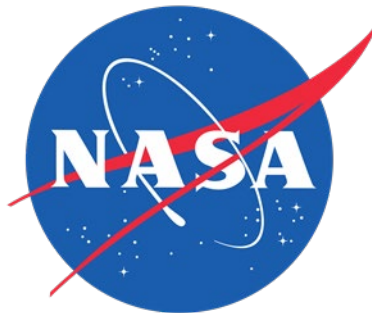


**KSC CHILD DEVELOPMENT CENTER
(PRL 149)
CONFIRMATORY SAMPLING REPORT AND INTERIM
MEASURES WORK PLAN**

KENNEDY SPACE CENTER, FLORIDA

Prepared for



**National Aeronautics and Space Administration
John F. Kennedy Space Center**

**June 2024
Revision 0**

Prepared by

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CERTIFICATION AND APPROVAL

**KSC CHILD DEVELOPMENT CENTER
(PRL 149)**

CONFIRMATORY SAMPLING REPORT AND INTERIM MEASURES WORK PLAN

I hereby certify that in my professional judgment this document entitled: *KSC Child Development Center Confirmatory Sampling Report and Interim Measures Work Plan*, generally satisfies the requirements set forth in Chapter 471, Florida Statutes. I have completed and/or been in responsible charge of work completed by qualified professionals working directly under my supervision and the applicable portions of this document and associated work comply with Chapter 62-780, Florida Administrative Code (FAC) and Rule 62-780.400(1), FAC.



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June 3, 2024

Date

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ACRONYMS/ABBREVIATIONS

mg/kg	milligrams per kilogram
As	arsenic
bgs	below ground surface
COPC	contaminant of potential concern
COC	contaminant of concern
Cr	chromium
Cr(VI)	hexavalent chromium
CS	Confirmatory Sampling
CSWP	Confirmatory Sampling Work Plan
Cu	copper
DEP	Department of Environmental Protection
EPA	U.S. Environmental Protection Agency
ft	feet
GCTL	groundwater cleanup target level
HGL	HydroGeoLogic, Inc.
IM	interim measures
iSCTL	industrial soil cleanup target level
KCDC	KSC Child Development Center
KSC	Kennedy Space Center
KSCRT	KSC Remediation Team
LOC	location of concern
ISCTL	leachability soil cleanup target level
NASA	National Aeronautics and Space Administration
NEMCON	National Aeronautics and Space Administration Environmental and Medical Services Contract
PRL	potential release location
RCRA	Resource Conservation and Recovery Act
rSCTL	residential soil cleanup target level
SA	Solid Waste Management Unit Assessment

ACRONYMS/ABBREVIATIONS (continued)

SAR	Solid Waste Management Unit Assessment Report
SCTL	soil cleanup target level
SWMU	solid waste management unit

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EXECUTIVE SUMMARY

The National Aeronautics and Space Administration (NASA) Resource Conservation and Recovery Act (RCRA) permit requires identification and evaluation of known Solid Waste Management Units (SWMU) located at the Kennedy Space Center (KSC). The KSC Child Development Center (KCDC), the “site,” is designated as potential release location (PRL) 149 under the NASA RCRA permit. This report summarizes the results of the Confirmatory Sampling (CS) activities carried out in March 2022, and May 2023, at KCDC, PRL 149, KSC, Florida. This report additionally presents the results of an assessment conducted in July 2023, to determine whether construction activities in 2023 to replace certain playground equipment and the rubberized play surface released arsenic (As) contaminated soil.

The KCDC site is located on the southwestern portion of KSC and is bordered by 5th Street SE and A Avenue SE. The site was constructed as a child-care center for KSC employees in 1990. The facility is comprised of classrooms, offices, open play areas, staff lounge, lunch room, kitchen, and outside playground areas. The outside playground areas are located on the northeast side of the building and enclosed with plastic privacy fencing. Within the fenced area, the playground consists of grassy areas with picnic tables, areas sealed with a pour-in-place rubberized surface, and concrete walkways.

A SWMU Assessment (SA) was conducted in 2006 to identify potential environmental impacts related to current and historical operations conducted at the site. Four locations of concern (LOCs) were identified at the KCDC site: an electrical transformer substation (LOC 1); the areas beneath the wooden fences (LOC 2); locations adjacent to former mulched playground areas (LOC 3); and the area beneath the sealed playground areas (LOC 4). The playground was identified as a potential concern due to the past presence of pressure-treated equipment and a then-current pressure-treated lumber fence. The SA Report (SAR)/CS Work Plan (CSWP) was presented in an Advance Data Package (ADP) to the KSC Remediation Team (KSCRT) at the September 2006 meeting, and consensus was reached to sample for As, chromium (Cr), and copper (Cu) in the grassed playground area adjacent to the concrete path and under the old and current fence locations; and the proposed sampling for the transformers (Minute 0609-M13, Decisions D05 through D07) (Comprehensive Health Services [CHS], 2006). CS activities were initially conducted in April, June, and August 2007 to delineate areas of contamination (Geosyntec Consultants Inc. [Geosyntec], 2008). An interim measures (IM) was conducted in December 2007 to excavate and backfill 1,485 square feet of arsenic impacted soil. The wooden fence surrounding the playground area was removed and replaced with recycled-plastic fencing material (Geosyntec, 2007). A Land Use Control Implementation Plan (LUCIP) was put in place that required maintenance of the play surface to prevent contact with underlying potentially contaminated soil.

In 2022, a project by NASA to replace certain playground equipment and the rubberized play surface was planned. Sampling of soil was initiated to investigate whether other metals associated with treated wood (Cu and Cr) were present at levels of potential concern; and investigate remaining As levels. The sampling activities conducted on March 19, 2022, and May 16, 2023, at the KCDC site included the collection of 60 soil samples from 16 soil boring locations. The CS activities are summarized in **Table ES-1**.

Soil Sampling

CS activities in 2022 involved the collection of soil samples from LOC 2 (Wooden Fence Area) and LOC 4 (Sealed Playground Area); and CS activities in 2023 involved the collection of soil samples from LOC 2 only. Soils collected in 2022 were analyzed for As, Cu, Cr, and hexavalent Cr (Cr[VI]); and soils collected in 2023 were analyzed for As only.

At LOC 2, soil samples were collected in 2022 at two locations from ground surface to 0.5 feet (ft) below ground surface (bgs), 0.5 to 1.0 ft bgs, and every 1-ft interval until the water table was encountered (approximately 3 to 4 ft bgs). Delineation samples were collected at nine locations in 2023 from ground surface to 0.5 ft bgs, 0.5 to 1.0 ft bgs, and 1.0 to 2.0 ft bgs.

At LOC 4, a core drill was utilized to drill through the impervious playground surface and underlying concrete pad at five locations in 2022. Soil samples were collected from directly beneath the concrete pad to 1 ft bgs (0.5 to 1.0 ft bgs), and every 1-ft interval until the water table was encountered (approximately 3 to 4 ft bgs).

Soil sample results for Cr, Cr(VI), and Cu were less than the residential and/or leachability soil cleanup target levels (SCTLs) Various detections of As above the residential SCTL (rSCTL) were detected. By May 2023, delineation to below SCTLs was achieved. The analytical results for each LOC are summarized below.

LOC 2 – Areas Beneath the Wooden Fences

The detection of As in the 0 to 0.5 ft bgs sample interval at SB0048 (10.2 milligrams per kilogram [mg/kg]) exceeded the rSCTL of 2.1 mg/kg. Delineation to below SCTLs for As was achieved laterally and vertically in the 0.5 to 1.0 ft bgs sample interval. No other SCTL exceedances of As were detected at LOC 2. The soil boring location (SB0048) is not accessible to playground users because it is between two fences. Thus, the LUCIP remains valid. No further assessment for As is recommended for LOC 2.

LOC 4 – Sealed Playground Area

The detection of arsenic in the 1.0 to 2.0 ft bgs sample interval at SB0045 (2.3 mg/kg) exceeded the rSCTL of 2.1 mg/kg. Delineation to below SCTLs for As was achieved vertically in the 2.0 to 3.0 ft bgs sample interval. No other SCTL exceedances of As were detected at LOC 4. The soil boring location (SB0045) is not accessible to playground users because of the rubberized play surface. Thus, the LUCIP remains valid. No further assessment for As is recommended for LOC 4.

2023 Arsenic Contamination Release Assessment

The planned project by NASA to replace certain playground equipment and the rubberized play surface at KCDC commenced in June 2023 and was completed in July 2023. To assess conditions outside the rubberized play surface following construction activities, the NASA Remediation Program requested soil samples be collected to confirm As contaminated soil was not released during the periods when the concrete pad underneath the rubberized play surface had breaches.

Assessment activities completed in July 2023 included the collection of soil samples for As from within the fenced grassy play area and outside the fence.

Within the fenced grassy playground area, 67 soil samples were collected from 31 soil boring locations. Outside the fenced grassy playground area, 16 soil samples were collected from six soil boring locations. Soil samples were collected from ground surface to 0.5 ft bgs, and every 1-ft sample interval until the water table was encountered (approximately 2.0 ft bgs). By the end of July 2023, delineation for As to below rSCTLs was achieved. The analytical results are summarized below.

Detections of As at various locations exceeded the rSCTL of 2.1 mg/kg, with concentrations ranging from 2.29 mg/kg to 7.77 mg/kg. Detections of As in the 0 to 0.5 ft bgs sample interval exceeded the industrial SCTL (iSCTL) of 12 mg/kg at SB0077 (18.4 mg/kg) and SB0079 (18 mg/kg). The maximum depth with a SCTL exceedance of As was in 0.5 to 1.0 ft bgs sample interval. Delineation to below SCTLs for the locations with the iSCTL exceedance was achieved in the 0.5 to 1.0 ft bgs sample interval for SB0077, and in the 1.0 to 2.0 ft bgs sample interval for SB0079.

The NASA Remediation Program provided the data to NASA Environmental and Medical Services Contract (NEMCON) who coordinated a spill response cleanup within the fenced grassy play area to excavate As contaminated soils that exceed the residential and industrial SCTL. The NEMCON Report documenting the spill cleanup that addressed the soil excavation, site restoration, and waste characterization and disposal of the As contaminated soils is provided in Appendix F.

Recommendations

The soil cleanup within the fenced grassy play area by NEMCON included up to 1-ft outside the fence. A soil IM is recommended to address As impacted soil remaining outside the fenced grassy play area bounded by sample locations below SCTLs. Additionally, a soil IM is recommended to address As impacted soils at SB0048 and 2007 historical borings SB007 and SB0041, all borings are bounded by sample locations below SCTLs as well as engineering controls. On April 25, 2024 the CS Report and IM WP was presented to the KSCRT and consensus was reached for the following:

LOC2 – Proposed IM Approach

- Excavate soil from 0 to 0.5 ft bgs;
- As footprint (81.86 sq ft, 1.5 cubic yards);
- As samples are bounded by results less than the rSCTL;
- The concrete sidewalk and rubberized play surface provides engineering controls preventing human exposure to potential COCs within the play area. In the future if the engineering controls are removed, additional assessment is warranted prior to site closure; and
- Collect a confirmatory sidewall sample next to the fence south of SB0048 during the IM to ensure As contamination limits have been defined.

LOC 4 – Proposed IM Approach for Outside the North to South Fenceline

- Excavate soil from 0 to 0.5 ft bgs in two areas and 0 to 1.0 ft bgs in two areas;
- As combined footprints (903.76 sq ft; 33 cubic yards);
- Excavation limits bounded by results less than the SCTL;
- Post excavation, collect a verification floor sample east of SB0077 to confirm As has not migrated outside the fenceline;
- Install a monitoring well at SB0077 and sample the groundwater for As only to confirm contamination has not leached from the soil into the water table.

The ADP is included in Appendix A and the meeting minutes from the April 25th 2024, KSCRT meeting are included in Appendix B.

**KSC CHILD DEVELOPMENT CENTER
(PRL 149)
CONFIRMATORY SAMPLING REPORT AND INTERIM MEASURES
WORK PLAN**

1.0 INTRODUCTION

HydroGeoLogic, Inc. (HGL) prepared this Confirmatory Sampling (CS) Report and Interim Measures (IM) Work Plan for the National Aeronautics and Space Administration (NASA), Kennedy Space Center (KSC), Florida, under Contract Number 80KSC019D0012, Task Order 80KSC019F0118. This document presents the results of the CS activities performed in March 2022, and May 2023, at the KSC Child Development Center (KCDC), potential release location (PRL) 149, KSC, Florida. This report additionally presents the results of an assessment conducted between July 7 and July 27, 2023, to determine whether construction activities in 2023 to replace certain playground equipment and the rubberized play surface released arsenic (As) contaminated soil.

KSC's operating permit (0026028-009-HO) issued by the Florida Department of Environmental Protection (DEP) under the Hazardous and Solid Waste Amendment portion of the Resource Conservation and Recovery Act requires KSC to investigate all known Solid Waste Management Units (SWMUs) and locations of concern (LOCs) at KSC.

Potential As concerns were first identified at the childcare center in 2001 and a cleanup action was completed, as detailed in Section 2. Formal CS activities were initially completed by Geosyntec Consultants Inc. (Geosyntec) in April, June, and August 2007 (Geosyntec, 2008). An IM was conducted in December 2007 to excavate and backfill 1,485 square feet of As impacted soil. The wooden fence surrounding the playground area was removed and replaced with recycled-plastic fencing material (Geosyntec, 2007). In 2022, a project by NASA to replace certain playground equipment and the rubberized play surface was planned. Sampling of soil was initiated to investigate whether other metals associated with treated wood (copper [Cu] and chromium [Cr]) were present at levels of potential concern; and investigate remaining As levels.

1.1 PURPOSE

The purpose of this CS Report and IM Work Plan is to present the findings of the CS activities completed on March 19, 2022, and May 16, 2023. This report additionally provides the analytical results from the 2023 As contamination release assessment completed between July 7 and July 27, 2023. Sampling results were screened against their respective state of Florida cleanup target levels and evaluated for the presence or absence of contaminants of potential concern (COPCs).

1.2 REPORT ORGANIZATION

The remainder of this report is organized as follows:

- Section 2: *Site Location, Description, and History*. This section describes the site location, its history, and prior investigations.
- Section 3: *Confirmatory Sampling Activities*. This section provides the sampling objectives, techniques, and methodologies.
- Section 4: *Confirmatory Sampling Results*. This section presents and evaluates the findings of the CS activities.
- Section 5: *2023 Arsenic Contamination Release Assessment*. This section summarizes the assessment activities and findings. A spill cleanup report will be prepared separately by Environmental and Medical Services Contract (NEMCON).
- Section 6: *Summary, Conclusions, and Recommendations*. This section summarizes the CS activities and findings, and recommendations based on the results.
- Section 6: *References*. This section lists documents cited throughout the report.

2.0 SITE LOCATION, DESCRIPTION, AND HISTORY

2.1 SITE LOCATION

KSC is centrally located on the east coast of Florida, to the north and west of Cape Canaveral Space Force Station. It is situated in Brevard and Volusia Counties between the Merritt Island Barge Canal to the south, the town of Oak Hill to the north, the Atlantic Ocean and Cape Canaveral Space Force Station to the east, and the Indian River to the west. A large portion of the area, between the Indian River and the Atlantic Ocean, is in the northern part of Brevard County on Merritt Island, with the extreme north boundary extending about 7 miles into Volusia County. KCDC is in Section 7 of Township 23S, Range 37E of the Orsino Topographic Quadrangle (USGS, 1976).

KCDC is located on the southwestern portion of the KSC industrial area. The site is bordered by 5th Street SE and A Avenue SE. (**Figure 2.1**).

2.2 SITE DESCRIPTION AND HISTORY

The KCDC was constructed in 1990 with completion of the building in 1991. The facility was constructed as a child-care center for KSC employees and is currently operational. The facility is comprised of classrooms, offices, open play areas, staff lounge, lunch room, kitchen, and outside playgrounds. Facility parking lot areas are located to the south and west of the building and include a semi-circular covered driveway, paved with concrete. The outside playground areas are located on the northeast side of the building and enclosed with plastic privacy fencing. The original fence was made of treated lumber. Within the fenced area, the playground consists of grassy areas with picnic tables, areas sealed with a pour-in-place rubberized surface, and concrete walkways. The rubberized surface replaced the original mulch. The playground equipment currently consists of modular plastic structures. The original playground equipment was built of treated lumber. A site map of KCDC is presented in **Figure 2.2**.

2.3 PREVIOUS INVESTIGATIONS

In 2001, Joint Base Operation Support Contract (JBOSC) and Comprehensive Health Services (CHS) Environmental Sampling, Analysis and Monitoring (ESAM) personnel were requested by NASA to sample soil at the KCDC. The investigation focused on soil underneath pressure treated wood playground equipment and the perimeter fence line. The sampling was based on a national study demonstrating potential As contamination from pressure treated playground equipment. Ten soil samples were collected for As in August 2001. Detections of As exceeding the 2001 residential soil cleanup target level (rSCTL) of 0.8 milligrams per kilogram (mg/kg) were observed in soil 0 to 0.5 feet (ft.) beneath the mulch at 7 of the 10 locations sampled, with concentrations ranging from <0.52 to 26.2 mg/kg. Confirmatory surface soil samples were collected from seven locations in September 2001. The mulch from the location with the highest detection was also sampled for As. Soil samples from 5 of the 7 locations again exceeded the 2001 rSCTL. The mulch contained 25 mg/kg of As. Following evaluation of the results from the sampling activities in September 2001, the mulch and the top 6-inches of soil beneath the mulch were removed and disposed of as non-hazardous waste. The area was sealed with an impervious pour-in-place surfacing (plastic).

The wood playground equipment was replaced with plastic equipment. During this time, the wood fencing was not removed or replaced (JBOSC/CHS, 2006).

The KCDC site was evaluated through a SWMU Assessment (SA) completed by JBOSC/CHS in 2006 (JBOSC/CHS, 2006). Four locations of concern (LOCs) were identified at the KCDC site: an electrical transformer substation (LOC 1); the areas beneath the wooden fences (LOC 2); locations adjacent to former mulched playground areas (LOC 3); and the area beneath the sealed playground areas (LOC 4). The SA Report (SAR)/CS Work Plan (CSWP) was presented in an Advance Data Package (ADP) to the KSC Remediation Team (KSCRT) at the September 2006 meeting, and consensus was reached on the following: As in the playground would be addressed Under KSC's RCRA Corrective Action program rather than the Compliance program; to sample for As, Cr, and Cu in the grassed playground area adjacent to the concrete path and under the old and current fence locations; and the proposed sampling for transformers (Minute 0609-M13, Decisions D05 through D07) (CHS, 2006). Additionally, the team reached consensus that the transformers (LOC 1) will be compiled with other transformers on center that are not part of other investigations and will be evaluated together (Minute 0606-M13, Decision D22).

CS activities were completed by Geosyntec in 2007 in accordance with the SAR/CSWP and areas of contamination were delineated. An IM was conducted in December 2007 to excavate and backfill 1,485 square ft of As impacted soil above the rSCTL (0 to 1 ft below ground surface [bgs]). The wooden fence surrounding the playground area was removed and replaced with recycled-plastic fencing material (Geosyntec, 2008). IM results were presented in an ADP to the KSCRT at the May 2008 meeting, and consensus was reached on the following: the Statement of Basis (SB) with changes listed in meeting minutes; and the Land Use Control Implementation Plan (LUCIP) with changes listed in meeting minutes (Minute 0805-M05, Decisions D07 and D08).

Copies of the historical ADPs and the 2008 Interim Measure Report Figure 1.2 *Excavation Areas and Summary of As Detections in Soil* are provided in **Appendix A**, and meeting minutes are provided in **Appendix B**.

2.4 IDENTIFIED LOCATIONS OF CONCERN

In 2022, a project by NASA to replace certain playground equipment and the rubberized play surface was planned. Sampling of soil was initiated to investigate whether other metals associated with treated wood (Cu and Cr) were present at levels of potential concern; and investigate remaining As levels. The following paragraphs summarize each LOC sampled in 2022 and 2023; and the COPCs and applicable screening criteria. LOCs are identified in **Figure 2.3**.

2.4.1 LOC 2: Areas Beneath the Former Wooden Fences

LOC 2 is the area beneath the former wooden fences surrounding and dividing the playground areas. Soil impacts from As leaching from the former wooden fences have been detected. Releases of As and other metals associated with treated wood may have occurred. The ground surface is mowed and maintained grass and is not considered Ecological habitat. Samples from this area were screened against state of Florida SCTLs.

2.4.2 LOC 4: Sealed Playground Areas

LOC 4 includes the playground areas currently beneath the impervious cover. Surface soil impacts from As have been documented there and As and other metals may have leached into the deeper soils. Although these areas are identified as a LOC, a complete exposure pathway does not exist due to the installation of the impervious cover. These locations are not considered Ecological habitat and samples from this area were screened against state of Florida SCTLs. The KSC Combined Soil Background values are applicable in this area.

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3.0 CONFIRMATORY SAMPLING ACTIVITIES

The KCDC CS activities were completed on March 19, 2022, and May 16, 2023. The 2022 and 2023 CS locations, matrices, analytes, rationale, and screening criteria are included in **Table 3-1**. Spatial coordinates for the sampling locations were recorded using a hand-held global positioning system and are presented in **Table 3-2**. Copies of daily field activity are provided in **Appendix C**.

Prior to intrusive work, proposed sampling locations were marked, and a utility locate was conducted by KSC Survey. No concerns were identified at KCDC. A copy of the project's excavation permit is included in **Appendix D**.

3.1 CONFIRMATORY SAMPLING

The CS activities conducted on March 19, 2022, and May 16, 2023, at the KCDC site consisted of the collection of 53 soil samples from 16 boring locations (**Figure 3.1**). CS activities were conducted to investigate whether other metals associated with treated wood (Cu and Cr) were present at levels of potential concern; and investigate remaining As levels.

All soil samples were collected using a stainless steel hand auger. Each sampling interval was homogenized using a stainless-steel mixing bowl and spoon prior to placement into a single, 4-oz glass jar. Samples were immediately placed into coolers with wet ice prior to transportation to SGS North America Inc. in Orlando, Florida via SGS North America Inc. courier.

3.1.1 2022 Soil Sampling

On March 19, 2022, eight soil samples were collected from two LOC 2 locations; and 18 soil samples were collected from five LOC 4 locations. At LOC 2, soil samples were collected from ground surface to 0.5 feet (ft) below ground surface (bgs), 0.5 to 1.0 ft bgs, and every 1-ft interval until the water table was encountered. At LOC 4, a core drill was utilized to drill through the impervious playground surface and underlying concrete pad. Soil samples were collected from directly beneath the concrete pad to 1 ft bgs (0.5 to 1.0 ft bgs), and every 1-ft interval until the water table was encountered. The soil samples from each LOC were analyzed for the COPCs identified in the SAR: As, Cr, hexavalent Cr (CR[VI]), and Cu.

3.1.2 2023 Soil Sampling

On May 16, 2023, delineation samples were collected at nine LOC 2 locations from ground surface to 0.5 ft bgs, 0.5 to 1.0 ft bgs, and 1.0 to 2.0 ft bgs. The soil samples were analyzed for As.

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4.0 CONFIRMATORY SAMPLING RESULTS

Soil analytical results are provided in **Table 4-1** (LOC 2) and **Table 4-2** (LOC 4). The laboratory analytical reports are provided in **Appendix E**.

4.1 SOIL ANALYTICAL RESULTS

4.1.1 LOC 2 – Areas Beneath the Wooden Fence

Eight soil samples were collected from two LOC 2 locations (SB0048 and SB0049) on March 19, 2022. The samples were collected from ground surface to 0.5 ft bgs, 0.5 to 1.0 ft bgs, and every 1-ft interval until the water table was encountered (approximately 3 to 4 ft bgs). The samples were analyzed for As, Cr, Cr(VI), and Cu. Concentrations of Cr, Cr(VI), and Cu were not detected above their respective SCTLs. The concentration of As detected in the 0 to 0.5 ft bgs sample interval from SB0048 (10.2 mg/kg) exceeded the rSCTL of 2.1 mg/kg. No other SCTL exceedances were detected.

To delineate the rSCTL exceedance of As detected at SB0048, soil samples were collected for As from nine soil boring locations on May 16, 2023. The soil samples were collected from ground surface to 0.5 ft bgs, 0.5 to 1.0 ft bgs, and 1.0 to 2.0 ft bgs. No SCTL exceedances were detected. The rSCTL exceedance of As from 0 to 0.5 ft bgs at SB0048 was delineated to below SCTLs vertically at 0.5 to 1.0 ft bgs; and laterally by samples collected from SB0046, SB0053, and SB0054.

The analytical results are listed in **Table 4-1** and shown in **Figure 4.1**.

4.1.2 LOC 4 - Sealed Playground Area

On March 19, 2023, 18 soil samples were collected from five LOC 4 locations (SB0043 through SB0047). A core drill was utilized to drill through the impervious playground surface (approximately 2 inches) and underlying concrete pad (approximately 4 inches). Soil samples were collected from directly beneath the concrete pad to 1 ft bgs (0.5 to 1.0 ft bgs), and every 1-ft interval until the water table was encountered (approximately 3 to 4 ft bgs). The samples were analyzed for As, Cr, Cr(VI), and Cu. Concentrations of Cr, Cr(VI), and Cu were not detected above their respective SCTLs. The concentration of As detected in 1.0 to 2.0 ft bgs sample interval from SB0045 (2.3 mg/kg) exceeded the rSCTL of 2.1 mg/kg.

The analytical results are listed in **Table 4-2** and shown in **Figure 4.2**.

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5.0 2023 ARSENIC CONTAMINATION RELEASE ASSESSMENT

A planned project by NASA to replace certain playground equipment and the rubberized play surface at KCDC began in June 2023 and was completed in July 2023. To assess conditions outside the rubberized play surface following construction activities, the NASA Remediation Program requested soil samples be collected to confirm As contaminated soil was not released during the periods when the concrete pad underneath the rubberized play surface had breaches. The assessment activities were completed between July 7, 2023, and July 27, 2023.

The locations, matrices, analytes, rationale, and screening criteria are included in **Table 5-1**. Spatial coordinates for the sampling locations were recorded using a hand-held global positioning system and are presented in **Table 5-2**. Copies of daily field activity are provided in **Appendix C**. Permits are provided in **Appendix D**.

5.1 2023 ARSENIC CONTAMINATION RELEASE ASSESSMENT ACTIVITIES

The assessment activities conducted between July 7, 2023, and July 27, 2023, at the KCDC site included the collection of 83 soil samples from 37 boring locations (**Figure 5.1**). During assessment activities, 67 soil samples were collected from 31 boring locations within the fenced grassy play area; and 16 soil samples were collected from six boring locations outside the fenced grassy play area. Sample locations were chosen to reflect areas where potential releases may have occurred, as well as to provide coverage across the grassy play area.

All soil samples were collected using a stainless steel hand auger. Each sampling interval was homogenized using a stainless-steel mixing bowl and spoon prior to placement into a single, 4-oz glass jar. Samples were immediately placed into coolers with wet ice prior to transportation to SGS North America Inc. in Orlando, Florida via SGS North America Inc. courier. All samples were analyzed for As. The analytical results are listed in **Table 5-3** and presented on **Figures 5.2a** and **5.2b**.

5.2 2023 ARSENIC CONTAMINATION RELEASE ASSESSMENT ANALYTICAL RESULTS

On July 7, 2023, 18 soil samples were collected from 18 boring locations (SB0059 through SB0076) within the fenced grassy play area. Samples were collected from the ground surface to 0.5 ft bgs. Detections of As exceeded the rSCTL of 2.1 mg/kg at SB0068 (2.75 mg/kg), SB0070 (4.63 mg/kg), and SB0074 (2.98 mg/kg). No other SCTL exceedances of As were detected.

To delineate the rSCTL exceedances of As detected at SB0068, SB0070, and SB0074, 53 soil samples were collected from 23 boring locations on July 20, 2023. Vertical step-down samples were collected from 0.5 to 1.0 ft bgs at SB0066 through SB0071, SB0073, and SB0074. Additional vertical step-down samples were collected from 1.0 to 2.0 ft bgs at SB0066, SB0067, SB0070, and SB0071. Lateral step-out samples were collected from 0 to 0.5 ft bgs, 0.5 to 1.0 ft bgs, and every 1-ft interval until the water was encountered (approximately 2.0 ft bgs) at SB0077 through SB0091. Deeper samples were released to the laboratory for analysis depending on results of the shallower intervals. Thus, not all sample intervals for the lateral step-outs were analyzed.

The rSCTL exceedance from 0 to 0.5 ft bgs at SB0068 was delineated to below SCTLs vertically in the 0.5 to 1.0 ft bgs sample interval; and laterally to the west and east by samples collected from SB0067 and SB0078. The results of the lateral step-out samples from 0 to 0.5 ft bgs at SB0077 (18.4 mg/kg) and SB0079 (18 mg/kg) exceeded the industrial SCTL (iSCTL) of 12 mg/kg but were delineated to below SCTLs vertically in the 0.5 to 1.0 ft bgs (SB0077) and 1.0 to 2.0 ft bgs (SB0079) sample intervals. The iSCTL exceedance from 0 to 0.5 ft bgs at SB0077 was delineated to below SCTLs laterally to the north by the sample collected at SB0085. The concentration detected in the lateral step-out sample from 0 to 0.5 ft bgs at SB0087 (2.69 mg/kg) exceeded the rSCTL but was delineated to below SCTLs vertically in the 0.5 to 1.0 ft bgs sample interval; and laterally to the south by the sample collected at SB0090. The iSCTL exceedance from 0 to 0.5 ft bgs at SB0079 was delineated to below SCTLs laterally to the south by the sample collected at SB0090. The vertical delineation result from 0.5 to 1.0 ft bgs at SB0070 (4.65 mg/kg) exceeded the rSCTL of 2.1 mg/kg but was delineated to below SCTLs in the 1.0 to 2.0 ft bgs sample interval (1.33 mg/kg). The rSCTL exceedance from 0 to 0.5 ft bgs and 0.5 to 1.0 ft bgs at SB0070 was delineated to below SCTLs laterally by the samples collected from SB0066, SB0069, SB0071, and SB0080. The rSCTL exceedance from 0 to 0.5 ft bgs at SB0074 was delineated to below SCTLs vertically in the 0.5 to 1.0 ft bgs sample interval; and laterally to the east and west by samples collected from SB0082 and SB0084. The results of the lateral step-out samples from 0 to 0.5 ft bgs at SB0081 and SB0083; and from 0.5 to 1.0 ft bgs at SB0083 exceeded the rSCTL but were delineated to below SCTLs vertically in the 0.5 to 1.0 ft bgs (SB0081) and 1.0 to 2.0 ft bgs (SB0083) sample intervals. The As result of the lateral step-out sample collected from 0 to 0.5 ft bgs at SB0091 (2.34 mg/kg) to the south of SB0083 exceeded the rSCTL but was delineated to below SCTLs vertically in the 0.5 to 1.0 ft bgs sample interval.

To complete lateral delineation to the east and outside the fenced grassy play area, 12 soil samples were collected from 0 to 0.5 ft bgs, 0.5 to 1.0 ft bgs, and 1.0 to 2.0 ft bgs at four boring locations (SB0092 through SB0095) on July 27, 2023. All As results were below SCTLs.

6.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

6.1 SUMMARY AND CONCLUSIONS

The CS activities conducted on March 19, 2022, and May 16, 2023, at the KCDC site included the collection of 35 soil samples from 11 LOC 2 soil boring locations, and 18 soil samples from five LOC 4 locations.

To assess potential releases of As contamination from construction activities, 83 soil samples were collected from 37 boring locations within, and outside the fenced grassy play area between July 7, 2023, and July 27, 2023, at the KCDC site.

6.1.1 LOC 2 – Areas Beneath the Former Wooden Fence

A rSCTL exceedance of As was detected in one soil sample collected from ground surface to 0.5 ft bgs at LOC 2. The location with the rSCTL exceedance is not accessible to playground users because it is located between the plastic fence and the chain link fence. Any modification to the fencing would have to be coordinated with the KSC Remediation Program. The lateral and vertical extent of the identified COC has been delineated to below the SCTLs.

6.1.2 LOC 4 – Sealed Playground Area

A rSCTL exceedance of As was detected in one soil sample collected from 1.0 to 2.0 ft bgs at LOC 4. The location of the rSCTL exceedance is not accessible to playground users because it is located underneath the rubberized play surface and underlying concrete pad. Maintenance of the play surface is required under the LUCIP. The vertical extent of the identified COC has been delineated to below the SCTLs.

6.1.3 2023 Arsenic Contamination Release Assessment

Residential SCTL exceedances of As were detected in soil samples collected within the fenced grassy play area, with soil impacts ranging from ground surface to 1.0 ft bgs. Additionally, iSCTL exceedances of As were detected in soil samples collected within the fenced grassy play area, with soil impacts ranging from ground surface to 0.5 ft bgs. The lateral and vertical extent of the identified COC has been delineated to below the SCTLs and the data was provided to the NASA Remediation Program. A soil excavation was coordinated by NEMCON to remove As contaminated soils from within the fenced grassy area as part of a spill response cleanup program in August 2023. The cleanup was completed before the playground reopened. The excavation included up to 1 ft outside the fence. The spill response report is included in **Appendix F**.

6.2 RECOMMENDATIONS

A soil IM is recommended to address the rSCTL exceedance of As detected at LOC 2 (SB0048) and historical soil borings SB007 and SB0041 **Figure 6.1**. Additionally, the spill response excavation footprint included up to 1 ft outside the fenced grassy play area but not to the eastern boundary locations below SCTLs. Thus, a soil IM is recommended to address the remaining residential and iSCTL exceedances of As outside the fenced grassy play area **Figure 6.2**.

The results of the 2022-2023 activities were presented in an ADP to the KSCRT at the April 2024 meeting, and consensus was reached on the statements and recommendations listed below. At the time of this report, draft meeting minutes for the April 2024 KSCRT meeting are unavailable but will be included in **Appendix B** of the final report.

1. LUCIP remains protective of human health.
2. Land Use Controls and quarterly inspections will continue.
3. CS activities demonstrated that site soils exceeding SCTLs have been fully delineated.
4. Proposed soil IM excavation boundaries to remove soils that exceed the:
 - a. rSCTL:
 - i. (SB007 and SB0048): bound by sample locations below the rSCTL (SB0053 and SB0054), concrete pad, and the fence line;
 - ii. (SB0041): bounded by samples SB0051 and SB0050 and the fence line;
 - iii. (SB0074): bound by sample locations below the rSCTL (SB0081, SB0082, and SB0083) and the fence line; and
 - b. iSCTL:
 - i. (SB0077 and SB0079): bound by sample locations below the rSCTL (SB0078, SB0082, SB0085, SB0090, SB0092, SB0093, and SB0095) and the fence line.

6.2.1 Soil Interim Measures

Discussion on the soil IM approach including the proposed excavation method, depths, and square footage of each footprint is included in **Appendix G**. In summary, the soil shall be excavated from 0 to 0.5 ft bgs for the LOC 2 footprints (81.86 sq ft; 1.5 cubic yards) and to depths ranging from 0.5 ft bgs to 1.0 ft bgs outside the fenced grassy play area (903.76 sq ft; 33 cubic yards) (**Figures 6.1 and 6.2**). East of the fenced grassy play area, the footprint shall begin at the fence line. One floor confirmation sample east of SB0077 (the sample location with the highest As concentration 18.4 mg/kg) will be collected to ensure vertical delineation is achieved.

6.2.2 Post Interim Measure Groundwater Assessment

Following the soil interim measure, a monitoring well will be installed at the sample location with the highest As concentration (SB0077) to assess the area for possible impacts from As leaching from the soil. The monitoring well will be installed to a depth of approximately 13 ft bgs and screened from 3 ft to 13 ft bgs. The well will have 0.006 slot screen and a filter pack of 30/65 clean sand to minimize turbidity from suspended solids. Following the well development, the groundwater will be sampled for As only by EPA Method 6020A. The groundwater results will be included in the Interim Measure Report for Team review and approval.

7.0 REFERENCES

Comprehensive Health Services, 2006. *KSC Child Development Center Area, M6-0883, Potential Release Location #149, SAR/CSWP ADP*. August.

Geosyntec Consultants Inc. (Geosyntec), 2008. *Statement of Basis, Kennedy Space Center Child Development Center, PRL 149, National Aeronautics and Space Administration*. April.

Geosyntec, 2008. *Kennedy Space Center Child Development Center (KCDC), Interim Measures Advance Data Package, PRL 149*. May.

U.S. Geological Society, 1976. Orsino Topographic Quadrangle Map, 7.5' Series.

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TABLES

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**Table ES-1
Confirmatory Sampling Summary
2023 Confirmatory Sampling Report
KSC Child Development Center
Kenedy Space Center**

Sample Location	Matrix	Location ID	Depth (ft bgs)	Analyses	Rationale	Results	Conclusions			
LOC 2 Areas Beneath the Former Wooden Fences	Soil	SB0048	0-0.5	As, Cu, Cr, Cr(VI)	Potential release of As, Cu, Cr, and Cr(VI)	rSCTL exceedance (As).	Lateral and vertical delineation to below SCTLs was achieved for the COC (As) at LOC 2.			
			0.5-1.0			No SCTL exceedances.				
			1.0-2.0							
		SB0049	2.0-3.0							
			0-0.5	As, Cu, Cr, Cr(VI)	Potential release of As, Cu, Cr, and Cr(VI)	No SCTL exceedances.				
			0.5-1.0							
		1.0-2.0								
		SB0050	2.0-3.0							
			0-0.5	As	Delineate northern extent of As	No SCTL exceedances.				
			0.5-1.0							
		1.0-2.0								
		SB0051	0-0.5	As	Delineate northern extent of As	No SCTL exceedances.				
			0.5-1.0							
			1.0-2.0							
		SB0052	0-0.5	As	Delineate northern extent of As	No SCTL exceedances.				
			0.5-1.0							
			1.0-2.0							
		SB0053	0-0.5	As	Delineate northern extent of As	No SCTL exceedances.				
			0.5-1.0							
			1.0-2.0							
SB0054	0-0.5	As	Delineate northern extent of As	No SCTL exceedances.						
	0.5-1.0									
	1.0-2.0									
SB0055	0-0.5	As	Delineate northern extent of As	No SCTL exceedances.						
	0.5-1.0									
	1.0-2.0									
SB0056	0-0.5	As	Delineate northern extent of As	No SCTL exceedances.						
	0.5-1.0									
	1.0-2.0									
SB0057	0-0.5	As	Delineate northern extent of As	No SCTL exceedances.						
	0.5-1.0									
	1.0-2.0									
SB0058	0-0.5	As	Delineate northern extent of As	No SCTL exceedances.						
	0.5-1.0									
	1.0-2.0									
LOC 4 Sealed Playground Area	Soil	SB0043	0-0.5	As, Cu, Cr, Cr(VI)	Potential release of As, Cu, Cr, and Cr(VI)	Not sampled.	Lateral and vertical delineation to below SCTLs was achieved for the COC (As) at LOC 4. LUCIP remains protective of human health.			
			0.5-1.0			No SCTL exceedances.				
			1.0-2.0							
			2.0-3.0							
		SB0044	3.0-4.0							
			0-0.5	As, Cu, Cr, Cr(VI)	Potential release of As, Cu, Cr, and Cr(VI)	Not sampled.				
			0.5-1.0			No SCTL exceedances.				
			1.0-2.0							
		2.0-3.0								
		SB0045	2.0-3.0							
			3.0-4.0							
			0-0.5	As, Cu, Cr, Cr(VI)	Potential release of As, Cu, Cr, and Cr(VI)	Not sampled.				
			0.5-1.0			No SCTL exceedances.				
		1.0-2.0	rSCTL exceedance (As).							
		2.0-3.0	No SCTL exceedances.							
		SB0046	3.0-4.0							
			0-0.5	As, Cu, Cr, Cr(VI)	Potential release of As, Cu, Cr, and Cr(VI)	Not sampled.				
			0.5-1.0			No SCTL exceedances.				
			1.0-2.0							
		2.0-3.0								
SB0047	3.0-4.0									
	0-0.5	As, Cu, Cr, Cr(VI)	Potential release of As, Cu, Cr, and Cr(VI)	Not sampled.						
	0.5-1.0			No SCTL exceedances.						
	1.0-2.0									
2.0-3.0										
2023 Arsenic Contamination Release Assessment	Soil	SB0059 SB0060 SB0061 SB0062 SB0063 SB0064 SB0065	0-0.5	As	Potential release of As from soil due to construction activities.	No SCTL exceedances.	Lateral and vertical delineation to below SCTLs was achieved for the COC (As).			
			SB0066			0-0.5		As	Potential release of As from soil due to construction activities.	No SCTL exceedances.
						0.5-1.0			Vertical delineation.	
			SB0067			1.0-2.0				
						0-0.5		As	Potential release of As from soil due to construction activities.	No SCTL exceedances.
			0.5-1.0			Vertical delineation.				
		SB0068	1.0-2.0							
			0-0.5	As	Potential release of As from soil due to construction activities.	rSCTL exceedance.				
		0.5-1.0	Vertical delineation.		No SCTL exceedances.					
		SB0069	0-0.5	As	Potential release of As from soil due to construction activities.	No SCTL exceedances.				
			0.5-1.0		Vertical delineation.					
		SB0070	0-0.5	As	Potential release of As from soil due to construction activities.	rSCTL exceedance.				
			0.5-1.0		Vertical delineation.	No SCTL exceedances.				
			1.0-2.0							
		SB0071	0-0.5	As	Potential release of As from soil due to construction activities.	No SCTL exceedances.				
			0.5-1.0		Vertical delineation.					
			1.0-2.0							
		SB0072	0-0.5	As	Potential release of As from soil due to construction activities.	No SCTL exceedances.				
		SB0073	0-0.5	As	Potential release of As from soil due to construction activities.	No SCTL exceedances.				
			0.5-1.0		Vertical delineation.					
SB0074	0-0.5	As	Potential release of As from soil due to construction activities.	rSCTL exceedance.						
	0.5-1.0		Vertical delineation.	No SCTL exceedances.						
SB0075	0-0.5	As	Potential release of As from soil due to construction activities.	No SCTL exceedances.						
SB0076	0-0.5	As	Potential release of As from soil due to construction activities.	No SCTL exceedances.						
SB0077	0-0.5	As	Lateral delineation.	iSCTL exceedance.						
	0.5-1.0		Vertical delineation.	No SCTL exceedances.						
SB0078	0-0.5	As	Lateral delineation.	No SCTL exceedances.						
	0.5-1.0		Vertical delineation.							
SB0079	0-0.5	As	Lateral delineation.	iSCTL exceedance.						
	0.5-1.0		rSCTL exceedance.							
	1.0-2.0		Vertical delineation.	No SCTL exceedances.						

Table ES-1 (continued)
Confirmatory Sampling Summary
2023 Confirmatory Sampling Report
KSC Child Development Center
Kenedy Space Center

Sample Location	Matrix	Location ID	Depth (ft bgs)	Analyses	Rationale	Results	Conclusions
2023 Arsenic Contamination Release Assessment	Soil	SB0080	0-0.5	As	Lateral delineation.	No SCTL exceedances.	Lateral and vertical delineation to below SCTLs was achieved for the COC (As).
			0.5-1.0		Vertical delineation.		
			1.0-2.0				
		SB0081	0-0.5	As	Lateral delineation.	rSCTL exceedance.	
			0.5-1.0		Vertical delineation.	No SCTL exceedances.	
			1.0-2.0				
		SB0082	0-0.5	As	Lateral delineation.	No SCTL exceedances.	
			0.5-1.0		Vertical delineation.		
			1.0-2.0				
		SB0083	0-0.5	As	Lateral delineation.	rSCTL exceedance.	
			0.5-1.0		Vertical delineation.	rSCTL exceedance.	
			1.0-2.0			No SCTL exceedances.	
		SB0084	0-0.5	As	Lateral delineation.	No SCTL exceedances.	
			0.5-1.0		Vertical delineation.		
			1.0-2.0				
		SB0085	0-0.5	As	Lateral delineation.	No SCTL exceedances.	
			0.5-1.0		Vertical delineation.		
			1.0-2.0				
		SB0086	0-0.5	As	Lateral delineation.	No SCTL exceedances.	
			0.5-1.0		Vertical delineation.		
			1.0-2.0				
		SB0087	0-0.5	As	Lateral delineation.	rSCTL exceedance.	
			0.5-1.0		Vertical delineation.	No SCTL exceedances.	
			1.0-2.0				
		SB0088	0-0.5	As	Lateral delineation.	No SCTL exceedances.	
			0.5-1.0		Vertical delineation.		
			1.0-2.0				
		SB0089	0-0.5	As	Lateral delineation.	No SCTL exceedances.	
			0.5-1.0		Vertical delineation.		
			1.0-2.0				
		SB0090	0-0.5	As	Lateral delineation.	No SCTL exceedances.	
			0.5-1.0		Vertical delineation.		
			1.0-2.0				
		SB0091	0-0.5	As	Lateral delineation.	rSCTL exceedance.	
			0.5-1.0		Vertical delineation.	No SCTL exceedances.	
			1.0-2.0				
		SB0092	0-0.5	As	Lateral delineation.	No SCTL exceedances.	
			0.5-1.0		Vertical delineation.		
			1.0-2.0				
		SB0093	0-0.5	As	Lateral delineation.	No SCTL exceedances.	
			0.5-1.0		Vertical delineation.		
			1.0-2.0				
		SB0094	0-0.5	As	Lateral delineation.	No SCTL exceedances.	
			0.5-1.0		Vertical delineation.		
			1.0-2.0				
		SB0095	0-0.5	As	Lateral delineation.	No SCTL exceedances.	
			0.5-1.0		Vertical delineation.		
			1.0-2.0				

Notes

⁽¹⁾ The state of Florida cleanup target level criteria are derived from the Final Technical Report: Development of Cleanup Target Levels for Chapter 62-777, Florida Administrative Code, University of Florida, February 2005
The sealed playground surface at LOC 4 is considered from ground surface to 0.5 ft bgs, thus the interval was not sampled.

Acronyms

As = arsenic	KCDC = KSC Child Development Center
COC = contaminant of concern	KSC = Kennedy Space Center
Cr = chromium	LOC = location of concern
Cr(VI) = hexavalent chromium	LUCIP = Land Use Control Implementation Plan
Cu = copper	SCTL = soil cleanup target level
ES = Executive Summary	iSCTL = industrial SCTL
ft bgs = feet below ground surface	rSCTL = residential SCTL

Table 3-1
2022-2023 Confirmatory Sampling Locations, Matrices, Analytes, Rationale, and Screening Criteria
2023 Confirmatory Sampling Report
KSC Child Development Center
Kennedy Space Center

Sample Location	Matrix	Location ID (KCDC-)	Sample ID	Depth (ft bgs)	Analytes	Rationale	Screening Criteria
LOC 2 Areas Beneath the Former Wooden Fences	Soil	SB0048	KCDC-SB0048-000.5-20220319	0-0.5	As, Cr, Cr(VI), Cu (SW6020B)	Potential release of metals	SCTL ⁽¹⁾
			KCDC-SB0048-001.0-20220319	0.5-1.0			
			KCDC-SB0048-002.0-20220319	1.0-2.0			
			KCDC-SB0048-003.0-20220319	2.0-3.0			
		SB0049	KCDC-SB0049-000.5-20220319	0-0.5			
			KCDC-SB0049-001.0-20220319	0.5-1.0			
			KCDC-SB0049-002.0-20220319	1.0-2.0			
		SB0050	KCDC-SB0049-003.0-20220319	2.0-3.0			
			KCDC-SB0050-000.5-20230516	0-0.5			
			KCDC-SB0050-001.0-20230516	0.5-1.0			
		SB0051	KCDC-SB0050-002.0-20230516	1.0-2.0			
			KCDC-SB0051-000.5-20230516	0-0.5			
			KCDC-SB0051-001.0-20230516	0.5-1.0			
		SB0052	KCDC-SB0051-002.0-20230516	1.0-2.0			
			KCDC-SB0052-000.5-20230516	0-0.5			
			KCDC-SB0052-001.0-20230516	0.5-1.0			
		SB0053	KCDC-SB0052-002.0-20230516	1.0-2.0			
			KCDC-SB0053-000.5-20230516	0-0.5			
			KCDC-SB0053-001.0-20230516	0.5-1.0			
		SB0054	KCDC-SB0053-002.0-20230516	1.0-2.0			
			KCDC-SB0054-000.5-20230516	0-0.5			
			KCDC-SB0054-001.0-20230516	0.5-1.0			
		SB0055	KCDC-SB0054-002.0-20230516	1.0-2.0			
			KCDC-SB0055-000.5-20230516	0-0.5			
			KCDC-SB0055-001.0-20230516	0.5-1.0			
		SB0056	KCDC-SB0055-002.0-20230516	1.0-2.0			
			KCDC-SB0056-000.5-20230516	0-0.5			
			KCDC-SB0056-001.0-20230516	0.5-1.0			
SB0057	KCDC-SB0056-002.0-20230516	1.0-2.0					
	KCDC-SB0057-000.5-20230516	0-0.5					
	KCDC-SB0057-001.0-20230516	0.5-1.0					
SB0058	KCDC-SB0057-002.0-20230516	1.0-2.0					
	KCDC-SB0058-000.5-20230516	0-0.5					
	KCDC-SB0058-001.0-20230516	0.5-1.0					
			KCDC-SB0058-002.0-20230516	1.0-2.0	As (SW6020B)	Delineate northern extent of As (rSCTL exceedance at SB0048)	

Table 3-1b (continued)
2021-2022 Confirmatory Sampling Locations, Matrices, Analytes, Rationale, and Screening Criteria
2023 CS Report
KSC Child Development Center,
Kennedy Space Center

Sample Location	Matrix	Location ID (KCDC-)	Sample ID	Depth (ft bgs)	Analyses	Rationale	Screening Criteria
LOC 4 Sealed Playground Area	Soil	SB0043	KCDC-SB0043-001.0-20220319	0.5-1.0	As, Cr, Cr(VI), Cu (SW6020B)	Potential release of metals	SCTL ⁽¹⁾
			KCDC-SB0043-002.0-20220319	1.0-2.0			
			KCDC-SB0043-003.0-20220319	2.0-3.0			
			KCDC-SB0043-004.0-20220319	3.0-4.0			
		SB0044	KCDC-SB0044-001.0-20220319	0.5-1.0			
			KCDC-SB0044-002.0-20220319	1.0-2.0			
			KCDC-SB0044-003.0-20220319	2.0-3.0			
			KCDC-SB0044-004.0-20220319	3.0-4.0			
		SB0045	KCDC-SB0045-001.0-20220319	0.5-1.0			
			KCDC-SB0045-002.0-20220319	1.0-2.0			
			KCDC-SB0045-003.0-20220319	2.0-3.0			
			KCDC-SB0045-004.0-20220319	3.0-4.0			
		SB0046	KCDC-SB0046-001.0-20220319	0.5-1.0			
			KCDC-SB0046-002.0-20220319	1.0-2.0			
			KCDC-SB0046-003.0-20220319	2.0-3.0			
		SB0047	KCDC-SB0047-001.0-20220319	0.5-1.0			
KCDC-SB0047-002.0-20220319	1.0-2.0						
KCDC-SB0047-003.0-20220319	2.0-3.0						

Notes:
⁽¹⁾ The SCTL criteria are derived from the Final Technical Report: Development of Cleanup Target Levels for Chapter 62-777, Florida Administrative Code, University of Florida, February 2005.

Acronyms:
As = arsenic
Cr = chromium
Cr(VI) = hexavalent chromium
Cu = copper
ft bgs = feet below ground surface
ID = identification
KCDC = KSC Child Development Center
KSC = Kennedy Space Center
LOC = location of concern
SB = soil boring
SCTL = soil cleanup target level

Table 3-2
2022-2023 Confirmatory Sampling Locations Spatial Coordinates
2023 Confirmatory Sampling Report
KSC Child Development Center, Kennedy Space Center, Florida

Sample Location	Location ID	Matrix	Easting (m)	Northing (m)
LOC 2 Areas beneath the Wooden Fences	SB0048	Soil	232933.49	463557.66
	SB0049		232953.76	463547.87
	SB0050		232955.52	463557.41
	SB0051		232948.99	463557.28
	SB0052		232943.32	463557.38
	SB0053		232936.92	463557.34
	SB0054		232930.76	463557.28
	SB0055		232925.19	463557.30
	SB0056		232918.26	463557.30
	SB0057		232911.49	463557.37
LOC 4 Sealed Playground Area	SB0058	Soil	232906.47	463557.40
	SB0043		232945.97	463519.29
	SB0044		232932.33	463545.10
	SB0045		232928.06	463548.81
	SB0046		232938.02	463554.52
	SB0047		232937.64	463534.24

Notes:

All locations begin with prefix KCDC.

Spatial coordinates provided in U.S. State Plane North American Datum of 1983, Florida East (meters).

Acronyms:

ID = identification

KCDC = KSC Child Development Center

KSC = Kennedy Space Center

LOC = location of concern

m = meters

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Table 4-1
LOC 2 Soil Analytical Results Summary
2023 Confirmatory Sampling Report
KSC Child Development Center, Kennedy Space Center, Florida

			Metal			
			As	Cr	Cu	Cr(VI)
Residential SCTL (mg/kg)			2.1	210	150	210
Industrial SCTL (mg/kg)			12	470	89,000	470
Leachability SCTL (mg/kg)			--	38	--	38
Location ID (KCDC-)	Sample Interval (ft bgs)	Sample Date	Result (mg/kg)			
SB0048	0-0.5	3/19/2022	10.2	4.4	2.8	0.41 J
	0.5-1.0		1.3	0.67	0.63	0.45 U
	1.0-2.0		0.54	0.55	0.64	0.48 U
	2.0-3.0		0.23 J	0.47	0.37	2.1
SB0049	0-0.5	3/19/2022	0.40	4.2	3.6	0.62
	0.5-1.0		0.084 J	1.6	1.2	0.42 U
	1.0-2.0		0.025 J	0.30	0.14 J-	0.46 U
	2.0-3.0		0.15 J	2.6	0.11 UJ	3.5
SB0050	0-0.5	5/16/2023	0.31	--	--	--
	0.5-1.0		0.20 J	--	--	--
	1.0-2.0		0.14 J	--	--	--
SB0051	0-0.5	5/16/2023	0.084 J	--	--	--
	0.5-1.0		0.064 J	--	--	--
	1.0-2.0		0.047 J	--	--	--
SB0052	0-0.5	5/16/2023	0.37	--	--	--
	0.5-1.0		0.51	--	--	--
	1.0-2.0		0.072 J	--	--	--
SB0053	0-0.5	5/16/2023	0.79	--	--	--
	0.5-1.0		1.2	--	--	--
	1.0-2.0		0.26	--	--	--
SB0054	0-0.5	5/16/2023	0.23 J	--	--	--
	0.5-1.0		0.18 J	--	--	--
	1.0-2.0		0.36	--	--	--
SB0055	0-0.5	5/16/2023	0.58	--	--	--
	0.5-1.0		0.19 J	--	--	--
	1.0-2.0		0.091 J	--	--	--
SB0056	0-0.5	5/16/2023	0.55	--	--	--
	0.5-1.0		0.11 J	--	--	--
	1.0-2.0		0.07 J	--	--	--
SB0057	0-0.5	5/16/2023	0.11 J	--	--	--
	0.5-1.0		0.051 J	--	--	--
	1.0-2.0		0.075 J	--	--	--
SB0058	0-0.5	5/16/2023	0.06 J	--	--	--
	0.5-1.0		0.032 J	--	--	--
	1.0-2.0		0.027 J	--	--	--

Footnotes

SCTL criteria are from the Final Technical Report: Development of Cleanup Target Levels for Chapter 62-777, Florida Administrative Code, University of Florida, February 2005.

-- = The analyte was not analyzed or no value is available.

Definitions and Acronyms

As = arsenic
Cr = chromium
Cr(VI) = hexavalent chromium
Cu = copper
ft bgs = feet below ground surface
ID = identification
J = result is an estimated value.

J- = estimated value, low bias.
KCDC = KSC Child Development Center
KSC = Kennedy Space Center
LOC = Location of Concern
mg/kg = milligrams per kilogram
SCTL = soil cleanup target level
U = analyte not detected, result is the reporting limit.

Table 4-2
LOC 4 Soil Analytical Results Summary
2023 Confirmatory Sampling Report
KSC Child Development Center, Kennedy Space Center, Florida

		Metal	As	Cr	Cu	Cr(VI)
		Residential SCTL (mg/kg)	2.1	210	150	210
		Industrial SCTL (mg/kg)	12	470	89,000	470
		Leachability SCTL (mg/kg)	--	38	--	38
Location ID (KCDC-)	Sample Interval (ft bgs)	Sample Date	Result (mg/kg)			
SB0043	0.5-1.0	3/19/2022	0.22 J	2.3 J	0.30 J	0.47 J
	1.0-2.0		0.049 J	0.54	0.076 UJ	0.90
	2.0-3.0		0.20 J	0.80	0.30 J	1.2
	3.0-4.0		0.054 J	0.30 J+	0.23 U	0.54 U
SB0044	0.5-1.0	3/19/2022	0.18 J	0.64	0.73	0.42 J
	1.0-2.0		1.7	3.4	0.23 J	0.55 U
	2.0-3.0		1.3	3.2	0.30	0.48 J
	3.0-4.0		0.65	2.2	0.16 UJ	0.52 U
SB0045	0.5-1.0	3/19/2022	0.55	0.72	0.26	0.59
	1.0-2.0		2.3	3.9	0.29	0.48 U
	2.0-3.0		0.72	2	0.20 J-	0.66
	3.0-4.0		0.15 J	0.53	0.13 UJ	2.6
SB0046	0.5-1.0	3/19/2022	1.7	1.7	1.8	0.63
	1.0-2.0		0.22 J	0.46	6.8	0.51 U
	2.0-3.0		0.21 J	0.46	0.90	1.9
SB0047	0.5-1.0	3/19/2022	0.43	5.7	0.71	0.44 J
	1.0-2.0		0.18 J	1.1	0.47	0.45 U
	2.0-3.0		0.12 J	0.21 J+	0.32	0.46 U

Footnotes

SCTL criteria are from the Final Technical Report: Development of Cleanup Target Levels for Chapter 62-777, Florida Administrative Code, University of Florida, February 2005.

-- = The analyte was not analyzed or no value is available.

Defintions and Acronyms

As = arsenic

Cr = chromium

Cr(VI) = hexavalent chromim

Cu = copper

ft bgs = feet below ground surface

ID = identification

J = result is an estimated value.

J- = estimated value, low bias.

J+ = estimated value, high bias.

KCDC = KSC Child Development Center

KSC = Kennedy Space Center

LOC = Location of Concern

mg/kg = milligrams per kilogram

SCTL = soil cleanup target level

U = analyte not detected, result is the reporting limit.

Table 5-1
Arsenic Contamination Release Assessment Sampling Locations, Matrices, Analytes, Rationale, and Screening Criteria
2023 Confirmatory Sampling Report
KSC Child Development Center
Kennedy Space Center

Location ID (KCDC-)	Sample ID	Depth (ft bgs)	Rationale	Screening Criteria
SB0059	KCDC-SB0059-000.5-20230707	0-0.5	Potential release of As contaminated soil from beneath concrete pad	SCTL
SB0060	KCDC-SB0060-000.5-20230707	0-0.5		
SB0061	KCDC-SB0061-000.5-20230707	0-0.5		
SB0062	KCDC-SB0062-000.5-20230707	0-0.5		
SB0063	KCDC-SB0063-000.5-20230707	0-0.5		
SB0064	KCDC-SB0064-000.5-20230707	0-0.5		
SB0065	KCDC-SB0065-000.5-20230707	0-0.5		
SB0066	KCDC-SB0066-000.5-20230707	0-0.5	Vertical delineation of rSCTL exceedance SB0070 for excavation footprint.	
	KCDC-SB0066-001.0-20230720	0.5-1.0		
	KCDC-SB0066-002.0-20230720	1.0-2.0		
SB0067	KCDC-SB0067-000.5-20230707	0-0.5	Potential release of As contaminated soil from beneath concrete pad	
	KCDC-SB0067-001.0-20230720	0.5-1.0	Vertical delineation	
	KCDC-SB0067-002.0-20230720	1.0-2.0		
SB0068	KCDC-SB0068-000.5-20230707	0-0.5	Potential release of As contaminated soil from beneath concrete pad	
	KCDC-SB0068-001.0-20230720	0.5-1.0	Vertical delineation	
SB0069	KCDC-SB0069-000.5-20230707	0-0.5	Potential release of As contaminated soil from beneath concrete pad	
	KCDC-SB0069-001.0-20230720	0.5-1.0	Vertical delineation	
SB0070	KCDC-SB0070-000.5-20230707	0-0.5	Potential release of As contaminated soil from beneath concrete pad	
	KCDC-SB0070-001.0-20230720	0.5-1.0	Vertical delineation	
	KCDC-SB0070-002.0-20230720	1.0-2.0	Vertical delineation	
SB0071	KCDC-SB0071-000.5-20230707	0-0.5	Potential release of As contaminated soil from beneath concrete pad	
	KCDC-SB0071-001.0-20230720	0.5-1.0	Vertical delineation	
	KCDC-SB0071-002.0-20230720	1.0-2.0		
SB0072	KCDC-SB0072-000.5-20230707	0-0.5	Lateral delineation	
SB0073	KCDC-SB0073-000.5-20230707	0-0.5	Potential release of As contaminated soil from beneath concrete pad	
	KCDC-SB0073-001.0-20230720	0.5-1.0	Vertical delineation	
SB0074	KCDC-SB0074-000.5-20230707	0-0.5	Potential release of As contaminated soil from beneath concrete pad	
	KCDC-SB0074-001.0-20230720	0.5-1.0	Vertical delineation	
SB0075	KCDC-SB0075-000.5-20230707	0-0.5	Potential release of As contaminated soil from beneath concrete pad	
SB0076	KCDC-SB0076-000.5-20230707	0-0.5	Lateral delineation	
SB0077	KCDC-SB0077-000.5-20230720	0-0.5	Lateral delineation	
	KCDC-SB0077-001.0-20230720	0.5-1.0	Vertical delineation	
SB0079	KCDC-SB0079-000.5-20230720	0-0.5	Lateral delineation	
	KCDC-SB0079-001.0-20230720	0.5-1.0	Vertical delineation	
	KCDC-SB0079-002.0-20230720	1.0-2.0		
SB0080	KCDC-SB0080-000.5-20230720	0-0.5	Lateral delineation	
	KCDC-SB0080-001.0-20230720	0.5-1.0	Vertical delineation	
	KCDC-SB0080-002.0-20230720	1.0-2.0		
SB0081	KCDC-SB0081-000.5-20230720	0-0.5	Lateral delineation	
	KCDC-SB0081-001.0-20230720	0.5-1.0	Vertical delineation	
SB0083	KCDC-SB0083-000.5-20230720	0-0.5	Lateral delineation	
	KCDC-SB0083-001.0-20230720	0.5-1.0	Vertical delineation	
	KCDC-SB0083-002.0-20230720	1.0-2.0		
SB0084	KCDC-SB0084-000.5-20230720	0-0.5	Lateral delineation	
	KCDC-SB0084-001.0-20230720	0.5-1.0	Vertical delineation	
	KCDC-SB0084-002.0-20230720	1.0-2.0		
SB0085	KCDC-SB0085-000.5-20230720	0-0.5	Lateral delineation	
	KCDC-SB0085-001.0-20230720	0.5-1.0	Vertical delineation	
	KCDC-SB0085-002.0-20230720	1.0-2.0		
SB0086	KCDC-SB0086-000.5-20230720	0-0.5	Lateral delineation	
	KCDC-SB0086-001.0-20230720	0.5-1.0	Vertical delineation	
	KCDC-SB0086-002.0-20230720	1.0-2.0		
SB0087	KCDC-SB0087-000.5-20230720	0-0.5	Lateral delineation	
	KCDC-SB0087-001.0-20230720	0.5-1.0	Vertical delineation	
	KCDC-SB0087-002.0-20230720	1.0-2.0		
SB0088	KCDC-SB0088-000.5-20230720	0-0.5	Lateral delineation	
	KCDC-SB0088-001.0-20230720	0.5-1.0	Vertical delineation	
	KCDC-SB0088-002.0-20230720	1.0-2.0		
SB0089	KCDC-SB0089-000.5-20230720	0-0.5	Lateral delineation	
	KCDC-SB0089-001.0-20230720	0.5-1.0	Vertical delineation	
	KCDC-SB0089-002.0-20230720	1.0-2.0		
SB0090	KCDC-SB0090-000.5-20230720	0-0.5	Lateral delineation	
	KCDC-SB0090-001.0-20230720	0.5-1.0	Vertical delineation	
	KCDC-SB0090-002.0-20230720	1.0-2.0		
SB0091	KCDC-SB0091-000.5-20230720	0-0.5	Lateral delineation	
	KCDC-SB0091-001.0-20230720	0.5-1.0	Vertical delineation	
	KCDC-SB0091-002.0-20230720	1.0-2.0		

Table 5-1
Arsenic Contamination Release Assessment Sampling Locations, Matrices, Analytes, Rationale, and Screening Criteria
2023 Confirmatory Sampling Report
KSC Child Development Center
Kennedy Space Center

Location ID (KCDC-)	Sample ID	Depth (ft bgs)	Rationale	Screening Criteria
SB0078	KCDC-SB0078-000.5-20230720	0-0.5	Lateral delineation	SCTL
	KCDC-SB0078-001.0-20230720	0.5-1.0	Vertical delineation	
SB0082	KCDC-SB0082-000.5-20230720	0-0.5	Lateral delineation	
	KCDC-SB0082-001.0-20230720	0.5-1.0	Vertical delineation	
SB0092	KCDC-SB0092-000.5-20230727	0-0.5	Lateral delineation	
	KCDC-SB0092-001.0-20230727	0.5-1.0	Vertical delineation	
	KCDC-SB0092-002.0-20230727	1.0-2.0		
SB0093	KCDC-SB0093-000.5-20230727	0-0.5	Lateral delineation	
	KCDC-SB0093-001.0-20230727	0.5-1.0	Vertical delineation	
	KCDC-SB0093-002.0-20230727	1.0-2.0		
SB0094	KCDC-SB0094-000.5-20230727	0-0.5	Lateral delineation	
	KCDC-SB0094-001.0-20230727	0.5-1.0	Vertical delineation	
	KCDC-SB0094-002.0-20230727	1.0-2.0		
SB0095	KCDC-SB0095-000.5-20230727	0-0.5	Lateral delineation	
	KCDC-SB0095-001.0-20230727	0.5-1.0	Vertical delineation	
	KCDC-SB0095-002.0-20230727	1.0-2.0		

KCDC = KSC Child Development Center

KSC = Kennedy Space Center

LOC = location of concern

SB = soil boring

SCTL = soil cleanup target level

* Green shading indicates the original post construction sample locations

Table 5-2
Arsenic Contamination Release Assessment Locations Spatial Coordinates
2023 Confirmatory Sampling Report
KSC Child Development Center, Kennedy Space Center, Florida

Sample Location	Location ID	Matrix	Easting (m)	Northing (m)
Arsenic Contamination Release Investigation	SB0059	Soil	232940.80	463555.09
	SB0060		232943.99	463554.81
	SB0061		232940.77	463551.96
	SB0062		232943.98	463551.87
	SB0063		232940.42	463547.38
	SB0064		232943.61	463547.06
	SB0065		232939.80	463542.68
	SB0066		232943.10	463542.30
	SB0067		232950.37	463541.30
	SB0068		232953.54	463540.72
	SB0069		232938.72	463538.44
	SB0070		232941.77	463537.93
	SB0071		232940.07	463534.84
	SB0072		232942.22	463529.53
	SB0073		232944.56	463528.29
	SB0074		232951.81	463527.32
	SB0075		232944.84	463523.18
	SB0076		232946.91	463518.49
	SB0077		232953.95	463543.69
	SB0078		232956.49	463540.38
	SB0079		232953.26	463537.68
	SB0080		232944.69	463537.21
	SB0081		232952.27	463530.28
	SB0082		232955.07	463527.02
	SB0083		232951.44	463524.29
	SB0084		232948.90	463527.73
	SB0085		232954.36	463546.60
	SB0086		232947.98	463546.42
	SB0087		232953.01	463535.75
	SB0088		232947.85	463536.85
SB0089	232943.14	463534.62		
SB0090	232952.54	463533.14		
SB0091	232950.84	463521.28		
SB0092	232955.72	463546.36		
SB0093	232954.37	463535.12		
SB0094	232954.23	463531.36		
SB0095	232952.68	463519.28		

Notes:

All locations begin with prefix KCDC.

Spatial coordinates provided in U.S. State Plane North American Datum of 1983, Florida East (meters).

Acronyms:

ID = identification

KCDC = KSC Child Development Center

KSC = Kennedy Space Center

LOC = location of concern

m = meters

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Table 5-3
Arsenic Contamination Release Assessment Soil Analytical Results Summary
2023 Confirmatory Sampling Report
KSC Child Development Center, Kennedy Space Center, Florida

			Metal	As
			Residential SCTL (mg/kg)	2.1
			Industrial SCTL (mg/kg)	12
			Leachability SCTL (mg/kg)	--
Location ID (KCDC-)	Sample Interval (ft bgs)	Sample Date	Result (mg/kg)	
SB0059	0-0.5	7/7/2023	0.811	
SB0060	0-0.5	7/7/2023	0.434 J	
SB0061	0-0.5	7/7/2023	0.627	
SB0062	0-0.5	7/7/2023	0.591	
SB0063	0-0.5	7/7/2023	0.729	
SB0064	0-0.5	7/7/2023	0.702	
SB0065	0-0.5	7/7/2023	0.494	
SB0066	0-0.5	7/7/2023	0.727	
	0.5-1.0	7/20/2023	0.224 U	
	1.0-2.0	7/20/2023	0.188 U	
SB0067	0-0.5	7/7/2023	0.49	
	0.5-1.0	7/20/2023	0.723	
	1.0-2.0	7/20/2023	0.197 U	
SB0068	0-0.5	7/7/2023	2.75	
	0.5-1.0	7/20/2023	1.13	
SB0069	0-0.5	7/7/2023	0.813	
	0.5-1.0	7/20/2023	0.663	
SB0070	0-0.5	7/7/2023	4.63	
	0.5-1.0	7/20/2023	4.65	
	1.0-2.0		1.33	
SB0071	0-0.5	7/7/2023	0.89	
	0.5-1.0	7/20/2023	0.562	
	1.0-2.0		0.195 U	
SB0072	0-0.5	7/7/2023	0.876	
SB0073	0-0.5	7/7/2023	0.824	
	0.5-1.0	7/20/2023	0.305 J	
SB0074	0-0.5	7/7/2023	2.98	
	0.5-1.0	7/20/2023	1.82	
SB0075	0-0.5	7/7/2023	1.39	
SB0076	0-0.5	7/7/2023	0.238 J	
SB0077	0-0.5	7/20/2023	18.4	
	0.5-1.0		1.15	
SB0078	0-0.5	7/20/2023	1.150	
	0.5-1.0		0.341 J	
SB0079	0-0.5	7/20/2023	18	
	0.5-1.0		3.4	
	1.0-2.0		0.225 U	
SB0080	0-0.5	7/20/2023	0.269 U	
	0.5-1.0		0.223 U	
	1.0-2.0		0.180 U	
SB0081	0-0.5	7/20/2023	2.29	
	0.5-1.0		0.233 U	
SB0082	0-0.5	7/20/2023	0.397 J	
	0.5-1.0		0.216 U	

Table 5-3
Arsenic Contamination Release Assessment Soil Analytical Results Summary
2023 Confirmatory Sampling Report
KSC Child Development Center, Kennedy Space Center, Florida

Metal			As
Residential SCTL (mg/kg)			2.1
Industrial SCTL (mg/kg)			12
Leachability SCTL (mg/kg)			--
Location ID (KCDC-)	Sample Interval (ft bgs)	Sample Date	Result (mg/kg)
SB0083	0-0.5	7/20/2023	7.77
	0.5-1.0		6.71
	1.0-2.0		0.132 J
SB0084	0-0.5	7/20/2023	0.234 J
	0.5-1.0		0.214 U
	1.0-2.0		0.191 U
SB0085	0-0.5	7/20/2023	0.956
	0.5-1.0		0.223 U
	1.0-2.0		0.236 U
SB0086	0-0.5	7/20/2023	0.785
	0.5-1.0		0.225 U
	1.0-2.0		0.241 U
SB0087	0-0.5	7/20/2023	2.69
	0.5-1.0		0.437 J
	1.0-2.0		0.174 J
SB0088	0-0.5	7/20/2023	0.289 J
	0.5-1.0		0.182 J
	1.0-2.0		0.151 J
SB0089	0-0.5	7/20/2023	0.195 J
	0.5-1.0		0.131 J
	1.0-2.0		0.198 U
SB0090	0-0.5	7/20/2023	1.22
	0.5-1.0		0.149 J
	1.0-2.0		0.179 J
SB0091	0-0.5	7/20/2023	2.34
	0.5-1.0		0.494
	1.0-2.0		0.185 U
SB0092	0-0.5	7/27/2023	0.57 U
	0.5-1.0		0.58 U
	1.0-2.0		0.63 U
SB0093	0-0.5	7/27/2023	0.55 J
	0.5-1.0		1.6
	1.0-2.0		1
SB0094	0-0.5	7/27/2023	0.58 U
	0.5-1.0		0.56 J
	1.0-2.0		0.58 U

Table 5-3
Arsenic Contamination Release Assessment Soil Analytical Results Summary
2023 Confirmatory Sampling Report
KSC Child Development Center, Kennedy Space Center, Florida

Metal			As
Residential SCTL (mg/kg)			2.1
Industrial SCTL (mg/kg)			12
Leachability SCTL (mg/kg)			--
Location ID (KCDC-)	Sample Interval (ft bgs)	Sample Date	Result (mg/kg)
SB0095	0-0.5	7/27/2023	0.59 U
	0.5-1.0		0.59 U
	1.0-2.0		0.53 U

Footnotes

SCTL criteria are from the Final Technical Report: Development of Cleanup Target Levels for Chapter 62-777, Florida Administrative Code, University of Florida, February 2005.

-- = The analyte was not analyzed or no value is available.

Defintions and Acronyms

As = arsenic

ft bgs = feet below ground surface

ID = identification

J = result is an estimated value.

KCDC = KSC Child Development Center

KSC = Kennedy Space Center

mg/kg = milligrams per kilogram

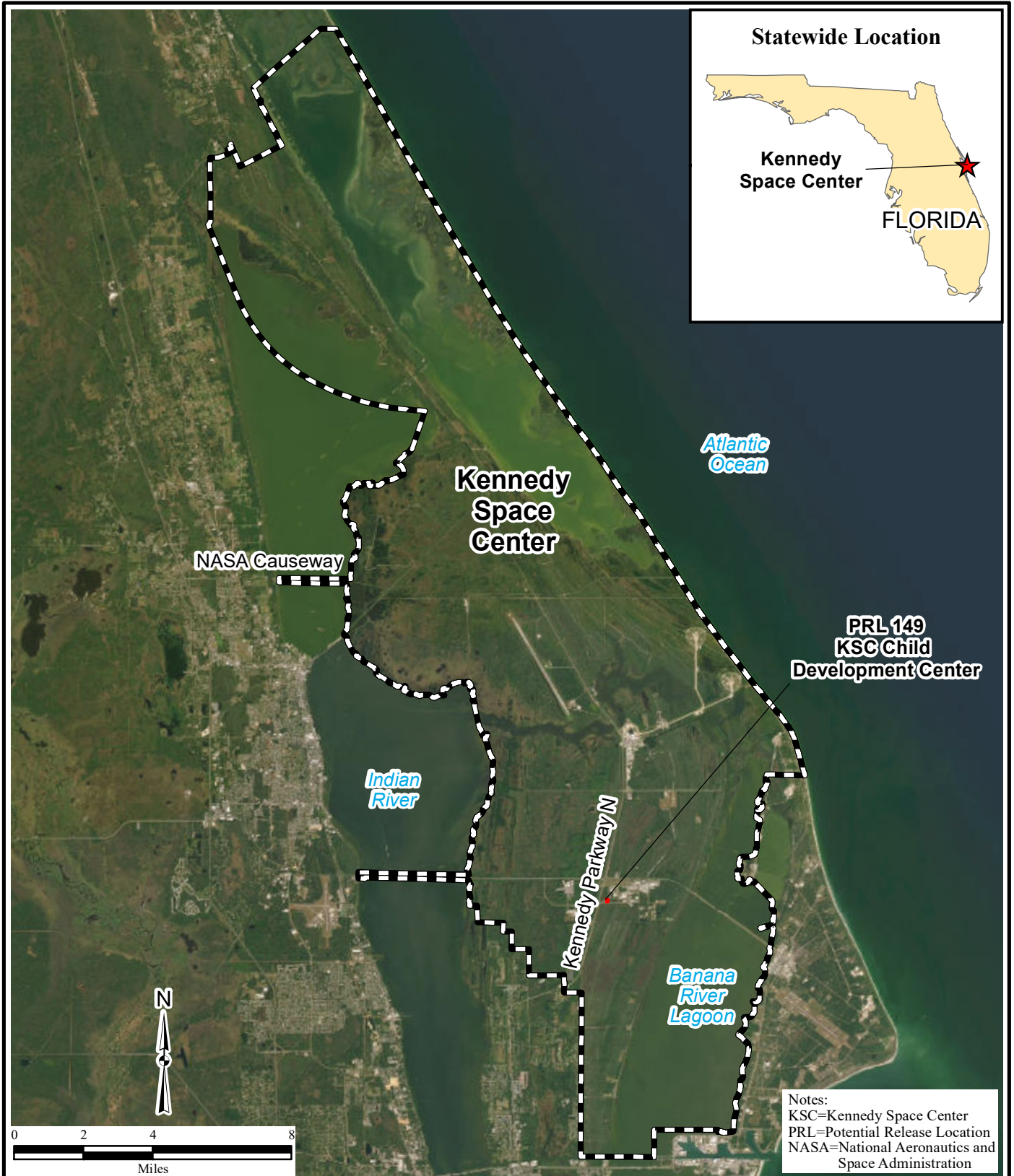
SCTL = soil cleanup target level

U = analyte not detected, result is the reporting limit.

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FIGURES

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Notes:
 KSC=Kennedy Space Center
 PRL=Potential Release Location
 NASA=National Aeronautics and Space Administration

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 12/8/2023 TH
 Source: HGL, NASA
 ArcGIS Online Imagery

Legend





-  Site Location
-  PRL 149 - KSC Child Development Center
-  Kennedy Space Center

Figure 2.1
Site Location Map

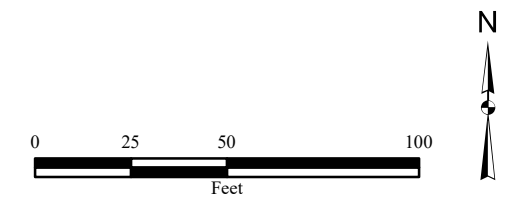
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Figure 2.2 KSC Child Development Center Site Layout

Legend

 PRL 149 Boundary





Notes:
KCDC=KSC Child Development Center
KSC=Kennedy Space Center
PRL=potential release location



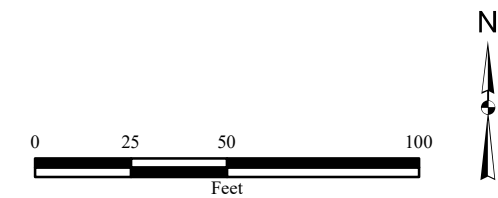
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(2-02)Site_Layout.mxd
12/11/2023 RS
Source: HGL,
ArcGIS Online Imagery

Figure 2.3
KSC Child Development Center
Locations Of Concern

Legend

-  PRL 149 Boundary
-  LOC 2 - Area Beneath the Former Wooden Fence
-  LOC 3 - Former Potential Leaching Impact Areas
-  LOC 4 - Sealed Playground Areas

Notes:
KCDC=KSC Child Development Center
KSC=Kennedy Space Center
LOC=Location of Concern
PRL=potential release location








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(2-03)Locations_of_Concern.mxd
5/24/2024 TB
Source: HGL,
ArcGIS Online Imagery

Figure 3.1
Confirmatory Soil Sample Locations



Legend

-  Completed 2022 Soil Sample Location
-  Completed 2023 Soil Sample Location
-  PRL 149 Boundary
-  LOC 2 - Area Beneath Former Wooden Fence
-  LOC 4 - Sealed Playground Area

Notes:
KCDC=KSC Child Development Center
KSC=Kennedy Space Center
LOC=Location of Concern
PRL=potential release location

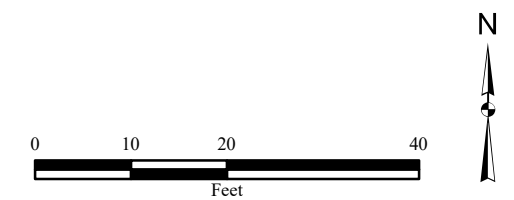


Figure 4.1 LOC 2 Soil Analytical Results Summary

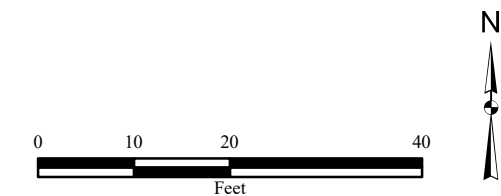
Legend

- Completed Soil Sample Location, Results less than the SCTLs
- Completed Soil Sample Location Greater than Residential SCTLs
- Location of Concern
LOC 2 - Area Beneath Former Wooden Fence
- PRL 149 Boundary

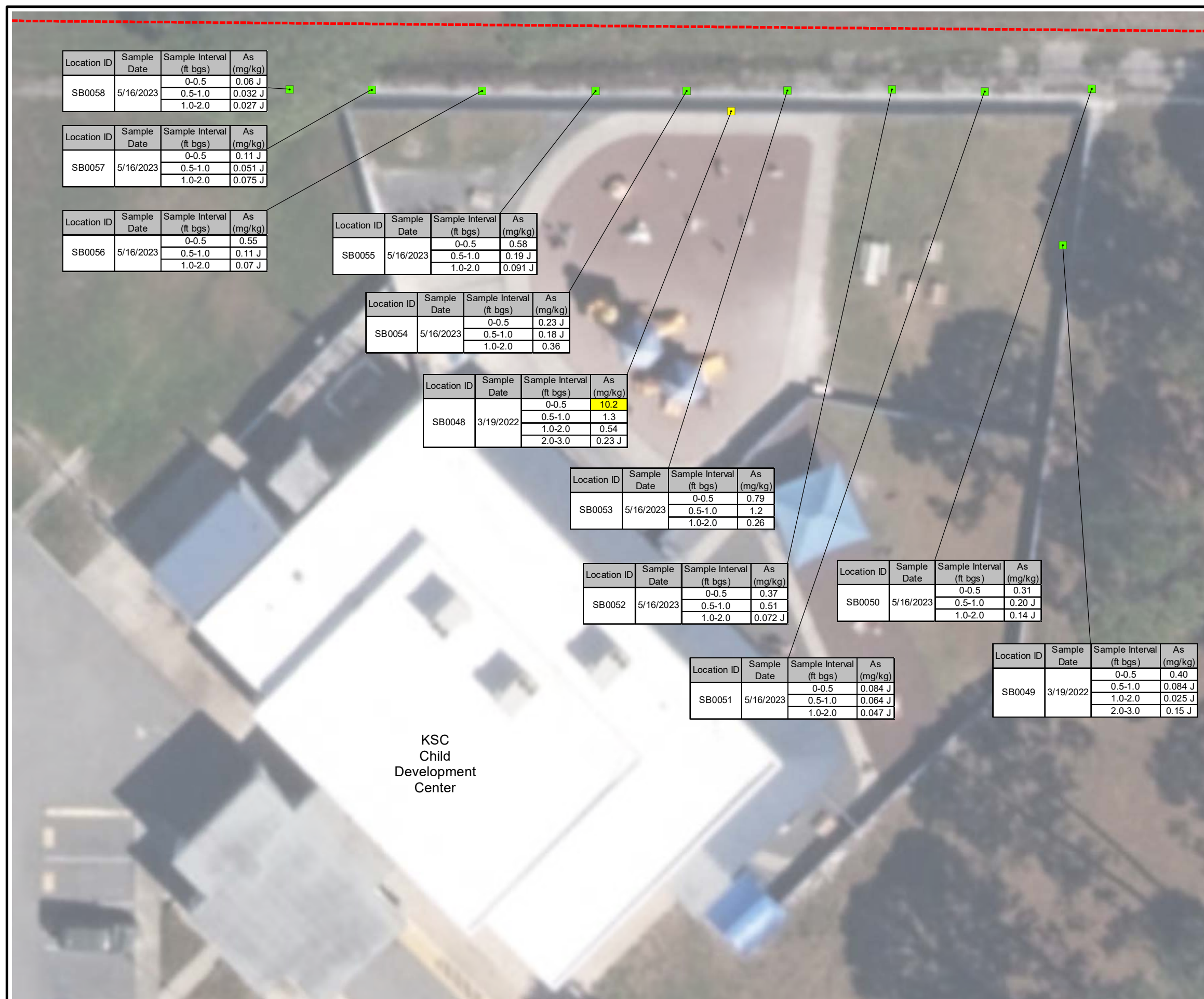
Notes:
SCTL criteria are from the Final Technical Report: Development of Cleanup Target Levels for Chapter 62-777, Florida Administrative Code, University of Florida, February 2005.
All location IDs begin with KCDC-
Yellow highlight indicates concentration is greater than the residential SCTL

As=Arsenic
ft bgs=feet below ground surface
ID=Identification
J=result is an estimated value
KCDC=KSC Child Development Center
KSC=Kennedy Space Center
LOC=Location of Concern
mg/kg=miligrams per kilogram
PRL=potential release location
SCTL=soil cleanup target level

Metal	SCTL (mg/kg)		
	Residential	Industrial	Leachability
As	2.1	12	--



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5/24/2024 TH
Source: HGL, ArcGIS Online Imagery



Location ID	Sample Date	Sample Interval (ft bgs)	As (mg/kg)
SB0058	5/16/2023	0-0.5	0.06 J
		0.5-1.0	0.032 J
		1.0-2.0	0.027 J

Location ID	Sample Date	Sample Interval (ft bgs)	As (mg/kg)
SB0057	5/16/2023	0-0.5	0.11 J
		0.5-1.0	0.051 J
		1.0-2.0	0.075 J

Location ID	Sample Date	Sample Interval (ft bgs)	As (mg/kg)
SB0056	5/16/2023	0-0.5	0.55
		0.5-1.0	0.11 J
		1.0-2.0	0.07 J

Location ID	Sample Date	Sample Interval (ft bgs)	As (mg/kg)
SB0055	5/16/2023	0-0.5	0.58
		0.5-1.0	0.19 J
		1.0-2.0	0.091 J

Location ID	Sample Date	Sample Interval (ft bgs)	As (mg/kg)
SB0054	5/16/2023	0-0.5	0.23 J
		0.5-1.0	0.18 J
		1.0-2.0	0.36

Location ID	Sample Date	Sample Interval (ft bgs)	As (mg/kg)
SB0048	3/19/2022	0-0.5	10.2
		0.5-1.0	1.3
		1.0-2.0	0.54
		2.0-3.0	0.23 J

Location ID	Sample Date	Sample Interval (ft bgs)	As (mg/kg)
SB0053	5/16/2023	0-0.5	0.79
		0.5-1.0	1.2
		1.0-2.0	0.26

Location ID	Sample Date	Sample Interval (ft bgs)	As (mg/kg)
SB0052	5/16/2023	0-0.5	0.37
		0.5-1.0	0.51
		1.0-2.0	0.072 J

Location ID	Sample Date	Sample Interval (ft bgs)	As (mg/kg)
SB0050	5/16/2023	0-0.5	0.31
		0.5-1.0	0.20 J
		1.0-2.0	0.14 J

Location ID	Sample Date	Sample Interval (ft bgs)	As (mg/kg)
SB0051	5/16/2023	0-0.5	0.084 J
		0.5-1.0	0.064 J
		1.0-2.0	0.047 J

Location ID	Sample Date	Sample Interval (ft bgs)	As (mg/kg)
SB0049	3/19/2022	0-0.5	0.40
		0.5-1.0	0.084 J
		1.0-2.0	0.025 J
		2.0-3.0	0.15 J

KSC
Child
Development
Center

Figure 4.2 LOC 4 Soil Analytical Results Summary

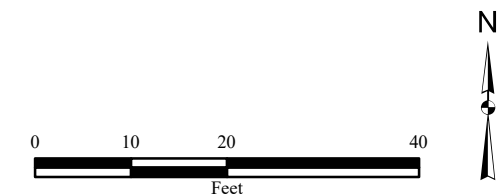
Legend

- Completed Soil Sample Location, Results less than the SCTLs
- Completed Soil Sample Location Greater than Residential SCTLs
- Location of Concern
LOC 4 - Sealed Playground Areas
- PRL 149 Boundary

Notes:
SCTL criteria are from the Final Technical Report: Development of Cleanup Target Levels for Chapter 62-777, Florida Administrative Code, University of Florida, February 2005.
All location IDs begin with KCDC-
Yellow highlight indicates concentration is greater than the residential SCTL

As=Arsenic
ft bgs=feet below ground surface
ID=Identification
J=result is an estimated value
KCDC=KSC Child Development Center
KSC=Kennedy Space Center
LOC=Location of Concern
mg/kg=miligrams per kilogram
PRL=potential release location
SCTL=soil cleanup target level

Metal	SCTL (mg/kg)		
	Residential	Industrial	Leachability
As	2.1	12	—



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5/24/2024 TB
Source: HGL, ArcGIS Online Imagery



KSC
Child
Development
Center

Figure 5.1
2023 Arsenic Contamination Release Assessment Soil Sample Locations

Legend

- ▣ Completed 2023 Arsenic Contamination Release Assessment Soil Sample Location
- ▭ PRL 149 Boundary

Notes:
All location IDs begin with KCDC-
ID=Identification
KCDC=KSC Child Development Center
KSC=Kennedy Space Center
PRL=potential release location



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12/20/2023 RS
Source: HGL,
ArcGIS Online Imagery

Figure 5.2a North Grass Play Area Soil Assessment Analytical Summary Results

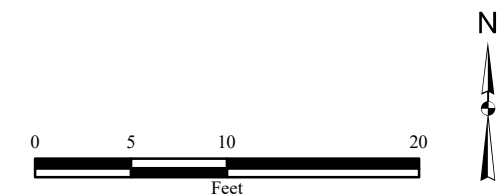
Legend

- Completed Soil Sample Location Results less than the SCTLs
- Completed Soil Sample Location Greater than Residential SCTLs
- Completed Soil Sample Location Greater than Industrial SCTLs
- PRL 149 Boundary

Notes:
SCTL criteria are from the Final Technical Report: Development of Cleanup Target Levels for Chapter 62-777, Florida Administrative Code, University of Florida, February 2005.
All location IDs begin with KCDC-
Data tags are shown for locations with analytical results above the screening criteria; and for locations below SCTLs that function as a boundary point for the extent of contamination. All results are available in Table 5-3.
Yellow highlight indicates concentration is greater than the residential SCTL
Orange highlight indicated concentration is greater than the industrial SCTL

As=Arsenic
ft bgs=feet below ground surface
ID=Identification
J=result is an estimated value
KCDC=KSC Child Development Center
KSC=Kennedy Space Center
LOC=Location of Concern
mg/kg=miligrams per kilogram
PRL=potential release location
SCTL=soil cleanup target level

Metal	SCTL (mg/kg)		
	Residential	Industrial	Leachability
As	2.1	12	--



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Source: HGL, ArcGIS Online Imagery

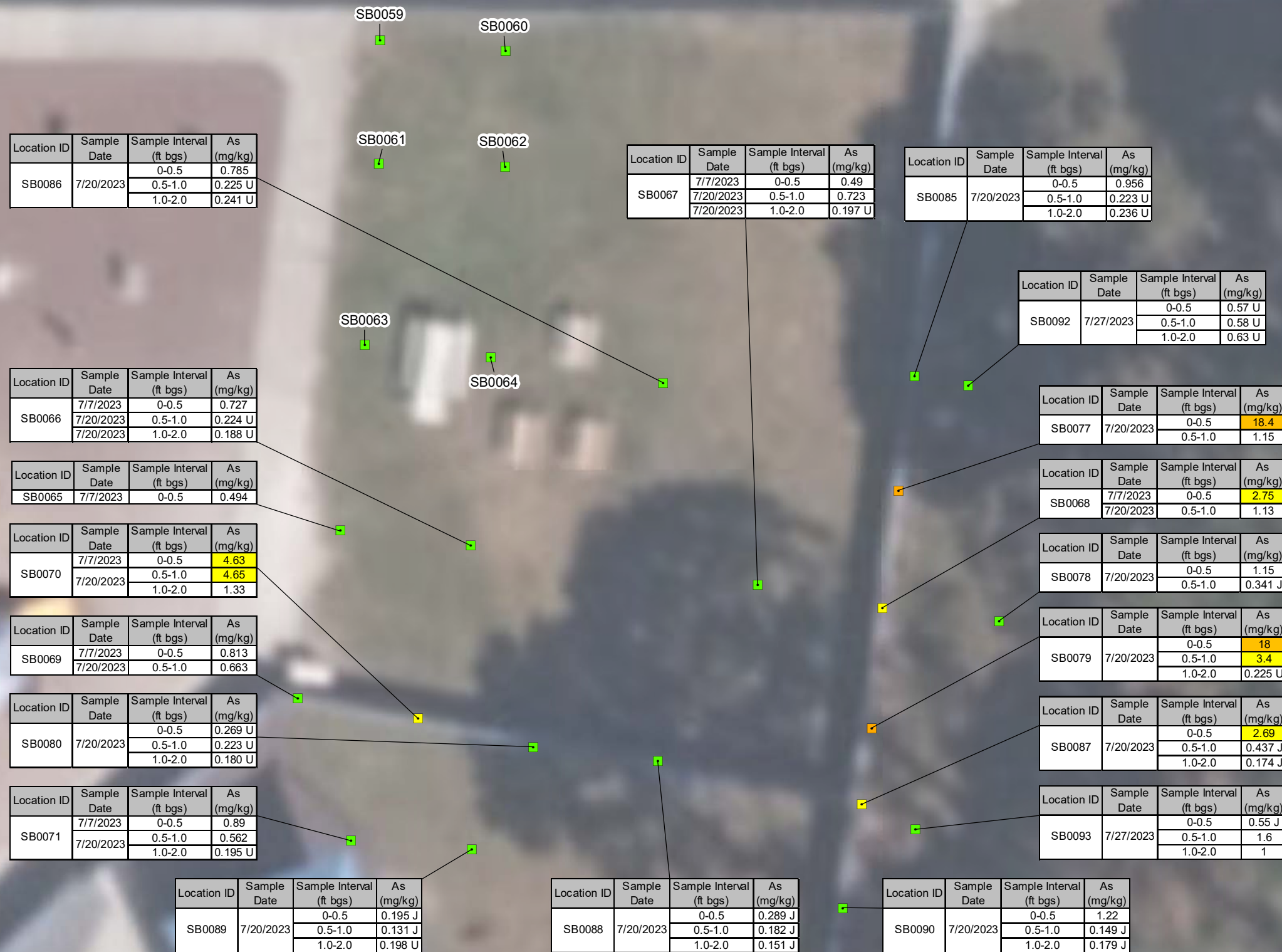


Figure 5.2b South Grass Play Area Assessment Analytical Summary Results

Legend

- Completed Soil Sample Location Results less than the SCTLs
- Completed Soil Sample Location Greater than Residential SCTLs
- Completed Soil Sample Location Greater than Industrial SCTLs
- PRL 149 Boundary

Notes:
SCTL criteria are from the Final Technical Report: Development of Cleanup Target Levels for Chapter 62-777, Florida Administrative Code, University of Florida, February 2005.
All location IDs begin with KCDC-
Data tags are shown for locations with analytical results above the screening criteria; and for locations below SCTLs that function as a boundary point for the extent of contamination. All results are available in Table 5-3.
Yellow highlight indicates concentration is greater than the residential SCTL
Orange highlight indicated concentration is greater than the industrial SCTL

As=Arsenic
ft bgs=feet below ground surface
ID=Identification
J=result is an estimated value
KCDC=KSC Child Development Center
KSC=Kennedy Space Center
LOC=Location of Concern
mg/kg=miligrams per kilogram
PRL=potential release location
SCTL=soil cleanup target level

Metal	SCTL (mg/kg)		
	Residential	Industrial	Leachability
As	2.1	12	--

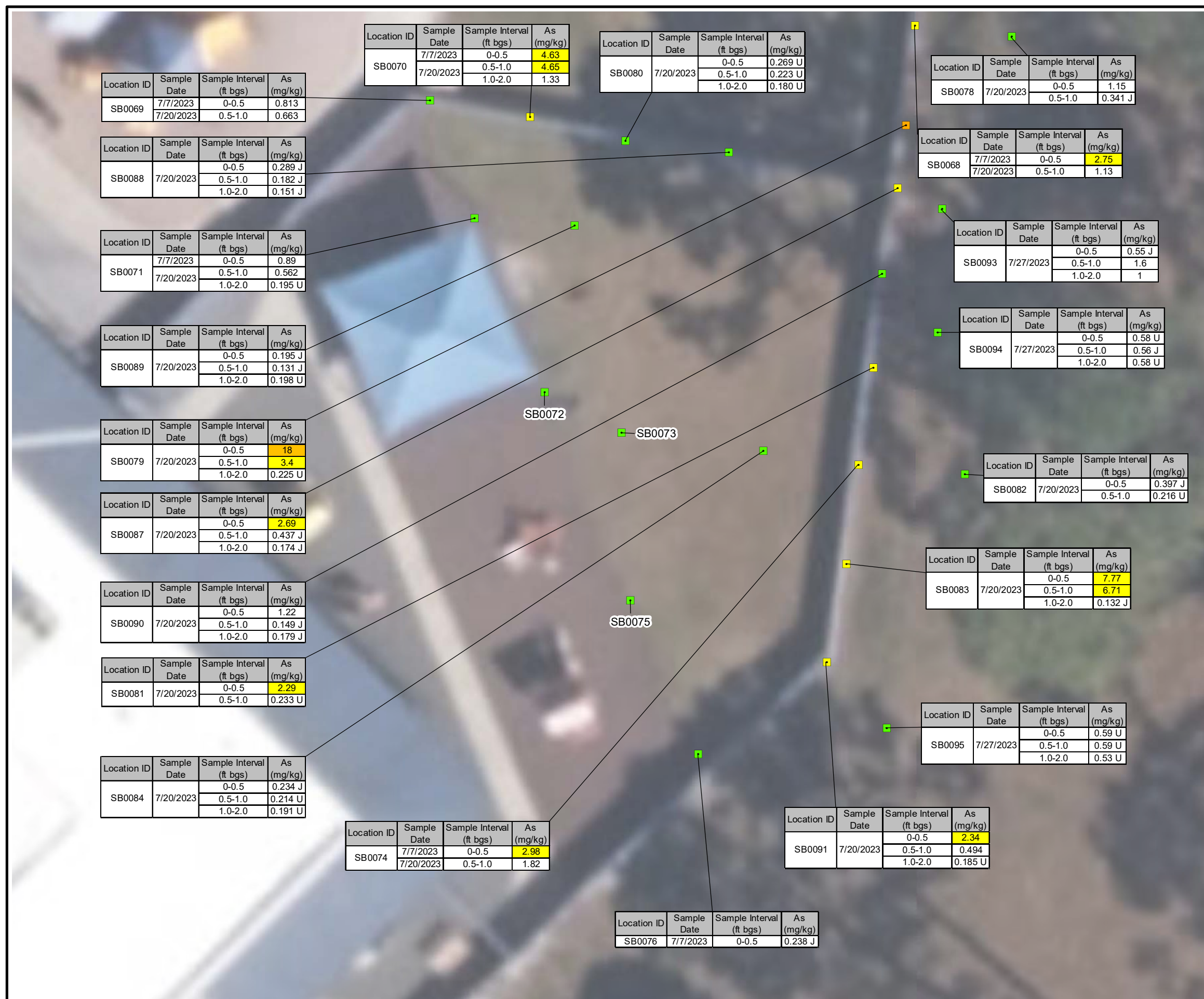
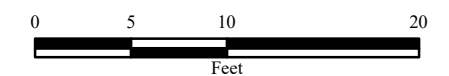
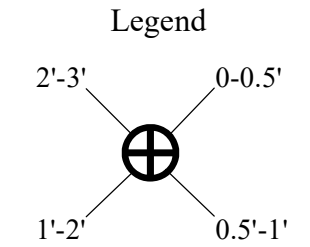


Figure 6.1
LOC 2
Soil Arsenic Assessment and Proposed IM Areas



- Soil Sample Not Collected or Interval Not Analyzed
- Soil Sample Below Residential SCTL
- Soil Sample Exceeds Residential SCTL
- Former Fence
- Proposed Remedial Action Area (0-0.5' ft bgs)
- LOC 2 - Area Beneath Former Wooden Fence
- LOC 4 - Sealed Playground Areas
- 2007 Soil Excavation Area 2 Backfilled with Clean Fill
- PRL 149 Boundary

Notes:
 A confirmatory soil sample will be collected near SB0048 and the blue plastic fence following the soil remedial action.
 The sidewalk and rubberized play surface provide engineering controls preventing potential human exposure to potential contaminant of concern. In the future if the engineering controls are removed, additional assessment is warranted prior to site closure.
 SCTL criteria are from the Final Technical Report: Development of Cleanup Target Levels for Chapter 62-777, Florida Administrative Code, University of Florida, February 2005.
 All location IDs begin with KCDC-

*=2007 Soil Sample Locations
 ft bgs=feet below ground surface
 ID=identification
 KCDC=KSC Child Development Center
 KSC=Kennedy Space Center
 LOC=Location of Concern
 PRL=potential release location
 SCTL=soil cleanup target level

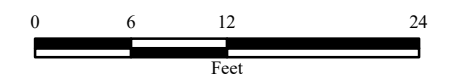
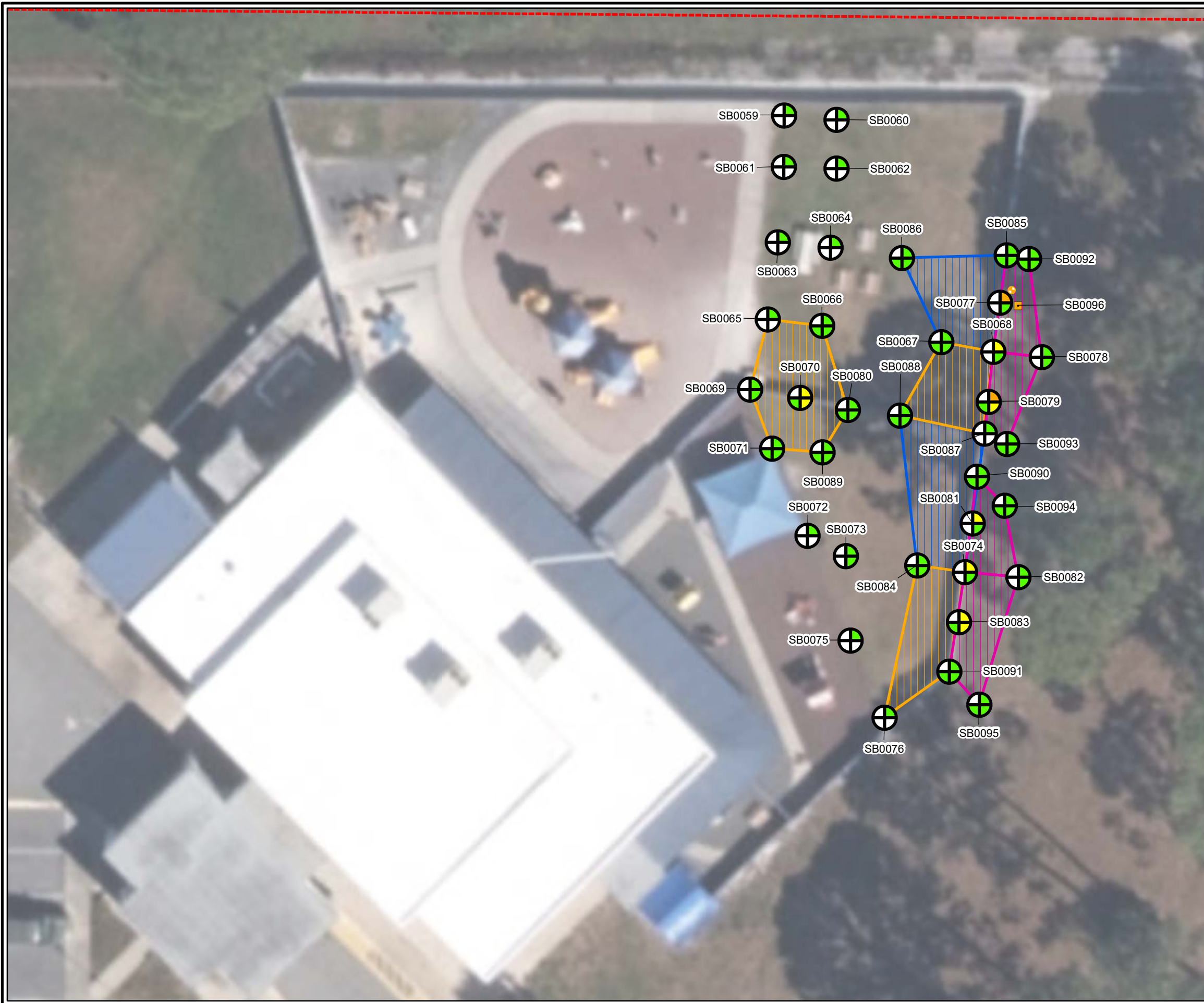


Figure 6.2
2023 Soil Arsenic
Assessment/Excavations
and Proposed IM Areas



Legend

- 2'-3' (top-left), 0-0.5' (top-right), 1'-2' (bottom-left), 0.5'-1' (bottom-right)
- Soil Sample Not Collected or Interval Not Analyzed
- Soil Sample Below Residential SCTL
- Soil Sample Exceeds Residential SCTL
- Soil Sample Exceeds Industrial SCTL
- Proposed Monitoring Well
- Proposed Confirmatory Floor Sample
- Excavation Footprint for Arsenic Completed by NEMCON (0-1.0' ft bgs)
- Excavation Footprint for Arsenic Completed by NEMCON (0-0.5' ft bgs)
- Proposed Remedial Action Areas
- PRL 149 Boundary

Notes:
 SCTL criteria are from the Final Technical Report: Development of Cleanup Target Levels for Chapter 62-777, Florida Administrative Code, University of Florida, February 2005.
 All location IDs begin with KCDC-

ft bgs=feet below ground surface
 ID=identification
 IM=interim measure
 KCDC=KSC Child Development Center
 KSC=Kennedy Space Center
 LOC=Location of Concern
 NEMCON= National Aeronautics and Space Administration
 Environmental and Medical Services Contact
 PRL=potential release location
 SCTL=soil cleanup target level



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 Source: HGL, ArcGIS Online Imagery

APPENDIX A
PREVIOUS INVESTIGATIONS

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**KSC Child Development Center Area
(KCDC) M6-0883
PRL #149
SAR/CSWP ADP
August 2006**

Goal:

- 1- Present SA findings
- 2- Obtain Team consensus on proposed sampling

Site Description & History (Figure 1):

Potential Release Location number 149 (PRL#149)
SWMU Assessment 2006

A temporary road through the site is visible in pictures from the early 1960s, prior to construction of 5th Street

Area was undeveloped prior to 1990

Building completed in 1991; concrete block

Constructed specifically as a child care center for the children of KSC employees

Building is comprised of classrooms, offices, open play areas, staff lounge, and a kitchen

Connected to water and sewer

One floor drain within the Janitors closet is connected to sewer

Stormwater retention structures on north and east sides of site

Concrete stormwater discharge flumes located on south and north sides of parking lot

Outside playground area divided into two sections surrounded with wooden fencing

Formerly had some wooden playground equipment, currently all plastic equipment

Two Previous Investigations (Figures 2 & 3)

2001 KSC Child Development Center Playground Soil Sampling for Arsenic:

arsenic exceedances detected in soil (0-6" beneath mulch) under wooden playground equipment and fencing (<0.52 to 26.2 mg/kg in soil)

confirmatory sampling at 7 highest detections and mulch at 26.2 mg/kg soil location (0.87 to 16 mg/kg in soil, mulch = 25 mg/kg)

mulch and top soil removed and ground surface in those areas sealed with Pour -in Place Surfacing

Fencing not removed or replaced

GSA Seized Property, SWMU #? (formerly PRL #130) West of the KCDC:

Vinyl Chloride exceedances were confirmed in groundwater

A RFI WP will be presented this meeting

Three LOCs identified

- 1- Two transformers
- 2- Playground
- 3- Playground perimeter fence

Confirmatory Sampling Recommended

**KSC Child Development Center Area
(KCDC) M6-0883
PRL #149
SAR/CSWP ADP
August 2006**

**Identified Locations of Concern (LOCs) and Proposed Sampling
Figure 4 Table 1**

LOC 1 Transformers

LOC 1A Transformer located at the southeast corner of the property boundary

LOC 1B Transformer located on northwest side of the building (confirmation pending)

- Not Ecological Habitat
- Screen against Human Health criteria only
- Combined soil values applicable
- Proposed sampling:
Soil: One surface sample each side [PCBs, TPH]

LOC 2 Wooden Perimeter Fence Area

- Fence surrounding playgrounds
- Previous arsenic exceedances in soil beneath fence
- Not Ecological habitat
- Screened against Human Health criteria only
- Combined soil values applicable
- Proposed Sampling:
Soil: One surface sample beneath fence every ~10' [As, Cr, Cu]

LOC 3 Playground Area

- Located on the north and east sides of the building
- Former locations of pressure treated wood playground equipment
- Previous arsenic exceedances in soil and mulch
- Not Ecological habitat
- Screen against Human Health criteria only
- Combined soil values applicable
- Postpone sampling until facility is removed from service or playground is relocated or refurbished
- Proposed Sampling:
Soil: One surface sample beneath plastic surface at 3 previous Arsenic exceedance locations [As, Cr, Cu]
[SPLP at highest detections or Leachability exceedance]

Figure 1. KSC Child Development Center Site Map & Identified LOCs (2/05 photo)



Figure 2. 2001 Playground Sampling Locations & Arsenic Results (5/00 Photo)

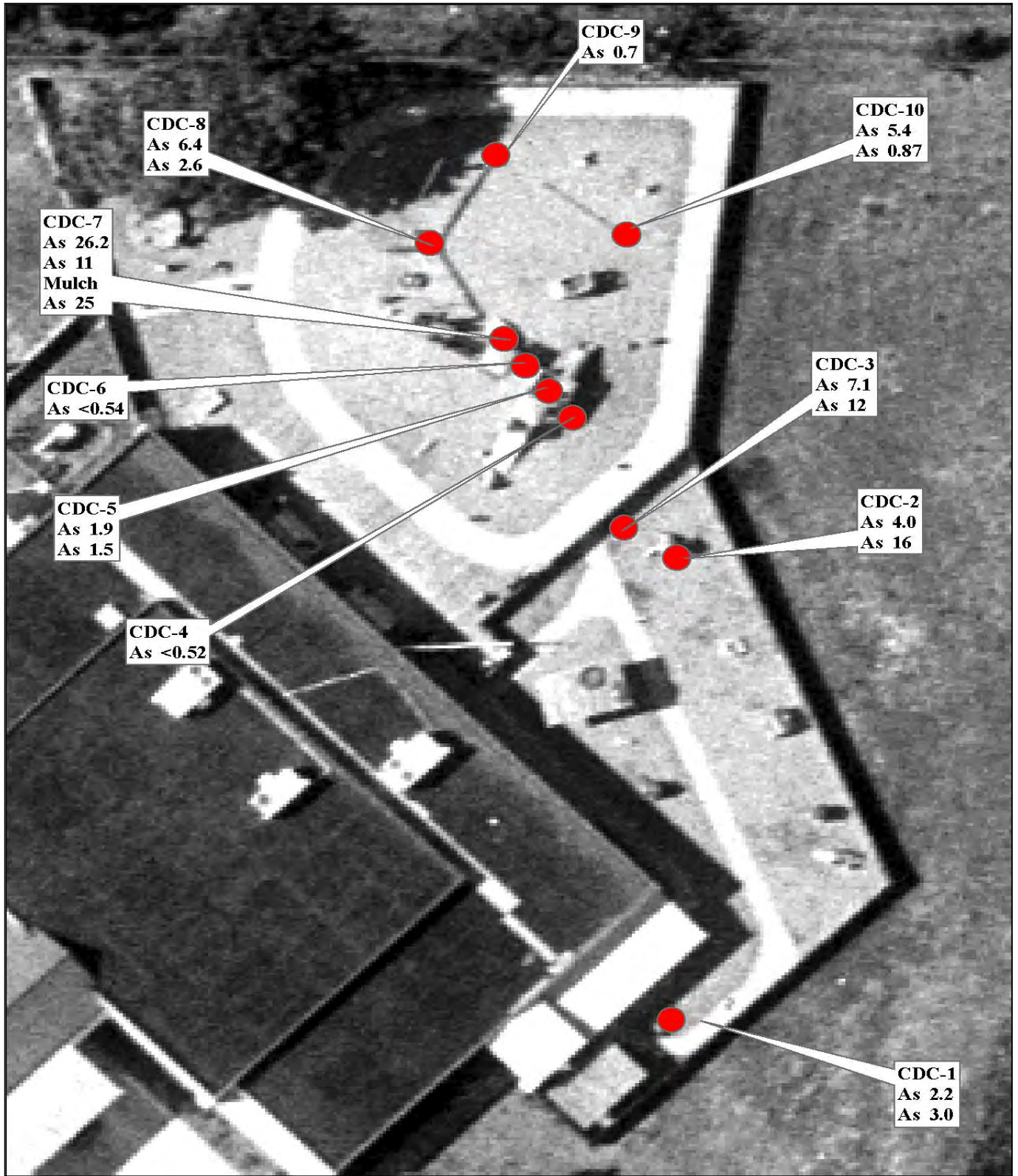


Figure 3. 2001 Playground Sampling Locations & Arsenic Results (2/05 Photo)

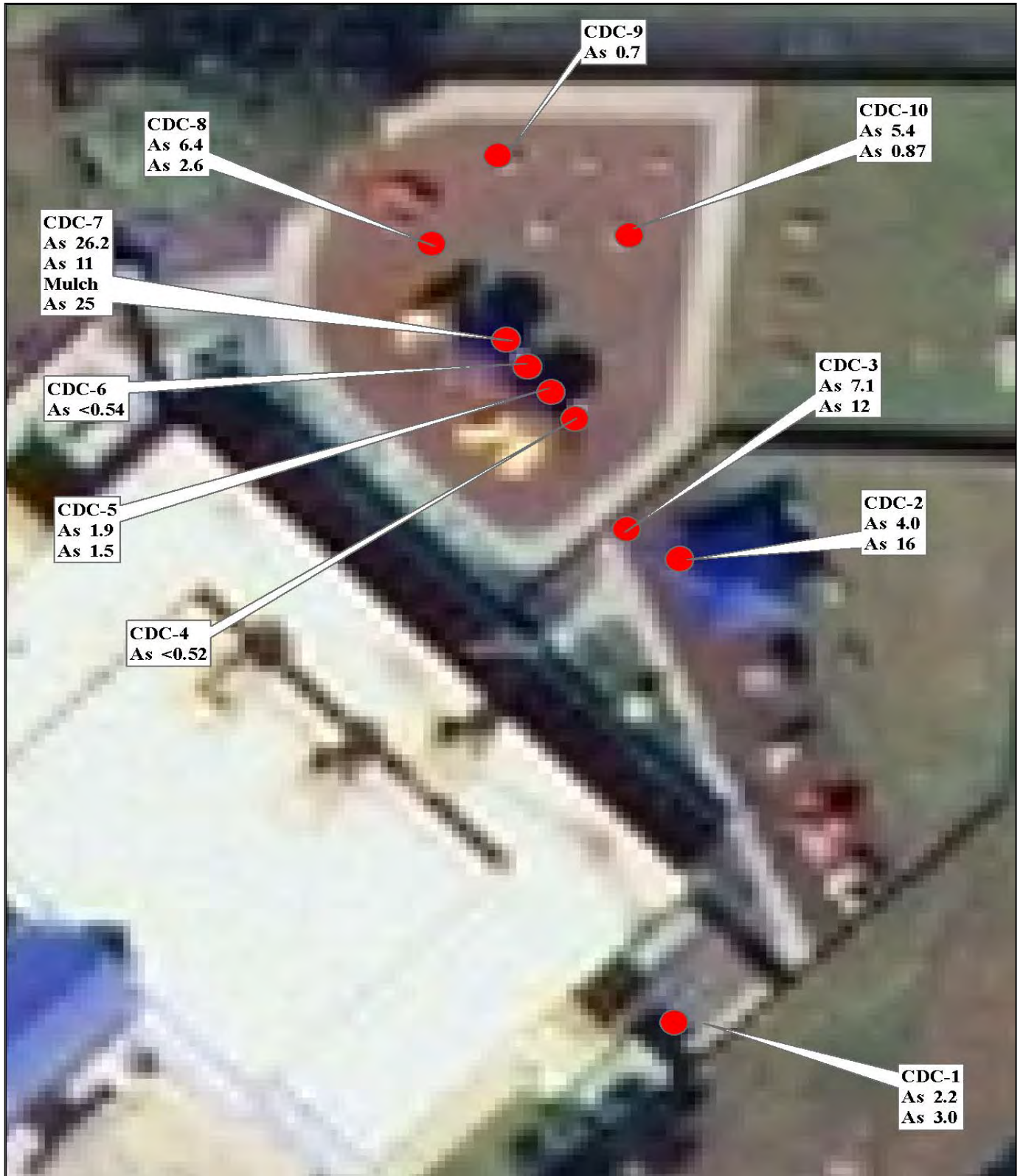


Figure 4. KSC Child Development Center Site Map & Proposed Sampling

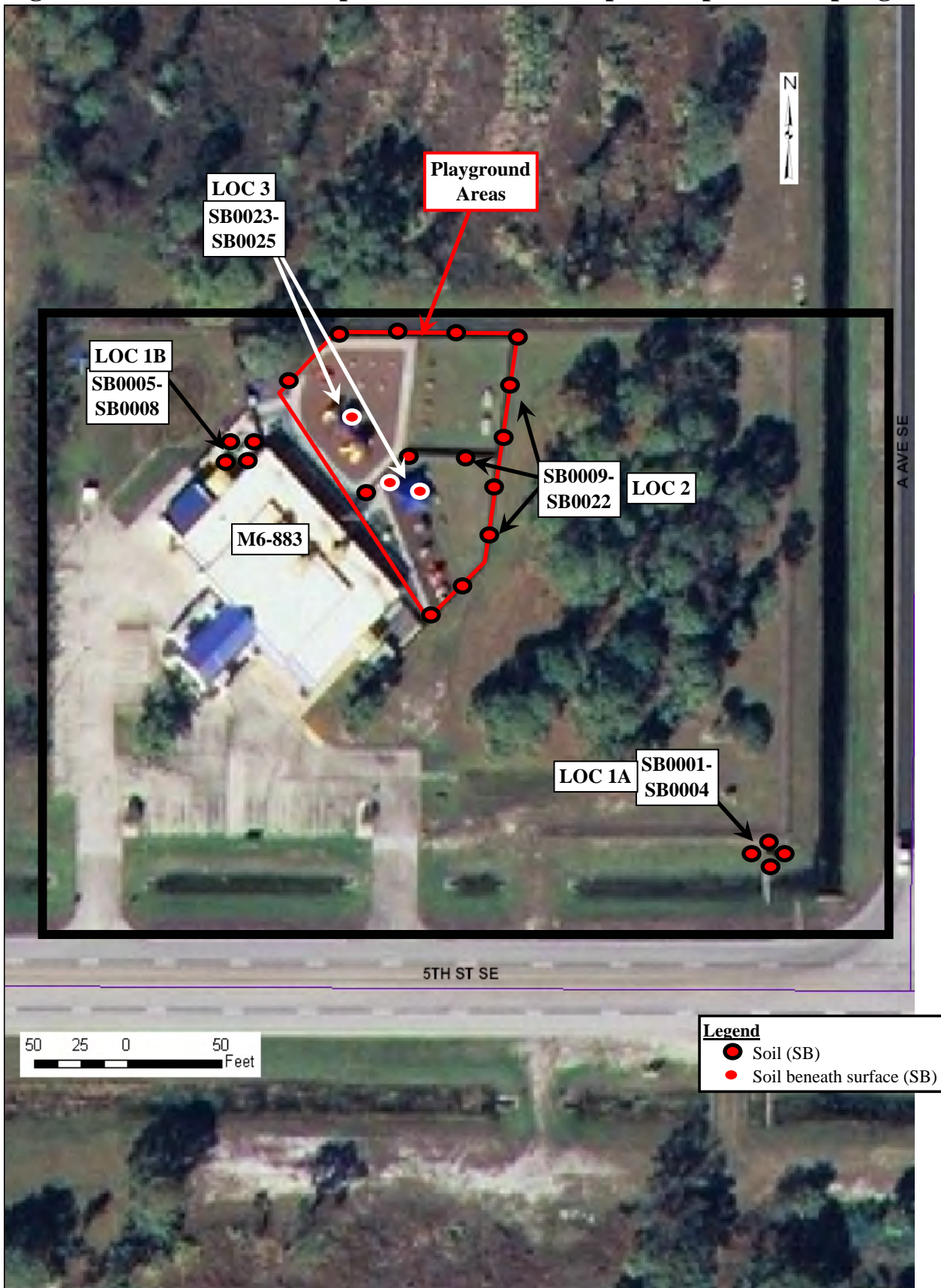


Table 1: KSC Child Development Center Proposed Sampling Locations, Matrices, Analytes, Rationale & Criteria

Sample Location	Location ID	Sample ID	Matrix	Depth (ft bls)	Analyses	Rationale	Criteria
LOC 1A Electrical Transformer	KCDC-SB0001	KCDC-SB0001-000.5-yyyymmdd	Soil	0-0.5	PCBs (8082), TPH (FLPRO)	Potential releases from electrical transformer; southeast corner of site	Human Health only Combined Soil Background values
	KCDC-SB0002	KCDC-SB0002-000.5-yyyymmdd					
	KCDC-SB0003	KCDC-SB0003-000.5-yyyymmdd					
	KCDC-SB0004	KCDC-SB0004-000.5-yyyymmdd					
LOC 1B Electrical Transformer	KCDC-SB0005	KCDC-SB0005-000.5-yyyymmdd	Soil	0-0.5	PCBs (8082), TPH (FLPRO)	Potential releases from electrical transformer; north side of building	Human Health only Combined Soil Background values
	KCDC-SB0006	KCDC-SB0006-000.5-yyyymmdd					
	KCDC-SB0007	KCDC-SB0007-000.5-yyyymmdd					
	KCDC-SB0008	KCDC-SB0008-000.5-yyyymmdd					
LOC 2 Wooden Fence	KCDC-SB0009	KCDC-SB0009-000.5-yyyymmdd	Soil	0-0.5	Copper, Chromium and Arsenic (6010/7471)	Potential releases from treated wood playground fence	Human Health only Combined Soil Background values
	KCDC-SB0010	KCDC-SB0010-000.5-yyyymmdd					
	KCDC-SB0011	KCDC-SB0011-000.5-yyyymmdd					
	KCDC-SB0012	KCDC-SB0012-000.5-yyyymmdd					
	KCDC-SB0013	KCDC-SB0013-000.5-yyyymmdd					
	KCDC-SB0014	KCDC-SB0014-000.5-yyyymmdd					
	KCDC-SB0015	KCDC-SB0015-000.5-yyyymmdd					
	KCDC-SB0016	KCDC-SB0016-000.5-yyyymmdd					
	KCDC-SB0017	KCDC-SB0017-000.5-yyyymmdd					
	KCDC-SB0018	KCDC-SB0018-000.5-yyyymmdd					
	KCDC-SB0019	KCDC-SB0019-000.5-yyyymmdd					
	KCDC-SB0020	KCDC-SB0020-000.5-yyyymmdd					
	KCDC-SB0021	KCDC-SB0021-000.5-yyyymmdd					
KCDC-SB0022	KCDC-SB0022-000.5-yyyymmdd						
LOC 3 Playground Area	KCDC-SB0023	KCDC-SB0023-0.005-yyyymmdd	Soil	0-0.5	Copper, Chromium and Arsenic (6010/7471)	Potential releases from treated wood playground equipment	Human Health only Combined Soil Background values
	KCDC-SB0024	KCDC-SB0024-0.005-yyyymmdd					
	KCDC-SB0025	KCDC-SB0025-0.005-yyyymmdd					

Abbreviations:

TPH - Total Petroleum Hydrocarbons

SB - Soil Boring

PCBs - Polychlorinated biphenyls

KCDC- KSC Child Development Center

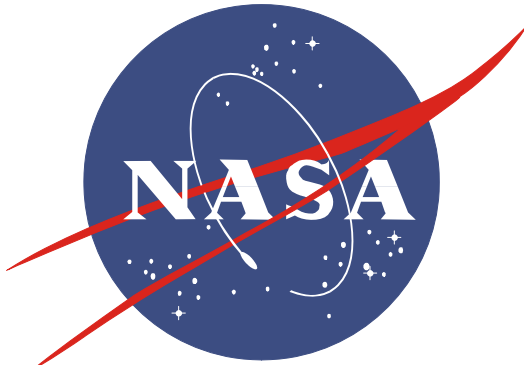
All soil sampling locations will be screened with an OVA to the water table and deeper samples will be collected if warranted.

Metals analysis will only be performed for Arsenic, Copper and Chromium metals.



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Figure 1-2
 Excavation Areas and Summary of Arsenic Detections in Soil



***Kennedy Space Center
Child Development Center (KCDC)
Interim Measures
PRL 149***

May 2008



Presentation Outline

- Introduction/Purpose
- CS Results
- IM Excavation Areas
- IM Activities



Introduction

Introduction/
Purpose

CS Results

IM Excavation
Areas

IM Activities

- Objective

- Present the results of the Interim Measures (IM) performed at the KCDC December 2008

- Background

- The KCDC was constructed in 1990 specifically as a child care center for KSC employees
- The outside playground areas are located on the northeast side of the building and enclosed with privacy fencing





- Purpose of the IM:
 - *Mitigate human health risks associated with Arsenic in soil identified during the completion of Phase II Confirmatory Sampling (CS) field activities*
 - *Obtain a No Further Action (NFA) for uncovered soils within the fenced playground area*
 - *Implement Land Use Controls (LUCs) to maintain the existing impervious surfaces to prevent contact with subsurface soils in the fenced playground area*
- IM accomplished via the excavation of soils with concentrations $>$ Residential SCTLs and disposal at the KSC landfill
- Pressure-treated fence was removed and replaced with recycled plastic fence



CS Results – Arsenic in Soil

Introduction/
Purpose

CS Results

IM Excavation
Areas

IM Activities

Contaminant	Maximum KCDC Concentration (mg/kg)	Cleanup Goal (mg/kg)	Reference
Arsenic	9.0	2.1	FDEP, Residential SCTL

Area	Contaminant(s) of Concern	Area of Excavation (ft ²)	Depth Interval (ft BLS)	Maximum Arsenic Concentration (mg/kg)
1	Arsenic	54	0-1	3.9
2	Arsenic	1,003	0-1	9.0
3	Arsenic	363	0-1	6.0
4	Arsenic	68	0-1	7.1



Excavation Areas



Introduction/
Purpose

CS Results

IM Excavation
Areas

IM Activities



Preliminary Activities

- Fence Removal
 - *Removal of 590 linear feet of existing pressure-treated fence*
 - *Six roll-offs (31 tons) of construction debris removed*
 - *Debris transported to the Brevard County Landfill in Melbourne, Florida for disposal*

Introduction/
Purpose

CS Results

IM Excavation
Areas

IM Activities



Excavation Activities

Introduction/
Purpose

CS Results

IM Excavation
Areas

IM Activities

- Excavation work initiated on 15 December 2007 and completed 16 December 2007
 - *Soil transported to Schwartz Road Class III Landfill at Kennedy Space Center, Florida*
 - *Four roll-offs (108 tons) of soil excavated and disposed*
 - *Clean fill used to backfill the excavation areas*
 - *1,488 square feet of sod was placed to restore the disturbed areas*
 - *A recycled plastic fence was installed to replace the pressure-treated wooden fence*



Excavation Area 1

Introduction/
Purpose

CS Results

IM Excavation
Areas

IM Activities





Excavation Area 2

Introduction/
Purpose

CS Results

IM Excavation
Areas

IM Activities





Excavation Area 3

Introduction/
Purpose

CS Results

IM Excavation
Areas

IM Activities





Excavation Area 4

Introduction/
Purpose

CS Results

IM Excavation
Areas

IM Activities





Lessons Learned

Introduction/
Purpose

CS Results

IM Excavation
Areas

IM Activities

- Recycled Plastic Fencing
 - *Very expensive (3X price of PVC fencing and 5X price of wooden fence)*
 - *Limited availability (special order)*
 - *Difficult to work with (very heavy, difficult to drill, slower installation process, etc.)*
 - *Fence subcontractors not familiar with product*
 - *Specifications provided by NASA facilities for standard wooden fencing not appropriate for recycled fencing*
 - *Less rigid than equivalent wooden fence*
- Would not recommend recycled plastic fencing on future projects



**LAND USE CONTROL IMPLEMENTATION PLAN
KENNEDY SPACE CENTER
CHILD DEVELOPMENT CENTER, PRL 149
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION**



FACILITY: Kennedy Space Center Child Development Center
Potential Release Location 149

CONTAMINANTS: Arsenic

CONTROL: Maintain Existing Pour-in-Place Surfaces

PURPOSE OF LAND USE CONTROL IMPLEMENTATION PLAN

This Land Use Control Implementation Plan (LUCIP) has been prepared to inform current and potential future users of the Kennedy Space Center Child Development Center (KCDC) of institutional controls that have been implemented at the site¹. Although there are no current unacceptable risks to human health or the environment associated with the KCDC site, institutional land use controls (LUCs) are necessary to prevent contact with subsurface soils at the site. Controls will include periodic inspection, condition certification, and agency notification.

WHY LAND USE CONTROLS ARE NEEDED

Surface soil impacts from arsenic were documented in the area of the current pour-in-place playground surfaces. Soils below the 0.5 ft excavation were not sampled. A complete exposure pathway does not exist due to the installation of the impervious cover. Therefore, land use controls are

needed to ensure that the impervious surfaces within the fenced area of the KCDC remain unaltered.

SITE DESCRIPTION

The KCDC was constructed in 1990 specifically as a child care center for KSC employees. Prior to 1990 the area was undeveloped. The KCDC is a 6,776 square foot single story concrete block building. The building was previously owned by an outside company, Tutor Time-Space Coast, Inc.; however, ownership transferred to NASA in October 1996. The facility is comprised of classrooms, offices, open play areas, staff lounge, lunch room, kitchen, and outside playgrounds. The facility parking lot areas are located to the south and west of the building and include a semi-circular covered driveway, all are paved with concrete. The outside playground areas are located on the northeast side of the building and enclosed with privacy fencing. Within the fenced area, the playground consists of grassy areas with picnic tables, areas sealed with a pour-in-place rubberized surface, and

¹ This LUCIP summarizes institutional controls regarding the KCDC. For detailed information on the site, consult the KCDC administrative file, which is available for review by contacting the KSC Environmental Program Office at telephone number (321) 867-8411.

concrete walkways. The playground equipment currently consists of modular plastic structures. The site location with inset showing the site layout is shown on Figure 1.

SITE LOCATION

The KCDC is located on Fifth Street, east of Kennedy Parkway South (SR-3), in the southwestern portion of the KSC Industrial Area. The land use control area covered by the LUCIP is shown on Figure 2.

Coordinates of the corners of the LUC are provided in the State Plane Coordinate System NAD 1983 meters, Florida East.

SITE CONTAMINATION AND CONTROL

Soil at the site contained arsenic above FDEP's Soil Cleanup Target Level (SCTL). Based on the Solid Waste Management Unit (SWMU) Assessment (SA), three of four identified Locations of Concern (LOCs) were excavated and backfilled and the wooden fence was removed and replaced with recycled-plastic fencing. LUCs were recommended for the fourth LOC, the impervious playground surfaces including the pour-in-place rubberized playground surfaces and concrete sidewalks, to prevent contact with

subsurface soils in that area of the KCDC facility.

IMPLEMENTATION

Institutional controls will be implemented by the Kennedy Space Center (KSC) Environmental Program Office in accordance with their RCRA permit and a Land Use Control Assurance Plan included in a Memorandum of Agreement (MOA)² between the National Aeronautics and Space Administration (NASA), FDEP, and the Environmental Protection Agency (EPA), effective February 23, 2001. Upon approval of this LUCIP, it will be incorporated into the permit by reference. Property transfer (if conducted in the future) will be conducted in accordance with Section X of the MOA.

KSC's Environmental Program Office will provide KSC's Master Planning Office with survey coordinates of the LUCs. Restrictions will specify limitations on development and reuse for the area for as long as LUCs are necessary to protect human health and the environment.

MONITORING

Quarterly inspections to monitor that the institutional controls specified herein are in place and operating will be conducted by

² By separate MOA effective February 23, 2001, with the EPA and FDEP, KSC, on behalf of NASA, agreed to implement Center-wide, certain periodic site inspections, condition certification, and agency notification procedures designed to ensure the maintenance by Center personnel of any site-specific LUCs deemed necessary for future protection of human health and the environment. A fundamental premise underlying execution of that agreement was that through the Center's substantial good faith compliance with the procedures called for herein, reasonable assurances would be provided to EPA and FDEP as to the permanency of those remedies which included the use of specific LUCs.

Although the terms and conditions of the MOA are not specifically incorporated or made enforceable herein by reference, it is understood and agreed by NASA KSC, EPA and FDEP that the contemplated permanence of the remedy reflected herein shall be dependent upon the Center's substantial good faith compliance with the specific LUC maintenance commitments reflected herein. Should such compliance not occur or should the MOA be terminated, it is understood that the protectiveness of the remedy concurred in may be reconsidered and that additional measures may need to be taken to adequately ensure necessary future protection of human health and the environment.

KSC's Environmental Program Office. The inspection will verify that the impervious playground surface is maintained therefore preventing contact with the subsurface soils in this area.

REPORTING

KSC's Environmental Program Office will submit annual reports to the EPA and FDEP certifying retention of the implemented LUCs.

ENFORCEMENT

KSC's Environmental Program Office will be responsible for stopping any activities at KSC that are not compliant with this LUCIP.

MAINTENANCE

The LUCIP shall remain in place until a land use change is implemented and the concerns managed by the LUCIP are mitigated; or there is a discovery, based upon analytical evidence, that scenarios managed by the LUCIP are no longer a concern. Any change in LUC management must be approved by the FDEP and implemented by modification of NASA's operating permit.

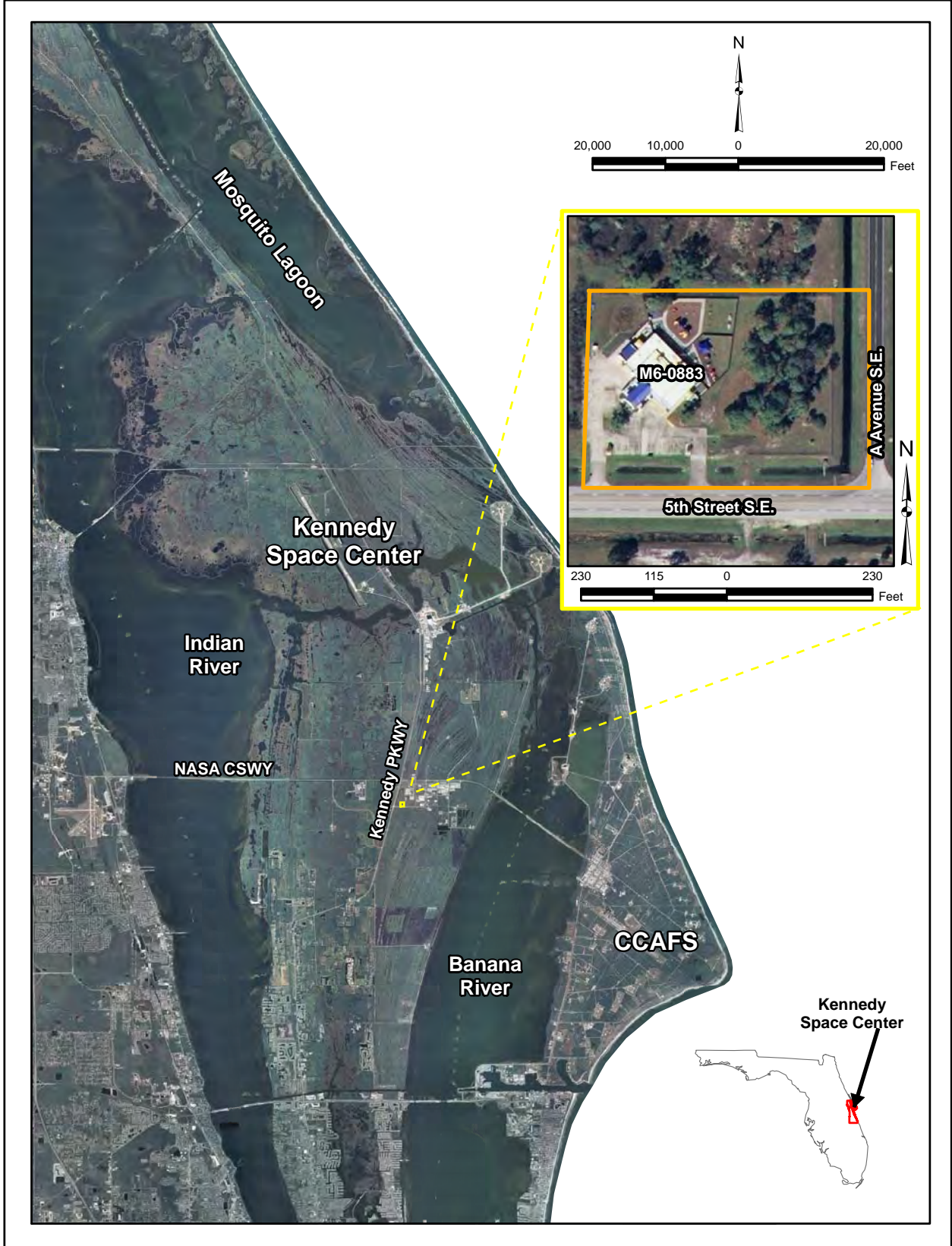



Figure 1
KSC Child Development Center Site Location Map



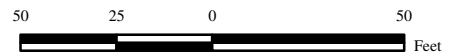
Figure 2
KCDC Land Use Control Area

Legend

 Area Covered by LUCIP and Subsurface Soil Controls



Note: Survey Coordinates are in US State Plane Coordinate System NAD1983 meters, Florida East.





**STATEMENT OF BASIS
KENNEDY SPACE CENTER
CHILD DEVELOPMENT CENTER (KCDC)
PRL 149**

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

PURPOSE OF STATEMENT OF BASIS

This Statement of Basis (SB) has been developed to inform and give the public an opportunity to comment on the proposed remedy to address potential environmental impacts at the Kennedy Space Center Child Development Center (KCDC)¹. A Kennedy Space Center (KSC) Remediation Team consisting of National Aeronautics and Space Administration (NASA) and Florida Department of Environmental Protection (FDEP) personnel has determined that the proposed remedy is cost effective and protective of human health and the environment. However, before implementing the proposed remedy, the KSC Remediation Team would like to provide the public an opportunity to comment on the proposed remedy. At any time during the public comment period, the public may comment as explained in the “How Do You Participate” section of this SB. After the end of the public comment period, the KSC Remediation Team will review all comments and issues raised in the comments, and determine if there is a need to modify the proposed remedy prior to implementation.

WHY IS A REMEDY NEEDED?

The results of the Confirmation Sampling (CS) Report indicated that arsenic was

present in the site soils at concentrations which could potentially be harmful to human health.

HOW DO YOU PARTICIPATE?

The KSC Remediation Team solicits public review and comment on this SB before implementing the proposed remedy. The remedy for KCDC

will eventually be incorporated into the Hazardous and Solid Waste Amendments (HSWA) Permit for KSC.

The public comment period for this SB and

proposed remedy will begin on the date of publication for notice of availability of the SB in major local newspapers of general circulation, and end 45 days thereafter. If requested during the comment period, the KSC Remediation Team will hold a public meeting to respond to any oral comments or questions regarding the proposed remedy. To request a hearing or provide comments, contact the following person in writing within the 45-day comment period:

<p>The Cleanup Remedy</p> <p>The proposed cleanup remedy for KCDC includes:</p> <ul style="list-style-type: none"> • Implementation of institutional controls to maintain the impervious playground surface to prevent contact with subsurface soils in that area of the KCDC facility.

¹ In accordance with RCRA §7004(b), this Statement of Basis summarizes the proposed remedy for the NASA KCDC site. For detailed information on the site, consult the KCDC administrative file, which is available for review by contacting the KSC Environmental Program Office at telephone number (321) 867-8411.

Mr. John R. Armstrong, P.G.
 FDEP - Bureau of Waste Cleanup
 2600 Blair Stone Road, MS 4535
 Tallahassee, FL 32399-2400

The HSWA Permit, SB, and associated administrative file, including the Solid Waste Management Unit (SWMU) Assessment Report (SAR), CS Report, and Interim Measures Report will be available to the public for viewing and copying at:

NASA Document Library
 Merritt Island Public Library
 1195 N. Courtenay Pkwy
 Merritt Island, FL 32953
 Telephone: (321) 455-1369

To request further information, you may contact one of the following people:

Mr. Harold G. Williams
 Remediation Program Manager
 Environmental Program Office
 Mail Code: TA-C3
 Kennedy Space Center, FL 32899
 E-mail: Harold.G.Williams@nasa.gov
 Telephone: (321) 867-8411

Mr. John R. Armstrong, P.G.
 FDEP-Bureau of Waste Cleanup
 2600 Blair Stone Road, MS 4535
 Tallahassee, FL 32399-2400
 E-mail: John.Armstrong@dep.state.fl.us
 Telephone: (850) 245-8981

FACILITY DESCRIPTION

NASA established KSC as the primary launch site for the space program. These operations have involved the use of toxic and

hazardous materials. Under the RCRA and applicable HSWA permit (Permit No. 0026028/HO/001) issued by FDEP and/or the Environmental Protection Agency (EPA), KSC was required to perform an investigation to evaluate the presence or absence of contamination at Potential Release Location (PRL) 149, KCDC.

SITE DESCRIPTION AND HISTORY

The KCDC is located on Fifth Street, east of Kennedy Parkway South (SR-3), in the southwestern portion of the KSC Industrial Area.

The KCDC was constructed in 1990 specifically as a child care center for KSC employees. Prior to 1990 the area was undeveloped. The KCDC is a 6,776 square foot single story concrete block building. The building was previously owned by an outside company, Tutor Time-Space Coast, Inc.; however, ownership transferred to NASA in October 1996. The facility is comprised of classrooms, offices, open play areas, staff lounge, lunch room, kitchen, and outside playgrounds. The facility parking lot areas are located to the south and west of the building and include a semi-circular covered driveway, all are paved with concrete. The outside playground areas are located on the northeast side of the building and enclosed with privacy fencing. Within the fenced area, the playground consists of grassy areas with picnic tables, areas sealed with a pour-in-place rubberized surface, and concrete walkways. The playground equipment currently consists of modular plastic structures. The site location with inset showing the site layout is shown on Figure 1.

Investigations conducted at the site include:

- 2001: NASA requested that soil samples be collected in the areas underlying pressure treated wood fencing and playground equipment for arsenic analysis. Arsenic impacts in site soils and mulch were detected above the FDEP soil cleanup target level (SCTL). The mulch and top six inches of soil beneath the mulch were removed. The area was then sealed with an impervious pour-in-place surfacing.
- 2006: The SWMU Assessment (SA) was conducted to identify potential environmental impacts related to operations at the KCDC. Based on the SA results, the SAR recommended confirmatory sampling at three of the four identified Locations of Concern (LOCs).
- 2007: In April, June and August, CS activities were performed to delineate the area of contamination. A Interim Measures (IM) was conducted in December to excavate and backfill 1,485 square feet of arsenic impacted soil. The wooden fence was removed and replaced with recycled-plastic fencing material.

SUMMARY OF SITE RISK

As part of the CS activities a Preliminary Risk Evaluation (PRE) was completed in accordance with KSC's Remediation Team Risk Assessment Decision Process Document (DPD).

Human health chemicals of concern (COCs) in soil were identified by comparing the maximum detected concentration of each

constituent against FDEP Residential SCTLs. If the maximum concentration of a chemical exceeded the SCTL, it was retained as a COC.

The only COC identified for human health during the CS was arsenic in soil. Due to the lack of ecological habitat present at KCDC, no unacceptable ecological risk exists.

WHAT ARE THE REMEDY OBJECTIVES AND LEVELS?

The remedial action objectives (RAOs) are to protect humans from contact with subsurface soils by maintaining the existing impervious playground surfaces which include the pour-in-place rubberized playground surfaces and concrete sidewalks.

CHEMICALS OF CONCERN IN SOIL AT THE KENNEDY SPACE CENTER CHILD DEVELOPMENT CENTER

Corrective Measures Objectives (CMOs) for this site include institutional controls.

The institutional controls will maintain the existing impervious playground surface to prevent contact with subsurface soils within the fenced area of the KCDC. NASA, EPA, and FDEP have entered a Memorandum of Agreement (MOA), which outlines how institutional controls will be managed at NASA². The MOA requires periodic inspections, condition certification, and agency notification.

EVALUATION OF REMEDIES

The selected remedy was evaluated to determine if it will comply with the four

threshold criteria and five balancing criteria for corrective measures. The four threshold criteria for corrective measures are:

- overall protection of human health and the environment;
- attain media cleanup standards;
- control the sources of releases; and
- comply with standards for management of wastes.

The five balancing criteria are:

- long-term reliability and effectiveness;
- short-term effectiveness;
- reduction in the toxicity, mobility, and volume of wastes;
- implementability; and
- cost.

Institutional controls meet each of the threshold criteria and was determined by the KSC Remediation Team to be the best overall approach.

FINAL REMEDY

Institutional Controls: Institutional land use controls will be implemented to maintain the existing impervious playground surface. The area of the site that will be under institutional control for soil is shown on Figure 2.

² By separate MOA effective February 23, 2001, with the EPA and FDEP, KSC, on behalf of NASA, agreed to implement Center-wide, certain periodic site inspections, condition certification, and agency notification procedures designed to ensure the maintenance by Center personnel of any site-specific LUCs deemed necessary for future protection of human health and the environment. A fundamental premise underlying execution of that agreement was that through the Center's substantial good faith compliance with the procedures called for herein, reasonable assurances would be provided to EPA and FDEP as to the permanency of those remedies which included the use of specific LUCs.

Although the terms and conditions of the MOA are not specifically incorporated or made enforceable herein by reference, it is understood and agreed by NASA KSC, EPA and FDEP that the contemplated permanence of the remedy reflected herein shall be dependent upon the Center's substantial good faith compliance with the specific LUC maintenance commitments reflected herein. Should such compliance not occur or should the MOA be terminated, it is understood that the protectiveness of the remedy concurred in may be reconsidered and that additional measures may need to be taken to adequately ensure necessary future protection of human health and the environment.

WHAT IMPACTS WOULD THE REMEDY HAVE ON THE LOCAL COMMUNITY?

There would be no impacts to the local community because excavation removed the accessible area of contaminants and institutional controls will prevent access to potentially contaminated areas.

WHY DOES THE KSC REMEDIATION TEAM RECOMMEND THIS REMEDY?

The Team recommends the proposed remedy because:

- The recommended alternative does not create potential exposure risks associated with bringing potentially contaminated soil to the surface where human exposure and/or releases to the environment can occur.

NEXT STEPS

The KSC Remediation Team will review all comments on this SB to determine if the proposed remedy needs modification prior to implementation and prior to incorporating the proposed remedy into KSC's HSWA permit. If the proposed remedy is determined to be appropriate for implementation, a Land Use Control Implementation Plan (LUCIP) will be developed to incorporate the institutional controls at this site.

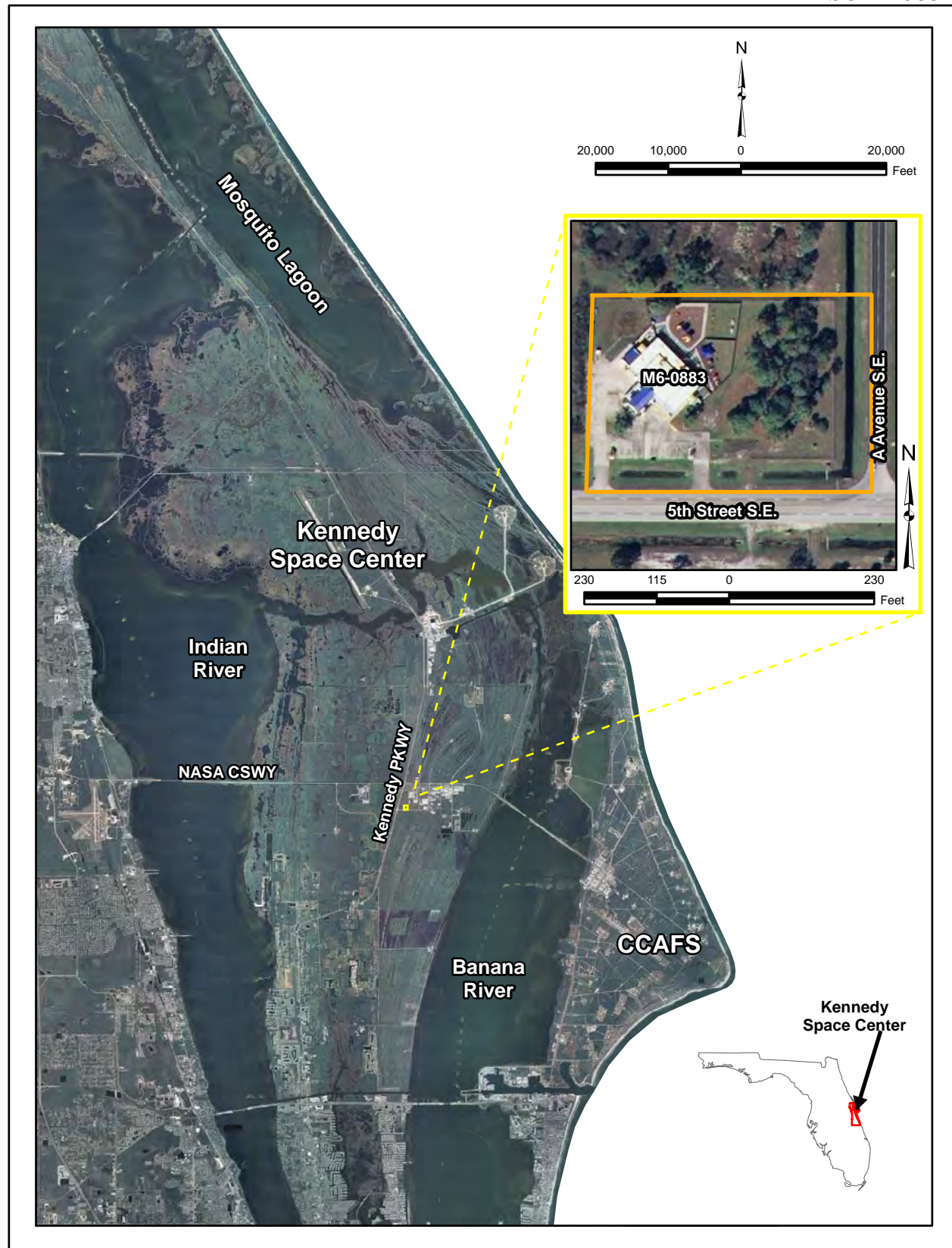


Figure 1
KSC Child Development Center Site Location Map

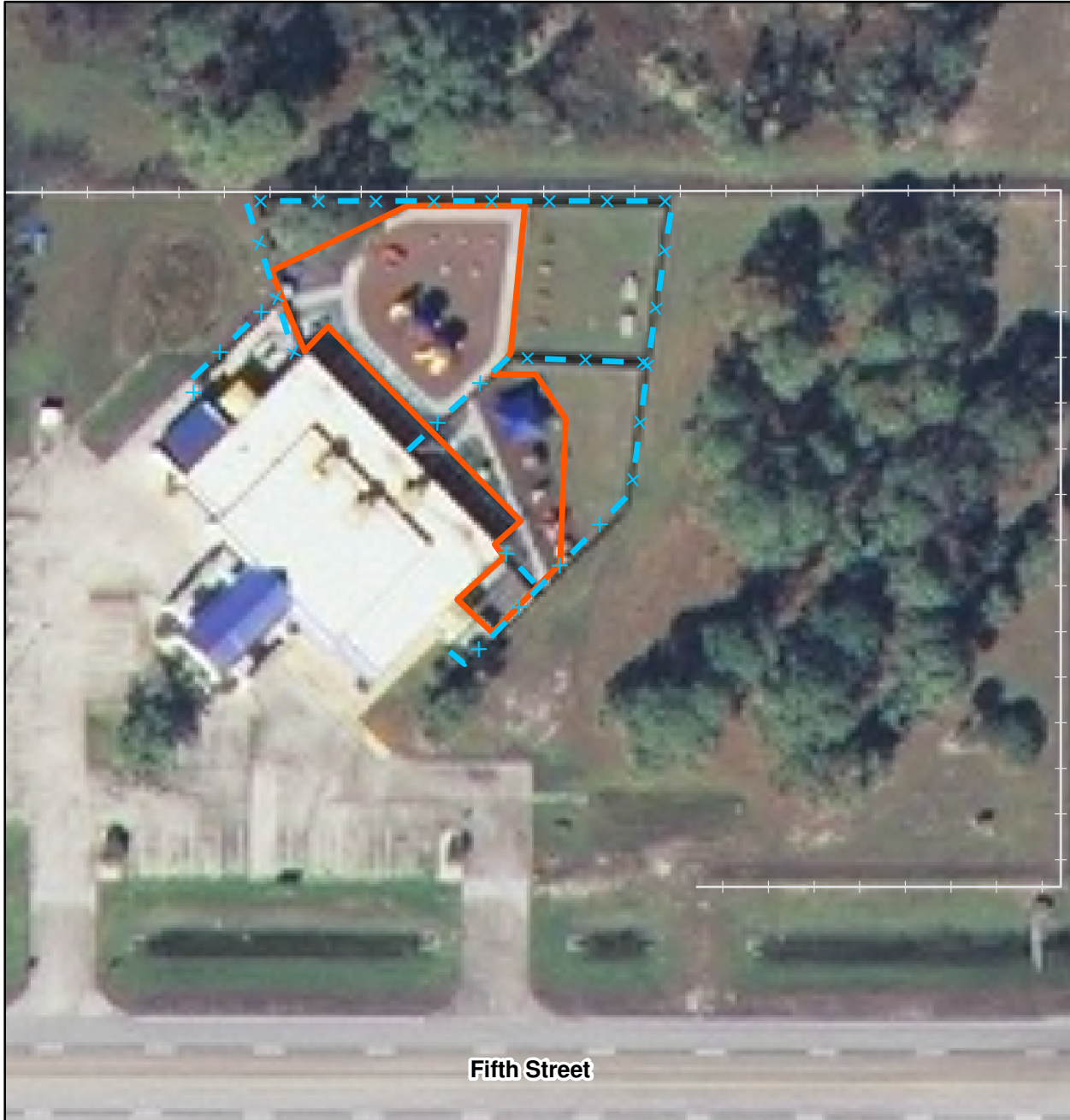
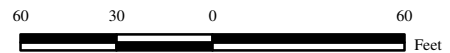
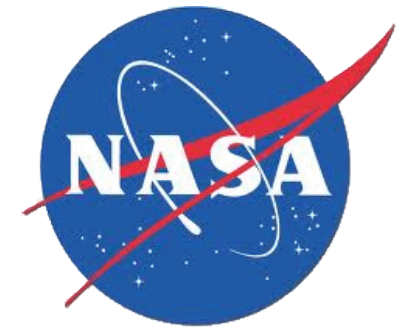


Figure 2
KCDC Land Use Control Area

Legend

- Chainlink
- × — × — Recycled-Plastic Fence
- ▭ Land Use Control Area





KSC CHILD DEVELOPMENT CENTER

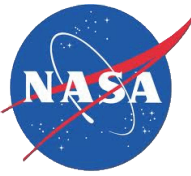
PRL 149

Confirmatory Sampling Addendum

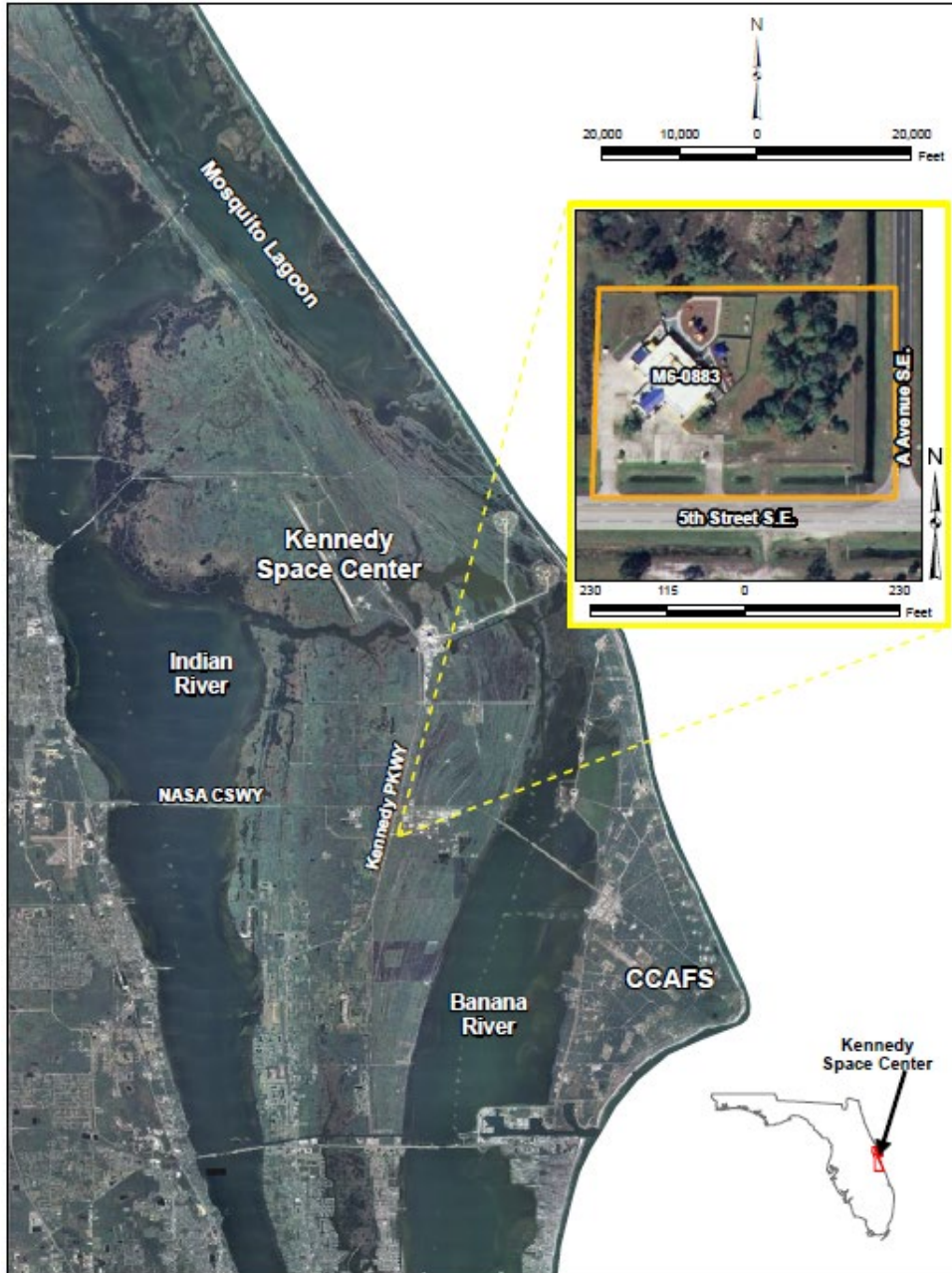
June 2022

Presentation Contents

- Site Location and Background
- Site History Overview
- 2022 Confirmatory Sampling
- Path Forward

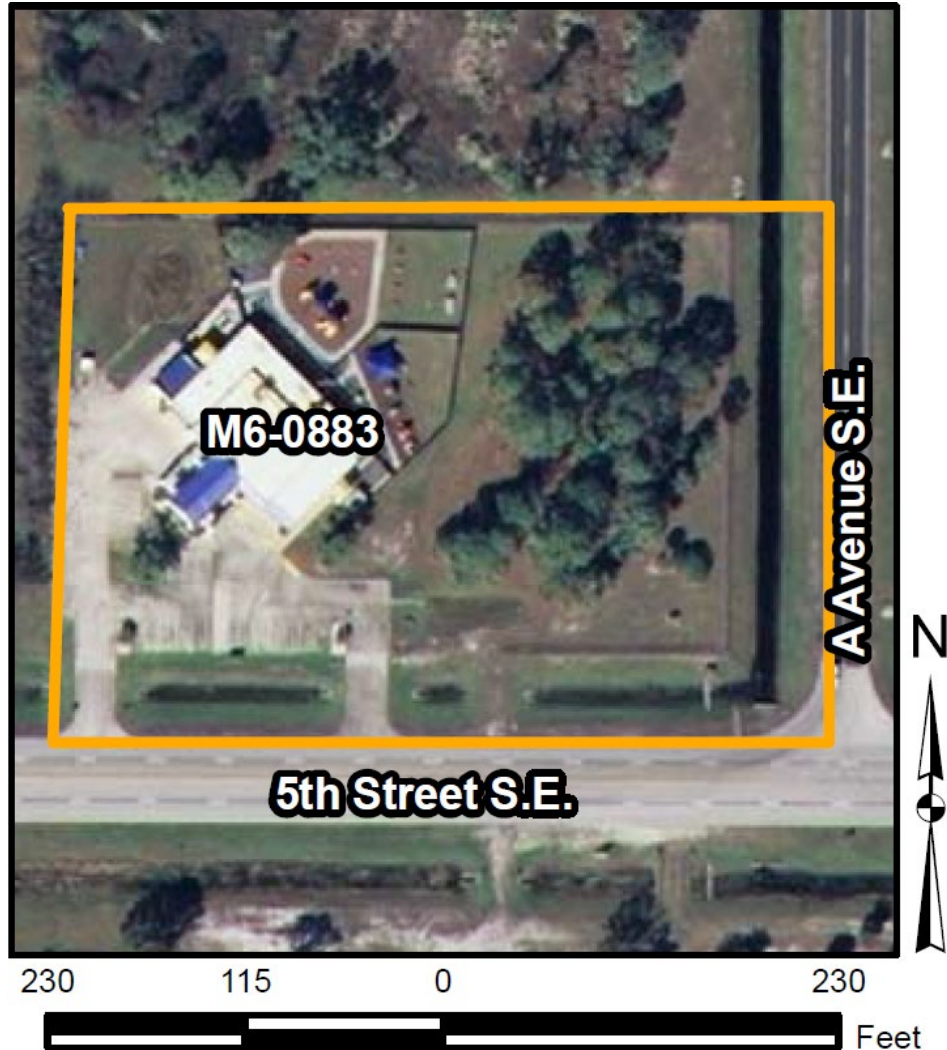


Site Location and Background



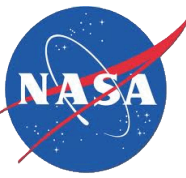
- The Site is located in the southwestern portion of the Kennedy Space Center (KSC) Industrial Area.
- Site is bordered by 5th Street SE and A Ave SE.
- Site remained undeveloped prior to acquisition by National Aeronautics and Space Administration (NASA) in 1961.
- 1990-1991: KSC Child Development Center (KCDC) (M6-0883) constructed as a child-care center for KSC employees.

Site Location and Background cont.



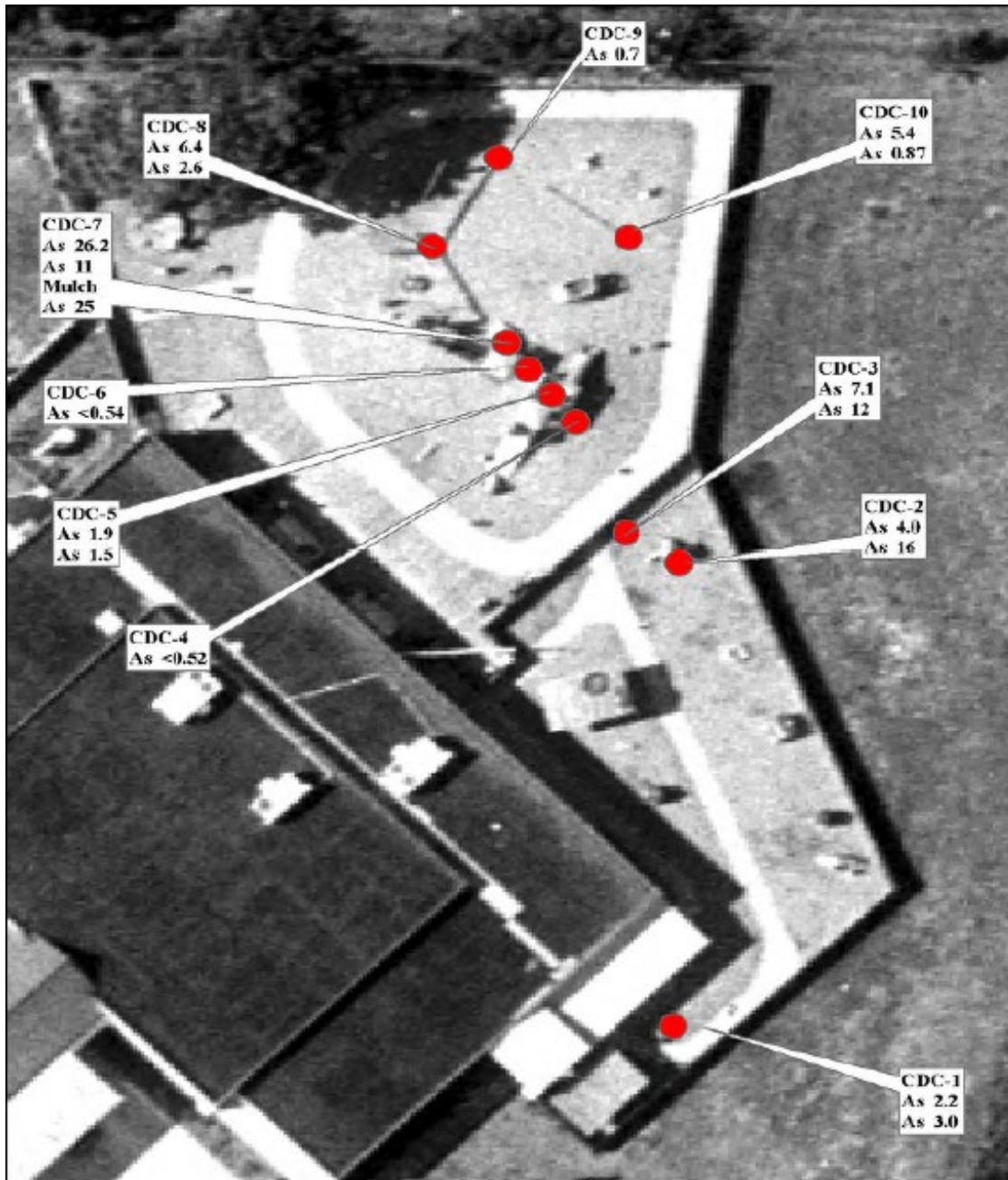
- The facility is comprised of classrooms, offices, open play areas, staff lounge, lunch room, kitchen, and outside playgrounds.
- Facility parking lot areas are located to the south and west of the building and include a semi-circular covered driveway, paved with concrete.
- The outside playground areas are located on the northeast side of the building and enclosed with plastic privacy fencing. The original fence was made of treated lumber.
- Within the fenced area, the playground consists of grassy areas with picnic tables, areas sealed with a pour-in-place rubberized surface, and concrete walkways. The rubberized surface replaced the original mulch.
- The playground equipment currently consists of modular plastic structures. The original playground equipment was built of treated lumber.

Site History Overview



- In 2001, Joint Base Operation Support Contract (JBOSC), Comprehensive Health Services (CHS), and Environmental Sampling, Analysis and Monitoring (ESAM) personnel were requested by NASA to conduct a confirmatory sampling (CS) project at the KCDC.
- The investigation focused on the soils underneath the pressure treated wood playground equipment and perimeter fence line.
- The CS project was based on a national study demonstrating potential arsenic (As) contamination from pressure treated playground equipment.
- 10 soil samples were collected for As in August 2001.

Site History Overview cont.



- August 2001 - Detections of As exceeding the 2001 Florida Department of Environmental Protection (FDEP) Residential Soil Cleanup Target Level (SCTL) (0.8 milligrams per kilogram [mg/kg]) were observed in soil 0-0.5 feet (ft.) beneath mulch at 7 of the 10 locations sampled (<0.52 to 26.2 mg/kg).
- September 2001 confirmatory surface soil samples were collected from 7 locations.
- The mulch from the location with the highest detection (CDC-7) was also sampled for As.
- Soil samples from 5 of the 7 locations again exceeded the FDEP rSCTL. The mulch contained 25 mg/kg of As.

Site History Overview cont.

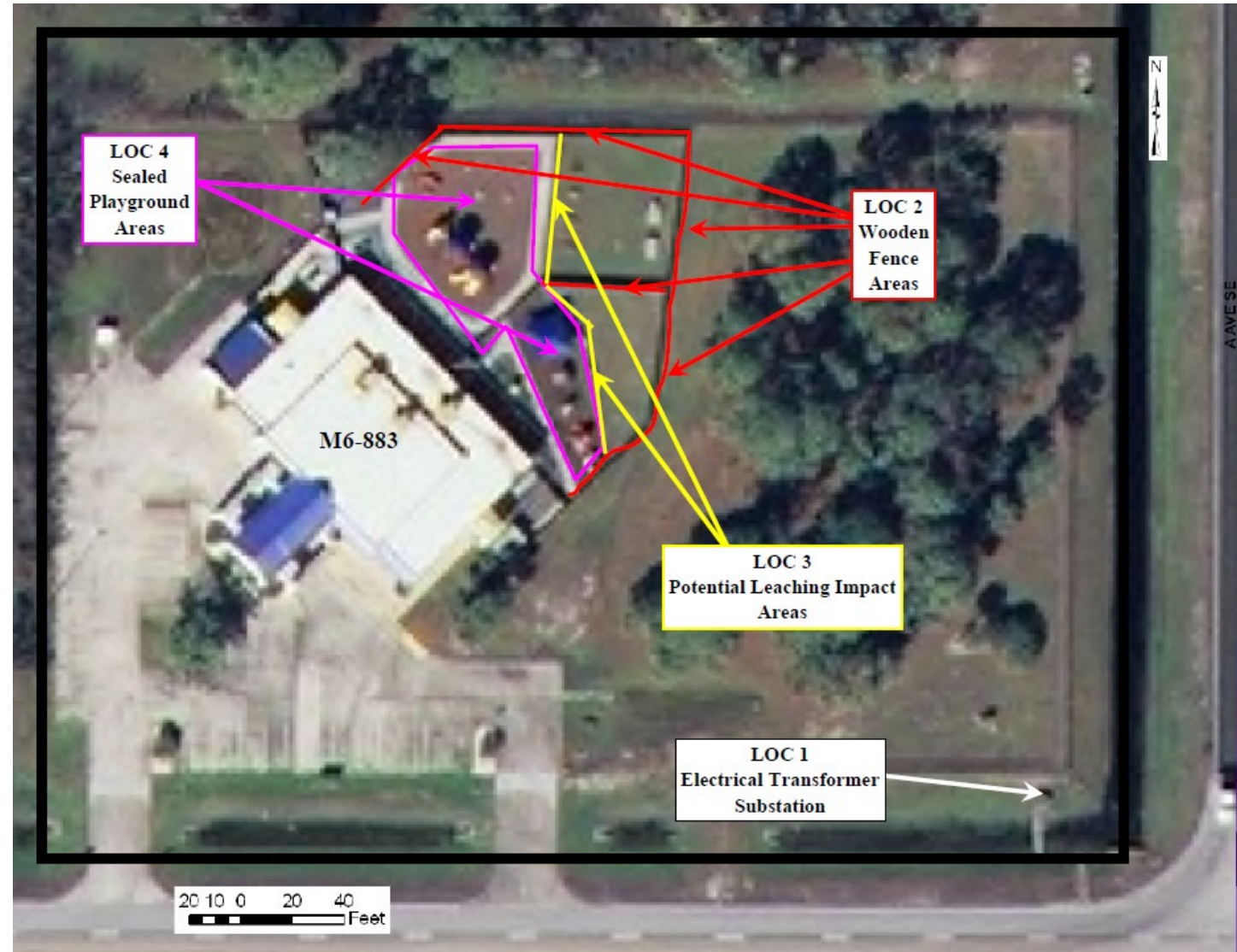
- 2001 (continued):
 - Following evaluation of the results from the CS activities in September 2001, the mulch and the top 6-inches of soil beneath the mulch were subsequently removed and disposed of as non-hazardous waste.
 - The area was sealed with an impervious pour-in-place surfacing (plastic).
 - The wood playground equipment was replaced with plastic equipment.
 - During this time, the wood fencing was not removed or replaced.



NASA, 2006. KSC Child Development Center SWMU Assessment Report. December.

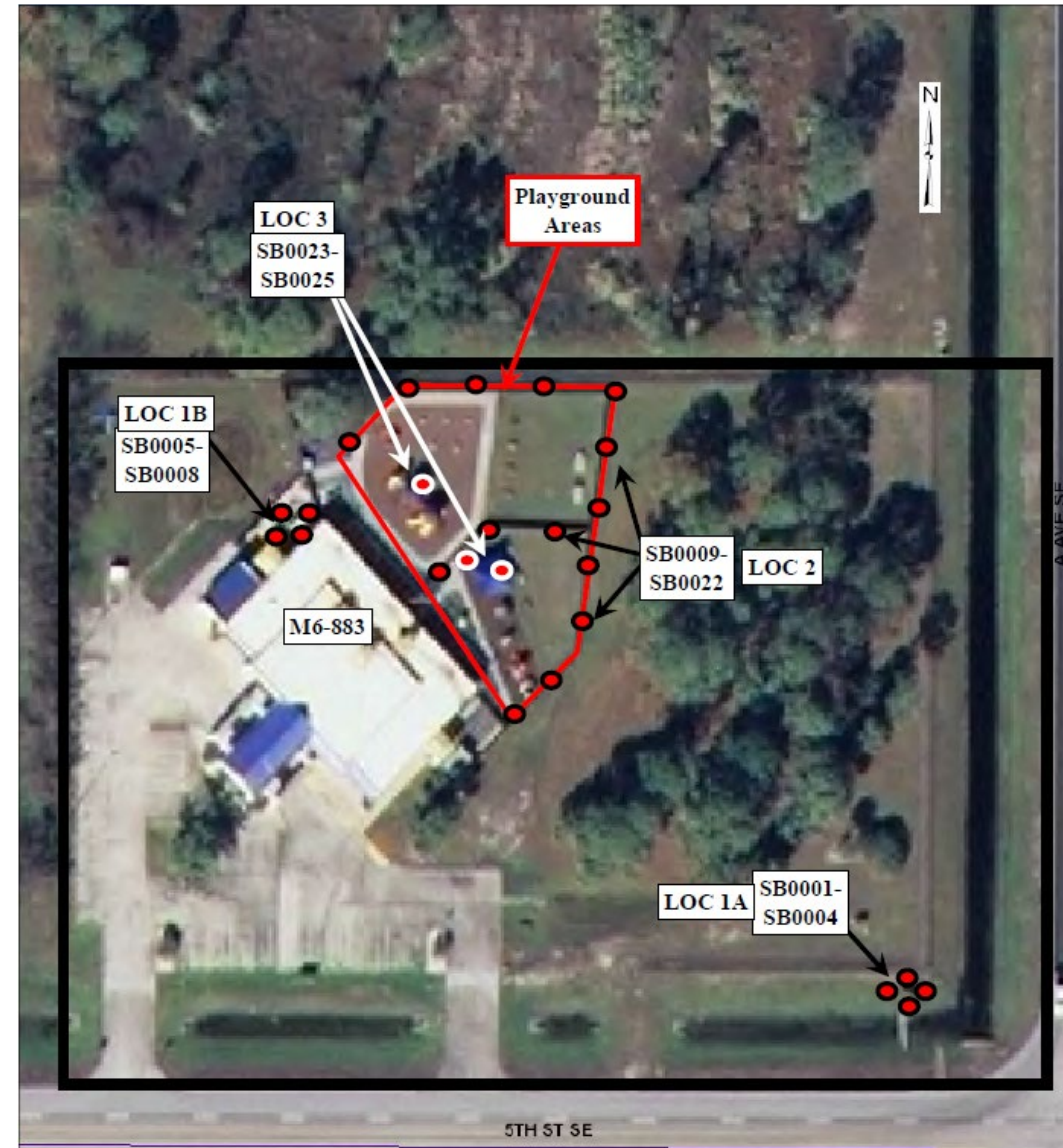
Site History Overview cont.

- 2006: KCDC was identified as Potential Release Location #149 (PRL #149) and a Solid Waste Management Unit (SWMU) Assessment (SA) was conducted.
- Four Locations of Concern (LOCs) were identified:
 1. LOC 1: Electrical Transformer Substation
 2. LOC 2: Areas beneath the Wooden Fences
 3. LOC 3: Potential Leaching Impacted Areas
 4. LOC 4: Sealed Playground Area



Site History Overview cont.

- 2006 (continued): SA Report (SAR)/Confirmatory Sampling Work Plan (CSWP) was presented to the KSC Remediation Team (KSCRT) at the September 2006 meeting. Team consensus was reached on the following (0609-M05, D05 to D06):
 - Arsenic in the playground is not a Resource Conservation and Recovery Act (RCRA) issue.
 - The grassed playground area adjacent to the concrete path and under the old and current fence locations shall be sampled for arsenic, chromium, and copper.
- Sampling locations proposed in the SAR/CSWP pictured right.



JBOSC/CHS Environmental Services Branch, 2006. *KSC Child Development Center SAR/CSWP ADP, KSC, FL. September.*

Site History Overview cont.

- 2006 (continued): SAR/CS Summary Results.
- 4 Areas with As rSCTL exceedances from 0 to 0.5 ft bgs.
 - Area 1: SB0006 (0-0.5) – 3.9 mg/kg
 - Area 2: 5 samples: (SB0008, SB0009, SB0010, SB0019, and SB0030) - 2.1 mg/kg to 9 mg/kg.
 - Area 3: SB0018 – 6 mg/kg.
 - Area 4: SB0014 – 7.1 mg/kg.
- Note: 2 samples located outside 2007 Soil IM areas: SB0007 – 6.7 mg/kg; SB0041 – 5.7 mg/kg.



Site History Overview cont.



- 2007: CS and Interim Measure (IM) Activities
 - CS activities delineated areas of contamination in accordance with the SAR/CSWP.
 - An IM was conducted in December 2007 at 4 Areas, to excavate As impacted soils above rSCTL (0-1 ft bgs) and replace the wooden fence.
 - 1,488 cumulative square ft total excavated;
 - 31 tons of construction debris removed;
 - 108 tons of As impacted soil removed; and
 - 590 linear ft of pressure-treated fence was replaced with recycled plastic fence.
 - IM results were presented to the KSCRT in May 2008, and consensus was reached on the following (0805-M05, D07 to D08):
 - The Statement of Basis with changes listed in meeting minutes; and
 - Land Use Control Implementation Plan (LUCIP) with changes listed in meeting minutes.

Site History Overview cont.



Geosyntec, 2008. *KSC Child Development Center Interim Measures, PRL 149 ADP*. May.



Geosyntec, 2008. *KSC Child Development Center Interim Measures, PRL 149 ADP*. May. 12

Excavation Area 1



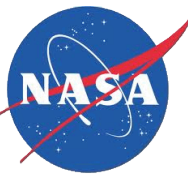
Geosyntec, 2008. KSC Child Development Center Interim Measures ADP, PRL 149. May.

Excavation Area 2



Geosyntec, 2008. KSC Child Development Center Interim Measures ADP, PRL 149. May.

Excavation Area 3

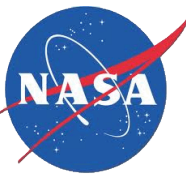


Geosyntec, 2008. KSC Child Development Center Interim Measures ADP, PRL 149. May.

Excavation Area 4

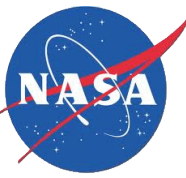


Geosyntec, 2008. KSC Child Development Center Interim Measures ADP, PRL 149. May.



2022 Confirmatory Sampling

- In 2022, a project by NASA to replace certain playground equipment and the rubberized play surface is planned.
- Soil sampling was initiated to:
 1. Investigate whether other metals associated with treated wood (copper and chromium) were present at levels of potential concern; and
 2. Investigate remaining arsenic levels.



2022 Confirmatory Sampling

- On March 19th, 2022, soil sampling was conducted at LOC 4 (Sealed Playground Area) and LOC 2 (Wooden Fence Area).
- At LOC 4, a core drill was utilized to drill through the impervious playground surface and underlying concrete pad at five locations.
 - Soil samples were collected from directly beneath the concrete pad to 1 ft below ground surface (bgs) (0.5-1.0 ft. bgs), and every 1-ft. interval until the water table was encountered (approx. 3-4 ft bgs across the site).
- At LOC 2, two soil boring locations were advanced from ground surface using a hand auger.
 - Soil samples were collected from ground surface to 0.5 ft. bgs, 0.5-1.0 ft. bgs, and every 1-ft. interval until the water table was encountered.
- All soil samples were analyzed for arsenic, total chromium, hexavalent chromium, and copper.

2022 Confirmatory Sampling



Pictured right: Northeastern grass playground area near excavation area 2 and approximate location of SB0049 (red circle; LOC 2).



Pictured left: Northern side of toddler playground (LOC 4) near excavation area 3 (grass area) and SB0047 (see next slide for another photo).



Pictured right: Northeast area of playground equipment (LOC 4).



Pictured left: Northern side of pre-school playground near SB0045 (LOC 4; red circle near Space Shuttle Spring Rider).



2022 Confirmatory Sampling – LOC 4



Pictured right: SB0047 original location being advanced using a core drill.



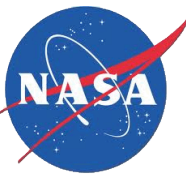
Pictured left: Revised SB0047 location after encountering obstruction using hand auger in original borehole at 2 ft. bgs.

Pictured right: Soil collected from SB0044 (from left-to-right: 0.5-1.0, 1.0-2.0, 2.0-3.0, and 3.0-4.0 ft. bgs).



Pictured left: Cleanup at SB0044 following sample collection activities.

2022 Confirmatory Sampling – LOC 2



Location pictured: KCDC-SB0048 (left); KCDC-SB0046 (right, near Horse Spring Rider which is in LOC 4)



Location pictured: KCDC-SB0049

2022 Confirmatory Sampling – LOC 4



- Playground surface thickness was predominantly 2” at all five locations
- Underlying concrete pad thickness was predominantly 4” at all five locations



Playground surface and concrete core from KCDC-SB0046.



Location pictured: KCDC-SB0045

2022 Confirmatory Sampling – LOC 4



- Locations within the playground surface were completed with playground mat patchwork.



Location pictured: KCDC-SB0043

2022 Confirmatory Sampling Results



- Soil sample results for total chromium, hexavalent chromium, and copper were less than the residential and/or leachability SCTLs.

LOC 4					
Location ID (KCDC-)	Depth (ft. bgs)	As	Cu	Cr	Cr (VI)
SB0043	0-0.5	NS			
	0.5-1.0	0.22 J	0.30 J	2.3 J	0.47 J
	1.0-2.0	0.049 J	0.076 UJ	0.54	0.90
	2.0-3.0	0.20 J	0.30 J	0.80	1.2
	3.0-4.0	0.054 J	0.23 U	0.30 J	0.54 U
SB0044	0-0.5	NS			
	0.5-1.0	0.18 J	0.73	0.64	0.42 J
	1.0-2.0	1.7	0.23 J	3.4	0.55 U
	2.0-3.0	1.3	0.30	3.2	0.48 J
	3.0-4.0	0.65	0.16 UJ	2.2	0.52 U
SB0045	0-0.5	NS			
	0.5-1.0	0.55	0.26	0.72	0.59
	1.0-2.0	2.3	0.29	3.9	0.48 U
	2.0-3.0	0.72	0.20 J	2.0	0.66
	3.0-4.0	0.15 J	0.13 UJ	0.53	2.6
SB0046	0-0.5	NS			
	0.5-1.0	1.7	1.8	1.7	0.63
	1.0-2.0	0.22 J	6.8	0.46	0.51 U
	2.0-3.0	0.21 J	0.90	0.46	1.9
	3.0-4.0	WT			
SB0047	0-0.5	NS			
	0.5-1.0	1.7	1.8	1.7	0.63
	1.0-2.0	0.22 J	6.8	0.46	0.51 U
	2.0-3.0	0.21 J	0.90	0.46	1.9
	3.0-4.0	WT			

LOC 2					
Location ID (KCDC-)	Depth (ft. bgs)	As	Cu	Cr	Cr (VI)
SB0048	0-0.5	10.2	2.8	4.4	0.41 J
	0.5-1.0	1.3	0.63	0.67	0.45 U
	1.0-2.0	0.54	0.64	0.55	0.48 U
	2.0-3.0	0.23 J	0.37	0.47	2.1
	3.0-4.0	WT			
SB0049	0-0.5	0.40	3.6	4.2	0.62
	0.5-1.0	0.084 J	1.2	1.6	0.42 U
	1.0-2.0	0.025 J	0.14 J	0.30	0.46 U
	2.0-3.0	0.15 J	0.11 UJ	2.6	3.5
	3.0-4.0	WT			

Analyte	Residential SCTL	Industrial SCTL	Leachability SCTL
As	2.1	12	
Cu	150	89,000	--
Cr	210	470	--
Cr (VI)	210	470	38

Notes:

As=Arsenic
 Cr=Chromium (total)
 ft. bgs=feet below ground surface
 LOC=Location of Concern
 SCTL=Soil Cleanup Target Level

Cu=Copper
 Cr (VI)=Chromium (hexavalent)
 KCDC=KSC Child Development Center
 NS=not sampled
 WT=water table

Qualifiers

Blank=analyte was detected at concentration shown.
 J=analyte was detected but the concentration reported is an estimated value.
 U=analyte was not detected above method detection limit.



2022 Confirmatory Sampling Results

- Detections of As exceeding the FDEP rSCTL of 2.1 mg/kg were observed at SB0045 (LOC 4) and SB0048 (LOC 2).
 - SB0045: 2.3 mg/kg at 1.0-2.0 ft bgs;
 - SB0048: 10.2 mg/kg at 0-0.5 ft bgs.
 - Both sample locations were delineated vertically to concentrations less than the rSCTL.
 - All arsenic results from the other 5 boring locations were less than the rSCTL.
- The two locations with results above the rSCTL are not accessible to playground users because of the play surface and concrete (SB0045) or because of location between two fences (SB0048). Thus, the LUCIP remains valid.



Path Forward

- LUCIP remains protective of human health.
- Land Use Controls and quarterly inspections will continue.
- The Remediation Program will continue to have repairs made to the play surface as needed.
- Further soil sampling and a possible removal action will be planned for the time when the KSC Child Development Center moves to a new location, which is anticipated to be within the next 10 years.



*Restoring the Environment
Protecting Our Future.*

KSC Child Development Center

**CONFIRMATORY SAMPLING ADDENDUM AND INTERIM
MEASURES WORK PLAN**

APRIL 2024





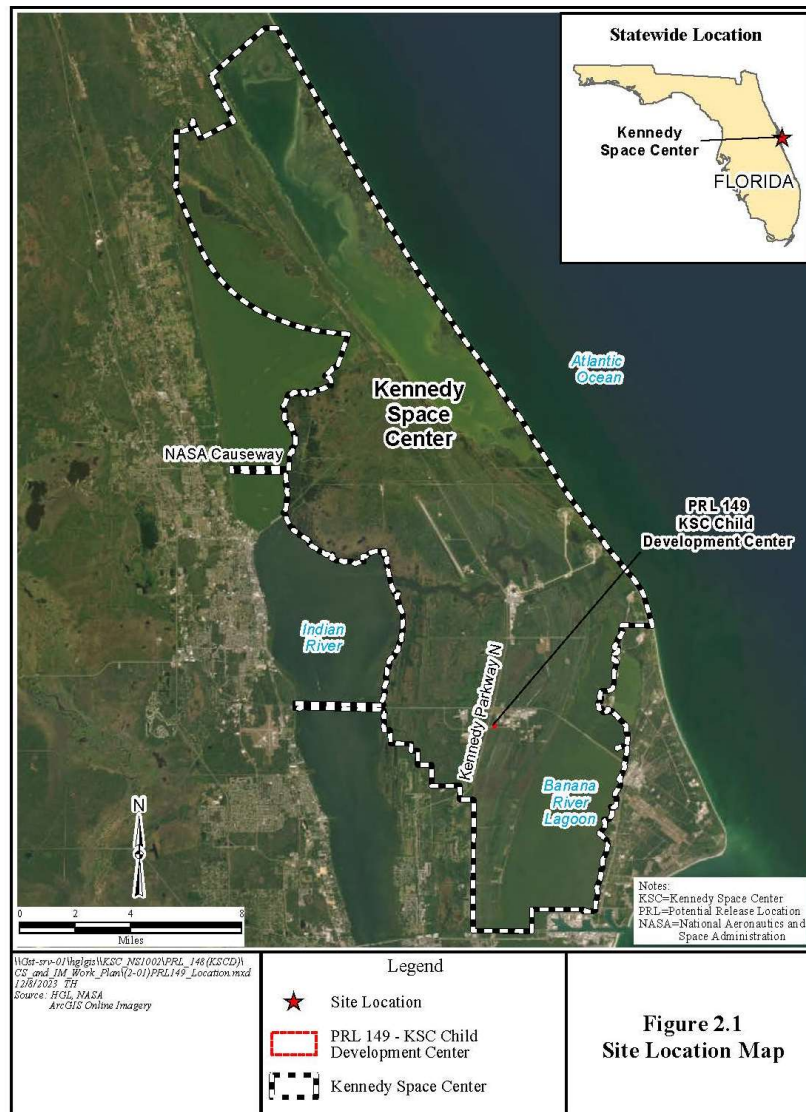
Presentation Outline

- ▶ **Site Location and Background**
- ▶ **Site History Overview**
- ▶ **2022-2023 Confirmatory Sampling (CS)**
- ▶ **2023 Arsenic Contamination Release Assessment**
- ▶ **Path Forward**



Site Location and Description

- ▶ The Site is located in the southwestern portion of the Kennedy Space Center (KSC) Industrial Area.
- ▶ Site is bordered by 5th Street SE and A Ave SE.
- ▶ Site undeveloped prior to acquisition by National Aeronautics and Space Administration (NASA) in 1961.
- ▶ 1990-1991: KSC Child Development Center (KCDC) (M6-0883) constructed as a child-care center for KSC employees.





Site Location and Description cont.



- ▶ The facility is comprised of classrooms, offices, open play areas, staff lounge, lunchroom, kitchen, and outside playgrounds.
- ▶ Vehicle access and parking areas are paved and located in the southwest portion of the facility.
- ▶ The outside playground areas are located on the northeast side of the building and enclosed with plastic privacy fencing. The original fence was made of treated lumber.
- ▶ Within the fenced area, the playground consists of grassy areas with picnic tables, areas sealed with a pour-in-place rubberized surface, and concrete walkways. The rubberized surface replaced the original mulch.
- ▶ The playground equipment currently consists of modular plastic structures. The original playground equipment was built of treated lumber.



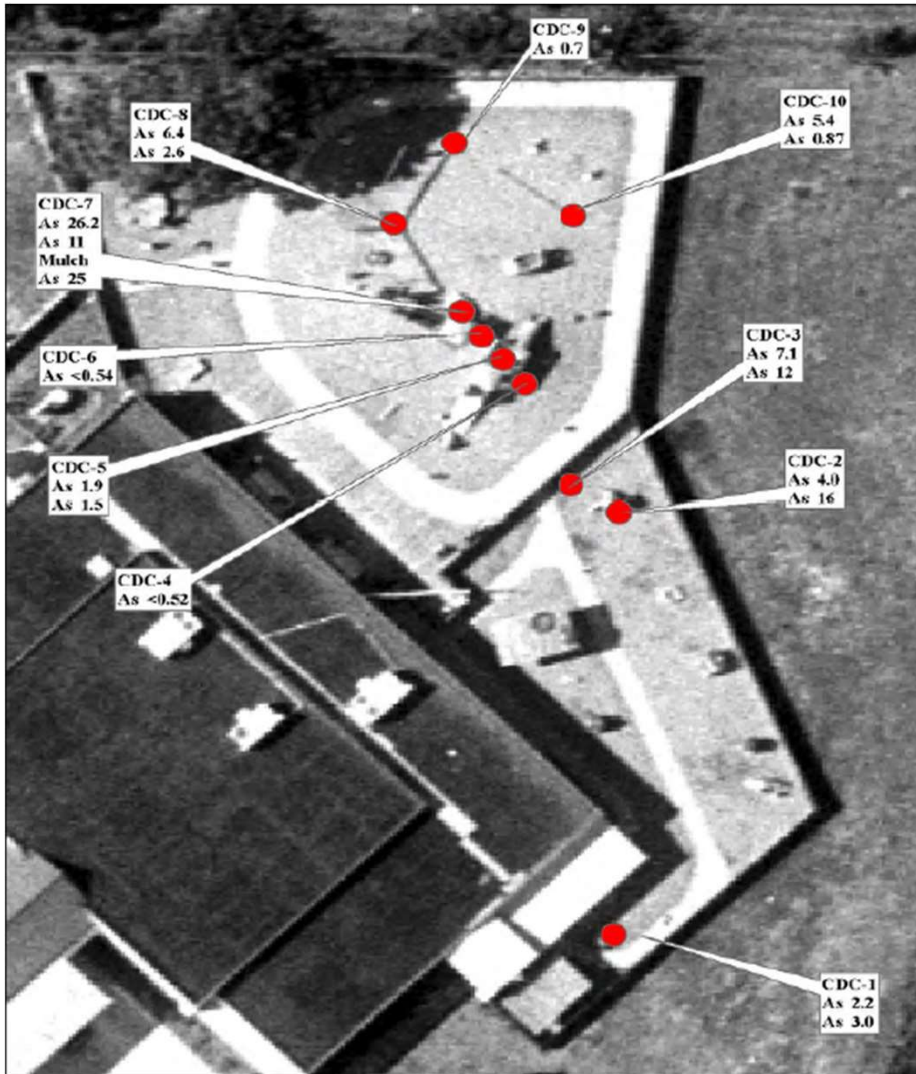
Site History Overview

- ▶ In 2001, Joint Base Operation Support Contract (JBOSC), Comprehensive Health Services (CHS), and Environmental Sampling, Analysis and Monitoring (ESAM) personnel were requested by NASA to conduct a CS project at the KCDC.
- ▶ The investigation focused on the soils underneath the pressure treated wood playground equipment and perimeter fence line.
- ▶ The CS project was initiated after a national study demonstrated potential arsenic (As) contamination from pressure treated playground equipment.
- ▶ 10 soil samples were collected and analyzed for As in August 2001.



Site History Overview cont.

- ▶ August 2001 - Detections of As exceeding the 2001 State of Florida Residential Soil Cleanup Target Level (rSCTL) (0.8 milligrams per kilogram [mg/kg]) were observed in soil 0-0.5 feet (ft.) beneath mulch at 7 of the 10 locations sampled. Concentrations ranged from <0.52 to 26.2 mg/kg.
- ▶ September 2001 – The seven locations exceeding SCTLs were resampled, and mulch from the location with the highest detection (CDC-7) was also analyzed for As.
- ▶ Soil samples from 5 of the 7 locations again exceeded the rSCTL. The mulch contained 25 mg/kg of As.



6

NASA, 2006. KSC Child Development Center SWMU Assessment Report/CSWP ADP. August.





Site History Overview cont.



NASA, 2006. KSC Child Development Center SWMU Assessment Report. December.

- ▶ 2001 (continued):
- ▶ Following evaluation of the results from the CS activities in September 2001, the mulch and the top 6-inches of soil beneath the mulch were subsequently removed and disposed of as non-hazardous waste.
- ▶ The area was sealed with an impervious pour-in-place surfacing (plastic).
- ▶ The wood playground equipment was replaced with plastic and metal equipment.
- ▶ During this time, the wood fencing was not removed or replaced.



Site History Overview cont.

- ▶ 2006: KCDC was identified as Potential Release Location #149 (PRL #149) and a Solid Waste Management Unit (SWMU) Assessment (SA) was conducted.
- ▶ Four Locations of Concern (LOCs) were identified:
 - ▶ LOC 1: Electrical Transformer Substation
 - ▶ LOC 2: Areas beneath the Wooden Fences
 - ▶ LOC 3: Potential Leaching Impacted Areas
 - ▶ LOC 4: Sealed Playground Area
- ▶ Florida raised the rSCTL for As to 2.1 mg/kg in 2005.

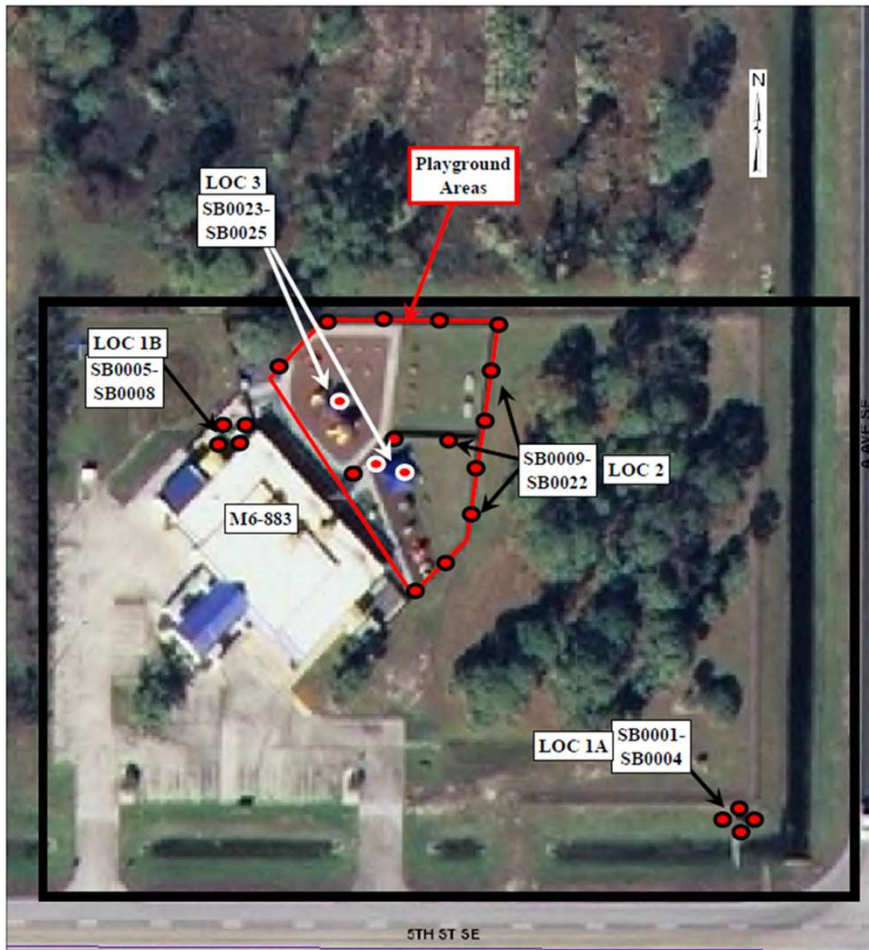


NASA, 2006. *KSC Child Development Center SWMU Assessment Report*. December.



Site History Overview cont.

- ▶ 2006 (continued): SA Report (SAR)/CS Work Plan (CSWP) was presented to the KSC Remediation Team (KSCRT) at the September 2006 meeting. Team consensus was reached on the following (0609-M05, D05 to D06):
 - ▶ Arsenic in the playground is not a Resource Conservation and Recovery Act (RCRA) issue.
 - ▶ The grassed playground area adjacent to the concrete path and under the old and current fence locations shall be sampled for As, chromium (Cr), and copper (Cu).
- ▶ Sampling locations proposed in the SAR/CSWP pictured left.



9 JBOSC/CHS Environmental Services Branch, 2006. KSC Child Development Center SAR/CSWP ADP, KSC, FL. September.





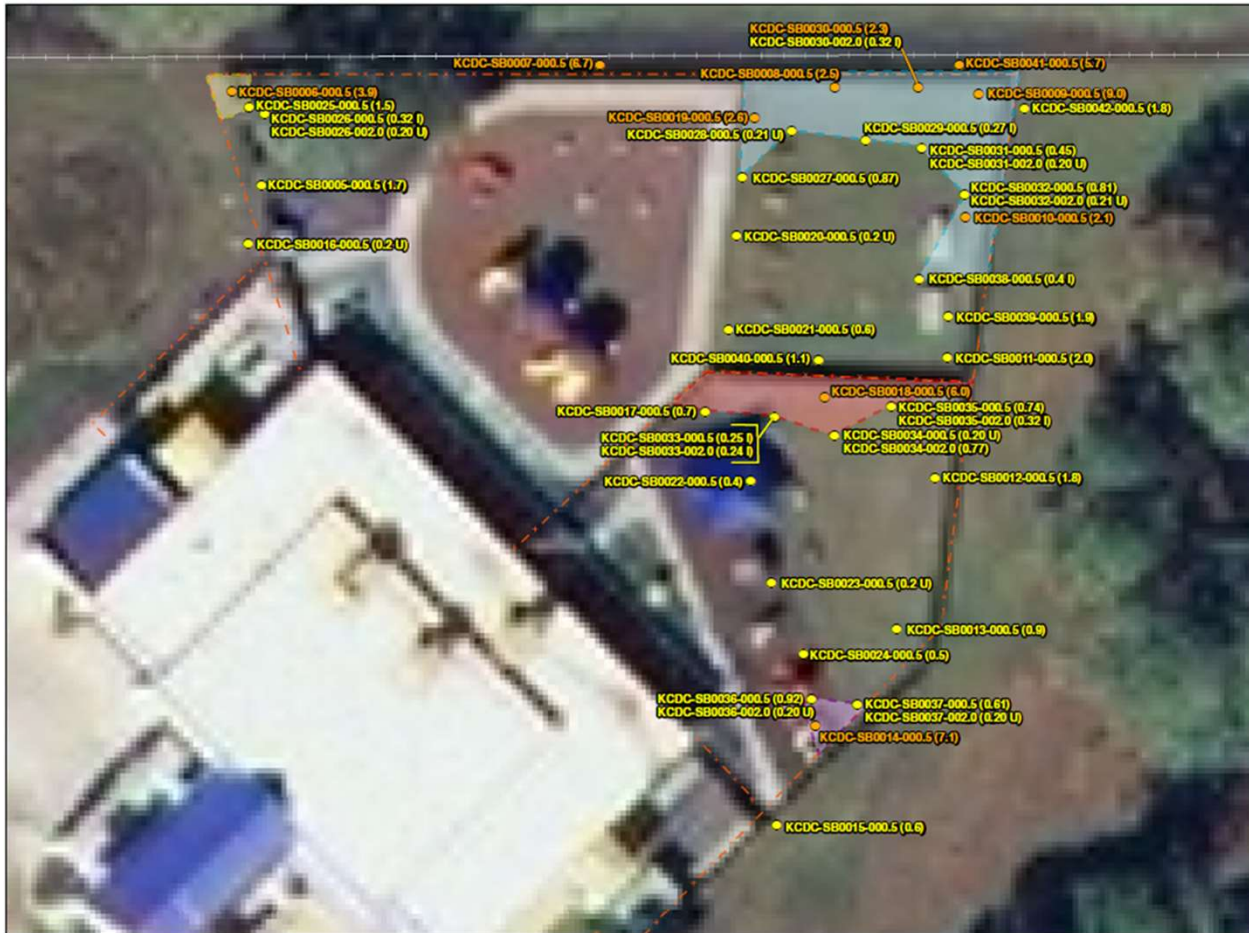
Site History Overview cont.

- ▶ **2007: CS and Interim Measure (IM) Activities**
 - ▶ **CS activities delineated areas of contamination in accordance with the SAR/CSWP.**
 - ▶ **An IM was conducted in December 2007 at 4 Areas, to excavate As impacted soils above rSCTL (0-1 ft bgs) and replace the wooden fence.**
 - ▶ 1,488 cumulative square (sq) ft total excavated;
 - ▶ 31 tons of construction debris removed;
 - ▶ 108 tons of As impacted soil removed; and
 - ▶ 590 linear ft of pressure-treated fence was replaced with recycled plastic fence.
 - ▶ **IM results were presented to the KSCRT in May 2008, and consensus was reached on the following (0805-M05, D07 to D08):**
 - ▶ The Statement of Basis with changes listed in meeting minutes; and
 - ▶ Land Use Control Implementation Plan (LUCIP) with changes listed in meeting minutes.



Site History Overview cont.

- ▶ 2006 (continued): SAR/CS Summary Results.
- ▶ 4 Areas with As rSCTL exceedances from 0 to 0.5 ft bgs.
- ▶ Area 1: SB0006 (0-0.5) – 3.9 mg/kg
- ▶ Area 2: 5 samples: (SB0008, SB0009, SB0010, SB0019, and SB0030) - 2.1 mg/kg to 9 mg/kg.
- ▶ Area 3: SB0018 – 6 mg/kg.
- ▶ Area 4: SB0014 – 7.1 mg/kg.
- ▶ Note: 2 samples located outside 2007 Soil IM areas: SB0007 – 6.7 mg/kg; SB0041 – 5.7 mg/kg.





Land Use Control and 2007 IM Areas



Geosyntec, 2008. KSC Child Development Center Interim Measures, PRL 149 ADP. May.



12 Geosyntec, 2008. KSC Child Development Center Interim Measures, PRL 149 ADP. May.



Site History Overview cont. (2022)

- ▶ In 2022, a project to replace certain playground equipment and the rubberized play surface was planned by NASA . Soil sampling was initiated to:
 1. Investigate whether other metals associated with treated wood (Cu and Cr) were present at levels of potential concern; and
 2. Investigate remaining As levels.
- ▶ On March 19th, 2022, soil sampling was conducted at LOC 4 (Sealed Playground Area) and LOC 2 (Wooden Fence Area).
 - ▶ LOC 4: Soil samples were collected from directly beneath the concrete pad to 1 ft below ground surface (bgs) (0.5-1.0 ft. bgs), and every 1-ft. interval until the water table was encountered (approx. 3-4 ft bgs across the site).
 - ▶ LOC 2: Soil samples were collected from ground surface to 0.5 ft. bgs, 0.5-1.0 ft. bgs, and every 1-ft. interval at two locations until the water table was encountered.
 - ▶ All soil samples were analyzed for As, total Cr, hexavalent Cr (Cr[VI]), and Cu.



Site History Overview cont. (2022)

- ▶ Soil sample results for total Cr, Cr(VI), and Cu were less than the residential and/or leachability SCTLs at both LOC 2 and LOC 4.
- ▶ The detections of As from 1.0 to 2.0 ft bgs at SB0045 (2.3 mg/kg) (LOC 4) and 0 to 0.5 ft bgs at SB0048 (10.2 mg/kg) (LOC 2) exceeded the rSCTL of 2.1 mg/kg.
 - ▶ Vertical delineation to below SCTLs was achieved in the 2.0 to 3.0 ft bgs sample interval for SB0045; and in the 0.5 to 1.0 ft bgs sample interval for SB0048.
- ▶ The sample intervals with results above the rSCTL are not accessible to playground users because they are located:
 1. Underneath the play surface and underlying concrete pad (SB0045 at LOC 4); and
 2. Between the playground fence and outer chain link fence (SB0048 at LOC 2).
- ▶ The results of the 2022 CS activities were presented in an ADP to the KSCRT at the June 2022 meeting.
- ▶ Based on the discussion at the June 2022 meeting, delineation of the rSCTL exceedance of As at SB0048 to the north was warranted.

2022 Confirmatory Sampling Results

Legend

- Soil Boring Location Below SCTL
- Soil Boring Location Above SCTL
- PRL 149 Boundary

Notes:

 = detection exceeded residential SCTL

Blank (i.e., no qualifier)=the chemical was detected
 ft. bgs=feet below ground surface
 J=The chemical was detected but the concentration reported is an estimated value.

mg/kg=milligrams per kilogram
 KCDC=KSC Child Development Center
 KSC=Kennedy Space Center
 NS=not sampled
 PRL=potential release location
 SCTL=soil cleanup target level, Florida Administrative Code 62-777

Parameter	Residential SCTL	Industrial SCTL
Arsenic (mg/kg)	2.1	12



Site History Overview cont.



Location pictured: SB0048 (left); KCDC-SB0046 (right, near horse spring rider which is in LOC 4)



Location pictured: SB0045 in front of space shuttle spring rider.








2023 CS Activities LOC 2 (Areas beneath the Former Wooden Fences)

- ▶ CS activities were completed on May 16, 2023, to:
 - ▶ Delineate the rSCTL exceedance of As detected from 0 to 0.5 ft bgs at SB0048; and
 - ▶ Close data gaps north of the fence where excavation areas 1 and 2 were conducted.
- ▶ 27 soil samples were collected from nine soil boring locations (SB0050 through SB0058).
- ▶ Soil samples were collected using a stainless-steel hand auger from ground surface to 0.5 ft bgs, 0.5 to 1.0 ft bgs, and 1.0 to 2.0 ft bgs.
 - ▶ The water table was encountered at 2.0 ft bgs at every location.
- ▶ Each sample was homogenized using a stainless-steel mixing bowl and spoon prior to placement in single, 4-oz glass sample jars.
 - ▶ Equipment was decontaminated using a potable water rinse; Luminox® scrub and wash; and a deionized water rinse. Equipment was allowed to air dry prior to use.
- ▶ Samples were analyzed for As only.

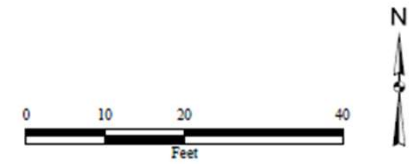
Completed Confirmatory Sampling Locations 2022-2023



Legend

-  Completed 2022 Soil Sample Location
-  Completed 2023 Soil Sample Location
-  PRL 149 Boundary
-  LOC 2 - Area Beneath The Wooden Fence
-  LOC 4 - Sealed Playground Area

Notes:
 KCDC=KSC Child Development Center
 KSC=Kennedy Space Center
 LOC=Location of Concern
 PRL=potential release location





2023 CS Activities - LOC 2

Pictured right:
northern side of the
playground area.
View is looking
southeast.



Pictured left: Soil
boring locations
were placed just
outside the chain-
link fence (white
line), before the
swale (blue line).



Pictured right:
northeast corner of
playground fence
near location
KCDC-SB0050



Pictured left:
northwest corner of
playground fence
near location of
KCDC-SB0058.





2023 CS Results - LOC 2

- ▶ No SCTL exceedances of As were detected.
- ▶ The rSCTL exceedance of As from 0 to 0.5 ft bgs at SB0048 was delineated to below SCTLs laterally by samples collected from SB0046 (sample collected from March 19, 2022), SB0053, and SB0054.

LOC 2 Soil Analytical Results Summary

Legend

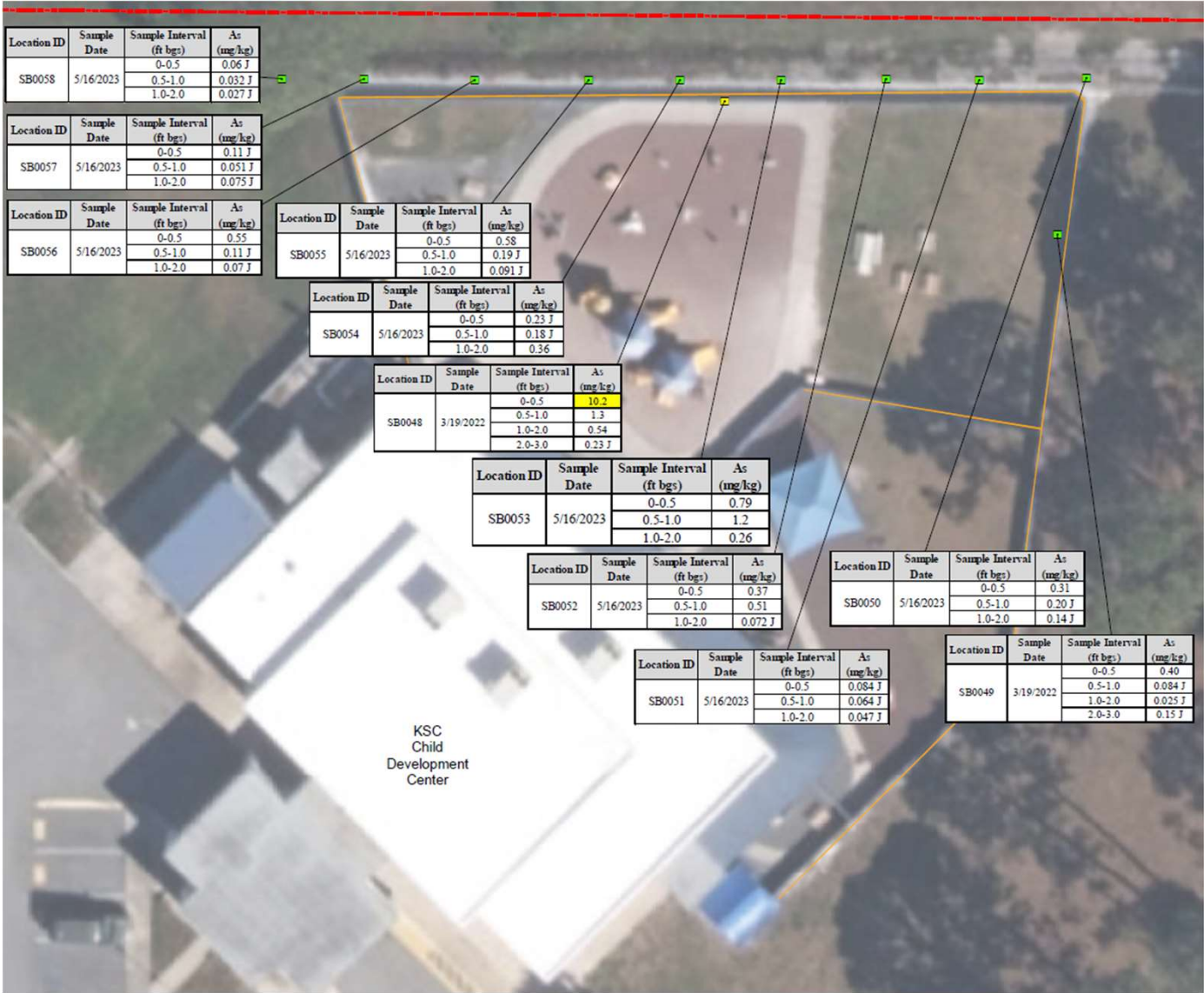
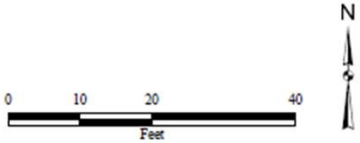
- Completed Soil Sample Location, Results less than the SCTLs are included in Table 4-3a
 - Completed Soil Sample Location Greater than Residential SCTLs
 - Location of Concern
 - PRL 149 Boundary
- LOC 2 - Area Beneath Former Wooden Fence

Notes:

SCTL criteria is from the Final Technical Report, Development of Cleanup Target Levels for Chapter 62-777, Florida Administrative Code, University of Florida, February 2005.
 All location IDs begin with KCDC-
 Yellow highlight indicates concentration is greater than the residential SCTL

As=Arsenic
 ft bgs=feet below ground surface
 ID=identification
 J=result is and estimated value
 KCDC=KSC Child Development Center
 KSC=Kennedy Space Center
 LOC=Location of Concern
 mg/kg=miligrams per kilogram
 PRL=potential release location
 SCTL=soil cleanup target level

Metal	SCTL (mg/kg)		
	Residential	Industrial	Leachability
As	2.1	12	--



This Advance Data Package was prepared for NASA to aid in evaluation of site conditions and remedial actions. This is not a decision document. New information may come to light that makes this Advance Data Package outdated.



2023 Arsenic Contamination Release Assessment

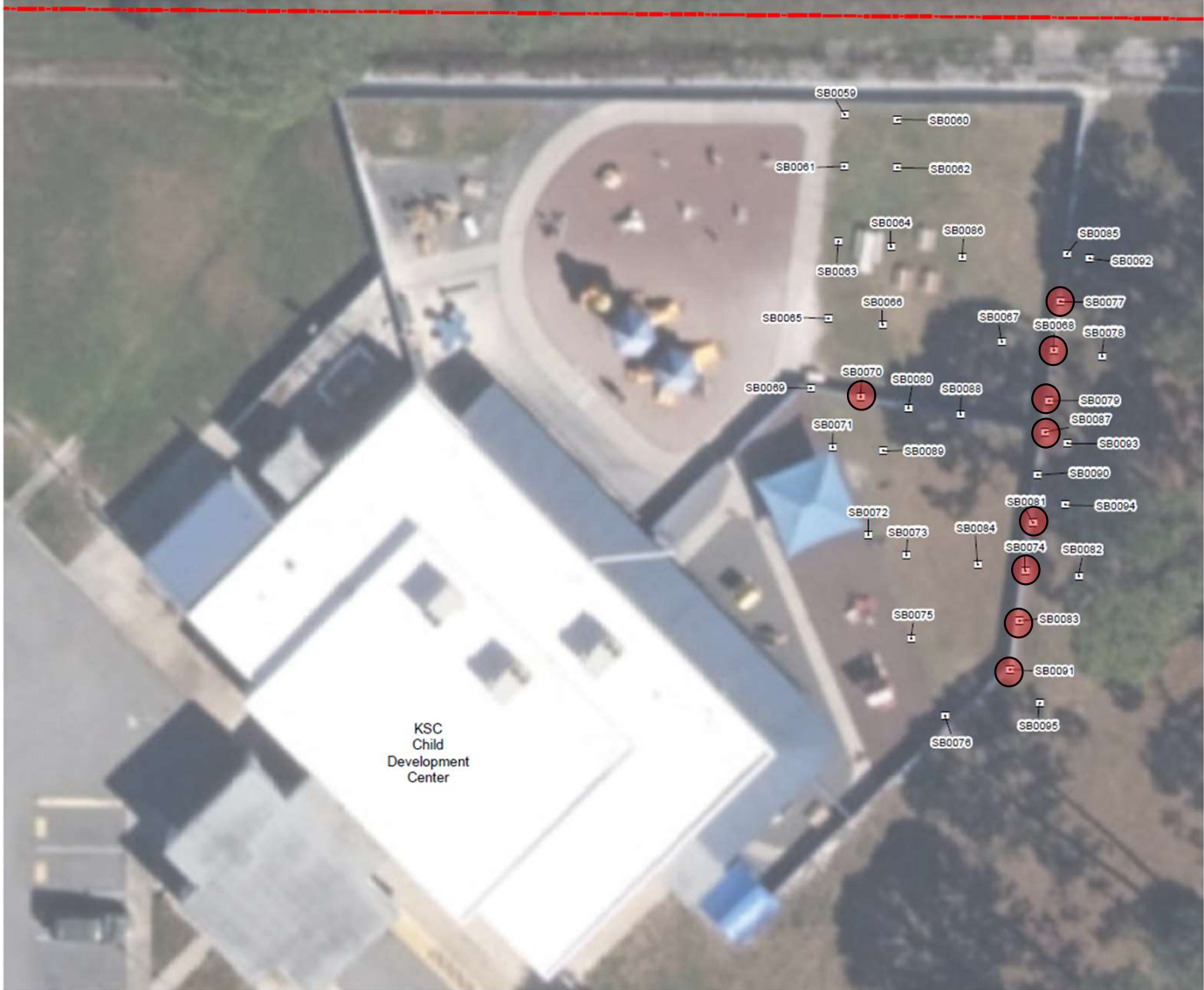
- ▶ The planned project by NASA to replace certain playground equipment and the rubberized play surface at KCDC commenced in June 2023. Construction activities were completed in July 2023.
- ▶ To assess conditions outside the rubberized play surface following construction activities, the NASA Remediation Program requested soil samples be collected to confirm As contaminated soil was not released during the periods when the concrete pad underneath the rubberized play surface had breaches.
- ▶ The assessment activities were completed by HGL between July 7, 2023, and July 27, 2023.
- ▶ Initial sample locations were chosen to reflect areas where potential releases may have occurred, as well as to provide coverage across the grassy play area.






2023 Arsenic Contamination Release Assessment

- ▶ Initially, soil samples were collected from 18 boring locations (SB0059 through SB0076) within the fenced grassy play area on July 7, 2023.
- ▶ Samples were collected from ground surface to 0.5 ft bgs.
- ▶ Detections of As exceeded the rSCTL of 2.1 mg/kg at SB0068 (2.75 mg/kg), SB0070 (4.63 mg/kg), and SB0074 (2.98 mg/kg).
- ▶ No other SCTL exceedances of As were detected.

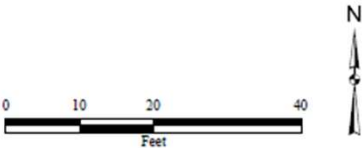
2023 Arsenic Contamination Release Assessment Soil Sample Locations



Legend

-  Completed 2023 Arsenic Contamination Release Assessment Soil Sample Location
-  PRL 149 Boundary
-  > rSCTL

Notes:
 All location IDs begin with KCDC-
 ID=Identification
 KCDC=KSC Child Development Center
 KSC=Kennedy Space Center
 PRL=potential release location



This Advance Data Package was prepared for NASA to aid in evaluation of site conditions and remedial actions. This is not a decision document. New information may come to light that makes this Advance Data Package outdated.

2023 Arsenic Contamination Release Assessment



Pictured right:
Northern grassy
play area. Locations
inside are SB0059
through SB0070.



Pictured left:
Northern grassy
play area. Locations
inside are SB0059
through SB0070.

Pictured right:
Southern grassy
play area. Locations
inside are SB0071
through SB0076.



Pictured left:
Southern grassy
play area. Locations
inside are SB0071
through SB0076.





2023 Arsenic Contamination Release Assessment

- ▶ To delineate the rSCTL exceedances of As detected at SB0068, SB0070, and SB0074, 53 soil samples were collected from 23 boring locations on July 20, 2023.
- ▶ Vertical step-down samples were collected from 0.5 to 1.0 ft bgs at SB0066 through SB0071, SB0073, and SB0074.
 - ▶ Additional vertical step-down samples were collected from 1.0 to 2.0 ft bgs at SB0066, SB0067, SB0070, and SB0071.
- ▶ Lateral step-out samples were collected from 0 to 0.5 ft bgs, 0.5 to 1.0 ft bgs, and every 1-ft interval until the water was encountered (approximately 2.0 ft bgs) at SB0077 through SB0091.
- ▶ Deeper samples were released to the laboratory for analysis depending on results of the shallower intervals. Thus, not all sample intervals for the lateral step-outs were analyzed.

2023 Arsenic Contamination Release Assessment



Pictured right: HGL staff placing soil into single 4-oz glass jars.



Pictured left: HGL staff using a stainless-steel hand auger to collect soil.



Pictured right: sampling equipment decon process: potable water rinse, Luminox® scrub and wash, and deionized water rinse.



Pictured left: HGL staff collecting coordinates from completed soil boring locations using a handheld GPS.



2023 Arsenic Contamination Release Assessment Results – Northern Grass Play Area



- ▶ Five soil borings (SB0068, SB0070, SB0077, SB0079 and SB0087) had rSCTL exceedances. Highest concentrations noted in SB0077(0 to 0.5) (18.4 mg/kg) and SB0079(0 to 0.5) (18 mg/kg), both exceed the industrial SCTL (iSCTL) of 12 mg/kg and were located under the north to south fence line.
- ▶ East to West Fenceline Results
 - ▶ SB0070 was the only boring under the east to west fence line with rSCTL exceedances.
 - ▶ SB0070 is delineated laterally by four samples: SB0066, SB0069, SB0071, and SB0080.
 - ▶ SB0070 vertical delineation was achieved in the 1.0 to 2.0 ft bgs sample interval.
- ▶ North to South Fenceline Results
 - ▶ SB0068, SB0077, SB0079 and SB0087 were delineated by six samples: SB0085, SB0092, SB0078, SB0093, SB0090 and SB0067.
 - ▶ SB0068, SB0077, and SB0087 were vertically delineated in the 0.5 to 1 ft bgs interval and SB0079 in the 1 to 2 ft bgs interval.

North Grass Play Area Soil Assessment Analytical Summary Results

Legend

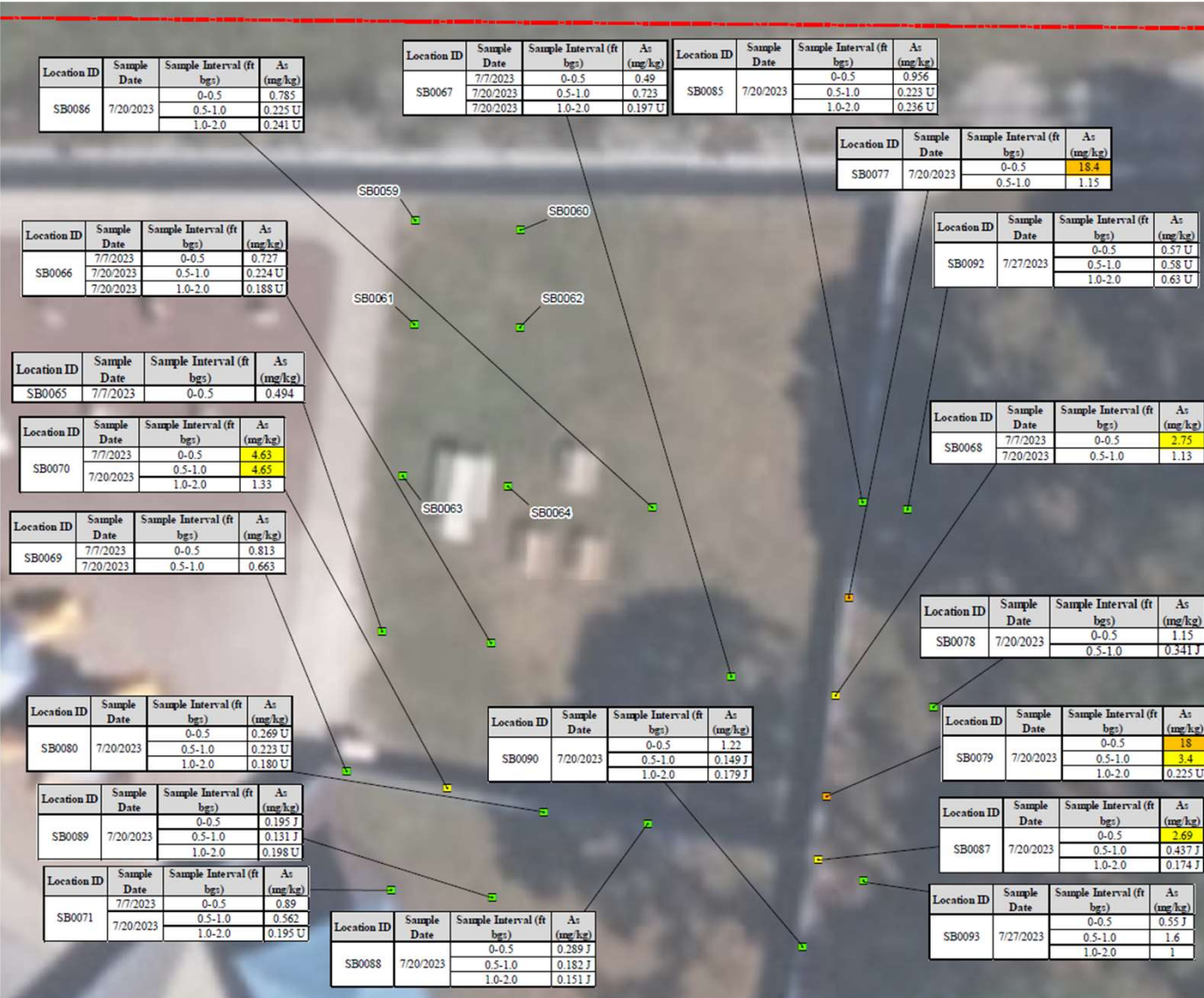
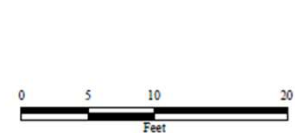
- Completed Soil Sample Location Results less than the SCTLs
- Completed Soil Sample Location Greater than Residential SCTLs
- Completed Soil Sample Location Greater than Industrial SCTLs
- PRL 149 Boundary

Notes:

SCTL criteria is from the Final Technical Report: Development of Cleanup Target Levels for Chapter 62-777, Florida Administrative Code, University of Florida, February 2005.
All location IDs begin with KCDC-
Data tags are shown for locations with analytical results above the screening criteria; and for locations below SCTLs that function as a boundary point for the extent of contamination.
Yellow highlight indicates concentration is greater than the residential SCTL
Orange highlight indicated concentration is greater than the industrial SCTL

As=Arsenic
ft bgs=feet below ground surface
ID=Identification
J=result is and estimated value
KCDC=KSC Child Development Center
KSC=Kennedy Space Center
LOC=Location of Concern
mg/kg=miligrams per kilogram
PRL=potential release location
SCTL=soil cleanup target level

Metal	SCTL (mg/kg)		
	Residential	Industrial	Leachability
As	21	12	--



2023 Arsenic Contamination Release Assessment Results – Southern Grass Play Area



▶ North to South Fenceline Results

- ▶ Four borings (SB0074, SB0081, SB0083, and SB0091) had As rSCTL exceedances beneath the north to south fence line within the Southern section of the Play Area.
- ▶ These borings were delineated laterally by six borings (SB0090, SB0094, SB0082, SB0095, SB0076 and SB0084).
- ▶ SB0074, SB0081, SB0091 were vertically delineated in the 0.5 to 1 ft bgs interval and SB0083 was delineated in the 1 to 2 ft bgs interval.

South Grass Play Area Soil Assessment Analytical Summary Results

Legend

- Completed Soil Sample Location Results less than the SCTLs
- Completed Soil Sample Location Greater than Residential SCTLs
- Completed Soil Sample Location Greater than Industrial SCTLs
- PRL 149 Boundary

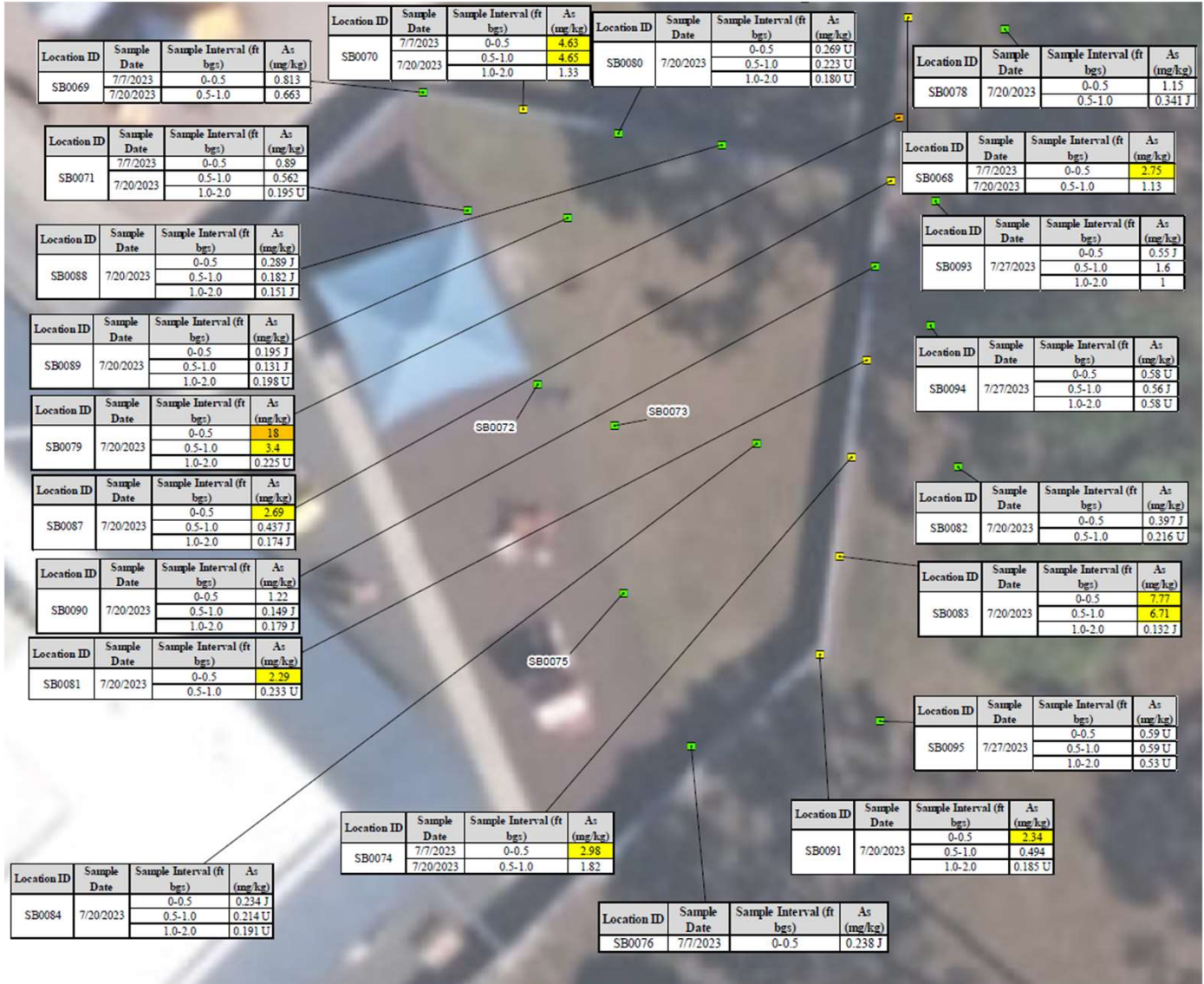
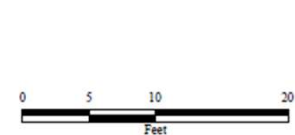
Notes:

SCTL criteria is from the Final Technical Report: Development of Cleanup Target Levels for Chapter 62-777, Florida Administrative Code, University of Florida, February 2005. All location IDs begin with KCDC- Data tags are shown for locations with analytical results above the screening criteria; and for locations below SCTLs that function as a boundary point for the extent of contamination.

Yellow highlight indicates concentration is greater than the residential SCTL
Orange highlight indicates concentration is greater than the industrial SCTL

As=Arsenic
ft bgs=feet below ground surface
ID=Identification
J=result is an estimated value
KCDC=KSC Child Development Center
KSC=Kennedy Space Center
LOC=Location of Concern
mg/kg=milligrams per kilogram
PRL=potential release location
SCTL=soil cleanup target level

Metal	SCTL (mg/kg)		
	Residential	Industrial	Leachability
As	21	12	--





Summary and Conclusions

- ▶ **LOC 2 - Areas beneath the Former Wooden Fence:**
 - ▶ The CS activities conducted on May 16, 2023, included the collection of 27 soil samples from 9 soil boring locations at LOC 2.
 - ▶ The lateral and vertical extent of the identified COC has been delineated to below the SCTLs.
- ▶ **2023 As Contamination Release Assessment:**
 - ▶ A total of 83 soil samples were collected from 37 boring locations within, and outside the fenced grassy play area between July 7, 2023, and July 27, 2023.
 - ▶ Residential SCTL exceedances of As were detected in soil samples collected within the fenced grassy play area, with soil impacts ranging from ground surface to 1.0 ft bgs.
 - ▶ Industrial SCTL exceedances of As were detected in soil samples collected within the fenced grassy play area, with soil impacts ranging from ground surface to 0.5 ft bgs.
 - ▶ The lateral and vertical extent of the identified COC has been delineated to below the SCTLs.



Summary and Conclusions cont.

- ▶ **2023 As Contamination Release Assessment (continued):**
 - ▶ **The laboratory analytical results were provided to the NASA Remediation Program.**
 - ▶ **NASA Environmental Assurance Branch requested NASA Environmental and Medical Contract (NEMCON) Spill Cleanup Team manage this as a spill cleanup.**
 - ▶ **Heavy rains occurred the week of July 17 causing washout which prompted NASA to handle material as a spill.**
 - ▶ **A soil excavation was completed by NEMCON sub-contractor Alpha-Omega Training and Compliance, Inc. the week of July 24, 2023.**
 - ▶ **The excavation removed all soil with Arsenic above the residential SCTL in the unpaved playground areas, restoring conditions consistent with the LUCIP.**
 - ▶ **The excavation footprint extended 1-ft beyond the outside of the fence. Thus, soils containing potential SCTL exceedances of As remain up to the boundary sample locations with results below SCTLs outside the playground.**



Summary and Conclusions cont.

- ▶ The excavation activities by NEMCON are summarized below and documented in the LUCIP Report.
- ▶ **Soils were excavated from five contiguous areas, totaling approximately 1,753 square feet.**
 - ▶ **Two areas were excavated to a depth of 0.5 feet below land surface (bls) and the other three areas were excavated to a depth of one-foot bls.**
 - ▶ **All excavated soil was placed in lined roll-off containers, transported under manifest, and was disposed as industrial waste at the JED Landfill in St. Cloud, Florida.**
 - ▶ **Two confirmation soil samples were collected from the excavations. Analytical results from the confirmation samples indicated that arsenic concentrations were below the residential SCTL of 2.1 mg/kg.**
 - ▶ **A total of 64.91 tons (approximately 53 cubic yards) of arsenic-contaminated soil exceeding the rSCTL of 2.1 mg/kg were removed from the Site.**



Path Forward/Recommendations

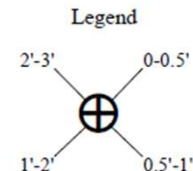
- ▶ A soil IM is recommended to address the:
 - ▶ rSCTL exceedance of As detected at LOC 2 (SB0048 and historical locations SB0007 and SB0041); and
 - ▶ the remaining SCTL exceedances of As outside the fenced grassy play area.
- ▶ The CS activities, including the contamination assessment investigation, and proposed soil IM will be presented in a CS Report and IM Work Plan (IMWP).



Proposed IM Footprint - LOC 2

- ▶ **Excavate soil from 0 to 0.5 ft bgs**
- ▶ **As footprint (81.86 sq ft; 1.5 cubic yards)**
- ▶ **Bounded by results less than the rSCTL**
- ▶ **The concrete sidewalk and rubberized play surface provides engineering controls preventing human exposure to potential COCs within the Play area. In the future if the engineering controls are removed, additional assessment is warranted prior to site closure.**
- ▶ **Collect a confirmatory sidewall sample next to the fence south of SB0048 during the IM to ensure As contamination limits have been defined.**

LOC 2 Soil Results Summary and Proposed Soil Excavation Footprint



- Soil Sample Not Collected or Analyte Not Sampled For
- Soil Sample Below Residential SCTL
- Soil Sample Exceeds Residential SCTL
- Proposed Remedial Action Area (0-0.5' ft bgs)
- LOC 2 - Area Beneath Former Wooden Fence
- LOC 4 - Sealed Playground Areas
- PRL 149 Boundary

Notes:
 A confirmatory soil sample will be collected near SB0048 and the blue plastic fence following the soil remedial action.
 *The sidewalk and rubberized play surface provides engineering controls preventing potential human exposure to potential contaminant of concern. In the future if the engineering controls are removed, additional assessment is warranted prior to site closure.
 SCTL criteria is from the Final Technical Report: Development of Cleanup Target Levels for Chapter 62-777, Florida Administrative Code, University of Florida, February 2005.
 All location IDs begin with KCDC.

ft bgs=feet below ground surface
 ID=identification
 KCDC=KSC Child Development Center
 KSC=Kennedy Space Center
 LOC=Location of Concern
 PRL=potential release location
 SCTL=soil cleanup target level

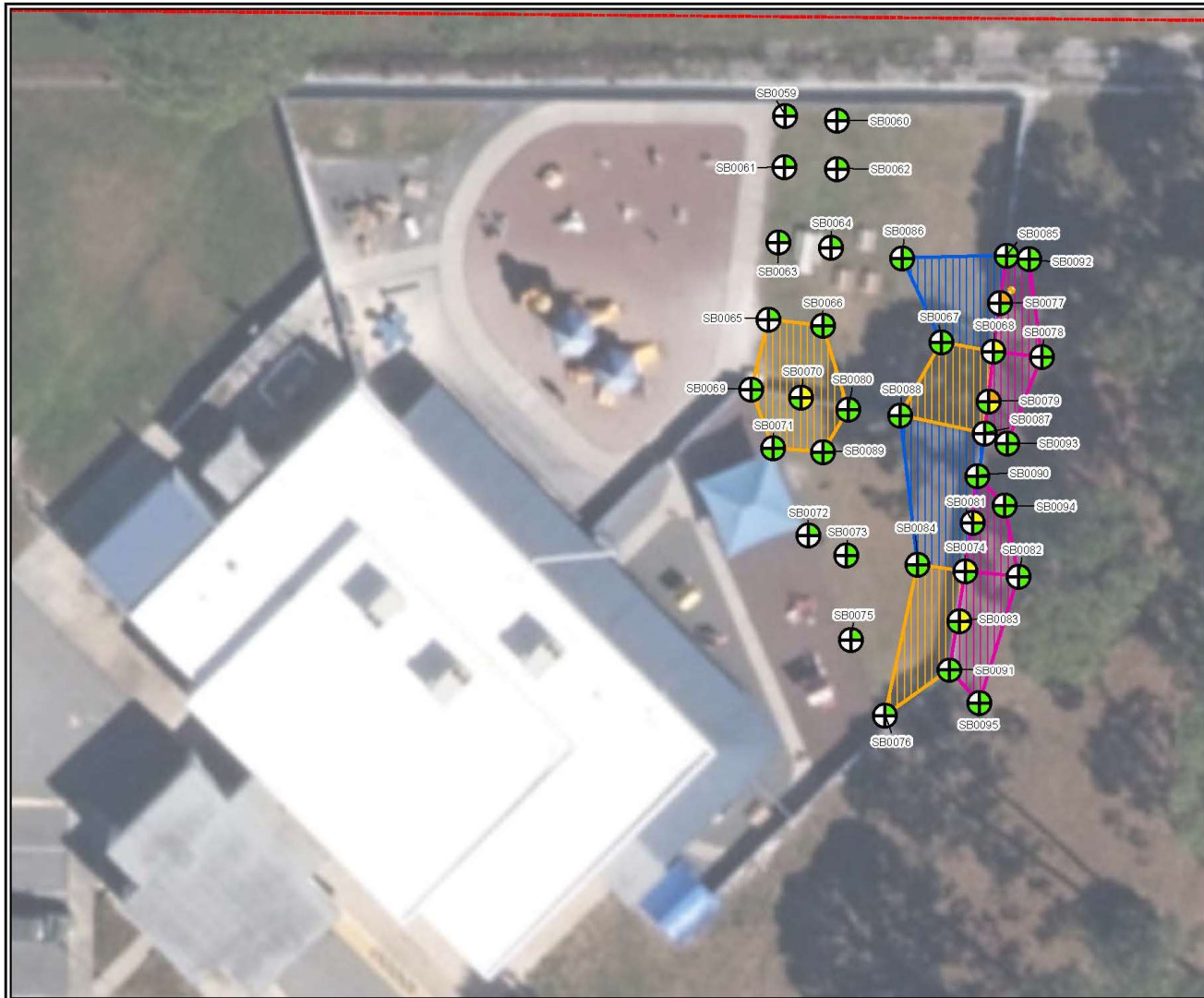
This Advance Data Package was prepared for NASA to aid in evaluation of site conditions and remedial actions. This is not a decision document. New information may come to light that makes this Advance Data Package outdated.



Proposed IM Footprint - Outside North to South Fence Line of Grass Play Areas

- ▶ Excavate soil from 0 to 0.5 ft bgs in two areas and 0 to 1.0 ft bgs in two areas
- ▶ As combined footprints (903.76 sq ft; 33 cubic yards)
- ▶ Excavation limits bounded by results less than the SCTL.
- ▶ Post excavation, install a monitoring well at SB0077 and sample the groundwater for As only to confirm contamination has not leached from the soil into the water table.

2023 Arsenic Contamination Release Assessment Completed Soil Excavation Footprints



Legend

- Soil Sample Not Collected or Analyte Not Sampled For
- Soil Sample Below Residential SCTL
- Soil Sample Exceeds Residential SCTL
- Soil Sample Exceeds Industrial SCTL
- Proposed Monitoring Well
- Excavation Footprint for Arsenic Completed by NEMCON (0-1.0' ft bgs)
- Excavation Footprint for Arsenic Completed by NEMCON (0-0.5' ft bgs)
- Proposed Remedial Action Areas
- PRL 149 Boundary

Notes:
 SCTL criteria is from the Final Technical Report: Development of Cleanup Target Levels for Chapter 62-777, Florida Administrative Code, University of Florida, February 2005.
 All location IDs begin with KCDC.

ft bgs=feet below ground surface
 ID=identification
 KCDC=KSC Child Development Center
 KSC=Kennedy Space Center
 LOC=Location of Concern
 NEMCON=National Aeronautics and Space Administration Environmental and Medical Services Contact
 PRL=potential release location
 SCTL=soil cleanup target level





Test Consensus

1. LUCIP is protective of human health by maintaining impervious surfaces to prevent contact with subsurface soils within the fenceline area.
2. Land Use Controls and quarterly inspections will continue.
3. CS activities demonstrated that site soils exceeding SCTLs have been fully delineated and have been or will be removed via an IM or are bounded by engineering controls.
4. Proposed soil IM excavation boundaries to remove soils that exceed the:
 - a. rSCTL:
 - i. SB0048: The boring is outside the fence line, bounded by sample locations below the rSCTL (SB0053 and SB0054) and the concrete sidewalk to the south (this includes historical location SB0007 which exceeded the rSCTL);
 - ii. SB0041: The boring is outside the fence line, bounded by sample locations below the rSCTL (SB0051 and SB0050);
 - iii. SB0074: bound by sample locations below the rSCTL (SB0081, SB0082, and SB0083) and the fence line; and
 - b. iSCTL:
 - i. SB0077 and SB0079: bound by sample locations below the rSCTL (SB0078, SB0082, SB0085, SB0090, SB0092, SB0093, and SB0095) and the fence line.



Thank you.





Attachments





List of Attachments

- ▶ **Table 1 - Location of Concern (LOC) 2 Soil Analytical Results Summary**
- ▶ **Table 2 - LOC 4 Soil Analytical Results Summary**
- ▶ **Table 3 - Arsenic (As) Analytical Results Summary**

Table 1
LOC 2 Soil Analytical Results Summary
2023 Confirmatory Sampling Report
KSC Child Development Center, Kennedy Space Center, Florida

Metal			As	Cr	Cu	Cr(VI)
Residential SCTL (mg/kg)			2.1	210	150	210
Industrial SCTL (mg/kg)			12	470	89,000	470
Leachability SCTL (mg/kg)			--	38	--	38
Location ID (KCDC-)	Sample Interval (ft bgs)	Sample Date	Result (mg/kg)			
SB0048	0-0.5	3/19/2022	10.2	4.4	2.8	0.41 J
	0.5-1.0		1.3	0.67	0.63	0.45 U
	1.0-2.0		0.54	0.55	0.64	0.48 U
	2.0-3.0		0.23 J	0.47	0.37	2.1
SB0049	0-0.5	3/19/2022	0.40	4.2	3.6	0.62
	0.5-1.0		0.084 J	1.6	1.2	0.42 U
	1.0-2.0		0.025 J	0.30	0.14 J-	0.46 U
	2.0-3.0		0.15 J	2.6	0.11 UJ	3.5
SB0050	0-0.5	5/16/2023	0.31	--	--	--
	0.5-1.0		0.20 J	--	--	--
	1.0-2.0		0.14 J	--	--	--
SB0051	0-0.5	5/16/2023	0.084 J	--	--	--
	0.5-1.0		0.064 J	--	--	--
	1.0-2.0		0.047 J	--	--	--
SB0052	0-0.5	5/16/2023	0.37	--	--	--
	0.5-1.0		0.51	--	--	--
	1.0-2.0		0.072 J	--	--	--
SB0053	0-0.5	5/16/2023	0.79	--	--	--
	0.5-1.0		1.2	--	--	--
	1.0-2.0		0.26	--	--	--
SB0054	0-0.5	5/16/2023	0.23 J	--	--	--
	0.5-1.0		0.18 J	--	--	--
	1.0-2.0		0.36	--	--	--
SB0055	0-0.5	5/16/2023	0.58	--	--	--
	0.5-1.0		0.19 J	--	--	--
	1.0-2.0		0.091 J	--	--	--
SB0056	0-0.5	5/16/2023	0.55	--	--	--
	0.5-1.0		0.11 J	--	--	--
	1.0-2.0		0.07 J	--	--	--
SB0057	0-0.5	5/16/2023	0.11 J	--	--	--
	0.5-1.0		0.051 J	--	--	--
	1.0-2.0		0.075 J	--	--	--
SB0058	0-0.5	5/16/2023	0.06 J	--	--	--
	0.5-1.0		0.032 J	--	--	--
	1.0-2.0		0.027 J	--	--	--

Footnotes

SCTL criteria is from the Final Technical Report: Development of Cleanup Target Levels for Chapter 62-777, Florida Administrative Code, University of Florida, February 2005.

-- = The analyte was not analyzed or no value is available.

Definitions and Acronyms

As = arsenic	J- = estimated value, low bias.
Cr = chromium	KCDC = KSC Child Development Center
Cr(VI) = hexavalent chromim	KSC = Kennedy Space Center
Cu = copper	LOC = Location of Concern
ft bgs = feet below ground surface	mg/kg = milligrams per kilogram
ID = identification	SCTL = soil cleanup target level
J = result is an estimated value.	U = analyte not detected, result is the reporting limit.

Table 2
LOC 4 Soil Analytical Results Summary
2023 Confirmatory Sampling Report
KSC Child Development Center, Kennedy Space Center, Florida

Metal			As	Cr	Cu	Cr(VI)
Residential SCTL (mg/kg)			2.1	210	150	210
Industrial SCTL (mg/kg)			12	470	89,000	470
Leachability SCTL (mg/kg)			--	38	--	38
Location ID (KCDC-)	Sample Interval (ft bgs)	Sample Date	Result (mg/kg)			
SB0043	0.5-1.0	3/19/2022	0.22 J	2.3 J	0.30 J	0.47 J
	1.0-2.0		0.049 J	0.54	0.076 UJ	0.90
	2.0-3.0		0.20 J	0.80	0.30 J	1.2
	3.0-4.0		0.054 J	0.30 J+	0.23 U	0.54 U
SB0044	0.5-1.0	3/19/2022	0.18 J	0.64	0.73	0.42 J
	1.0-2.0		1.7	3.4	0.23 J	0.55 U
	2.0-3.0		1.3	3.2	0.30	0.48 J
	3.0-4.0		0.65	2.2	0.16 UJ	0.52 U
SB0045	0.5-1.0	3/19/2022	0.55	0.72	0.26	0.59
	1.0-2.0		2.3	3.9	0.29	0.48 U
	2.0-3.0		0.72	2	0.20 J-	0.66
	3.0-4.0		0.15 J	0.53	0.13 UJ	2.6
SB0046	0.5-1.0	3/19/2022	1.7	1.7	1.8	0.63
	1.0-2.0		0.22 J	0.46	6.8	0.51 U
	2.0-3.0		0.21 J	0.46	0.90	1.9
SB0047	0.5-1.0	3/19/2022	0.43	5.7	0.71	0.44 J
	1.0-2.0		0.18 J	1.1	0.47	0.45 U
	2.0-3.0		0.12 J	0.21 J+	0.32	0.46 U

Footnotes

SCTL criteria is from the Final Technical Report: Development of Cleanup Target Levels for Chapter 62-777, Florida Administrative Code, University of Florida, February 2005.

-- = The analyte was not analyzed or no value is available.

Defintions and Acronyms

As = arsenic

Cr = chromium

Cr(VI) = hexavalent chromim

Cu = copper

ft bgs = feet below ground surface

ID = identification

J = result is an estimated value.

J- = estimated value, low bias.

J+ = estimated value, high bias.

KCDC = KSC Child Development Center

KSC = Kennedy Space Center

LOC = Location of Concern

mg/kg = milligrams per kilogram

SCTL = soil cleanup target level

U = analyte not detected, result is the reporting limit.

Table 3
Arsenic Soil Analytical Results Summary
2023 Confirmatory Sampling Report
KSC Child Development Center, Kennedy Space Center, Florida

Metal			As
Residential SCTL (mg/kg)			2.1
Industrial SCTL (mg/kg)			12
Leachability SCTL (mg/kg)			--
Location ID (KCDC-)	Sample Interval (ft bgs)	Sample Date	Result (mg/kg)
SB0059	0-0.5	7/7/2023	0.811
SB0060	0-0.5	7/7/2023	0.434 J
SB0061	0-0.5	7/7/2023	0.627
SB0062	0-0.5	7/7/2023	0.591
SB0063	0-0.5	7/7/2023	0.729
SB0064	0-0.5	7/7/2023	0.702
SB0065	0-0.5	7/7/2023	0.494
SB0066	0-0.5	7/7/2023	0.727
	0.5-1.0	7/20/2023	0.224 U
	1.0-2.0	7/20/2023	0.188 U
SB0067	0-0.5	7/7/2023	0.49
	0.5-1.0	7/20/2023	0.723
	1.0-2.0	7/20/2023	0.197 U
SB0068	0-0.5	7/7/2023	2.75
	0.5-1.0	7/20/2023	1.13
SB0069	0-0.5	7/7/2023	0.813
	0.5-1.0	7/20/2023	0.663
SB0070	0-0.5	7/7/2023	4.63
	0.5-1.0	7/20/2023	4.65
	1.0-2.0		1.33
SB0071	0-0.5	7/7/2023	0.89
	0.5-1.0	7/20/2023	0.562
	1.0-2.0		0.195 U
SB0072	0-0.5	7/7/2023	0.876
SB0073	0-0.5	7/7/2023	0.824
	0.5-1.0	7/20/2023	0.305 J

Table 3
Arsenic Soil Analytical Results Summary
2023 Confirmatory Sampling Report
KSC Child Development Center, Kennedy Space Center, Florida

Metal			As
Residential SCTL (mg/kg)			2.1
Industrial SCTL (mg/kg)			12
Leachability SCTL (mg/kg)			--
Location ID (KCDC-)	Sample Interval (ft bgs)	Sample Date	Result (mg/kg)
SB0074	0-0.5	7/7/2023	2.98
	0.5-1.0	7/20/2023	1.82
SB0075	0-0.5	7/7/2023	1.39
SB0076	0-0.5	7/7/2023	0.238 J
SB0077	0-0.5	7/20/2023	18.4
	0.5-1.0		1.15
SB0078	0-0.5	7/20/2023	1.150
	0.5-1.0		0.341 J
SB0079	0-0.5	7/20/2023	18
	0.5-1.0		3.4
	1.0-2.0		0.225 U
SB0080	0-0.5	7/20/2023	0.269 U
	0.5-1.0		0.223 U
	1.0-2.0		0.180 U
SB0081	0-0.5	7/20/2023	2.29
	0.5-1.0		0.233 U
SB0082	0-0.5	7/20/2023	0.397 J
	0.5-1.0		0.216 U
SB0083	0-0.5	7/20/2023	7.77
	0.5-1.0		6.71
	1.0-2.0		0.132 J
SB0084	0-0.5	7/20/2023	0.234 J
	0.5-1.0		0.214 U
	1.0-2.0		0.191 U
SB0085	0-0.5	7/20/2023	0.956
	0.5-1.0		0.223 U
	1.0-2.0		0.236 U
SB0086	0-0.5	7/20/2023	0.785
	0.5-1.0		0.225 U
	1.0-2.0		0.241 U

Table 3
Arsenic Soil Analytical Results Summary
2023 Confirmatory Sampling Report
KSC Child Development Center, Kennedy Space Center, Florida

Metal			As
Residential SCTL (mg/kg)			2.1
Industrial SCTL (mg/kg)			12
Leachability SCTL (mg/kg)			--
Location ID (KCDC-)	Sample Interval (ft bgs)	Sample Date	Result (mg/kg)
SB0087	0-0.5	7/20/2023	2.69
	0.5-1.0		0.437 J
	1.0-2.0		0.174 J
SB0088	0-0.5	7/20/2023	0.289 J
	0.5-1.0		0.182 J
	1.0-2.0		0.151 J
SB0089	0-0.5	7/20/2023	0.195 J
	0.5-1.0		0.131 J
	1.0-2.0		0.198 U
SB0090	0-0.5	7/20/2023	1.22
	0.5-1.0		0.149 J
	1.0-2.0		0.179 J
SB0091	0-0.5	7/20/2023	2.34
	0.5-1.0		0.494
	1.0-2.0		0.185 U
SB0092	0-0.5	7/27/2023	0.57 U
	0.5-1.0		0.58 U
	1.0-2.0		0.63 U
SB0093	0-0.5	7/27/2023	0.55 J
	0.5-1.0		1.6
	1.0-2.0		1
SB0094	0-0.5	7/27/2023	0.58 U
	0.5-1.0		0.56 J
	1.0-2.0		0.58 U
SB0095	0-0.5	7/27/2023	0.59 U
	0.5-1.0		0.59 U
	1.0-2.0		0.53 U

Footnotes

SCTL criteria is from the Final Technical Report: Development of Cleanup Target Levels for Chapter 62-777, Florida

-- = The analyte was not analyzed or no value is available.

Defintions and Acronyms

As = arsenic

ft bgs = feet below ground surface

ID = identification

J = result is an estimated value.

KCDC = KSC Child Development Center

KSC = Kennedy Space Center

mg/kg = milligrams per kilogram

SCTL = soil cleanup target level

U = analyte not detected, result is the reporting limit.

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APPENDIX B
KSC REMEDIATION
TEAM MEETING
MINUTES AND
DECISIONS

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KSC Remediation Team
Meeting Minutes Excerpts Pertaining to PRL #149 KCDC Area

- 0606-M13 Team Eco Site Visits
Discussion: Team consensus reached that there is no ecological habitat at the HQ area (PRL 146). Team consensus reached that there is no ecological habitat at the Base Operations Building (PRL 148). Team consensus reached that the wooded area to the east of the playgrounds will be the only areas to be considered ecological habitat at the KSC Child Development Center (CDC) (PRL 149). If the only issue at the KSC CDC is associated with transformers, the transformers will be compiled with other transformers on center that are not part of other investigations and evaluated together.
- 0606-D22 **Results-** Team consensus reached that the wooded area to the east of the playgrounds will be the only areas to be considered ecological habitat at the KSC Child Development Center (CDC) (PRL 149). If the only issue at the KSC CDC is associated with transformers, the transformers will be compiled with other transformers on center that are not part of other investigations and evaluated together.
- 0609-M05 KSC Child Development Center (PRL 149)
Sue Tzareff/CHS **Discussion:** Team discussed whether or not the playground area that was previously investigated a RCRA issue versus a compliance issue? Previous investigation of the playground area had hits of Arsenic which was the only parameter that was analyzed for. The playground areas had six inches of soil removed along with the overlying mulch. After the soil removal an engineering control (Pour in Place Surfacing) on those areas was installed. The soil exceedances were not delineated vertically or horizontally. Following the soil removal and the installation of the engineering controls the playground areas were expanded to areas that were not looked at previously. Concern was expressed in regards to run off issues. Team consensus reached that the Arsenic issue in the playground is not a RCRA issue. Due to the potential exposure issue of children the remediation team should look into this site. Team consensus reached to sample for Arsenic, Chromium, and Copper in the grassed playground area adjacent the concrete path and under the old and current fence locations. Analysis results will be given to the Occupational Health Office, NASA Compliance Office, NASA Environmental Division Chief, and the NASA Exchange Council for further investigation. Team agreed not sample groundwater or under the pour in place surfacing. Team consensus reached on proposed sampling for transformers.
- 0609- D05 to D07 KSC Child Development Center (PRL 149)
Decisions: Team consensus reached that the Arsenic issue in the playground is not a RCRA issue. Team consensus reached to sample for Arsenic, Chromium, and Copper in the grassed playground area adjacent the concrete path and under the old and current fence locations. Team consensus reached on proposed sampling for transformers.

Meeting Minutes Summary Report

Meeting Start Date:	Meeting ID:	Minute ID:	Presenter:	PRL / SWMU:
06/26/2007	4	12	Santos-Ebaugh, Rosaly	KSC CHILD DEVELOPMENT CENTER (PRL 149)
Topic:				
Child Care Center (PRL 149)				
Discussion:				
Arsenic present in soil around fence area above SCTL-R from 0 to 0.5 ft BLS. Arsenic is likely coming from the fence. If data was compared to background levels, only one sample would exceed the range of background. The presence of arsenic is not a RCRA issue, but an exposure risk exists. Team consensus reached to dig up soil to 1 ft BLS and that the Child Care Center should replace the fence.				
Goal:				
Arsenic present in soil around fence area above SCTL-R from 0 to 0.5 ft BLS. Arsenic is likely coming from the fence. If data was compared to background levels, only one sample would exceed the range of background. The presence of arsenic is not a RCRA issue, but an exposure risk exists. Team consensus reached to dig up soil to 1 ft BLS and that the Child Care Center should replace the fence.				
Decision:21	Child Care Center (PRL 149)- Team consensus reached to dig up soil to 1 ft BLS and at the Child Care Center should replace the fence.			

Meeting Start Date:	Meeting ID:	Minute ID:	Presenter:	PRL / SWMU:
08/07/2007	102	11	Castellanos, Myra	KSC CHILD DEVELOPMENT CENTER (PRL 149)
Topic:				
KSC Child Development Center (PRL 149)				
Discussion:				
Team consensus reached on additional delineation north and east of SB0009 for excavation delineation. Team spent significant time discussing the previous work that sparked this investigation. The pour-in-place surface was installed following historic sampling results that exceeded industrial arsenic concentrations in mulch and soil. Soil delineation was not conducted at that time and the contamination found was removed and the pour-in-place surface was installed. No detailed information about the excavation has been found. Post excavation confirmation soil sampling was not conducted. Team members are concerned that there is no clear evidence that the soils beneath these "caps" are clean and therefore a LUCIP would need to be placed in the areas where the pour-in-place rubber surface is present or soil sampling below it would need to be conducted. As part of the IM, the wooden fences around the playground areas will be removed and replaced with recycled plastic fencing				
Goal:				
Present CS results, present IMWP, and obtain team consensus on path forward.				
Decision:30	0708-D30 KSC Child Development Center (PRL 149) - Team consensus reached on performing additional delineation of arsenic in soil north and east of SB0009 for excavation delineation.			

Meeting Minutes Summary Report

Meeting Start Date:	Meeting ID:	Minute ID:	Presenter:	PRL / SWMU:
05/08/2008	128	5	Guyer, Emily	KSC CHILD DEVELOPMENT CENTER (PRL 149)
Topic:				
KSC CDC IM Report (PRL 149)				
Discussion:				
<p>Interim Measures was accomplished via the excavation of soils with concentrations greater than residential SCTLs and disposal of such soils at the KSC landfill. Pressure treated fence was removed and replaced with recycled plastic fence. Lessons learned: The recycled plastic fencing is very expensive (3 times the price of PVC fencing and 5 times the price of wooden fencing), limited availability (special order), difficult to work with, fence subcontractors not familiar with product, less rigid than equivalent wooden fence, and the specifications provided by NASA facilities for standard wooden fencing not appropriate for recycled fencing. Team consensus reached on SB with the following changes; page 3 under 2001 summary add residential to “detected above the FDEP residential soil cleanup”. At the end of the 2006 summary add information regarding why the fourth area was not sampled (i.e. beneath the pour-in-place surface). Page 4, column 2, under “WHY DOES THE KSC REMEDIATION TEAM RECOMMEND THIS REMEDY?” – replace does not create potential with prevents potential. Team consensus reached on the LUCIP with the following changes: global change walkways or sidewalks choose one throughout. Add “and concrete sidewalks around play area” to the control line on page1. Page 1 first paragraph replace no current unacceptable with know unacceptable. Page 2 under site contamination and control first sentence add residential. The new LUCIP language only applies to sites with industrial LUCIPs. Soils at this site were excavated to residential. The SB and LUCIPs were created to ensure that the pour-in-place surfaces and concrete sidewalks on the east side to the buildings remain in their current configuration.</p>				
Goal:				
present IM activities, SB, and LUCIP				
Decision:7	0805-D07.KSC CDC IM Report (PRL 149) - Team consensus reached on Statement of Basis with changes listed in meeting minutes.			
Decision:8	0805-D08.KSC CDC IM Report (PRL 149) - Team consensus reached on Land Use Control Implementation Plan (LUCIP) with changes listed in meeting minutes.			

Minute Id	Presenter	PRL SWMU
M10	Lynch, Robert	KSC CHILD DEVELOPMENT CENTER (PRL 149)
Topic		
Child Development Center Confirmation Sampling Update		
Discussion		
<p>In 2022, a project by NASA to replace certain playground equipment and the rubberized play surface is planned. A Land Use Control Implementation Plan (LUCIP) is in effect at KCDC due to arsenic above the residential soil cleanup target level (rSCTL) beneath the playground's artificial surface. Soil sampling was initiated to investigate whether other metals associated with treated wood (copper and chromium) were present at levels of potential concern; and investigate the remaining arsenic levels.</p> <p>On March 19th, 2022, soil sampling was conducted at Location of Concern (LOC) 4 (Sealed Playground Area) and LOC 2 (Wooden Fence Area). At LOC 4, a core drill was utilized to drill through the impervious playground surface and underlying concrete pad at five locations. Soil samples were collected from directly beneath the concrete pad to 1 ft below ground surface (bgs) (0.5-1.0 ft. bgs), and every 1-ft. interval until the water table was encountered (approx. 3- 4 ft bgs across the site). At LOC 2, two soil boring locations were advanced from ground surface using a hand auger. Soil samples were collected from ground surface to 0.5 ft. bgs, 0.5-1.0 ft. bgs, and every 1-ft. interval until the water table was encountered. All soil samples were analyzed for arsenic, total chromium, hexavalent chromium, and copper. Soil sample results for total chromium, hexavalent chromium, and copper were less than the residential and/or leachability SCTLs.</p> <p>Detections of arsenic exceeding the rSCTL of 2.1 mg/kg were observed at SB0045 (LOC 4) and SB0048 (LOC 2). Results are as follows: SB0045: 2.3 mg/kg at 1.0-2.0 ft bgs; SB0048: 10.2 mg/kg at 0-0.5 ft bgs. Both sample locations were delineated vertically to concentrations less than the rSCTL. All arsenic results from the other 5 boring locations were less than the rSCTL.</p> <p>The two locations with results above the rSCTL are not accessible to playground users because of the play surface and concrete (SB0045) or because of location between two fences (SB0048). Thus, the LUCIP remains valid as a means of protection for human health.</p> <p>Therefore, Land Use Controls and quarterly inspections will continue and the Remediation Program will continue to have repairs made to the play surface as needed.</p> <p>Further soil sampling and a possible removal action will be planned for the time when the KSC Child Development Center moves to a new location, which is anticipated to be within the next 10 years.</p> <p>The NASA RPM told the Team that the Remediation Program hoped they could take advantage of the project replacement of the poured- in-place surface. However, the concrete that underlies the rubberized surface will remain in place and is not being removed to expose the contaminated soils. NASA will look at this again when the CDC moves and there is an opportunity to fully excavate.</p> <p>At sample SB0048, FDEP noted that this is bare ground between two fences with arsenic almost at the industrial level and asked about a delineation. NASA does not believe this is fully delineated to the north. The KSC range of background was used at the time this was initially investigated. NASA has had further discussion with FDEP about regional levels not always being acceptable.</p> <p>FDEP responded that site-specific values are encouraged as we moved forward here. A little more delineation is warranted in the northern area. What is the facility to the north? NASA replied it was a warehouse.</p> <p>NASA showed the existing LUCIP boundary. NASA is on board with further delineation and extending the LUC boundary to match the new delineated area if necessary.</p>		
Goal		
The goal is to present the results of the 2022 Confirmatory Sampling event at the KSC Child Development Center (KCDC).		

Minute Id	Presenter	PRL SWMU
M11	Chrest, Anne	KSC REMEDIATION TEAM MEETINGS
Topic		
Miscellaneous Discussion		
Discussion		
<p>NASA provided an update with regards to the PFAS investigations. The Phase II and III Center-wide Report will be submitted to FDEP shortly. The report was substantially complete when the EPA issued new regional screening levels (RSLs) in May 2022. The recommendations the report developed based on Florida's provisional cleanup target levels will not be changed, but the transmittal letter will include a summary of sites that may require additional evaluation based on the RSLs. Initial Site Assessment work at the selected individual sites has generated a lot of data. , There are groundwater samples near the KSC property line that may indicate potential off-site migration.</p> <p>FDEP responded that it may serve you better to do something sooner than later when it comes to the location near the property boundary. NASA replied that further investigation is underway. FDEP plans on inviting the Program Administrator to at least phone in for the next PFAS presentation and see the PFAS sites. NASA is ahead of the Department of Defense and other government agencies in your investigation efforts.</p> <p>NASA noted that the PFAS ADPs are being presented in the near future. To get away from very large reports they will try to present findings as they are developed.</p> <p>FDEP responded that this sounds good for information purposes for them. They cannot make regulatory demands upon anyone at this time. NASA stated they want FDEPs input and would like to give FDEP the opportunity for this round of sites under investigation. We are pulling forward three new sites into the SWMU Assessment stage to include the South Repeater Building, the Sharkey Road area, and Contractor Support Building #7. NASA picked sites that would provide better understanding of groundwater and surface water regional impacts.</p> <p>FDEP observed that originally NASA contracted to investigate sites that had results above the Florida provisional CTLs. What is the status now? NASA responded that the Site Assessments are being funded incrementally. Comparing to the provisional groundwater cleanup target levels, they had 40 sites with groundwater concerns and now the RSLs suggest 47 sites with potential groundwater concerns. There was one site with soil above the provisional soil cleanup target level, but there are 8 sites with potential soil concerns with the new RSLs.</p> <p>For the contractors' information, NASA noted that NASA's internal review of documents for public release (STRIVES) is finding very small things. For example, in a legend, they found a copyright symbol, which requires a release for use. Some contractors have a standard email caveat about being read by someone who is not being the intended recipient. NASA asks that contractors please be aware of these export review issues.</p> <p>2022 Meeting Dates September 13 virtual meeting for shortened agenda pushing most to October 4th date. October 5th & 6th (hybrid meeting) November 30th-December 1st, 2022</p> <p>Agenda Topics for September and October 2022 Meetings</p> <p>AECOM</p> <ol style="list-style-type: none"> 1. ORSY site wide PCB results and IMWP (45 min) 2. Updates on PFAS to include (Former Fire Station 2, SLF, South Repeater Building, VAB North) (90 minutes) 3. VAB LTM (LC39OGA DPT groundwater sampling and proposed groundwater monitoring well locations) <p>Tetra Tech</p> <ol style="list-style-type: none"> 1. Fire Station 1, Fire Station 3, STP #1 (90 min) 2. CCB RAE (60 min) 3. LC 34 AS Pilot Study (90 min) Jonnet 4. POL Annual OM&M (60 min) 5. AOSB Year 1 OM&M (60 min) 6. CHP Year 1 PMR (60 min) <p>HGL</p> <ol style="list-style-type: none"> 1. C5 Substation PARM (30 min) 2. PFAS Sharkey Rd <p>FDEP 15-20-minute FDEP update by Program Manager</p> <p>Anne Chrest is the team leader next meeting so email topics to this individual after the meeting is over.</p>		
Goal		

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**KSC Child Development Center (KCDC) (PRL 149)
Confirmatory Sampling (CS) Addendum and Interim
Measure Work Plan (IMWP)**

Objective: The objective of the ADP is to summarize the site description, history, present the 2022-2023 Confirmatory Sampling results and 2023 Arsenic Contamination Release Assessment, and obtain team consensus on a path forward.

Discussion:

CS activities were completed on May 16, 2023, to delineate the rSCTL exceedance of As detected from 0 to 0.5 ft bgs at SB0048; and close data gaps north of the fence where excavation areas 1 and 2 were conducted. Twenty-seven soil samples were collected from nine soil boring locations (SB0050 through SB0058). Soil samples were collected using a stainless-steel hand auger from ground surface to 0.5 ft bgs, 0.5 to 1.0 ft bgs, and 1.0 to 2.0 ft bgs.

The water table was encountered at 2.0 ft bgs at every location. Each sample was homogenized using a stainless-steel mixing bowl and spoon prior to placement in single, 4-oz glass sample jars. Equipment was decontaminated using a potable water rinse; Luminox® scrub and wash; and a deionized water rinse. Equipment was allowed to air dry prior to use. Samples were analyzed for As only.

2023 CS Results

No SCTL exceedances of As were detected. The rSCTL exceedance of As from 0 to 0.5 ft bgs at SB0048 was delineated to below SCTLs laterally by samples collected from SB0046 (sample collected from March 19, 2022), SB0053, and SB0054.

2023 Arsenic Contamination Release Assessment

The planned project by NASA to replace certain playground equipment and the rubberized play surface at KCDC commenced in June 2023. Construction activities were completed in July 2023.

To assess conditions outside the rubberized play surface following construction activities, the NASA Remediation

Program requested soil samples be collected to confirm As contaminated soil was not released during the periods when the concrete pad underneath the rubberized play surface had breaches.

The assessment activities were completed by HGL between July 7, 2023, and July 27, 2023. Initial sample locations were chosen to reflect areas where potential releases may have occurred, as well as to provide coverage across the grassy play area.

Initially, soil samples were collected from 18 boring locations (SB0059 through SB0076) within the fenced grassy play area on July 7, 2023. Samples were collected from ground surface to 0.5 ft bgs. Detections of As exceeded the rSCTL of 2.1 mg/kg at SB0068 (2.75 mg/kg), SB0070 (4.63 mg/kg), and SB0074 (2.98 mg/kg). No other SCTL exceedances of As were detected.

To delineate the rSCTL exceedances of As detected at SB0068, SB0070, and SB0074, 53 soil samples were collected from 23 boring locations on July 20, 2023.

Vertical step-down samples were collected from 0.5 to 1.0 ft bgs at SB0066 through SB0071, SB0073, and SB0074. Additional vertical step-down samples were collected from 1.0 to 2.0 ft bgs at SB0066, SB0067, SB0070, and SB0071.

Lateral step-out samples were collected from 0 to 0.5 ft bgs, 0.5 to 1.0 ft bgs, and every 1-ft interval until the water was encountered (approximately 2.0 ft bgs) at SB0077 through SB0091.

Deeper samples were released to the laboratory for analysis depending on results of the shallower intervals. Thus, not all sample intervals for the lateral step-outs were analyzed.

Results

Five soil borings (SB0068, SB0070, SB0077, SB0079 and SB0087) had rSCTL exceedances. Highest concentrations noted in SB0077(0 to 0.5) (18.4 mg/kg) and SB0079(0 to 0.5) (18 mg/kg), both exceed the industrial SCTL (iSCTL) of 12 mg/kg and were located under the north to south fence line.

East to West Fenceline Results showed that SB0070 was the only boring under the east to west fence line with rSCTL exceedances. SB0070 is delineated laterally by four samples: SB0066, SB0080, SB0071, and SB0080. SB0070 vertical delineation was achieved in the 1.0 to 2.0 ft bgs sample interval.

North to South Fenceline Results: SB0068, SB0077, SB0079 and SB0087 were delineated by six samples: SB0085, SB0092, SB0078, SB0093, SB0090 and SB0067. SB0068, SB0077, and SB0087 were vertically delineated in the 0.5 to 1 ft bgs interval and SB0079 in the 1 to 2 ft bgs interval.

North to South Fenceline Results: Four borings (SB0074, SB0081, SB0083, and SB0091) had As rSCTL exceedances beneath the north to south fence line within the Southern section of the Play Area.

These borings were delineated laterally by six borings (SB0090, SB0094, SB0082, SB0095, SB0076 and SB0084). SB0074, SB0081, and SB0083 were vertically delineated in the 0.5 to 1 ft bgs interval and SB0083 was delineated in the 1 to 2 ft bgs interval.

Summary and Conclusions

LOC 2 - Areas beneath the Former Wooden Fence: The CS activities conducted on May 16, 2023, included the collection of 27 soil samples from 9 soil boring locations at LOC 2. The lateral and vertical extent of the identified COC has been delineated to below the SCTLs.

2023 As Contamination Release Assessment: A total of 83 soil samples were collected from 37 boring locations within, and outside the fenced grassy play area between July 7, 2023, and July 27, 2023. Residential SCTL exceedances of As were detected in soil samples collected within the fenced grassy play area, with soil impacts ranging from ground surface to 1.0 ft bgs. Industrial SCTL exceedances of As were detected in soil samples collected within the fenced grassy play area, with soil impacts ranging from ground surface to 0.5 ft bgs. The lateral and vertical extent of the identified COC has been delineated to below the SCTLs.

The laboratory analytical results were provided to the NASA Remediation Program. The NASA Environmental Assurance

Branch requested NASA Environmental and Medical Contract (NEMCON) Spill Cleanup Team manage this as a spill cleanup.

Heavy rains occurred the week of July 17 causing washout which prompted NASA to handle material as a spill. A soil excavation was completed by NEMCON sub-contractor Alpha-Omega Training and Compliance, Inc. the week of July 24, 2023. The excavation removed all soil with Arsenic above the residential SCTL in the unpaved playground areas, restoring conditions consistent with the LUCIP. The excavation footprint extended 1-ft beyond the outside of the fence. Thus, soils containing potential SCTL exceedances of As remain up to the boundary sample locations with results below SCTLs outside the playground.

The excavation activities by NEMCON are summarized below and documented in the LUCIP Report. Soils were excavated from five contiguous areas, totaling approximately 1,753 square feet. Two areas were excavated to a depth of 0.5 feet below land surface (bls) and the other three areas were excavated to a depth of one-foot bls.

All excavated soil was placed in lined roll-off containers, transported under manifest, and was disposed as industrial waste at the JED Landfill in St. Cloud, Florida. Two confirmation soil samples were collected from the excavations. Analytical results from the confirmation samples indicated that arsenic concentrations were below the residential SCTL of 2.1 mg/kg. A total of 64.91 tons (approximately 53 cubic yards) of arsenic-contaminated soil exceeding the rSCTL of 2.1 mg/kg were removed from the Site.

Path Forward Recommendations

A soil IM is recommended to address the: rSCTL exceedance of As detected at LOC 2 (SB0048 and historical locations SB0007 and SB0041); and the remaining SCTL exceedances of As outside the fenced grassy play area. The CS activities, including the contamination assessment investigation, and proposed soil IM will be presented in a CS Report and IM Work Plan (IMWP).

Proposed IM Footprint at LOC 2:

- Excavate soil from 0 to 0.5 ft bgs.

- As footprint (81.86 sq ft; 1.5 cubic yards)
- Bounded by results less than the rSCTL
- The concrete sidewalk and rubberized play surface provides engineering controls preventing human exposure to potential COCs within the Play area. In the future if the engineering controls are removed, additional assessment is warranted prior to site closure.
- Collect a confirmatory sidewall sample next to the fence south of SB0048 during the IM to ensure As contamination limits have been defined.

Proposed IM Footprints at LOC 4:

- Excavate soil from 0 to 0.5 ft bgs in two areas and 0 to 1.0 ft bgs in two areas
- As combined footprints (903.76 sq ft; 33 cubic yards)
- Excavation limits bounded by results less than the SCTL.
- Post excavation, install a monitoring well at SB0077 and sample the groundwater for As only to confirm contamination has not leached from the soil into the water table.

Team consensus reached that the LUCIP is protective of human health by maintaining impervious surfaces to prevent contact with subsurface soils within the fence line area **(2404-D07)**.

Team consensus was reached to continue Land Use Controls and quarterly inspections **(2404-D08)**.

Team consensus reached that the CS activities demonstrated that site soils exceeding SCTLs have been fully delineated and have been or will be removed via an interim measure (IM) or are bounded by engineering controls **(2404-D09)**.

Team consensus reached that the proposed soil IM excavation boundaries to remove soils that exceed the:

- **rSCTL:**
 - SB0048: The boring is outside the fence line, bounded by sample locations below the rSCTL (SB0053 and SB0054) and the concrete sidewalk to the south (this includes historical location SB0007 which exceeded the rSCTL);

- SB0041: The boring is outside the fence line, bounded by sample locations below the rSCTL (SB0051 and SB0050);
- SB0074: bound by sample locations below the rSCTL (SB0081, SB0082, and SB0083) and the fence line; and
- **iSCTL:**
 - SB0077 and SB0079: bound by sample locations below the rSCTL (SB0078, SB0082, SB0085, SB0090, SB0092, SB0093, and SB0095) and the fence line **(2404-D10)**.

Team consensus reached on the boundaries of the excavation. A follow-on confirmatory sample will be taken around the area of SB0077 following excavation. FDEP requests that once excavation is done on exterior side, take a CS sample (at least one) near SB0077 , where you had the Industrial exceedance.

In reference to Slide 39 on map showing the excavation; FDEP inquired if all the areas from the IM were inside of the fenced area. FDEP inquired where the 2 confirmatory samples were taken? HGL stated that confirmatory sampling was along the west wall and confirmed by NASA.

FDEP requests that once excavation is taken on the exterior side of the fence, take a CS sample (at least one) near SB0077, where you had the industrial exceedance **(2404-A02)**.

**Results: Decision Items 2404-D07 through D10
Action item 2404-A02**

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APPENDIX C

FIELD

DOCUMENTATION

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Daily Quality Control Report

Daily Quality Control Report		Day	S	M	T	W	TH	F	S	
Date: 5/16/2023					X					
NASA Remediation Project Manager:	Deda Johansen	Weather	Bright Sun		Clear	Overcast		Rain	Fog	
HGL Program Manager	Janardan Patel		X							
HGL Project Manager:	Tim Jellett	Temp	Min. 65			Max. 82				
Contract No.	80KSC019D0012	Wind	Still	Moderate		High		Gust		
Task Order No.	80KSC019F0090		X							
Project Name:	KCDC Soil Sampling	Humidity	Dry	Moderate		High		Rainfall		
Project No.	NS1005.15.08		X							
1. List of On-Site Personnel:										
1.1 List of HGL Personnel Onsite										
HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours					
Robert Lynch	Scientist IV	KCDC	4	2	6					
Dustin Lupis	Construction Specialist III	KCDC	4	2	6					
William (Parker) Duttenhaver	Construction Specialist II	KCDC	4	2	6					
TOTAL HGL PERSONNEL ONSITE		3	TOTAL HOURS WORKED				6			
1.2 List of GOV. Personnel Onsite										
Personnel Onsite	Affiliation / Position	Location	Est. Total Hours							
TOTAL GOV PERSONNEL ONSITE		0	TOTAL HOURS WORKED				0			
1.3 Subcontractors Onsite										
Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours					
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		0	TOTAL HOURS WORKED				0			
2. List of Equipment										
2.1 Heavy Equipment										
Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair					
2.2 Instrumentation & Equipment										
Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used					
3. Field Activities										
DFOW / ACTIVITY / DELIVERIES	S = Start C = Continuing F = Finish		Description of Work Actually Performed / Material Deliveries							
	F = Finish									
KCDC Soil Sampling	F = Finish		Collected soil samples from 9 soil boring locations							
4. Testing and Sampling Activities										
4.1 Sampling Conducted										
Location	Analysis				Results - Detected / Not Detected					
KCDC-SB0050	Arsenic				Pending					
KCDC-SB0051										
KCDC-SB0052										
KCDC-SB0053										
KCDC-SB0054										
KCDC-SB0055										
KCDC-SB0056										
KCDC-SB0057										
KCDC-SB0058										

Daily Quality Control Report

5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)

Biologicals, Pinch Points, Chemical Exposure, Slips, Trips and Falls, Proper PPE

6. Description of Work Completed

A total of 27 soil samples were collected from 9 soil boring locations. Soil samples from each location were collected from 0 to 0.5; 0.5 to 1; and 1 to 2 ft bgs. Soil samples were collected using a stainless steel hand auger and bucket and homogenized using stainless steel mixing bowls and spoons. Samples were placed into single, 4-oz glass jars and placed in a cooler with ice until transported to SGS North America, Inc. via courier service. Approximately 2 to 3 gallons of decon IDW were generated and transferred into a new 55-gallon steel drum (229684) staged at CCF at KSC. Coordinates for all locations were recorded using a handheld Topcon GPS.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.

Printed Name: Robert Lynch Signature: Lynch, Robert	5/16/2023 5/16/2023
--	------------------------

Digitally signed by Lynch, Robert
Date: 2023.05.16 15:49:36 -0400

I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.

Printed Name: Tim Jellett Signature: Jellett, Tim	5/16/2023 5/16/2023
--	------------------------

Digitally signed by Jellett, Tim
Date: 2023.05.16 19:40:13 -0400



SAFETY MEETING/TRAINING LOG

- Tailgate (daily)
- Activity Hazard Analysis
- Pre-Task Hazard Analysis (prior to new task or operation)
- Site Safety Orientation (new personnel)
- Supervisor's (monthly)
- Supervisor's (weekly)
- UXO Awareness
- Asbestos Awareness
- Health and Safety Plan Addendum: _____
- Other: _____

Date/Time: 05/16/2023 0800

Client: KSC/NASA

Location: KCDC

Job No.: NS1005.15.08

Meeting/training conducted by: Rob Lynch

Work Activities: Collect Soil Samples

Safety / Training Topics Presented

Chemical Hazards: Arsenic

Physical Hazards: Pinch points, slips, trips, falls, biologicals, hand tools

Specific Safety Topic(s): Hand tools - Hand augers, shovels, post hole diggers.

Specific Training Covered: wear proper PPE - gloves. Be mindful of surroundings.

Attendees

Name Printed and Employee Number:

Signature:

DUSTIN LUPIS
William Dautenhaver
Robert Lynch

[Signature]
[Signature]
[Signature]

Location KSC / KCDC

Date 5-16-2023

7

Project / Client NASA / KSC

PURPOSE: Conduct soil sampling
north of playground area and
fence

PERSONNEL: Rob L., Dustin I., Parker D.

WEATHER: 67°F, Sunny H: 82°F LO-65°F

EQUIPMENT: Stainless steel hand auger
and buckets, stainless steel mixing
bowls and spoons, Liquinox and DI
water for decon, Topcon GPS, 4 oz
glass jars, field trucks

0800 - All personnel onsite. Conducted
TGS and set up sampling equip
and sampling area.

0835 - collected KCDC-SB0050-000.5

0836 - collected KCDC-SB0050-001.0

0837 - collected KCDC-SB0050-002.0

0840 - collected KCDC-SB0051-000.5

0847 - collected KCDC-SB0051-001.0

0848 - collected KCDC-SB0051-002.0

0855 - collected KCDC-SB0052-000.5

0856 - collected KCDC-SB0052-001.0

0857 - collected KCDC-SB0052-002.0

0910 - collected KCDC-SB0053-000.5

0911 - collected KCDC-SB0053-001.0

Location KSC - KCDC Date 5-16-23Project / Client NASA / KSC

0912	- collected	KCDC - SB0053 - 002.0
0923	- collected	KCDC - SB0054 - 000.5
0924	- collected	KCDC - SB0054 - 001.0
0925	- collected	KCDC - SB0054 - 002.0
0937	- collected	KCDC - SB0055 - 000.5
0938	- collected	KCDC - SB0055 - 001.0
0939	- collected	KCDC - SB0055 - 002.0
0946	- collected	KCDC - SB0056 - 000.5
0947	- collected	KCDC - SB0056 - 001.0
0948	- collected	KCDC - SB0056 - 002.0
1000	- collected	KCDC - SB0057 - 000.5
1001	- collected	KCDC - SB0057 - 001.0
1002	- collected	KCDC - SB0057 - 002.0
1006	- collected	KCDC - SB0058 - 000.5
1007	- collected	KCDC - SB0058 - 001.0
1008	- collected	KCDC - SB0058 - 002.0

- NOTE - Water table consistently encountered at 2.5 - 3 Ft bgs.

- Coordinates were collected using handheld Topcon GPS.

- Deron IDW (approx. 3 gallons) transferred to new drum 229684 stored at CCF.


1130 - All personnel offsite.

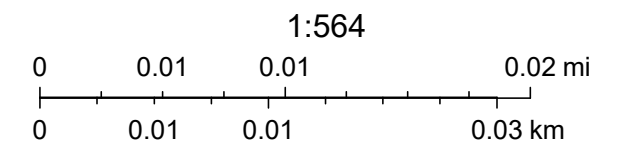
TZ

KSC GIS Advanced GIS Viewer



October 27, 2022

 ReferenceGrid_8227



State of Florida, Maxar, Microsoft

Daily Quality Control Report

Daily Quality Control Report		Day	S	M	T	W	TH	F	S	
Date: 7/20/2023							X			
NASA Remediation Project Manager:	Deda Johansen	Weather	Bright Sun		Clear	Overcast		Rain	Fog	
HGL Program Manager	Janardan Patel		X							
HGL Project Manager:	Tim Jellett	Temp	Min. 78			Max. 89				
Contract No.	80KSC019D0012	Wind	Still	Moderate		High		Gust		
Task Order No.	80KSC019F0090		X							
Project Name:	KCDC Soil Sampling	Humidity	Dry	Moderate		High		Rainfall		
Project No.	NS1005.15.08					X				
1. List of On-Site Personnel:										
1.1 List of HGL Personnel Onsite										
HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours					
Robert Lynch	Scientist IV	KCDC	6	2	8					
Justin Vojak	Geologist III	KCDC	6	0	6					
Brandon Schmidt	Geologist II	KCDC	6	0	6					
Meghan West	Geologist II	KCDC	2	0	2					
William (Parker) Duttonhaver	Construction Specialist II	KCDC	6	2	8					
TOTAL HGL PERSONNEL ONSITE			5	TOTAL HOURS WORKED				16		
1.2 List of GOV. Personnel Onsite										
Personnel Onsite	Affiliation / Position		Location		Est. Total Hours					
Deda Johansen	NASA/RPM		KCDC		0.25					
TOTAL GOV PERSONNEL ONSITE			1					0.25		
1.3 Subcontractors Onsite										
Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours					
TOTAL SUBCONTRACTOR PERSONNEL ONSITE			0	TOTAL HOURS WORKED				0		
2. List of Equipment										
2.1 Heavy Equipment										
Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair					
2.2 Instrumentation & Equipment										
Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used					
3. Field Activities										
DFOW / ACTIVITY / DELIVERIES	S = Start		Description of Work Actually Performed / Material Deliveries							
	C = Continuing									
F = Finish										
KCDC Soil Sampling	F = Finish		Collected 67 soil samples from 25 soil boring locations							

Daily Quality Control Report

4. Testing and Sampling Activities			
4.1 Sampling Conducted			
Location	Analysis	Results - Detected / Not Detected	
KCDC-SB0066	Arsenic (See Chain of Custody)	Pending	
KCDC-SB0067			
KCDC-SB0068			
KCDC-SB0069			
KCDC-SB0070			
KCDC-SB0071			
KCDC-SB0073			
KCDC-SB0074			
KCDC-SB0077			
KCDC-SB0078			
KCDC-SB0079			
KCDC-SB0080			
KCDC-SB0081			
KCDC-SB0082			
KCDC-SB0083			
KCDC-SB0084			
KCDC-G1			
KCDC-G2			
KCDC-G3			
KCDC-G4			
KCDC-G5			
KCDC-G6			
KCDC-G7			
KCDC-G8			
KCDC-G9			
5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)			
Biologicals, Pinch Points, Chemical Exposure, Slips, Trips and Falls, Proper PPE			
6. Description of Work Completed			
<p>A total of 67 soil samples were collected from 25 soil boring locations. Soil samples were collected from 0.5 to 1.0 and 1.0 to 2.0 ft bgs at SB0066 through SB0071; and SB0073 and SB0074. The samples collected from 1.0 to 2.0 ft bgs are being held at the CCSFS field office in a cooler with wet ice, and will be released to the laboratory SGS North America, Inc. depending on the results of the 0.5 to 1.0 ft bgs sample interval. Soil samples were collected from 0 to 0.5; 0.5 to 1.0; and 1.0 to 2.0 ft bgs from SB0077 through SB0084; and G-1 through G-9. Samples from 1.0 to 2.0 ft bgs from SB0077 through SB0084; and all samples collected from G-1 through G-9 are being held at the CCSFS field office in a cooler with wet ice, and will be released to the laboratory SGS North America, Inc. depending on results of SB0077 through SB0084. Soil samples were collected using a stainless steel hand auger and bucket and homogenized using stainless steel mixing bowls and spoons. Samples were placed into single, 4-oz glass jars and placed in a cooler with wet ice until transported to SGS North America, Inc. via courier service. Approximately 10 to 12 gallons of decon IDW were generated and transferred into a 55-gallon steel drum (229684) staged at CCF at KSC. Coordinates for all new locations were recorded using a handheld Topcon GPS. If soil samples from locations G-1 through G-9 are released to the lab, the permanent location number will be determined prior to submission to the laboratory.</p>			
7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)			
Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed
I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.			
Printed Name: Robert Lynch	7/20/2023		
Signature: Lynch, Robert	7/20/2023		
I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.			
Printed Name: Tim Jellett	7/20/2023		
Signature: Jellett, Tim	7/20/2023		



SAFETY MEETING/TRAINING LOG

- Tailgate (daily)
- Activity Hazard Analysis
- Pre-Task Hazard Analysis (prior to new task or operation)
- Site Safety Orientation (new personnel)
- Supervisor's (monthly)
- Supervisor's (weekly)
- UXO Awareness
- Asbestos Awareness
- Health and Safety Plan Addendum: _____
- Other: _____

Date/Time: 07/20/2023 0800

Client: NASA/KSC

Location: KSC Child Development Center (KCDC)

Job No.: NS1005.15.08

Meeting/training conducted by: Robert Lynch

Work Activities: Soil sampling using a hand auger

Safety / Training Topics Presented

Chemical Hazards: Arsenic

Physical Hazards: Heat Stress; Dehydration; Inclement Weather; Pinch Points; Hand Tools; Slips, Trips, and Falls

Specific Safety Topic(s): Wear proper PPE when handling site soils

Specific Training Covered: _____

Attendees

Name Printed and Employee Number:

Signature:

Meghan West
J. Vogel
William Dutton
Brandon Schmidt
Robert Lynch

[Signature]
[Signature]
[Signature]
[Signature]



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SGS - ORLANDO JOB # : PAGE 1 OF 2

SGS - ORLANDO Quote # SKIFF #

Client / Reporting Information			Project Information			Analytical Information										Matrix Codes
Company Name: HGL, Inc.			Project Name: KCDC Soil Sampling													DW - Drinking Water
Address: 2405 N. Courtney Parkway, STE 203			Street Kennedy Space Center													GW - Ground Water
City: Merritt Island	State: FL	Zip: 32937	City: Merritt Island	State: FL												WW - Water
Project Contact: Denise Rivers		Email: drivers@hgl.com	Project # NS1005.15.05		SW - Surface Water											
Phone #: 910-233-8460			Fax #													SO - Soil
Sampler(s) Name(s) (Printed)			Client Purchase Order #			SL - Sludge										
Sampler 1: Robert Lynch			Sampler 2: Brandon Schmidt			OI - Oil										
						LIQ - Other										
						Liquid										
						AIR - Air										

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION		SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION											Arsenic (SW6020B)	LAB USE ONLY
		DATE	TIME				OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZNA	DI WATER	MEOH				
	KCDC-SB0068-001.0-20230720	7/20/23	0848	RL	SO	1		X										X	
	KCDC-SB0077-000.5-20230720	7/20/23	0852	RL	SO	1		X										X	
	KCDC-SB0077-001.0-20230720	7/20/23	0853	RL	SO	1		X										X	
	KCDC-SB0078-000.5-20230720	7/20/23	0857	RL	SO	1		X										X	
	KCDC-SB0078-001.0-20230720	7/20/23	0858	RL	SO	1		X										X	
	KCDC-SB0079-000.5-20230720	7/20/23	0907	RL	SO	1		X										X	
	KCDC-SB0079-001.0-20230720	7/20/23	0908	RL	SO	1		X										X	
	KCDC-SB0067-001.0-20230720	7/20/23	1043	RL	SO	1		X										X	
	KCDC-SB0066-001.0-20230720	7/20/23	1038	RL	SO	1		X										X	
	KCDC-SB0069-001.0-20230720	7/20/23	0918	RL	SO	1		X										X	
	KCDC-SB0070-001.0-20230720	7/20/23	0923	RL	SO	1		X										X	
	KCDC-SB0080-000.5-20230720	7/20/23	0930	RL	SO	1		X										X	

Turnaround Time (Business days)		Data Deliverable Information		Comments / Remark:	
10 Day (Business)	Approved By: / Date:	<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY)			
7 Day		<input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC)			
5 Day		<input type="checkbox"/> REDT1 (EPA LEVEL 3)			
3 Day RUSH		<input type="checkbox"/> FULLT1 (EPA LEVEL 4)			
2 Day RUSH		<input type="checkbox"/> EDD'S			
<input checked="" type="checkbox"/> 1 Day RUSH					
Other					
Rush T/A Data Available VIA Email or Lablink					

Sample Custody must be documented below each time samples change possession, including courier delivery.					
Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1 <i>RL HGL</i>	7-20-23 13:58	<i>RL/BIA</i>	3		4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5			7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): <http://www.sgs.com/en/terms-and-conditions>



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SGS - ORLANDO JOB # : PAGE 1 OF 5

SGS - ORLANDO Quote # SKIFF #

Client / Reporting Information	Project Information	Analytical Information	Matrix Codes
Company Name: HGL, Inc.	Project Name: KCDC Soil Sampling	Arsenic (SW602B)	DW - Drinking Water
Address: 2405 N. Courtney Parkway, STE 203	Street Kennedy Space Center		GW - Ground Water
City: Merrit Island State: FL Zip:32937	City Merritt Island State FL		WW - Water
Project Contact: Denise Rivers Email:drivers@hgl.com	Project # NS1005.15.05		SW - Surface Water
Phone #:910-233-8460	Fax #		SO - Soil
Sampler(s) Name(s) (Printed) Sampler 1: Robert Lynch Sampler 2: Brandon Schmidt	Client Purchase Order #		SL- Sludge

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION		CONTAINER INFORMATION													LAB USE ONLY	
		DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MEOH			
	KCDC-SB0068-002.0-20230720	7/20/23	0850	RL	SO	1		X										
	KCDC-SB0077-002.0-20230720	7/20/23	0854	RL	SO	1		X										
	KCDC-SB0078-002.0-20230720	7/20/23	0859	RL	SO	1		X										
	KCDC-SB0079-002.0-20230720	7/20/23	0909	RL	SO	1		X										
	KCDC-SB0067-002.0-20230720	7/20/23	1044	RL	SO	1		X										
	KCDC-SB0066-002.0-20230720	7/20/23	1039	RL	SO	1		X										
	KCDC-SB0069-002.0-20230720	7/20/23	0919	RL	SO	1		X										
	KCDC-SB0070-002.0-20230720	7/20/23	0924	RL	SO	1		X										
	KCDC-SB0080-002.0-20230720	7/20/23	0932	RL	SO	1		X										
	KCDC-SB0071-002.0-20230720	7/20/23	0945	RL	SO	1		X										
	KCDC-SB0074-002.0-20230720	7/20/23	1000	RL	SO	1		X										
	KCDC-SB0081-002.0-20230720	7/20/23	1009	RL	SO	1		X										

HOLD @ CCSFS Field Office

Turnaround Time (Business days)	Data Deliverable Information	Comments / Remarks
10 Day (Business) _____ Approved By: / Date: _____ 7 Day _____ 5 Day _____ 3 Day <i>RUSH</i> _____ 2 Day <i>RUSH</i> _____ X 1 Day <i>RUSH</i> _____ Other _____ Rush T/A Data Available VIA Email or Lablink	<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input type="checkbox"/> FULLT1 (EPA LEVEL 4) <input type="checkbox"/> EDD'S	

Sample Custody must be documented below each time samples change possession, including courier delivery.				
Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Received By/Affiliation
1		2	3	4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Received By/Affiliation
5		6	7	8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): _____ <http://www.sgs.com/en/terms-and-conditions>



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SGS - ORLANDO Quote # SKIFF #

Client / Reporting Information	Project Information	Analytical Information	Matrix Codes
Company Name: HGL, Inc.	Project Name: KCDC Soil Sampling	Asenic (SW6020B)	DW - Drinking Water
Address: 2405 N. Courtney Parkway, STE 203	Street Kennedy Space Center		GW - Ground Water
City: Merrit Island State: FL Zip:32937	City Merritt Island State FL		WW - Water
Project Contact: Denise Rivers Email:drivers@hgl.com	Project # NS1005.15.05		SW - Surface Water
Phone #:910-233-8460	Fax #		SO - Soil
Sampler(s) Name(s) (Printed)	Client Purchase Order #		SL- Sludge
Sampler 1: Robert Lynch Sampler 2: Brandon Schmidt			OI - Oil
			LIQ - Other Liquid
		AIR - Air	

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION		SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION														
		DATE	TIME				OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MeOH						
	KCDC-SB0082-002.0-20230720	7/20/23	1015	RL	SO	1			X												
	KCDC-SB0083-002.0-20230720	7/20/23	1028	RL	SO	1			X												
	KCDC-SB0084-002.0-20230720	7/20/23	1033	RL	SO	1			X												
	KCDC-SB0073-002.0-20230720	7/20/23	0948	RL	SO	1			X												

HOLD @ CCSFS Field Office

Turnaround Time (Business days)	Data Deliverable Information	Comments / Remarks
10 Day (Business) Approved By: / Date: _____ 7 Day _____ 5 Day _____ 3 Day RUSH _____ 2 Day RUSH _____ X 1 Day RUSH _____ Other _____ Rush T/A Data Available VIA Email or Lablink	<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input type="checkbox"/> FULLT1 (EPA LEVEL 4) <input type="checkbox"/> EDD'S	

Sample Custody must be documented below each time samples change possession, including courier delivery.					
Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1		2	3		4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5		6	7		8



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SGS - ORLANDO Quote # SKIFF #

Client / Reporting Information				Project Information				Analytical Information								Matrix Codes									
Company Name: HGL, Inc.				Project Name: KCDC Soil Sampling				Arsenic (SW602B)											DW - Drinking Water	GW - Ground Water					
Address: 2405 N. Courtney Parkway, STE 203				Street Kennedy Space Center															WW - Water	SW - Surface Water					
City: Merritt Island		State: FL		Zip: 32937		City: Merritt Island													State: FL		SO - Soil	SL - Sludge	OI - Oil	LIQ - Other Liquid	AIR - Air
Project Contact: Denise Rivers				Project # NS1005.15.05															Project #		Client Purchase Order #				
Phone #: 910-233-8460				Fax #																					
Sampler(s) Name(s) (Printed)				Sampler 1: Robert Lynch															Sampler 2: Brandon Schmidt						
Field ID / Point of Collection				DATE															TIME				SAMPLER BY:		

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION		CONTAINER INFORMATION													LAB USE ONLY	
		DATE	TIME	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MEOH				
	KCDC-G5-000.5	7/20/23	1134	RL	SO	1		X										
	KCDC-G5-001.0	7/20/23	1135	RL	SO	1		X										
	KCDC-G5-002.0	7/20/23	1136	RL	SO	1		X										
	KCDC-G6-000.5	7/20/23	1143	RL	SO	1		X										
	KCDC-G6-001.0	7/20/23	1211	RL	SO	1		X										
	KCDC-G6-002.0	7/20/23	1212	RL	SO	1		X										
	KCDC-G7-000.5	7/20/23	1214	RL	SO	1		X										
	KCDC-G7-001.0	7/20/23	1215	RL	SO	1		X										
	KCDC-G7-002.0	7/20/23	1216	RL	SO	1		X										
	KCDC-G8-000.5	7/20/23	1220	RL	SO	1		X										
	KCDC-G8-001.0	7/20/23	1221	RL	SO	1		X										
	KCDC-G8-002.0	7/20/23	1222	RL	SO	1		X										

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Turnaround Time (Business days)		Data Deliverable Information		Comments / Remarks		
<input checked="" type="checkbox"/> 10 Day (Business) <input type="checkbox"/> 7 Day <input type="checkbox"/> 5 Day <input type="checkbox"/> 3 Day RUSH <input type="checkbox"/> 2 Day RUSH <input type="checkbox"/> 1 Day RUSH <input type="checkbox"/> Other	Approved By: / Date:	<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input type="checkbox"/> FULLT1 (EPA LEVEL 4) <input type="checkbox"/> EDD'S				

Sample Custody must be documented below each time samples change possession, including courier delivery.					
Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1		2	3		4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): _____ <http://www.sgs.com/en/terms-and-conditions>



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SGS - ORLANDO Quote #	SKIFF #
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Client / Reporting Information		Project Information	
Company Name: HGL, Inc.		Project Name: KCDC Soil Sampling	
Address: 2405 N. Courtney Parkway, STE 203		Street Kennedy Space Center	
City: Merrit Island State: FL Zip:32937	City Merritt Island State FL		
Project Contact: Denise Rivers Email:drivers@hgl.com		Project # NS1005.15.05	
Phone #:910-233-8460		Fax #	
Sampler(s) Name(s) (Printed)		Client Purchase Order #	
Sampler 1: Robert Lynch Sampler 2: Brandon Schmidt			

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION		SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION										
		DATE	TIME				OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MeOH		
	KCDC-G9-000.5	7/20/23	1226	RL	SO	1			X								
	KCDC-G9-001.0	7/20/23	1227	RL	SO	1			X								
	KCDC-G9-002.0	7/20/23	1228	RL	SO	1			X								

Analytical Information										Matrix Codes	
Asenic (SW6020B)											DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OL - Oil LIQ - Other Liquid AIR - Air
											LAB USE ONLY

HOLD @ CCSFS Field Office

Turnaround Time (Business days)	Date:	Approved By: / Date:	Data Deliverable Information	Comments / Remarks:
<input checked="" type="checkbox"/> 10 Day (Business) <input type="checkbox"/> 7 Day <input type="checkbox"/> 5 Day <input type="checkbox"/> 3 Day RUSH <input type="checkbox"/> 2 Day RUSH <input type="checkbox"/> 1 Day RUSH <input type="checkbox"/> Other			<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input type="checkbox"/> FULLT1 (EPA LEVEL 4) <input type="checkbox"/> EDD'S	
Rush T/A Data Available VIA Email or Lablink				

Sample Custody must be documented below each time samples change possession, including courier delivery.				
Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time: Received By/Affiliation
1		2	3	4
5		6	7	8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): _____ <http://www.sgs.com/en/terms-and-conditions>

Project / Client NASA / KSCNS1005.15.08

PURPOSE: collect additional soil samples within and outside blue fence area

PERSONNEL: Rob L., Justin V., Parker D., Brandon S., Meghan W.

WEATHER: 81°F Partly Cloudy

Hi - 89°F LO - 78°F 50% chance

STORMS

EQUIPMENT: Topcon GPS, stainless steel hand auger, buckets, bowls, and spoons

Deion (Luminex, deionized water, potable water), 5-gallon buckets, coolers with ice, level D PPE, nitrile gloves, 4-oz glass sample jars, field truck, 6 mil plastic sheeting (visqueen)

0800 - All personnel onsite. Conducted

TASM. D/S status is green (Category A).

0805 - Brandon S. began marking vertical step-down/lateral step-out sample locations with Topcon GPS.
- Staged deion area.

0848 - collected SB0063-001.0

0850 - collected SB0068-002.0 (Hold)

- WT encountered

WT = water table

Rite in the Rain

NS1005.15.08

- 0852 - collected SB0077-000.5
- 0853 - collected SB0077-001.0
- 0854 - collected SB0077-002.0 (HOLD) ~WT
- 0857 - collected SB0078-000.5
- 0858 - collected SB0078-001.0
- 0859 - collected SB0078-002.0 (HOLD) ~WT
- 0907 - collected SB0079-000.5
- 0908 - collected SB0079-001.0
- 0909 - collected SB0079-002.0 (HOLD)
- encased WT @ 2.0 ft bgs
- 0918 - collected SB0069-001.0
- 0919 - collected SB0069-002.0 (HOLD)
- 0923 - collected SB0070-001.0
- 0924 - collected SB0070-002.0 (HOLD)
- encased WT @ 2 ft bgs
- 0930 - collected SB0080-000.5
- 0931 - collected SB0080-001.0
- 0932 - collected SB0080-002.0 (HOLD)
- 0944 - collected SB0071-001.0
- 0945 - collected SB0071-002.0 (HOLD)
- 0947 - collected SB0073-001.0
- 0948 - collected SB0073-002.0 (HOLD)
- 0959 - collected SB0074-001.0
- 1000 - collected SB0074-002.0

Project / Client NASA/KSCNS1005.15.08

1007 - collected	SB0081-000.5	
1008 - collected	SB0081-001.0	
1009 - collected	SB0081-002.0	(HOLD)
1013 - collected	SB0082-000.5	
1014 - collected	SB0082-001.0	
1015 - collected	SB0082-002.0	(HOLD)
1026 - collected	SB0083-000.5	
1027 - collected	SB0083-001.0	
1028 - collected	SB0083-002.0	(HOLD)
1031 - collected	SB0084-000.5	
1032 - collected	SB0084-001.0	
1033 - collected	SB0084-002.0	(HOLD)
1038 - collected	SB0066-001.0	
1039 - collected	SB0066-002.0	(HOLD)
1043 - collected	SB0067-001.0	
1044 - collected	SB0067-002.0	(HOLD)
1112 - collected	G-1-000.5	} HOLD
1113 - collected	G-1-001.0	
1114 - collected	G-1-002.0	

NOTE - All G sample locations
will be held pending analysis
of other locations.

1118 - collected	G2-000.5	} HOLD
1119 - collected	G2-001.0	

- | | | | | |
|------|---|--|------------------|--------|
| 1120 | - | collected | G2-002.0 | } HOLD |
| 1124 | - | collected | G3-000.5 | |
| 1125 | - | collected | G3-001.0 | |
| 1126 | - | collected | G3-002.0 | |
| 1127 | - | collected | G4-000.5 | |
| 1128 | - | collected | G4-001.0 | |
| 1129 | - | collected | G4-002.0 | |
| 1134 | - | collected | G5-000.5 | |
| 1135 | - | collected | G-5-001.0 | |
| 1136 | - | collected | G-5-002.0 | |
| 1140 | - | Justin V. off-site to retrieve more DE water from CCFS field office. | | |
| 1143 | - | collected | G-6-000.5 (HOLD) | |
| 1200 | - | Justin V. back on site. | | |
| 1211 | - | collected | G-6-001.0 | } HOLD |
| 1212 | - | collected | G-6-002.0 | |
| 1214 | - | collected | G-7-000.5 | |
| 1215 | - | collected | G-7-001.0 | |
| 1216 | - | collected | G-7-002.0 | |
| 1220 | - | collected | G-8-000.5 | |
| 1221 | - | collected | G-8-001.0 | |
| 1222 | - | collected | G-8-002.0 | |

Project / Client NASA / KSCNS 1005.15.08

- 1226 Collected G-9-000.5
1227 Collected G-9-001.0
1228 Collected G-9-002.0 } HOLD
1229 Began site cleanup. Recorded new soil boring locations with handheld Topcon GPS.

- NOTES -

- Decon procedure consisted of potable water rinse, luminol wash, DI water rinse, and air dry.
 - Generated approx. 10-12 gallons of decon water IDW. Transferred to drum 229684 staged at CCF.
 - Sample location spacing for lateral step-outs were 10 ft, except for G-3, which was 21 ft NE of SB0066, and 21 ft W of G-2. G-4 was 7 ft S of SB0079.
 - Meghan W. observed sampling activities from 8:00 am to 10:00 am
 - Dede Johansen (NASA RPM) onsite for approx. 10 minutes
- 1300 - All personnel offsite.



NOTES Cont.

- All soil samples were placed in cooler with wet ice immediately after collection. All samples that are being held, are being kept in a cooler with wet ice, until they are needed for analysis.

Re

Figure 1
KSC Child Development Center
Soil Sample Locations
July 2023



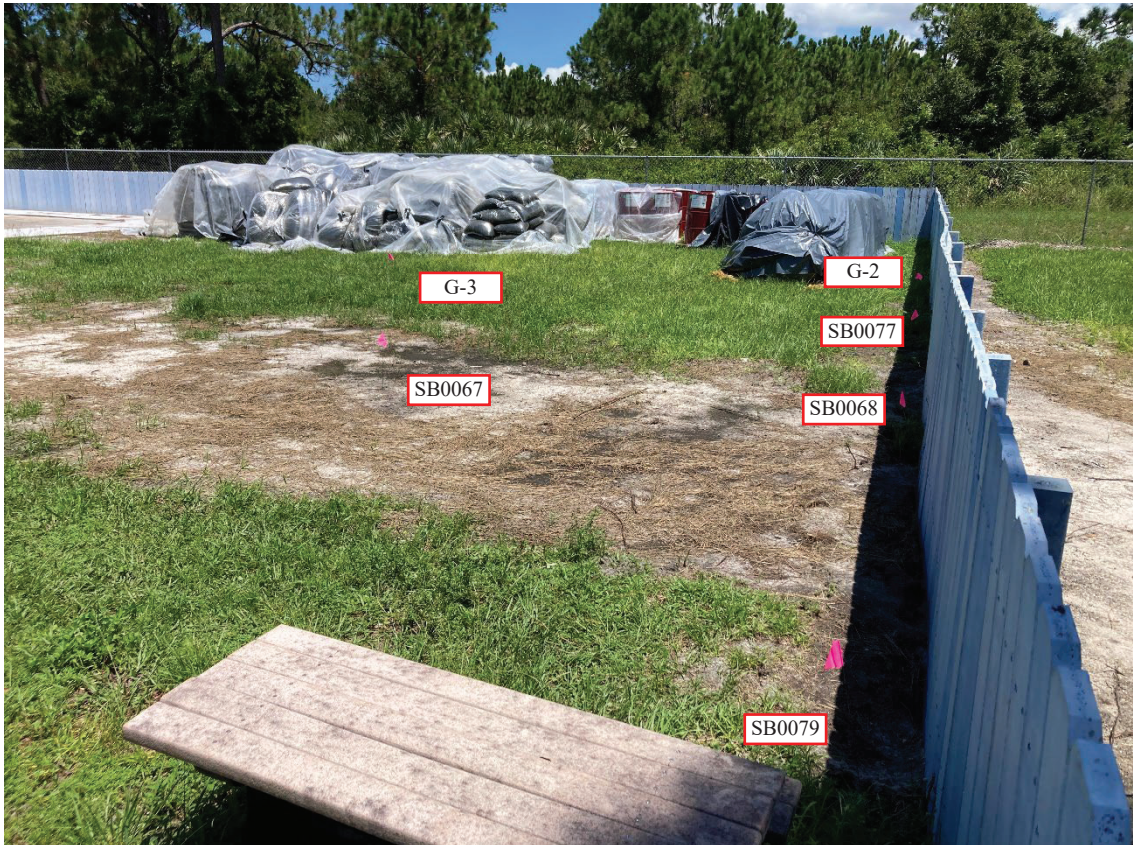
Legend

☒ Soil Boring Location

☐ PRL 149 Boundary

Notes:
 KCDC=KSC Child Development Center
 KSC=Kennedy Space Center
 PRL=potential release location

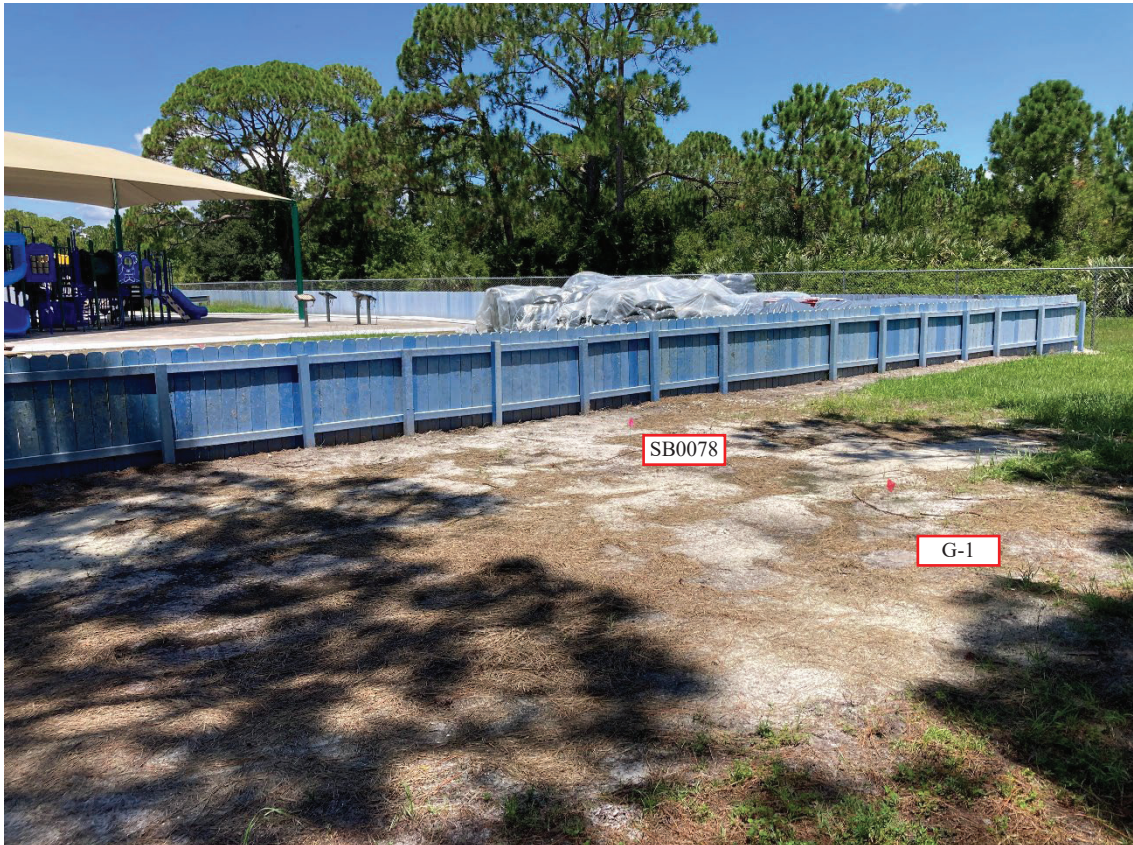
\\srv-gst-01\hglgis\KSC_NS1002\PRL_148(KSCD)\Misc_Figures\
 (1)KSCD_SoilSampLocs_2023-07.mxd
 7/20/2023 TB
 Source: HGL,
 ArcGIS Online Imagery


















Daily Quality Control Report

 Daily Quality Control Report		Day	S	M	T	W	TH	F	S	
Date: 7/7/2023								X		
NASA Remediation Project Manager:	Deda Johansen	Weather	Bright Sun		Clear	Overcast		Rain	Fog	
HGL Program Manager	Janardan Patel		X							
HGL Project Manager:	Tim Jellett	Temp	Min. 77			Max. 90				
Contract No.	80KSC019D0012	Wind	Still	Moderate		High		Gust		
Task Order No.	80KSC019F0090		X							
Project Name:	KCDC Soil Sampling	Humidity	Dry	Moderate		High		Rainfall		
Project No.	NS1005.15.08					X				
1. List of On-Site Personnel:										
1.1 List of HGL Personnel Onsite										
HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours					
Robert Lynch	Scientist IV	KCDC	3	2	5					
Justin Vojak	Geologist III	KCDC	3	2	5					
Brandon Schmidt	Geologist II	KCDC	3	2	5					
William (Parker) Duttenhaver	Construction Specialist II	KCDC	3	2	5					
TOTAL HGL PERSONNEL ONSITE			4	TOTAL HOURS WORKED				20		
1.2 List of GOV. Personnel Onsite										
Personnel Onsite	Affiliation / Position	Location	Est. Total Hours							
TOTAL GOV PERSONNEL ONSITE			0	TOTAL HOURS WORKED				0		
1.3 Subcontractors Onsite										
Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours					
TOTAL SUBCONTRACTOR PERSONNEL ONSITE			0	TOTAL HOURS WORKED				0		
2. List of Equipment										
2.1 Heavy Equipment										
Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair					
2.2 Instrumentation & Equipment										
Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used					
3. Field Activities										
DFOW / ACTIVITY / DELIVERIES	S = Start		Description of Work Actually Performed / Material Deliveries							
	C = Continuing									
	F = Finish									
KCDC Soil Sampling	F = Finish		Collected soil samples from 18 soil boring locations							

Daily Quality Control Report

4. Testing and Sampling Activities			
4.1 Sampling Conducted			
Location	Analysis	Results - Detected / Not Detected	
KCDC-SB0059	Arsenic	Pending	
KCDC-SB0060			
KCDC-SB0061			
KCDC-SB0062			
KCDC-SB0063			
KCDC-SB0064			
KCDC-SB0065			
KCDC-SB0066			
KCDC-SB0067			
KCDC-SB0068			
KCDC-SB0069			
KCDC-SB0070			
KCDC-SB0071			
KCDC-SB0072			
KCDC-SB0073			
KCDC-SB0074			
KCDC-SB0075			
KCDC-SB0076			
5. Job Safety: (TGSM Topics, Report violations, instructions given, corrective action taken)			
Biologicals, Pinch Points, Chemical Exposure, Slips, Trips and Falls, Proper PPE			
6. Description of Work Completed			
<p>A total of 18 soil samples were collected from 18 soil boring locations. Soil samples from each location were collected from 0 to 0.5 ft bgs. Soil samples were collected using a stainless steel hand auger and bucket and homogenized using stainless steel mixing bowls and spoons. Samples were placed into single, 4-oz glass jars and placed in a cooler with ice until transported to SGS North America, Inc. via courier service. Approximately 2 to 3 gallons of decon IDW were generated and transferred into a 55-gallon steel drum (229684) staged at CCF at KSC. Coordinates for all locations were recorded using a handheld Topcon GPS.</p>			
7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)			
Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed
I Certify that I am the Contractor's Authorized Representative and that the above information stated in this Daily Activity Report is accurate and representative of the work completed.			
Printed Name: Brandon Schmidt	7/7/2023		
Signature: Schmidt, Brandon <small>Digitally signed by Schmidt, Brandon Date: 2023.07.07 14:03:04'00'</small>	7/7/2023		
I Certify that I am the Contractor's Authorized Quality Control Representative and that this Daily Activity Report conforms with all appropriate and approved Work Plan Statement of Work.			
Printed Name: Tim Jellett	7/7/2023		
Signature: Jellett, Tim <small>Digitally signed by Jellett, Tim Date: 2023.07.07 14:10:50 -04'00'</small>	7/7/2023		



SAFETY MEETING/TRAINING LOG

- Tailgate (daily)
- Activity Hazard Analysis
- Pre-Task Hazard Analysis (prior to new task or operation)
- Site Safety Orientation (new personnel)
- Supervisor's (monthly)
- Supervisor's (weekly)
- UXO Awareness
- Asbestos Awareness
- Health and Safety Plan Addendum: _____
- Other: _____

Date/Time: 07/07/2023 0800

Client: NASA/KSC

Location: KSC Child Development Center (KCDC)

Job No.: NS1005.15.08

Meeting/training conducted by: Robert Lynch

Work Activities: Soil sampling using a hand auger

Safety / Training Topics Presented

Chemical Hazards: Arsenic

Physical Hazards: Heat Stress; Dehydration; Inclement Weather; Pinch Points; Hand Tools; Slips, Trips, and Falls

Specific Safety Topic(s): Wear proper PPE when handling site soils

Specific Training Covered: _____

Attendees

Name Printed and Employee Number:

Signature:

Robert Lynch

Justin Vojak

Brandon Schmidt

William Duttonhaver



SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, FL 32811
 TEL: 407-425-6700 FAX: 407-425-0707
 www.sgs.com

SGS - ORLANDO JOB # : PAGE 1 OF 2

SGS - ORLANDO Quote # SKIFF #

Client / Reporting Information		Project Information		Analytical Information										Matrix Codes
Company Name: HGL, Inc.		Project Name: KCDC Soil Sampling												DW - Drinking Water
Address: 2405 N. Courtney Parkway, STE 203		Street Kennedy Space Center												GW - Ground Water
City: Merritt Island State: FL Zip:32937		City Merritt Island State FL												WW - Water
Project Contact: Denise Rivers Email:drivers@hgl.com		Project # NS1005.15.05												SW - Surface Water
Phone #:910-233-8460		Fax #												SO - Soil
Sampler(s) Name(s) (Printed)		Client Purchase Order #												SL - Sludge
Sampler 1: Robert Lynch Sampler 2: Brandon Schmidt														OI - Oil

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION		CONTAINER INFORMATION													Arsenic (SW6020B)	LAB USE ONLY	
		DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZNA	DI WATER	MEOH				
	KCDC-SB0059-000.5-20230707	7/7/23	0835	RL	SO	1		X										X	
	KCDC-SB0060-000.5-20230707	7/7/23	0838	RL	SO	1		X										X	
	KCDC-SB0061-000.5-20230707	7/7/23	0842	RL	SO	1		X										X	
	KCDC-SB0062-000.5-20230707	7/7/23	0845	RL	SO	1		X										X	
	KCDC-SB0063-000.5-20230707	7/7/23	0848	RL	SO	1		X										X	
	KCDC-SB0064-000.5-20230707	7/7/23	0851	RL	SO	1		X										X	
	KCDC-SB0065-000.5-20230707	7/7/23	0854	RL	SO	1		X										X	
	KCDC-SB0066-000.5-20230707	7/7/23	0857	RL	SO	1		X										X	
	KCDC-SB0067-000.5-20230707	7/7/23	0858	RL	SO	1		X										X	
	KCDC-SB0068-000.5-20230707	7/7/23	0900	RL	SO	1		X										X	
	KCDC-SB0069-000.5-20230707	7/7/23	0904	RL	SO	1		X										X	
	KCDC-SB0070-000.5-20230707	7/7/23	0906	RL	SO	1		X										X	

Turnaround Time (Business days)		Data Deliverable Information		Comments / Remark:
10 Day (Business)	Approved By: / Date:	<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY)		
7 Day		<input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC)		
5 Day		<input type="checkbox"/> REDT1 (EPA LEVEL 3)		
3 Day RUSH		<input type="checkbox"/> FULLT1 (EPA LEVEL 4)		
2 Day RUSH		<input type="checkbox"/> EDD'S		
X 1 Day RUSH				
Other				

Sample Custody must be documented below each time samples change possession, including courier delivery.				
Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time: Received By/Affiliation
1		2	3	4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time: Received By/Affiliation
5		6	7	8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): <http://www.sgs.com/en/terms-and-conditions>



SGS North America Inc - Orlando

Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, FL 32811
 TEL: 407-425-6700 FAX: 407-425-0707
 www.sgs.com

SGS - ORLANDO Quote #	SKIFF #
-----------------------	---------

Client / Reporting Information		Project Information				Analytical Information												Matrix Codes	
Company Name: HGL, Inc.		Project Name: KCDC Soil Sampling																DW - Drinking Water	
Address: 2405 N. Courtney Parkway, STE 203		Street Kennedy Space Center																GW - Ground Water	
City: Merritt Island State: FL Zip:32937		City Merritt Island State FL																WW - Water	
Project Contact: Denise Rivers Email:drivers@hgl.com		Project # NS1005.15.05																SW - Surface Water	
Phone #:910-233-8460		Fax #																SO - Soil	
Sampler(s) Name(s) (Printed) Sampler 1: Robert Lynch Sampler 2: Brandon Schmidt		Client Purchase Order #																SL - Sludge	
												OI - Oil							
												LIQ - Other Liquid							
												AIR - Air							

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION			CONTAINER INFORMATION												Arsenic (SW6020B)	LAB USE ONLY	
		DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH-ZnAc	DI WATER	MEOH				
	KCDC-SB0071-000.5-20230707	7/7/23	0913	RL	SO	1		X										X	
	KCDC-SB0072-000.5-20230707	7/7/23	0915	RL	SO	1		X										X	
	KCDC-SB0073-000.5-20230707	7/7/23	0918	RL	SO	1		X										X	
	KCDC-SB0074-000.5-20230707	7/7/23	0920	RL	SO	1		X										X	
	KCDC-SB0075-000.5-20230707	7/7/23	0923	RL	SO	1		X										X	
	KCDC-SB0076-000.5-20230707	7/7/23	0925	RL	SO	1		X										X	

Turnaround Time (Business days)		Data Deliverable Information			Comments / Remark:	
10 Day (Business)	Approved By: / Date:	<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY)				
7 Day		<input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC)				
5 Day		<input type="checkbox"/> REDT1 (EPA LEVEL 3)				
3 Day RUSH		<input type="checkbox"/> FULLT1 (EPA LEVEL 4)				
2 Day RUSH		<input type="checkbox"/> EDD'S				
X 1 Day RUSH						
Other						
Rush T/A Data Available VIA Email or Lablink						

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
1		2	3		4
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation
5		6	7		8

Lab Use Only : Cooler Temperature (s) Celsius (corrected): _____ <http://www.sgs.com/en/terms-and-conditions>

Project / Client NASA / XSCNS 1005.15.08

PURPOSE: collect soil samples for arsenic

PERSONNEL: Rob C., Justin V., Brandon S.
Parker D.

WEATHER: 80°F Hi - 90 Lo - 77°F

70% chance storms

EQUIPMENT: Stainless steel hand
augers, buckets, bowls, spoons, decon
equipment, Topcon GPS, 4-oz glass
jars, field trucks0800 - All personnel on site. conducted
TGS M and assessed sampling
locations. (All 0-0.5 ft bgs)

0835 - collected SB0059

0838 - collected SB0060

0842 - collected SB0061

0845 - collected SB0062

0848 - collected SB0063

0851 - collected SB0064

0854 - collected SB0065

0857 - collected SB0066

~~0858~~
0900 - collected SB0067

0900 - collected SB0068

0904 - collected SB0069

0906 - collected SB0070

Location

NASA-KC0C

Date

7-7-2023

Project / Client

NASA / KSC

NS1005.15.08

0913 - collected SB0071

0915 - collected SB0072

0918 - collected SB0073

0920 - collected SB0074

0923 - collected SB0075

0925 - collected SB0076

0930 - Began site cleanup and recorded coordinates for all locations using Topcon GPS.

1030 - All personnel offsite. Transferred approx. 3 gallons of decon IDW to drum 229684 staged at CCF.

- Note - all hand awc- buckets, mixing bowls, spoons were deconned in between samples.



R



SB0059

SB0060

SB0061

SB0062

SB0063

SB0064

SB0066

SB0065

SB0067

SB0068

SB0069

SB0070

SB0071

SB0072

SB0073

SB0074

SB0075

SB0076





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APPENDIX D
PERMITS AND
APPROVALS

Avoid Verbal Orders

TO: SI-E2/Deda Johansen

DATE: 04/24/2023

FROM: SI-E3/Environmental Management Branch

SUBJECT: KSC Record of Environmental Consideration (REC)

REC #: 12262

1. PROJECT INFORMATION

Project Title: CDC Soil Sampling Activities

Project Lead: Deda Johansen, SI-E2, 321-508-2289

Project No.: 80KSC019F0118_CDC (REV A)

Project Description:

04/18/2023 Update: From EPR 21331 - This permit request is for collecting soil samples from up to 26 soil boring locations at the Child Development Center (CDC). The locations are outside the fence surrounding the Child Development Center. All locations will be hand augered down to the water table which is approximately 4 feet below ground surface. The attached figure shows the proposed sampling locations (yellow X) at the site.

Original Project Description: This request is for collecting soil samples from 7 soil boring locations at the Child Development Center (CDC). The locations underneath the playground will be completed using a core drill first and then with a hand auger. All locations will be hand augered down to the water table. Due to CDC operations, all work will be completed during weekends. The attached figure shows the proposed sampling locations at the site.

EPB Reviewer: LPH

Facility No.: M6-0883/Child Development Center

2. NEPA DETERMINATIONS

a. Categorical Exclusions per 14 CFR Part 1216.304(d)

e. Centerwide EIS

b. Environmental Assessment (EA) Required

f. AF Project on KSC/813

c. Environmental Impact Statement (EIS) Required

g. NASA Project on CCAFS/813

d. Existing FONSI or ROD

3. ENVIRONMENTAL REQUIREMENTS

a. Non-Permit Requirements

YES

NO

b. Permit Requirements

YES

NO

*****ORIGINAL REC #11717 ISSUED 03/02/2022*****

*****REC UPDATED 04/24/2023 Added SWMU #116, added T&E species statement, updated excavation permit request statement*****

2.a.1. CATEGORICAL EXCLUSION (CATEX): This project is categorically excluded

(CATEX) from further NEPA review as defined in 14 CFR 1216.304(d)(1)(v) Information-gathering exercises, such as inventories, audits, studies, and field studies, including water sampling, cultural resources surveys, biological surveys, geologic surveys, modeling or simulations, and routine data collection and analysis activities. For additional information, please contact Don Dankert of the NASA Environmental Management Branch (SI-E3, 321-861-1196).

3.a.1. POTENTIAL RELEASE (PRL) SITE: The proposed project is within PRL #149, "Child Development Center". A PRL designation means a site has had historical operations with the potential to impact the environment. This area is being investigated by the NASA Remediation Group under Remediation Project Manager (RPM) Deda Johansen (SI-E2, 321-508-2289) of the Environmental Assurance Branch. A Land Use Control Implementation Plan (LUCIP) has been prepared for the PRL. These controls are necessary to prohibit residential exposure to soil present at the site and requires maintaining concrete and "pour in place" or like surfaces within the playground areas.

The proposed sampling is also in boundary of SWMU #116 (includes PFAS Investigation, LOC 19). This area has land use controls to prevent contact with or discharge of potentially contaminated groundwater.

All workers involved in subsurface/dewatering work must be notified (HAZCOM) of the potential for contamination present and it is recommended that an Industrial Hygienist be consulted for determination of required personal protective equipment (PPE). Handle potentially contaminated soils or groundwater in accordance with site work plan. Utilize PPE as required by Health and Safety Plan.

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Avoid Verbal Orders

TO: SI-E2/Deda Johansen

DATE: 04/24/2023

FROM: SI-E3/Environmental Management Branch

SUBJECT: KSC Record of Environmental Consideration (REC)

REC #: 12262

3.a.2. HAZARDOUS/NON-HAZARDOUS WASTE: All hazardous and non-hazardous wastes generated during the interim measure must be properly containerized, stored, labeled, manifested, shipped, and disposed of in full regulatory compliance. Hazardous wastes generated by this activity must be manifested, shipped, and disposed of under either the remediation contractor's or NASA's Environmental Protection Agency (EPA) identification number. The contractor shall maintain copies of waste management records and manifests onsite and make them available for review by NASA upon request.

If wastes are managed, controlled and disposed of using the NASA EPA identification number, the KSC Waste Management requirements outlined in KNPR 8500.1 must be followed. A Process Waste Questionnaire (PWQ), KSC Form 26-551 along with any supporting documentation (MSDS, product formulation, lab analyses) must be submitted to the NEMCON Waste Management Office for each waste stream generated. That office will then generate a Technical Response Package (TRP) which will give direction on proper handling, storage, and disposal of the waste stream. Please contact NEMCON Waste Management Services at 867-8642 if assistance is required.

The remediation contractor is responsible for any spills, releases, or other environmental contamination that occurs as a result of the proposed activities. A KSC Pollution Incident Report (PIR) Form (KSC Form 21-555) must be completed and submitted to the NASA Environmental Assurance Branch within three (3) calendar days of the incident.

3.a.3. THREATENED AND ENDANGERED SPECIES: This project has the potential to affect the protected gopher tortoise. Measures must be taken to minimize impacts to their habitat. A biological survey will be required to identify potential impacts prior to disturbances. Please contact Russ Lowers (NEM-022, 321-759-6022), 14 days prior to beginning work to schedule a biological survey.

3.b.1. EXCAVATION PERMIT: A KSC Excavation Permit will be required for any digging proposed by this project. Please contact the Utility Locate/Excavation Permit Request Customer Helpline at 867-2406 or go to website at <http://epr.ksc.nasa.gov/Home/> for an underground utility scan and dig permit. NOTE: If a trench or pit is to be left open all day or overnight, the trench/pit must be checked for trapped animals at the beginning and end of each work shift. If an animal is observed trapped, contact Russ Lowers (NEM-022, 321-759-6022) or the Duty Office (861-5050, email KSC-BOSS-DutyOffice@mail.nasa.gov) to arrange removal/release. Do not handle the animal(s). If any archaeological material (e.g., artifacts and/or cultural features or human remains) is found, work must stop immediately, and the discovery reported to the KSC Cultural Resources Manager (CRM). For questions or to report a discovery, contact Katherine Zeringue (SI-E3) at 867-8454.

No other environmental issues were identified based upon the information provided in the KSC Environmental Checklist. This Record of Environmental Consideration (REC) does not relinquish the project lead from obtaining and complying with any other internal NASA permits or directives necessary to ensure all organizations potentially impacted by this project are notified and concur with the proposed project.

Due to potential changes in regulations, permit requirements and environmental conditions, statements in this REC are valid for 6 months, and subject to review after this period. It is the responsibility of the project lead to submit current project information for a REC update prior to project commencement if REC is older than 6 months; and also to notify the Environmental Management Branch (SI-E3) if the scope of the project changes at any time after the REC is issued.

D. Johansen/SI-E2

cc:

R. Lynch/HGL, Inc.

R. Lowers/NEM-022

Avoid Verbal Orders

TO: SI-E2/Deda Johansen

DATE: 04/24/2023

FROM: SI-E3/Environmental Management Branch

SUBJECT: KSC Record of Environmental Consideration (REC)

REC #: 12262

4. Upon evaluation of the subject project, the above determinations have been made and identified. Contact the Environmental Management Branch (SI-E3) at 861-1196 for re-evaluation should there be any modifications to the scope of work.



James Brooks

04/24/2023 16:27

Date

IMPORTANT : By accepting this permit, you are agreeing to abide by the following procedures. Failure to do so may result in safety risks, work stoppages, and other financial consequences.

	Timeframe	Responsibility	Procedure
1	Permit Submission	Requestor	Contact KSC permit office with contractor contact information. If not known at time of permit submission, requestor is responsible to contact KSC Permit Office with actual contractor contact once work is awarded / known.
2	No earlier than 21 days – no later than 72 hours before work start	Contractor	Call Sunshine 811 at 800-432-4770 or 811 (cell). <i>Create an account and request at www.online811.com</i> 811 Location (nearest Intersections): NW of A Ave SE and 5th ST SE Obtain your sunshine 811 ticket number and copy that ticket number to this Permit (below in signature section)
3	No earlier than 21 days – no later than 72 hours before work start	Contractor	After contacting 811, Call KSC Utility Locator to schedule utility locate and approve this Permit. Primary: 321-749-4840 Alternate: 321-529-4796
4	Day of utility Locate	Contractor	Meet with KSC Utility Locator with a copy of this permit for approval. Once signed, you will be authorized to begin work. The Excavator shall maintain a copy of the EPI signed/ approved permit on site at all times. This Permit will be immediately suspended should digging begin prior to approval from the KSC Utility Locator. Excavation or heavy equipment use is prohibited during utility locating.
<i>Continue on next page</i>			

	Timeframe	Responsibility	Procedure
5	After locate Before work start If work is delayed If scope of work changes	Contractor	<p>If the scope of work for the original Utility Locate/EPR is changed or the completion date needs to be extended, you are required to call KSC Permit Office 321-867-2406.</p> <p>If digging does not begin within 21 days from the time of utility locate (permit approval), this permit shall be suspended and work will not be permitted until a new 811 locate and KSC utility locate is performed.</p> <p>Excavator is responsible to maintain the paint markings. Failure to do so will result in this permit being suspended and work will not be permitted until a new 811 locate and KSC utility locate is performed.</p>
6	At the start of work – During work before backfill	Contractor	<p>You must hand dig within 24 inches in either direction of all Locator paint markings.</p> <p>You must hand dig within 36 inches of building walls or overhangs.</p> <p>Do not remove or disturb concrete thrust blocks. When excavating soil at location known to contain buried water or sewer lines, do not remove any buried concrete without prior NASA POC approval.</p> <p>Contact the KSC Survey for utility survey prior to backfilling or directional drilling of all new utilities.</p> <p>Primary: 321-288-3031 Alternate: 321-749-2474</p> <p>Failure to contact KSC Survey prior to backfill may result in additional excavating to expose buried utilities for survey.</p>
7	End of work	Requestor / Contractor	Contact KSC Permit Office 321-867-2406 to close permit.

Safety and Contact Information

Accidental Gas Main damage <i>* EVACUATE THE AREA!</i>	Call: 321-867-7911 (cell) or 911 (landline only) Call: Work Control Center 321-861-5050
Accidental Utility line damage (excluding Gas main damage)	Work Control Center (Duty Office) 321-861-5050
Questions regarding your Utility Locate/Excavation Permit Request, such as approving, revising the time or scope of work, updating any information within this permit.	KSC Permit Office Phone: 321-867-2406 Email: KSC-BOSS-DIGPERMT@mail.nasa.gov
Questions regarding your Utility Locate/Surveying, such as utilities markings and area surveying.	KSC Survey Office Supervisor Phone: 321-861-7945 Email: david.j.irwin@nasa.gov
Questions regarding Florida City Gas owned natural gas utilities <u>not including</u> : emergencies, gas leaks, and locate requests.	Florida City Gas Phone: 786-459-3655 Email: FSmallley@aglresources.com
Questions regarding environmental-related issues, comments stated within KSC Environmental Review (below).	KSC Environmental Phone: 321-867-8430

Permit Request: 21332 (Status: Approved) Rev 0**Permit Scope of Work / Justification**

This permit request is for collecting soil samples from up to 26 soil boring locations at the Child Development Center (CDC). The locations are outside the fence surrounding the Child Development Center. All locations will be hand augered down to the water table which is approximately 4 feet below ground surface. The attached figure shows the proposed sampling locations (yellow X) at the site.

Requestor Contact Information

Submitter Name, Company*	Robert Lynch, HGL
Submitter Email Address	rlynch@hgl.com
Submitter Phone: 269-203-5235 Fax:	

Contractor / Excavator Contact Information

Contractor / Excavator Name, Company	HGL
Contractor Contact Email Address	rlynch@hgl.com
Contractor Contact Phone* 269-203-5235	

NASA Technical / Project Contact Information

NASA POC Name	Deda Johansen
NASA POC Email Address	edith.m.johansen@nasa.gov
NASA POC Phone	321-508-2289

Permit Request Info

Permit Start Date: 4/18/2023 **Permit Expiration Date:** 10/20/2023

Facility Info

Facility ID: M6-0883 **Name:** KSC CHILD DEVELOPMENT CENTER
Secondary Location:

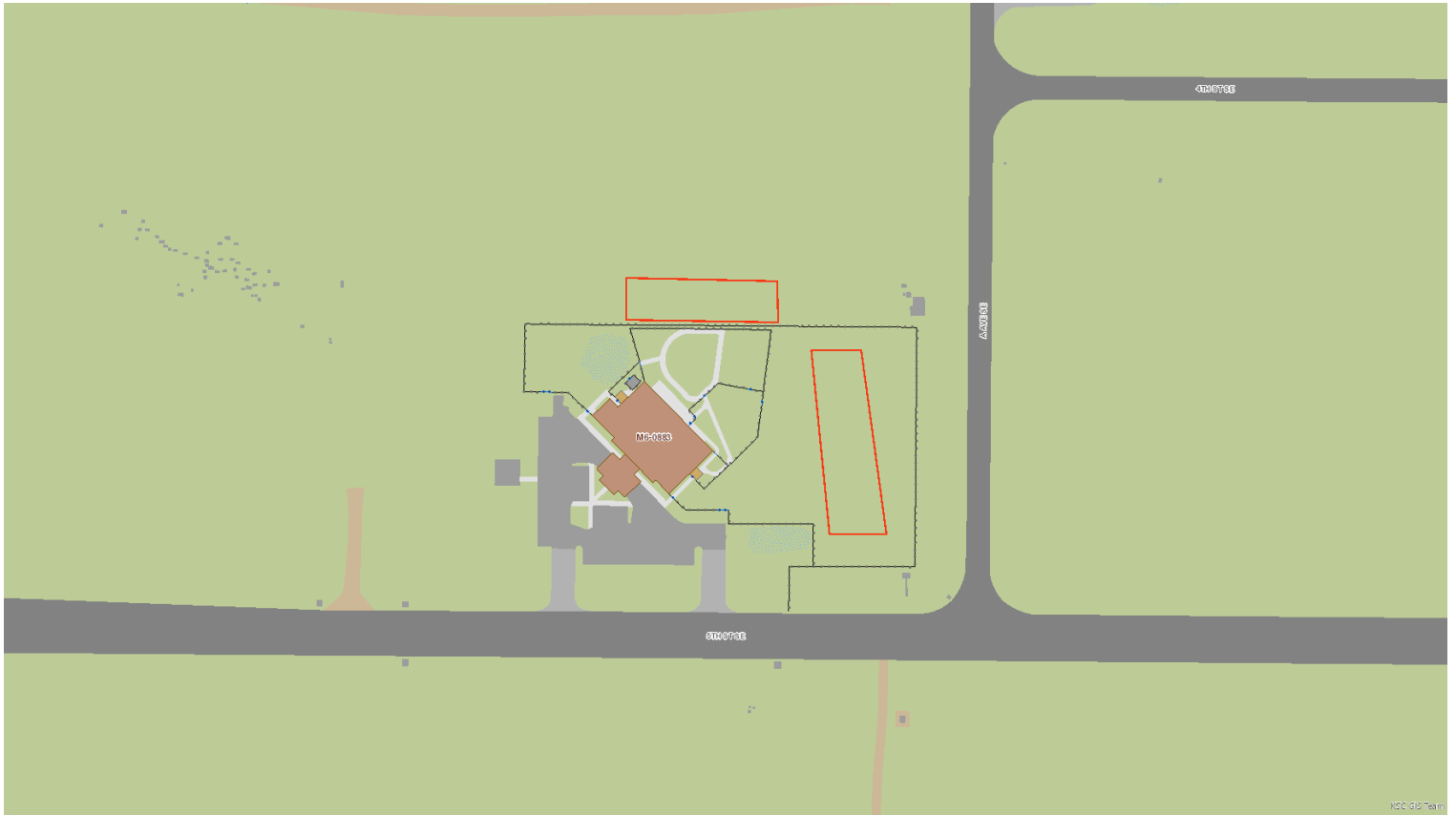
Additional Forms and Identifying Numbers

Work Order Number:	Environmental Check List Completed: No
---------------------------	---

Reviews

Reviewed By:	Date:	Results:	Comments:
Locator	4/18/2023	Agree	JM
Environmental	4/24/2023	Agree	Abide by all requirements provided in REC #12262 issued 04/24/2023.
Master Planner	4/18/2023	Agree	RS
Final	4/24/2023	Agree	AL

Map of Permitted Area of Work



The permitted area of work is displayed as the outlined shapes on the above map. It is the permit-holder's responsibility to ensure digging operations are contained within the permitted area of work. Failure to stay with permitted area of work will result in permit suspension and work stoppage.

If the scope of the project changes and the permitted area of work needs to be modified, it is the permit holder's responsibility to notify the excavation permit administrator to discuss the changes and impact.

Assigned Category Codes

Category A

Normally, excavation may proceed during all launch operations. However, other restrictions may be imposed on any given day.

Sunshine 811 Call Ticket Number	
Ticket Number	

Approved by: Jeff McDowell

Approved by: Alfredo George

Excavation Restriction

Notes:

ENTIRE LOCATED AREA TO BE HAND EXCAVATED ONLY!

Locator's Signature: _____

Reason for Hand Excavation:

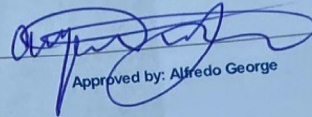
Permit Request: 21360 (Status: Pending) Rev 0

Sunshine 811 Call Ticket Number

Ticket Number

118300648

6-1-2003



Approved by: Alfredo George

Approved by: Jeff McDowell

Excavation Restriction

Notes:

Located inside playground area
for the removal and replacement of playground

ENTIRE LOCATED AREA TO BE HAND EXCAVATED ONLY!

Locator's Signature: _____

Reason for Hand Excavation:

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APPENDIX E
LABORATORY
ANALYTICAL
REPORTS



National Aeronautics and
Space Administration

PERMISSION TO PUBLISH

SGS North America, Inc. grants NASA and HGL permission to reproduce, publish, and distribute all Technical Reports for any HGL NASA projects received after 1/1/2020, hereinafter referred to as "the Work," in any form, language, or manner, now or hereafter known or developed, throughout the world, and to authorize others to do so on its behalf.

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A handwritten signature in cursive script that reads "Caitlin Brice".

Signature

Date

12-1-20

Company Name: SGS North America, Inc.
Company Representative Name: Caitlin Brice
Company Representative Title: General Manager
Company Address: 4405 Vineland Rd, Orlando, FL 32811
Company Representative Phone: 1-408-472-4663
Company Representative E-Mail: Caitlin.Brice@sgs.com



August 16, 2023

Jean Dent
SGS North America Inc._Orlando
4405 Vineland Rd
Suite C-15
Orlando, FL 32811

RE: Project: FC8409X TQN 118 NASA
Pace Project No.: 20285709

Dear Jean Dent:

Enclosed are the analytical results for sample(s) received by the laboratory on August 10, 2023. The results relate only to the samples included in this report. Results reported herein conform to the DOD Quality Systems Manual Version 5.4 and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Baton Rouge

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

Sincerely,

A handwritten signature in blue ink that reads "Ruth Welsh".

Ruth Welsh
ruth.welsh@pacelabs.com
(225) 678-1833
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: FC8409X TQN 118 NASA

Pace Project No.: 20285709

Pace Analytical Services Baton Rouge

7979 Innovation Park Drive Ste A, Baton Rouge, LA
70820-7402

Louisiana Dept of Environmental Quality (NELAC/LELAP):
01979

Florida Dept of Health (NELAC/FELAP): E87854

DoD ELAP (A2LA) #: 6429.01

Alabama DEM #: 41900

Alaska DEC-DW #: LA00024

Alaska DEC CS-LAP #: 21-001

Arkansas DEQ #: 88-0655

California ELAP #: 3063

Georgia DPD #: C050

Hawaii DOH State Laboratories Division

Illinois EPA #: 200048

Kansas DoHE #: E-10354

Kentucky DEP UST Branch #: 123054

Louisiana DOH #: LA036

Minnesota DOH #: 2233799

Mississippi State Dept of Health

Montana Department of Environmental Quality

Nebraska DHHS #: NE-OS-35.21

Nevada DCNR DEP #: LA00024

New York DOH #: 12149

North Carolina DEQ - WW & GW #: 618

North Dakota DEQ #: R195

Ohio EPA #: 87782

Oklahoma Dept of Environmental Quality #: 9403

Oregon ELAP #: 4168

Pennsylvania Dept of Environmental Protection #: 68-
05973

South Carolina DHEC #: 73006001

Texas CEQ #: T104704178-23-15

Utah DOH #: LA00024

Virginia DCLS #: 6460215

Washington Dept of Ecology #: C929

Wisconsin DNR #: 399139510

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SAMPLE SUMMARY

Project: FC8409X TQN 118 NASA

Pace Project No.: 20285709

Lab ID	Sample ID	Matrix	Date Collected	Date Received
20285709001	KCDC-SB0092-000.5-20230727	Solid	07/27/23 16:11	08/10/23 10:10
20285709002	KCDC-SB0092-001.0-20230727	Solid	07/27/23 16:12	08/10/23 10:10
20285709003	KCDC-SB0092-002.0-20230727	Solid	07/27/23 16:13	08/10/23 10:10
20285709004	KCDC-SB0093-000.5-20230727	Solid	07/27/23 16:23	08/10/23 10:10
20285709005	KCDC-SB0093-001.0-20230727	Solid	07/27/23 16:24	08/10/23 10:10
20285709006	KCDC-SB0093-002.0-20230727	Solid	07/27/23 16:25	08/10/23 10:10
20285709007	KCDC-SB0094-000.5-20230727	Solid	07/27/23 16:32	08/10/23 10:10
20285709008	KCDC-SB0094-001.0-20230727	Solid	07/27/23 16:33	08/10/23 10:10
20285709009	KCDC-SB0094-002.0-20230727	Solid	07/27/23 16:34	08/10/23 10:10
20285709010	KCDC-SB0095-000.5-20230727	Solid	07/27/23 16:45	08/10/23 10:10
20285709011	KCDC-SB0095-001.0-20230727	Solid	07/27/23 16:46	08/10/23 10:10
20285709012	KCDC-SB0095-002.0-20230727	Solid	07/27/23 16:47	08/10/23 10:10

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SAMPLE ANALYTE COUNT

Project: FC8409X TQN 118 NASA

Pace Project No.: 20285709

Lab ID	Sample ID	Method	Analysts	Analytes Reported
20285709001	KCDC-SB0092-000.5-20230727	EPA 6020B	TDM	1
		SW-846 method	AH	1
20285709002	KCDC-SB0092-001.0-20230727	EPA 6020B	TDM	1
		SW-846 method	AH	1
20285709003	KCDC-SB0092-002.0-20230727	EPA 6020B	TDM	1
		SW-846 method	AH	1
20285709004	KCDC-SB0093-000.5-20230727	EPA 6020B	TDM	1
		SW-846 method	AH	1
20285709005	KCDC-SB0093-001.0-20230727	EPA 6020B	TDM	1
		SW-846 method	AH	1
20285709006	KCDC-SB0093-002.0-20230727	EPA 6020B	TDM	1
		SW-846 method	AH	1
20285709007	KCDC-SB0094-000.5-20230727	EPA 6020B	TDM	1
		SW-846 method	AH	1
20285709008	KCDC-SB0094-001.0-20230727	EPA 6020B	TDM	1
		SW-846 method	AH	1
20285709009	KCDC-SB0094-002.0-20230727	EPA 6020B	TDM	1
		SW-846 method	AH	1
20285709010	KCDC-SB0095-000.5-20230727	EPA 6020B	TDM	1
		SW-846 method	AH	1
20285709011	KCDC-SB0095-001.0-20230727	EPA 6020B	TDM	1
		SW-846 method	AH	1
20285709012	KCDC-SB0095-002.0-20230727	EPA 6020B	TDM	1
		SW-846 method	AH	1

PASI-BR = Pace Analytical Services - Baton Rouge

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: FC8409X TQN 118 NASA

Pace Project No.: 20285709

Sample: **KCDC-SB0092-000.5-20230727** Lab ID: **20285709001** Collected: 07/27/23 16:11 Received: 08/10/23 10:10 Matrix: Solid

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

Parameters	Results	Units	DL	LOD	LOQ	DF	Prepared	Analyzed	CAS No.	Qual
BR 6020B Metals Soil	Analytical Method: EPA 6020B Preparation Method: EPA 3050B Pace Analytical Services - Baton Rouge									
Arsenic	1.0	mg/kg	0.14	0.54	0.54	10	08/14/23 08:10	08/14/23 15:59	7440-38-2	
BR Percent Moisture	Analytical Method: SW-846 method Pace Analytical Services - Baton Rouge									
Percent Moisture	19.6	%	0.50	0.50	0.50	1		08/14/23 14:11		N2

Sample: **KCDC-SB0092-001.0-20230727** Lab ID: **20285709002** Collected: 07/27/23 16:12 Received: 08/10/23 10:10 Matrix: Solid

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

Parameters	Results	Units	DL	LOD	LOQ	DF	Prepared	Analyzed	CAS No.	Qual
BR 6020B Metals Soil	Analytical Method: EPA 6020B Preparation Method: EPA 3050B Pace Analytical Services - Baton Rouge									
Arsenic	0.53U	mg/kg	0.13	0.53	0.53	10	08/14/23 08:10	08/14/23 16:02	7440-38-2	
BR Percent Moisture	Analytical Method: SW-846 method Pace Analytical Services - Baton Rouge									
Percent Moisture	16.0	%	0.50	0.50	0.50	1		08/14/23 14:12		N2

Sample: **KCDC-SB0092-002.0-20230727** Lab ID: **20285709003** Collected: 07/27/23 16:13 Received: 08/10/23 10:10 Matrix: Solid

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

Parameters	Results	Units	DL	LOD	LOQ	DF	Prepared	Analyzed	CAS No.	Qual
BR 6020B Metals Soil	Analytical Method: EPA 6020B Preparation Method: EPA 3050B Pace Analytical Services - Baton Rouge									
Arsenic	0.58U	mg/kg	0.15	0.58	0.58	10	08/14/23 08:10	08/14/23 16:06	7440-38-2	
BR Percent Moisture	Analytical Method: SW-846 method Pace Analytical Services - Baton Rouge									
Percent Moisture	20.6	%	0.50	0.50	0.50	1		08/14/23 14:13		N2

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: FC8409X TQN 118 NASA

Pace Project No.: 20285709

Sample: **KCDC-SB0093-000.5-20230727** Lab ID: **20285709004** Collected: 07/27/23 16:23 Received: 08/10/23 10:10 Matrix: Solid

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

Parameters	Results	Units	DL	LOD	LOQ	DF	Prepared	Analyzed	CAS No.	Qual
BR 6020B Metals Soil		Analytical Method: EPA 6020B Preparation Method: EPA 3050B Pace Analytical Services - Baton Rouge								
Arsenic	1.6	mg/kg	0.16	0.65	0.65	10	08/14/23 08:10	08/14/23 16:09	7440-38-2	
BR Percent Moisture		Analytical Method: SW-846 method Pace Analytical Services - Baton Rouge								
Percent Moisture	28.8	%	0.50	0.50	0.50	1		08/14/23 14:15		N2

Sample: **KCDC-SB0093-001.0-20230727** Lab ID: **20285709005** Collected: 07/27/23 16:24 Received: 08/10/23 10:10 Matrix: Solid

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

Parameters	Results	Units	DL	LOD	LOQ	DF	Prepared	Analyzed	CAS No.	Qual
BR 6020B Metals Soil		Analytical Method: EPA 6020B Preparation Method: EPA 3050B Pace Analytical Services - Baton Rouge								
Arsenic	0.57U	mg/kg	0.14	0.57	0.57	10	08/14/23 08:10	08/14/23 16:13	7440-38-2	
BR Percent Moisture		Analytical Method: SW-846 method Pace Analytical Services - Baton Rouge								
Percent Moisture	23.0	%	0.50	0.50	0.50	1		08/14/23 14:17		N2

Sample: **KCDC-SB0093-002.0-20230727** Lab ID: **20285709006** Collected: 07/27/23 16:25 Received: 08/10/23 10:10 Matrix: Solid

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

Parameters	Results	Units	DL	LOD	LOQ	DF	Prepared	Analyzed	CAS No.	Qual
BR 6020B Metals Soil		Analytical Method: EPA 6020B Preparation Method: EPA 3050B Pace Analytical Services - Baton Rouge								
Arsenic	0.59U	mg/kg	0.15	0.59	0.59	10	08/14/23 08:10	08/14/23 16:23	7440-38-2	
BR Percent Moisture		Analytical Method: SW-846 method Pace Analytical Services - Baton Rouge								
Percent Moisture	21.7	%	0.50	0.50	0.50	1		08/14/23 14:19		N2

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**ANALYTICAL RESULTS**

Project: FC8409X TQN 118 NASA

Pace Project No.: 20285709

Sample: KCDC-SB0094-000.5-20230727 **Lab ID: 20285709007** Collected: 07/27/23 16:32 Received: 08/10/23 10:10 Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	DL	LOD	LOQ	DF	Prepared	Analyzed	CAS No.	Qual
BR 6020B Metals Soil	Analytical Method: EPA 6020B Preparation Method: EPA 3050B Pace Analytical Services - Baton Rouge									
Arsenic	0.56J	mg/kg	0.17	0.69	0.69	10	08/14/23 08:10	08/14/23 16:27	7440-38-2	
BR Percent Moisture	Analytical Method: SW-846 method Pace Analytical Services - Baton Rouge									
Percent Moisture	35.3	%	0.50	0.50	0.50	1		08/14/23 14:20		N2

Sample: KCDC-SB0094-001.0-20230727 **Lab ID: 20285709008** Collected: 07/27/23 16:33 Received: 08/10/23 10:10 Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	DL	LOD	LOQ	DF	Prepared	Analyzed	CAS No.	Qual
BR 6020B Metals Soil	Analytical Method: EPA 6020B Preparation Method: EPA 3050B Pace Analytical Services - Baton Rouge									
Arsenic	0.63U	mg/kg	0.16	0.63	0.63	10	08/14/23 08:10	08/14/23 16:31	7440-38-2	
BR Percent Moisture	Analytical Method: SW-846 method Pace Analytical Services - Baton Rouge									
Percent Moisture	25.2	%	0.50	0.50	0.50	1		08/14/23 14:21		N2

Sample: KCDC-SB0094-002.0-20230727 **Lab ID: 20285709009** Collected: 07/27/23 16:34 Received: 08/10/23 10:10 Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	DL	LOD	LOQ	DF	Prepared	Analyzed	CAS No.	Qual
BR 6020B Metals Soil	Analytical Method: EPA 6020B Preparation Method: EPA 3050B Pace Analytical Services - Baton Rouge									
Arsenic	0.58U	mg/kg	0.15	0.58	0.58	10	08/14/23 08:10	08/14/23 16:34	7440-38-2	
BR Percent Moisture	Analytical Method: SW-846 method Pace Analytical Services - Baton Rouge									
Percent Moisture	22.1	%	0.50	0.50	0.50	1		08/14/23 14:22		N2

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**ANALYTICAL RESULTS**

Project: FC8409X TQN 118 NASA

Pace Project No.: 20285709

Sample: KCDC-SB0095-000.5-20230727 **Lab ID:** 20285709010 Collected: 07/27/23 16:45 Received: 08/10/23 10:10 Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	DL	LOD	LOQ	DF	Prepared	Analyzed	CAS No.	Qual
BR 6020B Metals Soil	Analytical Method: EPA 6020B Preparation Method: EPA 3050B Pace Analytical Services - Baton Rouge									
Arsenic	0.55J	mg/kg	0.15	0.61	0.61	10	08/14/23 08:10	08/14/23 16:38	7440-38-2	
BR Percent Moisture	Analytical Method: SW-846 method Pace Analytical Services - Baton Rouge									
Percent Moisture	23.6	%	0.50	0.50	0.50	1		08/14/23 14:23		N2

Sample: KCDC-SB0095-001.0-20230727 **Lab ID:** 20285709011 Collected: 07/27/23 16:46 Received: 08/10/23 10:10 Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	DL	LOD	LOQ	DF	Prepared	Analyzed	CAS No.	Qual
BR 6020B Metals Soil	Analytical Method: EPA 6020B Preparation Method: EPA 3050B Pace Analytical Services - Baton Rouge									
Arsenic	0.58U	mg/kg	0.15	0.58	0.58	10	08/14/23 08:10	08/14/23 16:41	7440-38-2	
BR Percent Moisture	Analytical Method: SW-846 method Pace Analytical Services - Baton Rouge									
Percent Moisture	23.0	%	0.50	0.50	0.50	1		08/14/23 14:24		N2

Sample: KCDC-SB0095-002.0-20230727 **Lab ID:** 20285709012 Collected: 07/27/23 16:47 Received: 08/10/23 10:10 Matrix: Solid*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	DL	LOD	LOQ	DF	Prepared	Analyzed	CAS No.	Qual
BR 6020B Metals Soil	Analytical Method: EPA 6020B Preparation Method: EPA 3050B Pace Analytical Services - Baton Rouge									
Arsenic	0.59U	mg/kg	0.15	0.59	0.59	10	08/14/23 08:10	08/14/23 16:45	7440-38-2	
BR Percent Moisture	Analytical Method: SW-846 method Pace Analytical Services - Baton Rouge									
Percent Moisture	20.3	%	0.50	0.50	0.50	1		08/14/23 14:25		N2

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QUALITY CONTROL DATA

Project: FC8409X TQN 118 NASA

Pace Project No.: 20285709

QC Batch:	294287	Analysis Method:	EPA 6020B
QC Batch Method:	EPA 3050B	Analysis Description:	BR 6020B Metals Soil
		Laboratory:	Pace Analytical Services - Baton Rouge
Associated Lab Samples:	20285709001, 20285709002, 20285709003, 20285709004, 20285709005, 20285709006, 20285709007, 20285709008, 20285709009, 20285709010, 20285709011, 20285709012		

METHOD BLANK:	1411120	Matrix:	Solid
Associated Lab Samples:	20285709001, 20285709002, 20285709003, 20285709004, 20285709005, 20285709006, 20285709007, 20285709008, 20285709009, 20285709010, 20285709011, 20285709012		

Parameter	Units	Blank Result	DL	LOD	LOQ	Analyzed	Qualifiers
Arsenic	mg/kg	0.048U	0.012	0.048	0.048	08/14/23 15:30	

LABORATORY CONTROL SAMPLE: 1411121							
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers	
Arsenic	mg/kg	2	2.1	104	80-120		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1411122												1411123	
Parameter	Units	20285655001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
Arsenic	mg/kg	7.5	2	2	7.0	7.3	-22	-6	82-118	5	20	M1	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: FC8409X TQN 118 NASA

Pace Project No.: 20285709

QC Batch:	294380	Analysis Method:	SW-846 method
QC Batch Method:	SW-846 method	Analysis Description:	BR Dry Weight/Percent Moisture
		Laboratory:	Pace Analytical Services - Baton Rouge

Associated Lab Samples: 20285709001, 20285709002, 20285709003, 20285709004, 20285709005, 20285709006, 20285709007, 20285709008, 20285709009, 20285709010, 20285709011, 20285709012

SAMPLE DUPLICATE: 1411625

Parameter	Units	20285709003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	20.6	18.0	14	25	N2

SAMPLE DUPLICATE: 1411626

Parameter	Units	20285709005 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	23.0	22.8	1	25	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALIFIERS

Project: FC8409X TQN 118 NASA

Pace Project No.: 20285709

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

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

TNI - The Nelac Institute

ANALYTE QUALIFIERS

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

N2 The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FC8409X TQN 118 NASA

Pace Project No.: 20285709

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
20285709001	KCDC-SB0092-000.5-20230727	EPA 3050B	294287	EPA 6020B	294451
20285709002	KCDC-SB0092-001.0-20230727	EPA 3050B	294287	EPA 6020B	294451
20285709003	KCDC-SB0092-002.0-20230727	EPA 3050B	294287	EPA 6020B	294451
20285709004	KCDC-SB0093-000.5-20230727	EPA 3050B	294287	EPA 6020B	294451
20285709005	KCDC-SB0093-001.0-20230727	EPA 3050B	294287	EPA 6020B	294451
20285709006	KCDC-SB0093-002.0-20230727	EPA 3050B	294287	EPA 6020B	294451
20285709007	KCDC-SB0094-000.5-20230727	EPA 3050B	294287	EPA 6020B	294451
20285709008	KCDC-SB0094-001.0-20230727	EPA 3050B	294287	EPA 6020B	294451
20285709009	KCDC-SB0094-002.0-20230727	EPA 3050B	294287	EPA 6020B	294451
20285709010	KCDC-SB0095-000.5-20230727	EPA 3050B	294287	EPA 6020B	294451
20285709011	KCDC-SB0095-001.0-20230727	EPA 3050B	294287	EPA 6020B	294451
20285709012	KCDC-SB0095-002.0-20230727	EPA 3050B	294287	EPA 6020B	294451
20285709001	KCDC-SB0092-000.5-20230727	SW-846 method	294380		
20285709002	KCDC-SB0092-001.0-20230727	SW-846 method	294380		
20285709003	KCDC-SB0092-002.0-20230727	SW-846 method	294380		
20285709004	KCDC-SB0093-000.5-20230727	SW-846 method	294380		
20285709005	KCDC-SB0093-001.0-20230727	SW-846 method	294380		
20285709006	KCDC-SB0093-002.0-20230727	SW-846 method	294380		
20285709007	KCDC-SB0094-000.5-20230727	SW-846 method	294380		
20285709008	KCDC-SB0094-001.0-20230727	SW-846 method	294380		
20285709009	KCDC-SB0094-002.0-20230727	SW-846 method	294380		
20285709010	KCDC-SB0095-000.5-20230727	SW-846 method	294380		
20285709011	KCDC-SB0095-001.0-20230727	SW-846 method	294380		
20285709012	KCDC-SB0095-002.0-20230727	SW-846 method	294380		

REPORT OF LABORATORY ANALYSIS

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CHAIN OF CUSTODY
 SGS North America Inc. - Orlando
 4405 Vineland Road, Suite C-15 Orlando, FL
 TEL: 407-425-6700 FAX: 407-425-0707
 www.sgs.com/ehsusa

WO#: 20285709



Order Control #

Job # FC8409X

Client / Reporting Information		Project Information										Requested Analysis (see TEST CODE sheet)										Matrix Codes											
Company Name: SGS North America Inc.		Project Name: TQN 118 NASA PRLs; KSC, FL										DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank										LAB USE ONLY											
Street Address 4405 Vineland Rd, Suite C-15		Street																															
City State Zip Orlando FL 32811		City State																															
Project Contact E-mail jean.dent@sgs.com		Project #																															
Phone # Fax # 407-425-6700		Client Purchase Order #																															
Sampler(s) Name(s) RLBS		Project Manager																															
		Attention:																															
		Billing Information (if different from Report to)																															
		Company Name																															
		Street Address																															
		City State Zip																															
		Collection										%SOL - ASMS																					
SGS Sample #		MEOH/DI Vial #																															
Field ID / Point of Collection		Date Time																															
1X		7/27/23 4:11:00 PM																															X
2X		7/27/23 4:12:00 PM																															X
3X		7/27/23 4:13:00 PM																															X
4X		7/27/23 4:23:00 PM																															X
5X		7/27/23 4:24:00 PM																															X
6X		7/27/23 4:25:00 PM																															X
7X		7/27/23 4:32:00 PM																															X
8X		7/27/23 4:33:00 PM																				X											
9X		7/27/23 4:34:00 PM																				X											
10X		7/27/23 4:45:00 PM																				X											
11X		7/27/23 4:46:00 PM																				X											
12X		7/27/23 4:47:00 PM																				X											
Turnaround Time (Business days)		Data Deliverable Information										Comments / Special Instructions																					
<input type="checkbox"/> Standard 10 Day (business) <input type="checkbox"/> 5 Business Days RUSH <input type="checkbox"/> 3 Business Days RUSH <input type="checkbox"/> 2 Business Days RUSH <input type="checkbox"/> 1 Business Day EMERGENCY <input checked="" type="checkbox"/> other Due 8/17/2023 Emergency & Rush T/A data available via Lablink Approval needed for RUSH/Emergency TAT		Approved By (SGS PM): / Date: _____ _____ _____ _____										<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> REDT1 (Level 3) <input checked="" type="checkbox"/> FULT1 (Level 4) <input type="checkbox"/> Commercial "C" <input type="checkbox"/> State Forms <input checked="" type="checkbox"/> EDD Format EQUIS <input type="checkbox"/> Other Commercial "A" = Results Onl Commercial "B" = Results + QC Summary Commercial "C" = Results + QC Summary + Partial Raw data										Please subcontract at PACE Gulf Coast. Thank you.											
		Sample Custody must be documented below each time samples change possession, including courier delivery.										http://www.sgs.com/en/terms-and-conditions																					
Relinquished by Sampler: <i>[Signature]</i>		Date Time: <i>08/09/23 1600</i>										Received By: <i>[Signature]</i>										1											
Relinquished by Sampler: <i>[Signature]</i>		Date Time:										Received By: <i>[Signature]</i>										2											
Relinquished by:		Date Time:										Received By:										3											
Relinquished by:		Date Time:										Received By:										4											
Relinquished by:		Date Time:										Received By:										5											
		Custody Seal #										<input type="checkbox"/> Intact Preserved where applicable <input type="checkbox"/> Not intact										<input type="checkbox"/> On Ice <input type="checkbox"/> Cooler Temp.											
												Therm. ID																					

1-2025-10-27-08-25-2023

NO#: 20285709

PM: RM Due Date: 08/15/23

CLIENT: BR-SGS_ORLLAN

PAGE

Sample Condition Upon Receipt (SUCR)

Workorder #: _____

10

7979 Innovation Park Dr. Baton Rouge, LA 70806

Cooler Inspected by/date: BRP / 8/15/23

Method of receipt: Pace Client UPS FedEx Other: _____

Yes No NA If custody seals were present, were they intact and unbroken?

Method: Temperature Blank Against Bottles IR Gun ID: EL3 IR Gun Correction Factor: 2.2 °C

Cooler #1 Cooler Temp °C: 8.00 (Actual/True) Samples on ice Yes No pH Strip Lot # _____

Cooler #2 Cooler Temp °C: 1.7 (Actual/True)

Cooler #3 Cooler Temp °C: _____ (Actual/True)

Cooler #4 Cooler Temp °C: _____ (Actual/True) Method of coolant: Wet Ice Packs Dry/Ice None

Tracking #: 6134 6612 4354

<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Is a temperature blank present?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Was a chain of custody (COC) received?		
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA	Was the line and profile number listed on the COC?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Were all coolers received at or below 6.0°C? If no, notify Project Manager notified via email.		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Were proper custody procedures (relinquished/received) followed?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Is the sampler name and signature on the COC?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Were sample IDs listed on the COC and all sample containers?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Was collection date & time listed on the COC and all sample containers?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Did all container label information (ID, date, time) agree with the COC?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Were tests to be performed listed on the COC?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Was adequate sample volume available?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Were all samples received within ½ the holding time or 48 hours, whichever comes first?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Were all samples containers accounted for? (No missing / excess)		
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Were VOA, 8015C (GRO/PH), and RSK-175 samples free of bubbles > "pea size" (1/4" or 6mm in diameter) in any of the VOA vials?		
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Trip blank present?		
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Filtered volume received for dissolved tests? If no, list affected sample(s) in comments below.		
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	Were all metals/nutrient samples received at a pH of < 2?		
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?		

Comments:

If No, was preservative added? Yes No
If added, record lots: Dispenser/pipette lot #: _____
HNO₃ _____ H₂SO₄ _____ NaOH _____
Date: _____ Time: _____



LELAP Certificate Number: 01955
A2LA Accredited (DoD ELAP-QSM 5.4) Certificate Number: 6429.01

ANALYTICAL RESULTS

PERFORMED BY

Pace Analytical Gulf Coast
7979 Innovation Park Dr.
Baton Rouge, LA 70820
(225) 769-4900

Report Date 07/19/2023

Report # 223071218



Project FC7587X KCDC Soil

Samples Collected 7/7/23

<i>Deliver To</i>	<i>Additional Recipients</i>
Jean Dent SGS North America Inc 4405 Vineland Rd Suite C-15 Orlando, FL 32811 407-425-6700	NONE



Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with Pace Gulf Coast's Standard Operating Procedures.

Common Abbreviations that may be Utilized in this Report

ND	Indicates the result was Not Detected at the specified reporting limit
NO	Indicates the sample did not ignite when preliminary test performed for EPA Method 1030
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
RE	Re-analysis
CF	HPLC or GC Confirmation
00:01	Reported as a time equivalent to 12:00 AM

Reporting Flags that may be Utilized in this Report

J or I	Indicates the result is between the MDL and LOQ
J	DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria
U	Indicates the compound was analyzed for but not detected
B or V	Indicates the analyte was detected in the associated Method Blank
Q	Indicates a non-compliant QC Result (See Q Flag Application Report)
*	Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
E	Organics - The result is estimated because it exceeded the instrument calibration range
E	Metals - % difference for the serial dilution is > 10%
L	Reporting Limits adjusted to meet risk-based limit.
P	RPD between primary and confirmation result is greater than 40
DL	Diluted analysis – when appended to Client Sample ID

Sample receipt at Pace Gulf Coast is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of Pace Gulf Coast. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.



Authorized Signature
Pace Gulf Coast Report 223071218

Certifications

Certification	Certification Number
A2LA Accredited (DoD ELAP-QSM 5.4)	6429.01
Alabama	01955
Arkansas	88-0655
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
Washington	C929
USDA Soil Permit	P330-16-00234

Case Narrative

Client: SGS Accutest - Orlando **Report:** 223071218

Pace Analytical Gulf Coast received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

This report was completed in accordance with DOD QSM 5.3 as specified in the contract.

No anomalies were found for the analyzed sample(s).

Sample Summary

Lab ID	Client ID	Matrix	Collect Date	Receive Date
22307121801	KCDC-SB0059-000.5-20230707	Solid	7/07/23 08:35	7/12/23 10:09
22307121802	KCDC-SB0060-000.5-20230707	Solid	7/07/23 08:38	7/12/23 10:09
22307121803	KCDC-SB0061-000.5-20230707	Solid	7/07/23 08:42	7/12/23 10:09
22307121804	KCDC-SB0062-000.5-20230707	Solid	7/07/23 08:45	7/12/23 10:09
22307121805	KCDC-SB0063-000.5-20230707	Solid	7/07/23 08:48	7/12/23 10:09
22307121806	KCDC-SB0064-000.5-20230707	Solid	7/07/23 08:51	7/12/23 10:09
22307121807	KCDC-SB0065-000.5-20230707	Solid	7/07/23 08:54	7/12/23 10:09
22307121808	KCDC-SB0066-000.5-20230707	Solid	7/07/23 08:57	7/12/23 10:09
22307121809	KCDC-SB0067-000.5-20230707	Solid	7/07/23 08:58	7/12/23 10:09
22307121810	KCDC-SB0068-000.5-20230707	Solid	7/07/23 09:00	7/12/23 10:09
22307121811	KCDC-SB0069-000.5-20230707	Solid	7/07/23 09:04	7/12/23 10:09
22307121812	KCDC-SB0070-000.5-20230707	Solid	7/07/23 09:06	7/12/23 10:09
22307121813	KCDC-SB0071-000.5-20230707	Solid	7/07/23 09:13	7/12/23 10:09
22307121814	KCDC-SB0072-000.5-20230707	Solid	7/07/23 09:15	7/12/23 10:09
22307121815	KCDC-SB0073-000.5-20230707	Solid	7/07/23 09:18	7/12/23 10:09
22307121816	KCDC-SB0074-000.5-20230707	Solid	7/07/23 09:20	7/12/23 10:09
22307121817	KCDC-SB0075-000.5-20230707	Solid	7/07/23 09:23	7/12/23 10:09
22307121818	KCDC-SB0076-000.5-20230707	Solid	7/07/23 09:25	7/12/23 10:09

Test Summary

EPA 6020B

Lab ID	Client ID	Matrix	Batch	Instru	RunDate
22307121801	KCDC-SB0059-000.5-20230707	Solid	768860	ICPMS2	7/12/23 16:24
22307121802	KCDC-SB0060-000.5-20230707	Solid	768860	ICPMS2	7/12/23 16:42
22307121803	KCDC-SB0061-000.5-20230707	Solid	768860	ICPMS2	7/12/23 16:46
22307121804	KCDC-SB0062-000.5-20230707	Solid	768860	ICPMS2	7/12/23 16:49
22307121805	KCDC-SB0063-000.5-20230707	Solid	768860	ICPMS2	7/12/23 16:53
22307121806	KCDC-SB0064-000.5-20230707	Solid	768860	ICPMS2	7/12/23 16:56
22307121807	KCDC-SB0065-000.5-20230707	Solid	768860	ICPMS2	7/12/23 17:00
22307121808	KCDC-SB0066-000.5-20230707	Solid	768860	ICPMS2	7/12/23 17:03
22307121809	KCDC-SB0067-000.5-20230707	Solid	768860	ICPMS2	7/12/23 17:07
22307121810	KCDC-SB0068-000.5-20230707	Solid	768860	ICPMS2	7/12/23 17:10
22307121811	KCDC-SB0069-000.5-20230707	Solid	768860	ICPMS2	7/12/23 17:21
22307121812	KCDC-SB0070-000.5-20230707	Solid	768860	ICPMS2	7/12/23 17:25
22307121813	KCDC-SB0071-000.5-20230707	Solid	768860	ICPMS2	7/12/23 17:28
22307121814	KCDC-SB0072-000.5-20230707	Solid	768860	ICPMS2	7/12/23 17:32
22307121815	KCDC-SB0073-000.5-20230707	Solid	768860	ICPMS2	7/12/23 17:35
22307121816	KCDC-SB0074-000.5-20230707	Solid	768860	ICPMS2	7/12/23 17:39
22307121817	KCDC-SB0075-000.5-20230707	Solid	768860	ICPMS2	7/12/23 17:43
22307121818	KCDC-SB0076-000.5-20230707	Solid	768860	ICPMS2	7/12/23 17:46

SM 2540 G-2011

Lab ID	Client ID	Matrix	Batch	Instru	RunDate
22307121801	KCDC-SB0059-000.5-20230707	Solid	768909	BAL15	7/13/23 10:15
22307121802	KCDC-SB0060-000.5-20230707	Solid	768909	BAL15	7/13/23 10:15
22307121803	KCDC-SB0061-000.5-20230707	Solid	768909	BAL15	7/13/23 10:15
22307121804	KCDC-SB0062-000.5-20230707	Solid	768909	BAL15	7/13/23 10:15
22307121805	KCDC-SB0063-000.5-20230707	Solid	768909	BAL15	7/13/23 10:15
22307121806	KCDC-SB0064-000.5-20230707	Solid	768909	BAL15	7/13/23 10:15
22307121807	KCDC-SB0065-000.5-20230707	Solid	768909	BAL15	7/13/23 10:15
22307121808	KCDC-SB0066-000.5-20230707	Solid	768909	BAL15	7/13/23 10:15
22307121809	KCDC-SB0067-000.5-20230707	Solid	768909	BAL15	7/13/23 10:15
22307121810	KCDC-SB0068-000.5-20230707	Solid	768909	BAL15	7/13/23 10:15
22307121811	KCDC-SB0069-000.5-20230707	Solid	768909	BAL15	7/13/23 10:15
22307121812	KCDC-SB0070-000.5-20230707	Solid	768909	BAL15	7/13/23 10:15
22307121813	KCDC-SB0071-000.5-20230707	Solid	768909	BAL15	7/13/23 10:15
22307121814	KCDC-SB0072-000.5-20230707	Solid	768909	BAL15	7/13/23 10:15
22307121815	KCDC-SB0073-000.5-20230707	Solid	768909	BAL15	7/13/23 10:15
22307121816	KCDC-SB0074-000.5-20230707	Solid	768909	BAL15	7/13/23 10:15
22307121817	KCDC-SB0075-000.5-20230707	Solid	768909	BAL15	7/13/23 10:15
22307121818	KCDC-SB0076-000.5-20230707	Solid	768909	BAL15	7/13/23 10:15

Manual Integrations

Manual Integrations for LC and IC (if performed) are documented in the raw data.
No other manual integrations were performed by Pace Gulf Coast.

Q Flag Summary

NO Q FLAGS FOR THIS WORKORDER

Detect Summary

Results and Detection Limits are adjusted for dilution and moisture when applicable

EPA 6020B						
Lab ID	Client ID	Parameter	Units	Result	Dil.	%Moist
22307121801	KCDC-SB0059-000.5-20230707	Arsenic	ug/Kg	811	10	14.97
22307121802	KCDC-SB0060-000.5-20230707	Arsenic	ug/Kg	434J	10	33.56
22307121803	KCDC-SB0061-000.5-20230707	Arsenic	ug/Kg	627	10	26.35
22307121804	KCDC-SB0062-000.5-20230707	Arsenic	ug/Kg	591	10	12.25
22307121805	KCDC-SB0063-000.5-20230707	Arsenic	ug/Kg	729	10	17.29
22307121806	KCDC-SB0064-000.5-20230707	Arsenic	ug/Kg	702	10	24.52
22307121807	KCDC-SB0065-000.5-20230707	Arsenic	ug/Kg	494	10	16.8
22307121808	KCDC-SB0066-000.5-20230707	Arsenic	ug/Kg	727	10	19.75
22307121809	KCDC-SB0067-000.5-20230707	Arsenic	ug/Kg	490	10	18.79
22307121810	KCDC-SB0068-000.5-20230707	Arsenic	ug/Kg	2750	10	26.62
22307121811	KCDC-SB0069-000.5-20230707	Arsenic	ug/Kg	813	10	23.58
22307121812	KCDC-SB0070-000.5-20230707	Arsenic	ug/Kg	4630	10	16.62
22307121813	KCDC-SB0071-000.5-20230707	Arsenic	ug/Kg	890	10	21.21
22307121814	KCDC-SB0072-000.5-20230707	Arsenic	ug/Kg	876	10	29.65
22307121815	KCDC-SB0073-000.5-20230707	Arsenic	ug/Kg	824	10	8.92
22307121816	KCDC-SB0074-000.5-20230707	Arsenic	ug/Kg	2980	10	27.73
22307121817	KCDC-SB0075-000.5-20230707	Arsenic	ug/Kg	1390	10	12.4
22307121818	KCDC-SB0076-000.5-20230707	Arsenic	ug/Kg	238J	10	10.94

Metals

Form I

Sample Results

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223071218</u>	Client Sample ID: <u>KCDC-SB0059-000.5-20230707</u>
Collect Date: <u>07/07/23</u> Time: <u>0835</u>	GCAL Sample ID: <u>22307121801</u>
Matrix: <u>Solid</u> % Solids: <u>85.02</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.25</u> g	Lab File ID: <u>2230712A_MS2.b\122961SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/12/23</u>	Analysis Date: <u>07/12/23</u> Time: <u>1624</u>
Prep Batch: <u>768841</u>	Analytical Batch: <u>768860</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	811	ug/kg		118	235	470

Reference Sample Report

Sample Name 22307121801
File Name 122961SMPL.d
Data Path Name C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
Acq Time 7/12/2023 4:24:36 PM
Sample Type AllRef
Total Dilution 400.0000
Comment ICPMS-2,TDM
ISTD Ref FileName 1221CALB.d
Sample QC Pass/Fial Pass
ISTD QC Pass/Fail Fail

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Conc. RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	432.196	18.8	62075.39	500	
Be	9	6	No Gas	53.458	4.4	348.01	1000	
B	11	6	No Gas	1267.068	10.3	7942.30	500	
Sr	88	72	No Gas	15541.195	2.0	2272135.02	1000	
Zr	90	72	No Gas	1272.122	9.3	116472.47	100	
Mo	95	115	No Gas	554.350	0.8	14816.66	1000	
Ag	107	115	No Gas	18.430	5.5	1351.19	100	
Cd	111	115	No Gas	61.437	6.7	1033.38	1000	
Sb	121	115	No Gas	261.639	0.5	20184.65	1000	
Ba	137	115	No Gas	11390.281	1.6	319355.07	1000	
Tl	205	209	No Gas	11.839	6.7	2807.08	1000	
Pb	208	209	No Gas	2323.651	2.5	540075.71	1000	
Na	23	45	He	14921.328	2.1	19069.27	100000	
Mg	24	45	He	83804.386	1.4	30795.65	100000	
Al	27	45	He	1916809.146	3.1	201413.78	20000	
Si	29	45	He	1572946.007	8.4	6809.69	10000	
K	39	45	He	48694.762	15.2	30629.72	100000	
Ca	44	45	He	3742445.654	0.5	62253.30	500000	
Ti	47	45	He	60526.429	4.6	8696.10	1000	
V	51	72	He	2799.160	1.1	17246.09	1000	
Cr	52	72	He	3585.643	1.0	28307.48	1000	
Mn	55	72	He	8885.361	1.8	30948.05	5000	
Fe	57	72	He	877330.527	1.4	130268.74	100000	
Co	59	72	He	154.875	3.3	2370.22	1000	
Ni	60	72	He	1169.749	2.6	5987.95	2000	
Cu	63	45	He	3180.230	1.3	39412.82	1000	
Zn	66	72	He	239201.922	0.2	373658.86	20000	
As	75	72	He	689.881	5.9	1031.71	1000	
Se	78	72	He	-639.663	N/A	-29.96	50	
Sn	120	115	He	135.957	17.6	1551.38	1000	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	%QC Low	%QC High	QC Flag
(Li)	6	No Gas	772092.04	0.8	662644.216666667	116.52	70	120	
Sc	45	No Gas	4547808.99	0.4	3751808.74	121.22	70	120	<70% or >120%
Ge	72	No Gas	1285293.49	0.5	1075610.546666667	119.49	70	120	

Reference Sample Report

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	%QC Low	%QC High	QC Flag
Rh	103	No Gas	9079477.97	0.3	7567675.80666667	119.98	70	120	
In	115	No Gas	9898891.76	0.4	8286385.15	119.46	70	120	
Tb	159	No Gas	14585520.20	0.6	11714148.99333333	124.51	70	120	<70% or >120%
Lu	175	No Gas	14344034.79	0.3	11754297.74	122.03	70	120	<70% or >120%
Bi	209	No Gas	9936473.60	0.6	8369981.75	118.72	70	120	
Sc	45	He	85025.65	0.3	76114.41	111.71	70	120	
Ge	72	He	89506.71	1.2	81380.8566666667	109.98	70	120	
Rh	103	He	3052437.17	1.1	2764364.75333333	110.42	70	120	
In	115	He	947398.12	1.5	879610.92	107.71	70	120	
Tb	159	He	4260317.96	1.3	3836613.38	111.04	70	120	
Lu	175	He	2565102.88	1.2	2355507.1	108.9	70	120	
Bi	209	He	3722393.49	0.9	3354908.39	110.95	70	120	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223071218</u>	Client Sample ID: <u>KCDC-SB0060-000.5-20230707</u>
Collect Date: <u>07/07/23</u> Time: <u>0838</u>	GCAL Sample ID: <u>22307121802</u>
Matrix: <u>Solid</u> % Solids: <u>66.43</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.28</u> g	Lab File ID: <u>2230712A_MS2.b\122966SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/12/23</u>	Analysis Date: <u>07/12/23</u> Time: <u>1642</u>
Prep Batch: <u>768841</u>	Analytical Batch: <u>768860</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	434	ug/kg	J	147	294	588

Sample Report

Sample Name	22307121802	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122966SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 4:42:27 PM	Total Dilution	390.6250
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.7	273.433	1.5	58818.12	500	
Be	9	6	No Gas	0.14	54.505	8.1	356.01	1000	
B	11	6	No Gas	1.477	577.009	4.1	5531.28	500	
Sr	88	72	No Gas	68.209	26644.178	1.1	3941705.25	1000	
Zr	90	72	No Gas	8.799	3437.184	21.8	316350.43	100	
Mo	95	115	No Gas	1.188	464.164	1.5	12745.83	1000	
Ag	107	115	No Gas	0.023	9.061	5.0	708.92	100	
Cd	111	115	No Gas	0.038	14.932	14.1	310.01	1000	
Sb	121	115	No Gas	0.357	139.406	2.6	11779.22	1000	
Ba	137	115	No Gas	24.954	9747.758	0.3	279954.66	1000	
Tl	205	209	No Gas	0.012	4.534	14.0	1613.49	1000	
Pb	208	209	No Gas	7.365	2876.965	2.4	701840.47	1000	
Na	23	45	He	31.709	12386.395	4.7	17124.72	100000	
Mg	24	45	He	190.321	74344.031	1.8	27592.61	100000	
Al	27	45	He	7627.204	2979376.606	1.3	313789.70	20000	
Si	29	45	He	4916.688	1920581.394	7.3	8079.03	10000	
K	39	45	He	80.612	31489.241	1.3	25022.62	100000	
Ca	44	45	He	3185.21	1244222.730	1.0	20988.43	500000	
Ti	47	45	He	428.663	167446.415	6.4	24113.31	1000	
V	51	72	He	7.415	2896.420	3.2	17927.19	1000	
Cr	52	72	He	10.153	3965.859	2.2	31406.96	1000	
Mn	55	72	He	4.317	1686.368	4.8	7710.51	5000	
Fe	57	72	He	701.966	274205.569	0.5	41008.47	100000	
Co	59	72	He	0.19	74.284	6.1	1175.62	1000	
Ni	60	72	He	0.9	351.630	3.6	2590.32	2000	
Cu	63	45	He	4.806	1877.386	2.1	23417.72	1000	
Zn	66	72	He	24.18	9445.375	1.5	15273.62	20000	
As	75	72	He	0.738	288.437	6.9	444.01	1000	
Se	78	72	He	-0.305	-119.295	125.1	5.76	50	
Sn	120	115	He	0.195	76.357	13.4	964.49	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3753762.76	3354908.39	111.89	
Ge	72	He	87870.19	81380.856666667	107.97	
In	115	He	931344.05	879610.92	105.88	
Lu	175	He	2555757.10	2355507.1	108.5	
Rh	103	He	3078955.15	2764364.75333333	111.38	
Sc	45	He	83233.49	76114.41	109.35	
Tb	159	He	4261448.58	3836613.38	111.07	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	761165.94	662644.216666667	114.87
Bi	209	No Gas	10187903.39	8369981.75	121.72
Ge	72	No Gas	1270360.47	1075610.54666667	118.11
In	115	No Gas	9901098.26	8286385.15	119.49
Lu	175	No Gas	14600207.28	11754297.74	124.21
Rh	103	No Gas	9149411.58	7567675.80666667	120.9
Sc	45	No Gas	4519257.60	3751808.74	120.46
Tb	159	No Gas	14811080.20	11714148.9933333	126.44

Sample Report

Flag
<70% or >120%
<70% or >120%
<70% or >120%
<70% or >120%
<70% or >120%

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223071218</u>	Client Sample ID: <u>KCDC-SB0061-000.5-20230707</u>
Collect Date: <u>07/07/23</u> Time: <u>0842</u>	GCAL Sample ID: <u>22307121803</u>
Matrix: <u>Solid</u> % Solids: <u>73.65</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.29</u> g	Lab File ID: <u>2230712A_MS2.b\122967SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/12/23</u>	Analysis Date: <u>07/12/23</u> Time: <u>1646</u>
Prep Batch: <u>768841</u>	Analytical Batch: <u>768860</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	627	ug/kg		132	263	526

Sample Report

Sample Name	22307121803	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122967SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 4:46:01 PM	Total Dilution	387.5969
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.824	319.513	1.6	59273.26	500	
Be	9	6	No Gas	0.132	51.217	9.7	338.01	1000	
B	11	6	No Gas	2.15	833.408	5.5	6411.53	500	
Sr	88	72	No Gas	35.101	13605.063	1.8	2056516.43	1000	
Zr	90	72	No Gas	3.55	1376.010	9.1	130178.54	100	
Mo	95	115	No Gas	1.967	762.318	3.6	20991.86	1000	
Ag	107	115	No Gas	0.019	7.292	6.8	587.80	100	
Cd	111	115	No Gas	0.043	16.793	5.0	343.34	1000	
Sb	121	115	No Gas	0.242	93.655	2.8	8546.04	1000	
Ba	137	115	No Gas	40.577	15727.504	2.7	456673.16	1000	
Tl	205	209	No Gas	0.014	5.343	6.4	1753.51	1000	
Pb	208	209	No Gas	5.11	1980.814	0.7	483342.20	1000	
Na	23	45	He	37.288	14452.722	2.0	18652.48	100000	
Mg	24	45	He	210.665	81653.152	1.7	30284.82	100000	
Al	27	45	He	5845.27	2265608.573	0.4	240346.47	20000	
Si	29	45	He	5623.521	2179659.356	1.4	9093.03	10000	
K	39	45	He	101.543	39357.856	0.9	27531.73	100000	
Ca	44	45	He	4406.794	1708059.579	1.3	28881.67	500000	
Ti	47	45	He	195.952	75950.477	5.6	11017.13	1000	
V	51	72	He	8.864	3435.556	0.3	21454.63	1000	
Cr	52	72	He	9.362	3628.695	1.4	29089.03	1000	
Mn	55	72	He	9.364	3629.588	2.3	14141.32	5000	
Fe	57	72	He	1206.971	467818.037	1.8	70644.87	100000	
Co	59	72	He	0.27	104.478	4.9	1644.56	1000	
Ni	60	72	He	0.839	325.202	3.1	2498.02	2000	
Cu	63	45	He	5.107	1979.543	1.4	24854.41	1000	
Zn	66	72	He	60.509	23453.265	2.0	37644.91	20000	
As	75	72	He	1.192	461.935	4.5	707.69	1000	
Se	78	72	He	-1.729	-670.142	-8.9	-33.06	50	
Sn	120	115	He	0.167	64.656	8.1	860.04	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3757396.19	3354908.39	112	
Ge	72	He	88136.26	81380.856666667	108.3	
In	115	He	938652.71	879610.92	106.71	
Lu	175	He	2550932.93	2355507.1	108.3	
Rh	103	He	3083889.18	2764364.75333333	111.56	
Sc	45	He	83186.42	76114.41	109.29	
Tb	159	He	4262763.06	3836613.38	111.11	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	757023.48	662644.216666667	114.24
Bi	209	No Gas	10106487.97	8369981.75	120.75
Ge	72	No Gas	1287460.44	1075610.54666667	119.7
In	115	No Gas	9934694.98	8286385.15	119.89
Lu	175	No Gas	14519112.70	11754297.74	123.52
Rh	103	No Gas	9152741.58	7567675.80666667	120.95
Sc	45	No Gas	4559625.52	3751808.74	121.53
Tb	159	No Gas	14793798.11	11714148.9933333	126.29

Sample Report

Flag
<70% or >120%
<70% or >120%
<70% or >120%
<70% or >120%
<70% or >120%

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223071218</u>	Client Sample ID: <u>KCDC-SB0062-000.5-20230707</u>
Collect Date: <u>07/07/23</u> Time: <u>0845</u>	GCAL Sample ID: <u>22307121804</u>
Matrix: <u>Solid</u> % Solids: <u>87.74</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.25</u> g	Lab File ID: <u>2230712A_MS2.b\122968SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/12/23</u>	Analysis Date: <u>07/12/23</u> Time: <u>1649</u>
Prep Batch: <u>768841</u>	Analytical Batch: <u>768860</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	591	ug/kg		114	228	456

Sample Report

Sample Name	22307121804	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122968SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 4:49:35 PM	Total Dilution	400.0000
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	3.117	1246.904	0.5	72503.09	500	
Be	9	6	No Gas	0.167	66.642	3.5	406.68	1000	
B	11	6	No Gas	4.134	1653.657	13.1	8964.36	500	
Sr	88	72	No Gas	219.522	87808.734	0.1	12677444.39	1000	
Zr	90	72	No Gas	2.641	1056.290	5.6	95735.13	100	
Mo	95	115	No Gas	0.217	86.921	6.1	2555.82	1000	
Ag	107	115	No Gas	0.128	51.329	3.2	3663.84	100	
Cd	111	115	No Gas	0.292	116.656	2.5	1900.15	1000	
Sb	121	115	No Gas	0.157	62.759	1.6	6122.52	1000	
Ba	137	115	No Gas	18.3	7320.051	0.7	205477.70	1000	
Tl	205	209	No Gas	0.024	9.603	7.7	2433.65	1000	
Pb	208	209	No Gas	9.73	3891.822	0.5	907613.66	1000	
Na	23	45	He	311.588	124635.219	2.5	92077.71	100000	
Mg	24	45	He	613.932	245572.649	1.5	81876.41	100000	
Al	27	45	He	3917.569	1567027.586	0.2	157155.12	20000	
Si	29	45	He	2981.257	1192502.625	6.0	5167.06	10000	
K	39	45	He	118.384	47353.620	2.3	28835.67	100000	
Ca	44	45	He	66770.703	26708281.083	0.5	421813.07	500000	
Ti	47	45	He	96.051	38420.221	8.0	5271.90	1000	
V	51	72	He	4.54	1816.081	1.6	10806.35	1000	
Cr	52	72	He	11.871	4748.224	1.8	35829.20	1000	
Mn	55	72	He	77.861	31144.553	1.5	98654.56	5000	
Fe	57	72	He	2153.733	861493.207	2.7	122818.40	100000	
Co	59	72	He	0.437	174.672	3.1	2558.03	1000	
Ni	60	72	He	1.886	754.216	2.5	4098.39	2000	
Cu	63	45	He	39.911	15964.267	1.4	187877.66	1000	
Zn	66	72	He	66.551	26620.524	1.6	40322.05	20000	
As	75	72	He	1.297	518.658	3.4	749.02	1000	
Se	78	72	He	-0.618	-247.042	-32.3	-2.69	50	
Sn	120	115	He	0.196	78.330	10.0	945.60	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3642285.68	3354908.39	108.57	
Ge	72	He	85927.60	81380.856666667	105.59	
In	115	He	911566.55	879610.92	103.63	
Lu	175	He	2514676.52	2355507.1	106.76	
Rh	103	He	2939811.27	2764364.75333333	106.35	
Sc	45	He	81147.55	76114.41	106.61	
Tb	159	He	4181500.88	3836613.38	108.99	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	746074.68	662644.216666667	112.59
Bi	209	No Gas	9975979.23	8369981.75	119.19
Ge	72	No Gas	1269757.27	1075610.54666667	118.05
In	115	No Gas	9906728.63	8286385.15	119.55
Lu	175	No Gas	14560228.95	11754297.74	123.87
Rh	103	No Gas	8897971.87	7567675.80666667	117.58
Sc	45	No Gas	4491950.79	3751808.74	119.73
Tb	159	No Gas	14758275.61	11714148.9933333	125.99

Sample Report

Flag
<70% or >120%
<70% or >120%

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223071218</u>	Client Sample ID: <u>KCDC-SB0063-000.5-20230707</u>
Collect Date: <u>07/07/23</u> Time: <u>0848</u>	GCAL Sample ID: <u>22307121805</u>
Matrix: <u>Solid</u> % Solids: <u>82.71</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.3</u> g	Lab File ID: <u>2230712A_MS2.b\122969SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/12/23</u>	Analysis Date: <u>07/12/23</u> Time: <u>1653</u>
Prep Batch: <u>768841</u>	Analytical Batch: <u>768860</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	729	ug/kg		116	233	465

Sample Report

Sample Name	22307121805	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122969SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 4:53:09 PM	Total Dilution	384.6154
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	2.705	1040.516	1.1	69693.15	500	
Be	9	6	No Gas	0.18	69.196	11.6	433.34	1000	
B	11	6	No Gas	3.476	1337.035	4.1	8052.57	500	
Sr	88	72	No Gas	245.347	94364.413	0.4	13841739.37	1000	
Zr	90	72	No Gas	1.772	681.423	10.7	63068.11	100	
Mo	95	115	No Gas	0.126	48.515	7.3	1569.00	1000	
Ag	107	115	No Gas	0.134	51.709	6.6	3766.10	100	
Cd	111	115	No Gas	0.431	165.831	2.9	2724.73	1000	
Sb	121	115	No Gas	0.783	301.181	2.0	23416.37	1000	
Ba	137	115	No Gas	22.714	8736.103	0.9	250324.29	1000	
Tl	205	209	No Gas	0.019	7.275	7.8	2063.58	1000	
Pb	208	209	No Gas	8.326	3202.147	1.3	769339.27	1000	
Na	23	45	He	161.86	62253.892	1.8	50759.71	100000	
Mg	24	45	He	629.029	241934.401	0.8	82241.65	100000	
Al	27	45	He	3629.754	1396059.150	0.6	142836.13	20000	
Si	29	45	He	1535.953	590751.050	11.3	3081.77	10000	
K	39	45	He	100.346	38594.777	1.1	26207.11	100000	
Ca	44	45	He	75609.728	29080664.432	0.2	468494.80	500000	
Ti	47	45	He	52.568	20218.565	14.1	2833.62	1000	
V	51	72	He	6.501	2500.548	1.2	15164.57	1000	
Cr	52	72	He	13.746	5287.111	1.6	40795.02	1000	
Mn	55	72	He	84.989	32688.218	0.7	105881.77	5000	
Fe	57	72	He	2326.075	894644.298	1.1	130657.48	100000	
Co	59	72	He	0.45	172.934	4.0	2592.48	1000	
Ni	60	72	He	2.097	806.516	4.2	4368.47	2000	
Cu	63	45	He	50.001	19231.031	1.4	230832.11	1000	
Zn	66	72	He	123.552	47519.909	0.7	73360.24	20000	
As	75	72	He	1.568	602.972	3.9	888.36	1000	
Se	78	72	He	-0.623	-239.560	-162.9	-2.80	50	
Sn	120	115	He	0.214	82.442	25.4	998.03	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3604036.51	3354908.39	107.43	
Ge	72	He	84645.81	81380.8566666667	104.01	
In	115	He	897986.45	879610.92	102.09	
Lu	175	He	2473192.31	2355507.1	105	
Rh	103	He	2887971.14	2764364.75333333	104.47	
Sc	45	He	79600.34	76114.41	104.58	
Tb	159	He	4134268.17	3836613.38	107.76	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	743081.98	662644.216666667	112.14
Bi	209	No Gas	9880736.52	8369981.75	118.05
Ge	72	No Gas	1240451.13	1075610.54666667	115.33
In	115	No Gas	9725493.60	8286385.15	117.37
Lu	175	No Gas	14449316.87	11754297.74	122.93
Rh	103	No Gas	8700224.66	7567675.80666667	114.97
Sc	45	No Gas	4378532.19	3751808.74	116.7
Tb	159	No Gas	14584688.53	11714148.9933333	124.5

Sample Report

Flag
<70% or >120%
<70% or >120%

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223071218</u>	Client Sample ID: <u>KCDC-SB0064-000.5-20230707</u>
Collect Date: <u>07/07/23</u> Time: <u>0851</u>	GCAL Sample ID: <u>22307121806</u>
Matrix: <u>Solid</u> % Solids: <u>75.48</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.34</u> g	Lab File ID: <u>2230712A_MS2.b\122970SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/12/23</u>	Analysis Date: <u>07/12/23</u> Time: <u>1656</u>
Prep Batch: <u>768841</u>	Analytical Batch: <u>768860</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	702	ug/kg		124	247	494

Sample Report

Sample Name	22307121806	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122970SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 4:56:43 PM	Total Dilution	373.1343
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	6.532	2437.268	1.2	92266.15	500	
Be	9	6	No Gas	0.377	140.571	3.7	844.03	1000	
B	11	6	No Gas	6.727	2510.071	17.5	12248.44	500	
Sr	88	72	No Gas	318.488	118838.908	0.6	17558647.24	1000	
Zr	90	72	No Gas	2.45	914.211	7.2	84857.08	100	
Mo	95	115	No Gas	0.147	54.833	5.7	1742.35	1000	
Ag	107	115	No Gas	0.297	110.850	3.3	8062.36	100	
Cd	111	115	No Gas	0.794	296.338	1.0	4845.32	1000	
Sb	121	115	No Gas	0.133	49.699	0.1	5227.69	1000	
Ba	137	115	No Gas	41.819	15604.209	0.9	450000.96	1000	
Tl	205	209	No Gas	0.031	11.501	8.7	2840.43	1000	
Pb	208	209	No Gas	14.279	5327.992	0.7	1303139.48	1000	
Na	23	45	He	285.1	106380.546	1.1	81175.89	100000	
Mg	24	45	He	1614.26	602335.638	0.4	202331.64	100000	
Al	27	45	He	8430.469	3145697.388	0.5	323142.62	20000	
Si	29	45	He	1874.043	699269.923	7.7	3454.45	10000	
K	39	45	He	201.572	75213.475	1.1	36893.14	100000	
Ca	44	45	He	120932.333	45124004.879	1.1	729868.03	500000	
Ti	47	45	He	62.909	23473.398	8.0	3303.00	1000	
V	51	72	He	9.644	3598.333	1.6	21982.34	1000	
Cr	52	72	He	27.272	10176.019	0.9	78925.59	1000	
Mn	55	72	He	193.062	72038.032	1.0	233280.98	5000	
Fe	57	72	He	4078.701	1521903.401	0.9	224688.64	100000	
Co	59	72	He	0.701	261.405	1.2	3928.34	1000	
Ni	60	72	He	3.393	1266.091	3.0	6276.97	2000	
Cu	63	45	He	113.748	42443.109	0.9	511344.51	1000	
Zn	66	72	He	150.96	56328.213	1.0	87842.39	20000	
As	75	72	He	1.42	529.839	3.8	791.02	1000	
Se	78	72	He	-1.29	-481.260	-7.3	-19.87	50	
Sn	120	115	He	0.189	70.646	7.3	881.15	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3522813.49	3354908.39	105	
Ge	72	He	83045.55	81380.856666667	102.05	
In	115	He	872701.68	879610.92	99.21	
Lu	175	He	2433632.05	2355507.1	103.32	
Rh	103	He	2810067.46	2764364.75333333	101.65	
Sc	45	He	77555.22	76114.41	101.89	
Tb	159	He	4062345.98	3836613.38	105.88	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	736337.89	662644.216666667	111.12
Bi	209	No Gas	9762303.40	8369981.75	116.63
Ge	72	No Gas	1212212.35	1075610.54666667	112.7
In	115	No Gas	9499637.09	8286385.15	114.64
Lu	175	No Gas	14272978.54	11754297.74	121.43
Rh	103	No Gas	8438656.61	7567675.80666667	111.51
Sc	45	No Gas	4303713.44	3751808.74	114.71
Tb	159	No Gas	14431196.87	11714148.9933333	123.19

Sample Report

Flag
<70% or >120%
<70% or >120%

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223071218</u>	Client Sample ID: <u>KCDC-SB0065-000.5-20230707</u>
Collect Date: <u>07/07/23</u> Time: <u>0854</u>	GCAL Sample ID: <u>22307121807</u>
Matrix: <u>Solid</u> % Solids: <u>83.20</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.36</u> g	Lab File ID: <u>2230712A_MS2.b\122971SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/12/23</u>	Analysis Date: <u>07/12/23</u> Time: <u>1700</u>
Prep Batch: <u>768841</u>	Analytical Batch: <u>768860</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	494	ug/kg		110	221	442

Sample Report

Sample Name	22307121807	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122971SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 5:00:17 PM	Total Dilution	367.6471
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.858	315.562	1.8	59041.80	500	
Be	9	6	No Gas	0.065	24.047	3.1	192.00	1000	
B	11	6	No Gas	1.867	686.386	6.9	5984.73	500	
Sr	88	72	No Gas	71.318	26219.742	1.4	3955911.30	1000	
Zr	90	72	No Gas	1.174	431.669	2.5	41436.01	100	
Mo	95	115	No Gas	0.157	57.656	3.7	1860.14	1000	
Ag	107	115	No Gas	0.045	16.715	7.7	1293.41	100	
Cd	111	115	No Gas	0.204	75.049	6.4	1308.97	1000	
Sb	121	115	No Gas	0.326	119.727	2.6	10559.62	1000	
Ba	137	115	No Gas	8.542	3140.605	2.3	93025.53	1000	
Tl	205	209	No Gas	0.013	4.790	3.6	1680.19	1000	
Pb	208	209	No Gas	4.412	1621.969	0.4	412346.50	1000	
Na	23	45	He	110.43	40599.264	1.3	35913.47	100000	
Mg	24	45	He	237.444	87295.638	1.0	31290.17	100000	
Al	27	45	He	1256.318	461881.557	0.9	47801.57	20000	
Si	29	45	He	1691.638	621925.889	8.9	3183.80	10000	
K	39	45	He	61.034	22439.083	3.8	20942.10	100000	
Ca	44	45	He	17757.895	6528637.858	1.5	106565.45	500000	
Ti	47	45	He	64.35	23658.249	4.3	3348.66	1000	
V	51	72	He	2.427	892.301	1.6	5646.74	1000	
Cr	52	72	He	5.121	1882.880	0.9	15163.44	1000	
Mn	55	72	He	22.446	8252.282	1.1	28898.50	5000	
Fe	57	72	He	909.199	334264.411	1.4	50006.05	100000	
Co	59	72	He	0.295	108.497	1.3	1684.56	1000	
Ni	60	72	He	1.162	427.238	4.8	2841.42	2000	
Cu	63	45	He	15.143	5567.254	1.4	67694.10	1000	
Zn	66	72	He	379.874	139659.612	0.9	219667.31	20000	
As	75	72	He	1.119	411.348	4.4	624.68	1000	
Se	78	72	He	-0.369	-135.816	27.6	3.76	50	
Sn	120	115	He	0.137	50.249	9.6	694.48	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3600298.39	3354908.39	107.31	
Ge	72	He	82778.48	81380.856666667	101.72	
In	115	He	877978.57	879610.92	99.81	
Lu	175	He	2431989.18	2355507.1	103.25	
Rh	103	He	2898564.40	2764364.75333333	104.85	
Sc	45	He	76904.12	76114.41	101.04	
Tb	159	He	4069182.02	3836613.38	106.06	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	751518.14	662644.216666667	113.41
Bi	209	No Gas	9985235.48	8369981.75	119.3
Ge	72	No Gas	1219317.76	1075610.54666667	113.36
In	115	No Gas	9595810.03	8286385.15	115.8
Lu	175	No Gas	14261763.12	11754297.74	121.33
Rh	103	No Gas	8715932.15	7567675.80666667	115.17
Sc	45	No Gas	4265640.25	3751808.74	113.7
Tb	159	No Gas	14404599.79	11714148.9933333	122.97

Sample Report

Flag
<70% or >120%
<70% or >120%

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223071218</u>	Client Sample ID: <u>KCDC-SB0066-000.5-20230707</u>
Collect Date: <u>07/07/23</u> Time: <u>0857</u>	GCAL Sample ID: <u>22307121808</u>
Matrix: <u>Solid</u> % Solids: <u>80.25</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.31</u> g	Lab File ID: <u>2230712A_MS2.b\122972SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/12/23</u>	Analysis Date: <u>07/12/23</u> Time: <u>1703</u>
Prep Batch: <u>768841</u>	Analytical Batch: <u>768860</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	727	ug/kg		119	238	476

Sample Report

Sample Name	22307121808	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122972SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 5:03:51 PM	Total Dilution	381.6794
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	5.079	1938.668	0.5	83730.06	500	
Be	9	6	No Gas	0.353	134.743	1.2	796.70	1000	
B	11	6	No Gas	5.558	2121.484	4.7	10754.17	500	
Sr	88	72	No Gas	534.444	203986.079	0.6	28830632.90	1000	
Zr	90	72	No Gas	2.15	820.462	8.8	72999.27	100	
Mo	95	115	No Gas	0.228	86.955	5.6	2509.14	1000	
Ag	107	115	No Gas	0.293	111.975	3.2	7814.47	100	
Cd	111	115	No Gas	0.961	366.781	3.8	5740.11	1000	
Sb	121	115	No Gas	0.139	53.004	4.1	5282.17	1000	
Ba	137	115	No Gas	41.688	15911.343	0.9	440265.65	1000	
Tl	205	209	No Gas	0.026	9.824	7.0	2456.99	1000	
Pb	208	209	No Gas	22.311	8515.624	1.0	2001418.76	1000	
Na	23	45	He	891.065	340101.140	1.6	232504.42	100000	
Mg	24	45	He	1427.995	545036.208	1.0	175692.55	100000	
Al	27	45	He	6861.382	2618848.164	0.9	257836.99	20000	
Si	29	45	He	1682.121	642030.916	8.6	3131.77	10000	
K	39	45	He	197.414	75348.830	0.5	35710.53	100000	
Ca	44	45	He	181753.134	69371425.009	0.6	1075122.28	500000	
Ti	47	45	He	49.201	18778.850	13.7	2535.00	1000	
V	51	72	He	11.582	4420.524	1.4	25556.58	1000	
Cr	52	72	He	28.725	10963.655	0.1	80557.69	1000	
Mn	55	72	He	214.728	81957.306	1.3	251302.14	5000	
Fe	57	72	He	4778.84	1823984.671	1.0	255190.17	100000	
Co	59	72	He	0.951	362.796	3.4	5146.50	1000	
Ni	60	72	He	4.097	1563.562	1.2	7130.68	2000	
Cu	63	45	He	127.854	48799.237	1.1	563428.90	1000	
Zn	66	72	He	174.236	66502.197	0.9	98219.56	20000	
As	75	72	He	1.528	583.326	1.1	824.03	1000	
Se	78	72	He	-1.226	-468.084	-19.3	-17.69	50	
Sn	120	115	He	0.231	88.120	10.6	1008.94	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3451262.45	3354908.39	102.87	
Ge	72	He	80506.83	81380.856666667	98.93	
In	115	He	854424.76	879610.92	97.14	
Lu	175	He	2402004.76	2355507.1	101.97	
Rh	103	He	2742773.22	2764364.75333333	99.22	
Sc	45	He	76029.75	76114.41	99.89	
Tb	159	He	3992027.76	3836613.38	104.05	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	738768.89	662644.216666667	111.49
Bi	209	No Gas	9598285.48	8369981.75	114.68
Ge	72	No Gas	1186160.13	1075610.54666667	110.28
In	115	No Gas	9323628.59	8286385.15	112.52
Lu	175	No Gas	14193658.12	11754297.74	120.75
Rh	103	No Gas	8162876.90	7567675.80666667	107.87
Sc	45	No Gas	4223214.14	3751808.74	112.56
Tb	159	No Gas	14223046.04	11714148.9933333	121.42

Sample Report

Flag
<70% or >120%
<70% or >120%

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223071218</u>	Client Sample ID: <u>KCDC-SB0067-000.5-20230707</u>
Collect Date: <u>07/07/23</u> Time: <u>0858</u>	GCAL Sample ID: <u>22307121809</u>
Matrix: <u>Solid</u> % Solids: <u>81.21</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.3</u> g	Lab File ID: <u>2230712A_MS2.b\122973SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/12/23</u>	Analysis Date: <u>07/12/23</u> Time: <u>1707</u>
Prep Batch: <u>768841</u>	Analytical Batch: <u>768860</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	490	ug/kg		118	237	474

Sample Report

Sample Name	22307121809	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122973SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 5:07:25 PM	Total Dilution	384.6154
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	2.804	1078.289	1.7	70034.67	500	
Be	9	6	No Gas	0.182	69.979	5.1	436.01	1000	
B	11	6	No Gas	4.084	1570.603	4.3	8826.17	500	
Sr	88	72	No Gas	283.767	109140.990	0.2	15301604.35	1000	
Zr	90	72	No Gas	1.275	490.298	1.9	43663.90	100	
Mo	95	115	No Gas	0.616	236.832	2.9	6341.46	1000	
Ag	107	115	No Gas	0.119	45.863	2.4	3207.06	100	
Cd	111	115	No Gas	0.388	149.186	5.7	2355.78	1000	
Sb	121	115	No Gas	0.125	48.194	3.1	4918.70	1000	
Ba	137	115	No Gas	20.477	7875.898	1.0	216289.23	1000	
Tl	205	209	No Gas	0.03	11.386	4.1	2730.39	1000	
Pb	208	209	No Gas	17.305	6655.701	1.1	1563011.63	1000	
Na	23	45	He	392.386	150917.775	1.2	105589.70	100000	
Mg	24	45	He	988.199	380076.635	1.7	121006.42	100000	
Al	27	45	He	3805.7	1463730.906	1.1	141612.30	20000	
Si	29	45	He	1370.301	527038.911	16.0	2699.03	10000	
K	39	45	He	229.288	88187.669	1.3	38831.51	100000	
Ca	44	45	He	83090.345	31957824.905	0.4	486811.14	500000	
Ti	47	45	He	38.957	14983.569	17.2	1985.64	1000	
V	51	72	He	4.676	1798.430	2.7	10568.37	1000	
Cr	52	72	He	16.583	6378.078	0.6	47365.67	1000	
Mn	55	72	He	89.569	34449.705	0.6	107510.11	5000	
Fe	57	72	He	2220.048	853864.522	1.9	120273.16	100000	
Co	59	72	He	0.453	174.062	6.4	2516.91	1000	
Ni	60	72	He	1.702	654.466	0.3	3616.04	2000	
Cu	63	45	He	57.355	22059.465	0.7	250349.75	1000	
Zn	66	72	He	87.124	33509.412	0.7	50019.37	20000	
As	75	72	He	1.034	397.709	4.4	571.01	1000	
Se	78	72	He	-0.899	-345.720	-7.7	-9.65	50	
Sn	120	115	He	0.141	54.353	8.4	695.59	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3490933.38	3354908.39	104.05	
Ge	72	He	81644.37	81380.856666667	100.32	
In	115	He	859747.98	879610.92	97.74	
Lu	175	He	2388327.05	2355507.1	101.39	
Rh	103	He	2776794.34	2764364.75333333	100.45	
Sc	45	He	75271.38	76114.41	98.89	
Tb	159	He	3998600.46	3836613.38	104.22	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	740345.05	662644.216666667	111.73
Bi	209	No Gas	9662807.57	8369981.75	115.45
Ge	72	No Gas	1185684.12	1075610.54666667	110.23
In	115	No Gas	9320083.91	8286385.15	112.47
Lu	175	No Gas	14017371.46	11754297.74	119.25
Rh	103	No Gas	8216436.34	7567675.80666667	108.57
Sc	45	No Gas	4175836.78	3751808.74	111.3
Tb	159	No Gas	14144785.21	11714148.9933333	120.75

Sample Report

Flag
<70% or >120%

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223071218</u>	Client Sample ID: <u>KCDC-SB0068-000.5-20230707</u>
Collect Date: <u>07/07/23</u> Time: <u>0900</u>	GCAL Sample ID: <u>22307121810</u>
Matrix: <u>Solid</u> % Solids: <u>73.38</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.27</u> g	Lab File ID: <u>2230712A_MS2.b\122974SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/12/23</u>	Analysis Date: <u>07/12/23</u> Time: <u>1710</u>
Prep Batch: <u>768841</u>	Analytical Batch: <u>768860</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	2750	ug/kg		134	268	536

Sample Report

Sample Name	22307121810	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122974SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 5:10:59 PM	Total Dilution	393.7008
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	3.385	1332.688	1.4	72680.56	500	
Be	9	6	No Gas	0.229	90.184	4.7	529.34	1000	
B	11	6	No Gas	3.373	1327.846	5.2	7788.96	500	
Sr	88	72	No Gas	412.153	162265.149	0.2	22212630.50	1000	
Zr	90	72	No Gas	1.877	738.787	0.9	63776.05	100	
Mo	95	115	No Gas	0.187	73.724	3.8	2106.85	1000	
Ag	107	115	No Gas	0.144	56.657	1.5	3858.35	100	
Cd	111	115	No Gas	0.43	169.300	3.6	2603.60	1000	
Sb	121	115	No Gas	0.095	37.369	4.3	4108.43	1000	
Ba	137	115	No Gas	23.216	9140.305	1.1	245129.26	1000	
Tl	205	209	No Gas	0.033	12.829	1.0	2923.77	1000	
Pb	208	209	No Gas	8.385	3301.236	1.7	756372.58	1000	
Na	23	45	He	550.245	216631.725	1.2	145221.50	100000	
Mg	24	45	He	879.393	346217.851	1.2	108053.43	100000	
Al	27	45	He	4712.884	1855466.247	0.7	175582.95	20000	
Si	29	45	He	1913.625	753395.578	11.2	3406.53	10000	
K	39	45	He	129.694	51060.634	4.8	28014.21	100000	
Ca	44	45	He	97310.5	38311220.499	0.4	570784.43	500000	
Ti	47	45	He	62.209	24491.857	23.6	3177.79	1000	
V	51	72	He	7.655	3013.713	2.1	17101.12	1000	
Cr	52	72	He	18.712	7366.877	0.6	53107.07	1000	
Mn	55	72	He	103.1	40590.634	1.4	122799.93	5000	
Fe	57	72	He	3371.243	1327261.162	0.7	181639.11	100000	
Co	59	72	He	0.569	223.871	3.6	3130.37	1000	
Ni	60	72	He	2.133	839.945	6.7	4247.34	2000	
Cu	63	45	He	79.205	31183.058	1.2	346097.07	1000	
Zn	66	72	He	67.648	26632.890	1.0	38731.11	20000	
As	75	72	He	5.119	2015.296	1.0	2745.60	1000	
Se	78	72	He	-1.145	-450.662	-33.2	-15.80	50	
Sn	120	115	He	0.152	59.952	6.9	735.59	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3494617.97	3354908.39	104.16	
Ge	72	He	81216.31	81380.856666667	99.8	
In	115	He	860531.46	879610.92	97.83	
Lu	175	He	2400945.49	2355507.1	101.93	
Rh	103	He	2770622.39	2764364.75333333	100.23	
Sc	45	He	75370.91	76114.41	99.02	
Tb	159	He	4007305.15	3836613.38	104.45	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	731362.73	662644.216666667	110.37
Bi	209	No Gas	9645083.61	8369981.75	115.23
Ge	72	No Gas	1185053.22	1075610.54666667	110.17
In	115	No Gas	9317729.68	8286385.15	112.45
Lu	175	No Gas	14039287.71	11754297.74	119.44
Rh	103	No Gas	8196586.90	7567675.80666667	108.31
Sc	45	No Gas	4183461.22	3751808.74	111.51
Tb	159	No Gas	14096147.71	11714148.9933333	120.33

Sample Report

Flag
<70% or >120%

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223071218</u>	Client Sample ID: <u>KCDC-SB0069-000.5-20230707</u>
Collect Date: <u>07/07/23</u> Time: <u>0904</u>	GCAL Sample ID: <u>22307121811</u>
Matrix: <u>Solid</u> % Solids: <u>76.42</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.26</u> g	Lab File ID: <u>2230712A_MS2.b\122977SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/12/23</u>	Analysis Date: <u>07/12/23</u> Time: <u>1721</u>
Prep Batch: <u>768841</u>	Analytical Batch: <u>768860</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	813	ug/kg		130	260	519

Sample Report

Sample Name	22307121811	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122977SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 5:21:40 PM	Total Dilution	396.8254
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	1.052	417.349	1.0	58098.39	500	
Be	9	6	No Gas	0.084	33.139	9.4	222.67	1000	
B	11	6	No Gas	1.084	430.147	5.8	4757.56	500	
Sr	88	72	No Gas	118.499	47023.303	0.6	6440187.20	1000	
Zr	90	72	No Gas	1.98	785.770	13.0	67829.74	100	
Mo	95	115	No Gas	0.12	47.794	3.6	1485.66	1000	
Ag	107	115	No Gas	0.031	12.194	51.2	889.65	100	
Cd	111	115	No Gas	0.165	65.557	3.8	1068.94	1000	
Sb	121	115	No Gas	0.304	120.788	4.0	9945.98	1000	
Ba	137	115	No Gas	5.97	2368.906	1.2	64874.67	1000	
Tl	205	209	No Gas	0.028	11.199	16.7	2711.39	1000	
Pb	208	209	No Gas	3.855	1529.604	0.9	358465.53	1000	
Na	23	45	He	271.22	107626.861	1.0	76568.08	100000	
Mg	24	45	He	207.314	82267.375	5.7	27447.37	100000	
Al	27	45	He	1393.336	552910.984	1.1	52740.26	20000	
Si	29	45	He	1782.456	707323.829	17.2	3286.47	10000	
K	39	45	He	20.899	8293.292	1.5	16389.75	100000	
Ca	44	45	He	26398.141	10475452.791	1.0	157452.40	500000	
Ti	47	45	He	97.323	38620.403	18.1	5035.59	1000	
V	51	72	He	2.12	841.440	3.2	4959.88	1000	
Cr	52	72	He	6.1	2420.589	1.7	17981.27	1000	
Mn	55	72	He	12.486	4954.727	1.7	17023.27	5000	
Fe	57	72	He	985.706	391153.311	2.7	54241.83	100000	
Co	59	72	He	0.471	186.986	1.2	2655.82	1000	
Ni	60	72	He	1.345	533.754	3.8	3122.59	2000	
Cu	63	45	He	12.777	5070.201	1.6	56865.12	1000	
Zn	66	72	He	272.316	108061.966	1.0	157705.70	20000	
As	75	72	He	1.565	621.091	4.8	868.03	1000	
Se	78	72	He	-0.311	-123.238	21.5	5.28	50	
Sn	120	115	He	0.353	139.921	4.5	1494.54	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3601859.95	3354908.39	107.36	
Ge	72	He	82834.52	81380.856666667	101.79	
In	115	He	885061.76	879610.92	100.62	
Lu	175	He	2459422.94	2355507.1	104.41	
Rh	103	He	2876773.08	2764364.75333333	104.07	
Sc	45	He	76515.53	76114.41	100.53	
Tb	159	He	4104925.98	3836613.38	106.99	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	724676.00	662644.216666667	109.36
Bi	209	No Gas	9932394.23	8369981.75	118.67
Ge	72	No Gas	1194859.68	1075610.54666667	111.09
In	115	No Gas	9566712.28	8286385.15	115.45
Lu	175	No Gas	14316301.46	11754297.74	121.8
Rh	103	No Gas	8542786.88	7567675.80666667	112.89
Sc	45	No Gas	4186453.86	3751808.74	111.58
Tb	159	No Gas	14381687.29	11714148.9933333	122.77

Sample Report

Flag
<70% or >120%
<70% or >120%

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223071218</u>	Client Sample ID: <u>KCDC-SB0070-000.5-20230707</u>
Collect Date: <u>07/07/23</u> Time: <u>0906</u>	GCAL Sample ID: <u>22307121812</u>
Matrix: <u>Solid</u> % Solids: <u>83.37</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.28</u> g	Lab File ID: <u>2230712A_MS2.b\122978SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/12/23</u>	Analysis Date: <u>07/12/23</u> Time: <u>1725</u>
Prep Batch: <u>768841</u>	Analytical Batch: <u>768860</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	4630	ug/kg		117	234	469

Sample Report

Sample Name	22307121812	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122978SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 5:25:14 PM	Total Dilution	390.6250
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	2.025	790.985	1.7	63760.92	500	
Be	9	6	No Gas	0.14	54.556	11.7	338.67	1000	
B	11	6	No Gas	1.544	602.947	2.2	5337.78	500	
Sr	88	72	No Gas	194.969	76159.648	0.4	10557487.76	1000	
Zr	90	72	No Gas	3.678	1436.627	53.1	124511.57	100	
Mo	95	115	No Gas	0.172	67.181	9.1	2003.61	1000	
Ag	107	115	No Gas	0.039	15.173	9.9	1106.72	100	
Cd	111	115	No Gas	0.147	57.252	6.1	953.38	1000	
Sb	121	115	No Gas	0.181	70.603	5.7	6546.48	1000	
Ba	137	115	No Gas	11.728	4581.248	0.8	126915.16	1000	
Tl	205	209	No Gas	0.02	7.896	3.6	2170.26	1000	
Pb	208	209	No Gas	5.244	2048.610	0.7	488991.29	1000	
Na	23	45	He	247.962	96860.191	1.7	70073.94	100000	
Mg	24	45	He	568.481	222063.011	1.5	71055.33	100000	
Al	27	45	He	3234.084	1263313.920	0.9	121330.48	20000	
Si	29	45	He	2801.1	1094179.518	10.6	4592.84	10000	
K	39	45	He	53.009	20706.670	2.4	19784.46	100000	
Ca	44	45	He	45344.384	17712650.023	0.4	267966.00	500000	
Ti	47	45	He	130.02	50789.251	10.0	6670.67	1000	
V	51	72	He	4.202	1641.345	1.6	9576.56	1000	
Cr	52	72	He	24.693	9645.656	2.0	70752.20	1000	
Mn	55	72	He	29.278	11436.633	1.8	36778.08	5000	
Fe	57	72	He	1655.674	646747.739	1.7	90299.88	100000	
Co	59	72	He	0.428	167.371	3.4	2400.23	1000	
Ni	60	72	He	1.27	496.074	3.3	2983.67	2000	
Cu	63	45	He	48.228	18838.918	1.4	212260.27	1000	
Zn	66	72	He	64.864	25337.317	1.4	37588.14	20000	
As	75	72	He	9.881	3859.788	0.8	5345.99	1000	
Se	78	72	He	-0.588	-229.730	-121.9	-1.83	50	
Sn	120	115	He	0.106	41.584	8.6	584.47	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3581205.67	3354908.39	106.75	
Ge	72	He	82161.64	81380.856666667	100.96	
In	115	He	878944.00	879610.92	99.92	
Lu	175	He	2439589.44	2355507.1	103.57	
Rh	103	He	2841305.58	2764364.75333333	102.78	
Sc	45	He	75884.49	76114.41	99.7	
Tb	159	He	4075902.65	3836613.38	106.24	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	723018.72	662644.216666667	109.11
Bi	209	No Gas	9964777.56	8369981.75	119.05
Ge	72	No Gas	1190572.45	1075610.54666667	110.69
In	115	No Gas	9542016.40	8286385.15	115.15
Lu	175	No Gas	14320850.21	11754297.74	121.84
Rh	103	No Gas	8456938.83	7567675.80666667	111.75
Sc	45	No Gas	4171561.92	3751808.74	111.19
Tb	159	No Gas	14381165.20	11714148.9933333	122.77

Sample Report

Flag
<70% or >120%
<70% or >120%

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223071218</u>	Client Sample ID: <u>KCDC-SB0071-000.5-20230707</u>
Collect Date: <u>07/07/23</u> Time: <u>0913</u>	GCAL Sample ID: <u>22307121813</u>
Matrix: <u>Solid</u> % Solids: <u>78.78</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.26</u> g	Lab File ID: <u>2230712A_MS2.b\122979SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/12/23</u>	Analysis Date: <u>07/12/23</u> Time: <u>1728</u>
Prep Batch: <u>768841</u>	Analytical Batch: <u>768860</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	890	ug/kg		126	252	504

Sample Report

Sample Name	22307121813	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122979SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 5:28:48 PM	Total Dilution	396.8254
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	3.616	1435.040	0.6	72737.75	500	
Be	9	6	No Gas	0.242	95.951	6.3	546.01	1000	
B	11	6	No Gas	1.882	746.988	4.0	5737.97	500	
Sr	88	72	No Gas	92.949	36884.498	0.1	5051882.74	1000	
Zr	90	72	No Gas	3.013	1195.758	2.1	102667.04	100	
Mo	95	115	No Gas	0.258	102.578	4.0	2846.98	1000	
Ag	107	115	No Gas	0.027	10.818	2.5	784.48	100	
Cd	111	115	No Gas	0.335	133.041	2.8	2071.29	1000	
Sb	121	115	No Gas	2.503	993.086	3.3	69102.97	1000	
Ba	137	115	No Gas	20.687	8209.256	0.5	221278.20	1000	
Tl	205	209	No Gas	0.03	11.787	6.2	2797.08	1000	
Pb	208	209	No Gas	5.394	2140.507	0.9	498460.85	1000	
Na	23	45	He	177.183	70310.589	3.3	51586.26	100000	
Mg	24	45	He	533.971	211893.351	1.0	66036.53	100000	
Al	27	45	He	3975.424	1577549.208	1.8	147269.75	20000	
Si	29	45	He	3108.674	1233600.681	3.7	4935.60	10000	
K	39	45	He	95.652	37957.031	2.7	24167.17	100000	
Ca	44	45	He	37020.552	14690695.091	0.3	216130.72	500000	
Ti	47	45	He	101.793	40393.888	18.6	5153.58	1000	
V	51	72	He	6.267	2486.985	2.2	14050.18	1000	
Cr	52	72	He	8.509	3376.641	0.4	24436.00	1000	
Mn	55	72	He	50.437	20014.769	1.2	61197.49	5000	
Fe	57	72	He	3459.742	1372913.356	0.9	186642.52	100000	
Co	59	72	He	1.169	463.737	1.7	6377.00	1000	
Ni	60	72	He	1.978	785.056	1.8	4018.37	2000	
Cu	63	45	He	22.262	8834.047	1.3	96883.31	1000	
Zn	66	72	He	2151.227	853661.354	0.8	1220086.41	20000	
As	75	72	He	1.768	701.520	4.4	960.04	1000	
Se	78	72	He	-0.953	-378.316	-47.9	-11.03	50	
Sn	120	115	He	0.459	182.013	35.6	1846.39	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3524632.03	3354908.39	105.06	
Ge	72	He	81320.32	81380.8566666667	99.93	
In	115	He	866151.90	879610.92	98.47	
Lu	175	He	2419256.16	2355507.1	102.71	
Rh	103	He	2830080.65	2764364.75333333	102.38	
Sc	45	He	74947.60	76114.41	98.47	
Tb	159	He	4032112.96	3836613.38	105.1	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	718147.42	662644.216666667	108.38
Bi	209	No Gas	9875836.73	8369981.75	117.99
Ge	72	No Gas	1194880.09	1075610.54666667	111.09
In	115	No Gas	943889.99	8286385.15	113.91
Lu	175	No Gas	14267236.46	11754297.74	121.38
Rh	103	No Gas	8477062.16	7567675.80666667	112.02
Sc	45	No Gas	4173708.45	3751808.74	111.25
Tb	159	No Gas	14379061.87	11714148.9933333	122.75

Sample Report

Flag
<70% or >120%
<70% or >120%

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223071218</u>	Client Sample ID: <u>KCDC-SB0072-000.5-20230707</u>
Collect Date: <u>07/07/23</u> Time: <u>0915</u>	GCAL Sample ID: <u>22307121814</u>
Matrix: <u>Solid</u> % Solids: <u>70.34</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.27</u> g	Lab File ID: <u>2230712A_MS2.b\122980SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/12/23</u>	Analysis Date: <u>07/12/23</u> Time: <u>1732</u>
Prep Batch: <u>768841</u>	Analytical Batch: <u>768860</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	876	ug/kg		140	280	560

Sample Report

Sample Name	22307121814	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122980SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 5:32:22 PM	Total Dilution	393.7008
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	3.073	1209.662	1.2	69810.65	500	
Be	9	6	No Gas	0.215	84.564	8.3	492.68	1000	
B	11	6	No Gas	2.21	870.020	3.3	6184.79	500	
Sr	88	72	No Gas	290.859	114511.383	0.5	15810174.76	1000	
Zr	90	72	No Gas	2.393	942.196	2.3	81763.03	100	
Mo	95	115	No Gas	0.194	76.363	4.2	2199.09	1000	
Ag	107	115	No Gas	0.027	10.825	7.5	790.03	100	
Cd	111	115	No Gas	0.181	71.330	7.8	1148.95	1000	
Sb	121	115	No Gas	19.612	7721.069	1.9	530054.53	1000	
Ba	137	115	No Gas	20.834	8202.502	0.4	222605.05	1000	
Tl	205	209	No Gas	0.029	11.242	12.3	2690.59	1000	
Pb	208	209	No Gas	4.8	1889.599	1.4	438862.23	1000	
Na	23	45	He	548.709	216027.223	1.0	146075.88	100000	
Mg	24	45	He	397.761	156598.997	0.3	50418.94	100000	
Al	27	45	He	3514.306	1383585.164	0.8	132066.71	20000	
Si	29	45	He	2076.727	817608.948	6.5	3651.85	10000	
K	39	45	He	108.027	42530.216	2.1	25869.86	100000	
Ca	44	45	He	64064.956	25222423.484	0.6	379128.64	500000	
Ti	47	45	He	56.475	22234.105	29.8	2906.78	1000	
V	51	72	He	5.845	2301.138	2.8	13065.44	1000	
Cr	52	72	He	7.813	3075.990	0.7	22394.86	1000	
Mn	55	72	He	31.312	12327.644	2.3	38637.41	5000	
Fe	57	72	He	2266.041	892142.009	1.5	121837.71	100000	
Co	59	72	He	0.893	351.668	1.9	4870.86	1000	
Ni	60	72	He	1.57	618.154	1.1	3391.54	2000	
Cu	63	45	He	8.908	3507.000	1.6	39450.72	1000	
Zn	66	72	He	1571.21	618586.592	1.2	887977.53	20000	
As	75	72	He	1.566	616.542	0.2	849.36	1000	
Se	78	72	He	-1.173	-461.921	-6.5	-16.46	50	
Sn	120	115	He	0.106	41.567	8.8	571.13	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3498941.82	3354908.39	104.29	
Ge	72	He	81020.90	81380.856666667	99.56	
In	115	He	863213.21	879610.92	98.14	
Lu	175	He	2421197.93	2355507.1	102.79	
Rh	103	He	2801167.74	2764364.75333333	101.33	
Sc	45	He	76012.81	76114.41	99.87	
Tb	159	He	4036527.23	3836613.38	105.21	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	721143.88	662644.216666667	108.83
Bi	209	No Gas	9769641.73	8369981.75	116.72
Ge	72	No Gas	1195191.03	1075610.54666667	111.12
In	115	No Gas	9428052.50	8286385.15	113.78
Lu	175	No Gas	14213491.04	11754297.74	120.92
Rh	103	No Gas	8325044.67	7567675.80666667	110.01
Sc	45	No Gas	4174152.06	3751808.74	111.26
Tb	159	No Gas	14294516.46	11714148.9933333	122.03

Sample Report

Flag
<70% or >120%
<70% or >120%

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223071218</u>	Client Sample ID: <u>KCDC-SB0073-000.5-20230707</u>
Collect Date: <u>07/07/23</u> Time: <u>0918</u>	GCAL Sample ID: <u>22307121815</u>
Matrix: <u>Solid</u> % Solids: <u>91.07</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.26</u> g	Lab File ID: <u>2230712A_MS2.b\122981SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/12/23</u>	Analysis Date: <u>07/12/23</u> Time: <u>1735</u>
Prep Batch: <u>768841</u>	Analytical Batch: <u>768860</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	824	ug/kg		109	218	436

Sample Report

Sample Name	22307121815	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122981SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 5:35:56 PM	Total Dilution	396.8254
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	4.274	1695.989	2.0	76031.40	500	
Be	9	6	No Gas	0.257	102.051	7.9	572.68	1000	
B	11	6	No Gas	2.144	850.736	1.8	6028.04	500	
Sr	88	72	No Gas	463.455	183910.795	3.3	24771295.47	1000	
Zr	90	72	No Gas	3.074	1220.028	8.4	103041.84	100	
Mo	95	115	No Gas	0.167	66.330	1.0	1912.37	1000	
Ag	107	115	No Gas	0.076	30.350	2.8	2080.18	100	
Cd	111	115	No Gas	0.181	71.827	1.9	1136.72	1000	
Sb	121	115	No Gas	0.127	50.580	2.2	4985.46	1000	
Ba	137	115	No Gas	18.488	7336.508	2.5	195661.18	1000	
Tl	205	209	No Gas	0.053	21.162	0.6	4347.56	1000	
Pb	208	209	No Gas	7.239	2872.655	1.1	659748.93	1000	
Na	23	45	He	753.924	299176.177	0.6	193563.31	100000	
Mg	24	45	He	776.491	308131.546	1.4	94372.31	100000	
Al	27	45	He	4973.048	1973431.922	0.3	182816.22	20000	
Si	29	45	He	2708.775	1074910.736	1.6	4385.42	10000	
K	39	45	He	100.979	40070.886	2.6	24554.29	100000	
Ca	44	45	He	86203.059	34207563.100	0.6	499011.75	500000	
Ti	47	45	He	81.509	32344.649	10.9	4099.25	1000	
V	51	72	He	8.357	3316.178	0.5	18334.84	1000	
Cr	52	72	He	16.349	6487.846	2.0	45671.38	1000	
Mn	55	72	He	52.057	20657.683	0.6	61954.18	5000	
Fe	57	72	He	3789.993	1503965.580	1.2	200728.17	100000	
Co	59	72	He	0.679	269.334	3.2	3660.49	1000	
Ni	60	72	He	1.841	730.597	1.1	3741.63	2000	
Cu	63	45	He	61.331	24337.806	0.5	264499.48	1000	
Zn	66	72	He	42.95	17043.562	2.4	24323.62	20000	
As	75	72	He	1.891	750.513	2.9	1007.37	1000	
Se	78	72	He	-2.109	-836.979	-3.4	-39.33	50	
Sn	120	115	He	0.15	59.609	8.1	723.36	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3500854.53	3354908.39	104.35	
Ge	72	He	79838.89	81380.8566666667	98.11	
In	115	He	854190.06	879610.92	97.11	
Lu	175	He	2400764.34	2355507.1	101.92	
Rh	103	He	2762181.83	2764364.75333333	99.92	
Sc	45	He	74375.96	76114.41	97.72	
Tb	159	He	4017915.04	3836613.38	104.73	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	712767.93	662644.216666667	107.56
Bi	209	No Gas	9743345.90	8369981.75	116.41
Ge	72	No Gas	1175293.88	1075610.54666667	109.27
In	115	No Gas	9337237.50	8286385.15	112.68
Lu	175	No Gas	14149790.62	11754297.74	120.38
Rh	103	No Gas	8184938.01	7567675.80666667	108.16
Sc	45	No Gas	4128445.95	3751808.74	110.04
Tb	159	No Gas	14202094.79	11714148.9933333	121.24

Sample Report

Flag
<70% or >120%
<70% or >120%

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223071218</u>	Client Sample ID: <u>KCDC-SB0074-000.5-20230707</u>
Collect Date: <u>07/07/23</u> Time: <u>0920</u>	GCAL Sample ID: <u>22307121816</u>
Matrix: <u>Solid</u> % Solids: <u>72.26</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.32</u> g	Lab File ID: <u>2230712A_MS2.b\122982SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/12/23</u>	Analysis Date: <u>07/12/23</u> Time: <u>1739</u>
Prep Batch: <u>768841</u>	Analytical Batch: <u>768860</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	2980	ug/kg		131	262	524

Sample Report

Sample Name	22307121816	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122982SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 5:39:30 PM	Total Dilution	378.7879
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	3.955	1498.113	0.3	75431.32	500	
Be	9	6	No Gas	0.189	71.572	5.2	441.34	1000	
B	11	6	No Gas	2.571	973.873	1.6	6681.71	500	
Sr	88	72	No Gas	374.118	141711.197	0.4	20118594.70	1000	
Zr	90	72	No Gas	3.128	1185.035	6.2	105426.99	100	
Mo	95	115	No Gas	0.13	49.125	2.7	1547.89	1000	
Ag	107	115	No Gas	0.128	48.361	3.4	3450.46	100	
Cd	111	115	No Gas	0.374	141.710	3.9	2287.99	1000	
Sb	121	115	No Gas	0.174	65.874	5.1	6250.36	1000	
Ba	137	115	No Gas	20.22	7659.156	4.5	214838.87	1000	
Tl	205	209	No Gas	0.03	11.325	0.9	2790.40	1000	
Pb	208	209	No Gas	7.921	3000.536	1.4	726367.73	1000	
Na	23	45	He	620.335	234975.375	0.8	162127.32	100000	
Mg	24	45	He	790.828	299556.088	1.1	97005.99	100000	
Al	27	45	He	4367.452	1654337.711	0.7	162085.98	20000	
Si	29	45	He	4006.779	1517719.304	4.9	6108.08	10000	
K	39	45	He	142.706	54055.461	2.5	29326.33	100000	
Ca	44	45	He	90236.805	34180608.056	1.3	527354.70	500000	
Ti	47	45	He	127.079	48136.018	11.6	6451.18	1000	
V	51	72	He	6.58	2492.325	0.7	14594.07	1000	
Cr	52	72	He	16.354	6194.800	1.2	46066.97	1000	
Mn	55	72	He	90.179	34158.530	0.8	106726.67	5000	
Fe	57	72	He	2567.95	972708.510	1.7	137159.04	100000	
Co	59	72	He	0.509	192.868	3.7	2783.63	1000	
Ni	60	72	He	1.734	656.795	4.5	3614.93	2000	
Cu	63	45	He	65.422	24781.228	0.4	284815.43	1000	
Zn	66	72	He	52.967	20063.210	0.8	30152.21	20000	
As	75	72	He	5.69	2155.268	0.7	3023.32	1000	
Se	78	72	He	-0.834	-316.058	-37.9	-7.93	50	
Sn	120	115	He	0.307	116.424	14.1	1293.44	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3518037.55	3354908.39	104.86	
Ge	72	He	80508.11	81380.856666667	98.93	
In	115	He	863616.41	879610.92	98.18	
Lu	175	He	2415362.51	2355507.1	102.54	
Rh	103	He	2779983.29	2764364.75333333	100.56	
Sc	45	He	75084.99	76114.41	98.65	
Tb	159	He	4021435.98	3836613.38	104.82	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	724758.17	662644.216666667	109.37
Bi	209	No Gas	9804450.27	8369981.75	117.14
Ge	72	No Gas	1182442.66	1075610.54666667	109.93
In	115	No Gas	9375386.10	8286385.15	113.14
Lu	175	No Gas	14111897.71	11754297.74	120.06
Rh	103	No Gas	8201794.12	7567675.80666667	108.38
Sc	45	No Gas	4158729.42	3751808.74	110.85
Tb	159	No Gas	14214117.29	11714148.9933333	121.34

Sample Report

Flag
<70% or >120%
<70% or >120%

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223071218</u>	Client Sample ID: <u>KCDC-SB0075-000.5-20230707</u>
Collect Date: <u>07/07/23</u> Time: <u>0923</u>	GCAL Sample ID: <u>22307121817</u>
Matrix: <u>Solid</u> % Solids: <u>87.60</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.27</u> g	Lab File ID: <u>2230712A_MS2.b\122983SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/12/23</u>	Analysis Date: <u>07/12/23</u> Time: <u>1743</u>
Prep Batch: <u>768841</u>	Analytical Batch: <u>768860</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	1390	ug/kg		112	225	449

Sample Report

Sample Name	22307121817	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122983SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 5:43:04 PM	Total Dilution	393.7008
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	6.124	2410.941	1.2	88143.03	500	
Be	9	6	No Gas	0.317	124.740	1.3	704.69	1000	
B	11	6	No Gas	2.463	969.639	4.4	6524.95	500	
Sr	88	72	No Gas	460.972	181484.897	0.7	25077702.96	1000	
Zr	90	72	No Gas	5.92	2330.738	12.5	201036.04	100	
Mo	95	115	No Gas	0.114	44.942	4.2	1414.53	1000	
Ag	107	115	No Gas	0.028	11.203	6.0	823.37	100	
Cd	111	115	No Gas	0.079	30.922	6.5	541.13	1000	
Sb	121	115	No Gas	0.206	81.045	4.7	7214.21	1000	
Ba	137	115	No Gas	20.603	8111.292	1.3	222213.79	1000	
Tl	205	209	No Gas	0.027	10.772	7.1	2640.38	1000	
Pb	208	209	No Gas	5.458	2148.811	1.4	504982.31	1000	
Na	23	45	He	810.774	319202.255	1.0	210478.26	100000	
Mg	24	45	He	729.305	287127.861	0.7	89995.48	100000	
Al	27	45	He	6403.205	2520946.781	1.3	238645.01	20000	
Si	29	45	He	7206.091	2837043.818	7.0	10303.10	10000	
K	39	45	He	109.728	43199.888	10.6	25845.78	100000	
Ca	44	45	He	106662.789	41993224.207	0.4	625905.92	500000	
Ti	47	45	He	179.315	70596.567	5.5	9137.89	1000	
V	51	72	He	9.96	3921.411	1.6	22488.57	1000	
Cr	52	72	He	11.453	4508.978	1.6	33115.28	1000	
Mn	55	72	He	35.978	14164.634	2.5	44782.04	5000	
Fe	57	72	He	3559.363	1401324.186	0.4	194287.45	100000	
Co	59	72	He	0.866	341.067	3.0	4799.72	1000	
Ni	60	72	He	2.058	810.372	0.7	4187.31	2000	
Cu	63	45	He	3.029	1192.465	4.5	13448.46	1000	
Zn	66	72	He	262.493	103343.761	0.7	151021.85	20000	
As	75	72	He	3.087	1215.311	1.9	1684.10	1000	
Se	78	72	He	-1.45	-570.978	-21.4	-23.75	50	
Sn	120	115	He	0.114	44.737	4.2	604.47	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3535930.05	3354908.39	105.4	
Ge	72	He	82282.33	81380.8566666667	101.11	
In	115	He	870050.53	879610.92	98.91	
Lu	175	He	2433475.12	2355507.1	103.31	
Rh	103	He	2802851.21	2764364.75333333	101.39	
Sc	45	He	75399.85	76114.41	99.06	
Tb	159	He	4073971.81	3836613.38	106.19	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	722840.71	662644.216666667	109.08
Bi	209	No Gas	9888507.14	8369981.75	118.14
Ge	72	No Gas	1196191.06	1075610.54666667	111.21
In	115	No Gas	9517356.68	8286385.15	114.86
Lu	175	No Gas	14429417.70	11754297.74	122.76
Rh	103	No Gas	8326465.50	7567675.80666667	110.03
Sc	45	No Gas	4231143.02	3751808.74	112.78
Tb	159	No Gas	14512857.28	11714148.9933333	123.89

Sample Report

Flag
<70% or >120%
<70% or >120%

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223071218</u>	Client Sample ID: <u>KCDC-SB0076-000.5-20230707</u>
Collect Date: <u>07/07/23</u> Time: <u>0925</u>	GCAL Sample ID: <u>22307121818</u>
Matrix: <u>Solid</u> % Solids: <u>89.06</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.33</u> g	Lab File ID: <u>2230712A_MS2.b\122984SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/12/23</u>	Analysis Date: <u>07/12/23</u> Time: <u>1746</u>
Prep Batch: <u>768841</u>	Analytical Batch: <u>768860</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	238	ug/kg	J	106	211	422

Sample Report

Sample Name	22307121818	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122984SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 5:46:38 PM	Total Dilution	375.9398
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.453	170.212	2.1	55693.03	500	
Be	9	6	No Gas	0.089	33.605	9.3	240.00	1000	
B	11	6	No Gas	2.359	886.937	20.1	6545.13	500	
Sr	88	72	No Gas	98.923	37188.926	2.1	5423988.05	1000	
Zr	90	72	No Gas	10.671	4011.660	9.7	364196.66	100	
Mo	95	115	No Gas	0.48	180.300	3.4	5132.60	1000	
Ag	107	115	No Gas	0.031	11.567	6.7	891.18	100	
Cd	111	115	No Gas	0.047	17.822	11.3	355.56	1000	
Sb	121	115	No Gas	0.428	160.859	0.8	13334.24	1000	
Ba	137	115	No Gas	21.629	8131.137	1.8	234695.96	1000	
Tl	205	209	No Gas	0.005	1.834	12.9	1136.76	1000	
Pb	208	209	No Gas	8.46	3180.543	0.0	802907.06	1000	
Na	23	45	He	35.287	13265.743	3.8	16432.81	100000	
Mg	24	45	He	140.404	52783.378	5.5	19009.28	100000	
Al	27	45	He	6608.172	2484275.248	1.2	246694.83	20000	
Si	29	45	He	3201.096	1203419.411	8.8	5093.81	10000	
K	39	45	He	72.522	27264.025	5.9	21822.29	100000	
Ca	44	45	He	5102.978	1918412.677	1.3	30311.12	500000	
Ti	47	45	He	576.075	216569.536	3.8	29388.53	1000	
V	51	72	He	5.095	1915.287	4.6	11508.06	1000	
Cr	52	72	He	9.082	3414.252	4.2	26166.56	1000	
Mn	55	72	He	5.515	2073.240	9.2	8580.62	5000	
Fe	57	72	He	448.192	168493.414	2.0	24377.73	100000	
Co	59	72	He	0.16	60.131	8.4	928.93	1000	
Ni	60	72	He	0.982	369.262	1.6	2531.38	2000	
Cu	63	45	He	5.674	2133.137	3.0	25048.10	1000	
Zn	66	72	He	50.101	18834.846	0.6	28958.65	20000	
As	75	72	He	0.563	211.532	4.4	318.34	1000	
Se	78	72	He	-0.169	-63.424	83.9	8.81	50	
Sn	120	115	He	0.207	77.725	8.4	940.05	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3606882.34	3354908.39	107.51	
Ge	72	He	81680.26	81380.8566666667	100.37	
In	115	He	868759.78	879610.92	98.77	
Lu	175	He	2428786.47	2355507.1	103.11	
Rh	103	He	2900303.08	2764364.75333333	104.92	
Sc	45	He	75526.09	76114.41	99.23	
Tb	159	He	4055762.65	3836613.38	105.71	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	740271.93	662644.216666667	111.71
Bi	209	No Gas	10147840.68	8369981.75	121.24
Ge	72	No Gas	1205392.80	1075610.54666667	112.07
In	115	No Gas	9575436.91	8286385.15	115.56
Lu	175	No Gas	14458446.03	11754297.74	123.01
Rh	103	No Gas	8750047.43	7567675.80666667	115.62
Sc	45	No Gas	4240317.05	3751808.74	113.02
Tb	159	No Gas	14547236.87	11714148.9933333	124.19

Sample Report

Flag
<70% or >120%
<70% or >120%
<70% or >120%

Metals

Form II

Calibration Verifications

II
INITIAL CALIBRATION VERIFICATION (ICV) STANDARD

Report No: 223071218 GCAL QC ID: 1600
Instrument ID: ICPMS2 Lab File ID: 2230712A_MS2.b\1227_ICV.d
Analyst: TDM Analytical Batch: 768860
Analysis Date: 07/12/23 Time: 1237 Analytical Method: EPA 6020B

ANALYTE	TRUE	FOUND	%RECOVERY	Q	UNITS
Arsenic	50.0	48.6	97		ug/L

CONTROL LIMITS 90-110%

FORM II - IN

Initial Calibration Verification (ICV) Report

Sample Name 1600 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name 1227_ICV.d **Comment** ICPMS-2,TDM
Acq Time 7/12/2023 12:37:23 PM **Total Dilution** 1.0000
Sample Type ICV **Sample Pass/Fail** Pass
ISTD Ref FileName 1221CALB.d **ISTD Pass/Fail** Pass
Units : ppb

QC Analyte Table

Recovery Limits: 90-110%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	Rec	QC Flag
Li	7	6	No Gas	257.572	0.7	1445105.50	250	103.03	
Be	9	6	No Gas	51.490	0.4	97131.51	50	102.98	
B	11	6	No Gas	256.166	1.1	304583.94	250	102.47	
Sr	88	72	No Gas	48.943	0.9	2365585.80	50	97.89	
Zr	90	72	No Gas	45.275	0.5	1359140.61	50	90.55	
Mo	95	115	No Gas	48.020	0.7	423224.67	50	96.04	
Ag	107	115	No Gas	51.466	0.6	1213385.58	50	102.93	
Cd	111	115	No Gas	48.983	0.8	257808.03	50	97.97	
Sb	121	115	No Gas	52.743	0.2	1253926.23	50	105.49	
Ba	137	115	No Gas	49.320	0.4	464160.17	50	98.64	
Tl	205	209	No Gas	48.238	1.5	2807447.04	50	96.48	
Pb	208	209	No Gas	47.961	1.0	3780773.25	50	95.92	
Na	23	45	He	4933.621	0.4	1215495.40	5000	98.67	
Mg	24	45	He	4935.518	0.7	584400.05	5000	98.71	
Al	27	45	He	976.848	0.3	35667.42	1000	97.68	
Si	29	45	He	5005.126	2.6	7274.46	5000	100.1	
K	39	45	He	4896.619	0.7	536593.03	5000	97.93	
Ca	44	45	He	24607.011	0.9	141539.84	25000	98.43	
Ti	47	45	He	48.377	1.7	2416.20	50	96.75	
V	51	72	He	49.132	1.1	106896.69	50	98.26	
Cr	52	72	He	49.615	0.4	137566.94	50	99.23	
Mn	55	72	He	49.001	1.3	58398.24	50	98	
Fe	57	72	He	4927.914	0.9	260794.97	5000	98.56	
Co	59	72	He	50.321	0.5	266966.52	50	100.64	
Ni	60	72	He	100.196	0.2	148859.47	100	100.2	
Cu	63	45	He	51.506	0.7	220384.52	50	103.01	
Zn	66	72	He	1005.497	0.9	559763.85	1000	100.55	
As	75	72	He	48.639	1.2	25490.51	50	97.28	
Se	78	72	He	24.270	2.4	611.62	25	97.08	
Sn	120	115	He	48.575	1.5	173984.69	50	97.15	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3315364.74	3354908.39	98.82	
Ge	72	He	79785.28	81380.8566666667	98.04	
In	115	He	860392.17	879610.92	97.82	
Lu	175	He	2370807.31	2355507.1	100.65	
Rh	103	He	2685218.50	2764364.753333333	97.14	
Sc	45	He	73781.91	76114.41	96.94	
Tb	159	He	3871953.17	3836613.38	100.92	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	659062.68	662644.216666667	99.46	
Bi	209	No Gas	8435984.46	8369981.75	100.79	
Ge	72	No Gas	1062337.11	1075610.546666667	98.77	
In	115	No Gas	8309145.99	8286385.15	100.27	
Lu	175	No Gas	12265147.32	11754297.74	104.35	
Rh	103	No Gas	7413113.87	7567675.806666667	97.96	
Sc	45	No Gas	3674407.22	3751808.74	97.94	
Tb	159	No Gas	12201143.99	11714148.99333333	104.16	

II
 LOW LEVEL CONTINUING CALIBRATION VERIFICATION (LLCCV) STANDARD

Report No: <u>223071218</u>	GCAL QC ID: <u>1803</u>
Instrument ID: <u>ICPMS2</u>	Lab File ID: <u>2230712A_MS2.b\122911CCV1.d</u>
Analyst: <u>TDM</u>	Analytical Batch: <u>768860</u>
Analysis Date: <u>07/12/23</u> Time: <u>1326</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>TRUE</i>	<i>FOUND</i>	<i>%RECOVERY</i>	<i>Q</i>	<i>UNITS</i>
Arsenic	1.00	1.06	106		ug/L

CONTROL LIMITS 80-120%

Low Level Continuing Calibration Verification(LLCCV) Report

Sample Name 1803 Data Path Name C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
 File Name 122911CCV1.d Comment ICPMS-2,TDM
 Acq Time 7/12/2023 1:26:30 PM Total Dilution 1.0000
 Sample Type LLCCV1 Sample Pass/Fail Pass
 ISTD Ref FileName 1221CALB.d ISTD Pass/Fail Pass

Units : ppb

QC Analyte Table Recovery Limits: Initial 6020B DOD 80-120% / 70-130% 6020B and 200.8

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	Rec	QC Flag
Li	7	6	No Gas	5.301	0.2	78335.16	5	106.02	
Be	9	6	No Gas	1.098	2.6	2182.84	1	109.8	
B	11	6	No Gas	10.557	2.3	15972.20	10	105.57	
Sr	88	72	No Gas	1.011	1.2	51425.93	1	101.1	
Zr	90	72	No Gas	0.908	1.9	28989.16	1	90.8	
Mo	95	115	No Gas	0.979	4.4	9070.73	1	97.9	
Ag	107	115	No Gas	1.013	1.6	24524.49	1	101.3	
Cd	111	115	No Gas	0.996	1.4	5432.21	1	99.6	
Sb	121	115	No Gas	2.013	1.7	50447.58	2	100.65	
Ba	137	115	No Gas	0.998	2.6	9815.75	1	99.8	
Tl	205	209	No Gas	0.982	0.6	59684.14	1	98.2	
Pb	208	209	No Gas	1.002	0.7	82201.28	1	100.2	
Na	23	45	He	96.532	2.6	32639.49	100	96.53	
Mg	24	45	He	101.421	1.0	14684.30	100	101.42	
Al	27	45	He	20.582	4.1	846.70	20	102.91	
Si	29	45	He	216.648	25.2	1233.40	200	108.32	
K	39	45	He	98.206	2.0	25295.54	100	98.21	
Ca	44	45	He	517.643	4.7	3463.80	500	103.53	
Ti	47	45	He	0.972	12.3	57.00	1	97.2	
V	51	72	He	0.993	0.6	2421.34	1	99.3	
Cr	52	72	He	0.999	1.3	3351.53	1	99.9	
Mn	55	72	He	5.302	2.0	8453.62	5	106.04	
Fe	57	72	He	97.803	4.4	5487.91	100	97.8	
Co	59	72	He	1.044	4.5	5813.43	1	104.4	
Ni	60	72	He	2.192	2.3	4426.27	2	109.6	
Cu	63	45	He	1.094	2.6	5140.96	1	109.4	
Zn	66	72	He	21.916	1.7	13108.17	20	109.58	
As	75	72	He	1.058	6.9	593.35	1	105.8	
Se	78	72	He	1.072	5.3	40.73	1	107.2	
Sn	120	115	He	0.997	3.5	3882.80	1	99.7	

QC ISTD Table Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3423560.89	3354908.39	102.05	
Ge	72	He	82945.08	81380.8566666667	101.92	
In	115	He	889146.69	879610.92	101.08	
Lu	175	He	2395033.82	2355507.1	101.68	
Rh	103	He	2800739.89	2764364.75333333	101.32	
Sc	45	He	77565.22	76114.41	101.91	
Tb	159	He	3913069.32	3836613.38	101.99	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	680236.46	662644.216666667	102.65	
Bi	209	No Gas	8709272.79	8369981.75	104.05	
Ge	72	No Gas	1095271.00	1075610.54666667	101.83	
In	115	No Gas	8515217.40	8286385.15	102.76	
Lu	175	No Gas	12211979.82	11754297.74	103.89	
Rh	103	No Gas	7767122.19	7567675.80666667	102.64	
Sc	45	No Gas	3786971.80	3751808.74	100.94	
Tb	159	No Gas	12226324.82	11714148.9933333	104.37	

II
LINEAR DYNAMIC RANGE (LDR) STANDARD

Report No: 223071218 GCAL QC ID: 2500
Instrument ID: ICPMS2 Lab File ID: 2230712A_MS2.b\122914_QC1.d
Analyst: TDM Analytical Batch: 768860
Analysis Date: 07/12/23 Time: 1337 Analytical Method: EPA 6020B

ANALYTE	TRUE	FOUND	%RECOVERY	Q	UNITS
Arsenic	1000	996	100		ug/L

CONTROL LIMITS 90-110%

FORM II - IN

Linear Dynamic Range Check (LDR) Report

Sample Name	LDR	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122914_QC1.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 1:37:15 PM	Total Dilution	1.0000
Sample Type	QC1	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Recovery Limits: 90-110%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	Rec	QC Flag
Be	9	6	No Gas	1065.741	0.8	1804528.54	1000	106.57	
Sr	88	72	No Gas	952.948	0.6	43962761.01	1000	95.29	
Mo	95	115	No Gas	1018.998	0.8	8195231.06	1000	101.9	
Cd	111	115	No Gas	978.083	1.5	4699165.51	1000	97.81	
Sb	121	115	No Gas	1017.952	0.8	22072202.46	1000	101.8	
Ba	137	115	No Gas	1012.276	1.3	8694860.77	1000	101.23	
Tl	205	209	No Gas	967.547	0.8	51172400.90	1000	96.75	
Pb	208	209	No Gas	977.849	0.5	70056593.55	1000	97.78	
Na	23	45	He	96891.362	0.9	23367254.65	100000	96.89	
Mg	24	45	He	96128.748	0.8	11169799.42	100000	96.13	
Al	27	45	He	19407.125	0.6	696658.00	20000	97.04	
K	39	45	He	97296.880	0.7	10245277.35	100000	97.3	
Ca	44	45	He	493658.326	1.0	2789450.38	500000	98.73	
Ti	47	45	He	976.322	0.5	47905.24	1000	97.63	
V	51	72	He	1021.802	1.2	2144755.96	1000	102.18	
Cr	52	72	He	1000.378	0.9	2671592.39	1000	100.04	
Mn	55	72	He	4967.177	0.9	5522955.34	5000	99.34	
Fe	57	72	He	98449.053	0.9	5032148.05	100000	98.45	
Co	59	72	He	983.275	1.2	5039409.52	1000	98.33	
Ni	60	72	He	1942.663	1.1	2770603.09	2000	97.13	
Cu	63	45	He	925.723	1.1	3896293.32	1000	92.57	
Zn	66	72	He	18754.777	1.1	10081071.55	20000	93.77	
As	75	72	He	995.868	1.2	503979.43	1000	99.59	
Sn	120	115	He	1005.841	1.8	3345636.39	1000	100.58	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3058314.22	3354908.39	91.16	
Ge	72	He	77089.87	81380.8566666667	94.73	
In	115	He	799834.69	879610.92	90.93	
Lu	175	He	2307487.99	2355507.1	97.96	
Rh	103	He	2492717.61	2764364.75333333	90.17	
Sc	45	He	72640.75	76114.41	95.44	
Tb	159	He	3738582.24	3836613.38	97.44	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	591892.36	662644.216666667	89.32	
Bi	209	No Gas	7668529.05	8369981.75	91.62	
Ge	72	No Gas	1014445.38	1075610.54666667	94.31	
In	115	No Gas	7586394.38	8286385.15	91.55	
Lu	175	No Gas	11679470.25	11754297.74	99.36	
Rh	103	No Gas	6762975.43	7567675.80666667	89.37	
Sc	45	No Gas	3588851.25	3751808.74	95.66	
Tb	159	No Gas	11618906.91	11714148.9933333	99.19	

II
CONTINUING CALIBRATION VERIFICATION (CCV) STANDARD

Report No: 223071218 GCAL QC ID: 1800
Instrument ID: ICPMS2 Lab File ID: 2230712A_MS2.b\122957SMPL.d
Analyst: TDM Analytical Batch: 768860
Analysis Date: 07/12/23 Time: 1610 Analytical Method: EPA 6020B

ANALYTE	TRUE	FOUND	%RECOVERY	Q	UNITS
Arsenic	10.0	10.4	104		ug/L

CONTROL LIMITS 90-110%

FORM II - IN

Sample Report

Sample Name	1800	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122957SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 4:10:21 PM	Total Dilution	1.0000
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	52.603	52.603	0.8	389215.14	500	
Be	9	6	No Gas	9.572	9.572	2.3	21175.35	1000	
B	11	6	No Gas	55.841	55.841	0.4	80479.97	500	
Sr	88	72	No Gas	10.085	10.085	0.8	589894.27	1000	
Zr	90	72	No Gas	10.074	10.074	0.3	366182.04	100	
Mo	95	115	No Gas	10.068	10.068	0.3	106204.35	1000	
Ag	107	115	No Gas	10.256	10.256	0.9	288866.21	100	
Cd	111	115	No Gas	9.977	9.977	0.4	62777.85	1000	
Sb	121	115	No Gas	19.902	19.902	0.6	566225.39	1000	
Ba	137	115	No Gas	9.975	9.975	0.6	112307.64	1000	
Tl	205	209	No Gas	9.825	9.825	1.2	673297.93	1000	
Pb	208	209	No Gas	10.001	10.001	0.7	928166.54	1000	
Na	23	45	He	1068.585	1068.585	1.3	299840.50	100000	
Mg	24	45	He	1031.944	1031.944	0.9	137918.37	100000	
Al	27	45	He	199.712	199.712	1.5	8173.60	20000	
Si	29	45	He	1968.63	1968.630	9.1	3794.51	10000	
K	39	45	He	1026.199	1026.199	0.8	137251.53	100000	
Ca	44	45	He	5054.748	5054.748	1.8	32686.18	500000	
Ti	47	45	He	10.468	10.468	2.1	587.68	1000	
V	51	72	He	10.417	10.417	1.5	25317.29	1000	
Cr	52	72	He	10.59	10.590	2.0	33011.33	1000	
Mn	55	72	He	51.871	51.871	0.9	68516.84	5000	
Fe	57	72	He	1058.653	1058.653	1.1	62302.35	100000	
Co	59	72	He	10.725	10.725	1.2	63237.24	1000	
Ni	60	72	He	21.866	21.866	1.0	36963.04	2000	
Cu	63	45	He	10.825	10.825	0.6	51799.93	1000	
Zn	66	72	He	209.37	209.370	0.2	129792.91	20000	
As	75	72	He	10.428	10.428	2.2	6082.95	1000	
Se	78	72	He	9.648	9.648	3.7	278.47	50	
Sn	120	115	He	10.001	10.001	1.2	39347.97	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3729196.82	3354908.39	111.16	
Ge	72	He	88595.54	81380.856666667	108.87	
In	115	He	941071.94	879610.92	106.99	
Lu	175	He	2560423.30	2355507.1	108.7	
Rh	103	He	3063904.18	2764364.75333333	110.84	
Sc	45	He	82209.00	76114.41	108.01	
Tb	159	He	4233350.67	3836613.38	110.34	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	771260.53	662644.216666667	116.39
Bi	209	No Gas	9925148.81	8369981.75	118.58
Ge	72	No Gas	1283463.49	1075610.54666667	119.32
In	115	No Gas	9924861.76	8286385.15	119.77
Lu	175	No Gas	14311630.62	11754297.74	121.76
Rh	103	No Gas	9130861.30	7567675.80666667	120.66
Sc	45	No Gas	4483544.82	3751808.74	119.5
Tb	159	No Gas	14546411.03	11714148.9933333	124.18

Sample Report

Flag
<70% or >120%
<70% or >120%
<70% or >120%

II
CONTINUING CALIBRATION VERIFICATION (CCV) STANDARD

Report No: 223071218 GCAL QC ID: 1800
Instrument ID: ICPMS2 Lab File ID: 2230712A_MS2.b\122975SMPL.d
Analyst: TDM Analytical Batch: 768860
Analysis Date: 07/12/23 Time: 1714 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>TRUE</i>	<i>FOUND</i>	<i>%RECOVERY</i>	<i>Q</i>	<i>UNITS</i>
Arsenic	10.0	10.2	102		ug/L

CONTROL LIMITS 90-110%

FORM II - IN

Sample Report

Sample Name	1800	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122975SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 5:14:32 PM	Total Dilution	1.0000
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	50.181	50.181	0.8	373792.98	500	
Be	9	6	No Gas	9.351	9.351	1.0	20680.01	1000	
B	11	6	No Gas	54.073	54.073	1.8	78037.39	500	
Sr	88	72	No Gas	10.022	10.022	0.3	559620.60	1000	
Zr	90	72	No Gas	9.898	9.898	0.8	343503.65	100	
Mo	95	115	No Gas	9.801	9.801	1.1	100783.48	1000	
Ag	107	115	No Gas	10.095	10.095	0.2	277144.28	100	
Cd	111	115	No Gas	9.952	9.952	1.1	61038.02	1000	
Sb	121	115	No Gas	19.847	19.847	0.9	550374.29	1000	
Ba	137	115	No Gas	9.947	9.947	0.4	109163.30	1000	
Tl	205	209	No Gas	9.732	9.732	1.2	677917.80	1000	
Pb	208	209	No Gas	9.837	9.837	0.7	927957.45	1000	
Na	23	45	He	1079.405	1079.405	0.9	284499.17	100000	
Mg	24	45	He	1045.99	1045.990	0.7	131333.02	100000	
Al	27	45	He	197.314	197.314	2.2	7589.30	20000	
Si	29	45	He	1932.944	1932.944	8.2	3518.44	10000	
K	39	45	He	1003.754	1003.754	0.9	126473.82	100000	
Ca	44	45	He	4943.578	4943.578	1.9	30043.97	500000	
Ti	47	45	He	9.648	9.648	7.8	509.68	1000	
V	51	72	He	10.462	10.462	2.1	23996.24	1000	
Cr	52	72	He	10.418	10.418	0.6	30649.56	1000	
Mn	55	72	He	49.946	49.946	0.8	62333.03	5000	
Fe	57	72	He	1042.785	1042.785	1.5	57904.75	100000	
Co	59	72	He	10.777	10.777	1.1	59964.94	1000	
Ni	60	72	He	21.218	21.218	0.3	33877.89	2000	
Cu	63	45	He	10.808	10.808	0.1	48596.92	1000	
Zn	66	72	He	208.027	208.027	0.4	121696.40	20000	
As	75	72	He	10.166	10.166	1.7	5596.09	1000	
Se	78	72	He	9.755	9.755	0.8	265.54	50	
Sn	120	115	He	10.03	10.030	0.4	37296.92	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3623923.49	3354908.39	108.02	
Ge	72	He	83612.08	81380.8566666667	102.74	
In	115	He	889519.81	879610.92	101.13	
Lu	175	He	2442229.34	2355507.1	103.68	
Rh	103	He	2940898.28	2764364.75333333	106.39	
Sc	45	He	77251.42	76114.41	101.49	
Tb	159	He	4080773.37	3836613.38	106.36	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	771169.81	662644.216666667	116.38
Bi	209	No Gas	10087838.60	8369981.75	120.52
Ge	72	No Gas	1225260.47	1075610.54666667	113.91
In	115	No Gas	9673829.64	8286385.15	116.74
Lu	175	No Gas	14338738.12	11754297.74	121.99
Rh	103	No Gas	8849232.43	7567675.80666667	116.93
Sc	45	No Gas	4284411.08	3751808.74	114.2
Tb	159	No Gas	14449179.37	11714148.9933333	123.35

Sample Report

Flag
<70% or >120%
<70% or >120%
<70% or >120%

II
CONTINUING CALIBRATION VERIFICATION (CCV) STANDARD

Report No:	<u>223071218</u>	GCAL QC ID:	<u>1800</u>
Instrument ID:	<u>ICPMS2</u>	Lab File ID:	<u>2230712A_MS2.b\122985SMPL.d</u>
Analyst:	<u>TDM</u>	Analytical Batch:	<u>768860</u>
Analysis Date:	<u>07/12/23</u>	Time:	<u>1750</u>
		Analytical Method:	<u>EPA 6020B</u>

<i>ANALYTE</i>	<i>TRUE</i>	<i>FOUND</i>	<i>%RECOVERY</i>	<i>Q</i>	<i>UNITS</i>
Arsenic	10.0	10.2	102		ug/L

CONTROL LIMITS 90-110%

FORM II - IN

Sample Report

Sample Name	1800	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122985SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 5:50:11 PM	Total Dilution	1.0000
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	50.847	50.847	1.0	369281.79	500	
Be	9	6	No Gas	9.373	9.373	1.3	20251.45	1000	
B	11	6	No Gas	53.874	53.874	2.0	75970.23	500	
Sr	88	72	No Gas	10.13	10.130	0.4	565095.25	1000	
Zr	90	72	No Gas	9.978	9.978	0.9	345936.11	100	
Mo	95	115	No Gas	9.805	9.805	1.4	100757.65	1000	
Ag	107	115	No Gas	10.141	10.141	0.6	278230.41	100	
Cd	111	115	No Gas	10.078	10.078	0.9	61773.48	1000	
Sb	121	115	No Gas	20.012	20.012	0.9	554620.06	1000	
Ba	137	115	No Gas	9.994	9.994	1.0	109616.76	1000	
Tl	205	209	No Gas	9.784	9.784	0.4	682752.49	1000	
Pb	208	209	No Gas	9.909	9.909	0.8	936414.79	1000	
Na	23	45	He	1084.567	1084.567	0.8	281460.52	100000	
Mg	24	45	He	1041.547	1041.547	0.8	128784.29	100000	
Al	27	45	He	201.362	201.362	1.7	7626.64	20000	
Si	29	45	He	1993.688	1993.688	6.8	3544.44	10000	
K	39	45	He	998.593	998.593	1.1	123975.95	100000	
Ca	44	45	He	5002.747	5002.747	1.6	29935.42	500000	
Ti	47	45	He	9.926	9.926	6.5	516.34	1000	
V	51	72	He	10.271	10.271	2.1	23391.89	1000	
Cr	52	72	He	10.699	10.699	0.5	31236.40	1000	
Mn	55	72	He	50.174	50.174	0.6	62157.79	5000	
Fe	57	72	He	1037.84	1037.840	1.6	57225.56	100000	
Co	59	72	He	10.696	10.696	1.5	59083.46	1000	
Ni	60	72	He	21.156	21.156	0.6	33535.94	2000	
Cu	63	45	He	10.992	10.992	0.9	48664.76	1000	
Zn	66	72	He	209.139	209.139	0.8	121459.03	20000	
As	75	72	He	10.244	10.244	0.9	5598.09	1000	
Se	78	72	He	9.711	9.711	2.5	262.55	50	
Sn	120	115	He	10.072	10.072	1.1	37036.24	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3640033.70	3354908.39	108.5	
Ge	72	He	83002.09	81380.856666667	101.99	
In	115	He	879668.26	879610.92	100.01	
Lu	175	He	2441710.69	2355507.1	103.66	
Rh	103	He	2932212.10	2764364.75333333	106.07	
Sc	45	He	76077.84	76114.41	99.95	
Tb	159	He	4090769.63	3836613.38	106.62	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	753287.70	662644.216666667	113.68
Bi	209	No Gas	10106382.56	8369981.75	120.75
Ge	72	No Gas	1224069.64	1075610.54666667	113.8
In	115	No Gas	9668390.72	8286385.15	116.68
Lu	175	No Gas	14353118.96	11754297.74	122.11
Rh	103	No Gas	8812426.87	7567675.80666667	116.45
Sc	45	No Gas	4253819.69	3751808.74	113.38
Tb	159	No Gas	14435533.95	11714148.9933333	123.23

Sample Report

Flag
<70% or >120%
<70% or >120%
<70% or >120%

Metals

Form III

Blanks

III
INITIAL CALIBRATION BLANK

Report No: 223071218 Blank ID: 1700
Instrument ID: ICPMS2 Lab File ID: 2230712A_MS2.b\1228_ICB.d
Analyst: TDM Analytical Batch: 768860
Analysis Date: 07/12/23 Time: 1241 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	0.50	ug/L	U	0.25	0.50	1.00

FORM III - IN

Initial Calibration Blank (ICB) Report

Sample Name 1700 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name 1228_ICB.d **Comment** ICPMS-2,TDM
Acq Time 7/12/2023 12:41:02 PM **Total Dilution** 1.0000
Sample Type ICB **Sample Pass/Fail** Pass
ISTD Ref FileName 1221CALB.d **ISTD Pass/Fail** Pass
Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	Conc	RSD	CPS	Limit	QC Flag
Li	7	6	No Gas	0.290	2.0	49494.69	2.5	
Be	9	6	No Gas	0.040	6.8	123.33	0.5	
B	11	6	No Gas	4.800	5.1	8842.81	5	
Sr	88	72	No Gas	0.016	13.1	1876.86	0.5	
Zr	90	72	No Gas	0.007	5.3	1108.94	0.5	
Mo	95	115	No Gas	0.173	6.1	1796.80	0.5	
Ag	107	115	No Gas	0.004	12.1	152.23	0.5	
Cd	111	115	No Gas	0.009	34.8	106.67	0.5	
Sb	121	115	No Gas	0.131	1.6	4635.25	1	
Ba	137	115	No Gas	0.022	3.8	406.68	0.5	
Tl	205	209	No Gas	0.029	12.6	2376.99	0.5	
Pb	208	209	No Gas	0.004	14.6	1003.38	0.5	
Na	23	45	He	4.275	4.4	8806.19	50	
Mg	24	45	He	-1.891	6.8	1850.18	50	
Al	27	45	He	0.252	16.5	66.67	10	
Si	29	45	He	19.138	37.5	958.71	100	
K	39	45	He	-1.673	1.0	13946.94	50	
Ca	44	45	He	4.473	4.9	365.01	250	
Ti	47	45	He	-0.027	24.7	4.67	0.5	
V	51	72	He	-0.003	8.8	173.34	0.5	
Cr	52	72	He	-0.021	6.2	423.35	0.5	
Mn	55	72	He	1.452	2.3	3859.44	2.5	
Fe	57	72	He	1.775	22.3	206.68	50	
Co	59	72	He	0.002	17.2	70.00	0.5	
Ni	60	72	He	-0.039	5.8	1006.71	1	
Cu	63	45	He	0.002	8.1	227.78	0.5	
Zn	66	72	He	7.526	2.7	4797.50	10	
As	75	72	He	0.026	5.6	31.00	0.5	
Se	78	72	He	0.043	12.2	14.40	0.5	
Sn	120	115	He	0.053	2.7	397.79	0.5	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3438855.89	3354908.39	102.5	
Ge	72	He	83130.34	81380.8566666667	102.15	
In	115	He	897284.84	879610.92	102.01	
Lu	175	He	2415883.87	2355507.1	102.56	
Rh	103	He	2823959.82	2764364.753333333	102.16	
Sc	45	He	76833.80	76114.41	100.95	
Tb	159	He	3937708.59	3836613.38	102.64	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	669955.33	662644.216666667	101.1	
Bi	209	No Gas	8646103.00	8369981.75	103.3	
Ge	72	No Gas	1091613.81	1075610.54666667	101.49	
In	115	No Gas	8528789.12	8286385.15	102.93	
Lu	175	No Gas	12219845.65	11754297.74	103.96	
Rh	103	No Gas	7753214.42	7567675.80666667	102.45	
Sc	45	No Gas	3762694.71	3751808.74	100.29	
Tb	159	No Gas	12203624.82	11714148.9933333	104.18	

III
CONTINUING CALIBRATION BLANK

Report No:	<u>223071218</u>	Blank ID:	<u>1900</u>		
Instrument ID:	<u>ICPMS2</u>	Lab File ID:	<u>2230712A_MS2.b\122958SMPL.d</u>		
Analyst:	<u>TDM</u>	Analytical Batch:	<u>768860</u>		
Analysis Date:	<u>07/12/23</u>	Time:	<u>1613</u>	Analytical Method:	<u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	0.50	ug/L	U	0.25	0.50	1.00

FORM III - IN

Sample Report

Sample Name	1900	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122958SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 4:13:54 PM	Total Dilution	1.0000
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	-0.034	-0.034	0.6	54508.18	500	
Be	9	6	No Gas	0.009	0.009	13.8	71.33	1000	
B	11	6	No Gas	0.995	0.995	5.2	4900.94	500	
Sr	88	72	No Gas	0.003	0.003	8.8	1380.11	1000	
Zr	90	72	No Gas	0.003	0.003	1.2	1151.18	100	
Mo	95	115	No Gas	0.029	0.029	1.5	577.80	1000	
Ag	107	115	No Gas	0.002	0.002	20.3	104.45	100	
Cd	111	115	No Gas	0.001	0.001	6.5	78.89	1000	
Sb	121	115	No Gas	0.126	0.126	5.5	5216.59	1000	
Ba	137	115	No Gas	0.003	0.003	19.2	250.00	1000	
Tl	205	209	No Gas	-0.002	-0.002	13.5	660.04	1000	
Pb	208	209	No Gas	0.011	0.011	6.8	1766.78	1000	
Na	23	45	He	6.807	6.807	4.0	10090.37	100000	
Mg	24	45	He	-1.949	-1.949	9.7	1966.85	100000	
Al	27	45	He	0.254	0.254	22.7	71.34	20000	
Si	29	45	He	-75.221	-75.221	27.3	890.03	10000	
K	39	45	He	-14.337	-14.337	3.0	13386.45	100000	
Ca	44	45	He	-25.277	-25.277	19.5	200.00	500000	
Ti	47	45	He	-0.033	-0.033	12.4	4.67	1000	
V	51	72	He	0.007	0.007	1.6	206.67	1000	
Cr	52	72	He	-0.012	-0.012	14.1	474.46	1000	
Mn	55	72	He	-0.255	-0.255	1.5	1919.03	5000	
Fe	57	72	He	5.461	5.461	19.6	433.36	100000	
Co	59	72	He	0.003	0.003	4.2	80.00	1000	
Ni	60	72	He	0.131	0.131	9.1	1341.18	2000	
Cu	63	45	He	0.004	0.004	10.4	253.34	1000	
Zn	66	72	He	-0.196	-0.196	7.4	340.01	20000	
As	75	72	He	0.012	0.012	8.0	25.00	1000	
Se	78	72	He	-0.033	-0.033	28.8	13.13	50	
Sn	120	115	He	-0.011	-0.011	7.7	164.45	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3717818.17	3354908.39	110.82	
Ge	72	He	88067.03	81380.856666667	108.22	
In	115	He	934929.92	879610.92	106.29	
Lu	175	He	2529290.53	2355507.1	107.38	
Rh	103	He	3068560.50	2764364.75333333	111	
Sc	45	He	82038.06	76114.41	107.78	
Tb	159	He	4190488.58	3836613.38	109.22	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	765285.61	662644.216666667	115.49
Bi	209	No Gas	9979032.35	8369981.75	119.22
Ge	72	No Gas	1263800.37	1075610.54666667	117.5
In	115	No Gas	9870128.97	8286385.15	119.11
Lu	175	No Gas	14248486.04	11754297.74	121.22
Rh	103	No Gas	9161436.58	7567675.80666667	121.06
Sc	45	No Gas	4400580.94	3751808.74	117.29
Tb	159	No Gas	14487972.28	11714148.9933333	123.68

Sample Report

Flag
<70% or >120%
<70% or >120%
<70% or >120%

III
METHOD BLANK

Report No: 223071218 Blank ID: MB2499851
Instrument ID: ICPMS2 Lab File ID: 2230712A_MS2.b\122959SMPL.d
Analyst: TDM Analytical Batch: 768860
Analysis Date: 07/12/23 Time: 1617 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	20.0	ug/kg	U	10.0	20.0	40.0

FORM III - IN

Method Blank (MB) Report

Sample Name 2499851 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name 122959SMPL.d **Comment** ICPMS-2,TDM
Acq Time 7/12/2023 4:17:28 PM **Total Dilution** 40.0000
Sample Type MBSOIL **Sample Pass/Fail** Fail
ISTD Ref FileName 1221CALB.d **ISTD Pass/Fail** Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	Conc	RSD	CPS	Limit	QC Flag
Li	7	6	No Gas	-0.540	4.5	48066.62	2.5	
Be	9	6	No Gas	0.137	4.4	52.67	0.5	
B	11	6	No Gas	36.944	3.2	4224.06	5	
Sr	88	72	No Gas	5.748	2.7	8689.58	0.5	
Zr	90	72	No Gas	7.429	15.3	7019.59	0.5	
Mo	95	115	No Gas	1.749	4.5	670.03	0.5	
Ag	107	115	No Gas	0.192	6.1	175.56	0.5	
Cd	111	115	No Gas	0.092	24.4	77.78	0.5	
Sb	121	115	No Gas	3.327	10.1	3687.19	1	
Ba	137	115	No Gas	4.401	5.4	1331.19	0.5	
Tl	205	209	No Gas	0.279	6.1	1140.09	0.5	
Pb	208	209	No Gas	1.001	4.9	2806.90	0.5	
Na	23	45	He	2648.096	4.6	25762.74	50	> 1/2 LOQ
Mg	24	45	He	-120.691	11.8	1793.51	50	
Al	27	45	He	244.151	13.6	302.67	10	
Si	29	45	He	2088.585	30.3	1048.71	100	
K	39	45	He	-96.395	2.1	14514.17	50	
Ca	44	45	He	1466.254	11.6	583.35	250	
Ti	47	45	He	4.221	65.1	12.00	0.5	
V	51	72	He	-1.400	10.5	102.22	0.5	
Cr	52	72	He	-0.283	9.6	472.23	0.5	
Mn	55	72	He	-12.618	15.6	1784.58	2.5	
Fe	57	72	He	296.856	6.8	530.04	50	
Co	59	72	He	0.282	8.2	102.22	0.5	
Ni	60	72	He	6.855	5.8	1361.19	1	
Cu	63	45	He	5.645	10.0	888.92	0.5	
Zn	66	72	He	429.721	3.1	6816.10	10	> 1/2 LOQ
As	75	72	He	0.621	11.5	26.00	0.5	
Se	78	72	He	-0.818	11.2	13.01	0.5	
Sn	120	115	He	2.221	9.4	410.01	0.5	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3505350.05	3354908.39	104.48	
Ge	72	He	85056.22	81380.8566666667	104.52	
In	115	He	904167.86	879610.92	102.79	
Lu	175	He	2457784.44	2355507.1	104.34	
Rh	103	He	2939933.63	2764364.753333333	106.35	
Sc	45	He	80436.06	76114.41	105.68	
Tb	159	He	4060648.48	3836613.38	105.84	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	673030.50	662644.216666667	101.57	
Bi	209	No Gas	9016792.78	8369981.75	107.73	
Ge	72	No Gas	1158334.43	1075610.54666667	107.69	
In	115	No Gas	9056488.75	8286385.15	109.29	
Lu	175	No Gas	13245874.39	11754297.74	112.69	
Rh	103	No Gas	8379224.11	7567675.80666667	110.72	
Sc	45	No Gas	4124898.45	3751808.74	109.94	
Tb	159	No Gas	13484368.55	11714148.99333333	115.11	

III
CONTINUING CALIBRATION BLANK

Report No: 223071218 Blank ID: 1900
Instrument ID: ICPMS2 Lab File ID: 2230712A_MS2.b\122976SMPL.d
Analyst: TDM Analytical Batch: 768860
Analysis Date: 07/12/23 Time: 1718 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	0.50	ug/L	U	0.25	0.50	1.00

FORM III - IN

Sample Report

Sample Name	1900	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122976SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 5:18:05 PM	Total Dilution	1.0000
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.018	0.018	2.0	54598.63	500	
Be	9	6	No Gas	0.004	0.004	27.7	61.33	1000	
B	11	6	No Gas	0.331	0.331	6.1	3977.32	500	
Sr	88	72	No Gas	0.008	0.008	8.3	1606.81	1000	
Zr	90	72	No Gas	0.002	0.002	1.9	1087.83	100	
Mo	95	115	No Gas	0.026	0.026	11.0	536.69	1000	
Ag	107	115	No Gas	0.001	0.001	2.3	84.44	100	
Cd	111	115	No Gas	0.001	0.001	12.0	73.33	1000	
Sb	121	115	No Gas	0.127	0.127	2.1	5202.13	1000	
Ba	137	115	No Gas	0.004	0.004	11.0	263.34	1000	
Tl	205	209	No Gas	-0.002	-0.002	20.4	680.05	1000	
Pb	208	209	No Gas	0.005	0.005	10.2	1280.08	1000	
Na	23	45	He	8.267	8.267	1.7	9926.95	100000	
Mg	24	45	He	-4.222	-4.222	6.7	1580.15	100000	
Al	27	45	He	-0.29	-0.290	27.9	46.67	20000	
Si	29	45	He	-60.388	-60.388	38.2	861.37	10000	
K	39	45	He	-14.36	-14.360	1.3	12665.75	100000	
Ca	44	45	He	-18.98	-18.980	27.0	226.67	500000	
Ti	47	45	He	-0.047	-0.047	41.7	3.67	1000	
V	51	72	He	-0.02	-0.020	16.4	135.56	1000	
Cr	52	72	He	-0.014	-0.014	9.4	448.90	1000	
Mn	55	72	He	-0.575	-0.575	1.6	1451.20	5000	
Fe	57	72	He	1.296	1.296	24.6	183.34	100000	
Co	59	72	He	-0.003	-0.003	7.1	46.67	1000	
Ni	60	72	He	0.155	0.155	4.1	1323.41	2000	
Cu	63	45	He	0.011	0.011	2.1	270.00	1000	
Zn	66	72	He	0.497	0.497	7.6	734.47	20000	
As	75	72	He	-0.009	-0.009	46.8	12.33	1000	
Se	78	72	He	0.031	0.031	20.8	14.33	50	
Sn	120	115	He	-0.013	-0.013	17.8	151.11	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3665982.03	3354908.39	109.27	
Ge	72	He	84405.53	81380.856666667	103.72	
In	115	He	899033.54	879610.92	102.21	
Lu	175	He	2474257.52	2355507.1	105.04	
Rh	103	He	2990411.27	2764364.75333333	108.18	
Sc	45	He	77634.26	76114.41	102	
Tb	159	He	4117996.29	3836613.38	107.33	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	761972.63	662644.216666667	114.99
Bi	209	No Gas	10124863.80	8369981.75	120.97
Ge	72	No Gas	1224685.61	1075610.54666667	113.86
In	115	No Gas	9752139.29	8286385.15	117.69
Lu	175	No Gas	14480780.20	11754297.74	123.2
Rh	103	No Gas	8957944.92	7567675.80666667	118.37
Sc	45	No Gas	4265379.14	3751808.74	113.69
Tb	159	No Gas	14615003.95	11714148.9933333	124.76

Sample Report

Flag
<70% or >120%
<70% or >120%
<70% or >120%

III
CONTINUING CALIBRATION BLANK

Report No: 223071218 Blank ID: 1900
Instrument ID: ICPMS2 Lab File ID: 2230712A_MS2.b\122986SMPL.d
Analyst: TDM Analytical Batch: 768860
Analysis Date: 07/12/23 Time: 1753 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	0.50	ug/L	U	0.25	0.50	1.00

FORM III - IN

Sample Report

Sample Name	1900	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122986SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 5:53:44 PM	Total Dilution	1.0000
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	-0.248	-0.248	0.6	52835.83	500	
Be	9	6	No Gas	0.002	0.002	12.4	56.67	1000	
B	11	6	No Gas	0.504	0.504	3.2	4204.06	500	
Sr	88	72	No Gas	0.004	0.004	9.4	1403.46	1000	
Zr	90	72	No Gas	0.003	0.003	2.2	1111.17	100	
Mo	95	115	No Gas	0.027	0.027	9.9	538.91	1000	
Ag	107	115	No Gas	0.001	0.001	18.3	83.33	100	
Cd	111	115	No Gas	0.001	0.001	31.8	73.33	1000	
Sb	121	115	No Gas	0.12	0.120	4.1	4960.93	1000	
Ba	137	115	No Gas	0.044	0.044	107.6	699.15	1000	
Tl	205	209	No Gas	-0.001	-0.001	31.5	713.38	1000	
Pb	208	209	No Gas	0.003	0.003	9.9	1103.40	1000	
Na	23	45	He	9.237	9.237	5.3	10020.36	100000	
Mg	24	45	He	0.34	0.340	1.5	2113.55	100000	
Al	27	45	He	0.138	0.138	11.6	62.00	20000	
Si	29	45	He	-50.986	-50.986	30.8	862.03	10000	
K	39	45	He	-7.696	-7.696	1.5	13212.90	100000	
Ca	44	45	He	-24.287	-24.287	21.2	191.67	500000	
Ti	47	45	He	-0.039	-0.039	25.0	4.00	1000	
V	51	72	He	-0.009	-0.009	12.7	157.78	1000	
Cr	52	72	He	0.015	0.015	7.8	520.02	1000	
Mn	55	72	He	-0.731	-0.731	10.9	1232.29	5000	
Fe	57	72	He	1.494	1.494	36.8	190.01	100000	
Co	59	72	He	0.002	0.002	23.1	71.11	1000	
Ni	60	72	He	-0.323	-0.323	5.0	564.46	2000	
Cu	63	45	He	0.024	0.024	22.8	323.34	1000	
Zn	66	72	He	-0.071	-0.071	5.2	390.01	20000	
As	75	72	He	0.002	0.002	16.7	18.00	1000	
Se	78	72	He	-0.128	-0.128	17.8	9.91	50	
Sn	120	115	He	-0.004	-0.004	9.3	180.00	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3614565.67	3354908.39	107.74	
Ge	72	He	82394.29	81380.8566666667	101.25	
In	115	He	877735.79	879610.92	99.79	
Lu	175	He	2418840.90	2355507.1	102.69	
Rh	103	He	2935724.68	2764364.75333333	106.2	
Sc	45	He	76487.65	76114.41	100.49	
Tb	159	He	4046686.82	3836613.38	105.48	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	760619.20	662644.216666667	114.79
Bi	209	No Gas	10105917.97	8369981.75	120.74
Ge	72	No Gas	1225621.17	1075610.54666667	113.95
In	115	No Gas	9667505.75	8286385.15	116.67
Lu	175	No Gas	14439331.03	11754297.74	122.84
Rh	103	No Gas	8936454.09	7567675.80666667	118.09
Sc	45	No Gas	4247440.11	3751808.74	113.21
Tb	159	No Gas	14511741.45	11714148.9933333	123.88

Sample Report

Flag
<70% or >120%
<70% or >120%
<70% or >120%

Metals

Form IV

Interference Checks

IV
ICPMS INTERFERENCE CHECKS

Report No: <u>223071218</u>	ICSA \ AB ID: <u>2000 \ 2100</u>
Instrument ID: <u>ICPMS2</u>	Analytical Batch: <u>768860</u>
Analyst: <u>TDM</u>	Analytical Method: <u>EPA 6020B</u>
Lab File ID ICSA1: <u>2230712A_MS2.b\122912ICSA.d</u>	Lab File ID ICSAB1: <u>2230712A_MS2.b\122913ICSB.d</u>
Lab File ID ICSA2: _____	Lab File ID ICSAB2: _____

Concentration Units: ug/L

Analyzed (A/AB):			07/12/23 1330	07/12/23 1333				
ANALYTE	TRUE A	TRUE AB	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R
Aluminum	1000	1000	1010	1010	101			
Antimony	0	0	0.012	0.067				
Arsenic	0	10.0	0.0090	9.79	98			
Barium	0	0	0.0030	0.015				
Beryllium	0	0	0.016	0.0050				
Boron	0	20.0	-0.26	22.3	112			
Cadmium	0	10.0	0.010	11.2	112			
Calcium	3000	3000	2910	2970	99			
Chromium	0	20.0	0.029	19.6	98			
Cobalt	0	20.0	0.024	19.8	99			
Copper	0	20.0	0.011	20.0	100			
Iron	2500	2500	2490	2490	100			
Lead	0	0	0.0030	0.0060				
Lithium	0	20.0	-0.024	21.3	106			
Magnesium	1000	1000	1010	1020	102			
Manganese	0	20.0	-0.24	19.9	100			
Molybdenum	20.0	20.0	18.7	18.8	94			
Nickel	0	20.0	0.14	20.2	101			
Potassium	1000	1000	983	988	99			
Selenium	0	10.0	-0.021	9.54	95			
Silicon	0	1000	12.8	1010	101			
Silver	0	5.00	0.0020	5.11	102			
Sodium	2500	2500	2450	2490	100			
Strontium	0	10.0	0.020	9.60	96			
Thallium	0	0	-0.0030	-0.0040				
Tin	0	10.0	0.020	9.38	94			
Titanium	20.0	20.0	19.3	19.7	98			
Vanadium	0	20.0	-0.0050	19.1	96			
Zinc	0	20.0	0.73	21.1	106			
Zirconium	0	20.0	0.013	18.5	92			

FORM IV - IN

Interference Check Solution A (ICS-A) Report

Sample Name 2000 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name 122912ICSA.d **Comment** ICPMS-2,TDM
Acq Time 7/12/2023 1:30:06 PM **Total Dilution** 1.0000
Sample Type ICSA **Sample Pass/Fail** Pass
ISTD Ref FileName 1221CALB.d **ISTD Pass/Fail** Pass
Units : ppb

QC Analyte Table

Spiked Element Recovery: 80-120%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	QC Flag
Li	7	6	No Gas	-0.024	0.7	48043.14	2.5	
Be	9	6	No Gas	0.016	4.6	76.00	0.5	
B	11	6	No Gas	-0.256	5.4	2810.35	5	
Sr	88	72	No Gas	0.020	2.5	2063.55	0.5	
Zr	90	72	No Gas	0.013	3.7	1288.96	0.5	
Mo	95	115	No Gas	18.749	1.3	168509.79	20	
Ag	107	115	No Gas	0.002	9.1	96.67	0.5	
Cd	111	115	No Gas	0.010	28.1	113.33	0.5	
Sb	121	115	No Gas	0.012	3.7	1723.46	1	
Ba	137	115	No Gas	0.003	14.5	218.89	0.5	
Tl	205	209	No Gas	-0.003	14.6	480.03	0.5	
Pb	208	209	No Gas	0.003	6.3	880.05	0.5	
Na	23	45	He	2452.248	0.4	620084.33	2500	
Mg	24	45	He	1010.990	0.4	123728.23	1000	
Al	27	45	He	1006.841	1.2	37498.48	1000	
Si	29	45	He	12.824	34.9	931.37	100	
K	39	45	He	982.627	0.5	120901.38	1000	
Ca	44	45	He	2912.344	0.3	17378.76	3000	
Ti	47	45	He	19.280	1.8	986.04	20	
V	51	72	He	-0.005	13.5	164.45	0.5	
Cr	52	72	He	0.029	7.3	553.35	0.5	
Mn	55	72	He	-0.237	3.1	1797.91	2.5	
Fe	57	72	He	2493.022	1.1	134766.93	2500	
Co	59	72	He	0.024	4.4	188.89	0.5	
Ni	60	72	He	0.143	6.2	1261.18	1	
Cu	63	45	He	0.011	10.7	264.45	0.5	
Zn	66	72	He	0.731	4.6	841.15	10	
As	75	72	He	0.009	19.2	21.67	0.5	
Se	78	72	He	-0.021	23.1	12.49	0.5	
Sn	120	115	He	0.020	4.4	265.56	0.5	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3375376.83	3354908.39	100.61	
Ge	72	He	81464.48	81380.856666667	100.1	
In	115	He	874551.81	879610.92	99.42	
Lu	175	He	2379197.41	2355507.1	101.01	
Rh	103	He	2734086.76	2764364.75333333	98.9	
Sc	45	He	75255.78	76114.41	98.87	
Tb	159	He	3886719.73	3836613.38	101.31	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	673754.31	662644.216666667	101.68	
Bi	209	No Gas	8636443.00	8369981.75	103.18	
Ge	72	No Gas	1088174.82	1075610.54666667	101.17	
In	115	No Gas	8466189.17	8286385.15	102.17	
Lu	175	No Gas	12256443.99	11754297.74	104.27	
Rh	103	No Gas	7616365.81	7567675.80666667	100.64	
Sc	45	No Gas	3730572.63	3751808.74	99.43	
Tb	159	No Gas	12246275.65	11714148.9933333	104.54	

Interference Check Solution AB (ICS-AB) Report

Sample Name 2100 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name 122913ICSB.d **Comment** ICPMS-2,TDM
Acq Time 7/12/2023 1:33:39 PM **Total Dilution** 1.0000
Sample Type ICSB **Sample Pass/Fail** Pass
ISTD Ref FileName 1221CALB.d **ISTD Pass/Fail** Pass

Units : ppb

QC Analyte Table Spiked Element Recovery: 80-120%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	QC Flag
Li	7	6	No Gas	21.298	1.0	163162.00	20	
Be	9	6	No Gas	0.005	11.1	54.00	0.5	
B	11	6	No Gas	22.251	0.8	29318.98	20	
Sr	88	72	No Gas	9.599	0.4	470630.92	10	
Zr	90	72	No Gas	18.518	1.0	563456.26	20	
Mo	95	115	No Gas	18.840	1.2	167833.05	20	
Ag	107	115	No Gas	5.111	1.4	121729.82	5	
Cd	111	115	No Gas	11.163	1.1	59383.29	10	
Sb	121	115	No Gas	0.067	3.0	3034.81	1	
Ba	137	115	No Gas	0.015	13.4	332.23	0.5	
Tl	205	209	No Gas	-0.004	15.4	443.36	0.5	
Pb	208	209	No Gas	0.006	10.3	1113.40	0.5	
Na	23	45	He	2488.711	0.5	617222.07	2500	
Mg	24	45	He	1017.273	0.8	122115.68	1000	
Al	27	45	He	1006.733	1.4	36780.07	1000	
Si	29	45	He	1009.729	12.9	2185.51	1000	
K	39	45	He	988.479	1.7	119227.74	1000	
Ca	44	45	He	2972.547	1.9	17393.68	3000	
Ti	47	45	He	19.737	3.5	990.04	20	
V	51	72	He	19.113	1.1	41880.22	20	
Cr	52	72	He	19.551	0.7	54736.30	20	
Mn	55	72	He	19.926	0.9	25069.16	20	
Fe	57	72	He	2488.843	0.9	132364.53	2500	
Co	59	72	He	19.820	0.7	105660.94	20	
Ni	60	72	He	20.214	0.5	30986.02	20	
Cu	63	45	He	19.998	0.8	85749.54	20	
Zn	66	72	He	21.129	0.7	12226.30	20	
As	75	72	He	9.786	1.9	5165.26	10	
Se	78	72	He	9.541	2.9	249.32	10	
Sn	120	115	He	9.383	0.8	33977.52	10	

QC ISTD Table Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3358743.91	3354908.39	100.11	
Ge	72	He	80151.72	81380.856666667	98.49	
In	115	He	865951.21	879610.92	98.45	
Lu	175	He	2361565.80	2355507.1	100.26	
Rh	103	He	2723365.87	2764364.753333333	98.52	
Sc	45	He	73823.02	76114.41	96.99	
Tb	159	He	3873145.57	3836613.38	100.95	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	660806.53	662644.216666667	99.72	
Bi	209	No Gas	8572060.29	8369981.75	102.41	
Ge	72	No Gas	1075736.13	1075610.54666667	100.01	
In	115	No Gas	8391405.21	8286385.15	101.27	
Lu	175	No Gas	12217005.65	11754297.74	103.94	
Rh	103	No Gas	7569138.03	7567675.80666667	100.02	
Sc	45	No Gas	3692250.82	3751808.74	98.41	
Tb	159	No Gas	12214823.15	11714148.9933333	104.27	

Metals

Form V1

Matrix Spikes

V1
MS/MSD RECOVERY

Report No: 223071218 Parent Sample ID: KCDC-SB0059-000.5-20230707
 Prep Method: 3050B Parent GCAL ID: 22307121801
 Prep Date: 07/12/23 Time: 1145 Prep Batch: 768841
 Analytical Method: EPA 6020B Analytical Batch: 768860

GCAL QC ID: 2499853 MS	Instrument ID: ICPMS2
Analyst: TDM	Lab File ID: 2230712A_MS2.b\122962SMPL.d
Analysis Date: 07/12/23 1628	Dilution: 10

ANALYTE	UNITS	SPIKE ADDED	SAMPLE RESULT	MS RESULT	MS % REC	#	QC LIMITS
Arsenic	ug/kg	2350	812	2750	82		80 - 120

GCAL QC ID: 2499854 MSD	Instrument ID: ICPMS2
Analyst: TDM	Lab File ID: 2230712A_MS2.b\122963SMPL.d
Analysis Date: 07/12/23 1631	Dilution: 10

ANALYTE	UNITS	SPIKE ADDED	MSD RESULT	MSD % REC	#	% RPD	#	QC LIMITS %REC	RPD
Arsenic	ug/kg	2350	2800	84		2		80 - 120	0 - 20

RPD : 0 out of 1 outside limits

Spike Recovery: 0 out of 2 outside limits

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

FORM V (PART 1) - IN

MS Report

Sample Name	2499853	Total Dilution	400.0000
File Name	122962SMPL.d	Comment	ICPMS-2, TDM
Data Path Name	C:\Agilent\ICPMHI\1\DATA\2230712A_MS2.b	ISTD Ref FileName	1221CALB.d
Acq Time	7/12/2023 4:28:10 PM	Sample QC Pass/Fail	Fail
Sample Type	MSSOIL	ISTD QC Pass/Fail	Fail

Analyte Table

Units : ppb

Name	Mass	ISTD	Mode	MeasValue	FinalConc	RSD	CPS	Ref Conc	%Rec	QC Flag
Ag	107	115	No Gas	5.037	2014.863	1.3	139362.48	18.4297502838562	99.8216766351391	
Al	27	45	He	7718.484	3087393.511	1.0	318574.42	1916809.14557217	2926.46091265849	> +/- 20%
As	75	72	He	5.843	2337.168	2.7	3419.08	689.881213680337	82.3643640923525	
B	11	6	No Gas	24.585	9833.869	1.3	37059.29	1267.06755310401	85.66801038372	
Ba	137	115	No Gas	45.544	18217.735	0.5	502821.40	11390.2808758145	341.372713681492	> +/- 20%
Be	9	6	No Gas	4.703	1881.091	1.3	10324.87	53.4583467841258	91.3816083090039	
Ca	44	45	He	13262.662	5305064.972	0.9	86517.19	3742445.65371095	156.261931834045	> +/- 20%
Cd	111	115	No Gas	4.799	1919.665	2.5	29693.33	61.4368584059833	92.9114035132877	
Co	59	72	He	5.407	2162.945	0.6	31933.60	154.874879279674	100.403487920608	
Cr	52	72	He	17.671	7068.487	13.2	54697.49	3585.6431327704	174.142175697839	> +/- 20%
Cu	63	45	He	11.343	4537.204	1.4	55125.27	3180.22977720304	67.8487118794662	> +/- 20%
Fe	57	72	He	1944.541	777816.269	0.9	114414.11	877330.527096832	-49.7571288316185	> +/- 20%
K	39	45	He	592.374	236949.600	1.8	86981.59	48694.7624773845	94.1274187488051	
Li	7	6	No Gas	26.371	10548.514	0.6	220412.18	432.195620688852	101.163188431448	
Mg	24	45	He	688.722	275488.821	0.6	94254.68	83804.385604045	95.8422178001253	
Mn	55	72	He	24.748	9899.287	1.7	33894.62	8885.36074833617	50.6963259880398	> +/- 20%
Mo	95	115	No Gas	6.046	2418.558	0.8	62747.38	554.349622858651	93.2103945086731	
Na	23	45	He	559.04	223616.014	0.3	163341.86	14921.3276527401	104.347343417538	
Ni	60	72	He	12.773	5109.270	1.8	22081.08	1169.74871105849	98.4880432855512	
Pb	208	209	No Gas	12.272	4908.872	1.4	1115158.55	2323.6507603019	129.26105941323	> +/- 20%
Sb	121	115	No Gas	6.166	2466.511	0.8	173437.20	261.639046596552	55.1217976088641	> +/- 20%
Se	78	72	He	-1.086	-434.442	-17.1	-15.59	-639.662809304975	51.3051899363394	> +/- 20%
Si	29	45	He	3612.751	1445100.517	5.1	6227.45	1572946.00673622	-63.9227450632472	> +/- 20%
Sn	120	115	He	3.459	1383.785	0.8	13458.77	135.956642383569	62.3914279204108	> +/- 20%
Sr	88	72	No Gas	55.662	22264.714	0.7	3220845.89	15541.1951498053	336.17596425079	> +/- 20%
Ti	47	45	He	157.562	63024.767	6.6	8895.86	60526.4287411971	124.916897521729	> +/- 20%
Tl	205	209	No Gas	4.68	1872.073	0.6	314496.74	11.8385094297941	93.0117198990133	
V	51	72	He	13.61	5443.817	0.8	33038.29	2799.16016999172	132.232854967993	> +/- 20%
Zn	66	72	He	625.883	250353.086	1.3	387341.74	239201.922092375	27.8779101860544	> +/- 20%
Zr	90	72	No Gas	5.457	2182.653	36.9	196746.24	1272.12244584765	227.632514324036	> +/- 20%

QC ISTD Table

Recovery Limits: 70 - 120%

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3652018.49	3354908.39	108.86	
Ge	72	He	88661.68	81380.8566666667	108.95	
In	115	He	921372.11	879610.92	104.75	
Lu	175	He	2524875.01	2355507.1	107.19	
Rh	103	He	2982563.84	2764364.75333333	107.89	
Sc	45	He	83509.66	76114.41	109.72	
Tb	159	He	4192594.94	3836613.38	109.28	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	763519.34	662644.216666667	115.22
Bi	209	No Gas	9719138.81	8369981.75	116.12
Ge	72	No Gas	1271900.79	1075610.54666667	118.25
In	115	No Gas	9747237.38	8286385.15	117.63
Lu	175	No Gas	14134836.87	11754297.74	120.25
Rh	103	No Gas	8876835.48	7567675.80666667	117.3
Sc	45	No Gas	4516661.21	3751808.74	120.39
Tb	159	No Gas	14453492.70	11714148.9933333	123.38

MS Report

Flag
<70% or >120%
<70% or >120%
<70% or >120%

Matrix Spike Duplicate (MSD) Sample Report

Sample Name 2499854 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name 122963SMPL.d **Comment** ICPMS-2,TDM
Acq Time 7/12/2023 4:31:44 PM **Total Dilution** 400.0000
Sample Type MSDSOIL **Sample Pass/Fail** Fail
ISTD Ref FileName 1221CALB.d **ISTD Pass/Fail** Fail

Units : ppb

QC Analyte Table

RPD Limits: 0-20%

Name	Mass	Mode	MeasValue	Final Conc	RSD	CPS	RefConc	RPD	Flag
Li	7	No Gas	27.987	11194.627	1.0	228598.65	26.3712861595842	5.94	
Be	9	No Gas	4.785	1913.918	0.9	10414.25	4.70272628241051	1.73	
B	11	No Gas	25.299	10119.590	2.3	37714.32	24.58467147869	2.86	
Sr	88	No Gas	48.063	19225.157	0.6	2768307.14	55.6617860870526	14.65	
Zr	90	No Gas	4.74	1896.039	10.7	170548.64	5.45663125785949	14.05	
Mo	95	No Gas	6.373	2549.244	1.5	65803.08	6.04639378258028	5.26	
Ag	107	No Gas	5.205	2081.991	1.2	143305.29	5.0371582074666	3.28	
Cd	111	No Gas	5.012	2004.845	0.4	30856.88	4.79916232167934	4.34	
Sb	121	No Gas	10.417	4166.659	1.5	290428.81	6.16627737737779	51.26	> 20%
Ba	137	No Gas	46.534	18613.499	2.3	511260.76	45.5443378736108	2.15	
Tl	205	No Gas	4.802	1920.895	0.3	323148.70	4.68018226852515	2.57	
Pb	208	No Gas	12.567	5026.602	0.5	1143529.78	12.2721798714163	2.37	
Na	23	He	541.235	216493.824	1.1	156634.06	559.04003621954	3.24	
Mg	24	He	716.241	286496.212	1.2	96834.45	688.722053010739	3.92	
Al	27	He	7956.716	3182686.207	0.9	324736.75	7718.48377658892	3.04	
Si	29	He	3562.793	1425117.240	8.7	6084.01	3612.75129152432	1.39	
K	39	He	596.038	238415.238	0.4	86438.43	592.373999937487	0.62	
Ca	44	He	12733.997	5093598.718	1.0	82152.41	13262.6624301285	4.07	
Ti	47	He	152.916	61166.449	16.8	8529.94	157.561916729079	2.99	
V	51	He	14.164	5665.430	0.6	34168.41	13.6095431733789	3.99	
Cr	52	He	17.235	6894.031	1.4	53117.12	17.671216616818	2.5	
Mn	55	He	26.106	10442.448	2.5	35415.11	24.7482181702424	5.34	
Fe	57	He	2825.146	1130058.333	1.0	165173.07	1944.54067358399	36.93	> 20%
Co	59	He	5.559	2223.696	1.2	32630.66	5.40736159422958	2.77	
Ni	60	He	13.372	5348.668	1.9	22922.44	12.7731761062013	4.58	
Cu	63	He	11.452	4580.747	0.8	55023.75	11.3430100369809	0.96	
Zn	66	He	800.152	320060.814	1.3	492078.21	625.882715416993	24.44	> 20%
As	75	He	5.948	2379.072	0.9	3458.42	5.84292123881847	1.78	
Se	78	He	-1.307	-522.983	-21.1	-21.56	-1.08610512389904	-18.5	
Sn	120	He	3.778	1511.034	0.6	14619.90	3.45946300197946	8.79	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3638064.84	3354908.39	108.44	
Ge	72	He	88119.56	81380.8566666667	108.28	
In	115	He	917819.95	879610.92	104.34	
Lu	175	He	2505099.54	2355507.1	106.35	
Rh	103	He	2978069.60	2764364.75333333	107.73	
Sc	45	He	82573.24	76114.41	108.49	
Tb	159	He	4165402.54	3836613.38	108.57	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	757111.33	662644.216666667	114.26
Bi	209	No Gas	9733407.15	8369981.75	116.29
Ge	72	No Gas	1265955.54	1075610.54666667	117.7
In	115	No Gas	9699759.29	8286385.15	117.06
Lu	175	No Gas	14139017.71	11754297.74	120.29
Rh	103	No Gas	8869935.48	7567675.80666667	117.21
Sc	45	No Gas	4496418.15	3751808.74	119.85
Tb	159	No Gas	14406251.87	11714148.9933333	122.98

Matrix Spike Duplicate (MSD) Sample Report

Flag
<70% or >120%
<70% or >120%

Metals

Form V2

Post Digestion Spikes

V2
POST DIGEST SPIKE SAMPLE RECOVERY

Report No:	<u>223071218</u>	GCAL PDS ID:	<u>2499947</u>
Matrix:	<u>Solid</u>	Parent Sample ID:	<u>KCDC-SB0059-000... (22307121801)</u>
Analyst:	<u>TDM</u>	Instrument ID:	<u>ICPMS2</u>
Analysis Date:	<u>07/12/23</u> Time: <u>1635</u>	Lab File ID:	<u>2230712A_MS2.b\122964SMPL.d</u>
Analytical Method:	<u>EPA 6020B</u>	Analytical Batch:	<u>768860</u>

ANALYTE	UNITS	SPIKED SAMPLE RESULT C		SAMPLE RESULT C		SPIKE ADDED	% R	Q	LCL	UCL
Arsenic	ug/kg	24400		812		23500	100		75	125

Post Digestion Spike (PDS) Report

Sample Name 2499947
File Name 122964SMPL.d
Data Path Name C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
Acq Time 7/12/2023 4:35:18 PM
Sample Type PDS
Total Dilution 400.0000
Comment ICPMS-2,TDM
ISTD Ref FileName 1221CALB.d
Sample QC Pass/Fial Fail
ISTD QC Pass/Fail Fail
QC Ref File Name 122961SMPL.d

QC Analyte Table

Name	Mass	Tune	Conc.	Conc. RSD	CPS	Reference Conc	Spk Amt	% Rec	%Low	%High	Flag
Li	7	No Gas	99175.291	0.4	1644133.73	1.08048905172213	250	98.75	75	125	
Be	9	No Gas	17988.276	0.3	100144.08	0.133645866960315	50	89.7	75	125	
B	11	No Gas	90259.337	0.5	317124.25	3.16766888276003	250	89.13	75	125	
Sr	88	No Gas	35568.630	0.5	5028404.41	38.8529878745131	50	100.08	75	125	
Zr	90	No Gas	20949.452	1.1	1839753.82	3.18030611461913	10	397.36	75	125	> +/- 25%
Mo	95	No Gas	21124.686	0.8	532183.77	1.38587405714663	50	102.77	75	125	
Ag	107	No Gas	21247.088	1.3	1431939.94	0.0460743757096406	50	106.14	75	125	
Cd	111	No Gas	19959.831	0.9	300294.79	0.153592146014958	50	99.49	75	125	
Sb	121	No Gas	39194.967	1.6	2662375.94	0.654097616491379	100	97.35	75	125	
Ba	137	No Gas	32631.314	1.0	877722.55	28.4757021895362	50	103.95	75	125	
Tl	205	No Gas	19754.678	0.5	3276790.47	0.0295962735744853	50	98.71	75	125	
Pb	208	No Gas	22225.296	1.0	4993599.53	5.80912690075475	50	99.56	75	125	
Na	23	He	2025813.396	1.5	1375866.60	37.3033191318503	5000	100.54	75	125	
Mg	24	He	2053770.131	1.0	670398.19	209.510964010113	5000	98.56	75	125	
Al	27	He	2359668.542	1.6	237247.31	4792.02286393043	1000	101.85	75	125	
Si	29	He	1784442.897	2.7	7261.90	3932.36501684056	5000	49.94	75	125	> +/- 25%
K	39	He	2013878.666	1.9	608022.96	121.736906193461	5000	98.3	75	125	
Ca	44	He	13479740.519	1.1	213638.64	9356.11413427738	25000	98.09	75	125	
Ti	47	He	88670.563	0.4	12189.91	151.316071852993	50	110.11	75	125	
V	51	He	23319.475	0.3	137532.32	6.99790042497929	50	102.28	75	125	
Cr	52	He	24161.875	0.7	181543.91	8.964107831926	50	102.44	75	125	
Mn	55	He	28820.647	1.2	92097.14	22.2134018708404	50	99.78	75	125	
Fe	57	He	2904148.003	1.1	416658.56	2193.32631774208	5000	100.93	75	125	
Co	59	He	21002.509	1.2	302108.89	0.387187198199185	50	104.21	75	125	
Ni	60	He	42847.814	1.1	172526.64	2.92437177764622	100	104.08	75	125	
Cu	63	He	23316.430	1.7	275025.96	7.9505744430076	50	100.59	75	125	
Zn	66	He	637991.444	1.0	962725.45	598.004805230938	1000	99.81	75	125	
As	75	He	20741.127	0.5	29471.28	1.72470303420084	50	100.25	75	125	
Se	78	He	3257.097	4.6	231.71	-1.59915702326244	10	96.93	75	125	
Sn	120	He	20021.245	0.9	186887.53	0.339891605958923	50	99.43	75	125	

QC ISTD Table

Post Digestion Spike (PDS) Report

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	%QC Low	%QC High	QC Flag
(Li)	6	No Gas	777960.95	0.8	662644.216666667	117.4	70	120	
Sc	45	No Gas	4420096.21	0.2	3751808.74	117.81	70	120	
Ge	72	No Gas	1243134.26	0.8	1075610.546666667	115.57	70	120	
Rh	103	No Gas	8641236.04	0.3	7567675.806666667	114.19	70	120	
In	115	No Gas	9500603.84	0.2	8286385.15	114.65	70	120	
Tb	159	No Gas	14331440.20	1.2	11714148.99333333	122.34	70	120	<70% or >120%
Lu	175	No Gas	14150869.79	0.4	11754297.74	120.39	70	120	<70% or >120%
Bi	209	No Gas	9617638.81	0.5	8369981.75	114.91	70	120	
Sc	45	He	81369.96	0.9	76114.41	106.9	70	120	
Ge	72	He	86532.19	0.3	81380.8566666667	106.33	70	120	
Rh	103	He	2916277.52	0.5	2764364.753333333	105.5	70	120	
In	115	He	896944.47	0.2	879610.92	101.97	70	120	
Tb	159	He	4145679.73	0.1	3836613.38	108.06	70	120	
Lu	175	He	2493148.76	0.5	2355507.1	105.84	70	120	
Bi	209	He	3593273.59	0.3	3354908.39	107.1	70	120	

Metals

Form VII

Lab Control Spikes

VII
LABORATORY CONTROL SAMPLE

Report No:	223071218	GCAL ID:	2499852 (LCS)
Matrix:	Solid	Instrument ID:	ICPMS2
Analyst:	TDM	Lab File ID:	2230712A_MS2.b\122960SMPL.d
Prep Date:	07/12/23	Time:	1145
		Analysis Date:	07/12/23
		Time:	1621
Prep Batch:	768841	Analytical Batch:	768860
Prep Method:	3050B	Analytical Method:	EPA 6020B

<i>ANALYTE</i>	<i>UNITS</i>	<i>TRUE</i>	<i>FOUND</i>	<i>% R</i>	<i>Q</i>	<i>LCL</i>	<i>UCL</i>
Arsenic	ug/kg	2000	2060	103		80	120

Laboratory Control Sample (LCS) Report

Sample Name	2499852	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122960SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 4:21:02 PM	Total Dilution	40.0000
Sample Type	LCS6020	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Recovery Limits: 80-120% 6020B / 85-115% 200.8

Name	Mass	ISTD	Mode	Conc	RSD	CPS	SpkAmt	Rec	QC Flag
Li	7	6	No Gas	10657.582	1.3	1599350.76	250	106.58	
Be	9	6	No Gas	1895.210	1.7	95737.52	50	94.76	
B	11	6	No Gas	9641.408	1.7	307151.65	250	96.41	
Sr	88	72	No Gas	2052.048	1.5	2714123.09	50	102.6	
Zr	90	72	No Gas	417.742	0.8	343893.63	10	104.44	
Mo	95	115	No Gas	2139.280	1.3	509764.09	50	106.96	
Ag	107	115	No Gas	2109.109	1.5	1344495.43	50	105.46	
Cd	111	115	No Gas	1999.205	1.4	284498.99	50	99.96	
Sb	121	115	No Gas	4165.968	1.6	2676538.43	100	104.15	
Ba	137	115	No Gas	2031.043	1.3	516817.85	50	101.55	
Tl	205	209	No Gas	2024.612	1.3	3112032.35	50	101.23	
Pb	208	209	No Gas	2033.300	1.3	4233421.18	50	101.67	
Na	23	45	He	206830.763	1.0	1412125.35	5000	103.42	
Mg	24	45	He	201030.991	1.6	659813.18	5000	100.52	
Al	27	45	He	39514.821	1.7	39998.22	1000	98.79	
Si	29	45	He	185860.775	3.2	7555.94	5000	92.93	
K	39	45	He	203693.497	1.8	618225.92	5000	101.85	
Ca	44	45	He	1009207.579	1.2	160901.05	25000	100.92	
Ti	47	45	He	1987.571	2.6	2751.60	50	99.38	
V	51	72	He	2130.648	1.7	124360.22	50	106.53	
Cr	52	72	He	2142.598	1.2	159348.70	50	107.13	
Mn	55	72	He	2125.926	2.0	67801.42	50	106.3	
Fe	57	72	He	211255.647	1.7	299957.17	5000	105.63	
Co	59	72	He	2131.774	1.8	303448.74	50	106.59	
Ni	60	72	He	4242.418	1.5	169042.96	100	106.06	
Cu	63	45	He	2017.856	1.4	239349.16	50	100.89	
Zn	66	72	He	40856.707	1.2	610197.14	1000	102.14	
As	75	72	He	2055.680	2.4	28906.84	50	102.78	
Se	78	72	He	407.747	3.8	283.65	10	101.94	
Sn	120	115	He	2013.267	1.6	190663.01	50	100.66	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3478012.35	3354908.39	103.67	
Ge	72	He	85639.42	81380.8566666667	105.23	
In	115	He	910068.64	879610.92	103.46	
Lu	175	He	2477142.83	2355507.1	105.16	
Rh	103	He	2876558.08	2764364.753333333	104.06	
Sc	45	He	81826.90	76114.41	107.51	
Tb	159	He	4090213.27	3836613.38	106.61	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	705938.86	662644.216666667	106.53	
Bi	209	No Gas	891252.99	8369981.75	106.48	
Ge	72	No Gas	1162900.61	1075610.54666667	108.12	
In	115	No Gas	8986224.71	8286385.15	108.45	
Lu	175	No Gas	13122508.55	11754297.74	111.64	
Rh	103	No Gas	8120933.01	7567675.80666667	107.31	
Sc	45	No Gas	4151946.08	3751808.74	110.67	
Tb	159	No Gas	13388571.47	11714148.9933333	114.29	

Metals

Form VIII

Tunes

VIII
ICP-MS TUNE

Report No: 223071218 GCAL QC ID: 1150
 Instrument ID: ICPMS2 Lab File ID: 2230712A_MS2.b\QCTune\2230712A_MS2-QCTu
 Analyst: LWZ Analytical Batch: 768860
 Analysis Date: 07/12/23 Time: 1008 Analytical Method: EPA 6020B

<i>ELEMENT - MASS</i>	<i>AVG MEASURED MASS (amu)</i>	<i>PEAK WIDTH AT 5% PEAK HEIGHT (amu)</i>	<i>%RSD</i>
Be-9	9.05	.7424	.6984
Mg-24	23.95	.7857	.7073
Mg-25	24.95	.7858	.5721
Mg-26	25.95	.7864	.2799
Co-59	59	.7619	.3911
In-115	115	.7321	.2338
Pb-206	206	.753	.4849
Pb-207	207	.7687	.6912
Pb-208	208	.7765	.3386

FORM VIII - IN

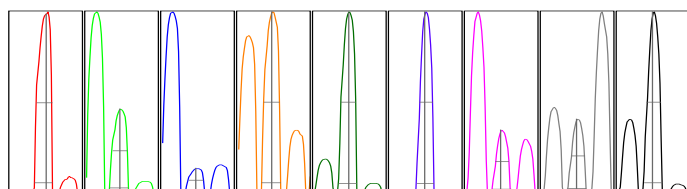
US EPA Tune Check Sample Report

Batch Folder C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
Report Comment
Instrument Name G8403A JP14170244

[No Gas]				
Mass	Count (Mean)	RSD% (Actual)	RSD% (Required)	RSD% (Flag)
9	4641	0.70	5.00	
24	151714	0.71	5.00	
25	20418	0.57	5.00	
26	23656	0.28	5.00	
59	120188	0.39	5.00	
115	130163	0.23	5.00	
206	37686	0.48	5.00	
207	32226	0.69	5.00	
208	78760	0.34	5.00	

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
9	4636	4681	4614	4607	4668
24	152722	152644	151970	150969	150263
25	20459	20478	20341	20552	20259
26	23649	23690	23750	23612	23582
59	119709	119727	120301	120811	120390
115	129779	130461	130390	130284	129901
206	37391	37701	37884	37770	37687
207	32473	32007	31977	32299	32376
208	78469	78841	78652	79175	78664

Integration Time [sec] = 0.1



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	Width-X% (Actual)	Width-X% (Required)	Width-X% (Flag)
9	763	9.05	8.9 - 9.1		0.742	0.849	
24	24970	23.95	23.9 - 24.1		0.786	0.849	
25	3318	24.95	24.9 - 25.1		0.786	0.849	
26	3820	25.95	25.9 - 26.1		0.786	0.849	
59	20787	59.00	58.9 - 59.1		0.762	0.849	
115	24282	115.00	114.9 - 115.1		0.732	0.849	
206	6895	206.00	205.9 - 206.1		0.753	0.849	
207	5919	207.00	206.9 - 207.1		0.769	0.849	
208	14581	208.00	207.9 - 208.1		0.777	0.849	

X% = 5 Integration Time [sec] = 0.1 Acquisition Time [sec] = 235 Y Axis = Linear

Tune Parameters

Plasma Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit	ParameterName	Value	Unit
RF Power	1550	W	Carrier Gas	1.00	L/min	S/C Temp		2 °C
RF Matching	1.60	V	Option Gas		%	Gas Switch		Dilution Gas
Smpl Depth	8.0	mm	Nebulizer Pump	0.10	rps	Makeup/Dilution Gas		0.20 L/min

Lenses Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit	ParameterName	Value	Unit
Extract 1	0.0	V	Omega Lens	12.6	V	Deflect	19.4	V
Extract 2	-205.0	V	Cell Entrance	-30	V	Plate Bias	-35	V
Omega Bias	-100	V	Cell Exit	-50	V			

Cell Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit	ParameterName	Value	Unit
Use Gas	false		3rd Gas Flow	0	%	Energy Discrimination	4.0	V
He Flow	0.0	mL/min	OctP Bias	-8.0	V			
H2 Flow	0.0	mL/min	OctP RF	200	V			

Metals

Form IX

Serial Dilutions

IX
SERIAL DILUTIONS

Report No:	<u>223071218</u>	GCAL SD ID:	<u>2499948</u>
Matrix:	<u>Solid</u>	Parent Sample ID:	<u>KCDC-SB0059-000.... (22307121801)</u>
Analyst:	<u>TDM</u>	Instrument ID:	<u>ICPMS2</u>
Analysis Date:	<u>07/12/23</u>	Time:	<u>1638</u>
		Lab File ID:	<u>2230712A_MS2.b\122965SMPL.d</u>
Analytical Method:	<u>EPA 6020B</u>	Analytical Batch:	<u>768860</u>

<i>ANALYTE</i>	<i>UNITS</i>	<i>PARENT SAMPLE RESULT</i>	<i>C</i>	<i>SERIAL DILUTION RESULT</i>	<i>C</i>	<i>% DIFF</i>	<i>Q</i>	<i>LCL</i>	<i>UCL</i>
Arsenic	ug/kg	811		830	J				

FORM IX - IN

Sample Report

Sample Name	2499948	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b
File Name	122965SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/12/2023 4:38:52 PM	Total Dilution	2000.0000
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	1221CALB.d	ISTD Pass/Fail	Fail

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.37	739.069	0.7	57218.60	500	
Be	9	6	No Gas	0.06	119.731	11.8	184.00	1000	
B	11	6	No Gas	2.389	4778.256	8.1	6828.41	500	
Sr	88	72	No Gas	7.798	15595.898	0.3	450865.50	1000	
Zr	90	72	No Gas	0.683	1366.696	5.2	25513.72	100	
Mo	95	115	No Gas	0.392	784.693	4.6	4391.86	1000	
Ag	107	115	No Gas	0.014	27.256	13.1	440.02	100	
Cd	111	115	No Gas	0.035	69.661	5.5	288.89	1000	
Sb	121	115	No Gas	0.687	1374.178	7.4	21123.78	1000	
Ba	137	115	No Gas	5.869	11738.476	1.0	66020.34	1000	
Tl	205	209	No Gas	0.011	21.492	4.0	1543.49	1000	
Pb	208	209	No Gas	1.181	2362.352	1.0	112472.84	1000	
Na	23	45	He	15.757	31514.252	4.6	12308.75	100000	
Mg	24	45	He	40.16	80320.269	4.0	7358.67	100000	
Al	27	45	He	1002.013	2004026.712	3.6	39945.33	20000	
Si	29	45	He	760.125	1520250.603	15.3	2035.50	10000	
K	39	45	He	9.75	19499.805	4.5	15969.18	100000	
Ca	44	45	He	1848.701	3697401.070	1.7	11945.00	500000	
Ti	47	45	He	28.674	57347.843	4.9	1567.54	1000	
V	51	72	He	1.464	2927.458	5.4	3675.02	1000	
Cr	52	72	He	1.809	3617.996	6.3	5991.37	1000	
Mn	55	72	He	3.978	7956.425	3.0	7247.41	5000	
Fe	57	72	He	452.253	904505.407	3.7	26354.51	100000	
Co	59	72	He	0.079	158.141	12.9	524.46	1000	
Ni	60	72	He	0.503	1005.611	3.3	1935.70	2000	
Cu	63	45	He	1.729	3458.829	3.4	8303.53	1000	
Zn	66	72	He	122.057	244113.442	1.8	74920.11	20000	
As	75	72	He	0.353	705.930	5.7	220.67	1000	
Se	78	72	He	-0.331	-661.547	36.7	5.04	50	
Sn	120	115	He	0.061	121.439	3.8	438.90	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3709200.57	3354908.39	110.56	
Ge	72	He	87496.98	81380.856666667	107.52	
In	115	He	924698.21	879610.92	105.13	
Lu	175	He	2520972.62	2355507.1	107.02	
Rh	103	He	3040093.91	2764364.75333333	109.97	
Sc	45	He	80605.91	76114.41	105.9	
Tb	159	He	4194935.04	3836613.38	109.34	

Name	Mass	Mode	CPS	Ref CPS	Rec
(Li)	6	No Gas	767504.26	662644.216666667	115.82
Bi	209	No Gas	10120709.85	8369981.75	120.92
Ge	72	No Gas	1267913.59	1075610.54666667	117.88
In	115	No Gas	9901877.67	8286385.15	119.5
Lu	175	No Gas	14533440.61	11754297.74	123.64
Rh	103	No Gas	9069929.92	7567675.80666667	119.85
Sc	45	No Gas	4420015.66	3751808.74	117.81
Tb	159	No Gas	14698429.36	11714148.9933333	125.48

Sample Report

Flag
<70% or >120%
<70% or >120%
<70% or >120%

Metals

Form XIII

Preparation Logs

XIII
PREPARATION LOG

Report No: 223071218

Prep Method: EPA 3050B

Prep Batch: 768841

<i>CLIENT SAMPLE ID</i>	<i>GCAL SAMPLE ID</i>	<i>PREP DATE</i>	<i>WEIGHT</i>	<i>UNITS</i>	<i>VOLUME</i>	<i>UNITS</i>
KCDC-SB0059-000 ...MS	2499853	07/12/23	1.25	g	50	mL
KCDC-SB0059-000...MSD	2499854	07/12/23	1.25	g	50	mL
KCDC-SB0059-000.5-20230707	22307121801	07/12/23	1.25	g	50	mL
KCDC-SB0060-000.5-20230707	22307121802	07/12/23	1.28	g	50	mL
KCDC-SB0061-000.5-20230707	22307121803	07/12/23	1.29	g	50	mL
KCDC-SB0062-000.5-20230707	22307121804	07/12/23	1.25	g	50	mL
KCDC-SB0063-000.5-20230707	22307121805	07/12/23	1.3	g	50	mL
KCDC-SB0064-000.5-20230707	22307121806	07/12/23	1.34	g	50	mL
KCDC-SB0065-000.5-20230707	22307121807	07/12/23	1.36	g	50	mL
KCDC-SB0066-000.5-20230707	22307121808	07/12/23	1.31	g	50	mL
KCDC-SB0067-000.5-20230707	22307121809	07/12/23	1.3	g	50	mL
KCDC-SB0068-000.5-20230707	22307121810	07/12/23	1.27	g	50	mL
KCDC-SB0069-000.5-20230707	22307121811	07/12/23	1.26	g	50	mL
KCDC-SB0070-000.5-20230707	22307121812	07/12/23	1.28	g	50	mL
KCDC-SB0071-000.5-20230707	22307121813	07/12/23	1.26	g	50	mL
KCDC-SB0072-000.5-20230707	22307121814	07/12/23	1.27	g	50	mL
KCDC-SB0073-000.5-20230707	22307121815	07/12/23	1.26	g	50	mL
KCDC-SB0074-000.5-20230707	22307121816	07/12/23	1.32	g	50	mL
KCDC-SB0075-000.5-20230707	22307121817	07/12/23	1.27	g	50	mL
KCDC-SB0076-000.5-20230707	22307121818	07/12/23	1.33	g	50	mL
LCS2499852	2499852	07/12/23	1.25	g	50	mL
MB2499851	2499851	07/12/23	1.25	g	50	mL

Metals

Form XIV

Run Logs

XIV
ANALYSIS RUN LOG

Report No: 223071218
Instrument ID: ICPMS2

Analytical Batch: 768860
Analytical Method: EPA 6020B

Start Date: 07/12/23
End Date: 07/12/23

CLIENT SAMPLE ID	GCAL SAMPLE ID	PF	D/F	TIME	Analyte Symbols																																	
					Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr			
ITUNE	1150	*	1	1007			X																															
IICALB	1300	*	1	1214			X																															
IICAL2	1302	*	1	1218			X																															
IICAL4	1304	*	1	1222			X																															
IICAL5	1305	*	1	1229			X																															
IICAL6	1306	*	1	1233			X																															
ICV	1600	*	1	1237			X																															
ICB	1700	*	1	1241			X																															
LLCCV	1803	*	1	1326			X																															
ICSA	2000	*	1	1330			X																															
ICSAB	2100	*	1	1333			X																															
LDR	2500	*	1	1337			X																															
CCV	1800	*	1	1610			X																															
CCB	1900	*	1	1613			X																															
MB2499851	2499851	*	1	1617			X																															
LCS2499852	2499852	*	1	1621			X																															
KCDC-SB0059-000.5-20230707	22307121801	*	10	1624			X																															
KCDC-SB0059-000...MS	2499853	*	10	1628			X																															
KCDC-SB0059-000...MSD	2499854	*	10	1631			X																															
KCDC-SB0059-000...PDS	2499947	*	10	1635			X																															
KCDC-SB0059-000...SD	2499948	*	50	1638			X																															
KCDC-SB0060-000.5-20230707	22307121802	*	10	1642			X																															
KCDC-SB0061-000.5-20230707	22307121803	*	10	1646			X																															
KCDC-SB0062-000.5-20230707	22307121804	*	10	1649			X																															
KCDC-SB0063-000.5-20230707	22307121805	*	10	1653			X																															
KCDC-SB0064-000.5-20230707	22307121806	*	10	1656			X																															
KCDC-SB0065-000.5-20230707	22307121807	*	10	1700			X																															
KCDC-SB0066-000.5-20230707	22307121808	*	10	1703			X																															
KCDC-SB0067-000.5-20230707	22307121809	*	10	1707			X																															

FORM XIV - IN

XIV
ANALYSIS RUN LOG

Report No: 223071218

Analytical Batch: 768860

Start Date: 07/12/23

Instrument ID: ICPMS2

Analytical Method: EPA 6020B

End Date: 07/12/23

CLIENT SAMPLE ID	GCAL SAMPLE ID	PF	D/F	TIME	Analyte Symbols																															
					Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr	
KCDC-SB0068-000.5-20230707	22307121810	*	10	1710				X																												
CCV	1800	*	1	1714				X																												
CCB	1900	*	1	1718				X																												
KCDC-SB0069-000.5-20230707	22307121811	*	10	1721				X																												
KCDC-SB0070-000.5-20230707	22307121812	*	10	1725				X																												
KCDC-SB0071-000.5-20230707	22307121813	*	10	1728				X																												
KCDC-SB0072-000.5-20230707	22307121814	*	10	1732				X																												
KCDC-SB0073-000.5-20230707	22307121815	*	10	1735				X																												
KCDC-SB0074-000.5-20230707	22307121816	*	10	1739				X																												
KCDC-SB0075-000.5-20230707	22307121817	*	10	1743				X																												
KCDC-SB0076-000.5-20230707	22307121818	*	10	1746				X																												
CCV	1800	*	1	1750				X																												
CCB	1900	*	1	1753				X																												

Metals

Form XV

Internal Standards

XV (He)
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Report No: 223071218
Instrument ID: ICPMS2
Analytical Method: EPA 6020B

Start Date: 07/12/23
End Date: 07/12/23
Analytical Batch: 768860

CLIENT SAMPLE ID	GCAL SAMPLE ID	TIME	Internal Standards %RI For:						
			ISTD1 Q	ISTD2 Q	ISTD3 Q	ISTD4 Q	ISTD5 Q	ISTD6 Q	ISTD7 Q
MB2499851	2499851	1617	104	105	103	104	106	106	106
LCS2499852	2499852	1621	104	105	103	105	104	108	107
KCDC-SB0059-000.5-20230707	22307121801	1624	111	110	108	109	110	112	111
KCDC-SB0059-000...MS	2499853	1628	109	109	105	107	108	110	109
KCDC-SB0059-000...MSD	2499854	1631	108	108	104	106	108	108	109
KCDC-SB0059-000...PDS	2499947	1635	107	106	102	106	105	107	108
KCDC-SB0059-000...SD	2499948	1638	111	108	105	107	110	106	109
KCDC-SB0060-000.5-20230707	22307121802	1642	112	108	106	109	111	109	111
KCDC-SB0061-000.5-20230707	22307121803	1646	112	108	107	108	112	109	111
KCDC-SB0062-000.5-20230707	22307121804	1649	109	106	104	107	106	107	109
KCDC-SB0063-000.5-20230707	22307121805	1653	107	104	102	105	104	105	108
KCDC-SB0064-000.5-20230707	22307121806	1656	105	102	99	103	102	102	106
KCDC-SB0065-000.5-20230707	22307121807	1700	107	102	100	103	105	101	106
KCDC-SB0066-000.5-20230707	22307121808	1703	103	99	97	102	99	100	104
KCDC-SB0067-000.5-20230707	22307121809	1707	104	100	98	101	100	99	104
KCDC-SB0068-000.5-20230707	22307121810	1710	104	100	98	102	100	99	104
KCDC-SB0069-000.5-20230707	22307121811	1721	107	102	101	104	104	101	107
KCDC-SB0070-000.5-20230707	22307121812	1725	107	101	100	104	103	100	106
KCDC-SB0071-000.5-20230707	22307121813	1728	105	100	98	103	102	98	105
KCDC-SB0072-000.5-20230707	22307121814	1732	104	100	98	103	101	100	105
KCDC-SB0073-000.5-20230707	22307121815	1735	104	98	97	102	100	98	105
KCDC-SB0074-000.5-20230707	22307121816	1739	105	99	98	103	101	99	105
KCDC-SB0075-000.5-20230707	22307121817	1743	105	101	99	103	101	99	106
KCDC-SB0076-000.5-20230707	22307121818	1746	108	100	99	103	105	99	106

ISTD 1: Bismuth (He) ISTD 4: Lutetium (He) ISTD 7: Terbium (He)
 ISTD 2: Germanium (He) ISTD 5: Rhodium (He)
 ISTD 3: Indium (He) ISTD 6: Scandium (He)

FORM XV - IN

XV (No Gas)
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Report No: <u>223071218</u>	Start Date: <u>07/12/23</u>
Instrument ID: <u>ICPMS2</u>	End Date: <u>07/12/23</u>
Analytical Method: <u>EPA 6020B</u>	Analytical Batch: <u>768860</u>

CLIENT SAMPLE ID	GCAL SAMPLE ID	TIME	Internal Standards %RI For:									
			ISTD8 Q	ISTD9 Q	ISTD10 Q	ISTD11 Q	ISTD12 Q	ISTD13 Q	ISTD14 Q			
MB2499851	2499851	1617	108	108	109	113	111	110	115			
LCS2499852	2499852	1621	106	108	108	112	107	111	114			
KCDC-SB0059-000.5-20230707	22307121801	1624	119	119	119	122	120	121	125			
KCDC-SB0059-000...MS	2499853	1628	116	118	118	120	117	120	123			
KCDC-SB0059-000...MSD	2499854	1631	116	118	117	120	117	120	123			
KCDC-SB0059-000...PDS	2499947	1635	115	116	115	120	114	118	122			
KCDC-SB0059-000...SD	2499948	1638	121	118	119	124	120	118	125			
KCDC-SB0060-000.5-20230707	22307121802	1642	122	118	119	124	121	120	126			
KCDC-SB0061-000.5-20230707	22307121803	1646	121	120	120	124	121	122	126			
KCDC-SB0062-000.5-20230707	22307121804	1649	119	118	120	124	118	120	126			
KCDC-SB0063-000.5-20230707	22307121805	1653	118	115	117	123	115	117	125			
KCDC-SB0064-000.5-20230707	22307121806	1656	117	113	115	121	112	115	123			
KCDC-SB0065-000.5-20230707	22307121807	1700	119	113	116	121	115	114	123			
KCDC-SB0066-000.5-20230707	22307121808	1703	115	110	113	121	108	113	121			
KCDC-SB0067-000.5-20230707	22307121809	1707	115	110	112	119	109	111	121			
KCDC-SB0068-000.5-20230707	22307121810	1710	115	110	112	119	108	112	120			
KCDC-SB0069-000.5-20230707	22307121811	1721	119	111	115	122	113	112	123			
KCDC-SB0070-000.5-20230707	22307121812	1725	119	111	115	122	112	111	123			
KCDC-SB0071-000.5-20230707	22307121813	1728	118	111	114	121	112	111	123			
KCDC-SB0072-000.5-20230707	22307121814	1732	117	111	114	121	110	111	122			
KCDC-SB0073-000.5-20230707	22307121815	1735	116	109	113	120	108	110	121			
KCDC-SB0074-000.5-20230707	22307121816	1739	117	110	113	120	108	111	121			
KCDC-SB0075-000.5-20230707	22307121817	1743	118	111	115	123	110	113	124			
KCDC-SB0076-000.5-20230707	22307121818	1746	121	112	116	123	116	113	124			

ISTD 8: Bismuth (No Gas)	ISTD 11: Lutetium (No Gas)	ISTD 14: Terbium (No Gas)
ISTD 9: Germanium (No Gas)	ISTD 12: Rhodium (No Gas)	
ISTD 10: Indium (No Gas)	ISTD 13: Scandium (No Gas)	

FORM XV - IN

Metals

ICPMS ICAL

Sample					
Data File	Acq. Date-Time	Type	Level	Sample Name	Total Dil.
001SMPL.d	7/12/2023 10:37	Sample		Blank	1
002SMPL.d	7/12/2023 10:40	Sample		Blank	1
003SMPL.d	7/12/2023 10:44	Sample		Blank	1
004CALB.d	7/12/2023 10:47	CalBlk	1	1300	1
005CALS.d	7/12/2023 10:51	CalStd	3	1302	1
006CALS.d	7/12/2023 10:55	CalStd	5	1304	1
007CALS.d	7/12/2023 10:59	CalStd		5 PPB	1
008CALS.d	7/12/2023 11:02	CalStd	6	1305	1
009CALS.d	7/12/2023 11:06	CalStd	7	1306	1
010_ICV.d	7/12/2023 11:10	ICV		1600	1
011_ICB.d	7/12/2023 11:13	ICB		1700	1
0120.1.d	7/12/2023 11:32	LLCCV0.1		1804	1
1210.5.d	7/12/2023 11:35	LLCCV0.5		1804	1
1211CCV1.d	7/12/2023 11:39	LLCCV1		1803	1
1212ICSA.d	7/12/2023 11:43	ICSA		2000	1
1213ICSB.d	7/12/2023 11:46	ICSB		2100	1
1214SMPL.d	7/12/2023 11:50	Sample		BLANK TEST	1
1215SMPL.d	7/12/2023 11:53	Sample		Blank	1
1216SMPL.d	7/12/2023 11:56	Sample		Blank	1
1217SMPL.d	7/12/2023 12:00	Sample		Blank	1
1218SMPL.d	7/12/2023 12:04	Sample		Blank	1
1219SMPL.d	7/12/2023 12:07	Sample		Blank	1
1220SMPL.d	7/12/2023 12:11	Sample		Blank	1
1221CALB.d	7/12/2023 12:14	CalBlk	1	1300	1
1222CALS.d	7/12/2023 12:18	CalStd	3	1302	1
1223CALS.d	7/12/2023 12:22	CalStd	5	1304	1
1224CALS.d	7/12/2023 12:26	CalStd		5 PPB	1
1225CALS.d	7/12/2023 12:29	CalStd	6	1305	1
1226CALS.d	7/12/2023 12:33	CalStd	7	1306	1
1227_ICV.d	7/12/2023 12:37	ICV		1600	1
1228_ICB.d	7/12/2023 12:41	ICB		1700	1
12290.1.d	7/12/2023 13:19	LLCCV0.1		1804	1
122910.5.d	7/12/2023 13:22	LLCCV0.5		1804	1
122911CCV1.d	7/12/2023 13:26	LLCCV1		1803	1
122912ICSA.d	7/12/2023 13:30	ICSA		2000	1
122913ICSB.d	7/12/2023 13:33	ICSB		2100	1
122914_QC1.d	7/12/2023 13:37	QC1		LDR	1
122915SMPL.d	7/12/2023 13:40	Sample		2500	1
122916SMPL.d	7/12/2023 13:44	MBWATER		2499169	1
122917SMPL.d	7/12/2023 13:47	LCS6020		2499170	1
122918SMPL.d	7/12/2023 13:51	Sample		22307101201	2
122919SMPL.d	7/12/2023 13:55	Sample		BLANK	1
122920SMPL.d	7/12/2023 13:58	Sample		22307101202	2
122921SMPL.d	7/12/2023 14:02	Sample		BLANK	1
122922SMPL.d	7/12/2023 14:05	AllRef		22307100301	1

122923SMPL.d	7/12/2023 14:09	MS		22307100302	1
122924SMPL.d	7/12/2023 14:12	MSD		22307100303	1
122925SMPL.d	7/12/2023 14:16	PDS		2499652	1
122926SMPL.d	7/12/2023 14:20	Sample		2499653	5
122927SMPL.d	7/12/2023 14:23	Sample		1800	1
122928SMPL.d	7/12/2023 14:27	Sample		1900	1
122929SMPL.d	7/12/2023 14:30	MBWATER		2499165	1
122930SMPL.d	7/12/2023 14:34	LCS200.8		2499166	1
122931SMPL.d	7/12/2023 14:37	Sample		22307101601	1
122932SMPL.d	7/12/2023 14:41	AllRef		22307101704	1
122933SMPL.d	7/12/2023 14:44	MS		2499167	1
122934SMPL.d	7/12/2023 14:48	MSD		2499168	1
122935SMPL.d	7/12/2023 14:52	Sample		22307111305	1
122936SMPL.d	7/12/2023 14:55	Sample		22307112301	300
122937SMPL.d	7/12/2023 14:59	Sample		22307112302	300
122938SMPL.d	7/12/2023 15:02	Sample		22307112303	300
122939SMPL.d	7/12/2023 15:06	Sample		1800	1
122940SMPL.d	7/12/2023 15:09	Sample		1900	1
122941SMPL.d	7/12/2023 15:13	MBSOIL		2499551	40
122942SMPL.d	7/12/2023 15:16	LCS6020		2499552	40
122943SMPL.d	7/12/2023 15:20	AllRef		22307115501	400
122944SMPL.d	7/12/2023 15:24	MSSOIL		2499553	400
122945SMPL.d	7/12/2023 15:27	MSDSOIL		2499554	400
122946SMPL.d	7/12/2023 15:31	PDS		2499941	400
122947SMPL.d	7/12/2023 15:34	Sample		2499942	2000
122948SMPL.d	7/12/2023 15:38	Sample		22307115502	396.8254
122949SMPL.d	7/12/2023 15:41	Sample		22307115503	396.8254
122950SMPL.d	7/12/2023 15:45	Sample		22307115504	381.6794
122951SMPL.d	7/12/2023 15:49	Sample		22307115505	387.5969
122952SMPL.d	7/12/2023 15:52	Sample		22307115506	396.8254
122953SMPL.d	7/12/2023 15:56	Sample		22307115507	400
122954SMPL.d	7/12/2023 15:59	Sample		22307115508	378.7879
122955SMPL.d	7/12/2023 16:03	Sample		22307115509	393.7008
122956SMPL.d	7/12/2023 16:06	Sample		22307115510	400
122957SMPL.d	7/12/2023 16:10	Sample		1800	1
122958SMPL.d	7/12/2023 16:13	Sample		1900	1
122959SMPL.d	7/12/2023 16:17	MBSOIL		2499851	40
122960SMPL.d	7/12/2023 16:21	LCS6020		2499852	40
122961SMPL.d	7/12/2023 16:24	AllRef		22307121801	400
122962SMPL.d	7/12/2023 16:28	MSSOIL		2499853	400
122963SMPL.d	7/12/2023 16:31	MSDSOIL		2499854	400
122964SMPL.d	7/12/2023 16:35	PDS		2499947	400
122965SMPL.d	7/12/2023 16:38	Sample		2499948	2000
122966SMPL.d	7/12/2023 16:42	Sample		22307121802	390.625
122967SMPL.d	7/12/2023 16:46	Sample		22307121803	387.5969
122968SMPL.d	7/12/2023 16:49	Sample		22307121804	400
122969SMPL.d	7/12/2023 16:53	Sample		22307121805	384.6154

122970SMPL.d	7/12/2023 16:56	Sample		22307121806	373.1343
122971SMPL.d	7/12/2023 17:00	Sample		22307121807	367.6471
122972SMPL.d	7/12/2023 17:03	Sample		22307121808	381.6794
122973SMPL.d	7/12/2023 17:07	Sample		22307121809	384.6154
122974SMPL.d	7/12/2023 17:10	Sample		22307121810	393.7008
122975SMPL.d	7/12/2023 17:14	Sample		1800	1
122976SMPL.d	7/12/2023 17:18	Sample		1900	1
122977SMPL.d	7/12/2023 17:21	Sample		22307121811	396.8254
122978SMPL.d	7/12/2023 17:25	Sample		22307121812	390.625
122979SMPL.d	7/12/2023 17:28	Sample		22307121813	396.8254
122980SMPL.d	7/12/2023 17:32	Sample		22307121814	393.7008
122981SMPL.d	7/12/2023 17:35	Sample		22307121815	396.8254
122982SMPL.d	7/12/2023 17:39	Sample		22307121816	378.7879
122983SMPL.d	7/12/2023 17:43	Sample		22307121817	393.7008
122984SMPL.d	7/12/2023 17:46	Sample		22307121818	375.9398
122985SMPL.d	7/12/2023 17:50	Sample		1800	1
122986SMPL.d	7/12/2023 17:53	Sample		1900	1
122987SMPL.d	7/12/2023 17:57	MBWATER		2499710	1
122988SMPL.d	7/12/2023 18:00	LCS200.8		2499711	1
122989SMPL.d	7/12/2023 18:04	Sample		22307119301	1
122990SMPL.d	7/12/2023 18:08	Sample		22307118501	1
122991SMPL.d	7/12/2023 18:11	Sample		22307118502	1
122992SMPL.d	7/12/2023 18:15	Sample		1800	1
122993SMPL.d	7/12/2023 18:18	Sample		1900	1
122994SMPL.d	7/12/2023 18:22	Sample		22307115511	390.625
122995SMPL.d	7/12/2023 18:25	Sample		22307115512	390.625
122996SMPL.d	7/12/2023 18:29	Sample		22307115513	396.8254
122997SMPL.d	7/12/2023 18:32	Sample		22307115514	400
122998SMPL.d	7/12/2023 18:36	Sample		22307115515	390.625
122999SMPL.d	7/12/2023 18:40	Sample		22307115516	375.9398
123000SMPL.d	7/12/2023 18:43	Sample		22307115517	384.6154
123001SMPL.d	7/12/2023 18:47	Sample		22307115518	387.5969
123002SMPL.d	7/12/2023 18:50	Sample		22307115519	387.5969
123003SMPL.d	7/12/2023 18:54	Sample		1800	1
123004SMPL.d	7/12/2023 18:57	Sample		1900	1
123005SMPL.d	7/12/2023 19:01	Sample		BLANK	1
123006SMPL.d	7/12/2023 19:05	Sample		BLANK	1
123007SMPL.d	7/12/2023 19:08	Sample		BLANK	1

Vial Number
1101
1102
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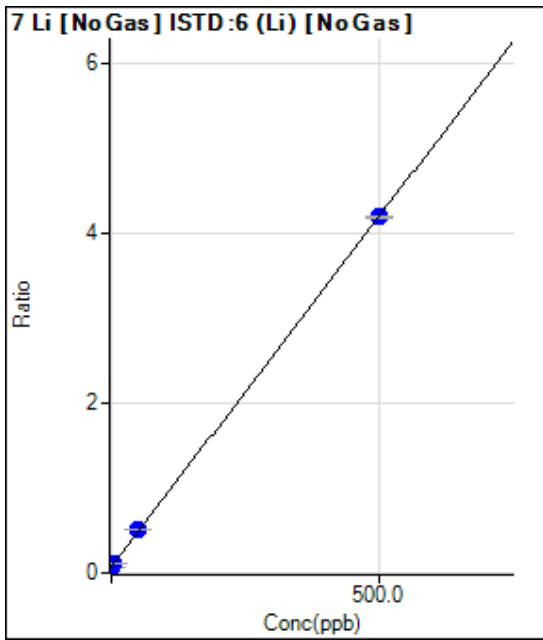
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1503
4101
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4103
4104
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2407
2408
1402
1502
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5
5

Tune Mode	Mass	Name	ISTD	R	a	b (blank)	DL	BEC	Units
No Gas	7	Li	6 (Li) [No Gas]	0.999966777	0.008235443	0.071508952	0.352441503	8.683073048	ppb
No Gas	9	Be	6 (Li) [No Gas]	0.999970656	0.002860976	6.84E-05	0.007162946	0.023909355	ppb
No Gas	11	B	6 (Li) [No Gas]	0.999895916	0.001785993	0.004628246	0.198323517	2.591412638	ppb
He	23	Na	45 Sc [He]	0.999999147	0.003319141	0.100458362	2.322833332	30.26636945	ppb
He	24	Mg	45 Sc [He]	0.999999692	0.001599451	0.027098049	3.107006416	16.94209169	ppb
He	27	Al	45 Sc [He]	0.99999953	0.000494171	0.00074335	1.009981312	1.504235855	ppb
He	29	Si	45 Sc [He]	0.999949204	1.73E-05	0.012173246	569.8933057	704.715672	ppb
He	39	K	45 Sc [He]	0.999999737	0.001447793	0.18394685	9.050436754	127.0532808	ppb
He	44	Ca	45 Sc [He]	0.999999773	7.78E-05	0.004401815	2.018770905	56.58971452	ppb
He	47	Ti	45 Sc [He]	0.999999599	0.000675455	7.88E-05	0.153483255	0.116661527	ppb
He	51	V	72 Ge [He]	0.999999415	0.027225494	0.002155839	0.032361469	0.079184566	ppb
He	52	Cr	72 Ge [He]	0.999999593	0.034636591	0.005801827	0.052794761	0.167505719	ppb
He	55	Mn	72 Ge [He]	0.999999551	0.014418197	0.025483936	0.109039407	1.76748431	ppb
He	57	Fe	72 Ge [He]	0.999999598	0.000663036	0.001310316	0.249845381	1.976237769	ppb
He	59	Co	72 Ge [He]	0.999998833	0.06648049	0.000736241	0.005982505	0.01107454	ppb
He	60	Ni	72 Ge [He]	0.999997333	0.018493439	0.012825677	0.117469647	0.693525781	ppb
He	63	Cu	45 Sc [He]	0.999996769	0.057941073	0.002864001	0.023848671	0.049429551	ppb
He	66	Zn	72 Ge [He]	0.999999452	0.006972276	0.005230416	0.085281855	0.750173404	ppb
He	75	As	72 Ge [He]	0.999999905	0.006564376	0.0002044	0.021672169	0.031137717	ppb
He	78	Se	72 Ge [He]	0.999988938	0.000309252	0.000159739	0.0456582	0.516533899	ppb
No Gas	88	Sr	72 Ge [No Gas]	0.999999728	0.045476992	0.000969773	0.004168048	0.021324467	ppb
No Gas	90	Zr	72 Ge [No Gas]	0.999999792	0.028239976	0.000824522	0.003409712	0.029196965	ppb
No Gas	95	Mo	115 In [No Gas]	0.999996738	0.001060136	2.76E-05	0.008075672	0.02604267	ppb
No Gas	107	Ag	115 In [No Gas]	0.99999961	0.002837329	5.77E-06	0.001336346	0.002034006	ppb
No Gas	111	Cd	115 In [No Gas]	0.999999277	0.000633281	7.12E-06	0.012638022	0.011240603	ppb
No Gas	118	(Sn)	115 In [No Gas]	0.999999366	0.001997693	9.69E-05	0.003166855	0.048525884	ppb
He	118	(Sn)	115 In [He]	0.999991866	0.002827139	0.000152893	0.018622562	0.054080465	ppb
He	120	Sn	115 In [He]	0.999996906	0.004158393	0.000222156	0.032176962	0.053423559	ppb
No Gas	121	Sb	115 In [No Gas]	0.999997562	0.002858085	0.000169625	0.007569951	0.059349307	ppb
No Gas	137	Ba	115 In [No Gas]	0.999998294	0.001132193	2.24E-05	0.003815594	0.019780364	ppb
He	156	[Se]	115 In [He]						ppb
No Gas	201	Hg							
No Gas	205	Tl	209 Bi [No Gas]	0.999999035	0.006897144	7.84E-05	0.005190556	0.011366209	ppb
No Gas	206	(Pb)	209 Bi [No Gas]	0.999999358	0.002351864	2.16E-05	0.010935803	0.009171619	ppb
No Gas	207	(Pb)	209 Bi [No Gas]	0.999999805	0.002009523	2.27E-05	0.008594534	0.011318501	ppb
No Gas	208	Pb	209 Bi [No Gas]	0.999999297	0.009342992	7.74E-05	0.00406871	0.008279815	ppb
No Gas	6	(Li)							ppb
No Gas	45	Sc							ppb
He	45	Sc							ppb
No Gas	72	Ge							ppb
He	72	Ge							ppb
No Gas	103	Rh							ppb
He	103	Rh							ppb
No Gas	115	In							ppb
He	115	In							ppb
No Gas	159	Tb							ppb
He	159	Tb							ppb
No Gas	175	Lu							ppb
He	175	Lu							ppb
No Gas	209	Bi							ppb
He	209	Bi							ppb

Calibration for 122998SMPL.d

Batch Folder: C:\Agilent\ICPMH\1\DATA\2230712A_MS2.b\
 Analysis File: 2230712A_MS2.batch.bin
 DA Date-Time: 7/13/2023 9:07:46 AM
 Calibration Title: EPA6020
 Calibration Method: External Calibration
 VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	1221CALB.d	1300	7/12/2023 12:14:40 PM
2			
3	1222CALS.d	1302	7/12/2023 12:18:14 PM
4			
5	1223CALS.d	1304	7/12/2023 12:22:27 PM
6	1225CALS.d	1305	7/12/2023 12:29:56 PM
7	1226CALS.d	1306	7/12/2023 12:33:40 PM
8			



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	47384.51	0.0715	P	1.4
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.500	0.655	50909.40	0.0769	P	1.7
4	<input type="checkbox"/>	2.500					
5	<input type="checkbox"/>	5.000	5.543	76907.91	0.1172	P	0.5
6	<input type="checkbox"/>	50.000	54.163	336397.84	0.5176	P	0.8
7	<input type="checkbox"/>	500.000	499.578	2799997.56	4.1858	P	0.4
8	<input type="checkbox"/>						

$y = 0.0082 * x + 0.0715$

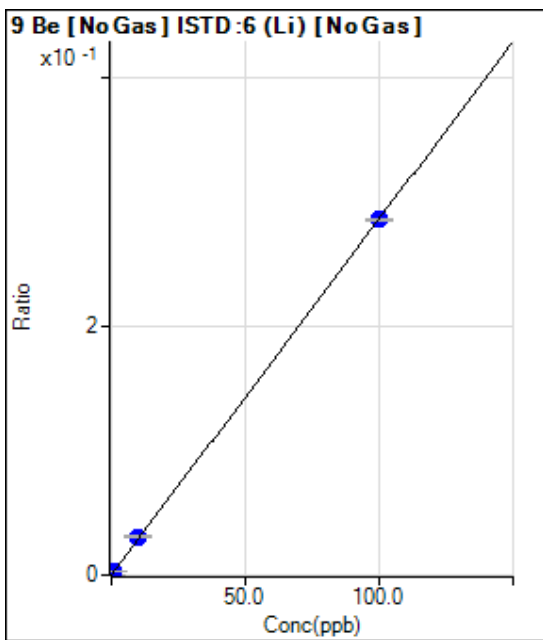
R = 1.0000

DL = 0.3524

BEC = 8.683

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	45.33	0.0001	P	10.0
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.103	240.00	0.0004	P	8.0
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.089	2090.83	0.0032	P	1.4
6	<input type="checkbox"/>	10.000	10.771	20073.88	0.0309	P	1.3
7	<input type="checkbox"/>	100.000	99.922	191274.03	0.2859	P	0.6
8	<input type="checkbox"/>						

$y = 0.0029 * x + 6.8404E-005$

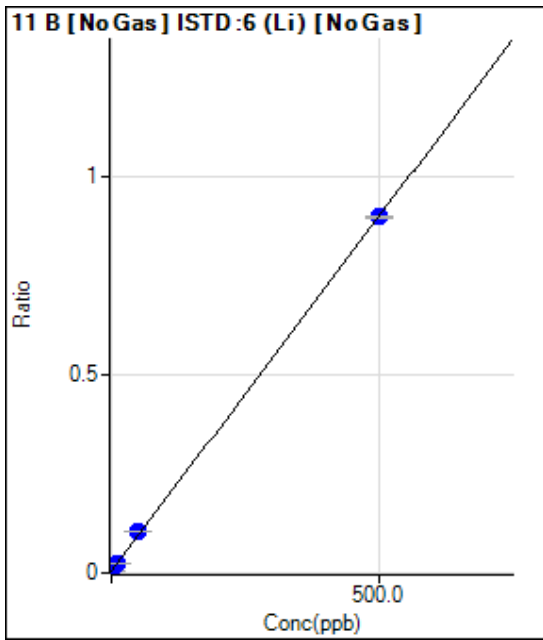
R = 1.0000

DL = 0.007163

BEC = 0.02391

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	3067.08	0.0046	P	2.6
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	1.000	0.558	3723.91	0.0056	P	4.2
4	<input type="checkbox"/>	5.000					
5	<input type="checkbox"/>	10.000	10.664	15541.71	0.0237	P	1.6
6	<input type="checkbox"/>	50.000	57.030	69211.41	0.1065	P	0.5
7	<input type="checkbox"/>	500.000	499.285	599606.79	0.8963	P	0.5
8	<input type="checkbox"/>						

$y = 0.0018 * x + 0.0046$

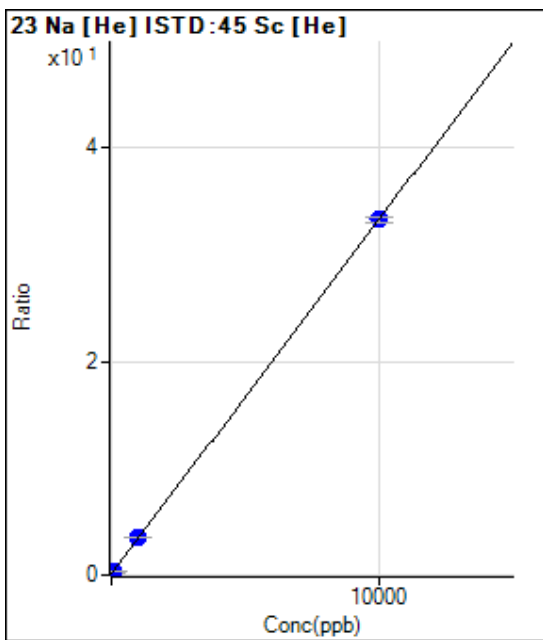
R = 0.9999

DL = 0.1983

BEC = 2.591

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	7645.53	0.1005	P	2.6
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	10.000	6.783	9463.25	0.1230	P	5.3
4	<input type="checkbox"/>	50.000					
5	<input type="checkbox"/>	100.000	100.682	32856.48	0.4346	P	2.3
6	<input type="checkbox"/>	1000.000	1011.598	260432.45	3.4581	P	0.5
7	<input type="checkbox"/>	10000.000	9998.837	2413255.23	33.2880	P	1.3
8	<input type="checkbox"/>						

$y = 0.0033 * x + 0.1005$

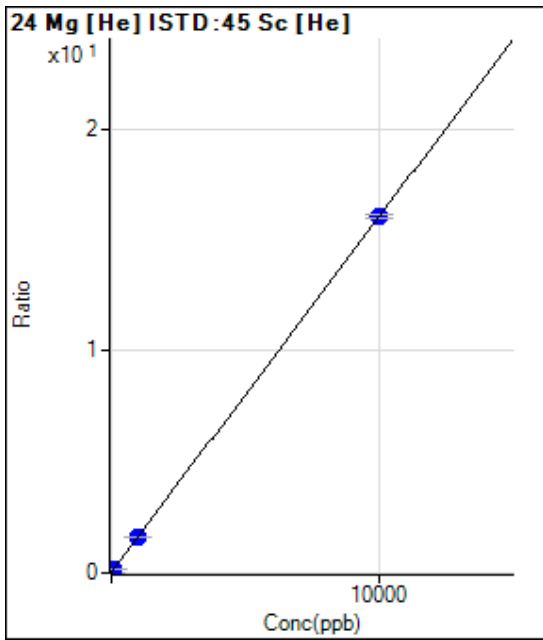
R = 1.0000

DL = 2.323

BEC = 30.27

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	2063.54	0.0271	P	6.1
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	10.000	6.640	2903.70	0.0377	P	7.1
4	<input type="checkbox"/>	50.000					
5	<input type="checkbox"/>	100.000	98.543	13960.19	0.1847	P	3.6
6	<input type="checkbox"/>	1000.000	991.361	121441.56	1.6127	P	2.6
7	<input type="checkbox"/>	10000.000	10000.882	1161626.29	16.0230	P	1.1
8	<input type="checkbox"/>						

$y = 0.0016 * x + 0.0271$

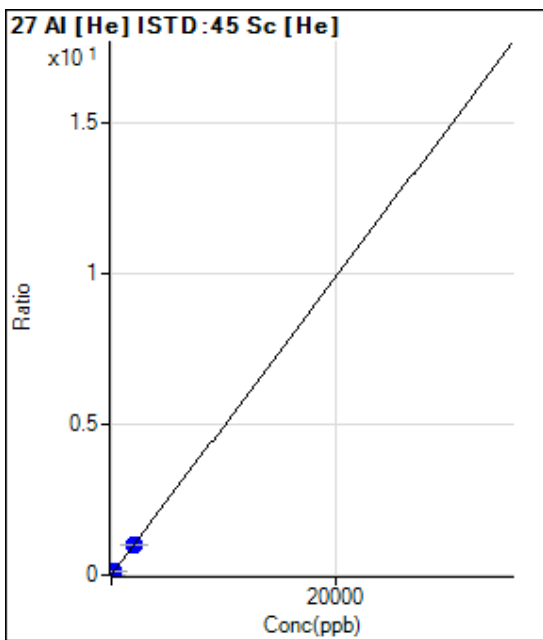
R = 1.0000

DL = 3.107

BEC = 16.94

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	56.67	0.0007	P	22.4
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	2.000	1.128	100.00	0.0013	P	26.8
4	<input type="checkbox"/>	10.000					
5	<input type="checkbox"/>	20.000	20.438	819.36	0.0108	P	9.4
6	<input type="checkbox"/>	200.000	201.446	7551.27	0.1003	P	5.1
7	<input type="checkbox"/>	2000.000	1999.852	71702.61	0.9890	P	0.7
8	<input type="checkbox"/>						

$y = 4.9417E-004 * x + 7.4335E-004$

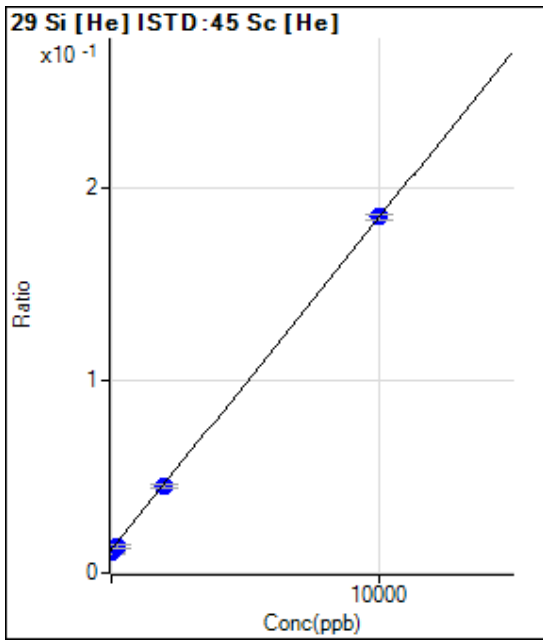
R = 1.0000

DL = 1.01

BEC = 1.504

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	924.70	0.0122	P	27.0
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	20.000	-82.946	826.03	0.0107	P	17.9
4	<input type="checkbox"/>	100.000					
5	<input type="checkbox"/>	200.000	105.481	1058.71	0.0140	P	17.0
6	<input type="checkbox"/>	2000.000	1914.925	3408.41	0.0453	P	5.6
7	<input type="checkbox"/>	10000.000	10019.111	13429.37	0.1852	P	1.4
8	<input type="checkbox"/>						

$y = 1.7274E-005 * x + 0.0122$

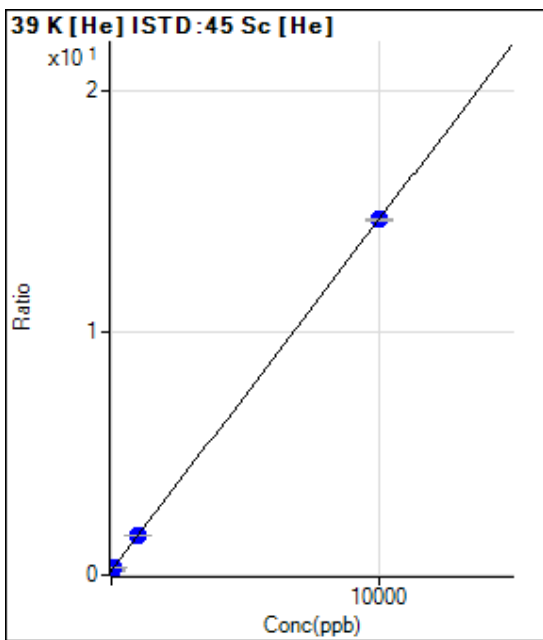
R = 0.9999

DL = 569.9

BEC = 704.7

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	14000.35	0.1839	P	2.4
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	10.000	6.806	14917.95	0.1938	P	6.3
4	<input type="checkbox"/>	50.000					
5	<input type="checkbox"/>	100.000	99.231	24764.55	0.3276	P	2.1
6	<input type="checkbox"/>	1000.000	1005.417	123465.67	1.6396	P	2.0
7	<input type="checkbox"/>	10000.000	9999.469	1062923.97	14.6611	P	0.9
8	<input type="checkbox"/>						

$y = 0.0014 * x + 0.1839$

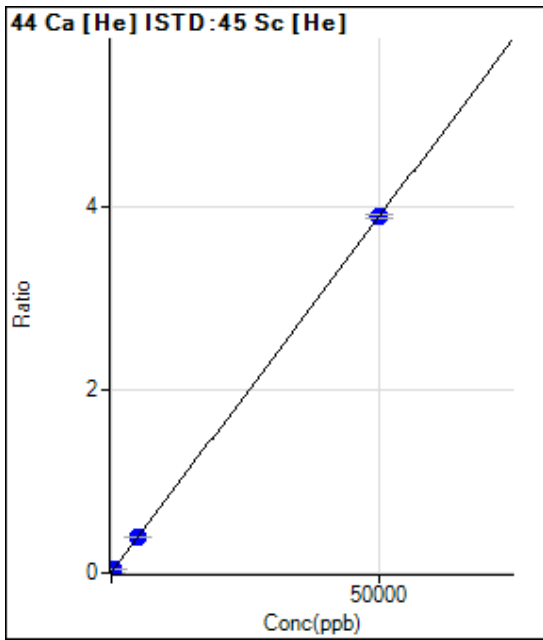
R = 1.0000

DL = 9.05

BEC = 127.1

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	335.01	0.0044	P	1.2
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	50.000	31.722	528.36	0.0069	P	15.8
4	<input type="checkbox"/>	250.000					
5	<input type="checkbox"/>	500.000	498.101	3262.08	0.0431	P	6.1
6	<input type="checkbox"/>	5000.000	5022.906	29753.37	0.3951	P	1.7
7	<input type="checkbox"/>	50000.000	49997.747	282267.34	3.8935	P	1.0
8	<input type="checkbox"/>						

$y = 7.7785E-005 * x + 0.0044$

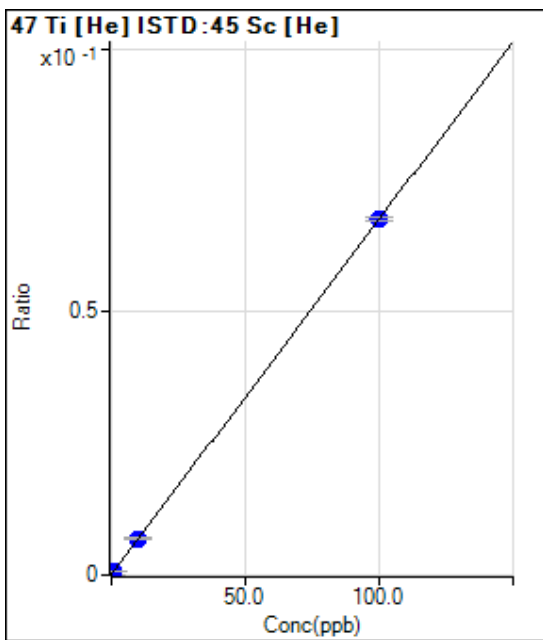
R = 1.0000

DL = 2.019

BEC = 56.59

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	6.00	0.0001	P	43.9
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.056	9.00	0.0001	P	18.8
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.026	58.33	0.0008	P	10.2
6	<input type="checkbox"/>	10.000	10.062	517.68	0.0069	P	5.1
7	<input type="checkbox"/>	100.000	99.994	4902.48	0.0676	P	0.9
8	<input type="checkbox"/>						

$y = 6.7545E-004 * x + 7.8800E-005$

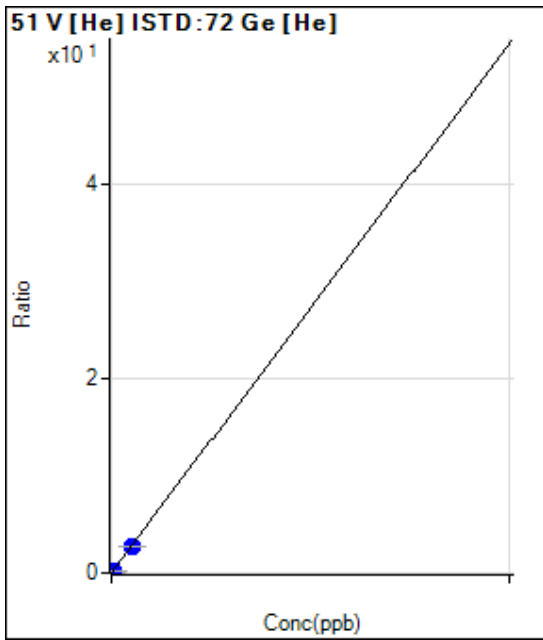
R = 1.0000

DL = 0.1535

BEC = 0.1167

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	175.56	0.0022	P	13.6
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.088	375.57	0.0046	P	13.2
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.005	2412.45	0.0295	P	1.1
6	<input type="checkbox"/>	10.000	9.893	22152.23	0.2715	P	2.8
7	<input type="checkbox"/>	100.000	100.011	215899.91	2.7250	P	1.3
8	<input type="checkbox"/>						

$y = 0.0272 * x + 0.0022$

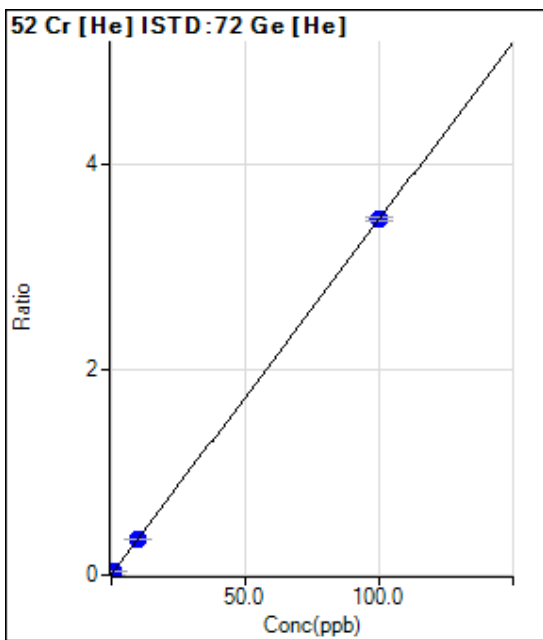
R = 1.0000

DL = 0.03236

BEC = 0.07918

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	472.23	0.0058	P	10.5
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.074	690.03	0.0084	P	1.5
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.036	3407.10	0.0417	P	3.7
6	<input type="checkbox"/>	10.000	9.929	28530.92	0.3497	P	4.5
7	<input type="checkbox"/>	100.000	100.007	274913.97	3.4697	P	1.0
8	<input type="checkbox"/>						

$y = 0.0346 * x + 0.0058$

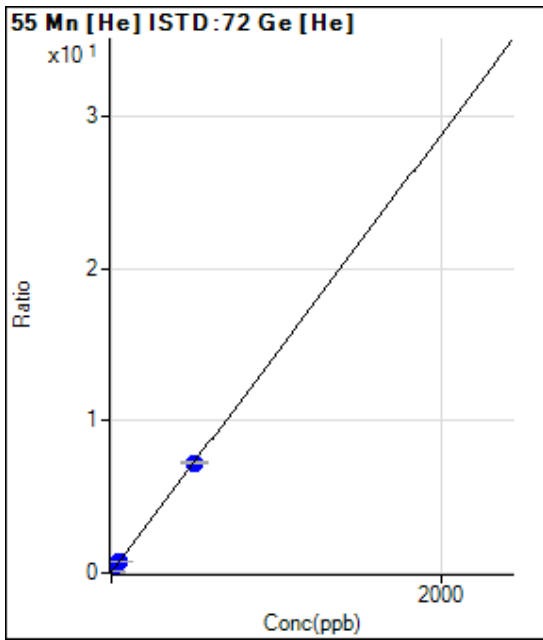
R = 1.0000

DL = 0.05279

BEC = 0.1675

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	2073.50	0.0255	P	2.1
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.500	0.148	2274.65	0.0276	P	5.0
4	<input type="checkbox"/>	2.500					
5	<input type="checkbox"/>	5.000	4.684	7605.37	0.0930	P	3.9
6	<input type="checkbox"/>	50.000	50.150	61074.67	0.7485	P	3.4
7	<input type="checkbox"/>	500.000	499.989	573163.82	7.2344	P	1.6
8	<input type="checkbox"/>						

$y = 0.0144 * x + 0.0255$

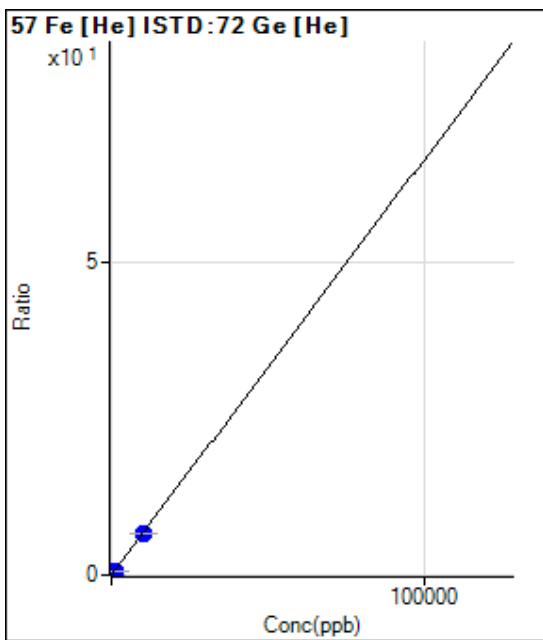
R = 1.0000

DL = 0.109

BEC = 1.767

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	106.67	0.0013	P	4.2
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	10.000	8.955	596.70	0.0072	P	8.1
4	<input type="checkbox"/>	50.000					
5	<input type="checkbox"/>	100.000	100.310	5544.58	0.0678	P	1.6
6	<input type="checkbox"/>	1000.000	991.065	53718.70	0.6584	P	4.2
7	<input type="checkbox"/>	10000.000	10000.891	525502.48	6.6323	P	0.6
8	<input type="checkbox"/>						

$y = 6.6304E-004 * x + 0.0013$

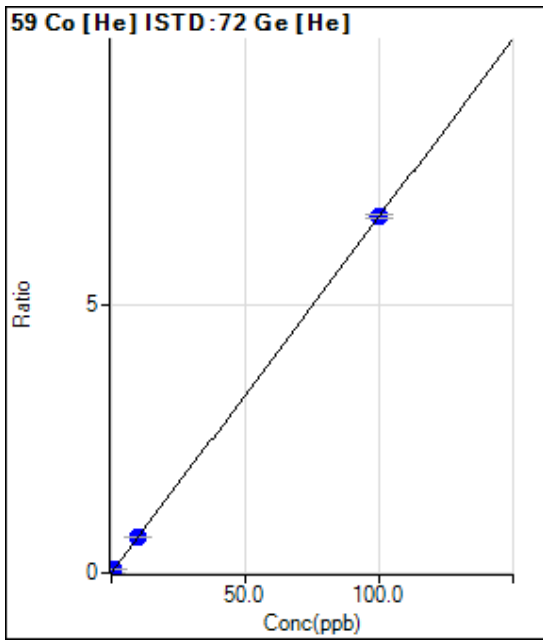
R = 1.0000

DL = 0.2498

BEC = 1.976

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	60.00	0.0007	P	18.0
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.087	538.91	0.0065	P	19.6
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.027	5644.47	0.0690	P	5.0
6	<input type="checkbox"/>	10.000	10.150	55121.62	0.6755	P	2.6
7	<input type="checkbox"/>	100.000	99.985	526705.69	6.6478	P	1.1
8	<input type="checkbox"/>						

$y = 0.0665 * x + 7.3624E-004$

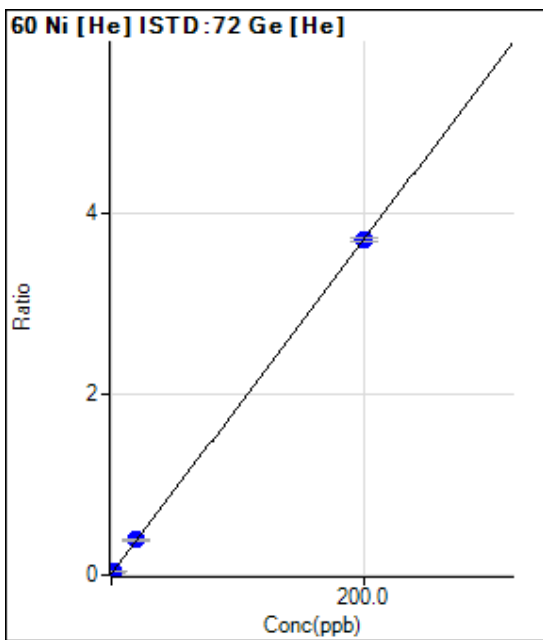
R = 1.0000

DL = 0.005983

BEC = 0.01107

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	1043.38	0.0128	P	5.6
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.200	0.092	1195.62	0.0145	P	10.7
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	2.000	1.994	4063.94	0.0497	P	3.8
6	<input type="checkbox"/>	20.000	20.408	31841.17	0.3902	P	3.0
7	<input type="checkbox"/>	200.000	199.959	294000.87	3.7108	P	1.4
8	<input type="checkbox"/>						

$y = 0.0185 * x + 0.0128$

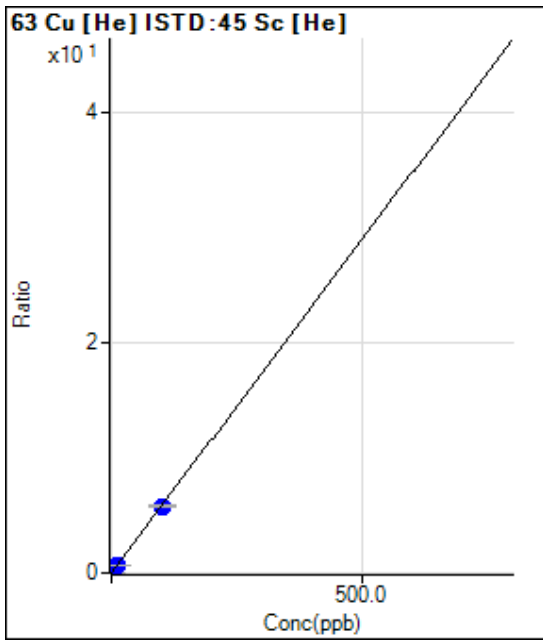
R = 1.0000

DL = 0.1175

BEC = 0.6935

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	217.78	0.0029	P	16.1
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.093	636.69	0.0083	P	9.2
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.082	4954.22	0.0655	P	3.9
6	<input type="checkbox"/>	10.000	10.258	44973.09	0.5972	P	2.8
7	<input type="checkbox"/>	100.000	99.973	420153.90	5.7954	P	1.2
8	<input type="checkbox"/>						

$y = 0.0579 * x + 0.0029$

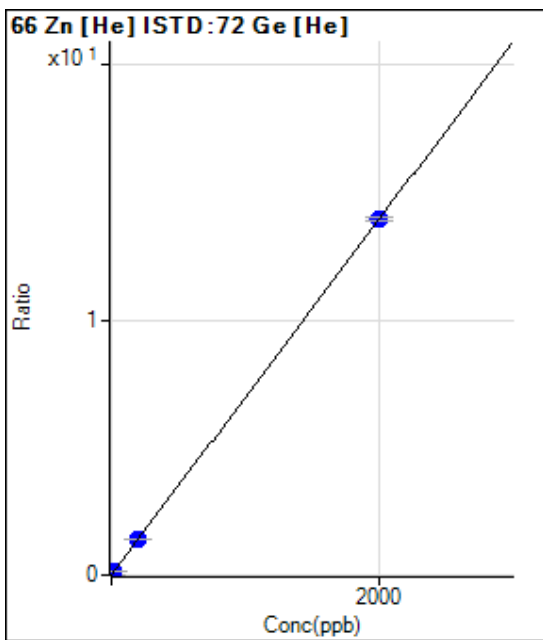
R = 1.0000

DL = 0.02385

BEC = 0.04943

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	425.56	0.0052	P	3.8
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	2.000	2.143	1661.22	0.0202	P	3.6
4	<input type="checkbox"/>	10.000					
5	<input type="checkbox"/>	20.000	19.726	11671.44	0.1428	P	5.3
6	<input type="checkbox"/>	200.000	201.984	115335.15	1.4135	P	3.0
7	<input type="checkbox"/>	2000.000	1999.804	1105133.88	13.9484	P	1.2
8	<input type="checkbox"/>						

$y = 0.0070 * x + 0.0052$

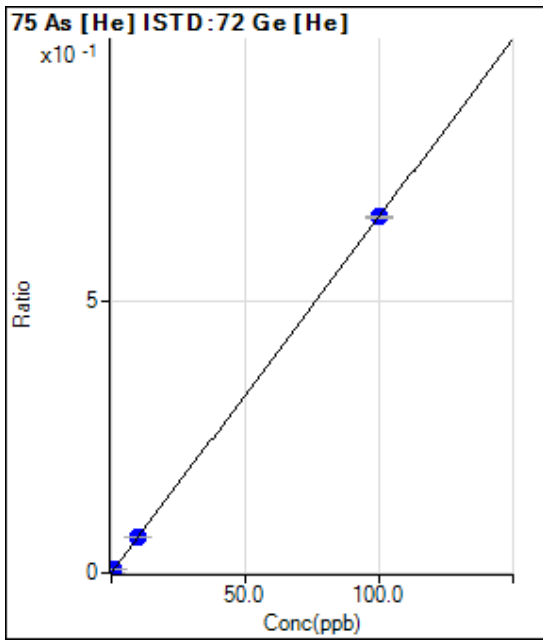
R = 1.0000

DL = 0.08528

BEC = 0.7502

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	16.67	0.0002	P	23.2
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.090	65.33	0.0008	P	15.9
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.996	551.01	0.0067	P	9.7
6	<input type="checkbox"/>	10.000	9.954	5347.99	0.0655	P	3.0
7	<input type="checkbox"/>	100.000	100.005	52029.77	0.6567	P	0.9
8	<input type="checkbox"/>						

$y = 0.0066 * x + 2.0440E-004$

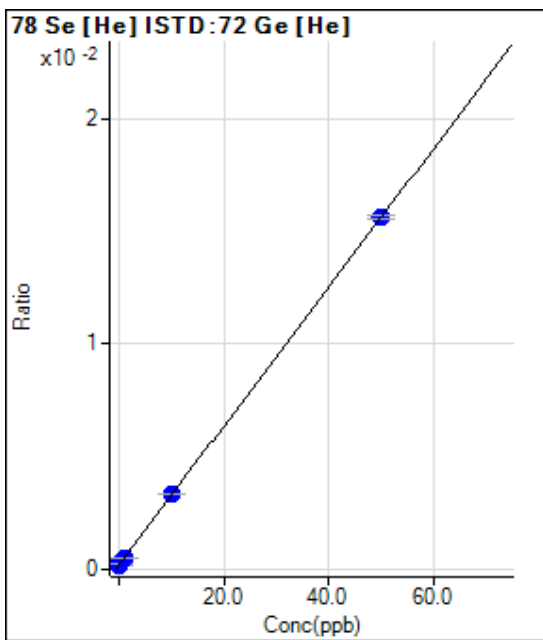
R = 1.0000

DL = 0.02167

BEC = 0.03114

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	13.00	0.0002	P	2.9
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.085	15.32	0.0002	P	5.4
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.914	36.16	0.0004	P	4.3
6	<input type="checkbox"/>	10.000	10.181	269.98	0.0033	P	1.0
7	<input type="checkbox"/>	50.000	49.966	1237.05	0.0156	P	1.1
8	<input type="checkbox"/>						

$y = 3.0925E-004 * x + 1.5974E-004$

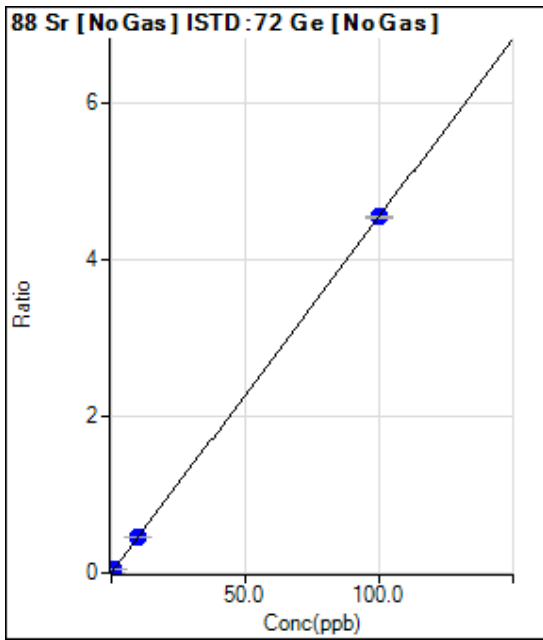
R = 1.0000

DL = 0.04566

BEC = 0.5165

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	1043.41	0.0010	P	6.5
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.101	5998.14	0.0056	P	1.9
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.011	50365.49	0.0470	P	1.2
6	<input type="checkbox"/>	10.000	10.075	490283.73	0.4592	P	0.5
7	<input type="checkbox"/>	100.000	99.992	4725493.26	4.5483	P	0.4
8	<input type="checkbox"/>						

$y = 0.0455 * x + 9.6977E-004$

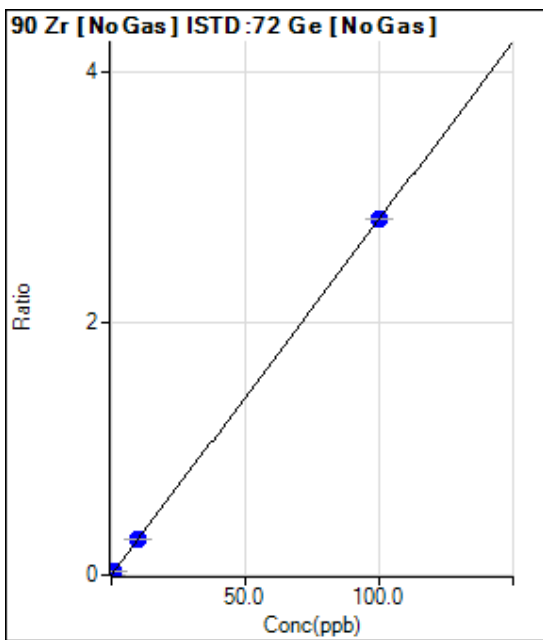
R = 1.0000

DL = 0.004168

BEC = 0.02132

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	886.71	0.0008	P	3.9
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.081	3359.32	0.0031	P	1.7
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.939	29319.87	0.0273	P	1.8
6	<input type="checkbox"/>	10.000	10.015	302861.97	0.2836	P	0.3
7	<input type="checkbox"/>	100.000	99.999	2934860.30	2.8248	P	0.2
8	<input type="checkbox"/>						

$y = 0.0282 * x + 8.2452E-004$

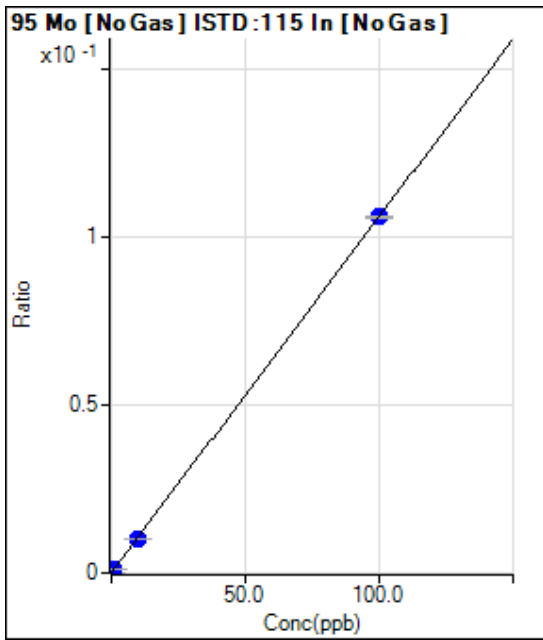
R = 1.0000

DL = 0.00341

BEC = 0.0292

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	228.89	0.0000	P	10.3
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.093	1052.27	0.0001	P	2.1
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.969	8795.00	0.0011	P	2.7
6	<input type="checkbox"/>	10.000	9.740	86836.88	0.0104	P	0.5
7	<input type="checkbox"/>	100.000	100.026	858286.67	0.1061	P	0.6
8	<input type="checkbox"/>						

$y = 0.0011 * x + 2.7609E-005$

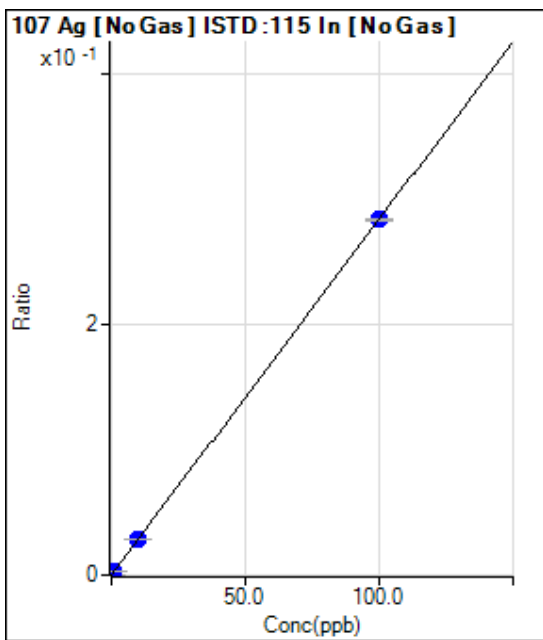
R = 1.0000

DL = 0.008076

BEC = 0.02604

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	47.78	0.0000	P	21.9
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.098	2376.90	0.0003	P	3.7
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.024	24266.28	0.0029	P	1.1
6	<input type="checkbox"/>	10.000	10.090	240177.91	0.0286	P	0.4
7	<input type="checkbox"/>	100.000	99.991	2295735.26	0.2837	P	0.5
8	<input type="checkbox"/>						

$y = 0.0028 * x + 5.7711E-006$

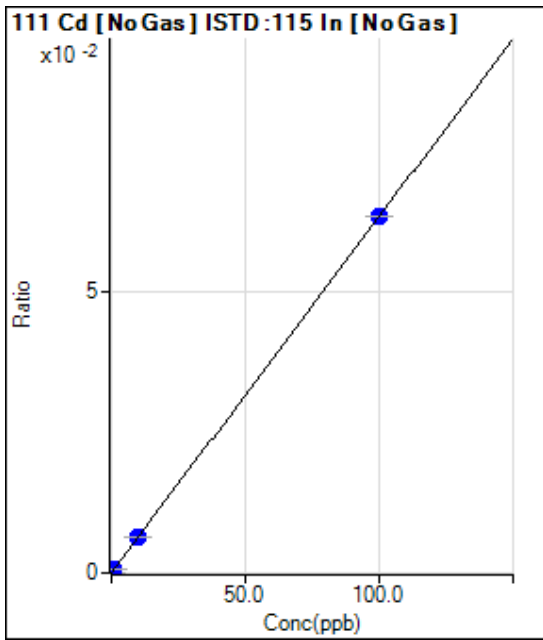
R = 1.0000

DL = 0.001336

BEC = 0.002034

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	58.89	0.0000	P	37.5
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.099	585.58	0.0001	P	9.7
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.015	5415.53	0.0006	P	3.5
6	<input type="checkbox"/>	10.000	9.887	52577.85	0.0063	P	0.3
7	<input type="checkbox"/>	100.000	100.011	512546.25	0.0633	P	0.1
8	<input type="checkbox"/>						

$y = 6.3328E-004 * x + 7.1185E-006$

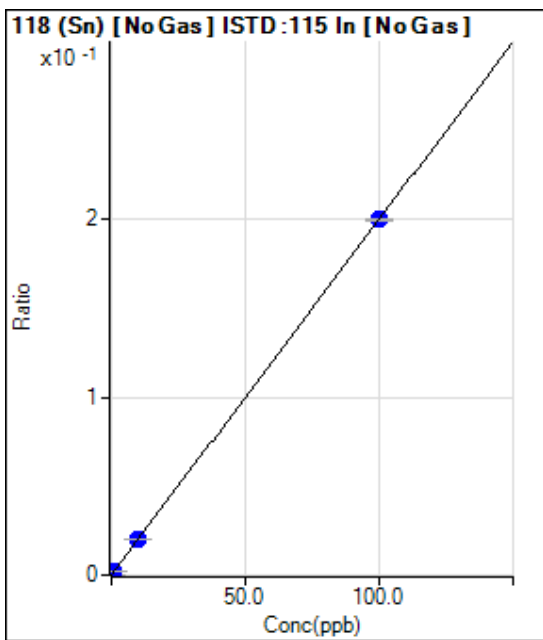
R = 1.0000

DL = 0.01264

BEC = 0.01124

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	803.37	0.0001	P	2.2
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.107	2593.60	0.0003	P	4.5
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.986	17238.40	0.0021	P	0.6
6	<input type="checkbox"/>	10.000	9.889	166514.84	0.0199	P	0.5
7	<input type="checkbox"/>	100.000	100.011	1617435.45	0.1999	P	0.2
8	<input type="checkbox"/>						

$y = 0.0020 * x + 9.6940E-005$

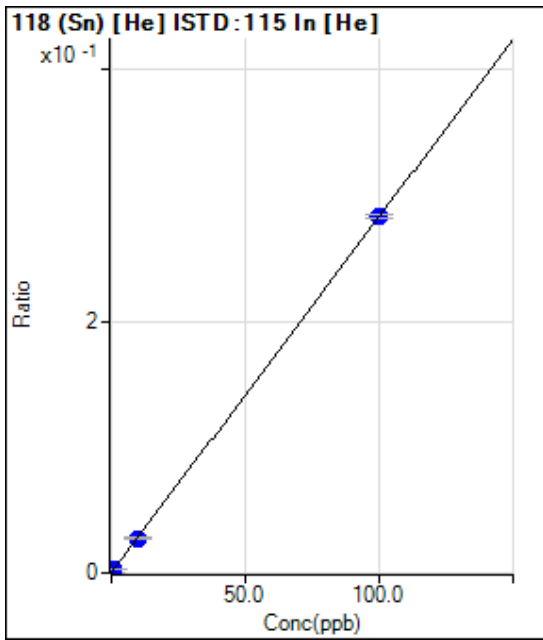
R = 1.0000

DL = 0.003167

BEC = 0.04853

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	134.45	0.0002	P	11.5
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.093	370.01	0.0004	P	13.4
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.950	2530.25	0.0028	P	4.9
6	<input type="checkbox"/>	10.000	9.590	24142.95	0.0273	P	4.0
7	<input type="checkbox"/>	100.000	100.041	239605.77	0.2830	P	1.1
8	<input type="checkbox"/>						

$y = 0.0028 * x + 1.5289E-004$

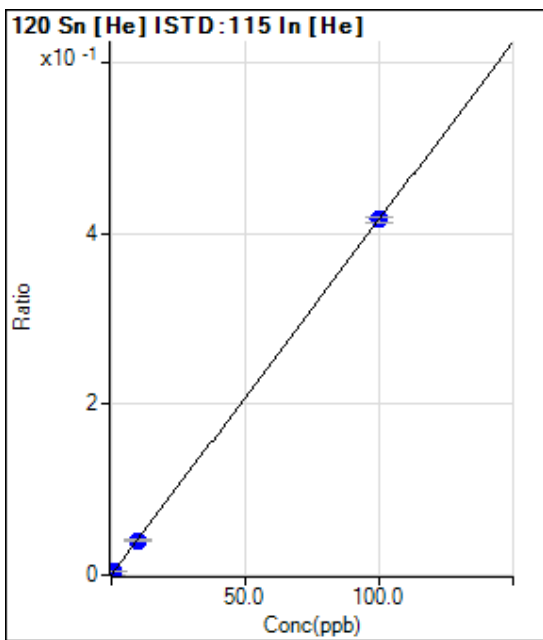
R = 1.0000

DL = 0.01862

BEC = 0.05408

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	195.56	0.0002	P	20.1
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.080	493.35	0.0006	P	10.3
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.975	3808.34	0.0043	P	4.2
6	<input type="checkbox"/>	10.000	9.744	36076.06	0.0407	P	2.9
7	<input type="checkbox"/>	100.000	100.026	352373.68	0.4162	P	1.3
8	<input type="checkbox"/>						

$y = 0.0042 * x + 2.2216E-004$

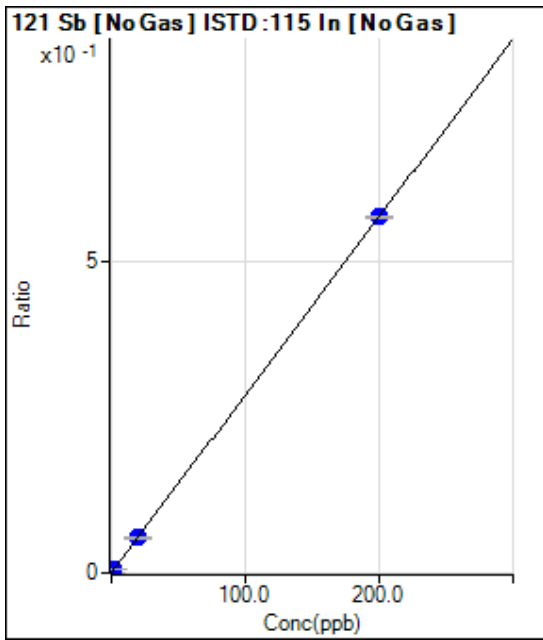
R = 1.0000

DL = 0.03218

BEC = 0.05342

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	1405.64	0.0002	P	4.3
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.200	0.192	6001.34	0.0007	P	1.3
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	2.000	2.002	49111.79	0.0059	P	1.1
6	<input type="checkbox"/>	20.000	19.565	470461.16	0.0561	P	0.7
7	<input type="checkbox"/>	200.000	200.043	4627762.74	0.5719	P	0.4
8	<input type="checkbox"/>						

$y = 0.0029 * x + 1.6963E-004$

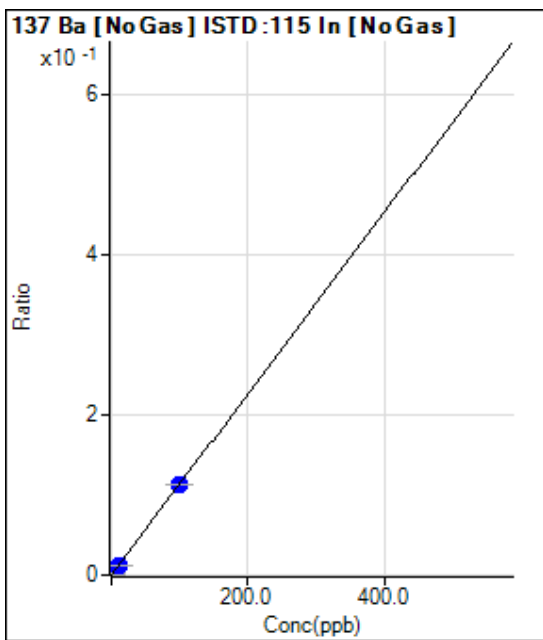
R = 1.0000

DL = 0.00757

BEC = 0.05935

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	185.56	0.0000	P	6.4
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.092	1058.94	0.0001	P	6.4
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.008	9700.12	0.0012	P	3.3
6	<input type="checkbox"/>	10.000	9.819	93435.11	0.0111	P	1.2
7	<input type="checkbox"/>	100.000	100.018	916487.22	0.1133	P	0.4
8	<input type="checkbox"/>	1000.000					

$y = 0.0011 * x + 2.2395E-005$

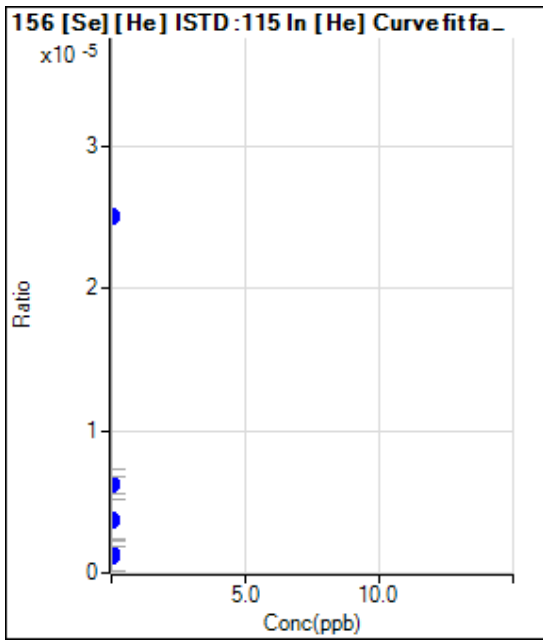
R = 1.0000

DL = 0.003816

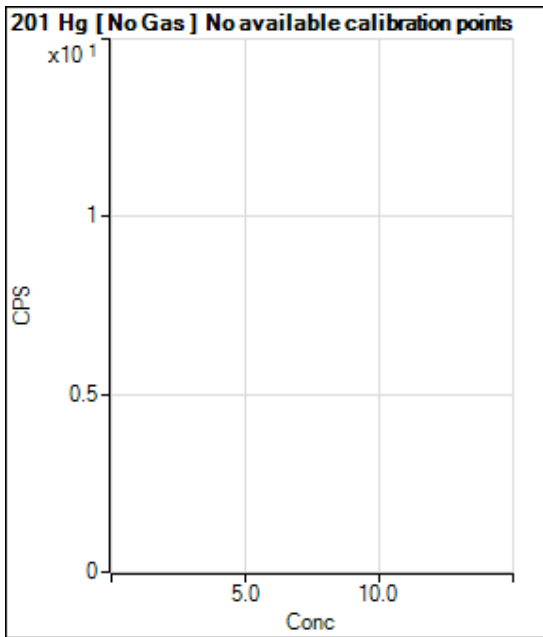
BEC = 0.01978

Weight: <None>

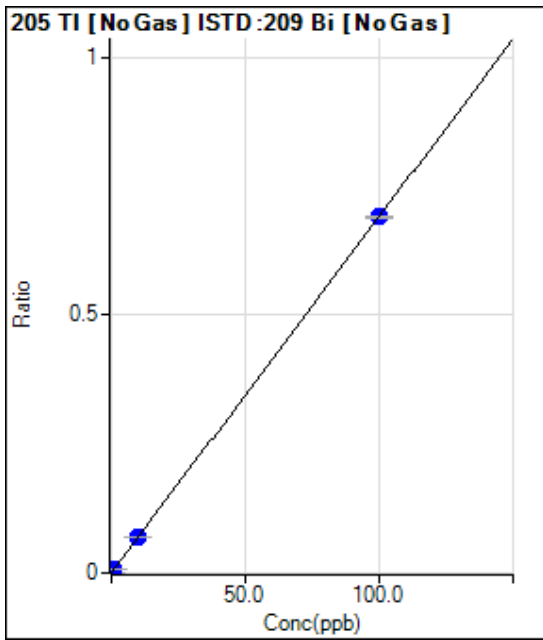
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000		1.11	0.0000	P	173.2
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.000		3.33	0.0000	P	99.6
4	<input type="checkbox"/>	0.000					
5	<input type="checkbox"/>	0.000		1.11	0.0000	P	173.2
6	<input type="checkbox"/>	0.000		5.56	0.0000	P	34.2
7	<input type="checkbox"/>	0.000		21.11	0.0000	P	146.1
8	<input type="checkbox"/>						



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>			7.00		P	31.1
2	<input type="checkbox"/>						
3	<input type="checkbox"/>			19.17		P	6.6
4	<input type="checkbox"/>						
5	<input type="checkbox"/>			11.83		P	12.2
6	<input type="checkbox"/>			20.33		P	8.6
7	<input type="checkbox"/>			51.67		P	11.2
8	<input type="checkbox"/>						



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	656.72	0.0001	P	15.2
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.096	6278.38	0.0007	P	2.5
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.984	58461.87	0.0069	P	3.0
6	<input type="checkbox"/>	10.000	9.858	583230.95	0.0681	P	0.7
7	<input type="checkbox"/>	100.000	100.014	5719692.21	0.6899	P	0.6
8	<input type="checkbox"/>						

$y = 0.0069 * x + 7.8394E-005$

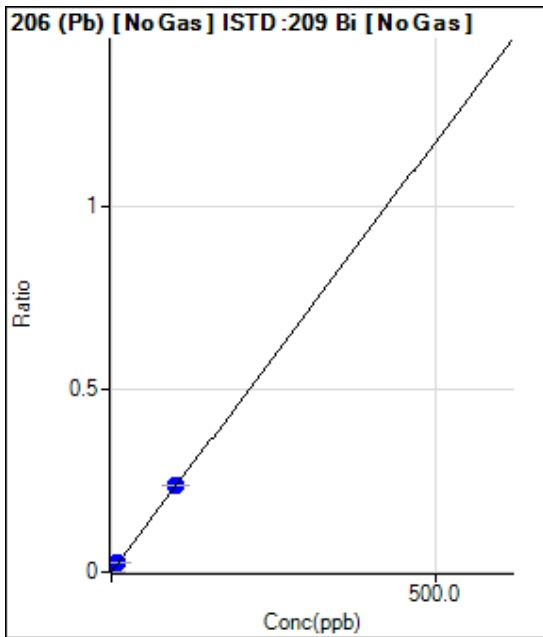
R = 1.0000

DL = 0.005191

BEC = 0.01137

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	180.01	0.0000	P	39.7
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.100	2176.93	0.0003	P	7.1
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.001	20245.96	0.0024	P	2.6
6	<input type="checkbox"/>	10.000	9.889	199451.73	0.0233	P	0.8
7	<input type="checkbox"/>	100.000	100.011	1950368.30	0.2352	P	0.5
8	<input type="checkbox"/>						

$y = 0.0024 * x + 2.1570E-005$

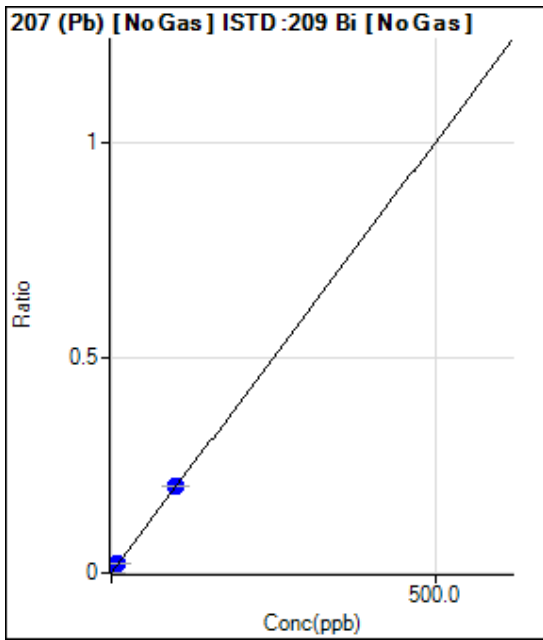
R = 1.0000

DL = 0.01094

BEC = 0.009172

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	190.01	0.0000	P	25.3
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.096	1830.19	0.0002	P	0.1
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.006	17412.04	0.0020	P	3.9
6	<input type="checkbox"/>	10.000	9.940	171314.57	0.0200	P	1.1
7	<input type="checkbox"/>	100.000	100.006	1666308.62	0.2010	P	0.6
8	<input type="checkbox"/>						

$y = 0.0020 * x + 2.2745E-005$

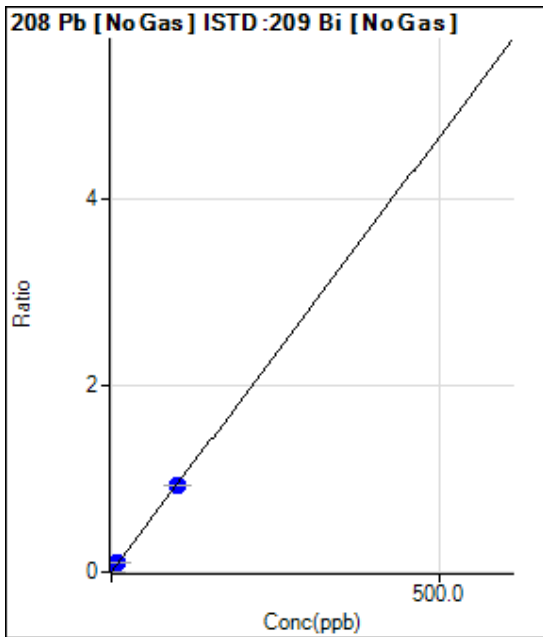
R = 1.0000

DL = 0.008595

BEC = 0.01132

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	646.70	0.0001	P	16.4
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.102	8741.48	0.0010	P	2.7
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.998	80119.78	0.0094	P	3.0
6	<input type="checkbox"/>	10.000	9.884	791803.06	0.0924	P	0.4
7	<input type="checkbox"/>	100.000	100.012	7747616.14	0.9345	P	0.4
8	<input type="checkbox"/>						

$y = 0.0093 * x + 7.7358E-005$

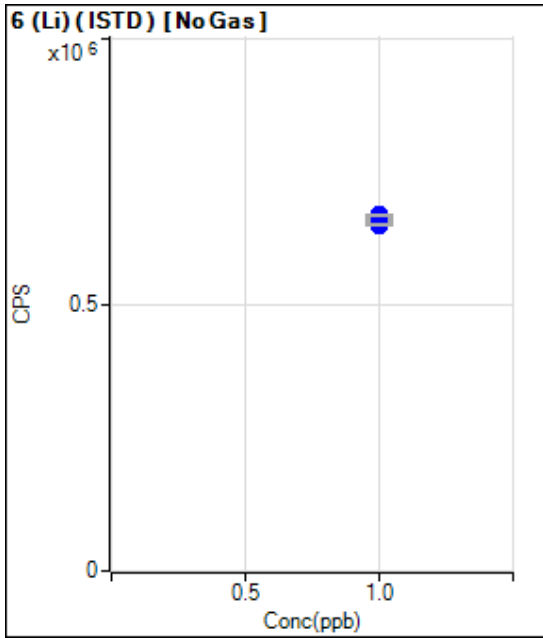
R = 1.0000

DL = 0.004069

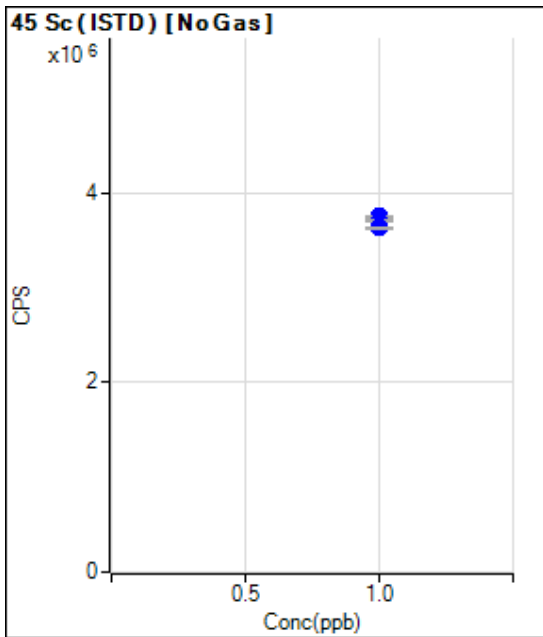
BEC = 0.00828

Weight: <None>

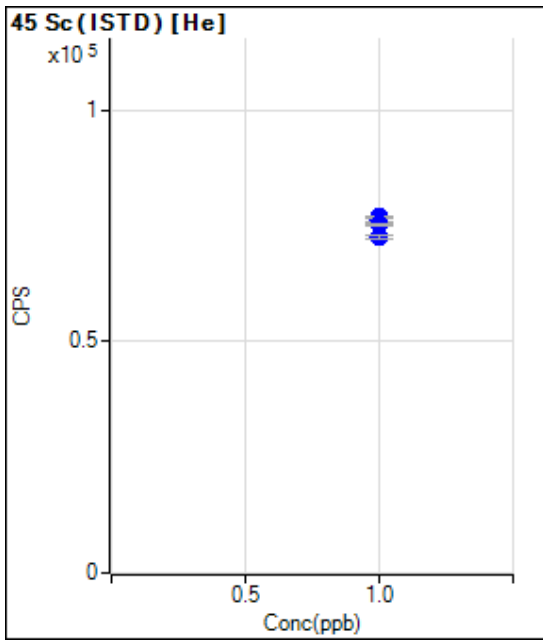
Min Conc: <None>



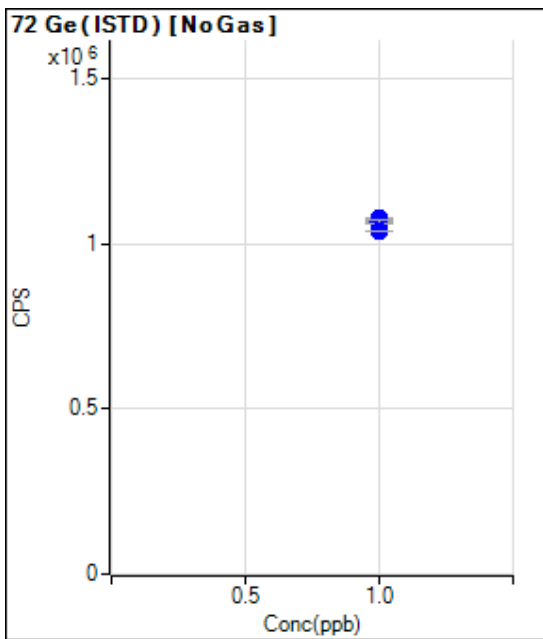
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		662644.22		P	0.8
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		662010.14		P	0.3
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		656441.89		P	0.4
6	<input type="checkbox"/>	1.000		649976.25		P	0.6
7	<input type="checkbox"/>	1.000		668935.49		P	0.4
8	<input type="checkbox"/>	1.000					



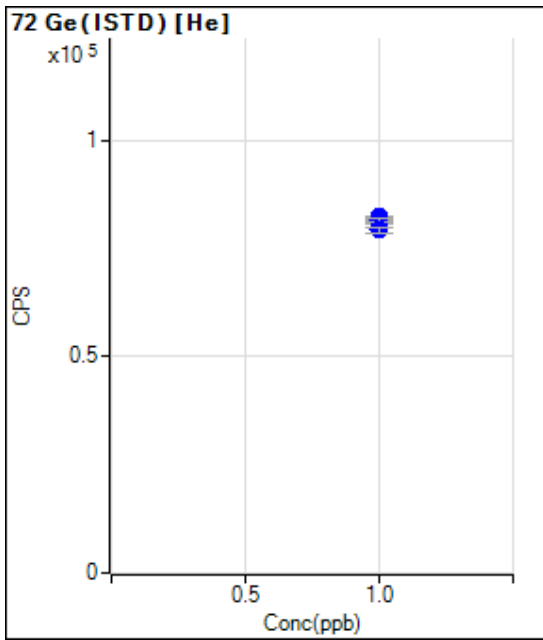
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		3751808.74		P	0.4
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		3751525.54		P	0.1
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		3742305.27		P	0.4
6	<input type="checkbox"/>	1.000		3703599.85		P	0.3
7	<input type="checkbox"/>	1.000		3635790.83		P	0.4
8	<input type="checkbox"/>	1.000					



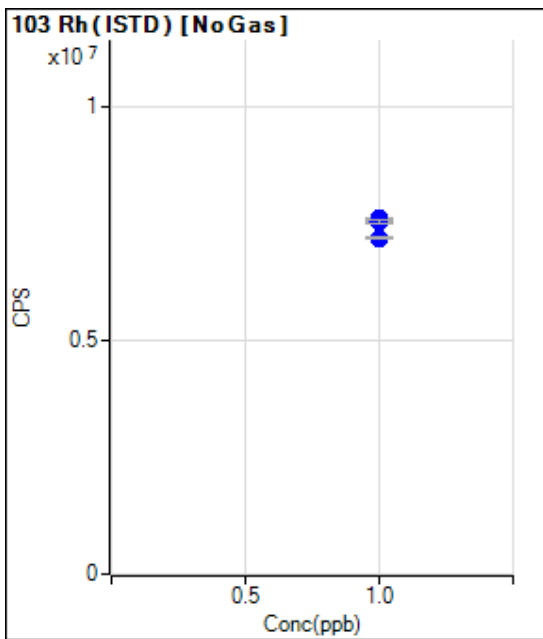
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		76114.41		P	1.2
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		76971.17		P	0.7
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		75587.44		P	0.7
6	<input type="checkbox"/>	1.000		75310.41		P	0.7
7	<input type="checkbox"/>	1.000		72502.14		P	0.9
8	<input type="checkbox"/>	1.000					



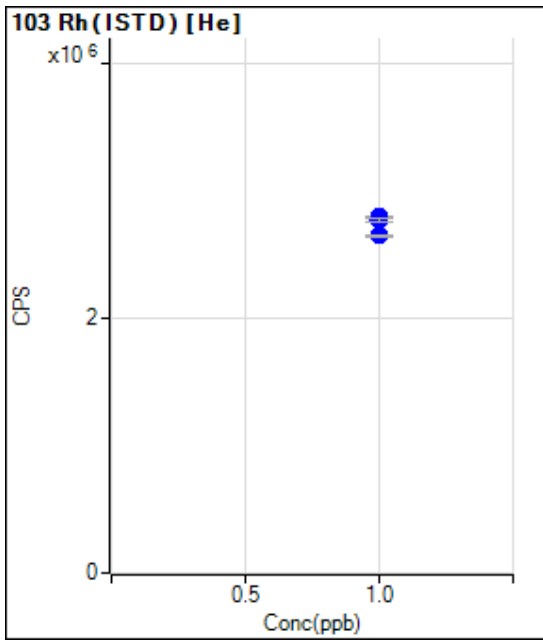
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		1075610.55		P	0.7
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		1077298.08		P	0.4
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		1072529.68		P	0.7
6	<input type="checkbox"/>	1.000		1067758.08		P	0.9
7	<input type="checkbox"/>	1.000		1038960.31		P	0.5
8	<input type="checkbox"/>	1.000					



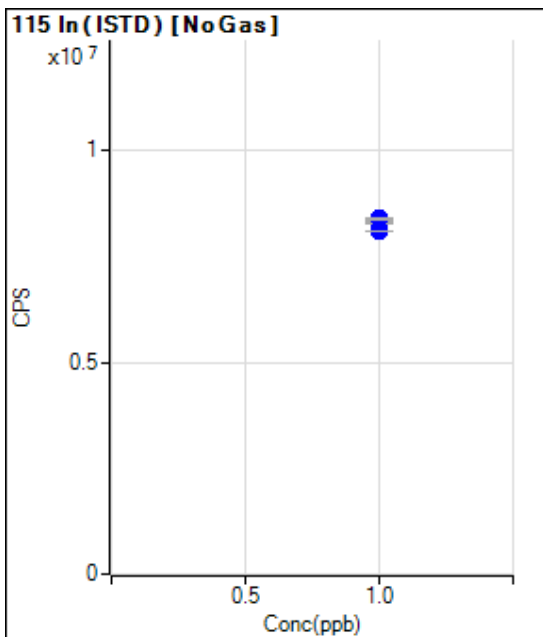
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		81380.86		P	1.4
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		82353.79		P	0.5
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		81753.68		P	0.2
6	<input type="checkbox"/>	1.000		81615.40		P	1.3
7	<input type="checkbox"/>	1.000		79239.09		P	1.5
8	<input type="checkbox"/>	1.000					



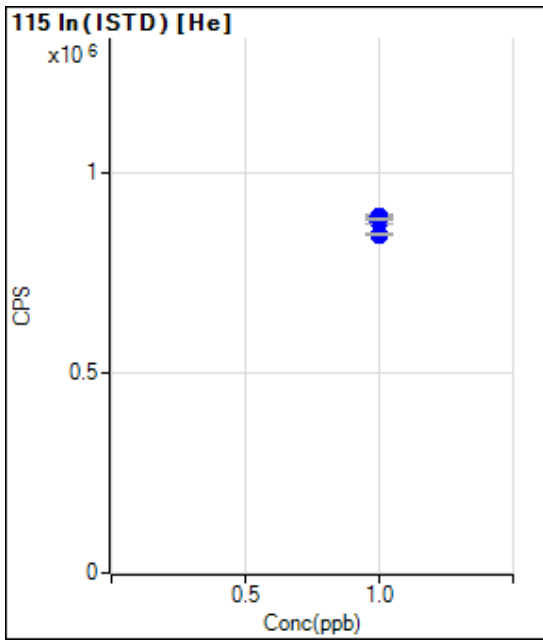
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		7567675.81		P	0.6
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		7620163.87		P	0.7
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		7606306.08		P	0.7
6	<input type="checkbox"/>	1.000		7559943.03		P	0.7
7	<input type="checkbox"/>	1.000		7203894.16		P	0.6
8	<input type="checkbox"/>	1.000					



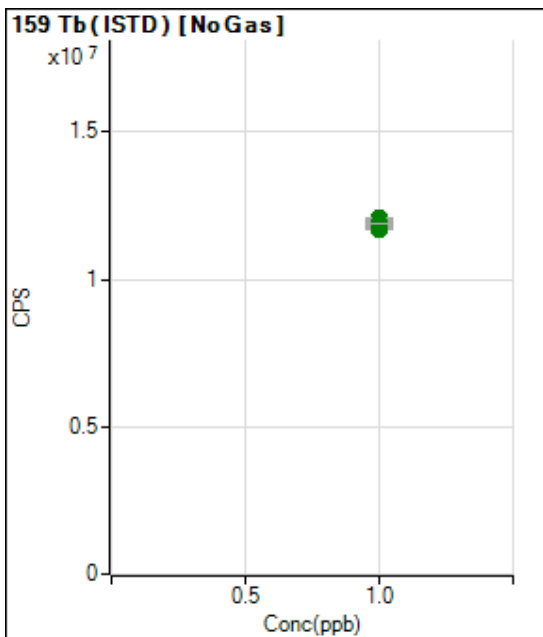
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		2764364.75		P	0.9
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		2790949.75		P	0.7
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		2792577.18		P	0.7
6	<input type="checkbox"/>	1.000		2767156.07		P	0.9
7	<input type="checkbox"/>	1.000		2643781.91		P	0.9
8	<input type="checkbox"/>	1.000					



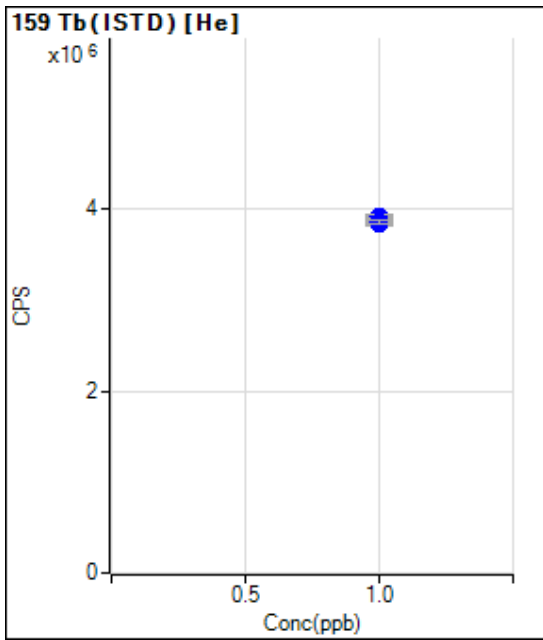
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		8286385.15		P	0.7
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		8350891.51		P	0.2
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		8337728.02		P	1.2
6	<input type="checkbox"/>	1.000		8387629.87		P	0.6
7	<input type="checkbox"/>	1.000		8091690.43		P	0.3
8	<input type="checkbox"/>	1.000					



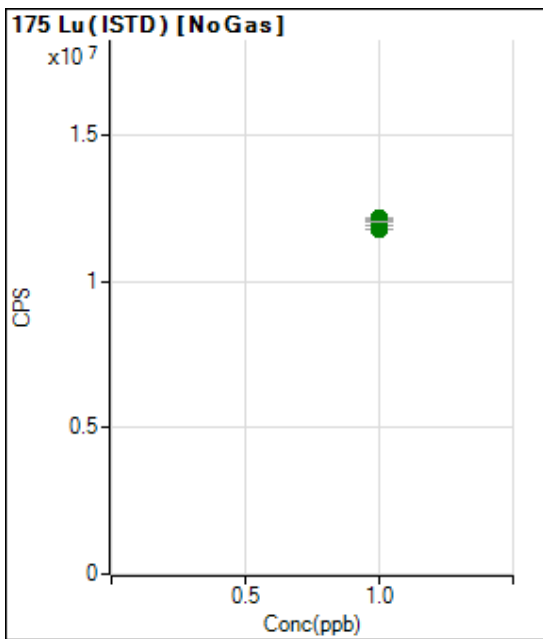
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		879610.92		P	0.9
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		888928.66		P	0.8
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		891026.98		P	1.2
6	<input type="checkbox"/>	1.000		885684.24		P	1.0
7	<input type="checkbox"/>	1.000		846754.74		P	0.7
8	<input type="checkbox"/>	1.000					



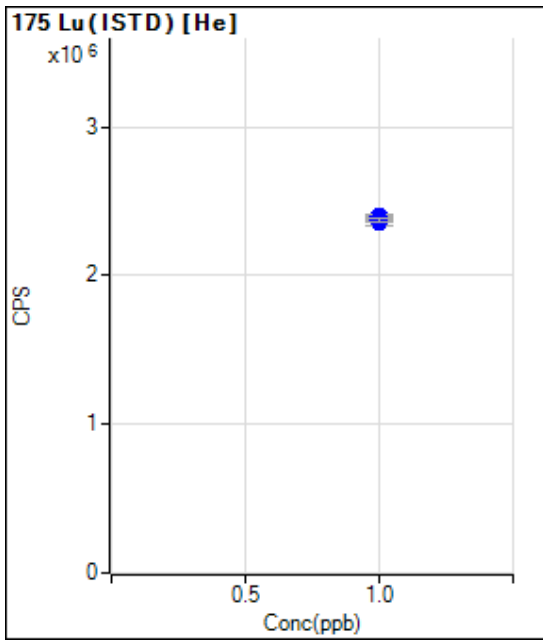
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		11714148.99		A	0.6
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		11834277.32		A	0.4
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		11980481.49		A	0.2
6	<input type="checkbox"/>	1.000		12068051.90		A	0.1
7	<input type="checkbox"/>	1.000		11906960.24		A	0.4
8	<input type="checkbox"/>	1.000					



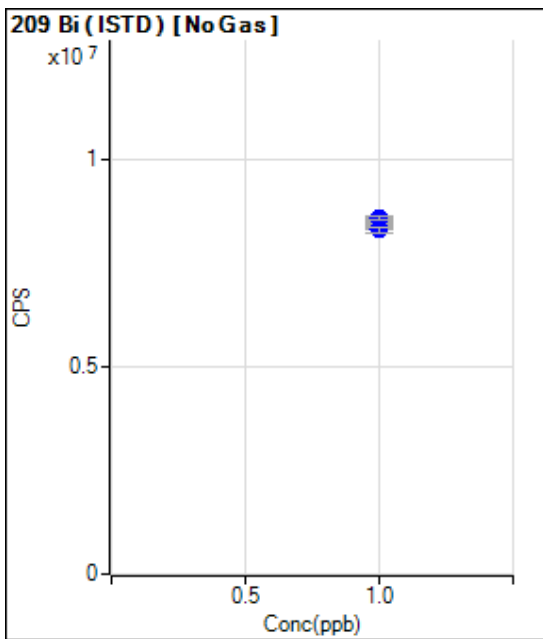
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		3836613.38		P	1.6
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		3881657.13		P	1.1
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		3900387.34		P	1.1
6	<input type="checkbox"/>	1.000		3913672.23		P	1.0
7	<input type="checkbox"/>	1.000		3851411.71		P	1.0
8	<input type="checkbox"/>	1.000					



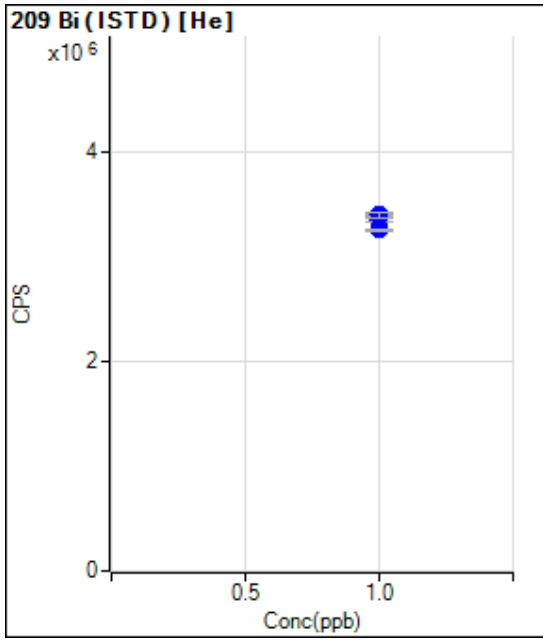
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		11754297.74		A	0.2
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		11900307.32		A	0.2
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		12003469.40		A	0.1
6	<input type="checkbox"/>	1.000		12133858.15		A	0.3
7	<input type="checkbox"/>	1.000		12023978.57		A	0.2
8	<input type="checkbox"/>	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		2355507.10		P	1.9
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		2375707.26		P	1.3
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		2389783.40		P	0.8
6	<input type="checkbox"/>	1.000		2395467.00		P	0.9
7	<input type="checkbox"/>	1.000		2370232.36		P	1.0
8	<input type="checkbox"/>	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		8369981.75		P	1.1
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		8492897.37		P	0.5
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		8520246.33		P	1.3
6	<input type="checkbox"/>	1.000		8567353.41		P	1.1
7	<input type="checkbox"/>	1.000		8291018.21		P	1.2
8	<input type="checkbox"/>	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		3354908.39		P	1.3
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		3388032.45		P	1.3
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		3403636.82		P	0.8
6	<input type="checkbox"/>	1.000		3402052.03		P	1.2
7	<input type="checkbox"/>	1.000		3257181.93		P	1.0
8	<input type="checkbox"/>	1.000					

Metals

Prep Sheets



3050B Metals Solid Preparation



ANALYST/ TECH	JEL	START DATE/TIME	7/12/2023 11:45	END DATE/TIME	7/12/2023 14:45	BATCH	768841
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#	CLIENT	TYPE	CLIENT ID	LAB ID	INITIAL WGT (g)	FINAL VOL (mL)	COMMENT	STANDARDS\ REAGENTS
1	QC	MB	MB 2499851	2499851	1.25	50		GCAL - 8 - 250uL
2	QC	LCS	LCS 2499852	2499852	1.25	50		2132617
3	AL-O	SAMP	KCDC-SB0059-000 5-2023...	22307121801	1.25	50		Sb,Ag,Se SPIKE - 250uL
4	QC	MS	KCDC-SB0059-000 ...(2499826MS)	2499853	1.25	50		360-8-2
5	QC	MSD	KCDC-SB0059-000...(2499826MSD)	2499854	1.25	50		Li,B,Zr SPIKE - 250uL
6	AL-O	SAMP	KCDC-SB0060-000 5-2023...	22307121802	1.28	50		360-8-3
7	AL-O	SAMP	KCDC-SB0061-000 5-2023...	22307121803	1.29	50		Si SPIKE - 250uL
8	AL-O	SAMP	KCDC-SB0062-000 5-2023...	22307121804	1.25	50		2131076
9	AL-O	SAMP	KCDC-SB0063-000 5-2023...	22307121805	1.30	50		HNO3
10	AL-O	SAMP	KCDC-SB0064-000 5-2023...	22307121806	1.34	50		2133188
11	AL-O	SAMP	KCDC-SB0065-000 5-2023...	22307121807	1.36	50		H2O2
12	AL-O	SAMP	KCDC-SB0066-000 5-2023...	22307121808	1.31	50		2133068
13	AL-O	SAMP	KCDC-SB0067-000 5-2023...	22307121809	1.30	50		HCL
14	AL-O	SAMP	KCDC-SB0068-000 5-2023...	22307121810	1.27	50		
15	AL-O	SAMP	KCDC-SB0069-000 5-2023...	22307121811	1.26	50		1:1 HNO3
16	AL-O	SAMP	KCDC-SB0070-000 5-2023...	22307121812	1.28	50		226-42-16
17	AL-O	SAMP	KCDC-SB0071-000 5-2023...	22307121813	1.26	50		
18	AL-O	SAMP	KCDC-SB0072-000 5-2023...	22307121814	1.27	50		
19	AL-O	SAMP	KCDC-SB0073-000 5-2023...	22307121815	1.26	50		
20	AL-O	SAMP	KCDC-SB0074-000 5-2023...	22307121816	1.32	50		
21	AL-O	SAMP	KCDC-SB0075-000 5-2023...	22307121817	1.27	50		
22	AL-O	SAMP	KCDC-SB0076-000 5-2023...	22307121818	1.33	50		
23								
24								
25								Solid Material
26								2208065-2342WI
27								Digestion Vessel Lot #
28								0260000251
29								
30								

EQUIPMENT\CONDITIONS

BALANCE ID	DIGESTION BLOCK\THERMOMETER ID	TEMPERATURE
21	C1	94
PIPETTE 1	PIPETTE 2	PIPETTE 3
117	115	

NOTES

Matrix-Soil. 6020_S_EX



Dry Weight/Percent Moisture



ANALYST/TECH	AMH	START DATE/TIME	7/13/2023 10:15	END DATE/TIME	7/14/2023 11:19	BATCH	768909
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#	LAB ID	Pan ID	Pan Weight (g)	Initial Wgt (g) (Sample+Pan)	Final Wgt #1 (g) (Sample+Pan)	Final Wgt #2 (g) (Sample+Pan)	Diff (g)	Initial Wgt (g) (LessPan)	Final Wgt (g) (LessPan)	Total Solids (%)	Total Moisture (%)
1	22307121801	1	0.9928	11.2023	9.6735			10.2095	8.6807	85.03	14.97
2	22307121802	2	0.9853	11.5893	8.0304			10.604	7.0451	66.44	33.56
3	22307121803	3	0.9933	10.7334	8.1672			9.7401	7.1739	73.65	26.35
4	22307121804	4	0.9917	10.9152	9.6992			9.9235	8.7075	87.75	12.25
5	2500279	5	0.9891	11.0874	9.8391			10.0983	8.85	87.64	12.36
6	22307121805	6	0.9890	11.2696	9.4922			10.2806	8.5032	82.71	17.29
7	22307121806	7	0.9888	12.6666	9.8036			11.6778	8.8148	75.48	24.52
8	22307121807	8	0.9898	11.1778	9.4666			10.188	8.4768	83.2	16.8
9	22307121808	9	0.9870	10.2617	8.4304			9.2747	7.4434	80.25	19.75
10	22307121809	10	0.9877	10.4082	8.6381			9.4205	7.6504	81.21	18.79
11	22307121810	11	0.9998	10.7191	8.1322			9.7193	7.1324	73.38	26.62
12	22307121811	12	1.0087	10.8042	8.4949			9.7955	7.4862	76.42	23.58
13	2500280	13	0.9893	13.9198	10.7898			12.9305	9.8005	75.79	24.21
14	22307121812	14	0.9863	10.1126	8.5956			9.1263	7.6093	83.38	16.62
15	22307121813	15	0.9915	9.7199	7.8685			8.7284	6.877	78.79	21.21
16	22307121814	16	0.9952	10.3813	7.5979			9.3861	6.6027	70.35	29.65
17	22307121815	17	0.9822	10.1949	9.3731			9.2127	8.3909	91.08	8.92
18	22307121816	18	0.9864	10.6921	8.0003			9.7057	7.0139	72.27	27.73
19	22307121817	19	1.0020	10.6504	9.4541			9.6484	8.4521	87.6	12.4
20	22307121818	20	1.0052	11.1007	9.9967			10.0955	8.9915	89.06	10.94
21	22307116305	21	1.0063	11.1225	2.7448			10.1162	1.7385	17.19	82.81
22											
23											
24											
25											
26											
27											
28											
29											
30											

EQUIPMENT\CONDITIONS

BALANCE ID	BAL15	
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NOTES

TS % = ((Final Sample Mass - Initial Sample Mass) x 100) / Initial Sample Mass;



SGS North America Inc - Orlando
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, FL 32811
TEL 407-425-6700 FAX 407-425-0707
www.sgs.com

SGS - ORLANDO JOB #: PAGE 1 OF 2

FC 7587

Client ID: AL-O - SGS Accutest - Orlando
SDG: 223071218
PM: RWe



Client / Reporting Information		Project Information	
Company Name: HGL, Inc.		Project Name: KCDC Soil Sampling	
Address: 2405 N. Courtney Parkway, STE 203		Street Kennedy Space Center	
City: Merrit Island	State: FL Zip: 32937	City Merrit Island	State FL
Project Contact: Denise Rivers Email: drivers@hgl.com		Project # NS1005.15.05	
Phone #: 910-233-8460		Fax #	
Sampler(s) Name(s) (Printed)		Client Purchase Order #	
Sampler 1: Robert Lynch Sampler 2: Brandon Schmidt			

4.2 Soils

SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION		CONTAINER INFORMATION											Arsenic (SW6020B)	LAB USE ONLY			
		DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NiOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER			MEOH		
1	KCDC-SB0059-000.5-20230707	7/7/23	0835	RL	SO	1		X										X	
2	KCDC-SB0060-000.5-20230707	7/7/23	0838	RL	SO	1		X										X	1
3	KCDC-SB0061-000.5-20230707	7/7/23	0842	RL	SO	1		X										X	2
4	KCDC-SB0062-000.5-20230707	7/7/23	0845	RL	SO	1		X										X	3
5	KCDC-SB0063-000.5-20230707	7/7/23	0848	RL	SO	1		X										X	4
6	KCDC-SB0064-000.5-20230707	7/7/23	0851	RL	SO	1		X										X	5
7	KCDC-SB0065-000.5-20230707	7/7/23	0854	RL	SO	1		X										X	6
8	KCDC-SB0066-000.5-20230707	7/7/23	0857	RL	SO	1		X										X	7
9	KCDC-SB0067-000.5-20230707	7/7/23	0858	RL	SO	1		X										X	8
10	KCDC-SB0068-000.5-20230707	7/7/23	0900	RL	SO	1		X										X	9
11	KCDC-SB0069-000.5-20230707	7/7/23	0904	RL	SO	1		X										X	10
12	KCDC-SB0070-000.5-20230707	7/7/23	0906	RL	SO	1		X										X	11
Turnaround Time (Business days)		Data Deliverable Information																	
10 Day (Business) 7 Day 5 Day 3 Day RUSH 2 Day RUSH <input checked="" type="checkbox"/> 1 Day RUSH Other _____ Rush T/A Data Available VIA Email or Lablink		Approved By: / Date:		<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input type="checkbox"/> FULLT1 (EPA LEVEL 4) <input type="checkbox"/> EDD'S											Comments / Remark:				
															Pace LA Report To: Jean.Dent@sgs.com				

Relinquished by Sampler/Affiliation		Date Time:	Received By/Affiliation		Relinquished By/Affiliation		Date Time:	Received By/Affiliation	
1 <i>Robert Lynch HGL</i>		7-7-23 15:43	2 <i>JL AKA</i> 7/7/23 13:40		3 <i>FedEx</i>		7/13/23	4 <i>[Signature]</i>	
Relinquished by/Affiliation		Date Time:	Received By/Affiliation		Relinquished By/Affiliation		Date Time:	Received By/Affiliation	
5			6		7			8	

Lab Use Only : Cooler Temperature (s) Celsius (corrected): _____

<http://www.sgs.com/en/terms-and-conditions>

KCDC_COC_20230707 Rev 031318



SGS North America Inc - Orlando
Chain of Custody

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FC 17587

SGS - ORLANDO JOB #: PAGE 2 OF 2

SGS - ORLANDO Quote # SKIFF #

Client ID: AL-O - SGS Accutest - Orlando
SDG: 223071218
PM: RWe



Client / Reporting Information		Project Information	
Company Name: HGL, Inc.		Project Name: KCDC Soil Sampling	
Address: 2405 N. Courtney Parkway, STE 203		Street Kennedy Space Center	
City: Merritt Island	State: FL Zip: 32937	City Merritt Island	State FL
Project Contact: Denise Rivers Email: drivers@hgl.com		Project # NS1005.15.05	
Phone #: 910-233-8460		Fax #	
Sampler(s) Name(s) (Printed)		Client Purchase Order #	
Sampler 1: Robert Lynch Sampler 2: Brandon Schmidt			

SGS Orlando Sample #	Field ID / Point of Collection	DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION											LAB USE ONLY	
							OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH/ZnAc	DJ WATER	MECH	Arsenic (SW620B)	% Solids		
13	KCDC-SB0071-000.5-20230707	7/7/23	0913	RL	SO	1		X										X	13
14	KCDC-SB0072-000.5-20230707	7/7/23	0915	RL	SO	1		X										X	14
15	KCDC-SB0073-000.5-20230707	7/7/23	0918	RL	SO	1		X										X	15
16	KCDC-SB0074-000.5-20230707	7/7/23	0920	RL	SO	1		X										X	16
17	KCDC-SB0075-000.5-20230707	7/7/23	0923	RL	SO	1		X										X	17
18	KCDC-SB0076-000.5-20230707	7/7/23	0925	RL	SO	1		X										X	18

Turnaround Time (Business days)		Data Deliverable Information		Comments / Remark:	
10 Day (Business)	Approved By: / Date:	<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY)		Pace LA Report To: Jean.Dent@sgs.com	
7 Day		<input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC)			
5 Day		<input type="checkbox"/> REDT1 (EPA LEVEL 3)			
3 Day RUSH		<input type="checkbox"/> FULLT1 (EPA LEVEL 4)			
2 Day RUSH		<input type="checkbox"/> EDD'S			
X 1 Day RUSH					
Other					
Rush T/A Data Available VIA Email or Lablink					

Sample Custody must be documented below each time samples change possession, including courier delivery.							
Relinquished by Sampler/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Relinquished By/Affiliation	Date Time:	Received By/Affiliation	
1 HGL	7-7-23 1543	7/7/23 1543		3 FedEx	7/23/23 10:09		
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Relinquished By/Affiliation	Date Time:	Received By/Affiliation	
5		6		7		8	

Lab Use Only : Cooler Temperature (s) Celsius (corrected):

<http://www.sgs.com/en/terms-and-conditions>

KCDC_COC_20230707 Rev 031318

Client ID: AL-O - SGS Accutest - Orlando
 SDG: 223071218
 PM: RWE



Sample Receipt Checklist (SRC)

Client: _____ Cooler Inspected by/date: _____ / _____ Workorder #: Asstv Label

Means of receipt: Pace Client UPS LEAD EX Other: 0134661 0244

Yes No N/A Were custody seals present on the cooler?
 Yes No N/A If custody seals were present, were they intact and unbroken?

Chemical Preservation Checked by: _____
 Original temperature upon receipt / Derived (Corrected) temperature upon receipt (°C): 10.8 / 10.8

Method: Temperature Blank Against Bottles IR Gun ID: M3 IR Gun Correction Factor: 0.0 °C
 Method of coolant: Dry Ice Ice Packs Dry Ice None Wetted Ice

Yes No N/A Was the line and profile number listed on the COC? If yes, line and profile # _____
 Yes No N/A Were all coolers received at or below 6.0°C? If no, was Project Manager notified via email?
 Yes No N/A Email Notification Date and Time: _____
 Yes No N/A Is the commercial courier's packing slip attached to this form?
 Yes No N/A Were proper custody procedures (relinquished/received) followed?
 Yes No N/A Is the sampler's signature included on the COC?
 Yes No N/A Were sample IDs listed on the COC and all sample containers?
 Yes No N/A Was collection date & time listed on the COC and all sample containers?
 Yes No N/A Did all container label information (ID, date, time) agree with the COC?
 Yes No N/A Were tests to be performed listed on the COC?
 Yes No N/A Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
 Yes No N/A Was adequate sample volume available?
 Yes No N/A Were all samples received within 1/2 the holding time or 48 hours, whichever comes first?
 Yes No N/A Were all samples containers accounted for? (No missing/excess)
 Yes No N/A Were VOA, 8015C, and RSK-175 samples free of bubbles > "pea size" (1/4" or 5mm in diameter) in any of the VOA vials?
 Yes No N/A If no, list affected sample(s) in comments below.
 Yes No N/A Filtered volume received for dissolved tests?
 Yes No N/A If no, list affected sample(s) in comments below.
 Yes No N/A Were all DRO/metals/nutrient samples received at a pH of < 2?
 Yes No N/A If no, list affected sample(s) in comments below and record preservation in logbook.
 Yes No N/A Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
 Yes No N/A If no, list affected sample(s) in comments below and record preservation in logbook.

Comments:



SAMPLE RECEIVING CHECKLIST



SAMPLE DELIVERY GROUP 223071218			CHECKLIST		YES	NO
Client AL-O - SGS Accutest - Orlando	PM R/W	Transport Method FEDEX	Samples received with proper thermal preservation?	<input type="checkbox"/>	<input type="checkbox"/>	
			Radioactivity is <1600 cpm? If no, record cpm value in notes section.	<input type="checkbox"/>	<input type="checkbox"/>	
Profile Number 313827		Received By Roberts, George S.	COC relinquished and complete (including sampleIDs, collect times, and sampler)?	<input type="checkbox"/>	<input type="checkbox"/>	
			All containers received in good condition and within hold time?	<input type="checkbox"/>	<input type="checkbox"/>	
Line Item(s) 1 - Arsenic		Receive Date(s) 07/12/23	All sample labels and containers received match the chain of custody?	<input type="checkbox"/>	<input type="checkbox"/>	
			Preservative added to any containers?	<input type="checkbox"/>	<input type="checkbox"/>	
			If received, was headspace for VOC water containers < 6mm?	<input type="checkbox"/>	<input type="checkbox"/>	
			Samples collected in containers provided by Pace Gulf Coast?	<input type="checkbox"/>	<input type="checkbox"/>	
COOLERS			DISCREPANCIES	LAB PRESERVATIONS		
Airbill	Thermometer ID:	Temp °C	None	None		
NOTES						



LELAP Certificate Number: 01955
A2LA Accredited (DoD ELAP-QSM 5.4) Certificate Number: 6429.01

ANALYTICAL RESULTS

PERFORMED BY

Pace Analytical Gulf Coast
7979 Innovation Park Dr.
Baton Rouge, LA 70820
(225) 769-4900

Report Date 08/01/2023

Report # 223072147



Project FC7948X

Samples Collected 7/20/23

<i>Deliver To</i>	<i>Additional Recipients</i>
Jean Dent SGS North America Inc 4405 Vineland Rd Suite C-15 Orlando, FL 32811 407-425-6700	NONE



Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with Pace Gulf Coast's Standard Operating Procedures.

Common Abbreviations that may be Utilized in this Report

ND	Indicates the result was Not Detected at the specified reporting limit
NO	Indicates the sample did not ignite when preliminary test performed for EPA Method 1030
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
RE	Re-analysis
CF	HPLC or GC Confirmation
00:01	Reported as a time equivalent to 12:00 AM

Reporting Flags that may be Utilized in this Report

J or I	Indicates the result is between the MDL and LOQ
J	DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria
U	Indicates the compound was analyzed for but not detected
B or V	Indicates the analyte was detected in the associated Method Blank
Q	Indicates a non-compliant QC Result (See Q Flag Application Report)
*	Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
E	Organics - The result is estimated because it exceeded the instrument calibration range
E	Metals - % difference for the serial dilution is > 10%
L	Reporting Limits adjusted to meet risk-based limit.
P	RPD between primary and confirmation result is greater than 40
DL	Diluted analysis – when appended to Client Sample ID

Sample receipt at Pace Gulf Coast is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of Pace Gulf Coast. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.



Authorized Signature
Pace Gulf Coast Report 223072147

Certifications

Certification	Certification Number
A2LA Accredited (DoD ELAP-QSM 5.4)	6429.01
Alabama	01955
Arkansas	88-0655
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
Washington	C929
USDA Soil Permit	P330-16-00234

Case Narrative

Client: SGS Accutest - Orlando **Report:** 223072147

Pace Analytical Gulf Coast received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

This report was completed in accordance with DOD QSM 5.3 as specified in the contract.

METALS

In the EPA 6020B analysis for prep batch 769361, the MS and MSD recovery is outside the control limits for Arsenic. The LCS recovery is within control limits. A post-digestion spike was performed and was within limits. This indicates the analysis is in control and the sample is affected by matrix interference or the element is non-homogeneous in the sample.

Sample Summary

Lab ID	Client ID	Matrix	Collect Date	Receive Date
22307214701	KCDC-SB0068-001.0-20230720	Solid	7/20/23 08:48	7/21/23 09:20
22307214702	KCDC-SB0077-000.5-20230720	Solid	7/20/23 08:52	7/21/23 09:20
22307214703	KCDC-SB0077-001.0-20230720	Solid	7/20/23 08:53	7/21/23 09:20
22307214704	KCDC-SB0078-000.5-20230720	Solid	7/20/23 08:57	7/21/23 09:20
22307214705	KCDC-SB0078-001.0-20230720	Solid	7/20/23 08:58	7/21/23 09:20
22307214706	KCDC-SB0079-000.5-20230720	Solid	7/20/23 09:07	7/21/23 09:20
22307214707	KCDC-SB0079-001.0-20230720	Solid	7/20/23 09:08	7/21/23 09:20
22307214708	KCDC-SB0067-001.0-20230720	Solid	7/20/23 10:43	7/21/23 09:20
22307214709	KCDC-SB0066-001.0-20230720	Solid	7/20/23 10:38	7/21/23 09:20
22307214710	KCDC-SB0069-001.0-20230720	Solid	7/20/23 09:18	7/21/23 09:20
22307214711	KCDC-SB0070-001.0-20230720	Solid	7/20/23 09:23	7/21/23 09:20
22307214712	KCDC-SB0080-000.5-20230720	Solid	7/20/23 09:30	7/21/23 09:20
22307214713	KCDC-SB0080-001.0-20230720	Solid	7/20/23 09:31	7/21/23 09:20
22307214714	KCDC-SB0071-001.0-20230720	Solid	7/20/23 09:44	7/21/23 09:20
22307214715	KCDC-SB0074-001.0-20230720	Solid	7/20/23 09:59	7/21/23 09:20
22307214716	KCDC-SB0081-000.5-20230720	Solid	7/20/23 10:07	7/21/23 09:20
22307214717	KCDC-SB0081-001.0-20230720	Solid	7/20/23 10:08	7/21/23 09:20
22307214718	KCDC-SB0082-000.5-20230720	Solid	7/20/23 10:13	7/21/23 09:20
22307214719	KCDC-SB0082-001.0-20230720	Solid	7/20/23 10:14	7/21/23 09:20
22307214720	KCDC-SB0083-000.5-20230720	Solid	7/20/23 10:26	7/21/23 09:20
22307214721	KCDC-SB0083-001.0-20230720	Solid	7/20/23 10:27	7/21/23 09:20
22307214722	KCDC-SB0084-000.5-20230720	Solid	7/20/23 10:31	7/21/23 09:20
22307214723	KCDC-SB0084-001.0-20230720	Solid	7/20/23 10:32	7/21/23 09:20
22307214724	KCDC-SB0073-001.0-20230720	Solid	7/20/23 09:47	7/21/23 09:20

Test Summary

EPA 6020B

Lab ID	Client ID	Matrix	Batch	Instru	RunDate
22307214701	KCDC-SB0068-001.0-20230720	Solid	769477	ICPMS2	7/24/23 15:52
22307214702	KCDC-SB0077-000.5-20230720	Solid	769477	ICPMS2	7/24/23 16:10
22307214703	KCDC-SB0077-001.0-20230720	Solid	769477	ICPMS2	7/24/23 16:14
22307214704	KCDC-SB0078-000.5-20230720	Solid	769477	ICPMS2	7/24/23 16:18
22307214705	KCDC-SB0078-001.0-20230720	Solid	769477	ICPMS2	7/24/23 16:21
22307214706	KCDC-SB0079-000.5-20230720	Solid	769477	ICPMS2	7/24/23 16:25
22307214707	KCDC-SB0079-001.0-20230720	Solid	769477	ICPMS2	7/24/23 16:28
22307214708	KCDC-SB0067-001.0-20230720	Solid	769477	ICPMS2	7/24/23 16:32
22307214709	KCDC-SB0066-001.0-20230720	Solid	769477	ICPMS2	7/24/23 16:35
22307214710	KCDC-SB0069-001.0-20230720	Solid	769477	ICPMS2	7/24/23 16:39
22307214711	KCDC-SB0070-001.0-20230720	Solid	769477	ICPMS2	7/24/23 16:50
22307214712	KCDC-SB0080-000.5-20230720	Solid	769477	ICPMS2	7/24/23 16:53
22307214713	KCDC-SB0080-001.0-20230720	Solid	769477	ICPMS2	7/24/23 16:57
22307214714	KCDC-SB0071-001.0-20230720	Solid	769477	ICPMS2	7/24/23 17:00
22307214715	KCDC-SB0074-001.0-20230720	Solid	769477	ICPMS2	7/24/23 17:04
22307214716	KCDC-SB0081-000.5-20230720	Solid	769477	ICPMS2	7/24/23 17:08
22307214717	KCDC-SB0081-001.0-20230720	Solid	769477	ICPMS2	7/24/23 17:11
22307214718	KCDC-SB0082-000.5-20230720	Solid	769477	ICPMS2	7/24/23 17:15
22307214719	KCDC-SB0082-001.0-20230720	Solid	769477	ICPMS2	7/24/23 17:18
22307214720	KCDC-SB0083-000.5-20230720	Solid	769477	ICPMS2	7/24/23 17:22
22307214721	KCDC-SB0083-001.0-20230720	Solid	769477	ICPMS2	7/24/23 17:58
22307214722	KCDC-SB0084-000.5-20230720	Solid	769477	ICPMS2	7/24/23 18:16
22307214723	KCDC-SB0084-001.0-20230720	Solid	769477	ICPMS2	7/24/23 18:19
22307214724	KCDC-SB0073-001.0-20230720	Solid	769477	ICPMS2	7/24/23 18:23

SM 2540 G-2011

Lab ID	Client ID	Matrix	Batch	Instru	RunDate
22307214701	KCDC-SB0068-001.0-20230720	Solid	769366	BAL25	7/21/23 14:36
22307214702	KCDC-SB0077-000.5-20230720	Solid	769366	BAL25	7/21/23 14:36
22307214703	KCDC-SB0077-001.0-20230720	Solid	769366	BAL25	7/21/23 14:36
22307214704	KCDC-SB0078-000.5-20230720	Solid	769366	BAL25	7/21/23 14:36
22307214705	KCDC-SB0078-001.0-20230720	Solid	769366	BAL25	7/21/23 14:36
22307214706	KCDC-SB0079-000.5-20230720	Solid	769366	BAL25	7/21/23 14:36
22307214707	KCDC-SB0079-001.0-20230720	Solid	769366	BAL25	7/21/23 14:36
22307214708	KCDC-SB0067-001.0-20230720	Solid	769366	BAL25	7/21/23 14:36
22307214709	KCDC-SB0066-001.0-20230720	Solid	769366	BAL25	7/21/23 14:36
22307214710	KCDC-SB0069-001.0-20230720	Solid	769366	BAL25	7/21/23 14:36
22307214711	KCDC-SB0070-001.0-20230720	Solid	769366	BAL25	7/21/23 14:36
22307214712	KCDC-SB0080-000.5-20230720	Solid	769366	BAL25	7/21/23 14:36

Test Summary (Continued)

SM 2540 G-2011

Lab ID	Client ID	Matrix	Batch	Instru	RunDate
22307214713	KCDC-SB0080-001.0-20230720	Solid	769366	BAL25	7/21/23 14:36
22307214714	KCDC-SB0071-001.0-20230720	Solid	769366	BAL25	7/21/23 14:36
22307214715	KCDC-SB0074-001.0-20230720	Solid	769366	BAL25	7/21/23 14:36
22307214716	KCDC-SB0081-000.5-20230720	Solid	769366	BAL25	7/21/23 14:36
22307214717	KCDC-SB0081-001.0-20230720	Solid	769366	BAL25	7/21/23 14:36
22307214718	KCDC-SB0082-000.5-20230720	Solid	769366	BAL25	7/21/23 14:36
22307214719	KCDC-SB0082-001.0-20230720	Solid	769366	BAL25	7/21/23 14:36
22307214720	KCDC-SB0083-000.5-20230720	Solid	769366	BAL25	7/21/23 14:36
22307214721	KCDC-SB0083-001.0-20230720	Solid	769386	BAL25	7/21/23 16:51
22307214722	KCDC-SB0084-000.5-20230720	Solid	769386	BAL25	7/21/23 16:51
22307214723	KCDC-SB0084-001.0-20230720	Solid	769386	BAL25	7/21/23 16:51
22307214724	KCDC-SB0073-001.0-20230720	Solid	769386	BAL25	7/21/23 16:51

Manual Integrations

Manual Integrations for LC and IC (if performed) are documented in the raw data.
No other manual integrations were performed by Pace Gulf Coast.

Q Flag Summary

NO Q FLAGS FOR THIS WORKORDER

Detect Summary

Results and Detection Limits are adjusted for dilution and moisture when applicable

EPA 6020B							
Lab ID	Client ID	Parameter	Units	Result	Dil.	%Moist	
22307214701	KCDC-SB0068-001.0-20230720	Arsenic	ug/Kg	1130	10	13.9	
22307214702	KCDC-SB0077-000.5-20230720	Arsenic	ug/Kg	18400	10	19.27	
22307214703	KCDC-SB0077-001.0-20230720	Arsenic	ug/Kg	1150	10	13.67	
22307214704	KCDC-SB0078-000.5-20230720	Arsenic	ug/Kg	341J	10	12.98	
22307214706	KCDC-SB0079-000.5-20230720	Arsenic	ug/Kg	18000	10	15.9	
22307214707	KCDC-SB0079-001.0-20230720	Arsenic	ug/Kg	3400	10	23	
22307214708	KCDC-SB0067-001.0-20230720	Arsenic	ug/Kg	723	10	28.09	
22307214710	KCDC-SB0069-001.0-20230720	Arsenic	ug/Kg	663	10	9.75	
22307214711	KCDC-SB0070-001.0-20230720	Arsenic	ug/Kg	4650	10	23.97	
22307214714	KCDC-SB0071-001.0-20230720	Arsenic	ug/Kg	562	10	24.88	
22307214715	KCDC-SB0074-001.0-20230720	Arsenic	ug/Kg	1820	10	12.59	
22307214716	KCDC-SB0081-000.5-20230720	Arsenic	ug/Kg	2290	10	12.39	
22307214718	KCDC-SB0082-000.5-20230720	Arsenic	ug/Kg	397J	10	16.86	
22307214720	KCDC-SB0083-000.5-20230720	Arsenic	ug/Kg	7770	10	14.06	
22307214721	KCDC-SB0083-001.0-20230720	Arsenic	ug/Kg	6710	10	24.23	
22307214722	KCDC-SB0084-000.5-20230720	Arsenic	ug/Kg	234J	10	12.68	
22307214724	KCDC-SB0073-001.0-20230720	Arsenic	ug/Kg	305J	10	11.26	

Metals

Form I

Sample Results

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0068-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>0848</u>	GCAL Sample ID: <u>22307214701</u>
Matrix: <u>Solid</u> % Solids: <u>86.09</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.25</u> g	Lab File ID: <u>2230724A_MS2.b\1271SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1552</u>
Prep Batch: <u>769363</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	1130	ug/kg		116	232	465

Reference Sample Report

Sample Name 22307214701
File Name 1271SMPL.d
Data Path Name C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
Acq Time 7/24/2023 3:52:55 PM
Sample Type AllRef
Total Dilution 400.0000
Comment ICPMS-2,TDM
ISTD Ref FileName 004CALB.d
Sample QC Pass/Fial Pass
ISTD QC Pass/Fail Pass

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Conc. RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	262.003	20.9	82598.52	500	
Be	9	6	No Gas	0.644	218.3	271.33	1000	
B	11	6	No Gas	903.498	8.1	9036.33	500	
Sr	88	72	No Gas	6533.720	0.5	1207583.34	1000	
Zr	90	72	No Gas	157.603	19.7	19710.63	100	
Mo	95	115	No Gas	-49.192	N/A	1198.95	1000	
Ag	107	115	No Gas	8.923	2.3	897.82	100	
Cd	111	115	No Gas	4.074	32.3	706.69	1000	
Sb	121	115	No Gas	-0.965	N/A	3576.05	1000	
Ba	137	115	No Gas	1056.563	2.5	34251.02	1000	
Tl	205	209	No Gas	-52.085	N/A	1840.20	1000	
Pb	208	209	No Gas	432.540	1.1	105172.36	1000	
Na	23	45	He	11599.004	6.0	55021.37	100000	
Mg	24	45	He	29997.643	2.4	23395.74	100000	
Al	27	45	He	200004.601	2.0	46921.23	20000	
Si	29	45	He	-6926859.270	N/A	35483.82	10000	
K	39	45	He	4231.933	13.6	55567.72	100000	
Ca	44	45	He	2374526.359	0.9	104285.15	500000	
Ti	47	45	He	7766.098	7.3	2945.94	1000	
V	51	72	He	238.893	3.4	4015.04	1000	
Cr	52	72	He	712.321	0.2	13981.16	1000	
Mn	55	72	He	4625.497	1.8	37340.07	5000	
Fe	57	72	He	91758.892	2.8	30840.50	100000	
Co	59	72	He	17.791	17.3	812.25	1000	
Ni	60	72	He	84.056	9.8	1302.30	2000	
Cu	63	45	He	3940.080	0.9	91002.05	1000	
Zn	66	72	He	3052.803	1.2	11731.49	20000	
As	75	72	He	970.614	1.9	3902.53	1000	
Se	78	72	He	-66.102	N/A	91.81	50	
Sn	120	115	He	-3.393	N/A	1163.39	1000	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	%QC Low	%QC High	QC Flag
(Li)	6	No Gas	1045516.38	1.6	976725.24	107.04	70	120	
Sc	45	No Gas	6834320.28	2.5	5845931.02	116.91	70	120	
Ge	72	No Gas	1820479.51	0.5	1639549.58666667	111.04	70	120	

Reference Sample Report

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	%QC Low	%QC High	QC Flag
Rh	103	No Gas	12046243.13	0.2	10512158.19333333	114.59	70	120	
In	115	No Gas	12737577.90	0.4	10997055.3166667	115.83	70	120	
Tb	159	No Gas	16189132.26	0.7	14199586.87333333	114.01	70	120	
Lu	175	No Gas	15746990.18	0.3	13769018.1266667	114.37	70	120	
Bi	209	No Gas	10512808.17	0.7	9415604.23333333	111.65	70	120	
Sc	45	He	239057.18	1.6	209719.873333333	113.99	70	120	
Ge	72	He	220730.52	1.3	194706.726666667	113.37	70	120	
Rh	103	He	5559973.81	1.9	5075027.71333333	109.56	70	120	
In	115	He	2313193.03	1.9	2072569.52666667	111.61	70	120	
Tb	159	He	7900551.55	1.6	7217928.22666667	109.46	70	120	
Lu	175	He	5280484.30	1.8	4837163.67666667	109.16	70	120	
Bi	209	He	6640777.19	1.6	6132749.07333333	108.28	70	120	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0077-000.5-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>0852</u>	GCAL Sample ID: <u>22307214702</u>
Matrix: <u>Solid</u> % Solids: <u>80.73</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.29</u> g	Lab File ID: <u>2230724A_MS2.b\1276SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1610</u>
Prep Batch: <u>769363</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	18400	ug/kg		120	240	480

Sample Report

Sample Name	22307214702	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1276SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 4:10:51 PM	Total Dilution	387.5969
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	6.046	2343.248	1.4	122636.43	500	
Be	9	6	No Gas	0.407	157.813	3.4	1460.08	1000	
B	11	6	No Gas	7.544	2924.185	0.3	18618.66	500	
Sr	88	72	No Gas	390.611	151399.584	0.4	26666611.27	1000	
Zr	90	72	No Gas	2.278	882.956	3.3	98193.81	100	
Mo	95	115	No Gas	0.005	1.946	5.1	2704.73	1000	
Ag	107	115	No Gas	0.327	126.583	1.6	10992.12	100	
Cd	111	115	No Gas	0.881	341.492	3.5	7067.38	1000	
Sb	121	115	No Gas	0.197	76.364	2.5	9813.52	1000	
Ba	137	115	No Gas	40.262	15605.302	1.0	471498.26	1000	
Tl	205	209	No Gas	-0.09	-34.745	1.3	4190.81	1000	
Pb	208	209	No Gas	16.877	6541.613	0.9	1434422.36	1000	
Na	23	45	He	396.967	153863.172	2.3	287654.04	100000	
Mg	24	45	He	2274.011	881399.730	2.4	626717.48	100000	
Al	27	45	He	8428.194	3266741.942	2.4	733328.60	20000	
Si	29	45	He	-16342.352	-6334244.998	5.4	35841.39	10000	
K	39	45	He	230.723	89427.609	1.6	132958.98	100000	
Ca	44	45	He	139396.107	54029498.865	2.5	2252507.62	500000	
Ti	47	45	He	16.37	6344.999	4.7	2313.20	1000	
V	51	72	He	8.697	3370.839	2.7	45331.47	1000	
Cr	52	72	He	31.719	12294.344	1.8	207790.87	1000	
Mn	55	72	He	204.976	79447.894	2.1	605732.67	5000	
Fe	57	72	He	3991.21	1546980.446	2.3	491128.93	100000	
Co	59	72	He	0.7	271.248	5.2	8021.14	1000	
Ni	60	72	He	3.245	1257.902	3.7	10331.49	2000	
Cu	63	45	He	165.003	63954.706	1.1	1406197.37	1000	
Zn	66	72	He	128.627	49855.330	1.6	168053.97	20000	
As	75	72	He	38.429	14895.092	1.6	53084.89	1000	
Se	78	72	He	-0.573	-221.936	16.0	53.37	50	
Sn	120	115	He	0.15	58.115	2.4	2237.98	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6036895.74	6132749.07333333	98.44	
Ge	72	He	203525.83	194706.726666667	104.53	
In	115	He	2082957.34	2072569.52666667	100.5	
Lu	175	He	4887396.59	4837163.67666667	101.04	
Rh	103	He	5012212.30	5075027.71333333	98.76	
Sc	45	He	222530.15	209719.873333333	106.11	
Tb	159	He	7311580.72	7217928.22666667	101.3	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	991620.13	976725.24	101.52	
Bi	209	No Gas	9479833.61	9415604.23333333	100.68	
Ge	72	No Gas	1683609.52	1639549.58666667	102.69	
In	115	No Gas	11596811.49	10997055.3166667	105.45	
Lu	175	No Gas	14693649.36	13769018.1266667	106.72	
Rh	103	No Gas	10800521.24	10512158.1933333	102.74	
Sc	45	No Gas	6242710.17	5845931.02	106.79	
Tb	159	No Gas	15045133.95	14199586.8733333	105.95	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0077-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>0853</u>	GCAL Sample ID: <u>22307214703</u>
Matrix: <u>Solid</u> % Solids: <u>86.33</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.26</u> g	Lab File ID: <u>2230724A_MS2.b\1277SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1614</u>
Prep Batch: <u>769363</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	1150	ug/kg		115	230	460

Sample Report

Sample Name	22307214703	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1277SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 4:14:26 PM	Total Dilution	396.8254
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.412	163.306	0.3	78928.76	500	
Be	9	6	No Gas	0.006	2.547	7.8	280.67	1000	
B	11	6	No Gas	1.457	578.299	7.9	7285.36	500	
Sr	88	72	No Gas	40.64	16127.125	1.0	2808971.94	1000	
Zr	90	72	No Gas	0.493	195.517	0.8	22693.83	100	
Mo	95	115	No Gas	-0.11	-43.741	6.0	1276.74	1000	
Ag	107	115	No Gas	0.036	14.302	0.8	1301.18	100	
Cd	111	115	No Gas	0.046	18.113	5.8	922.26	1000	
Sb	121	115	No Gas	0.059	23.475	3.0	5382.20	1000	
Ba	137	115	No Gas	4.554	1806.981	1.6	54594.02	1000	
Tl	205	209	No Gas	-0.13	-51.752	4.4	1733.52	1000	
Pb	208	209	No Gas	2.862	1135.582	1.1	258916.37	1000	
Na	23	45	He	50.306	19962.669	2.3	64999.86	100000	
Mg	24	45	He	121.711	48297.834	1.5	34670.98	100000	
Al	27	45	He	743.763	295143.913	1.9	64970.55	20000	
Si	29	45	He	-17577.532	-6975211.009	7.5	32302.78	10000	
K	39	45	He	23.155	9188.422	0.4	56437.29	100000	
Ca	44	45	He	11982.745	4755057.361	2.0	195018.18	500000	
Ti	47	45	He	10.656	4228.394	11.7	1512.11	1000	
V	51	72	He	1.023	405.901	1.0	5953.51	1000	
Cr	52	72	He	3.873	1536.756	1.5	26801.02	1000	
Mn	55	72	He	21.886	8684.748	1.5	65637.35	5000	
Fe	57	72	He	406.148	161169.780	1.8	50732.05	100000	
Co	59	72	He	0.083	33.055	3.6	1191.17	1000	
Ni	60	72	He	0.38	150.821	2.7	1731.23	2000	
Cu	63	45	He	17.77	7051.407	1.5	152400.56	1000	
Zn	66	72	He	12.152	4822.227	2.5	16872.07	20000	
As	75	72	He	2.51	996.012	3.0	3754.16	1000	
Se	78	72	He	-0.062	-24.609	8.0	93.50	50	
Sn	120	115	He	-0.01	-4.153	7.7	1057.83	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6274250.74	6132749.07333333	102.31	
Ge	72	He	205772.75	194706.726666667	105.68	
In	115	He	2132654.22	2072569.52666667	102.9	
Lu	175	He	4959792.95	4837163.67666667	102.54	
Rh	103	He	5189890.07	5075027.71333333	102.26	
Sc	45	He	222860.95	209719.873333333	106.27	
Tb	159	He	7408500.93	7217928.22666667	102.64	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1025115.81	976725.24	104.95	
Bi	209	No Gas	9984601.52	9415604.23333333	106.04	
Ge	72	No Gas	1703644.72	1639549.58666667	103.91	
In	115	No Gas	11819740.62	10997055.3166667	107.48	
Lu	175	No Gas	14907261.45	13769018.1266667	108.27	
Rh	103	No Gas	11142578.72	10512158.19333333	106	
Sc	45	No Gas	6247987.25	5845931.02	106.88	
Tb	159	No Gas	15314952.69	14199586.87333333	107.85	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0078-000.5-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>0857</u>	GCAL Sample ID: <u>22307214704</u>
Matrix: <u>Solid</u> % Solids: <u>87.01</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.31</u> g	Lab File ID: <u>2230724A_MS2.b\1278SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1618</u>
Prep Batch: <u>769363</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	341	ug/kg	J	110	219	439

Sample Report

Sample Name	22307214704	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1278SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 4:18:00 PM	Total Dilution	381.6794
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	2.845	1085.890	1.3	101216.82	500	
Be	9	6	No Gas	0.158	60.356	1.0	758.02	1000	
B	11	6	No Gas	3.945	1505.688	3.6	12368.72	500	
Sr	88	72	No Gas	157.965	60292.026	0.2	11446600.66	1000	
Zr	90	72	No Gas	1.866	712.312	4.6	85701.01	100	
Mo	95	115	No Gas	0.013	4.943	4.1	2994.81	1000	
Ag	107	115	No Gas	0.141	53.721	1.7	5103.19	100	
Cd	111	115	No Gas	0.366	139.644	2.2	3489.35	1000	
Sb	121	115	No Gas	0.064	24.558	2.1	5821.26	1000	
Ba	137	115	No Gas	18.989	7247.546	1.4	237657.73	1000	
Tl	205	209	No Gas	-0.126	-48.116	4.8	2070.24	1000	
Pb	208	209	No Gas	9.294	3547.481	1.2	854415.64	1000	
Na	23	45	He	124.466	47506.283	0.9	117425.60	100000	
Mg	24	45	He	898.221	342832.563	0.4	258995.08	100000	
Al	27	45	He	3840.558	1465861.905	1.1	348796.17	20000	
Si	29	45	He	-16117.19	-6151599.307	3.8	38115.03	10000	
K	39	45	He	107.939	41198.282	2.8	91490.72	100000	
Ca	44	45	He	61746.627	23567415.010	1.5	1041895.40	500000	
Ti	47	45	He	44.615	17028.704	9.0	6547.04	1000	
V	51	72	He	8.533	3256.954	1.5	46665.57	1000	
Cr	52	72	He	15.821	6038.599	1.3	109399.87	1000	
Mn	55	72	He	102.051	38950.747	1.5	316478.00	5000	
Fe	57	72	He	2522.419	962755.236	1.8	325666.37	100000	
Co	59	72	He	0.385	146.845	3.3	4745.30	1000	
Ni	60	72	He	2.056	784.885	5.9	7088.46	2000	
Cu	63	45	He	65.15	24866.372	1.1	580017.83	1000	
Zn	66	72	He	65.864	25139.053	1.4	90729.68	20000	
As	75	72	He	0.777	296.475	1.9	1395.40	1000	
Se	78	72	He	-0.257	-98.046	7.5	81.37	50	
Sn	120	115	He	0.131	49.885	5.2	2214.70	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6427585.11	6132749.07333333	104.81	
Ge	72	He	213496.75	194706.726666667	109.65	
In	115	He	2203575.44	2072569.52666667	106.32	
Lu	175	He	5130200.65	4837163.67666667	106.06	
Rh	103	He	5327736.87	5075027.71333333	104.98	
Sc	45	He	232220.07	209719.873333333	110.73	
Tb	159	He	7669504.47	7217928.22666667	106.26	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1041855.31	976725.24	106.67	
Bi	209	No Gas	10233795.89	9415604.23333333	108.69	
Ge	72	No Gas	1786984.72	1639549.58666667	108.99	
In	115	No Gas	12385906.60	10997055.3166667	112.63	
Lu	175	No Gas	15613874.35	13769018.1266667	113.4	
Rh	103	No Gas	11500337.04	10512158.1933333	109.4	
Sc	45	No Gas	6587215.99	5845931.02	112.68	
Tb	159	No Gas	16059721.84	14199586.8733333	113.1	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0078-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>0858</u>	GCAL Sample ID: <u>22307214705</u>
Matrix: <u>Solid</u> % Solids: <u>86.98</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.28</u> g	Lab File ID: <u>2230724A_MS2.b\1279SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1621</u>
Prep Batch: <u>769363</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	225	ug/kg	U	112	225	449

Sample Report

Sample Name	22307214705	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1279SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 4:21:35 PM	Total Dilution	390.6250
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.163	63.832	0.6	79807.42	500	
Be	9	6	No Gas	-0.016	-6.439	8.5	218.67	1000	
B	11	6	No Gas	1.052	410.746	0.6	6738.37	500	
Sr	88	72	No Gas	9.305	3634.916	1.1	672459.68	1000	
Zr	90	72	No Gas	0.17	66.332	2.2	9209.71	100	
Mo	95	115	No Gas	-0.136	-53.166	8.0	986.71	1000	
Ag	107	115	No Gas	0.015	6.028	6.5	625.58	100	
Cd	111	115	No Gas	0.001	0.408	11.4	613.35	1000	
Sb	121	115	No Gas	0.005	1.995	1.6	3730.52	1000	
Ba	137	115	No Gas	2.676	1045.176	1.6	33635.03	1000	
Tl	205	209	No Gas	-0.139	-54.188	10.2	1236.77	1000	
Pb	208	209	No Gas	2.401	937.839	1.8	226733.41	1000	
Na	23	45	He	14.932	5832.657	2.5	43506.86	100000	
Mg	24	45	He	38.208	14924.933	1.7	12035.21	100000	
Al	27	45	He	245.355	95841.637	2.7	22206.40	20000	
Si	29	45	He	-18320.744	-7156540.434	6.0	31066.09	10000	
K	39	45	He	8.042	3141.337	2.0	52409.61	100000	
Ca	44	45	He	3703.606	1446721.094	0.9	62953.14	500000	
Ti	47	45	He	14.741	5758.349	0.4	2149.83	1000	
V	51	72	He	0.573	223.898	3.7	3744.95	1000	
Cr	52	72	He	0.847	330.835	1.3	7126.23	1000	
Mn	55	72	He	5.588	2182.753	3.5	17567.24	5000	
Fe	57	72	He	160.478	62686.876	3.6	20895.39	100000	
Co	59	72	He	0.022	8.751	2.8	526.68	1000	
Ni	60	72	He	0.165	64.390	2.2	1114.50	2000	
Cu	63	45	He	4.302	1680.357	0.9	38625.17	1000	
Zn	66	72	He	4.194	1638.129	1.8	6642.69	20000	
As	75	72	He	0.007	2.642	6.9	284.33	1000	
Se	78	72	He	-0.128	-50.068	4.7	91.52	50	
Sn	120	115	He	-0.031	-11.953	2.8	933.37	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6542789.49	6132749.07333333	106.69	
Ge	72	He	212981.77	194706.726666667	109.39	
In	115	He	2207414.51	2072569.52666667	106.51	
Lu	175	He	5125325.76	4837163.67666667	105.96	
Rh	103	He	5470340.48	5075027.71333333	107.79	
Sc	45	He	229638.52	209719.873333333	109.5	
Tb	159	He	7697348.01	7217928.22666667	106.64	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1064993.91	976725.24	109.04	
Bi	209	No Gas	10395423.39	9415604.23333333	110.41	
Ge	72	No Gas	1777380.41	1639549.58666667	108.41	
In	115	No Gas	12349951.82	10997055.3166667	112.3	
Lu	175	No Gas	15559971.85	13769018.1266667	113.01	
Rh	103	No Gas	11773868.98	10512158.19333333	112	
Sc	45	No Gas	6520821.96	5845931.02	111.54	
Tb	159	No Gas	16071261.01	14199586.87333333	113.18	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0079-000.5-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>0907</u>	GCAL Sample ID: <u>22307214706</u>
Matrix: <u>Solid</u> % Solids: <u>84.10</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.26</u> g	Lab File ID: <u>2230724A_MS2.b\1280SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1625</u>
Prep Batch: <u>769363</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	18000	ug/kg		118	236	472

Sample Report

Sample Name	22307214706	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1280SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 4:25:10 PM	Total Dilution	396.8254
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.807	320.195	0.8	84093.36	500	
Be	9	6	No Gas	0.078	30.825	6.9	510.01	1000	
B	11	6	No Gas	1.935	767.776	1.1	8402.59	500	
Sr	88	72	No Gas	130.125	51636.999	1.5	9358142.57	1000	
Zr	90	72	No Gas	1.335	529.959	1.4	61292.62	100	
Mo	95	115	No Gas	-0.007	-2.794	3.2	2699.17	1000	
Ag	107	115	No Gas	0.03	11.887	5.2	1134.50	100	
Cd	111	115	No Gas	0.07	27.762	9.8	1146.73	1000	
Sb	121	115	No Gas	0.076	30.224	5.0	6174.76	1000	
Ba	137	115	No Gas	13.384	5311.158	0.8	165930.60	1000	
Tl	205	209	No Gas	-0.116	-45.995	4.1	2773.72	1000	
Pb	208	209	No Gas	5.463	2167.900	0.8	507070.75	1000	
Na	23	45	He	132.558	52602.226	1.3	121920.27	100000	
Mg	24	45	He	324.262	128675.260	2.8	93567.64	100000	
Al	27	45	He	4007.811	1590401.195	2.3	361210.66	20000	
Si	29	45	He	-17921.165	-7111573.343	6.6	32362.18	10000	
K	39	45	He	56.381	22373.420	0.5	71046.26	100000	
Ca	44	45	He	22640.705	8984406.835	1.7	379855.15	500000	
Ti	47	45	He	21.371	8480.561	4.1	3123.09	1000	
V	51	72	He	4.298	1705.382	3.0	23744.76	1000	
Cr	52	72	He	14.826	5883.207	1.9	102214.52	1000	
Mn	55	72	He	20.007	7939.396	1.1	62038.53	5000	
Fe	57	72	He	1403.928	557114.327	2.0	180672.68	100000	
Co	59	72	He	0.263	104.370	3.3	3315.97	1000	
Ni	60	72	He	0.945	375.036	1.1	3563.81	2000	
Cu	63	45	He	49.829	19773.291	1.9	440415.88	1000	
Zn	66	72	He	17.521	6952.948	1.8	24733.19	20000	
As	75	72	He	38.237	15173.395	2.1	55201.35	1000	
Se	78	72	He	0.187	74.138	3.6	116.42	50	
Sn	120	115	He	-0.012	-4.817	10.7	1074.50	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6505851.99	6132749.07333333	106.08	
Ge	72	He	212696.19	194706.726666667	109.24	
In	115	He	2198403.12	2072569.52666667	106.07	
Lu	175	He	5165453.88	4837163.67666667	106.79	
Rh	103	He	5381570.20	5075027.71333333	106.04	
Sc	45	He	230423.12	209719.873333333	109.87	
Tb	159	He	7731414.47	7217928.22666667	107.11	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1047625.10	976725.24	107.26	
Bi	209	No Gas	10304423.80	9415604.23333333	109.44	
Ge	72	No Gas	1773246.18	1639549.58666667	108.15	
In	115	No Gas	12263544.38	10997055.3166667	111.52	
Lu	175	No Gas	15558707.27	13769018.1266667	113	
Rh	103	No Gas	11635741.20	10512158.1933333	110.69	
Sc	45	No Gas	6610230.30	5845931.02	113.07	
Tb	159	No Gas	15920879.76	14199586.8733333	112.12	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0079-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>0908</u>	GCAL Sample ID: <u>22307214707</u>
Matrix: <u>Solid</u> % Solids: <u>76.99</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.27</u> g	Lab File ID: <u>2230724A_MS2.b\1281SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1628</u>
Prep Batch: <u>769363</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	3400	ug/kg		128	256	511

Sample Report

Sample Name	22307214707	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1281SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 4:28:44 PM	Total Dilution	393.7008
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	-0.134	-52.628	0.5	78972.62	500	
Be	9	6	No Gas	-0.027	-10.704	15.1	188.67	1000	
B	11	6	No Gas	0.635	249.814	5.8	6021.42	500	
Sr	88	72	No Gas	10.378	4086.019	1.7	749038.92	1000	
Zr	90	72	No Gas	0.362	142.402	55.4	17837.97	100	
Mo	95	115	No Gas	-0.128	-50.271	5.8	1097.83	1000	
Ag	107	115	No Gas	0.008	3.000	8.5	346.68	100	
Cd	111	115	No Gas	-0.023	-9.199	6.4	421.12	1000	
Sb	121	115	No Gas	0.001	0.353	3.4	3577.16	1000	
Ba	137	115	No Gas	1.96	771.820	1.8	24679.70	1000	
Tl	205	209	No Gas	-0.138	-54.191	10.9	1326.78	1000	
Pb	208	209	No Gas	0.767	301.971	0.9	75709.59	1000	
Na	23	45	He	12.159	4786.940	1.8	41838.74	100000	
Mg	24	45	He	29.041	11433.392	5.6	9473.30	100000	
Al	27	45	He	521.431	205287.758	1.4	47173.67	20000	
Si	29	45	He	-18523.763	-7292820.030	7.3	30575.20	10000	
K	39	45	He	7.639	3007.601	2.4	52469.64	100000	
Ca	44	45	He	1502.273	591446.127	2.9	26375.38	500000	
Ti	47	45	He	16.156	6360.626	11.0	2362.31	1000	
V	51	72	He	0.305	120.039	4.1	2307.99	1000	
Cr	52	72	He	1.508	593.660	1.9	11662.48	1000	
Mn	55	72	He	2.012	791.937	3.6	6528.19	5000	
Fe	57	72	He	72.047	28364.973	2.7	9533.62	100000	
Co	59	72	He	0.018	7.047	15.1	475.57	1000	
Ni	60	72	He	0.067	26.335	10.5	807.81	2000	
Cu	63	45	He	4.618	1817.920	2.5	41578.83	1000	
Zn	66	72	He	2.406	947.324	2.8	4223.99	20000	
As	75	72	He	6.642	2615.134	1.5	9857.01	1000	
Se	78	72	He	-0.138	-54.330	4.8	90.98	50	
Sn	120	115	He	-0.055	-21.597	7.5	743.36	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6553781.78	6132749.07333333	106.87	
Ge	72	He	213571.55	194706.726666667	109.69	
In	115	He	2214084.62	2072569.52666667	106.83	
Lu	175	He	5135358.88	4837163.67666667	106.16	
Rh	103	He	5498181.73	5075027.71333333	108.34	
Sc	45	He	230562.52	209719.873333333	109.94	
Tb	159	He	7690751.35	7217928.22666667	106.55	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1089651.38	976725.24	111.56	
Bi	209	No Gas	10527604.42	9415604.23333333	111.81	
Ge	72	No Gas	1775526.60	1639549.58666667	108.29	
In	115	No Gas	12329601.61	10997055.3166667	112.12	
Lu	175	No Gas	15601160.19	13769018.1266667	113.31	
Rh	103	No Gas	11879815.64	10512158.1933333	113.01	
Sc	45	No Gas	6475963.91	5845931.02	110.78	
Tb	159	No Gas	16079011.01	14199586.8733333	113.24	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0067-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1043</u>	GCAL Sample ID: <u>22307214708</u>
Matrix: <u>Solid</u> % Solids: <u>71.91</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.28</u> g	Lab File ID: <u>2230724A_MS2.b\1282SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1632</u>
Prep Batch: <u>769363</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

ANALYTE	RESULT	UNITS	Q	DL	LOD	LOQ
Arsenic	723	ug/kg		136	272	543

Sample Report

Sample Name	22307214708	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1282SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 4:32:20 PM	Total Dilution	390.6250
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	4.434	1731.903	1.1	116291.15	500	
Be	9	6	No Gas	0.32	125.144	3.4	1278.06	1000	
B	11	6	No Gas	4.712	1840.437	2.7	14070.33	500	
Sr	88	72	No Gas	278.058	108616.539	0.8	20075479.70	1000	
Zr	90	72	No Gas	1.75	683.690	0.9	80157.15	100	
Mo	95	115	No Gas	-0.078	-30.621	6.2	1766.80	1000	
Ag	107	115	No Gas	0.246	96.285	2.3	8879.52	100	
Cd	111	115	No Gas	0.699	273.087	4.3	6114.72	1000	
Sb	121	115	No Gas	0.052	20.450	2.5	5401.09	1000	
Ba	137	115	No Gas	31.911	12465.295	1.7	399207.19	1000	
Tl	205	209	No Gas	-0.109	-42.757	10.5	3210.51	1000	
Pb	208	209	No Gas	13.252	5176.416	1.4	1223718.11	1000	
Na	23	45	He	170.354	66544.678	1.4	148254.81	100000	
Mg	24	45	He	1318.981	515226.968	1.0	379918.63	100000	
Al	27	45	He	6593.473	2575575.377	1.9	598919.42	20000	
Si	29	45	He	-17718.668	-6921354.792	6.9	33232.07	10000	
K	39	45	He	178.495	69724.430	2.6	118707.47	100000	
Ca	44	45	He	123352.412	48184535.983	1.8	2080835.02	500000	
Ti	47	45	He	13.96	5453.153	2.3	2059.17	1000	
V	51	72	He	13.589	5308.286	0.8	73171.78	1000	
Cr	52	72	He	24.744	9665.799	1.9	168633.64	1000	
Mn	55	72	He	160.43	62667.835	1.5	492362.41	5000	
Fe	57	72	He	4291.004	1676173.450	1.6	548268.51	100000	
Co	59	72	He	0.591	230.719	5.3	7068.42	1000	
Ni	60	72	He	2.691	1051.114	2.0	8996.15	2000	
Cu	63	45	He	117.846	46033.561	1.8	1048904.92	1000	
Zn	66	72	He	92.753	36231.640	1.5	126101.47	20000	
As	75	72	He	1.33	519.608	5.9	2172.50	1000	
Se	78	72	He	-0.551	-215.412	5.1	57.20	50	
Sn	120	115	He	0.091	35.401	8.2	1886.81	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6372996.36	6132749.07333333	103.92	
Ge	72	He	211361.64	194706.726666667	108.55	
In	115	He	2191539.79	2072569.52666667	105.74	
Lu	175	He	5121145.86	4837163.67666667	105.87	
Rh	103	He	5291029.65	5075027.71333333	104.26	
Sc	45	He	232304.33	209719.873333333	110.77	
Tb	159	He	7703498.42	7217928.22666667	106.73	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1054530.21	976725.24	107.97	
Bi	209	No Gas	10292792.34	9415604.23333333	109.32	
Ge	72	No Gas	1780635.21	1639549.58666667	108.61	
In	115	No Gas	12386652.65	10997055.31666667	112.64	
Lu	175	No Gas	15683558.52	13769018.12666667	113.9	
Rh	103	No Gas	11452841.77	10512158.19333333	108.95	
Sc	45	No Gas	6672146.40	5845931.02	114.13	
Tb	159	No Gas	16072746.01	14199586.87333333	113.19	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0066-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1038</u>	GCAL Sample ID: <u>22307214709</u>
Matrix: <u>Solid</u> % Solids: <u>83.26</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.34</u> g	Lab File ID: <u>2230724A_MS2.b\1283SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1635</u>
Prep Batch: <u>769363</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	224	ug/kg	U	112	224	448

Sample Report

Sample Name	22307214709	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1283SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 4:35:54 PM	Total Dilution	373.1343
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.127	47.278	1.6	81482.84	500	
Be	9	6	No Gas	0.002	0.625	2.9	283.33	1000	
B	11	6	No Gas	1.396	520.836	3.3	7628.83	500	
Sr	88	72	No Gas	32.059	11962.482	0.4	2372766.27	1000	
Zr	90	72	No Gas	0.416	155.111	1.0	20755.06	100	
Mo	95	115	No Gas	-0.129	-48.173	4.5	1111.17	1000	
Ag	107	115	No Gas	0.041	15.113	5.0	1561.22	100	
Cd	111	115	No Gas	0.234	87.251	4.4	2510.25	1000	
Sb	121	115	No Gas	0.018	6.767	1.4	4305.14	1000	
Ba	137	115	No Gas	7.698	2872.281	1.8	98949.89	1000	
Tl	205	209	No Gas	-0.136	-50.737	9.3	1466.81	1000	
Pb	208	209	No Gas	6.36	2373.106	0.9	612691.61	1000	
Na	23	45	He	22.639	8447.514	1.4	50191.24	100000	
Mg	24	45	He	152.288	56823.869	0.8	45857.31	100000	
Al	27	45	He	691.347	257965.294	1.6	64257.50	20000	
Si	29	45	He	-19193.102	-7161605.332	7.2	29356.07	10000	
K	39	45	He	11.027	4114.688	3.7	55290.81	100000	
Ca	44	45	He	12283.419	4583365.239	1.5	212625.67	500000	
Ti	47	45	He	12.639	4715.918	1.3	1904.80	1000	
V	51	72	He	1.031	384.806	3.0	6284.73	1000	
Cr	52	72	He	2.375	886.297	2.1	17755.20	1000	
Mn	55	72	He	18.507	6905.545	1.0	58189.68	5000	
Fe	57	72	He	451.009	168287.076	1.7	58995.32	100000	
Co	59	72	He	0.087	32.454	4.3	1291.18	1000	
Ni	60	72	He	0.613	228.790	1.7	2555.81	2000	
Cu	63	45	He	13.822	5157.315	1.5	126290.96	1000	
Zn	66	72	He	13.43	5011.315	0.7	19436.33	20000	
As	75	72	He	0.107	39.750	3.6	433.01	1000	
Se	78	72	He	-0.106	-39.560	3.4	94.39	50	
Sn	120	115	He	0	0.122	4.1	1202.29	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6635125.73	6132749.07333333	108.19	
Ge	72	He	215592.84	194706.726666667	110.73	
In	115	He	2248406.03	2072569.52666667	108.48	
Lu	175	He	5231465.96	4837163.67666667	108.15	
Rh	103	He	5531797.28	5075027.71333333	109	
Sc	45	He	237074.95	209719.873333333	113.04	
Tb	159	He	7836290.51	7217928.22666667	108.57	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1091681.16	976725.24	111.77	
Bi	209	No Gas	10705278.17	9415604.23333333	113.7	
Ge	72	No Gas	1823883.54	1639549.58666667	111.24	
In	115	No Gas	12698357.52	10997055.3166667	115.47	
Lu	175	No Gas	16071118.51	13769018.1266667	116.72	
Rh	103	No Gas	11986296.19	10512158.19333333	114.02	
Sc	45	No Gas	6778541.26	5845931.02	115.95	
Tb	159	No Gas	16526574.34	14199586.87333333	116.39	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0069-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>0918</u>	GCAL Sample ID: <u>22307214710</u>
Matrix: <u>Solid</u> % Solids: <u>90.25</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.31</u> g	Lab File ID: <u>2230724A_MS2.b\1284SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1639</u>
Prep Batch: <u>769363</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	663	ug/kg		106	211	423

Sample Report

Sample Name	22307214710	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1284SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 4:39:29 PM	Total Dilution	381.6794
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.199	75.967	1.7	80014.94	500	
Be	9	6	No Gas	0.002	0.705	6.1	276.67	1000	
B	11	6	No Gas	1.162	443.348	1.3	6955.19	500	
Sr	88	72	No Gas	29.483	11253.198	0.5	2131728.09	1000	
Zr	90	72	No Gas	0.427	162.891	5.0	20774.33	100	
Mo	95	115	No Gas	-0.091	-34.608	3.5	1613.44	1000	
Ag	107	115	No Gas	0.046	17.428	1.6	1720.12	100	
Cd	111	115	No Gas	0.081	31.105	9.8	1257.85	1000	
Sb	121	115	No Gas	0.111	42.356	1.6	7518.74	1000	
Ba	137	115	No Gas	6.936	2647.318	1.2	87669.62	1000	
Tl	205	209	No Gas	-0.109	-41.479	10.6	3323.87	1000	
Pb	208	209	No Gas	6.147	2346.140	0.9	580534.77	1000	
Na	23	45	He	11.819	4511.113	1.5	42032.56	100000	
Mg	24	45	He	179.098	68358.038	1.3	52763.41	100000	
Al	27	45	He	452.637	172762.161	1.6	41385.26	20000	
Si	29	45	He	-19263.382	-7352435.914	7.2	28619.27	10000	
K	39	45	He	46.784	17856.521	2.3	68115.88	100000	
Ca	44	45	He	4368.428	1667338.869	1.5	75078.89	500000	
Ti	47	45	He	20.117	7678.395	3.7	2971.31	1000	
V	51	72	He	0.729	278.207	1.0	4595.20	1000	
Cr	52	72	He	3.212	1225.869	1.8	23316.27	1000	
Mn	55	72	He	5.752	2195.273	2.2	18131.28	5000	
Fe	57	72	He	397.188	151598.561	1.9	51527.61	100000	
Co	59	72	He	0.181	69.068	2.9	2375.78	1000	
Ni	60	72	He	0.853	325.562	5.2	3292.63	2000	
Cu	63	45	He	9.762	3726.100	1.3	87858.70	1000	
Zn	66	72	He	94.263	35978.238	1.4	129559.90	20000	
As	75	72	He	1.567	598.067	2.3	2537.23	1000	
Se	78	72	He	-0.068	-25.890	2.2	96.64	50	
Sn	120	115	He	0.063	24.202	3.4	1686.79	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6586821.36	6132749.07333333	107.4	
Ge	72	He	213703.67	194706.726666667	109.76	
In	115	He	2212077.42	2072569.52666667	106.73	
Lu	175	He	5159700.34	4837163.67666667	106.67	
Rh	103	He	5513044.36	5075027.71333333	108.63	
Sc	45	He	232873.24	209719.873333333	111.04	
Tb	159	He	7742059.88	7217928.22666667	107.26	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1063989.41	976725.24	108.93	
Bi	209	No Gas	10493618.17	9415604.23333333	111.45	
Ge	72	No Gas	1781687.43	1639549.58666667	108.67	
In	115	No Gas	12482759.14	10997055.3166667	113.51	
Lu	175	No Gas	15614398.52	13769018.1266667	113.4	
Rh	103	No Gas	12010822.58	10512158.1933333	114.26	
Sc	45	No Gas	6652181.12	5845931.02	113.79	
Tb	159	No Gas	16048822.68	14199586.8733333	113.02	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0070-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>0923</u>	GCAL Sample ID: <u>22307214711</u>
Matrix: <u>Solid</u> % Solids: <u>76.02</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.25</u> g	Lab File ID: <u>2230724A_MS2.b\1287SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1650</u>
Prep Batch: <u>769363</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	4650	ug/kg		132	263	526

Sample Report

Sample Name	22307214711	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1287SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 4:50:12 PM	Total Dilution	400.0000
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.687	274.707	2.2	84465.07	500	
Be	9	6	No Gas	0.045	18.155	5.5	416.01	1000	
B	11	6	No Gas	0.885	353.933	4.5	6398.20	500	
Sr	88	72	No Gas	129.023	51609.001	0.9	9287407.78	1000	
Zr	90	72	No Gas	0.882	352.651	3.8	41052.56	100	
Mo	95	115	No Gas	-0.123	-49.253	5.1	1168.95	1000	
Ag	107	115	No Gas	0.015	5.874	2.9	603.36	100	
Cd	111	115	No Gas	0.002	0.698	7.9	623.35	1000	
Sb	121	115	No Gas	0.025	9.957	2.6	4455.20	1000	
Ba	137	115	No Gas	4.983	1993.104	1.0	62836.08	1000	
Tl	205	209	No Gas	-0.131	-52.462	10.0	1746.85	1000	
Pb	208	209	No Gas	2.917	1166.663	1.0	273448.46	1000	
Na	23	45	He	222.373	88949.332	1.0	181667.26	100000	
Mg	24	45	He	137.969	55187.468	0.6	40485.39	100000	
Al	27	45	He	1022.375	408949.820	2.4	92272.09	20000	
Si	29	45	He	-18600.922	-7440368.693	7.7	30308.61	10000	
K	39	45	He	9.39	3756.025	1.4	53095.29	100000	
Ca	44	45	He	35889.488	14355795.292	1.8	601395.28	500000	
Ti	47	45	He	12.101	4840.536	18.4	1775.34	1000	
V	51	72	He	2.748	1099.026	3.1	15351.43	1000	
Cr	52	72	He	3.174	1269.403	1.7	22847.77	1000	
Mn	55	72	He	11.848	4739.079	1.7	36703.32	5000	
Fe	57	72	He	842.824	337129.556	2.6	108094.25	100000	
Co	59	72	He	0.169	67.411	3.3	2210.19	1000	
Ni	60	72	He	0.434	173.655	3.8	1950.15	2000	
Cu	63	45	He	4.01	1604.057	1.8	36185.70	1000	
Zn	66	72	He	5.095	2037.976	4.0	7822.17	20000	
As	75	72	He	8.843	3537.136	2.9	12922.39	1000	
Se	78	72	He	-0.178	-71.015	1.0	87.03	50	
Sn	120	115	He	-0.064	-25.546	7.3	668.91	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6429790.94	6132749.07333333	104.84	
Ge	72	He	211766.62	194706.726666667	108.76	
In	115	He	2211512.47	2072569.52666667	106.7	
Lu	175	He	5123156.07	4837163.67666667	105.91	
Rh	103	He	5356189.37	5075027.71333333	105.54	
Sc	45	He	230401.35	209719.873333333	109.86	
Tb	159	He	7679266.34	7217928.22666667	106.39	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1065381.78	976725.24	109.08	
Bi	209	No Gas	10347889.85	9415604.23333333	109.9	
Ge	72	No Gas	1775001.25	1639549.58666667	108.26	
In	115	No Gas	12438037.43	10997055.31666667	113.1	
Lu	175	No Gas	15517179.77	13769018.12666667	112.7	
Rh	103	No Gas	11626258.98	10512158.19333333	110.6	
Sc	45	No Gas	6573137.80	5845931.02	112.44	
Tb	159	No Gas	15998172.68	14199586.87333333	112.67	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0080-000.5-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>0930</u>	GCAL Sample ID: <u>22307214712</u>
Matrix: <u>Solid</u> % Solids: <u>73.20</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.27</u> g	Lab File ID: <u>2230724A_MS2.b\1288SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1653</u>
Prep Batch: <u>769363</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	269	ug/kg	U	134	269	538

Sample Report

Sample Name	22307214712	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1288SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 4:53:47 PM	Total Dilution	393.7008
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	-0.039	-15.498	1.9	78854.94	500	
Be	9	6	No Gas	0.017	6.848	3.4	330.01	1000	
B	11	6	No Gas	0.701	276.095	3.9	6088.08	500	
Sr	88	72	No Gas	49.266	19396.096	0.3	3560487.97	1000	
Zr	90	72	No Gas	0.812	319.686	3.4	38070.55	100	
Mo	95	115	No Gas	-0.074	-28.950	5.7	1829.03	1000	
Ag	107	115	No Gas	0.009	3.649	7.0	406.68	100	
Cd	111	115	No Gas	-0.005	-1.860	5.4	568.91	1000	
Sb	121	115	No Gas	0.013	5.222	1.1	4021.73	1000	
Ba	137	115	No Gas	9.777	3849.363	0.7	122313.52	1000	
Tl	205	209	No Gas	-0.136	-53.480	14.0	1446.80	1000	
Pb	208	209	No Gas	4.31	1696.843	1.4	408010.18	1000	
Na	23	45	He	2.489	979.808	1.1	35606.08	100000	
Mg	24	45	He	118.603	46694.253	1.3	35202.01	100000	
Al	27	45	He	3084.117	1214219.446	0.8	279758.10	20000	
Si	29	45	He	-19460.39	-7661571.040	7.2	27908.62	10000	
K	39	45	He	11.189	4405.031	3.1	54142.81	100000	
Ca	44	45	He	2046.51	805712.439	1.4	35684.66	500000	
Ti	47	45	He	35.097	13817.746	2.7	5153.27	1000	
V	51	72	He	1.194	470.187	2.0	7056.20	1000	
Cr	52	72	He	4.217	1660.152	1.3	29965.99	1000	
Mn	55	72	He	6.004	2363.828	2.4	18776.50	5000	
Fe	57	72	He	459.185	180781.335	1.2	59093.23	100000	
Co	59	72	He	0.11	43.314	4.8	1536.76	1000	
Ni	60	72	He	0.407	160.158	3.7	1869.03	2000	
Cu	63	45	He	7.7	3031.516	2.0	69188.61	1000	
Zn	66	72	He	8.663	3410.585	2.5	12672.25	20000	
As	75	72	He	0.247	97.263	1.3	627.35	1000	
Se	78	72	He	0.099	38.892	2.6	109.18	50	
Sn	120	115	He	-0.046	-17.969	11.1	812.26	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6512444.70	6132749.07333333	106.19	
Ge	72	He	212148.63	194706.726666667	108.96	
In	115	He	2201760.73	2072569.52666667	106.23	
Lu	175	He	5134123.26	4837163.67666667	106.14	
Rh	103	He	5483876.45	5075027.71333333	108.06	
Sc	45	He	231896.41	209719.873333333	110.57	
Tb	159	He	7706060.09	7217928.22666667	106.76	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1076364.70	976725.24	110.2	
Bi	209	No Gas	10490951.30	9415604.23333333	111.42	
Ge	72	No Gas	1781471.32	1639549.58666667	108.66	
In	115	No Gas	12366419.49	10997055.3166667	112.45	
Lu	175	No Gas	15685386.02	13769018.1266667	113.92	
Rh	103	No Gas	11945617.58	10512158.19333333	113.64	
Sc	45	No Gas	6575000.43	5845931.02	112.47	
Tb	159	No Gas	16123398.09	14199586.87333333	113.55	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0080-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>0931</u>	GCAL Sample ID: <u>22307214713</u>
Matrix: <u>Solid</u> % Solids: <u>85.41</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.31</u> g	Lab File ID: <u>2230724A_MS2.b\1289SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1657</u>
Prep Batch: <u>769363</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	223	ug/kg	U	112	223	447

Sample Report

Sample Name	22307214713	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1289SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 4:57:22 PM	Total Dilution	381.6794
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	-0.096	-36.622	1.4	78268.86	500	
Be	9	6	No Gas	0.024	9.311	8.6	352.01	1000	
B	11	6	No Gas	0.696	265.822	2.6	6071.52	500	
Sr	88	72	No Gas	37.764	14413.580	1.6	2724376.73	1000	
Zr	90	72	No Gas	2.978	1136.570	27.8	135164.53	100	
Mo	95	115	No Gas	-0.044	-16.758	6.0	2226.89	1000	
Ag	107	115	No Gas	0.009	3.337	3.3	387.79	100	
Cd	111	115	No Gas	-0.006	-2.397	9.6	556.69	1000	
Sb	121	115	No Gas	0.004	1.569	4.4	3700.53	1000	
Ba	137	115	No Gas	8.206	3132.243	1.1	102683.97	1000	
Tl	205	209	No Gas	-0.137	-52.198	5.5	1373.46	1000	
Pb	208	209	No Gas	4.389	1675.169	1.3	412217.59	1000	
Na	23	45	He	3.029	1156.079	1.2	35723.19	100000	
Mg	24	45	He	45.594	17402.396	3.6	14177.16	100000	
Al	27	45	He	2782.46	1062007.506	0.6	250681.83	20000	
Si	29	45	He	-19011.989	-7256484.173	9.0	29057.60	10000	
K	39	45	He	9.245	3528.494	2.5	53028.29	100000	
Ca	44	45	He	1905.788	727399.844	0.1	33083.72	500000	
Ti	47	45	He	126.807	48399.775	2.5	18460.53	1000	
V	51	72	He	2.308	880.794	2.0	13049.59	1000	
Cr	52	72	He	3.902	1489.452	0.6	27884.20	1000	
Mn	55	72	He	3.21	1225.282	3.9	10196.98	5000	
Fe	57	72	He	150.678	57510.579	8.0	19609.14	100000	
Co	59	72	He	0.052	19.817	4.6	867.81	1000	
Ni	60	72	He	0.352	134.173	3.2	1697.90	2000	
Cu	63	45	He	2.65	1011.604	1.9	24184.49	1000	
Zn	66	72	He	4.524	1726.782	1.3	7078.46	20000	
As	75	72	He	0.221	84.173	5.3	591.01	1000	
Se	78	72	He	-0.062	-23.760	6.9	96.64	50	
Sn	120	115	He	-0.019	-7.308	13.1	1016.72	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6500329.07	6132749.07333333	105.99	
Ge	72	He	212609.67	194706.726666667	109.19	
In	115	He	2186263.05	2072569.52666667	105.49	
Lu	175	He	5118910.24	4837163.67666667	105.82	
Rh	103	He	5456235.20	5075027.71333333	107.51	
Sc	45	He	230322.68	209719.873333333	109.82	
Tb	159	He	7698384.68	7217928.22666667	106.66	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1075277.01	976725.24	110.09	
Bi	209	No Gas	10410926.30	9415604.23333333	110.57	
Ge	72	No Gas	1777980.76	1639549.58666667	108.44	
In	115	No Gas	12363424.56	10997055.3166667	112.42	
Lu	175	No Gas	15669302.27	13769018.1266667	113.8	
Rh	103	No Gas	11913336.19	10512158.1933333	113.33	
Sc	45	No Gas	6550845.71	5845931.02	112.06	
Tb	159	No Gas	16086821.43	14199586.8733333	113.29	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0071-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>0944</u>	GCAL Sample ID: <u>22307214714</u>
Matrix: <u>Solid</u> % Solids: <u>75.12</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.33</u> g	Lab File ID: <u>2230724A_MS2.b\1290SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1700</u>
Prep Batch: <u>769363</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	562	ug/kg		125	250	500

Sample Report

Sample Name	22307214714	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1290SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 5:00:56 PM	Total Dilution	375.9398
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	1.544	580.535	0.5	92052.68	500	
Be	9	6	No Gas	0.176	66.315	5.4	834.03	1000	
B	11	6	No Gas	1.716	644.934	4.6	8102.43	500	
Sr	88	72	No Gas	201.284	75670.753	0.0	14473996.03	1000	
Zr	90	72	No Gas	2.322	873.044	0.7	105409.95	100	
Mo	95	115	No Gas	0.133	49.817	4.4	4577.45	1000	
Ag	107	115	No Gas	0.016	5.975	6.0	640.02	100	
Cd	111	115	No Gas	0.072	26.983	1.9	1165.62	1000	
Sb	121	115	No Gas	0.029	11.060	0.7	4568.58	1000	
Ba	137	115	No Gas	10.725	4031.833	0.5	133563.00	1000	
Tl	205	209	No Gas	-0.118	-44.258	4.9	2660.37	1000	
Pb	208	209	No Gas	5.014	1885.046	1.6	467571.75	1000	
Na	23	45	He	365.301	137331.383	1.9	277474.94	100000	
Mg	24	45	He	232.349	87349.135	1.7	67538.80	100000	
Al	27	45	He	2268.99	853003.890	2.1	205055.79	20000	
Si	29	45	He	-18658.168	-7014348.889	6.0	30216.39	10000	
K	39	45	He	46.89	17627.790	2.9	67603.74	100000	
Ca	44	45	He	48038.339	18059525.960	1.7	806516.21	500000	
Ti	47	45	He	14.264	5362.355	2.6	2092.17	1000	
V	51	72	He	4.635	1742.366	1.4	25158.16	1000	
Cr	52	72	He	5.329	2003.310	1.2	37030.67	1000	
Mn	55	72	He	23.628	8882.550	1.7	72098.48	5000	
Fe	57	72	He	1823.549	685544.920	1.2	231001.77	100000	
Co	59	72	He	0.454	170.692	3.8	5446.62	1000	
Ni	60	72	He	1.403	527.454	4.6	4929.77	2000	
Cu	63	45	He	2.715	1020.755	1.7	24824.39	1000	
Zn	66	72	He	222.704	83723.184	2.1	298756.00	20000	
As	75	72	He	1.123	422.150	1.7	1857.79	1000	
Se	78	72	He	-0.493	-185.214	4.5	61.28	50	
Sn	120	115	He	-0.031	-11.555	6.2	917.82	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6320690.74	6132749.07333333	103.06	
Ge	72	He	209428.30	194706.726666667	107.56	
In	115	He	2172502.35	2072569.52666667	104.82	
Lu	175	He	5025612.01	4837163.67666667	103.9	
Rh	103	He	5284997.70	5075027.71333333	104.14	
Sc	45	He	230965.23	209719.873333333	110.13	
Tb	159	He	7557214.89	7217928.22666667	104.7	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1065778.40	976725.24	109.12	
Bi	209	No Gas	10345779.43	9415604.23333333	109.88	
Ge	72	No Gas	1773253.75	1639549.58666667	108.15	
In	115	No Gas	12313523.37	10997055.3166667	111.97	
Lu	175	No Gas	15626003.10	13769018.1266667	113.49	
Rh	103	No Gas	11496548.99	10512158.1933333	109.36	
Sc	45	No Gas	6515395.71	5845931.02	111.45	
Tb	159	No Gas	16080829.76	14199586.8733333	113.25	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0074-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>0959</u>	GCAL Sample ID: <u>22307214715</u>
Matrix: <u>Solid</u> % Solids: <u>87.41</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.25</u> g	Lab File ID: <u>2230724A_MS2.b\1291SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1704</u>
Prep Batch: <u>769363</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	1820	ug/kg		114	229	458

Sample Report

Sample Name	22307214715	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1291SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 5:04:31 PM	Total Dilution	400.0000
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.655	261.805	0.9	84052.88	500	
Be	9	6	No Gas	0.039	15.452	5.0	394.01	1000	
B	11	6	No Gas	1.191	476.351	0.8	7015.19	500	
Sr	88	72	No Gas	42.799	17119.456	0.9	3081216.10	1000	
Zr	90	72	No Gas	0.582	232.797	2.3	27635.66	100	
Mo	95	115	No Gas	-0.132	-52.955	8.7	1035.61	1000	
Ag	107	115	No Gas	0.057	22.765	3.4	2101.29	100	
Cd	111	115	No Gas	0.125	49.969	4.9	1585.66	1000	
Sb	121	115	No Gas	0.019	7.757	1.0	4228.46	1000	
Ba	137	115	No Gas	6.778	2711.274	0.9	84716.17	1000	
Tl	205	209	No Gas	-0.133	-53.001	12.5	1653.50	1000	
Pb	208	209	No Gas	4.604	1841.672	1.0	429316.01	1000	
Na	23	45	He	36.397	14558.935	1.6	57058.96	100000	
Mg	24	45	He	230.083	92033.194	4.0	65737.72	100000	
Al	27	45	He	1387.998	555199.206	1.8	123292.67	20000	
Si	29	45	He	-18973.589	-7589435.428	7.0	28739.50	10000	
K	39	45	He	41.931	16772.509	1.4	64537.07	100000	
Ca	44	45	He	16269.939	6507975.689	2.7	269194.34	500000	
Ti	47	45	He	13.083	5233.120	22.6	1888.80	1000	
V	51	72	He	1.554	621.429	2.5	8903.91	1000	
Cr	52	72	He	5.742	2296.916	1.9	39970.64	1000	
Mn	55	72	He	41.731	16692.341	2.2	127664.15	5000	
Fe	57	72	He	622.855	249141.952	2.3	79394.68	100000	
Co	59	72	He	0.118	47.151	8.4	1615.66	1000	
Ni	60	72	He	0.628	251.037	4.4	2539.14	2000	
Cu	63	45	He	31.771	12708.532	0.9	276783.78	1000	
Zn	66	72	He	21.328	8531.088	3.7	29574.38	20000	
As	75	72	He	3.97	1588.028	3.1	5910.87	1000	
Se	78	72	He	-0.2	-79.959	6.4	84.71	50	
Sn	120	115	He	0.003	1.153	6.5	1186.73	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6373600.32	6132749.07333333	103.93	
Ge	72	He	210303.63	194706.726666667	108.01	
In	115	He	2180279.34	2072569.52666667	105.2	
Lu	175	He	5032714.09	4837163.67666667	104.04	
Rh	103	He	5323062.98	5075027.71333333	104.89	
Sc	45	He	226916.94	209719.873333333	108.2	
Tb	159	He	7585872.81	7217928.22666667	105.1	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1064074.30	976725.24	108.94	
Bi	209	No Gas	10338891.93	9415604.23333333	109.81	
Ge	72	No Gas	1774498.33	1639549.58666667	108.23	
In	115	No Gas	12342435.95	10997055.3166667	112.23	
Lu	175	No Gas	15582219.77	13769018.1266667	113.17	
Rh	103	No Gas	11605060.65	10512158.19333333	110.4	
Sc	45	No Gas	6511148.91	5845931.02	111.38	
Tb	159	No Gas	15975235.18	14199586.87333333	112.5	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0081-000.5-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1007</u>	GCAL Sample ID: <u>22307214716</u>
Matrix: <u>Solid</u> % Solids: <u>87.60</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.34</u> g	Lab File ID: <u>2230724A_MS2.b\1292SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1708</u>
Prep Batch: <u>769363</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	2290	ug/kg		106	213	426

Sample Report

Sample Name	22307214716	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1292SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 5:08:06 PM	Total Dilution	373.1343
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	4.099	1529.557	2.2	111978.14	500	
Be	9	6	No Gas	0.318	118.581	3.4	1254.72	1000	
B	11	6	No Gas	2.745	1024.165	3.2	9966.90	500	
Sr	88	72	No Gas	382.412	142691.115	0.7	27281062.09	1000	
Zr	90	72	No Gas	2.182	814.169	4.5	98382.41	100	
Mo	95	115	No Gas	-0.028	-10.514	4.7	2416.90	1000	
Ag	107	115	No Gas	0.072	26.806	3.9	2614.72	100	
Cd	111	115	No Gas	0.207	77.233	7.0	2214.65	1000	
Sb	121	115	No Gas	0.056	20.751	12.5	5458.50	1000	
Ba	137	115	No Gas	15.941	5948.241	1.5	197502.97	1000	
Tl	205	209	No Gas	-0.102	-38.050	6.2	3707.32	1000	
Pb	208	209	No Gas	6.392	2385.106	1.2	591084.96	1000	
Na	23	45	He	577.988	215667.114	2.5	413847.57	100000	
Mg	24	45	He	751.619	280454.725	1.3	212949.04	100000	
Al	27	45	He	4436.866	1655546.980	2.4	395535.60	20000	
Si	29	45	He	-17378.114	-6484371.063	6.5	33630.95	10000	
K	39	45	He	155.931	58183.350	1.2	107919.24	100000	
Ca	44	45	He	72443.278	27031073.777	2.3	1199675.17	500000	
Ti	47	45	He	32.475	12117.466	6.7	4686.30	1000	
V	51	72	He	6.315	2356.249	2.3	33795.33	1000	
Cr	52	72	He	17.921	6686.969	1.4	120479.21	1000	
Mn	55	72	He	54.564	20359.539	2.8	164916.02	5000	
Fe	57	72	He	3007.272	1122116.498	2.0	378014.03	100000	
Co	59	72	He	0.585	218.150	2.1	6885.03	1000	
Ni	60	72	He	1.976	737.295	2.8	6652.68	2000	
Cu	63	45	He	43.661	16291.375	1.7	381809.38	1000	
Zn	66	72	He	45.089	16824.190	1.3	60763.22	20000	
As	75	72	He	5.385	2009.272	2.2	7828.78	1000	
Se	78	72	He	-0.98	-365.644	27.0	22.87	50	
Sn	120	115	He	0.051	18.862	5.4	1537.88	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6285792.61	6132749.07333333	102.5	
Ge	72	He	207883.33	194706.726666667	106.77	
In	115	He	2147617.20	2072569.52666667	103.62	
Lu	175	He	5002719.82	4837163.67666667	103.42	
Rh	103	He	5211071.46	5075027.71333333	102.68	
Sc	45	He	227925.24	209719.873333333	108.68	
Tb	159	He	7558336.14	7217928.22666667	104.72	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1041164.99	976725.24	106.6	
Bi	209	No Gas	10275942.97	9415604.23333333	109.14	
Ge	72	No Gas	1759406.18	1639549.58666667	107.31	
In	115	No Gas	12257952.58	10997055.3166667	111.47	
Lu	175	No Gas	15566422.27	13769018.1266667	113.05	
Rh	103	No Gas	11323144.27	10512158.1933333	107.71	
Sc	45	No Gas	6607863.35	5845931.02	113.03	
Tb	159	No Gas	15933151.01	14199586.8733333	112.21	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0081-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1008</u>	GCAL Sample ID: <u>22307214717</u>
Matrix: <u>Solid</u> % Solids: <u>81.82</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.31</u> g	Lab File ID: <u>2230724A_MS2.b\1293SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1711</u>
Prep Batch: <u>769363</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	233	ug/kg	U	117	233	466

Sample Report

Sample Name	22307214717	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1293SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 5:11:41 PM	Total Dilution	381.6794
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.03	11.568	2.5	76255.70	500	
Be	9	6	No Gas	-0.013	-5.059	10.9	222.00	1000	
B	11	6	No Gas	0.541	206.546	3.3	5524.51	500	
Sr	88	72	No Gas	10.292	3928.241	2.4	743323.06	1000	
Zr	90	72	No Gas	0.157	59.856	21.2	8614.67	100	
Mo	95	115	No Gas	-0.153	-58.508	4.5	752.25	1000	
Ag	107	115	No Gas	0.007	2.560	6.6	313.34	100	
Cd	111	115	No Gas	-0.019	-7.392	13.0	451.12	1000	
Sb	121	115	No Gas	-0.012	-4.761	6.9	3099.27	1000	
Ba	137	115	No Gas	1.573	600.352	2.9	19794.16	1000	
Tl	205	209	No Gas	-0.137	-52.421	5.1	1316.78	1000	
Pb	208	209	No Gas	0.39	149.039	0.9	39310.96	1000	
Na	23	45	He	19.717	7525.756	3.8	46847.09	100000	
Mg	24	45	He	36.492	13928.397	2.0	11584.86	100000	
Al	27	45	He	192.012	73286.841	0.4	17471.05	20000	
Si	29	45	He	-19343.527	-7383025.492	7.7	28085.66	10000	
K	39	45	He	7.828	2987.958	2.6	52500.23	100000	
Ca	44	45	He	2340.937	893487.594	1.2	40376.64	500000	
Ti	47	45	He	8.843	3375.058	9.8	1299.42	1000	
V	51	72	He	0.275	104.803	3.8	2121.29	1000	
Cr	52	72	He	3.055	1165.923	0.8	21983.13	1000	
Mn	55	72	He	2.554	974.801	1.3	8117.87	5000	
Fe	57	72	He	111.688	42628.897	1.4	14491.01	100000	
Co	59	72	He	0.022	8.464	14.4	520.02	1000	
Ni	60	72	He	0.048	18.491	7.6	741.14	2000	
Cu	63	45	He	5.574	2127.475	1.3	49982.58	1000	
Zn	66	72	He	5.153	1966.816	1.6	7882.21	20000	
As	75	72	He	0.12	45.897	2.8	444.01	1000	
Se	78	72	He	-0.208	-79.328	11.1	84.51	50	
Sn	120	115	He	-0.052	-20.004	0.7	752.25	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6442600.53	6132749.07333333	105.05	
Ge	72	He	211252.82	194706.726666667	108.5	
In	115	He	2186108.91	2072569.52666667	105.48	
Lu	175	He	5089330.96	4837163.67666667	105.21	
Rh	103	He	5417247.70	5075027.71333333	106.74	
Sc	45	He	230394.24	209719.873333333	109.86	
Tb	159	He	7614821.97	7217928.22666667	105.5	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1032791.32	976725.24	105.74	
Bi	209	No Gas	10281911.31	9415604.23333333	109.2	
Ge	72	No Gas	1776679.17	1639549.58666667	108.36	
In	115	No Gas	12289890.06	10997055.3166667	111.76	
Lu	175	No Gas	15453837.69	13769018.1266667	112.24	
Rh	103	No Gas	11812882.31	10512158.19333333	112.37	
Sc	45	No Gas	6508146.68	5845931.02	111.33	
Tb	159	No Gas	15837006.01	14199586.87333333	111.53	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0082-000.5-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1013</u>	GCAL Sample ID: <u>22307214718</u>
Matrix: <u>Solid</u> % Solids: <u>83.14</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.33</u> g	Lab File ID: <u>2230724A_MS2.b\1294SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1715</u>
Prep Batch: <u>769363</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	397	ug/kg	J	113	226	452

Sample Report

Sample Name	22307214718	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1294SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 5:15:15 PM	Total Dilution	375.9398
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	3.352	1260.079	1.1	104139.23	500	
Be	9	6	No Gas	0.265	99.538	0.7	1075.38	1000	
B	11	6	No Gas	6.55	2462.534	1.3	17333.74	500	
Sr	88	72	No Gas	300.86	113105.114	0.7	21431418.85	1000	
Zr	90	72	No Gas	1.924	723.171	1.9	86775.54	100	
Mo	95	115	No Gas	0.006	2.218	4.8	2851.43	1000	
Ag	107	115	No Gas	0.203	76.497	1.5	7217.45	100	
Cd	111	115	No Gas	0.47	176.505	2.4	4231.80	1000	
Sb	121	115	No Gas	0.109	40.891	1.4	7256.39	1000	
Ba	137	115	No Gas	29.439	11067.148	0.6	361961.27	1000	
Tl	205	209	No Gas	-0.12	-45.091	10.8	2460.32	1000	
Pb	208	209	No Gas	10.996	4133.940	0.7	1000831.33	1000	
Na	23	45	He	281.145	105693.739	0.9	221779.91	100000	
Mg	24	45	He	1318.108	495529.396	2.0	378398.37	100000	
Al	27	45	He	5504.555	2069381.448	1.6	498264.03	20000	
Si	29	45	He	-17852.033	-6711290.789	6.9	32718.94	10000	
K	39	45	He	219.795	82629.766	2.8	134153.32	100000	
Ca	44	45	He	114361.103	42992896.008	2.3	1922621.38	500000	
Ti	47	45	He	21.036	7908.330	4.6	3085.41	1000	
V	51	72	He	6.994	2629.267	1.9	37760.41	1000	
Cr	52	72	He	23.731	8921.612	2.1	160841.14	1000	
Mn	55	72	He	145.794	54809.644	1.3	444835.02	5000	
Fe	57	72	He	2965.731	1114936.504	2.0	376785.53	100000	
Co	59	72	He	0.513	192.849	4.0	6140.22	1000	
Ni	60	72	He	2.355	885.238	1.0	7898.86	2000	
Cu	63	45	He	82.071	30853.720	1.6	728149.72	1000	
Zn	66	72	He	99.891	37552.971	1.3	134936.11	20000	
As	75	72	He	0.878	330.165	4.0	1517.42	1000	
Se	78	72	He	-0.458	-172.061	17.1	64.35	50	
Sn	120	115	He	0.161	60.574	7.9	2411.45	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6274356.37	6132749.07333333	102.31	
Ge	72	He	210113.44	194706.726666667	107.91	
In	115	He	2163843.54	2072569.52666667	104.4	
Lu	175	He	5048272.53	4837163.67666667	104.36	
Rh	103	He	5232228.68	5075027.71333333	103.1	
Sc	45	He	231473.56	209719.873333333	110.37	
Tb	159	He	7576182.39	7217928.22666667	104.96	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1027473.13	976725.24	105.2	
Bi	209	No Gas	10138568.18	9415604.23333333	107.68	
Ge	72	No Gas	1756720.55	1639549.58666667	107.15	
In	115	No Gas	12173550.26	10997055.3166667	110.7	
Lu	175	No Gas	15546521.85	13769018.1266667	112.91	
Rh	103	No Gas	11391948.44	10512158.1933333	108.37	
Sc	45	No Gas	6468381.13	5845931.02	110.65	
Tb	159	No Gas	16009929.76	14199586.8733333	112.75	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0082-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1014</u>	GCAL Sample ID: <u>22307214719</u>
Matrix: <u>Solid</u> % Solids: <u>89.90</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.29</u> g	Lab File ID: <u>2230724A_MS2.b\1295SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1718</u>
Prep Batch: <u>769363</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	216	ug/kg	U	108	216	431

Sample Report

Sample Name	22307214719	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1295SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 5:18:50 PM	Total Dilution	387.5969
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	-0.086	-33.178	2.5	75632.52	500	
Be	9	6	No Gas	-0.029	-11.433	5.2	172.67	1000	
B	11	6	No Gas	0.405	157.101	7.0	5281.09	500	
Sr	88	72	No Gas	1.421	550.725	1.1	104199.56	1000	
Zr	90	72	No Gas	0.045	17.619	3.6	3637.18	100	
Mo	95	115	No Gas	-0.161	-62.547	5.6	646.69	1000	
Ag	107	115	No Gas	0.009	3.480	9.7	395.57	100	
Cd	111	115	No Gas	-0.022	-8.570	10.1	431.12	1000	
Sb	121	115	No Gas	-0.028	-10.881	5.2	2565.82	1000	
Ba	137	115	No Gas	0.818	317.086	0.9	10471.79	1000	
Tl	205	209	No Gas	-0.141	-54.741	19.8	1060.09	1000	
Pb	208	209	No Gas	0.549	212.846	2.5	54174.81	1000	
Na	23	45	He	-2.387	-925.278	5.0	32221.85	100000	
Mg	24	45	He	8.926	3459.835	3.6	3740.57	100000	
Al	27	45	He	64.392	24958.079	3.2	5992.56	20000	
Si	29	45	He	-19493.218	-7555511.032	9.6	27665.62	10000	
K	39	45	He	1.052	407.884	1.5	50021.71	100000	
Ca	44	45	He	602.402	233488.975	1.2	11326.15	500000	
Ti	47	45	He	12.474	4834.815	0.8	1831.12	1000	
V	51	72	He	0.173	67.090	9.5	1583.62	1000	
Cr	52	72	He	0.348	134.919	3.8	3713.84	1000	
Mn	55	72	He	2.414	935.751	0.4	7722.09	5000	
Fe	57	72	He	36.119	13999.432	0.8	4864.32	100000	
Co	59	72	He	0.005	2.082	5.0	327.78	1000	
Ni	60	72	He	0.005	2.077	2.0	610.02	2000	
Cu	63	45	He	4.577	1774.191	3.0	41292.50	1000	
Zn	66	72	He	2.452	950.213	4.3	4258.45	20000	
As	75	72	He	-0.1	-38.900	6.2	129.67	1000	
Se	78	72	He	-0.157	-60.668	9.1	88.93	50	
Sn	120	115	He	-0.065	-25.357	6.5	652.25	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6428605.32	6132749.07333333	104.82	
Ge	72	He	212170.85	194706.726666667	108.97	
In	115	He	2192339.81	2072569.52666667	105.78	
Lu	175	He	5058164.30	4837163.67666667	104.57	
Rh	103	He	5471803.67	5075027.71333333	107.82	
Sc	45	He	230944.32	209719.873333333	110.12	
Tb	159	He	7614006.97	7217928.22666667	105.49	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1037749.96	976725.24	106.25	
Bi	209	No Gas	10333082.35	9415604.23333333	109.74	
Ge	72	No Gas	1776851.18	1639549.58666667	108.37	
In	115	No Gas	12338755.58	10997055.3166667	112.2	
Lu	175	No Gas	15567461.44	13769018.1266667	113.06	
Rh	103	No Gas	11906729.25	10512158.1933333	113.27	
Sc	45	No Gas	6496306.69	5845931.02	111.13	
Tb	159	No Gas	16019508.93	14199586.8733333	112.82	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0083-000.5-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1026</u>	GCAL Sample ID: <u>22307214720</u>
Matrix: <u>Solid</u> % Solids: <u>85.93</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.3</u> g	Lab File ID: <u>2230724A_MS2.b\1296SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1722</u>
Prep Batch: <u>769363</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	7770	ug/kg		112	224	448

Sample Report

Sample Name	22307214720	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1296SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 5:22:25 PM	Total Dilution	384.6154
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	6.037	2322.039	1.0	125959.88	500	
Be	9	6	No Gas	0.39	150.052	2.1	1448.75	1000	
B	11	6	No Gas	5.337	2052.615	1.4	14821.00	500	
Sr	88	72	No Gas	433.508	166733.793	0.7	30655587.88	1000	
Zr	90	72	No Gas	2.89	1111.641	2.2	128651.97	100	
Mo	95	115	No Gas	0.004	1.598	3.0	2821.42	1000	
Ag	107	115	No Gas	0.322	124.000	1.4	11366.87	100	
Cd	111	115	No Gas	0.958	368.316	2.1	7993.44	1000	
Sb	121	115	No Gas	0.126	48.574	2.6	7844.50	1000	
Ba	137	115	No Gas	38.301	14731.011	0.4	469808.59	1000	
Tl	205	209	No Gas	-0.096	-37.044	3.7	4034.10	1000	
Pb	208	209	No Gas	18.162	6985.328	1.1	1649744.07	1000	
Na	23	45	He	486.498	187114.553	1.8	358672.82	100000	
Mg	24	45	He	2864.017	1101545.002	1.3	819771.71	100000	
Al	27	45	He	8051.754	3096828.287	1.5	727902.79	20000	
Si	29	45	He	-16559.774	-6369143.823	6.6	36611.23	10000	
K	39	45	He	206.151	79288.842	1.8	128744.11	100000	
Ca	44	45	He	133658	51406923.014	2.0	2244085.02	500000	
Ti	47	45	He	63.027	24241.221	7.7	9216.54	1000	
V	51	72	He	12.78	4915.493	1.8	67665.91	1000	
Cr	52	72	He	34.41	13234.532	1.1	229883.14	1000	
Mn	55	72	He	249.423	95931.824	1.8	752013.22	5000	
Fe	57	72	He	4995.978	1921530.017	1.2	627164.61	100000	
Co	59	72	He	0.882	339.137	1.6	10241.41	1000	
Ni	60	72	He	3.683	1416.727	0.9	11883.81	2000	
Cu	63	45	He	148.681	57184.891	1.7	1316950.33	1000	
Zn	66	72	He	141.135	54282.840	2.3	188082.97	20000	
As	75	72	He	17.361	6677.241	1.6	24617.35	1000	
Se	78	72	He	-0.809	-311.080	18.1	36.16	50	
Sn	120	115	He	0.261	100.427	1.5	3149.28	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6250831.37	6132749.07333333	101.93	
Ge	72	He	207668.77	194706.726666667	106.66	
In	115	He	2134377.04	2072569.526666667	102.98	
Lu	175	He	5027789.82	4837163.676666667	103.94	
Rh	103	He	5192578.96	5075027.71333333	102.32	
Sc	45	He	231185.34	209719.873333333	110.24	
Tb	159	He	7573626.76	7217928.226666667	104.93	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1019184.57	976725.24	104.35	
Bi	209	No Gas	10131904.64	9415604.23333333	107.61	
Ge	72	No Gas	1743999.20	1639549.586666667	106.37	
In	115	No Gas	12146782.11	10997055.31666667	110.45	
Lu	175	No Gas	15568480.19	13769018.12666667	113.07	
Rh	103	No Gas	11321364.00	10512158.19333333	107.7	
Sc	45	No Gas	6522585.44	5845931.02	111.57	
Tb	159	No Gas	15991334.76	14199586.87333333	112.62	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0083-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1027</u>	GCAL Sample ID: <u>22307214721</u>
Matrix: <u>Solid</u> % Solids: <u>75.77</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.25</u> g	Lab File ID: <u>2230724A_MS2.b\1306SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1758</u>
Prep Batch: <u>769361</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	6710	ug/kg		132	264	528

Reference Sample Report

Sample Name 22307214721
File Name 1306SMPL.d
Data Path Name C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
Acq Time 7/24/2023 5:58:15 PM
Sample Type AllRef
Total Dilution 400.0000
Comment ICPMS-2,TDM
ISTD Ref FileName 004CALB.d
Sample QC Pass/Fial Pass
ISTD QC Pass/Fail Fail

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Conc. RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	789.341	6.7	89105.33	500	
Be	9	6	No Gas	73.691	8.5	798.03	1000	
B	11	6	No Gas	795.453	12.6	8049.04	500	
Sr	88	72	No Gas	78736.425	0.4	14703415.20	1000	
Zr	90	72	No Gas	786.246	0.2	92932.38	100	
Mo	95	115	No Gas	2311.016	7.7	83688.32	1000	
Ag	107	115	No Gas	11.691	7.0	1163.39	100	
Cd	111	115	No Gas	19.156	9.0	1022.27	1000	
Sb	121	115	No Gas	8.674	5.4	4490.77	1000	
Ba	137	115	No Gas	3561.605	1.2	115895.11	1000	
Tl	205	209	No Gas	-48.563	N/A	2497.01	1000	
Pb	208	209	No Gas	1820.499	2.1	440018.27	1000	
Na	23	45	He	128397.008	1.6	262255.58	100000	
Mg	24	45	He	121107.504	1.8	92695.30	100000	
Al	27	45	He	1024165.243	0.8	244731.78	20000	
Si	29	45	He	-7770468.975	N/A	29492.34	10000	
K	39	45	He	10176.372	10.7	62817.29	100000	
Ca	44	45	He	19344016.277	0.8	858877.33	500000	
Ti	47	45	He	3848.290	2.4	1496.75	1000	
V	51	72	He	1715.024	0.5	24994.53	1000	
Cr	52	72	He	2254.458	0.5	41886.96	1000	
Mn	55	72	He	9899.207	1.5	80919.24	5000	
Fe	57	72	He	585099.557	1.9	198640.00	100000	
Co	59	72	He	180.714	3.1	5810.10	1000	
Ni	60	72	He	398.389	5.8	3932.79	2000	
Cu	63	45	He	4389.352	0.6	103495.05	1000	
Zn	66	72	He	2828.797	2.1	11126.55	20000	
As	75	72	He	5084.658	0.9	19558.74	1000	
Se	78	72	He	-150.709	N/A	75.49	50	
Sn	120	115	He	-18.700	N/A	838.93	1000	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	%QC Low	%QC High	QC Flag
(Li)	6	No Gas	990855.26	1.2	976725.24	101.45	70	120	
Sc	45	No Gas	7033769.17	0.3	5845931.02	120.32	70	120	<70% or >120%
Ge	72	No Gas	1841946.31	0.7	1639549.58666667	112.34	70	120	

Reference Sample Report

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	%QC Low	%QC High	QC Flag
Rh	103	No Gas	12122280.91	0.4	10512158.19333333	115.32	70	120	
In	115	No Gas	12863942.25	0.3	10997055.3166667	116.98	70	120	
Tb	159	No Gas	16773273.50	0.4	14199586.87333333	118.13	70	120	
Lu	175	No Gas	16222003.93	0.5	13769018.1266667	117.82	70	120	
Bi	209	No Gas	10719480.67	0.8	9415604.23333333	113.85	70	120	
Sc	45	He	244297.32	2.1	209719.873333333	116.49	70	120	
Ge	72	He	224418.12	2.0	194706.726666667	115.26	70	120	
Rh	103	He	5554537.84	2.0	5075027.71333333	109.45	70	120	
In	115	He	2302497.43	2.4	2072569.52666667	111.09	70	120	
Tb	159	He	7971663.84	2.5	7217928.22666667	110.44	70	120	
Lu	175	He	5318990.86	2.4	4837163.67666667	109.96	70	120	
Bi	209	He	6645178.44	2.0	6132749.07333333	108.36	70	120	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0084-000.5-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1031</u>	GCAL Sample ID: <u>22307214722</u>
Matrix: <u>Solid</u> % Solids: <u>87.31</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.27</u> g	Lab File ID: <u>2230724A_MS2.b\1311SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1816</u>
Prep Batch: <u>769361</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	234	ug/kg	J	113	225	451

Sample Report

Sample Name	22307214722	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1311SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 6:16:09 PM	Total Dilution	393.7008
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.778	306.260	1.0	80547.32	500	
Be	9	6	No Gas	0.044	17.282	10.3	388.68	1000	
B	11	6	No Gas	2.01	791.253	2.1	8215.81	500	
Sr	88	72	No Gas	252.764	99513.511	1.4	18488255.14	1000	
Zr	90	72	No Gas	0.675	265.840	0.7	32327.51	100	
Mo	95	115	No Gas	0.18	71.035	1.9	5382.19	1000	
Ag	107	115	No Gas	0.025	9.646	11.0	975.60	100	
Cd	111	115	No Gas	0.037	14.472	5.3	918.93	1000	
Sb	121	115	No Gas	0.146	57.574	3.1	8916.22	1000	
Ba	137	115	No Gas	5.396	2124.545	1.3	69446.03	1000	
Tl	205	209	No Gas	-0.12	-47.415	5.8	2493.66	1000	
Pb	208	209	No Gas	2.01	791.358	1.4	190796.53	1000	
Na	23	45	He	426.648	167971.597	1.6	328100.87	100000	
Mg	24	45	He	214.597	84487.056	2.5	64384.88	100000	
Al	27	45	He	1003.759	395180.625	1.7	93577.49	20000	
Si	29	45	He	-19683.171	-7749280.057	7.5	27936.72	10000	
K	39	45	He	25.913	10201.978	3.4	61373.69	100000	
Ca	44	45	He	47097.218	18542211.967	1.3	814835.98	500000	
Ti	47	45	He	10.67	4200.663	4.2	1615.79	1000	
V	51	72	He	1.865	734.079	2.4	10855.18	1000	
Cr	52	72	He	3.888	1530.662	0.9	28270.50	1000	
Mn	55	72	He	16.291	6413.963	1.2	51424.79	5000	
Fe	57	72	He	798.805	314490.072	1.1	104621.13	100000	
Co	59	72	He	0.169	66.359	2.5	2257.98	1000	
Ni	60	72	He	0.444	174.865	4.6	2024.61	2000	
Cu	63	45	He	19.184	7552.883	1.1	175654.03	1000	
Zn	66	72	He	8.72	3432.985	0.5	12992.54	20000	
As	75	72	He	0.518	204.030	5.8	1036.37	1000	
Se	78	72	He	-0.418	-164.653	0.9	69.33	50	
Sn	120	115	He	-0.02	-7.997	3.3	1024.49	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6447848.45	6132749.07333333	105.14	
Ge	72	He	216273.14	194706.726666667	111.08	
In	115	He	2227701.45	2072569.526666667	107.49	
Lu	175	He	5129516.80	4837163.676666667	106.04	
Rh	103	He	5410975.20	5075027.71333333	106.62	
Sc	45	He	238028.70	209719.873333333	113.5	
Tb	159	He	7702261.14	7217928.226666667	106.71	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1006547.83	976725.24	103.05	
Bi	209	No Gas	10417920.05	9415604.23333333	110.65	
Ge	72	No Gas	1803686.73	1639549.586666667	110.01	
In	115	No Gas	12697060.81	10997055.31666667	115.46	
Lu	175	No Gas	15746290.60	13769018.12666667	114.36	
Rh	103	No Gas	11827635.09	10512158.19333333	112.51	
Sc	45	No Gas	6713966.54	5845931.02	114.85	
Tb	159	No Gas	16251320.18	14199586.87333333	114.45	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0084-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1032</u>	GCAL Sample ID: <u>22307214723</u>
Matrix: <u>Solid</u> % Solids: <u>87.69</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.33</u> g	Lab File ID: <u>2230724A_MS2.b\1312SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1819</u>
Prep Batch: <u>769361</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	214	ug/kg	U	107	214	429

Sample Report

Sample Name	22307214723	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1312SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 6:19:44 PM	Total Dilution	375.9398
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.239	90.033	1.4	75512.15	500	
Be	9	6	No Gas	-0.001	-0.542	11.2	250.00	1000	
B	11	6	No Gas	0.976	366.986	1.2	6178.11	500	
Sr	88	72	No Gas	43.486	16348.262	1.2	3199479.33	1000	
Zr	90	72	No Gas	0.289	108.480	2.2	14825.58	100	
Mo	95	115	No Gas	0.09	33.918	4.0	4108.42	1000	
Ag	107	115	No Gas	0.007	2.816	4.2	350.01	100	
Cd	111	115	No Gas	-0.014	-5.370	1.3	503.35	1000	
Sb	121	115	No Gas	0.053	20.010	2.6	5528.93	1000	
Ba	137	115	No Gas	2.29	860.974	0.2	29432.25	1000	
Tl	205	209	No Gas	-0.135	-50.659	3.1	1513.48	1000	
Pb	208	209	No Gas	0.526	197.768	0.9	52525.81	1000	
Na	23	45	He	67.857	25509.993	1.9	82013.02	100000	
Mg	24	45	He	50.651	19041.778	2.6	16242.67	100000	
Al	27	45	He	371.168	139537.016	2.0	34948.45	20000	
Si	29	45	He	-19599.296	-7368156.352	9.3	28380.26	10000	
K	39	45	He	5.529	2078.447	3.1	53683.97	100000	
Ca	44	45	He	8026.451	3017462.892	2.3	140854.51	500000	
Ti	47	45	He	15.803	5940.886	1.3	2403.54	1000	
V	51	72	He	0.744	279.584	4.1	4776.37	1000	
Cr	52	72	He	1.368	514.303	2.9	10951.92	1000	
Mn	55	72	He	3.531	1327.518	1.2	11490.13	5000	
Fe	57	72	He	274.989	103379.158	3.0	36542.84	100000	
Co	59	72	He	0.076	28.519	3.2	1176.73	1000	
Ni	60	72	He	0.141	53.151	6.3	1066.72	2000	
Cu	63	45	He	5.326	2002.235	1.6	49697.22	1000	
Zn	66	72	He	2.493	937.041	1.9	4439.61	20000	
As	75	72	He	0.059	22.223	5.2	369.01	1000	
Se	78	72	He	-0.243	-91.176	3.1	84.46	50	
Sn	120	115	He	-0.049	-18.583	3.3	798.92	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6530068.44	6132749.07333333	106.48	
Ge	72	He	218417.38	194706.726666667	112.18	
In	115	He	2251151.10	2072569.526666667	108.62	
Lu	175	He	5131337.63	4837163.676666667	106.08	
Rh	103	He	5513793.12	5075027.71333333	108.65	
Sc	45	He	239584.22	209719.873333333	114.24	
Tb	159	He	7763802.18	7217928.226666667	107.56	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	999314.35	976725.24	102.31	
Bi	209	No Gas	10429329.63	9415604.23333333	110.77	
Ge	72	No Gas	1813431.94	1639549.586666667	110.61	
In	115	No Gas	12608138.09	10997055.31666667	114.65	
Lu	175	No Gas	15655103.94	13769018.12666667	113.7	
Rh	103	No Gas	12051532.85	10512158.19333333	114.64	
Sc	45	No Gas	6797202.23	5845931.02	116.27	
Tb	159	No Gas	16181036.43	14199586.87333333	113.95	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072147</u>	Client Sample ID: <u>KCDC-SB0073-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>0947</u>	GCAL Sample ID: <u>22307214724</u>
Matrix: <u>Solid</u> % Solids: <u>88.73</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.25</u> g	Lab File ID: <u>2230724A_MS2.b\1313SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/21/23</u>	Analysis Date: <u>07/24/23</u> Time: <u>1823</u>
Prep Batch: <u>769361</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	305	ug/kg	J	113	225	451

Sample Report

Sample Name	22307214724	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1313SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 6:23:19 PM	Total Dilution	400.0000
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	2.031	812.579	0.7	91070.06	500	
Be	9	6	No Gas	0.219	87.563	9.7	916.04	1000	
B	11	6	No Gas	2.22	887.966	0.7	8629.38	500	
Sr	88	72	No Gas	334.547	133818.672	0.4	24334495.47	1000	
Zr	90	72	No Gas	2.534	1013.531	0.8	116196.04	100	
Mo	95	115	No Gas	0.075	29.873	5.8	3873.90	1000	
Ag	107	115	No Gas	0.028	11.341	6.4	1102.28	100	
Cd	111	115	No Gas	0.03	11.816	1.4	850.03	1000	
Sb	121	115	No Gas	0.069	27.773	1.0	6074.70	1000	
Ba	137	115	No Gas	11.846	4738.305	0.5	150181.46	1000	
Tl	205	209	No Gas	-0.118	-47.346	8.1	2620.37	1000	
Pb	208	209	No Gas	4.643	1857.134	0.6	433787.24	1000	
Na	23	45	He	552.331	220932.362	1.2	414164.81	100000	
Mg	24	45	He	352.789	141115.713	2.3	104974.89	100000	
Al	27	45	He	3007.823	1203129.242	1.5	279841.39	20000	
Si	29	45	He	-18783.535	-7513413.844	7.3	30719.44	10000	
K	39	45	He	33.571	13428.410	2.3	64357.11	100000	
Ca	44	45	He	76813.89	30725556.191	1.8	1327313.65	500000	
Ti	47	45	He	11.337	4534.719	1.5	1715.45	1000	
V	51	72	He	5.072	2028.710	2.3	28294.95	1000	
Cr	52	72	He	5.807	2322.980	2.3	41444.64	1000	
Mn	55	72	He	20.929	8371.751	1.8	65809.41	5000	
Fe	57	72	He	1686.679	674671.536	2.6	220099.80	100000	
Co	59	72	He	0.383	153.237	4.1	4775.27	1000	
Ni	60	72	He	1.14	455.923	2.6	4236.20	2000	
Cu	63	45	He	16.959	6783.623	1.4	155272.76	1000	
Zn	66	72	He	7.242	2896.719	2.8	10926.39	20000	
As	75	72	He	0.676	270.437	2.0	1263.06	1000	
Se	78	72	He	-0.416	-166.428	9.9	69.33	50	
Sn	120	115	He	-0.063	-25.008	12.3	684.47	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6364566.99	6132749.07333333	103.78	
Ge	72	He	215685.32	194706.726666667	110.77	
In	115	He	2220878.02	2072569.52666667	107.16	
Lu	175	He	5102154.93	4837163.67666667	105.48	
Rh	103	He	5358039.23	5075027.71333333	105.58	
Sc	45	He	237854.70	209719.873333333	113.42	
Tb	159	He	7666160.09	7217928.22666667	106.21	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1007412.95	976725.24	103.14	
Bi	209	No Gas	10360318.18	9415604.23333333	110.03	
Ge	72	No Gas	1793826.18	1639549.58666667	109.41	
In	115	No Gas	12538247.36	10997055.3166667	114.01	
Lu	175	No Gas	15797935.18	13769018.1266667	114.74	
Rh	103	No Gas	11709507.31	10512158.1933333	111.39	
Sc	45	No Gas	6902719.31	5845931.02	118.08	
Tb	159	No Gas	16243208.51	14199586.8733333	114.39	

Metals

Form II

Calibration Verifications

II
INITIAL CALIBRATION VERIFICATION (ICV) STANDARD

Report No: 223072147 GCAL QC ID: 1600
Instrument ID: ICPMS2 Lab File ID: 2230724A_MS2.b\010_ICV.d
Analyst: TDM Analytical Batch: 769477
Analysis Date: 07/24/23 Time: 1204 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>TRUE</i>	<i>FOUND</i>	<i>%RECOVERY</i>	<i>Q</i>	<i>UNITS</i>
Arsenic	50.0	49.1	98		ug/L

CONTROL LIMITS 90-110%

FORM II - IN

Initial Calibration Verification (ICV) Report

Sample Name	1600	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	010_ICV.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 12:04:34 PM	Total Dilution	1.0000
Sample Type	ICV	Sample Pass/Fail	Fail
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Recovery Limits: 90-110%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	Rec	QC Flag
Li	7	6	No Gas	248.863	1.3	2190164.34	250	99.55	
Be	9	6	No Gas	50.326	0.1	154686.56	50	100.65	
B	11	6	No Gas	256.341	0.3	508592.06	250	102.54	
Sr	88	72	No Gas	48.955	0.8	3203818.28	50	97.91	
Zr	90	72	No Gas	45.516	0.7	1852481.80	50	91.03	
Mo	95	115	No Gas	47.844	1.3	567459.54	50	95.69	
Ag	107	115	No Gas	51.118	0.9	1601676.36	50	102.24	
Cd	111	115	No Gas	48.776	0.9	337632.58	50	97.55	
Sb	121	115	No Gas	51.425	0.8	1587890.84	50	102.85	
Ba	137	115	No Gas	49.395	1.0	541962.65	50	98.79	
Tl	205	209	No Gas	47.903	1.6	2954045.89	50	95.81	
Pb	208	209	No Gas	47.740	1.0	3991264.26	50	95.48	
Na	23	45	He	5139.929	2.2	2991680.89	5000	102.8	
Mg	24	45	He	5016.214	1.9	1238628.05	5000	100.32	
Al	27	45	He	1010.837	2.3	79020.91	1000	101.08	
Si	29	45	He	4051.607	0.7	85523.62	5000	81.03	> +/- 10%
K	39	45	He	4990.587	1.9	1695021.17	5000	99.81	
Ca	44	45	He	24987.505	1.7	362987.25	25000	99.95	
Ti	47	45	He	49.389	2.5	6235.99	50	98.78	
V	51	72	He	49.385	2.1	233108.45	50	98.77	
Cr	52	72	He	49.737	1.4	297818.21	50	99.47	
Mn	55	72	He	49.869	1.3	135194.87	50	99.74	
Fe	57	72	He	4995.214	0.9	562999.02	5000	99.9	
Co	59	72	He	50.633	1.3	514860.22	50	101.27	
Ni	60	72	He	101.201	1.1	279376.26	100	101.2	
Cu	63	45	He	53.148	1.3	406771.36	50	106.3	
Zn	66	72	He	1016.357	1.3	1210849.99	1000	101.64	
As	75	72	He	49.094	1.6	62064.63	50	98.19	
Se	78	72	He	24.460	2.7	1801.54	25	97.84	
Sn	120	115	He	49.238	2.1	349366.59	50	98.48	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	5825889.29	6132749.07333333	95	
Ge	72	He	186454.44	194706.726666667	95.76	
In	115	He	1959837.88	2072569.52666667	94.56	
Lu	175	He	4690731.39	4837163.67666667	96.97	
Rh	103	He	4780531.61	5075027.71333333	94.2	
Sc	45	He	199572.70	209719.873333333	95.16	
Tb	159	He	7008602.60	7217928.22666667	97.1	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1025848.63	976725.24	105.03	
Bi	209	No Gas	9337089.65	9415604.23333333	99.17	
Ge	72	No Gas	1613164.69	1639549.58666667	98.39	
In	115	No Gas	10866248.10	10997055.3166667	98.81	
Lu	175	No Gas	14081411.87	13769018.1266667	102.27	
Rh	103	No Gas	10209508.48	10512158.1933333	97.12	
Sc	45	No Gas	5816591.71	5845931.02	99.5	
Tb	159	No Gas	14489554.37	14199586.8733333	102.04	

II
 LOW LEVEL CONTINUING CALIBRATION VERIFICATION (LLCCV) STANDARD

Report No: <u>223072147</u>	GCAL QC ID: <u>1803</u>
Instrument ID: <u>ICPMS2</u>	Lab File ID: <u>2230724A_MS2.b\1211CCV1.d</u>
Analyst: <u>TDM</u>	Analytical Batch: <u>769477</u>
Analysis Date: <u>07/24/23</u> Time: <u>1218</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>TRUE</i>	<i>FOUND</i>	<i>%RECOVERY</i>	<i>Q</i>	<i>UNITS</i>
Arsenic	1.00	0.900	90		ug/L

CONTROL LIMITS 80-120%

FORM II - IN

Low Level Continuing Calibration Verification(LLCCV) Report

Sample Name 1803 Data Path Name C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
 File Name 1211CCV1.d Comment ICPMS-2,TDM
 Acq Time 7/24/2023 12:18:54 PM Total Dilution 1.0000
 Sample Type LLCCV1 Sample Pass/Fail Fail
 ISTD Ref FileName 004CALB.d ISTD Pass/Fail Pass

Units : ppb

QC Analyte Table Recovery Limits: Initial 6020B DOD 80-120% / 70-130% 6020B and 200.8

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	Rec	QC Flag
Li	7	6	No Gas	5.397	1.0	122256.64	5	107.94	
Be	9	6	No Gas	1.038	1.6	3473.08	1	103.8	
B	11	6	No Gas	11.113	0.5	26477.13	10	111.13	
Sr	88	72	No Gas	1.012	1.4	68791.94	1	101.2	
Zr	90	72	No Gas	0.929	1.3	39762.51	1	92.9	
Mo	95	115	No Gas	0.820	1.5	12608.95	1	82	
Ag	107	115	No Gas	1.001	1.4	32592.77	1	100.1	
Cd	111	115	No Gas	0.970	0.4	7500.94	1	97	
Sb	121	115	No Gas	2.004	0.9	67298.44	2	100.2	
Ba	137	115	No Gas	0.972	1.5	11316.90	1	97.2	
Tl	205	209	No Gas	0.835	2.4	63337.49	1	83.5	
Pb	208	209	No Gas	0.982	1.0	88408.33	1	98.2	
Na	23	45	He	98.481	3.1	88419.11	100	98.48	
Mg	24	45	He	107.040	3.4	28227.40	100	107.04	
Al	27	45	He	20.520	2.0	1804.79	20	102.6	
Si	29	45	He	-3565.252	1.5	67436.78	200	-1782.63	> +/- 20%
K	39	45	He	96.399	1.9	76912.22	100	96.4	
Ca	44	45	He	500.898	1.6	8557.59	500	100.18	
Ti	47	45	He	0.946	1.6	133.33	1	94.6	
V	51	72	He	0.986	2.4	5364.36	1	98.6	
Cr	52	72	He	1.036	2.7	7570.90	1	103.6	
Mn	55	72	He	5.259	3.4	14884.32	5	105.18	
Fe	57	72	He	106.833	3.1	12582.41	100	106.83	
Co	59	72	He	1.046	4.4	11162.13	1	104.6	
Ni	60	72	He	2.028	0.9	6274.74	2	101.4	
Cu	63	45	He	1.105	1.9	9405.29	1	110.5	
Zn	66	72	He	21.101	2.2	26656.59	20	105.51	
As	75	72	He	0.899	1.8	1410.74	1	89.9	
Se	78	72	He	0.843	3.1	152.21	1	84.3	
Sn	120	115	He	0.926	3.9	7897.83	1	92.6	

QC ISTD Table Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6087708.87	6132749.07333333	99.27	
Ge	72	He	191585.20	194706.726666667	98.4	
In	115	He	2037686.89	2072569.52666667	98.32	
Lu	175	He	4802766.18	4837163.67666667	99.29	
Rh	103	He	5033824.94	5075027.71333333	99.19	
Sc	45	He	205261.09	209719.873333333	97.87	
Tb	159	He	7155150.73	7217928.22666667	99.13	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1033555.35	976725.24	105.82	
Bi	209	No Gas	9697556.52	9415604.23333333	102.99	
Ge	72	No Gas	1635737.71	1639549.58666667	99.77	
In	115	No Gas	11268763.62	10997055.3166667	102.47	
Lu	175	No Gas	14270234.37	13769018.1266667	103.64	
Rh	103	No Gas	10742281.24	10512158.1933333	102.19	
Sc	45	No Gas	5896100.60	5845931.02	100.86	
Tb	159	No Gas	14657888.53	14199586.8733333	103.23	



II
LINEAR DYNAMIC RANGE (LDR) STANDARD

Report No: 223072147 GCAL QC ID: 2500
Instrument ID: ICPMS2 Lab File ID: 2230724A_MS2.b\1214_QC1.d
Analyst: TDM Analytical Batch: 769477
Analysis Date: 07/24/23 Time: 1229 Analytical Method: EPA 6020B

ANALYTE	TRUE	FOUND	%RECOVERY	Q	UNITS
Arsenic	1000	969	97		ug/L

CONTROL LIMITS 90-110%

FORM II - IN

Linear Dynamic Range Check (LDR) Report

Sample Name	LDR	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1214_QC1.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 12:29:37 PM	Total Dilution	1.0000
Sample Type	QC1	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Recovery Limits: 90-110%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	Rec	QC Flag
Be	9	6	No Gas	1052.512	0.4	2849873.50	1000	105.25	
Sr	88	72	No Gas	960.021	1.5	62299412.41	1000	96	
Mo	95	115	No Gas	1005.875	0.6	11508294.82	1000	100.59	
Cd	111	115	No Gas	953.671	1.1	6385036.55	1000	95.37	
Sb	121	115	No Gas	967.592	1.0	28886933.30	1000	96.76	
Ba	137	115	No Gas	964.813	0.7	10249595.43	1000	96.48	
Tl	205	209	No Gas	964.925	0.9	55536980.84	1000	96.49	
Pb	208	209	No Gas	967.714	0.3	75688106.38	1000	96.77	
Na	23	45	He	96644.430	1.6	58048092.47	100000	96.64	
Mg	24	45	He	96270.100	1.6	24740957.97	100000	96.27	
Al	27	45	He	19351.740	1.7	1572739.08	20000	96.76	
K	39	45	He	98152.817	2.4	33892619.49	100000	98.15	
Ca	44	45	He	492826.760	1.7	7436432.18	500000	98.57	
Ti	47	45	He	980.050	1.7	128681.91	1000	98	
V	51	72	He	1005.945	1.7	4838050.36	1000	100.59	
Cr	52	72	He	988.722	1.8	6024078.93	1000	98.87	
Mn	55	72	He	4868.815	2.0	13457307.24	5000	97.38	
Fe	57	72	He	97347.454	2.1	11203610.25	100000	97.35	
Co	59	72	He	970.093	1.8	10071298.21	1000	97.01	
Ni	60	72	He	1924.836	1.4	5417763.26	2000	96.24	
Cu	63	45	He	928.441	1.5	7390044.43	1000	92.84	
Zn	66	72	He	18692.560	2.0	22732782.43	20000	93.46	
As	75	72	He	969.086	2.2	1246774.08	1000	96.91	
Sn	120	115	He	1004.305	1.9	6975132.08	1000	100.43	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	5626038.04	6132749.07333333	91.74	
Ge	72	He	190441.60	194706.726666667	97.81	
In	115	He	1923560.10	2072569.52666667	92.81	
Lu	175	He	4758894.20	4837163.67666667	98.38	
Rh	103	He	4674920.78	5075027.71333333	92.12	
Sc	45	He	207864.12	209719.873333333	99.12	
Tb	159	He	7098912.39	7217928.22666667	98.35	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	905121.37	976725.24	92.67	
Bi	209	No Gas	8741530.08	9415604.23333333	92.84	
Ge	72	No Gas	1600352.09	1639549.58666667	97.61	
In	115	No Gas	10525708.76	10997055.3166667	95.71	
Lu	175	No Gas	13934798.54	13769018.1266667	101.2	
Rh	103	No Gas	9813526.56	10512158.1933333	93.35	
Sc	45	No Gas	5846713.66	5845931.02	100.01	
Tb	159	No Gas	14195093.96	14199586.8733333	99.97	

II
CONTINUING CALIBRATION VERIFICATION (CCV) STANDARD

Report No:	<u>223072147</u>	GCAL QC ID:	<u>1800</u>
Instrument ID:	<u>ICPMS2</u>	Lab File ID:	<u>2230724A_MS2.b\1267_CCV.d</u>
Analyst:	<u>TDM</u>	Analytical Batch:	<u>769477</u>
Analysis Date:	<u>07/24/23</u>	Time:	<u>1538</u>
		Analytical Method:	<u>EPA 6020B</u>

<i>ANALYTE</i>	<i>TRUE</i>	<i>FOUND</i>	<i>%RECOVERY</i>	<i>Q</i>	<i>UNITS</i>
Arsenic	10.0	10.5	105		ug/L

CONTROL LIMITS 90-110%

FORM II - IN

Continuing Calibration Verification (CCV) Report

Sample Name 1800 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name 1267_CCV.d **Comment** ICPMS-2,TDM
Acq Time 7/24/2023 3:38:43 PM **Total Dilution** 1.0000
Sample Type CCV **Sample Pass/Fail** Fail
ISTD Ref FileName 004CALB.d **ISTD Pass/Fail** Pass

Units : ppb

QC Analyte Table

Recovery Limits: 90-110%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	Rec	QC Flag
Li	7	6	No Gas	54.771	1.6	541717.01	50	109.54	
Be	9	6	No Gas	11.109	0.8	34405.33	10	111.09	> +/- 10%
B	11	6	No Gas	62.394	0.4	127333.98	50	124.79	> +/- 10%
Sr	88	72	No Gas	10.342	1.1	738062.31	10	103.42	
Zr	90	72	No Gas	10.639	0.4	472440.10	10	106.39	
Mo	95	115	No Gas	9.560	1.2	128622.30	10	95.6	
Ag	107	115	No Gas	10.236	1.3	357635.64	10	102.36	
Cd	111	115	No Gas	10.010	2.5	77723.46	10	100.1	
Sb	121	115	No Gas	20.290	1.1	700592.06	20	101.45	
Ba	137	115	No Gas	9.893	1.0	121238.29	10	98.93	
Tl	205	209	No Gas	9.716	1.4	653847.48	10	97.16	
Pb	208	209	No Gas	9.878	1.0	892439.97	10	98.78	
Na	23	45	He	1112.521	1.4	765651.21	1000	111.25	> +/- 10%
Mg	24	45	He	1083.445	1.0	306454.12	1000	108.34	
Al	27	45	He	213.478	1.9	19195.59	200	106.74	
Si	29	45	He	-14335.598	4.8	42747.25	2000	-716.78	> +/- 10%
K	39	45	He	1078.710	1.5	456835.28	1000	107.87	
Ca	44	45	He	5339.462	0.4	89542.99	5000	106.79	
Ti	47	45	He	10.527	1.9	1527.42	10	105.27	
V	51	72	He	10.540	2.2	56872.13	10	105.4	
Cr	52	72	He	10.685	1.6	73526.11	10	106.85	
Mn	55	72	He	53.757	1.5	165058.23	50	107.51	
Fe	57	72	He	1065.643	1.5	136240.58	1000	106.56	
Co	59	72	He	10.724	1.3	123731.29	10	107.24	
Ni	60	72	He	21.487	1.2	67655.78	20	107.43	
Cu	63	45	He	10.953	0.8	96383.53	10	109.53	
Zn	66	72	He	219.111	1.5	296424.13	200	109.56	
As	75	72	He	10.509	1.6	15262.97	10	105.09	
Se	78	72	He	10.383	3.4	924.33	10	103.83	
Sn	120	115	He	10.270	0.9	82750.45	10	102.7	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6411735.74	6132749.07333333	104.55	
Ge	72	He	211196.34	194706.726666667	108.47	
In	115	He	2200599.00	2072569.526666667	106.18	
Lu	175	He	5076239.61	4837163.676666667	104.94	
Rh	103	He	5408536.17	5075027.71333333	106.57	
Sc	45	He	227920.07	209719.873333333	108.68	
Tb	159	He	7592545.93	7217928.226666667	105.19	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1027542.29	976725.24	105.2	
Bi	209	No Gas	10060604.64	9415604.23333333	106.85	
Ge	72	No Gas	1755822.67	1639549.586666667	107.09	
In	115	No Gas	12114409.66	10997055.31666667	110.16	
Lu	175	No Gas	15066765.19	13769018.12666667	109.43	
Rh	103	No Gas	11595559.26	10512158.19333333	110.31	
Sc	45	No Gas	6412089.74	5845931.02	109.68	
Tb	159	No Gas	15550702.69	14199586.87333333	109.52	

II
CONTINUING CALIBRATION VERIFICATION (CCV) STANDARD

Report No:	<u>223072147</u>	GCAL QC ID:	<u>1800</u>
Instrument ID:	<u>ICPMS2</u>	Lab File ID:	<u>2230724A_MS2.b\1285_CCV.d</u>
Analyst:	<u>TDM</u>	Analytical Batch:	<u>769477</u>
Analysis Date:	<u>07/24/23</u>	Time:	<u>1643</u>
		Analytical Method:	<u>EPA 6020B</u>

ANALYTE	TRUE	FOUND	%RECOVERY	Q	UNITS
Arsenic	10.0	10.1	101		ug/L

CONTROL LIMITS 90-110%

FORM II - IN

Continuing Calibration Verification (CCV) Report

Sample Name	1800	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1285_CCV.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 4:43:03 PM	Total Dilution	1.0000
Sample Type	CCV	Sample Pass/Fail	Fail
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Recovery Limits: 90-110%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	Rec	QC Flag
Li	7	6	No Gas	52.172	1.2	546128.80	50	104.34	
Be	9	6	No Gas	10.346	0.4	33693.10	10	103.46	
B	11	6	No Gas	59.174	1.4	127159.77	50	118.35	> +/- 10%
Sr	88	72	No Gas	10.060	0.2	740047.83	10	100.6	
Zr	90	72	No Gas	10.005	0.6	458074.15	10	100.05	
Mo	95	115	No Gas	9.341	0.8	130910.49	10	93.41	
Ag	107	115	No Gas	9.815	0.8	357029.07	10	98.15	
Cd	111	115	No Gas	9.770	1.3	78993.49	10	97.7	
Sb	121	115	No Gas	19.612	0.6	705163.32	20	98.06	
Ba	137	115	No Gas	9.695	0.7	123703.42	10	96.95	
Tl	205	209	No Gas	9.370	0.9	664735.07	10	93.7	
Pb	208	209	No Gas	9.541	1.4	908319.88	10	95.41	
Na	23	45	He	1070.834	0.7	752461.91	1000	107.08	
Mg	24	45	He	1067.896	2.5	307987.25	1000	106.79	
Al	27	45	He	209.167	1.0	19176.89	200	104.58	
Si	29	45	He	-16900.207	5.7	35747.73	2000	-845.01	> +/- 10%
K	39	45	He	1042.485	2.0	451743.28	1000	104.25	
Ca	44	45	He	5169.347	2.2	88421.71	5000	103.39	
Ti	47	45	He	10.529	1.1	1556.76	10	105.29	
V	51	72	He	10.356	2.1	56778.51	10	103.56	
Cr	52	72	He	10.537	1.9	73683.47	10	105.37	
Mn	55	72	He	52.430	2.2	163555.56	50	104.86	
Fe	57	72	He	1047.716	1.6	136068.40	1000	104.77	
Co	59	72	He	10.517	1.6	123267.45	10	105.17	
Ni	60	72	He	21.289	0.4	68085.43	20	106.44	
Cu	63	45	He	10.759	1.6	96532.53	10	107.59	
Zn	66	72	He	208.546	1.5	286640.01	200	104.27	
As	75	72	He	10.087	2.7	14895.93	10	100.87	
Se	78	72	He	9.904	2.4	900.31	10	99.04	
Sn	120	115	He	9.948	2.1	81452.02	10	99.48	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6579134.28	6132749.07333333	107.28	
Ge	72	He	214592.41	194706.726666667	110.21	
In	115	He	2235091.30	2072569.52666667	107.84	
Lu	175	He	5168109.61	4837163.67666667	106.84	
Rh	103	He	5535367.14	5075027.71333333	109.07	
Sc	45	He	232353.99	209719.873333333	110.79	
Tb	159	He	7778996.13	7217928.22666667	107.77	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1079755.97	976725.24	110.55	
Bi	209	No Gas	10599821.51	9415604.23333333	112.58	
Ge	72	No Gas	1809629.79	1639549.58666667	110.37	
In	115	No Gas	12613121.28	10997055.3166667	114.7	
Lu	175	No Gas	15900048.93	13769018.1266667	115.48	
Rh	103	No Gas	12008233.69	10512158.1933333	114.23	
Sc	45	No Gas	6623981.41	5845931.02	113.31	
Tb	159	No Gas	16359101.84	14199586.8733333	115.21	

II
CONTINUING CALIBRATION VERIFICATION (CCV) STANDARD

Report No: 223072147 GCAL QC ID: 1800
Instrument ID: ICPMS2 Lab File ID: 2230724A_MS2.b\1297_CCV.d
Analyst: TDM Analytical Batch: 769477
Analysis Date: 07/24/23 Time: 1725 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>TRUE</i>	<i>FOUND</i>	<i>%RECOVERY</i>	<i>Q</i>	<i>UNITS</i>
Arsenic	10.0	10.1	101		ug/L

CONTROL LIMITS 90-110%

FORM II - IN

Continuing Calibration Verification (CCV) Report

Sample Name	1800	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1297_CCV.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 5:25:58 PM	Total Dilution	1.0000
Sample Type	CCV	Sample Pass/Fail	Fail
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table Recovery Limits: 90-110%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	Rec	QC Flag
Li	7	6	No Gas	52.554	1.5	533870.89	50	105.11	
Be	9	6	No Gas	10.347	0.7	32735.03	10	103.47	
B	11	6	No Gas	60.194	2.7	125586.73	50	120.39	> +/- 10%
Sr	88	72	No Gas	10.132	0.2	741664.16	10	101.32	
Zr	90	72	No Gas	9.993	0.9	455336.63	10	99.93	
Mo	95	115	No Gas	9.160	0.6	128865.68	10	91.6	
Ag	107	115	No Gas	9.732	1.2	355220.38	10	97.32	
Cd	111	115	No Gas	9.572	1.1	77667.34	10	95.72	
Sb	121	115	No Gas	19.492	0.6	703220.46	20	97.46	
Ba	137	115	No Gas	9.528	1.6	121985.01	10	95.28	
Tl	205	209	No Gas	9.336	0.1	664069.23	10	93.36	
Pb	208	209	No Gas	9.499	0.1	906672.31	10	94.99	
Na	23	45	He	1070.566	1.7	752274.44	1000	107.06	
Mg	24	45	He	1059.602	2.1	305537.03	1000	105.96	
Al	27	45	He	209.466	2.6	19204.95	200	104.73	
Si	29	45	He	-17583.693	5.6	33668.98	2000	-879.18	> +/- 10%
K	39	45	He	1041.291	2.0	451223.12	1000	104.13	
Ca	44	45	He	5130.070	2.4	87746.17	5000	102.6	
Ti	47	45	He	10.326	1.8	1526.75	10	103.26	
V	51	72	He	10.229	0.5	55882.80	10	102.29	
Cr	52	72	He	10.407	1.9	72536.78	10	104.07	
Mn	55	72	He	55.368	1.9	172087.57	50	110.74	> +/- 10%
Fe	57	72	He	1022.911	1.8	132388.89	1000	102.29	
Co	59	72	He	10.489	0.7	122504.62	10	104.89	
Ni	60	72	He	21.046	1.6	67096.48	20	105.23	
Cu	63	45	He	10.643	0.7	95473.47	10	106.43	
Zn	66	72	He	211.527	1.2	289705.56	200	105.76	
As	75	72	He	10.118	1.7	14885.24	10	101.18	
Se	78	72	He	9.997	2.3	904.42	10	99.97	
Sn	120	115	He	9.839	2.3	80053.02	10	98.39	

QC ISTD Table Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6533605.73	6132749.07333333	106.54	
Ge	72	He	213796.42	194706.726666667	109.8	
In	115	He	2220400.02	2072569.52666667	107.13	
Lu	175	He	5126126.59	4837163.67666667	105.97	
Rh	103	He	5528676.86	5075027.71333333	108.94	
Sc	45	He	232317.97	209719.873333333	110.78	
Tb	159	He	7735513.01	7217928.22666667	107.17	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1048949.06	976725.24	107.39	
Bi	209	No Gas	10626737.34	9415604.23333333	112.86	
Ge	72	No Gas	1801027.08	1639549.58666667	109.85	
In	115	No Gas	12655401.73	10997055.3166667	115.08	
Lu	175	No Gas	15920227.26	13769018.1266667	115.62	
Rh	103	No Gas	12047663.69	10512158.1933333	114.61	
Sc	45	No Gas	6808138.34	5845931.02	116.46	
Tb	159	No Gas	16372887.67	14199586.8733333	115.31	

II
CONTINUING CALIBRATION VERIFICATION (CCV) STANDARD

Report No:	<u>223072147</u>	GCAL QC ID:	<u>1800</u>
Instrument ID:	<u>ICPMS2</u>	Lab File ID:	<u>2230724A_MS2.b\1320_CCV.d</u>
Analyst:	<u>TDM</u>	Analytical Batch:	<u>769477</u>
Analysis Date:	<u>07/24/23</u>	Time:	<u>1848</u>
		Analytical Method:	<u>EPA 6020B</u>

<i>ANALYTE</i>	<i>TRUE</i>	<i>FOUND</i>	<i>%RECOVERY</i>	<i>Q</i>	<i>UNITS</i>
Arsenic	10.0	10.2	102		ug/L

CONTROL LIMITS 90-110%

FORM II - IN

Continuing Calibration Verification (CCV) Report

Sample Name 1800 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name 1320_CCV.d **Comment** ICPMS-2,TDM
Acq Time 7/24/2023 6:48:28 PM **Total Dilution** 1.0000
Sample Type CCV **Sample Pass/Fail** Fail
ISTD Ref FileName 004CALB.d **ISTD Pass/Fail** Pass

Units : ppb

QC Analyte Table

Recovery Limits: 90-110%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	Rec	QC Flag
Li	7	6	No Gas	53.255	1.8	467866.50	50	106.51	
Be	9	6	No Gas	10.923	0.5	29929.30	10	109.23	
B	11	6	No Gas	67.073	0.8	120811.87	50	134.15	> +/- 10%
Sr	88	72	No Gas	10.164	0.8	744560.25	10	101.64	
Zr	90	72	No Gas	10.440	0.5	475897.10	10	104.4	
Mo	95	115	No Gas	9.468	1.4	131672.95	10	94.68	
Ag	107	115	No Gas	9.775	1.0	352959.68	10	97.75	
Cd	111	115	No Gas	9.615	0.7	77181.36	10	96.15	
Sb	121	115	No Gas	19.844	0.6	708214.05	20	99.22	
Ba	137	115	No Gas	9.617	0.8	121808.27	10	96.17	
Tl	205	209	No Gas	9.319	1.5	637558.57	10	93.19	
Pb	208	209	No Gas	9.500	1.1	872120.96	10	95	
Na	23	45	He	1060.163	2.4	762912.28	1000	106.02	
Mg	24	45	He	1032.702	1.9	304818.64	1000	103.27	
Al	27	45	He	204.230	3.7	19174.23	200	102.12	
Si	29	45	He	-16629.361	6.6	37411.16	2000	-831.47	> +/- 10%
K	39	45	He	1069.250	2.5	472922.55	1000	106.92	
Ca	44	45	He	5141.925	2.4	90020.79	5000	102.84	
Ti	47	45	He	10.269	2.7	1554.08	10	102.69	
V	51	72	He	10.212	1.7	57086.27	10	102.12	
Cr	52	72	He	10.325	1.8	73637.68	10	103.25	
Mn	55	72	He	52.451	2.2	166824.94	50	104.9	
Fe	57	72	He	1041.073	3.3	137899.05	1000	104.11	
Co	59	72	He	10.426	1.3	124594.25	10	104.26	
Ni	60	72	He	20.724	2.5	67616.83	20	103.62	
Cu	63	45	He	10.518	1.7	96596.27	10	105.18	
Zn	66	72	He	211.613	1.8	296550.87	200	105.81	
As	75	72	He	10.210	1.3	15364.41	10	102.1	
Se	78	72	He	9.996	1.1	925.26	10	99.96	
Sn	120	115	He	10.080	2.6	81934.85	10	100.8	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6415318.03	6132749.07333333	104.61	
Ge	72	He	218785.72	194706.726666667	112.37	
In	115	He	2218944.60	2072569.52666667	107.06	
Lu	175	He	5019930.14	4837163.67666667	103.78	
Rh	103	He	5511580.48	5075027.71333333	108.6	
Sc	45	He	237824.11	209719.873333333	113.4	
Tb	159	He	7632570.72	7217928.22666667	105.74	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	908970.65	976725.24	93.06	
Bi	209	No Gas	10221008.60	9415604.23333333	108.55	
Ge	72	No Gas	1802162.64	1639549.58666667	109.92	
In	115	No Gas	12520131.19	10997055.3166667	113.85	
Lu	175	No Gas	15518519.35	13769018.1266667	112.71	
Rh	103	No Gas	12019970.36	10512158.1933333	114.34	
Sc	45	No Gas	6751604.18	5845931.02	115.49	
Tb	159	No Gas	16002596.84	14199586.8733333	112.7	

Metals

Form III

Blanks

III
INITIAL CALIBRATION BLANK

Report No: 223072147 Blank ID: 1700
Instrument ID: ICPMS2 Lab File ID: 2230724A_MS2.b\011_JCB.d
Analyst: TDM Analytical Batch: 769477
Analysis Date: 07/24/23 Time: 1208 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	0.50	ug/L	U	0.25	0.50	1.00

FORM III - IN

Initial Calibration Blank (ICB) Report

Sample Name 1700 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name 011_ICB.d **Comment** ICPMS-2,TDM
Acq Time 7/24/2023 12:08:13 PM **Total Dilution** 1.0000
Sample Type ICB **Sample Pass/Fail** Pass
ISTD Ref FileName 004CALB.d **ISTD Pass/Fail** Pass
Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	Conc	RSD	CPS	Limit	QC Flag
Li	7	6	No Gas	0.013	2.1	73069.70	2.5	
Be	9	6	No Gas	-0.009	8.0	226.67	0.5	
B	11	6	No Gas	4.763	3.7	13336.28	5	
Sr	88	72	No Gas	0.000	7.4	1626.82	0.5	
Zr	90	72	No Gas	0.005	3.6	1669.01	0.5	
Mo	95	115	No Gas	0.039	6.7	2964.78	0.5	
Ag	107	115	No Gas	0.005	7.0	215.56	0.5	
Cd	111	115	No Gas	-0.015	16.1	435.57	0.5	
Sb	121	115	No Gas	0.084	1.6	5777.91	1	
Ba	137	115	No Gas	0.009	2.5	353.34	0.5	
Tl	205	209	No Gas	-0.085	7.0	4437.58	0.5	
Pb	208	209	No Gas	0.002	9.2	3256.94	0.5	
Na	23	45	He	-4.516	2.2	26881.40	50	
Mg	24	45	He	-1.640	7.1	633.37	50	
Al	27	45	He	0.032	8.9	158.00	10	
Si	29	45	He	-1231.853	1.5	72432.47	100	
K	39	45	He	-3.271	2.3	42237.51	50	
Ca	44	45	He	-13.405	12.2	880.04	250	
Ti	47	45	He	0.032	30.7	14.67	0.5	
V	51	72	He	0.006	7.2	610.02	0.5	
Cr	52	72	He	0.003	4.5	1212.29	0.5	
Mn	55	72	He	0.028	15.6	332.23	2.5	
Fe	57	72	He	1.220	23.5	346.69	50	
Co	59	72	He	-0.001	6.1	222.22	0.5	
Ni	60	72	He	-0.056	13.7	368.90	1	
Cu	63	45	He	0.019	2.2	854.48	0.5	
Zn	66	72	He	0.118	6.4	968.93	10	
As	75	72	He	-0.067	7.4	157.67	0.5	
Se	78	72	He	-0.063	1.7	85.16	0.5	
Sn	120	115	He	0.002	19.4	1084.65	0.5	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	5996516.79	6132749.07333333	97.78	
Ge	72	He	187583.92	194706.726666667	96.34	
In	115	He	1994015.61	2072569.52666667	96.21	
Lu	175	He	4722032.43	4837163.67666667	97.62	
Rh	103	He	4909346.61	5075027.71333333	96.74	
Sc	45	He	201657.08	209719.873333333	96.16	
Tb	159	He	7044304.69	7217928.22666667	97.59	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	991864.11	976725.24	101.55	
Bi	209	No Gas	9442735.69	9415604.23333333	100.29	
Ge	72	No Gas	1606556.46	1639549.58666667	97.99	
In	115	No Gas	10985736.63	10997055.3166667	99.9	
Lu	175	No Gas	13854537.71	13769018.1266667	100.62	
Rh	103	No Gas	10488356.80	10512158.19333333	99.77	
Sc	45	No Gas	5743339.22	5845931.02	98.25	
Tb	159	No Gas	14253785.21	14199586.87333333	100.38	

III
CONTINUING CALIBRATION BLANK

Report No: 223072147 Blank ID: 1900
Instrument ID: ICPMS2 Lab File ID: 2230724A_MS2.b\1268_CCB.d
Analyst: TDM Analytical Batch: 769477
Analysis Date: 07/24/23 Time: 1542 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	0.50	ug/L	U	0.25	0.50	1.00

FORM III - IN

Continuing Calibration Blank (CCB) Report

Sample Name 1900 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name 1268_CCB.d **Comment** ICPMS-2,TDM
Acq Time 7/24/2023 3:42:16 PM **Total Dilution** 1.0000
Sample Type CCB **Sample Pass/Fail** Pass
ISTD Ref FileName 004CALB.d **ISTD Pass/Fail** Pass
Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	Conc	RSD	CPS	Limit	QC Flag
Li	7	6	No Gas	-0.146	0.6	75579.38	2.5	
Be	9	6	No Gas	-0.034	1.9	160.67	0.5	
B	11	6	No Gas	0.797	5.5	6098.06	5	
Sr	88	72	No Gas	0.003	8.7	2026.88	0.5	
Zr	90	72	No Gas	-0.001	6.7	1556.77	0.5	
Mo	95	115	No Gas	-0.144	11.1	871.15	0.5	
Ag	107	115	No Gas	0.002	10.2	161.11	0.5	
Cd	111	115	No Gas	-0.024	14.7	411.12	0.5	
Sb	121	115	No Gas	-0.018	2.1	2889.21	1	
Ba	137	115	No Gas	0.008	12.9	387.79	0.5	
Tl	205	209	No Gas	-0.136	4.6	1376.79	0.5	
Pb	208	209	No Gas	-0.006	13.1	2793.56	0.5	
Na	23	45	He	25.461	2.5	51355.17	50	
Mg	24	45	He	-1.692	25.5	720.05	50	
Al	27	45	He	-0.003	6.8	180.00	10	
Si	29	45	He	-17321.521	6.0	34645.20	100	
K	39	45	He	-1.786	1.3	49486.32	50	
Ca	44	45	He	-12.437	5.6	1036.72	250	
Ti	47	45	He	0.015	21.3	14.33	0.5	
V	51	72	He	-0.006	5.3	631.13	0.5	
Cr	52	72	He	-0.008	1.4	1303.41	0.5	
Mn	55	72	He	0.000	5.1	292.23	2.5	
Fe	57	72	He	-0.028	21.6	233.34	50	
Co	59	72	He	-0.005	11.8	213.33	0.5	
Ni	60	72	He	-0.099	1.8	285.56	1	
Cu	63	45	He	-0.004	2.6	790.03	0.5	
Zn	66	72	He	0.027	7.7	976.71	10	
As	75	72	He	-0.117	8.1	107.00	0.5	
Se	78	72	He	-0.163	10.3	88.90	0.5	
Sn	120	115	He	-0.070	8.4	631.14	0.5	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6530400.11	6132749.07333333	106.48	
Ge	72	He	213403.08	194706.726666667	109.6	
In	115	He	2238568.77	2072569.52666667	108.01	
Lu	175	He	5199079.92	4837163.67666667	107.48	
Rh	103	He	5532329.92	5075027.71333333	109.01	
Sc	45	He	233527.27	209719.873333333	111.35	
Tb	159	He	7740899.68	7217928.22666667	107.25	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1044469.16	976725.24	106.94	
Bi	209	No Gas	10216694.22	9415604.23333333	108.51	
Ge	72	No Gas	1759505.03	1639549.58666667	107.32	
In	115	No Gas	12276333.21	10997055.3166667	111.63	
Lu	175	No Gas	15289046.44	13769018.1266667	111.04	
Rh	103	No Gas	11828530.92	10512158.1933333	112.52	
Sc	45	No Gas	6425540.72	5845931.02	109.91	
Tb	159	No Gas	15793327.26	14199586.8733333	111.22	

III
METHOD BLANK

Report No: 223072147 Blank ID: MB2502796
Instrument ID: ICPMS2 Lab File ID: 2230724A_MS2.b\1269SMPL.d
Analyst: TDM Analytical Batch: 769477
Analysis Date: 07/24/23 Time: 1545 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	20.0	ug/kg	U	10.0	20.0	40.0

FORM III - IN

Method Blank (MB) Report

Sample Name 2502796 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name 1269SMPL.d **Comment** ICPMS-2,TDM
Acq Time 7/24/2023 3:45:49 PM **Total Dilution** 40.0000
Sample Type MBSOIL **Sample Pass/Fail** Pass
ISTD Ref FileName 004CALB.d **ISTD Pass/Fail** Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	Conc	RSD	CPS	Limit	QC Flag
Li	7	6	No Gas	-1.532	2.9	77180.26	2.5	
Be	9	6	No Gas	-0.840	7.9	202.00	0.5	
B	11	6	No Gas	27.463	2.9	5928.03	5	
Sr	88	72	No Gas	2.492	6.4	5961.47	0.5	
Zr	90	72	No Gas	3.762	6.3	5481.10	0.5	
Mo	95	115	No Gas	-5.356	6.9	956.71	0.5	
Ag	107	115	No Gas	0.164	12.9	208.90	0.5	
Cd	111	115	No Gas	-1.093	1.9	367.79	0.5	
Sb	121	115	No Gas	-1.865	4.0	1806.80	1	
Ba	137	115	No Gas	3.877	9.9	1404.53	0.5	
Tl	205	209	No Gas	-5.139	10.4	1790.19	0.5	
Pb	208	209	No Gas	0.393	2.0	4017.06	0.5	
Na	23	45	He	1837.251	0.8	64488.64	50	
Mg	24	45	He	52.416	2.8	1570.14	50	
Al	27	45	He	89.856	4.8	381.34	10	
Si	29	45	He	-728207.941	6.8	31616.63	100	
K	39	45	He	-108.850	4.0	48650.20	50	
Ca	44	45	He	751.124	6.5	1551.78	250	
Ti	47	45	He	2.172	25.0	20.00	0.5	
V	51	72	He	-2.703	7.1	293.34	0.5	
Cr	52	72	He	1.278	8.0	1551.21	0.5	
Mn	55	72	He	24.946	2.2	2185.75	2.5	
Fe	57	72	He	125.270	4.8	630.04	50	
Co	59	72	He	0.573	4.1	426.68	0.5	
Ni	60	72	He	-2.618	6.6	383.35	1	
Cu	63	45	He	2.238	6.3	1308.96	0.5	
Zn	66	72	He	270.957	3.3	10000.16	10	
As	75	72	He	-4.813	3.6	100.00	0.5	
Se	78	72	He	-4.502	4.1	91.32	0.5	
Sn	120	115	He	0.572	2.3	1295.63	0.5	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6364173.03	6132749.07333333	103.77	
Ge	72	He	209832.85	194706.726666667	107.77	
In	115	He	2214492.28	2072569.52666667	106.85	
Lu	175	He	5147824.51	4837163.67666667	106.42	
Rh	103	He	5397058.12	5075027.71333333	106.35	
Sc	45	He	231204.39	209719.873333333	110.24	
Tb	159	He	7655564.26	7217928.22666667	106.06	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1053313.65	976725.24	107.84	
Bi	209	No Gas	9632062.57	9415604.23333333	102.3	
Ge	72	No Gas	1676627.95	1639549.58666667	102.26	
In	115	No Gas	11631258.24	10997055.3166667	105.77	
Lu	175	No Gas	14680387.70	13769018.1266667	106.62	
Rh	103	No Gas	11215462.06	10512158.1933333	106.69	
Sc	45	No Gas	6314604.06	5845931.02	108.02	
Tb	159	No Gas	15022217.28	14199586.8733333	105.79	

III
CONTINUING CALIBRATION BLANK

Report No:	<u>223072147</u>	Blank ID:	<u>1900</u>		
Instrument ID:	<u>ICPMS2</u>	Lab File ID:	<u>2230724A_MS2.b\1286_CCB.d</u>		
Analyst:	<u>TDM</u>	Analytical Batch:	<u>769477</u>		
Analysis Date:	<u>07/24/23</u>	Time:	<u>1646</u>	Analytical Method:	<u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	0.50	ug/L	U	0.25	0.50	1.00

FORM III - IN

Continuing Calibration Blank (CCB) Report

Sample Name	1900	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1286_CCB.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 4:46:37 PM	Total Dilution	1.0000
Sample Type	CCB	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	Conc	RSD	CPS	Limit	QC Flag
Li	7	6	No Gas	-0.067	1.1	77839.60	2.5	
Be	9	6	No Gas	-0.029	12.8	180.00	0.5	
B	11	6	No Gas	0.835	6.6	6301.52	5	
Sr	88	72	No Gas	0.007	1.1	2330.27	0.5	
Zr	90	72	No Gas	0.000	4.8	1599.00	0.5	
Mo	95	115	No Gas	-0.142	8.5	913.37	0.5	
Ag	107	115	No Gas	0.001	16.0	122.22	0.5	
Cd	111	115	No Gas	-0.033	7.6	350.01	0.5	
Sb	121	115	No Gas	-0.018	3.8	2960.35	1	
Ba	137	115	No Gas	0.023	14.5	575.58	0.5	
Tl	205	209	No Gas	-0.136	4.2	1466.80	0.5	
Pb	208	209	No Gas	-0.007	7.3	2766.90	0.5	
Na	23	45	He	-0.945	0.2	33264.31	50	
Mg	24	45	He	-1.972	14.9	633.37	50	
Al	27	45	He	-0.213	8.9	159.33	10	
Si	29	45	He	-19491.287	7.8	27765.71	100	
K	39	45	He	-1.912	1.9	49044.71	50	
Ca	44	45	He	-16.107	9.2	966.71	250	
Ti	47	45	He	-0.001	30.0	12.00	0.5	
V	51	72	He	-0.010	8.8	608.91	0.5	
Cr	52	72	He	-0.005	2.8	1330.08	0.5	
Mn	55	72	He	0.016	4.0	344.45	2.5	
Fe	57	72	He	0.018	15.0	240.01	50	
Co	59	72	He	-0.004	11.9	225.56	0.5	
Ni	60	72	He	-0.105	9.1	265.56	1	
Cu	63	45	He	-0.013	6.5	704.47	0.5	
Zn	66	72	He	0.013	10.3	960.04	10	
As	75	72	He	-0.111	12.2	115.00	0.5	
Se	78	72	He	-0.140	1.0	90.90	0.5	
Sn	120	115	He	-0.065	7.7	663.36	0.5	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6539088.24	6132749.07333333	106.63	
Ge	72	He	213957.01	194706.726666667	109.89	
In	115	He	2227747.80	2072569.526666667	107.49	
Lu	175	He	5139671.90	4837163.676666667	106.25	
Rh	103	He	5557659.22	5075027.71333333	109.51	
Sc	45	He	231675.00	209719.873333333	110.47	
Tb	159	He	7730668.63	7217928.226666667	107.1	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1065787.78	976725.24	109.12	
Bi	209	No Gas	10469258.80	9415604.23333333	111.19	
Ge	72	No Gas	1782471.53	1639549.586666667	108.72	
In	115	No Gas	12485926.88	10997055.316666667	113.54	
Lu	175	No Gas	15744631.85	13769018.126666667	114.35	
Rh	103	No Gas	12090622.58	10512158.19333333	115.02	
Sc	45	No Gas	6550006.27	5845931.02	112.04	
Tb	159	No Gas	16178375.18	14199586.87333333	113.94	

III
CONTINUING CALIBRATION BLANK

Report No: 223072147 Blank ID: 1900
Instrument ID: ICPMS2 Lab File ID: 2230724A_MS2.b\1298_CCB.d
Analyst: TDM Analytical Batch: 769477
Analysis Date: 07/24/23 Time: 1729 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	0.50	ug/L	U	0.25	0.50	1.00

FORM III - IN

Continuing Calibration Blank (CCB) Report

Sample Name	1900	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1298_CCB.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 5:29:32 PM	Total Dilution	1.0000
Sample Type	CCB	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	Conc	RSD	CPS	Limit	QC Flag
Li	7	6	No Gas	-0.223	2.1	76214.99	2.5	
Be	9	6	No Gas	-0.034	2.6	161.33	0.5	
B	11	6	No Gas	0.483	1.1	5564.55	5	
Sr	88	72	No Gas	0.013	9.8	2827.05	0.5	
Zr	90	72	No Gas	-0.001	4.0	1573.44	0.5	
Mo	95	115	No Gas	-0.145	5.4	893.37	0.5	
Ag	107	115	No Gas	0.001	1.6	121.11	0.5	
Cd	111	115	No Gas	-0.029	6.0	388.90	0.5	
Sb	121	115	No Gas	-0.026	3.9	2702.51	1	
Ba	137	115	No Gas	0.034	4.6	731.14	0.5	
Tl	205	209	No Gas	-0.136	2.5	1450.13	0.5	
Pb	208	209	No Gas	-0.004	5.0	3136.94	0.5	
Na	23	45	He	-6.087	3.3	30157.53	50	
Mg	24	45	He	-1.650	7.0	733.38	50	
Al	27	45	He	0.139	4.8	193.33	10	
Si	29	45	He	-20383.525	8.0	25338.76	100	
K	39	45	He	-8.194	4.0	47138.71	50	
Ca	44	45	He	-14.738	8.5	1001.72	250	
Ti	47	45	He	-0.033	39.4	7.33	0.5	
V	51	72	He	-0.010	12.2	616.69	0.5	
Cr	52	72	He	0.014	0.3	1465.65	0.5	
Mn	55	72	He	0.016	7.7	343.34	2.5	
Fe	57	72	He	-0.250	31.1	206.68	50	
Co	59	72	He	-0.002	9.2	241.11	0.5	
Ni	60	72	He	-0.089	7.4	317.79	1	
Cu	63	45	He	0.001	3.6	828.92	0.5	
Zn	66	72	He	0.121	6.6	1114.50	10	
As	75	72	He	-0.114	2.7	112.33	0.5	
Se	78	72	He	-0.187	3.7	87.55	0.5	
Sn	120	115	He	-0.075	9.5	585.57	0.5	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6590824.07	6132749.07333333	107.47	
Ge	72	He	214945.14	194706.726666667	110.39	
In	115	He	2231129.47	2072569.526666667	107.65	
Lu	175	He	5151636.18	4837163.676666667	106.5	
Rh	103	He	5596294.22	5075027.71333333	110.27	
Sc	45	He	234127.83	209719.873333333	111.64	
Tb	159	He	7745319.88	7217928.226666667	107.31	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1062403.79	976725.24	108.77	
Bi	209	No Gas	10708778.59	9415604.23333333	113.73	
Ge	72	No Gas	1812685.90	1639549.586666667	110.56	
In	115	No Gas	12678378.44	10997055.316666667	115.29	
Lu	175	No Gas	15949673.51	13769018.126666667	115.84	
Rh	103	No Gas	12248066.73	10512158.19333333	116.51	
Sc	45	No Gas	6593940.71	5845931.02	112.8	
Tb	159	No Gas	16415711.84	14199586.87333333	115.61	



III
METHOD BLANK

Report No: 223072147 Blank ID: MB2502759
Instrument ID: ICPMS2 Lab File ID: 2230724A_MS2.b\1303SMPL.d
Analyst: TDM Analytical Batch: 769477
Analysis Date: 07/24/23 Time: 1747 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	20.0	ug/kg	U	10.0	20.0	40.0

FORM III - IN

Method Blank (MB) Report

Sample Name 2502759 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name 1303SMPL.d **Comment** ICPMS-2,TDM
Acq Time 7/24/2023 5:47:31 PM **Total Dilution** 40.0000
Sample Type MBSOIL **Sample Pass/Fail** Fail
ISTD Ref FileName 004CALB.d **ISTD Pass/Fail** Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	Conc	RSD	CPS	Limit	QC Flag
Li	7	6	No Gas	-7.362	2.5	76162.09	2.5	
Be	9	6	No Gas	-1.040	9.4	186.67	0.5	
B	11	6	No Gas	31.092	1.7	6131.42	5	
Sr	88	72	No Gas	2.632	8.3	6361.66	0.5	
Zr	90	72	No Gas	1.704	8.9	3391.55	0.5	
Mo	95	115	No Gas	-5.133	5.4	1052.27	0.5	
Ag	107	115	No Gas	0.141	12.0	194.45	0.5	
Cd	111	115	No Gas	-1.135	9.5	368.90	0.5	
Sb	121	115	No Gas	-2.328	3.2	1460.09	1	
Ba	137	115	No Gas	4.283	5.7	1562.33	0.5	
Tl	205	209	No Gas	-5.266	12.7	1660.16	0.5	
Pb	208	209	No Gas	0.116	5.5	3567.00	0.5	
Na	23	45	He	2314.563	2.5	73881.58	50	> 1/2 LOQ
Mg	24	45	He	385.644	5.1	4030.70	50	
Al	27	45	He	257.515	3.8	775.36	10	
Si	29	45	He	-838566.618	9.5	23704.19	100	
K	39	45	He	308.648	2.0	53670.41	50	
Ca	44	45	He	2289.615	4.8	2238.54	250	
Ti	47	45	He	1.685	24.2	18.67	0.5	
V	51	72	He	-1.959	10.2	393.34	0.5	
Cr	52	72	He	1.468	4.1	1590.10	0.5	
Mn	55	72	He	437.638	3.5	33755.31	2.5	> 1/2 LOQ
Fe	57	72	He	144.079	9.4	693.37	50	
Co	59	72	He	0.738	4.5	475.57	0.5	
Ni	60	72	He	0.135	4.8	600.02	1	
Cu	63	45	He	2.350	3.1	1360.08	0.5	
Zn	66	72	He	712.453	2.7	24897.94	10	> 1/2 LOQ
As	75	72	He	-4.735	5.9	103.33	0.5	
Se	78	72	He	-5.140	2.8	90.45	0.5	
Sn	120	115	He	54.187	3.6	11925.12	0.5	> 1/2 LOQ

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6375136.99	6132749.07333333	103.95	
Ge	72	He	210734.85	194706.726666667	108.23	
In	115	He	2198403.18	2072569.52666667	106.07	
Lu	175	He	5139580.86	4837163.67666667	106.25	
Rh	103	He	5455220.89	5075027.71333333	107.49	
Sc	45	He	235733.67	209719.873333333	112.4	
Tb	159	He	7637476.14	7217928.22666667	105.81	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1057121.22	976725.24	108.23	
Bi	209	No Gas	10034166.93	9415604.23333333	106.57	
Ge	72	No Gas	1719317.47	1639549.58666667	104.87	
In	115	No Gas	11914844.72	10997055.3166667	108.35	
Lu	175	No Gas	15167866.02	13769018.1266667	110.16	
Rh	103	No Gas	11563898.71	10512158.1933333	110	
Sc	45	No Gas	6502912.66	5845931.02	111.24	
Tb	159	No Gas	15639493.93	14199586.8733333	110.14	

III
CONTINUING CALIBRATION BLANK

Report No:	<u>223072147</u>	Blank ID:	<u>1900</u>		
Instrument ID:	<u>ICPMS2</u>	Lab File ID:	<u>2230724A_MS2.b\1321_CCB.d</u>		
Analyst:	<u>TDM</u>	Analytical Batch:	<u>769477</u>		
Analysis Date:	<u>07/24/23</u>	Time:	<u>1852</u>	Analytical Method:	<u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	0.50	ug/L	U	0.25	0.50	1.00

FORM III - IN

Continuing Calibration Blank (CCB) Report

Sample Name	1900	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1321_CCB.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 6:52:02 PM	Total Dilution	1.0000
Sample Type	CCB	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	Conc	RSD	CPS	Limit	QC Flag
Li	7	6	No Gas	0.534	1.7	69315.59	2.5	
Be	9	6	No Gas	-0.026	6.0	157.33	0.5	
B	11	6	No Gas	2.350	4.2	7832.25	5	
Sr	88	72	No Gas	0.007	6.6	2366.95	0.5	
Zr	90	72	No Gas	0.001	2.1	1660.11	0.5	
Mo	95	115	No Gas	-0.063	2.3	1990.16	0.5	
Ag	107	115	No Gas	0.002	12.9	155.56	0.5	
Cd	111	115	No Gas	-0.031	11.9	362.23	0.5	
Sb	121	115	No Gas	0.037	1.2	4897.58	1	
Ba	137	115	No Gas	0.011	5.3	425.57	0.5	
Tl	205	209	No Gas	-0.133	8.0	1560.15	0.5	
Pb	208	209	No Gas	-0.005	2.6	2883.56	0.5	
Na	23	45	He	-4.979	2.3	31764.25	50	
Mg	24	45	He	-1.896	3.9	680.04	50	
Al	27	45	He	-0.106	15.3	175.33	10	
Si	29	45	He	-18866.661	9.8	30809.08	100	
K	39	45	He	-1.272	2.7	51212.45	50	
Ca	44	45	He	-14.936	5.6	1025.05	250	
Ti	47	45	He	-0.002	28.5	12.33	0.5	
V	51	72	He	-0.010	9.8	626.69	0.5	
Cr	52	72	He	0.009	4.8	1463.42	0.5	
Mn	55	72	He	0.030	10.0	397.79	2.5	
Fe	57	72	He	0.972	20.1	373.35	50	
Co	59	72	He	0.000	5.2	280.01	0.5	
Ni	60	72	He	-0.072	3.8	380.01	1	
Cu	63	45	He	0.067	7.0	1460.09	0.5	
Zn	66	72	He	0.404	3.8	1534.54	10	
As	75	72	He	-0.110	7.5	119.67	0.5	
Se	78	72	He	-0.063	10.5	99.72	0.5	
Sn	120	115	He	-0.063	6.9	683.36	0.5	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6341114.07	6132749.07333333	103.4	
Ge	72	He	219467.09	194706.726666667	112.72	
In	115	He	2231840.48	2072569.52666667	107.68	
Lu	175	He	5018117.42	4837163.67666667	103.74	
Rh	103	He	5558073.95	5075027.71333333	109.52	
Sc	45	He	240692.77	209719.873333333	114.77	
Tb	159	He	7602979.26	7217928.22666667	105.33	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	888470.19	976725.24	90.96	
Bi	209	No Gas	10038935.06	9415604.23333333	106.62	
Ge	72	No Gas	1800181.94	1639549.58666667	109.8	
In	115	No Gas	12504826.90	10997055.3166667	113.71	
Lu	175	No Gas	15218492.27	13769018.1266667	110.53	
Rh	103	No Gas	12180278.13	10512158.19333333	115.87	
Sc	45	No Gas	6619856.96	5845931.02	113.24	
Tb	159	No Gas	15703881.44	14199586.87333333	110.59	



Metals

Form IV

Interference Checks

IV
ICPMS INTERFERENCE CHECKS

Report No: <u>223072147</u>	ICSA \ AB ID: <u>2000 \ 2100</u>
Instrument ID: <u>ICPMS2</u>	Analytical Batch: <u>769477</u>
Analyst: <u>TDM</u>	Analytical Method: <u>EPA 6020B</u>
Lab File ID ICSA1: <u>2230724A_MS2.b\1212ICSA.d</u>	Lab File ID ICSAB1: <u>2230724A_MS2.b\1213ICSB.d</u>
Lab File ID ICSA2: _____	Lab File ID ICSAB2: _____

Concentration Units: ug/L

Analyzed (A/AB):			07/24/23 1222	07/24/23 1226				
ANALYTE	TRUE A	TRUE AB	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R
Aluminum	1000	1000	1010	999	100			
Antimony	0	0	-0.013	0.038				
Arsenic	0	10.0	-0.088	9.53	95			
Barium	0	0	0.0030	0.013				
Beryllium	0	0	-0.022	-0.022				
Boron	0	20.0	0.17	22.8	114			
Cadmium	0	10.0	-0.0090	10.7	107			
Calcium	3000	3000	2920	2990	100			
Chromium	0	20.0	0.039	19.5	98			
Cobalt	0	20.0	0.024	19.7	98			
Copper	0	20.0	0.0050	20.6	103			
Iron	2500	2500	2500	2510	100			
Lead	0	0	-0.0030	0.0020				
Lithium	0	20.0	-0.28	20.9	104			
Magnesium	1000	1000	1030	1030	103			
Manganese	0	20.0	0.021	20.2	101			
Molybdenum	20.0	20.0	18.2	18.2	91			
Nickel	0	20.0	-0.034	20.1	100			
Potassium	1000	1000	985	992	99			
Selenium	0	10.0	-0.18	9.39	94			
Silicon	0	1000	-4900	-4100	-414			
Silver	0	5.00	0.0040	4.95	99			
Sodium	2500	2500	2490	2480	99			
Strontium	0	10.0	0.018	9.53	95			
Thallium	0	0	-0.12	-0.12				
Tin	0	10.0	-0.024	9.33	93			
Titanium	20.0	20.0	19.5	19.6	98			
Vanadium	0	20.0	-0.010	19.1	96			
Zinc	0	20.0	0.35	21.0	105			
Zirconium	0	20.0	0.012	18.5	92			

FORM IV - IN

Interference Check Solution A (ICS-A) Report

Sample Name 2000 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name 1212ICSA.d **Comment** ICPMS-2,TDM
Acq Time 7/24/2023 12:22:29 PM **Total Dilution** 1.0000
Sample Type ICSA **Sample Pass/Fail** Fail
ISTD Ref FileName 004CALB.d **ISTD Pass/Fail** Pass
Units : ppb

QC Analyte Table

Spiked Element Recovery: 80-120%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	QC Flag
Li	7	6	No Gas	-0.282	2.0	73883.63	2.5	
Be	9	6	No Gas	-0.022	5.1	195.33	0.5	
B	11	6	No Gas	0.174	8.4	4817.60	5	
Sr	88	72	No Gas	0.018	10.3	2930.41	0.5	
Zr	90	72	No Gas	0.012	5.8	2006.83	0.5	
Mo	95	115	No Gas	18.175	0.2	227244.13	20	
Ag	107	115	No Gas	0.004	14.0	194.45	0.5	
Cd	111	115	No Gas	-0.009	11.3	494.46	0.5	
Sb	121	115	No Gas	-0.013	7.6	2856.99	1	
Ba	137	115	No Gas	0.003	16.4	300.01	0.5	
Tl	205	209	No Gas	-0.121	5.6	2276.95	0.5	
Pb	208	209	No Gas	-0.003	5.8	2913.57	0.5	
Na	23	45	He	2487.862	1.6	1502569.25	2500	
Mg	24	45	He	1026.449	1.0	261141.90	1000	
Al	27	45	He	1006.074	1.0	80768.10	1000	
Si	29	45	He	-4879.135	1.3	63836.70	100	> LOD
K	39	45	He	985.248	1.9	379066.49	1000	
Ca	44	45	He	2918.986	2.4	44525.20	3000	
Ti	47	45	He	19.493	3.1	2534.56	20	
V	51	72	He	-0.010	16.3	551.13	0.5	
Cr	52	72	He	0.039	12.6	1480.09	0.5	
Mn	55	72	He	0.021	17.2	326.67	2.5	
Fe	57	72	He	2495.586	0.7	292443.07	2500	
Co	59	72	He	0.024	5.5	494.46	0.5	
Ni	60	72	He	-0.034	3.3	443.34	1	
Cu	63	45	He	0.005	8.5	758.92	0.5	
Zn	66	72	He	0.348	6.4	1285.63	10	
As	75	72	He	-0.088	9.2	134.33	0.5	
Se	78	72	He	-0.180	14.2	79.63	0.5	
Sn	120	115	He	-0.024	8.5	917.82	0.5	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6119474.49	6132749.07333333	99.78	
Ge	72	He	193845.25	194706.726666667	99.56	
In	115	He	2049800.98	2072569.52666667	98.9	
Lu	175	He	4819571.70	4837163.67666667	99.64	
Rh	103	He	4998211.47	5075027.71333333	98.49	
Sc	45	He	204988.41	209719.873333333	97.74	
Tb	159	He	7216580.10	7217928.22666667	99.98	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1037028.80	976725.24	106.17	
Bi	209	No Gas	9729391.31	9415604.23333333	103.33	
Ge	72	No Gas	1658220.66	1639549.58666667	101.14	
In	115	No Gas	11374421.75	10997055.31666667	103.43	
Lu	175	No Gas	14493597.28	13769018.12666667	105.26	
Rh	103	No Gas	10700529.30	10512158.19333333	101.79	
Sc	45	No Gas	5941256.98	5845931.02	101.63	
Tb	159	No Gas	14820034.78	14199586.87333333	104.37	

Interference Check Solution AB (ICS-AB) Report

Sample Name 2100 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name 1213ICSB.d **Comment** ICPMS-2,TDM
Acq Time 7/24/2023 12:26:01 PM **Total Dilution** 1.0000
Sample Type ICSB **Sample Pass/Fail** Fail
ISTD Ref FileName 004CALB.d **ISTD Pass/Fail** Pass
Units : ppb

QC Analyte Table Spiked Element Recovery: 80-120%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	QC Flag
Li	7	6	No Gas	20.879	0.8	248867.35	20	
Be	9	6	No Gas	-0.022	4.9	191.33	0.5	
B	11	6	No Gas	22.760	0.9	48401.13	20	
Sr	88	72	No Gas	9.532	0.5	647895.51	10	
Zr	90	72	No Gas	18.535	1.5	782707.21	20	
Mo	95	115	No Gas	18.215	0.9	230326.64	20	
Ag	107	115	No Gas	4.949	0.1	164231.42	5	
Cd	111	115	No Gas	10.683	0.2	78720.86	10	
Sb	121	115	No Gas	0.038	3.8	4558.57	1	
Ba	137	115	No Gas	0.013	6.0	418.90	0.5	
Tl	205	209	No Gas	-0.122	2.1	2200.26	0.5	
Pb	208	209	No Gas	0.002	2.6	3346.97	0.5	
Na	23	45	He	2483.082	1.4	1516453.93	2500	
Mg	24	45	He	1034.286	1.7	266072.29	1000	
Al	27	45	He	999.264	1.1	81112.03	1000	
Si	29	45	He	-4135.397	1.4	66564.20	1000	> +/- 20%
K	39	45	He	992.167	2.0	385651.49	1000	
Ca	44	45	He	2989.192	2.5	46076.44	3000	
Ti	47	45	He	19.598	3.9	2576.23	20	
V	51	72	He	19.130	0.9	94457.66	20	
Cr	52	72	He	19.463	1.5	122207.50	20	
Mn	55	72	He	20.164	1.3	57130.01	20	
Fe	57	72	He	2513.042	1.9	295291.15	2500	
Co	59	72	He	19.732	1.7	209275.77	20	
Ni	60	72	He	20.134	1.3	58364.07	20	
Cu	63	45	He	20.567	1.8	163932.77	20	
Zn	66	72	He	20.957	1.9	26862.47	20	
As	75	72	He	9.533	1.8	12760.92	10	
Se	78	72	He	9.392	2.7	778.18	10	
Sn	120	115	He	9.334	2.0	70896.89	10	

QC ISTD Table Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6179156.16	6132749.07333333	100.76	
Ge	72	He	194342.00	194706.726666667	99.81	
In	115	He	2071176.29	2072569.52666667	99.93	
Lu	175	He	4896015.55	4837163.67666667	101.22	
Rh	103	He	5065255.49	5075027.71333333	99.81	
Sc	45	He	207259.37	209719.873333333	98.83	
Tb	159	He	7303002.18	7217928.22666667	101.18	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1009495.98	976725.24	103.36	
Bi	209	No Gas	9732540.69	9415604.23333333	103.37	
Ge	72	No Gas	1671892.26	1639549.58666667	101.97	
In	115	No Gas	11503223.79	10997055.3166667	104.6	
Lu	175	No Gas	14615222.28	13769018.1266667	106.15	
Rh	103	No Gas	10852403.18	10512158.1933333	103.24	
Sc	45	No Gas	6028067.12	5845931.02	103.12	
Tb	159	No Gas	14919816.86	14199586.8733333	105.07	

Metals

Form V1

Matrix Spikes

V1
MS/MSD RECOVERY

Report No:	<u>223072147</u>	Parent Sample ID:	<u>KCDC-SB0068-001.0-20230720</u>
Prep Method:	<u>3050B</u>	Parent GCAL ID:	<u>22307214701</u>
Prep Date:	<u>07/21/23</u> Time: <u>1415</u>	Prep Batch:	<u>769363</u>
Analytical Method:	<u>EPA 6020B</u>	Analytical Batch:	<u>769477</u>

GCAL QC ID: 2502798 MS	Instrument ID: ICPMS2
Analyst: TDM	Lab File ID: 2230724A_MS2.b\1272SMPL.d
Analysis Date: 07/24/23 1556	Dilution: 10

ANALYTE	UNITS	SPIKE ADDED	SAMPLE RESULT	MS RESULT	MS % REC	#	QC LIMITS
Arsenic	ug/kg	2320	1130	3130	86		80 - 120

GCAL QC ID: 2502799 MSD	Instrument ID: ICPMS2
Analyst: TDM	Lab File ID: 2230724A_MS2.b\1273SMPL.d
Analysis Date: 07/24/23 1600	Dilution: 10

ANALYTE	UNITS	SPIKE ADDED	MSD RESULT	MSD % REC	#	% RPD	#	QC LIMITS %REC	RPD
Arsenic	ug/kg	2320	2990	80		5		80 - 120	0 - 20

RPD : 0 out of 1 outside limits

Spike Recovery: 0 out of 2 outside limits

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

FORM V (PART 1) - IN

MS Report

Sample Name	2502798	Total Dilution	400.0000
File Name	1272SMPL.d	Comment	ICPMS-2, TDM
Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b	ISTD Ref FileName	004CALB.d
Acq Time	7/24/2023 3:56:31 PM	Sample QC Pass/Fail	Fail
Sample Type	MSSOIL	ISTD QC Pass/Fail	Pass

Analyte Table

Units : ppb

Name	Mass	ISTD	Mode	MeasValue	FinalConc	RSD	CPS	Ref Conc	%Rec	QC Flag
Ag	107	115	No Gas	4.746	1898.200	1.9	170035.33	8.92266239226839	94.4638822488576	
Al	27	45	He	515.622	206248.899	1.9	48109.08	200004.60091838	15.6107453272495	> +/- 20%
As	75	72	He	6.736	2694.514	1.9	10223.59	970.614321094085	86.1949735401523	
B	11	6	No Gas	27.832	11132.835	1.4	60333.84	903.498434660795	102.293363395657	
Ba	137	115	No Gas	6.902	2760.724	0.9	86796.39	1056.5628044014	85.2080691170668	
Be	9	6	No Gas	5.394	2157.625	1.5	17146.33	0.644452845710492	107.849008482753	
Ca	44	45	He	6757.067	2702826.605	1.9	117873.53	2374526.35860959	32.8300246252156	> +/- 20%
Cd	111	115	No Gas	4.89	1955.943	2.1	39239.68	4.0738844859247	97.5934497560382	
Co	59	72	He	5.293	2117.312	1.2	63317.74	17.790783985804	104.976065761529	
Cr	52	72	He	6.724	2689.411	1.4	48385.64	712.320863766285	98.8545132262124	
Cu	63	45	He	11.794	4717.593	0.8	108185.19	3940.08037204539	38.875643953871	> +/- 20%
Fe	57	72	He	772.255	308902.107	3.1	102238.29	91758.8921286655	108.571607472583	
K	39	45	He	536.015	214405.907	1.5	262487.33	4231.93262119456	105.086987407183	
Li	7	6	No Gas	28.62	11447.862	1.0	325003.41	262.002885940181	111.858588080895	
Mg	24	45	He	583.24	233295.801	1.9	172666.25	29997.6428077005	101.64907933262	
Mn	55	72	He	13.372	5348.646	1.7	42703.94	4625.49740594825	36.1574525679941	> +/- 20%
Mo	95	115	No Gas	4.635	1854.071	1.2	65393.67	-49.1918599266375	95.1631275972781	
Na	23	45	He	549.295	219717.861	2.0	411970.33	11599.0040773379	104.059428683974	
Ni	60	72	He	10.723	4289.221	1.6	35238.88	84.0563166039645	105.129121518336	
Pb	208	209	No Gas	5.739	2295.502	2.0	533586.55	432.540347191898	93.1480624381085	
Sb	121	115	No Gas	9.595	3837.808	1.1	341530.07	-0.965158010505802	95.9693414346871	
Se	78	72	He	0.859	343.735	3.6	174.92	-66.1016251960562	102.459096166779	
Si	29	45	He	-17190.363	-6876145.262	6.3	35678.32	-6926859.26966718	25.3570039444799	> +/- 20%
Sn	120	115	He	4.651	1860.358	3.5	39557.58	-3.39318810601605	93.1875465510301	
Sr	88	72	No Gas	17.429	6971.452	1.1	1273477.61	6533.72007663304	21.8866051752199	> +/- 20%
Ti	47	45	He	16.182	6472.903	2.0	2442.21	7766.09772496347	-64.6597597206252	> +/- 20%
Tl	205	209	No Gas	4.731	1892.394	2.0	332240.51	-52.0846505616788	97.223907973312	
V	51	72	He	5.897	2358.715	2.8	33221.82	238.893271912764	105.991104136081	
Zn	66	72	He	109.048	43619.382	1.8	153122.78	3052.8029881611	101.416446736399	
Zr	90	72	No Gas	1.227	490.934	2.4	57281.12	157.602959205338	83.3328462450287	

QC ISTD Table

Recovery Limits: 70 - 120%

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6586604.90	6132749.07333333	107.4	
Ge	72	He	218533.98	194706.726666667	112.24	
In	115	He	2282944.57	2072569.52666667	110.15	
Lu	175	He	5265990.44	4837163.67666667	108.87	
Rh	103	He	5540609.64	5075027.71333333	109.17	
Sc	45	He	237751.03	209719.873333333	113.37	
Tb	159	He	7861667.80	7217928.22666667	108.92	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1046106.54	976725.24	107.1	
Bi	209	No Gas	10325117.35	9415604.23333333	109.66	
Ge	72	No Gas	1799418.26	1639549.58666667	109.75	
In	115	No Gas	12420561.56	10997055.31666667	112.94	
Lu	175	No Gas	15592939.77	13769018.12666667	113.25	
Rh	103	No Gas	11826376.20	10512158.19333333	112.5	
Sc	45	No Gas	6590786.82	5845931.02	112.74	
Tb	159	No Gas	16096972.26	14199586.87333333	113.36	

Matrix Spike Duplicate (MSD) Sample Report

Sample Name 2502799 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name 1273SMPL.d **Comment** ICPMS-2,TDM
Acq Time 7/24/2023 4:00:06 PM **Total Dilution** 400.0000
Sample Type MSDSOIL **Sample Pass/Fail** Pass
ISTD Ref FileName 004CALB.d **ISTD Pass/Fail** Pass

Units : ppb

QC Analyte Table

RPD Limits: 0-20%

Name	Mass	Mode	MeasValue	Final Conc	RSD	CPS	RefConc	RPD	Flag
Li	7	No Gas	28.268	11307.188	0.9	321706.47	28.6196542350743	1.24	
Be	9	No Gas	5.399	2159.514	1.2	17146.34	5.39406155625192	0.09	
B	11	No Gas	27.148	10859.162	1.7	58908.43	27.8320869355661	2.49	
Sr	88	No Gas	16.801	6720.547	1.0	1213030.76	17.4286304503436	3.66	
Zr	90	No Gas	1.224	489.731	2.0	56478.06	1.22733586046363	0.25	
Mo	95	No Gas	4.616	1846.310	0.3	64733.93	4.63517673004731	0.42	
Ag	107	No Gas	4.706	1882.470	1.0	167583.52	4.74550076842355	0.83	
Cd	111	No Gas	4.889	1955.441	0.7	38987.92	4.88985719901672	0.03	
Sb	121	No Gas	9.465	3786.045	1.1	334904.68	9.59452124844245	1.36	
Ba	137	No Gas	6.851	2740.341	1.3	85636.10	6.90181046685684	0.74	
Tl	205	No Gas	4.714	1885.465	1.3	328095.17	4.7309837722614	0.37	
Pb	208	No Gas	5.617	2246.759	1.6	517618.31	5.73875398988517	2.15	
Na	23	He	562.409	224963.714	2.3	413205.40	549.294653613215	2.36	
Mg	24	He	578.284	231313.408	1.4	168027.75	583.239503682351	0.85	
Al	27	He	502.643	201057.177	1.7	46034.73	515.622247623199	2.55	
Si	29	He	-17240.451	-6896180.460	6.9	34865.11	-17190.3631544455	-0.29	
K	39	He	546.104	218441.618	2.2	261558.10	536.014768588902	1.86	
Ca	44	He	6203.532	2481412.879	2.9	106329.30	6757.06651215438	8.54	
Ti	47	He	17.801	7120.411	2.1	2634.91	16.1822563263774	9.53	
V	51	He	5.627	2250.733	2.0	31277.54	5.89678838658596	4.69	
Cr	52	He	6.659	2663.780	2.0	47261.94	6.72352782072633	0.96	
Mn	55	He	11.82	4728.137	1.6	37248.08	13.3716161432703	12.32	
Fe	57	He	693.42	277367.857	3.2	90521.61	772.255267684577	10.76	
Co	59	He	5.328	2131.236	0.7	62831.05	5.29328024804096	0.66	
Ni	60	He	10.783	4313.236	2.5	34933.74	10.7230529433435	0.56	
Cu	63	He	12.199	4879.635	1.1	109810.36	11.793983127807	3.38	
Zn	66	He	109.569	43827.797	1.9	151669.55	109.048454206802	0.48	
As	75	He	6.437	2574.725	1.2	9641.86	6.73628447974283	4.55	
Se	78	He	0.936	374.374	5.1	178.67	0.859336898677654	8.53	
Sn	120	He	4.686	1874.353	2.6	39256.73	4.65089435728646	0.75	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6534340.32	6132749.07333333	106.55	
Ge	72	He	215416.82	194706.726666667	110.64	
In	115	He	2249571.63	2072569.52666667	108.54	
Lu	175	He	5227381.80	4837163.67666667	108.07	
Rh	103	He	5464754.23	5075027.71333333	107.68	
Sc	45	He	233351.54	209719.873333333	111.27	
Tb	159	He	7806445.30	7217928.22666667	108.15	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1045548.51	976725.24	107.05	
Bi	209	No Gas	10233020.26	9415604.23333333	108.68	
Ge	72	No Gas	1777960.35	1639549.58666667	108.44	
In	115	No Gas	12344705.63	10997055.3166667	112.25	
Lu	175	No Gas	15477535.60	13769018.1266667	112.41	
Rh	103	No Gas	11727498.15	10512158.1933333	111.56	
Sc	45	No Gas	6535737.10	5845931.02	111.8	
Tb	159	No Gas	15910954.76	14199586.8733333	112.05	

V1
MS/MSD RECOVERY

Report No:	<u>223072147</u>	Parent Sample ID:	<u>KCDC-SB0083-001.0-20230720</u>
Prep Method:	<u>3050B</u>	Parent GCAL ID:	<u>22307214721</u>
Prep Date:	<u>07/21/23</u> Time: <u>1415</u>	Prep Batch:	<u>769361</u>
Analytical Method:	<u>EPA 6020B</u>	Analytical Batch:	<u>769477</u>

GCAL QC ID: 2502801 MS	Instrument ID: ICPMS2
Analyst: TDM	Lab File ID: 2230724A_MS2.b\1307SMPL.d
Analysis Date: 07/24/23 1801	Dilution: 10

ANALYTE	UNITS	SPIKE ADDED	SAMPLE RESULT	MS RESULT	MS % REC	#	QC LIMITS
Arsenic	ug/kg	2640	6700	7650	36	*	80 - 120

GCAL QC ID: 2502802 MSD	Instrument ID: ICPMS2
Analyst: TDM	Lab File ID: 2230724A_MS2.b\1308SMPL.d
Analysis Date: 07/24/23 1805	Dilution: 10

ANALYTE	UNITS	SPIKE ADDED	MSD RESULT	MSD % REC	#	% RPD	#	QC LIMITS %REC	RPD
Arsenic	ug/kg	2640	7370	25	*	4		80 - 120	0 - 20

RPD : 0 out of 1 outside limits

Spike Recovery: 2 out of 2 outside limits

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

FORM V (PART 1) - IN

MS Report

Sample Name	2502801	Total Dilution	400.0000
File Name	1307SMPL.d	Comment	ICPMS-2, TDM
Data Path Name	C:\Agilent\ICPMH1\DATA\2230724A_MS2.b	ISTD Ref FileName	004CALB.d
Acq Time	7/24/2023 6:01:51 PM	Sample QC Pass/Fail	Fail
Sample Type	MSSOIL	ISTD QC Pass/Fail	Pass

Analyte Table

Units : ppb

Name	Mass	ISTD	Mode	MeasValue	FinalConc	RSD	CPS	Ref Conc	%Rec	QC Flag
Ag	107	115	No Gas	4.457	1782.901	1.3	163472.91	11.6910263210771	88.5605050420429	
Al	27	45	He	3238.617	1295446.656	2.0	306460.45	1024165.24324789	678.203530964939	> +/- 20%
As	75	72	He	14.49	5795.840	1.7	21931.42	5084.65769679109	35.5591177447116	> +/- 20%
B	11	6	No Gas	26.909	10763.778	2.3	55867.17	795.453321518036	99.6832421096398	
Ba	137	115	No Gas	11.647	4658.957	1.3	149745.54	3561.60526803581	54.8676114216967	> +/- 20%
Be	9	6	No Gas	5.105	2042.079	1.1	15513.92	73.6905288800879	98.4194130028276	
Ca	44	45	He	39147.199	15658879.563	1.4	688582.54	19344016.2773913	-368.51367146217	> +/- 20%
Cd	111	115	No Gas	4.638	1855.104	0.4	38124.43	19.1563545226251	91.7974000340755	
Co	59	72	He	5.387	2154.646	1.6	65226.00	180.713587656642	98.6966261685227	
Cr	52	72	He	11.659	4663.736	1.9	83904.00	2254.45786015304	120.463906299703	> +/- 20%
Cu	63	45	He	17.626	7050.504	2.0	164108.46	4389.35166755778	133.057603731664	> +/- 20%
Fe	57	72	He	2728.869	1091547.790	1.5	364995.57	585099.556771794	253.224116631883	> +/- 20%
K	39	45	He	539.358	215743.299	2.1	268424.38	10176.3721969167	102.783463390727	
Li	7	6	No Gas	29.264	11705.500	0.8	315790.51	789.340897238524	109.161592850214	
Mg	24	45	He	874.916	349966.289	1.1	262880.03	121107.503737777	114.429392880323	
Mn	55	72	He	33.295	13318.051	1.8	107184.70	9899.20701644424	170.942205341279	> +/- 20%
Mo	95	115	No Gas	5.971	2388.500	1.1	85395.36	2311.01616143387	3.87421196503767	> +/- 20%
Na	23	45	He	614.495	245798.149	1.6	464691.12	128397.008008759	58.7005706734717	> +/- 20%
Ni	60	72	He	11.042	4416.979	1.3	36710.19	398.388500107805	100.464752620302	
Pb	208	209	No Gas	7.618	3047.376	0.8	718755.65	1820.49871680957	61.3438464974286	> +/- 20%
Sb	121	115	No Gas	6.029	2411.707	1.1	221049.44	8.67382176447178	60.0758313635797	> +/- 20%
Se	78	72	He	0.698	279.002	3.7	163.63	-150.708956302908	107.427824018592	
Si	29	45	He	-19101.528	-7640611.300	7.5	30247.14	-7770468.97519499	64.9288375579477	> +/- 20%
Sn	120	115	He	3.209	1283.488	2.0	27556.95	-18.6998799034473	65.10937516036	> +/- 20%
Sr	88	72	No Gas	100.615	40246.179	1.2	7479811.14	78736.4248460455	-1924.51230752654	> +/- 20%
Ti	47	45	He	24.613	9845.017	3.6	3772.56	3848.2896469376	299.836349177499	> +/- 20%
Tl	205	209	No Gas	4.432	1772.883	1.2	317021.59	-48.5631121604739	91.0723199395005	
V	51	72	He	9.654	3861.769	2.3	54615.94	1715.0242589966	107.337258747716	
Zn	66	72	He	107.447	42978.844	1.4	152728.90	2828.79654495718	100.375118952633	
Zr	90	72	No Gas	2.321	928.361	1.2	108894.15	786.246355064006	35.5287461301627	> +/- 20%

QC ISTD Table

Recovery Limits: 70 - 120%

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6573339.69	6132749.07333333	107.18	
Ge	72	He	221205.01	194706.726666667	113.61	
In	115	He	2274319.53	2072569.52666667	109.73	
Lu	175	He	5211548.46	4837163.67666667	107.74	
Rh	103	He	5515691.87	5075027.71333333	108.68	
Sc	45	He	241890.21	209719.873333333	115.34	
Tb	159	He	7860640.51	7217928.22666667	108.9	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	999297.76	976725.24	102.31	
Bi	209	No Gas	10493703.38	9415604.23333333	111.45	
Ge	72	No Gas	1832978.40	1639549.58666667	111.8	
In	115	No Gas	12713605.86	10997055.31666667	115.61	
Lu	175	No Gas	15939463.93	13769018.12666667	115.76	
Rh	103	No Gas	11991598.13	10512158.19333333	114.07	
Sc	45	No Gas	6905444.73	5845931.02	118.12	
Tb	159	No Gas	16463174.76	14199586.87333333	115.94	

Matrix Spike Duplicate (MSD) Sample Report

Sample Name 2502802 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name 1308SMPL.d **Comment** ICPMS-2,TDM
Acq Time 7/24/2023 6:05:25 PM **Total Dilution** 400.0000
Sample Type MSDSOIL **Sample Pass/Fail** Fail
ISTD Ref FileName 004CALB.d **ISTD Pass/Fail** Pass

Units : ppb

QC Analyte Table

RPD Limits: 0-20%

Name	Mass	Mode	MeasValue	Final Conc	RSD	CPS	RefConc	RPD	Flag
Li	7	No Gas	31.804	12721.771	1.0	332276.58	29.2637504556499	8.32	
Be	9	No Gas	5.538	2215.158	0.6	16581.71	5.1051969723416	8.13	
B	11	No Gas	28.859	11543.489	2.0	58800.95	26.909443831205	6.99	
Sr	88	No Gas	216.298	86519.087	0.6	15905477.68	100.615446738787	73.01	> 20%
Zr	90	No Gas	2.809	1123.662	0.7	130050.72	2.32090334896164	19.03	
Mo	95	No Gas	5.423	2169.123	2.0	77615.20	5.97125100183657	9.63	
Ag	107	No Gas	4.605	1841.848	0.7	168428.52	4.45725281790484	3.25	
Cd	111	No Gas	4.883	1953.372	1.5	40006.18	4.63776088801034	5.16	
Sb	121	No Gas	5.365	2146.138	0.6	196586.02	6.02926769076915	11.65	
Ba	137	No Gas	13.554	5421.726	0.8	173750.34	11.6473937411743	15.13	
Tl	205	No Gas	4.769	1907.564	2.1	337934.94	4.43220821657384	7.32	
Pb	208	No Gas	9.529	3811.716	0.6	891958.91	7.61843911689535	22.29	> 20%
Na	23	He	854.113	341645.314	1.6	625054.90	614.495373389255	32.63	> 20%
Mg	24	He	939.261	375704.229	1.4	278992.90	874.915723746055	7.09	
Al	27	He	4450.536	1780214.217	1.5	416366.66	3238.61663908466	31.52	> 20%
Si	29	He	-18659.967	-7463986.715	6.7	31295.92	-19101.5282501977	-2.34	
K	39	He	575.351	230140.342	1.6	279708.63	539.358247445927	6.46	
Ca	44	He	52797.494	21118997.449	1.4	917910.12	39147.1989069241	29.69	> 20%
Ti	47	He	27.541	11016.413	2.0	4173.60	24.6125415762189	11.23	
V	51	He	11.081	4432.398	1.7	61976.76	9.65442358487733	13.76	
Cr	52	He	14.098	5639.035	1.3	100181.04	11.6593399653677	18.93	
Mn	55	He	40.805	16322.164	1.2	130029.16	33.2951278081745	20.27	> 20%
Fe	57	He	2776.923	1110769.086	1.6	367868.73	2728.8694750889	1.75	
Co	59	He	5.737	2294.848	1.2	68785.51	5.38661527756774	6.3	
Ni	60	He	11.875	4750.151	0.3	39052.97	11.0424465122997	7.27	
Cu	63	He	23.75	9499.824	1.5	218358.52	17.6262593554776	29.6	> 20%
Zn	66	He	118.527	47410.777	2.0	166780.34	107.447110315026	9.81	
As	75	He	13.954	5581.485	0.8	20925.96	14.4896001292133	3.77	
Se	78	He	0.617	246.656	5.2	155.38	0.697505849428651	12.31	
Sn	120	He	2.802	1120.670	2.8	23849.11	3.20871905825938	13.54	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6447460.53	6132749.07333333	105.13	
Ge	72	He	219087.52	194706.726666667	112.52	
In	115	He	2239624.44	2072569.52666667	108.06	
Lu	175	He	5157137.01	4837163.67666667	106.61	
Rh	103	He	5434308.53	5075027.71333333	107.08	
Sc	45	He	239199.31	209719.873333333	114.06	
Tb	159	He	7747050.72	7217928.22666667	107.33	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	985836.22	976725.24	100.93	
Bi	209	No Gas	10421239.85	9415604.23333333	110.68	
Ge	72	No Gas	1813387.15	1639549.58666667	110.6	
In	115	No Gas	12680031.29	10997055.3166667	115.3	
Lu	175	No Gas	15918813.93	13769018.1266667	115.61	
Rh	103	No Gas	11921169.25	10512158.1933333	113.4	
Sc	45	No Gas	6881194.17	5845931.02	117.71	
Tb	159	No Gas	16340835.18	14199586.8733333	115.08	

Metals

Form V2

Post Digestion Spikes

V2
POST DIGEST SPIKE SAMPLE RECOVERY

Report No:	<u>223072147</u>	GCAL PDS ID:	<u>2503388</u>
Matrix:	<u>Solid</u>	Parent Sample ID:	<u>KCDC-SB0068-001... (22307214701)</u>
Analyst:	<u>TDM</u>	Instrument ID:	<u>ICPMS2</u>
Analysis Date:	<u>07/24/23</u> Time: <u>1603</u>	Lab File ID:	<u>2230724A_MS2.b\1274SMPL.d</u>
Analytical Method:	<u>EPA 6020B</u>	Analytical Batch:	<u>769477</u>

ANALYTE	UNITS	SPIKED SAMPLE RESULT		C	SAMPLE RESULT		C	SPIKE ADDED	% R	Q	LCL	UCL
Arsenic	ug/kg	25400			1130			23200	105		75	125

Post Digestion Spike (PDS) Report

Sample Name 2503388
File Name 1274SMPL.d
Data Path Name C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
Acq Time 7/24/2023 4:03:42 PM
Sample Type PDS
Total Dilution 400.0000
Comment ICPMS-2,TDM
ISTD Ref FileName 004CALB.d
Sample QC Pass/Fial Fail
ISTD QC Pass/Fail Pass
QC Ref File Name 1271SMPL.d

QC Analyte Table

Name	Mass	Tune	Conc.	Conc. RSD	CPS	Reference Conc	Spk Amt	% Rec	%Low	%High	Flag
Li	7	No Gas	106341.992	1.5	2421073.56	0.655007214850453	250	106.06	75	125	
Be	9	No Gas	21283.705	0.8	169596.17	0.00161113211427623	50	106.42	75	125	
B	11	No Gas	100875.578	0.7	518968.94	2.25874608665199	250	99.97	75	125	
Sr	88	No Gas	26775.137	0.4	4801517.22	16.3343001915826	50	100.91	75	125	
Zr	90	No Gas	19853.772	0.5	2214352.07	0.394007398013346	10	477.53	75	125	> +/- 25%
Mo	95	No Gas	19882.122	1.2	656686.90	-0.122979649816594	50	99.66	75	125	
Ag	107	No Gas	20866.003	1.4	1820973.75	0.022306655980671	50	104.28	75	125	
Cd	111	No Gas	19869.813	1.4	383075.04	0.0101847112148118	50	99.33	75	125	
Sb	121	No Gas	38581.701	0.9	3315053.97	-0.00241289502626451	100	96.46	75	125	
Ba	137	No Gas	20704.694	1.0	632710.93	2.6414070110035	50	98.33	75	125	
Tl	205	No Gas	19530.821	0.5	3251619.01	-0.130211626404197	50	97.91	75	125	
Pb	208	No Gas	20044.549	1.0	4524445.51	1.08135086797974	50	98.1	75	125	
Na	23	He	2142265.969	0.6	3625740.15	28.9975101933446	5000	106.5	75	125	
Mg	24	He	2143348.136	0.5	1539700.71	74.9941070192512	5000	105.58	75	125	
Al	27	He	620945.249	0.9	141128.86	500.011502295949	1000	103.49	75	125	
Si	29	He	-6976387.200	N/A	34087.36	-17317.1481741679	5000	141.6	75	125	> +/- 25%
K	39	He	2131965.058	1.1	2103466.27	10.5798315529864	5000	106.37	75	125	
Ca	44	He	12937075.272	0.5	546423.37	5936.31589652399	25000	104.55	75	125	
Ti	47	He	30757.026	4.6	11293.64	19.4152443124087	50	110.77	75	125	
V	51	He	21093.841	0.4	286004.75	0.597233179781909	50	104.22	75	125	
Cr	52	He	21570.914	0.7	370967.93	1.78080215941571	50	104.15	75	125	
Mn	55	He	25828.155	0.1	201094.09	11.5637435148706	50	104.88	75	125	
Fe	57	He	2172519.521	0.9	703530.25	229.397230321664	5000	103.86	75	125	
Co	59	He	21026.388	0.8	614254.75	0.04447695996451	50	105.04	75	125	
Ni	60	He	42354.948	0.7	335924.01	0.210140791509911	100	105.67	75	125	
Cu	63	He	24461.743	0.6	544577.38	9.85020093011347	50	102.18	75	125	
Zn	66	He	418783.898	0.4	1433490.08	7.63200747040274	1000	103.9	75	125	
As	75	He	21885.545	0.4	79462.10	2.42653580273521	50	104.36	75	125	
Se	78	He	4062.822	2.1	919.33	-0.16525406299014	10	103.28	75	125	
Sn	120	He	20331.899	0.5	406736.79	-0.00848297026504012	50	101.68	75	125	

QC ISTD Table

Post Digestion Spike (PDS) Report

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	%QC Low	%QC High	QC Flag
(Li)	6	No Gas	1063861.73	1.1	976725.24	108.92	70	120	
Sc	45	No Gas	6485823.07	0.6	5845931.02	110.95	70	120	
Ge	72	No Gas	1768354.24	1.3	1639549.58666667	107.86	70	120	
Rh	103	No Gas	11435068.99	0.6	10512158.19333333	108.78	70	120	
In	115	No Gas	12106271.43	0.2	10997055.3166667	110.09	70	120	
Tb	159	No Gas	15597091.44	0.8	14199586.87333333	109.84	70	120	
Lu	175	No Gas	15315050.19	0.8	13769018.1266667	111.23	70	120	
Bi	209	No Gas	10083411.73	0.7	9415604.23333333	107.09	70	120	
Sc	45	He	232232.32	1.6	209719.873333333	110.73	70	120	
Ge	72	He	214282.65	1.7	194706.726666667	110.05	70	120	
Rh	103	He	5368781.73	1.6	5075027.71333333	105.79	70	120	
In	115	He	2210203.84	2.3	2072569.52666667	106.64	70	120	
Tb	159	He	7694552.59	2.8	7217928.22666667	106.6	70	120	
Lu	175	He	5189603.67	2.8	4837163.67666667	107.29	70	120	
Bi	209	He	6431958.86	1.7	6132749.07333333	104.88	70	120	

V2
POST DIGEST SPIKE SAMPLE RECOVERY

Report No:	<u>223072147</u>	GCAL PDS ID:	<u>2503390</u>
Matrix:	<u>Solid</u>	Parent Sample ID:	<u>KCDC-SB0083-001... (22307214721)</u>
Analyst:	<u>TDM</u>	Instrument ID:	<u>ICPMS2</u>
Analysis Date:	<u>07/24/23</u> Time: <u>1809</u>	Lab File ID:	<u>2230724A_MS2.b\1309SMPL.d</u>
Analytical Method:	<u>EPA 6020B</u>	Analytical Batch:	<u>769477</u>

ANALYTE	UNITS	SPIKED SAMPLE RESULT	C	SAMPLE RESULT	C	SPIKE ADDED	% R	Q	LCL	UCL
Arsenic	ug/kg	32000		6700		26400	96		75	125

Post Digestion Spike (PDS) Report

Sample Name 2503390
File Name 1309SMPL.d
Data Path Name C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
Acq Time 7/24/2023 6:09:00 PM
Sample Type PDS
Total Dilution 400.0000
Comment ICPMS-2,TDM
ISTD Ref FileName 004CALB.d
Sample QC Pass/Fial Fail
ISTD QC Pass/Fail Pass
QC Ref File Name 1306SMPL.d

QC Analyte Table

Name	Mass	Tune	Conc.	Conc. RSD	CPS	Reference Conc	Spk Amt	% Rec	%Low	%High	Flag
Li	7	No Gas	105574.948	4.4	2359752.15	1.97335224309631	250	104.75	75	125	
Be	9	No Gas	19170.839	3.1	149982.54	0.18422632220022	50	95.5	75	125	
B	11	No Gas	103304.126	1.9	521728.12	1.98863330379509	250	102.49	75	125	
Sr	88	No Gas	96156.193	0.8	17675306.82	196.841062115114	50	97.39	75	125	
Zr	90	No Gas	20704.122	0.5	2367875.05	1.96561588766002	10	432.58	75	125	> +/- 25%
Mo	95	No Gas	18836.712	0.8	639388.78	5.77754040358469	50	84.43	75	125	
Ag	107	No Gas	19548.423	1.1	1752832.88	0.0292275658026928	50	97.69	75	125	
Cd	111	No Gas	18116.004	1.0	358906.16	0.0478908863065627	50	90.49	75	125	
Sb	121	No Gas	35272.925	1.7	3114334.18	0.0216845544111794	100	88.16	75	125	
Ba	137	No Gas	21797.510	1.6	684385.86	8.90401317008951	50	92.51	75	125	
Tl	205	No Gas	18075.467	1.9	3065861.41	-0.121407780401185	50	90.6	75	125	
Pb	208	No Gas	19896.923	1.6	4574384.96	4.55124679202392	50	91.18	75	125	
Na	23	He	2086444.927	0.2	3658236.40	320.992520021897	5000	98.03	75	125	
Mg	24	He	2043009.957	0.2	1519910.65	302.768759344443	5000	96.32	75	125	
Al	27	He	1390680.258	0.7	327077.25	2560.41310811972	1000	97.65	75	125	
Si	29	He	-7821780.537	N/A	28644.07	-19426.1724379875	5000	135.55	75	125	> +/- 25%
K	39	He	1946348.095	0.9	1993197.26	25.4409304922918	5000	96.82	75	125	
Ca	44	He	28492993.270	0.4	1244722.66	48360.0406934783	25000	97.1	75	125	
Ti	47	He	23281.154	1.6	8855.03	9.62072411734399	50	97.62	75	125	
V	51	He	21206.371	0.5	291194.30	4.2875606474915	50	97.66	75	125	
Cr	52	He	21782.184	1.4	379410.01	5.63614465038259	50	97.88	75	125	
Mn	55	He	29674.479	1.3	233944.18	24.7480175411106	50	99.25	75	125	
Fe	57	He	2519778.229	1.0	826370.22	1462.74889192948	5000	97.47	75	125	
Co	59	He	19592.393	0.8	579735.50	0.451783969141604	50	97.08	75	125	
Ni	60	He	39162.032	1.0	314634.95	0.995971250269512	100	96.94	75	125	
Cu	63	He	22961.346	0.4	529470.74	10.9733791688944	50	94.14	75	125	
Zn	66	He	385698.081	1.1	1337187.17	7.07199136239295	1000	95.75	75	125	
As	75	He	24260.947	0.7	89180.78	12.7116442419777	50	96.72	75	125	
Se	78	He	3767.710	2.7	871.28	-0.376772390757271	10	97.88	75	125	
Sn	120	He	18883.437	0.8	378807.33	-0.0467496997586182	50	94.51	75	125	

QC ISTD Table

Post Digestion Spike (PDS) Report

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	%QC Low	%QC High	QC Flag
(Li)	6	No Gas	1044875.50	2.7	976725.24	106.98	70	120	
Sc	45	No Gas	6844325.42	1.8	5845931.02	117.08	70	120	
Ge	72	No Gas	1813337.77	1.6	1639549.58666667	110.6	70	120	
Rh	103	No Gas	11722525.37	0.4	10512158.19333333	111.51	70	120	
In	115	No Gas	12438322.98	0.4	10997055.3166667	113.11	70	120	
Tb	159	No Gas	16310231.84	1.0	14199586.87333333	114.86	70	120	
Lu	175	No Gas	15836397.26	1.0	13769018.1266667	115.01	70	120	
Bi	209	No Gas	10271379.64	0.8	9415604.23333333	109.09	70	120	
Sc	45	He	240508.69	1.4	209719.873333333	114.68	70	120	
Ge	72	He	217012.23	1.3	194706.726666667	111.46	70	120	
Rh	103	He	5394624.92	1.9	5075027.71333333	106.3	70	120	
In	115	He	2215932.88	2.2	2072569.52666667	106.92	70	120	
Tb	159	He	7736004.67	1.9	7217928.22666667	107.18	70	120	
Lu	175	He	5194491.17	2.5	4837163.67666667	107.39	70	120	
Bi	209	He	6417974.70	1.9	6132749.07333333	104.65	70	120	

Metals

Form VII

Lab Control Spikes

VII
LABORATORY CONTROL SAMPLE

Report No: <u>223072147</u>	GCAL ID: <u>2502760 (LCS)</u>
Matrix: <u>Solid</u>	Instrument ID: <u>ICPMS2</u>
Analyst: <u>TDM</u>	Lab File ID: <u>2230724A_MS2.b\1304SMPL.d</u>
Prep Date: <u>07/21/23</u> Time: <u>1415</u>	Analysis Date: <u>07/24/23</u> Time: <u>1751</u>
Prep Batch: <u>769361</u>	Analytical Batch: <u>769477</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>UNITS</i>	<i>TRUE</i>	<i>FOUND</i>	<i>% R</i>	<i>Q</i>	<i>LCL</i>	<i>UCL</i>
Arsenic	ug/kg	2000	1940	97		80	120

FORM VII - IN

Laboratory Control Sample (LCS) Report

Sample Name	2502760	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1304SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 5:51:05 PM	Total Dilution	40.0000
Sample Type	LCS6020	Sample Pass/Fail	Fail
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Recovery Limits: 80-120% 6020B / 85-115% 200.8

Name	Mass	ISTD	Mode	Conc	RSD	CPS	SpkAmt	Rec	QC Flag
Li	7	6	No Gas	10457.583	1.1	2428580.90	250	104.58	
Be	9	6	No Gas	1915.325	1.4	155675.75	50	95.77	
B	11	6	No Gas	9649.792	1.7	506542.99	250	96.5	
Sr	88	72	No Gas	1928.132	3.1	3399619.11	50	96.41	
Zr	90	72	No Gas	392.965	1.3	432026.32	10	98.24	
Mo	95	115	No Gas	1945.887	1.6	632321.31	50	97.29	
Ag	107	115	No Gas	1794.503	1.6	1540626.29	50	89.73	
Cd	111	115	No Gas	1855.443	1.6	351940.12	50	92.77	
Sb	121	115	No Gas	3770.544	1.9	3187254.32	100	94.26	
Ba	137	115	No Gas	1881.077	2.0	565532.79	50	94.05	
Tl	205	209	No Gas	1878.132	1.9	3058741.31	50	93.91	
Pb	208	209	No Gas	1879.936	2.2	4150639.29	50	94	
Na	23	45	He	199875.718	1.4	3417744.22	5000	99.94	
Mg	24	45	He	202265.189	2.3	1467126.12	5000	101.13	
Al	27	45	He	40113.226	2.3	92111.19	1000	100.28	
Si	29	45	He	-614516.849	3.9	40798.45	5000	-307.26	LCS6020 Main CR1 Failed
K	39	45	He	198171.782	1.8	1977464.55	5000	99.09	
Ca	44	45	He	996381.878	2.6	425225.75	25000	99.64	
Ti	47	45	He	1958.515	1.9	7263.45	50	97.93	
V	51	72	He	2012.439	1.7	271633.79	50	100.62	
Cr	52	72	He	2022.796	1.6	346368.33	50	101.14	
Mn	55	72	He	2059.001	1.9	159637.29	50	102.95	
Fe	57	72	He	202091.763	2.2	651488.00	5000	101.05	
Co	59	72	He	1999.425	2.2	581508.71	50	99.97	
Ni	60	72	He	3999.887	1.6	315806.43	100	100	
Cu	63	45	He	1946.458	1.5	437667.51	50	97.32	
Zn	66	72	He	38609.392	1.6	1315546.96	1000	96.52	
As	75	72	He	1940.058	1.9	70147.89	50	97	
Se	78	72	He	391.115	3.7	885.14	10	97.78	
Sn	120	115	He	1946.954	2.3	389617.85	50	97.35	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6337328.45	6132749.07333333	103.34	
Ge	72	He	213307.60	194706.726666667	109.55	
In	115	He	2210463.27	2072569.526666667	106.65	
Lu	175	He	5188372.11	4837163.676666667	107.26	
Rh	103	He	5327233.82	5075027.71333333	104.97	
Sc	45	He	234494.50	209719.873333333	111.81	
Tb	159	He	7758003.84	7217928.226666667	107.48	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1085545.28	976725.24	111.14	
Bi	209	No Gas	9862916.52	9415604.23333333	104.75	
Ge	72	No Gas	1738211.25	1639549.586666667	106.02	
In	115	No Gas	11908947.03	10997055.31666667	108.29	
Lu	175	No Gas	15225180.19	13769018.12666667	110.58	
Rh	103	No Gas	11266242.33	10512158.19333333	107.17	
Sc	45	No Gas	6545028.07	5845931.02	111.96	
Tb	159	No Gas	15579039.77	14199586.87333333	109.71	

VII
LABORATORY CONTROL SAMPLE

Report No:	223072147	GCAL ID:	2502797 (LCS)
Matrix:	Solid	Instrument ID:	ICPMS2
Analyst:	TDM	Lab File ID:	2230724A_MS2.b\1270SMPL.d
Prep Date:	07/21/23	Time:	1415
		Analysis Date:	07/24/23
		Time:	1549
Prep Batch:	769363	Analytical Batch:	769477
Prep Method:	3050B	Analytical Method:	EPA 6020B

<i>ANALYTE</i>	<i>UNITS</i>	<i>TRUE</i>	<i>FOUND</i>	<i>% R</i>	<i>Q</i>	<i>LCL</i>	<i>UCL</i>
Arsenic	ug/kg	2000	2040	102		80	120

FORM VII - IN

Laboratory Control Sample (LCS) Report

Sample Name	2502797	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1270SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 3:49:22 PM	Total Dilution	40.0000
Sample Type	LCS6020	Sample Pass/Fail	Fail
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Recovery Limits: 80-120% 6020B / 85-115% 200.8

Name	Mass	ISTD	Mode	Conc	RSD	CPS	SpkAmt	Rec	QC Flag
Li	7	6	No Gas	10891.528	1.0	2516951.42	250	108.92	
Be	9	6	No Gas	2056.757	1.3	166491.30	50	102.84	
B	11	6	No Gas	10029.795	1.2	524171.67	250	100.3	
Sr	88	72	No Gas	2027.659	2.3	3500881.51	50	101.38	
Zr	90	72	No Gas	423.589	0.9	455961.74	10	105.9	
Mo	95	115	No Gas	2042.196	1.7	650430.98	50	102.11	
Ag	107	115	No Gas	1859.237	2.4	1564882.58	50	92.96	
Cd	111	115	No Gas	1937.395	2.1	360245.98	50	96.87	
Sb	121	115	No Gas	3951.621	1.7	3274396.60	100	98.79	
Ba	137	115	No Gas	1963.113	2.1	578578.21	50	98.16	
Tl	205	209	No Gas	1969.403	2.0	3162343.60	50	98.47	
Pb	208	209	No Gas	1968.722	1.9	4286042.41	50	98.44	
Na	23	45	He	210079.371	1.8	3532786.72	5000	105.04	
Mg	24	45	He	211751.487	1.9	1510873.94	5000	105.88	
Al	27	45	He	42327.249	2.0	95611.46	1000	105.82	
Si	29	45	He	-500182.563	3.4	48775.31	5000	-250.09	LCS6020 Main CR1 Failed
K	39	45	He	208498.139	2.5	2044541.90	5000	104.25	
Ca	44	45	He	1058056.543	2.7	444185.98	25000	105.81	
Ti	47	45	He	2053.157	3.2	7492.56	50	102.66	
V	51	72	He	2090.954	2.0	279072.86	50	104.55	
Cr	52	72	He	2115.589	2.1	358176.56	50	105.78	
Mn	55	72	He	2186.354	2.0	167605.43	50	109.32	
Fe	57	72	He	211593.729	2.0	674479.96	5000	105.8	
Co	59	72	He	2091.484	1.8	601451.50	50	104.57	
Ni	60	72	He	4171.183	2.0	325655.56	100	104.28	
Cu	63	45	He	2036.235	1.6	450424.93	50	101.81	
Zn	66	72	He	40708.676	1.8	1371613.04	1000	101.77	
As	75	72	He	2041.798	2.2	72991.75	50	102.09	
Se	78	72	He	423.409	0.5	938.80	10	105.85	
Sn	120	115	He	2028.314	3.3	406509.88	50	101.42	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6349981.99	6132749.07333333	103.54	
Ge	72	He	210933.76	194706.726666667	108.33	
In	115	He	2213826.18	2072569.52666667	106.82	
Lu	175	He	5235936.59	4837163.67666667	108.24	
Rh	103	He	5290610.21	5075027.71333333	104.25	
Sc	45	He	230715.80	209719.873333333	110.01	
Tb	159	He	7754085.72	7217928.22666667	107.43	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1080804.75	976725.24	110.66	
Bi	209	No Gas	9725151.31	9415604.23333333	103.29	
Ge	72	No Gas	1702254.93	1639549.58666667	103.82	
In	115	No Gas	11674729.11	10997055.3166667	106.16	
Lu	175	No Gas	14860331.86	13769018.1266667	107.93	
Rh	103	No Gas	11000033.45	10512158.19333333	104.64	
Sc	45	No Gas	6382464.61	5845931.02	109.18	
Tb	159	No Gas	15260446.02	14199586.87333333	107.47	

Metals

Form VIII

Tunes

VIII
ICP-MS TUNE

Report No: 223072147 GCAL QC ID: 1150
Instrument ID: ICPMS2 Lab File ID: 2230724A_MS2.b\QCTune\2230724A_MS2-QCTu
Analyst: LWZ Analytical Batch: 769477
Analysis Date: 07/24/23 Time: 1039 Analytical Method: EPA 6020B

<i>ELEMENT - MASS</i>	<i>AVG MEASURED MASS (amu)</i>	<i>PEAK WIDTH AT 5% PEAK HEIGHT (amu)</i>	<i>%RSD</i>
Be-9	9.05	.7791	.8537
Mg-24	24.05	.7867	2.2203
Mg-25	25.05	.7855	2.8709
Mg-26	26	.7863	2.0228
Co-59	59	.7748	.5047
In-115	115.05	.7595	.4001
Pb-206	206.05	.7805	.4264
Pb-207	207	.7613	.3754
Pb-208	208	.7969	.3318

FORM VIII - IN

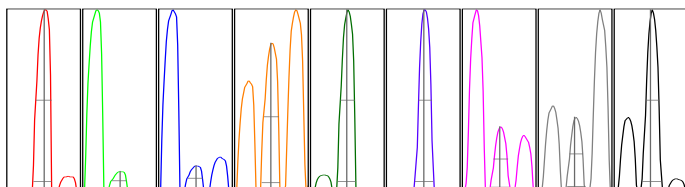
US EPA Tune Check Sample Report

Batch Folder C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
Report Comment
Instrument Name G8403A JP14170244

[No Gas]				
Mass	Count (Mean)	RSD% (Actual)	RSD% (Required)	RSD% (Flag)
9	6741	0.85	5.00	
24	74669	2.22	5.00	
25	10145	2.87	5.00	
26	13549	2.02	5.00	
59	170048	0.50	5.00	
115	157722	0.40	5.00	
206	39090	0.43	5.00	
207	33557	0.38	5.00	
208	83192	0.33	5.00	

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
9	6697	6661	6773	6786	6784
24	76829	75847	74159	73835	72673
25	10493	10420	9963	10008	9843
26	13806	13850	13507	13221	13362
59	170087	170327	169099	169425	171304
115	157604	157846	156818	158585	157755
206	39334	38868	39046	39084	39117
207	33740	33635	33479	33440	33494
208	83571	83249	83295	82895	82948

Integration Time [sec] = 0.1



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	Width-X% (Actual)	Width-X% (Required)	Width-X% (Flag)
9	1103	9.05	8.9 - 9.1		0.779	0.849	
24	12368	24.05	23.9 - 24.1		0.787	0.849	
25	1685	25.05	24.9 - 25.1		0.786	0.849	
26	2268	26.00	25.9 - 26.1		0.786	0.849	
59	29685	59.00	58.9 - 59.1		0.775	0.849	
115	29359	115.05	114.9 - 115.1		0.760	0.849	
206	7200	206.05	205.9 - 206.1		0.781	0.849	
207	6242	207.00	206.9 - 207.1		0.761	0.849	
208	15401	208.00	207.9 - 208.1		0.797	0.849	

X% = 5 Integration Time [sec] = 0.1 Acquisition Time [sec] = 235 Y Axis = Linear

Tune Parameters

Plasma Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit	ParameterName	Value	Unit
RF Power	1550	W	Carrier Gas	1.00	L/min	S/C Temp		2 °C
RF Matching	1.60	V	Option Gas		%	Gas Switch		Dilution Gas
Smpl Depth	8.0	mm	Nebulizer Pump	0.10	rps	Makeup/Dilution Gas		0.20 L/min

Lenses Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit	ParameterName	Value	Unit
Extract 1	0.0	V	Omega Lens	12.4	V	Deflect	14.6	V
Extract 2	-250.0	V	Cell Entrance	-30	V	Plate Bias	-35	V
Omega Bias	-105	V	Cell Exit	-50	V			

Cell Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit	ParameterName	Value	Unit
Use Gas	false		3rd Gas Flow	0	%	Energy Discrimination	4.0	V
He Flow	0.0	mL/min	OctP Bias	-8.0	V			
H2 Flow	0.0	mL/min	OctP RF	200	V			

Metals

Form IX

Serial Dilutions

IX
SERIAL DILUTIONS

Report No:	<u>223072147</u>	GCAL SD ID:	<u>2503389</u>
Matrix:	<u>Solid</u>	Parent Sample ID:	<u>KCDC-SB0068-001.... (22307214701)</u>
Analyst:	<u>TDM</u>	Instrument ID:	<u>ICPMS2</u>
Analysis Date:	<u>07/24/23</u>	Time:	<u>1607</u>
Analytical Method:	<u>EPA 6020B</u>	Lab File ID:	<u>2230724A_MS2.b\1275SMPL.d</u>
		Analytical Batch:	<u>769477</u>

<i>ANALYTE</i>	<i>UNITS</i>	<i>PARENT SAMPLE RESULT</i>	<i>C</i>	<i>SERIAL DILUTION RESULT</i>	<i>C</i>	<i>% DIFF</i>	<i>Q</i>	<i>LCL</i>	<i>UCL</i>
Arsenic	ug/kg	1130		990	J				

FORM IX - IN

Sample Report

Sample Name	2503389	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1275SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 4:07:17 PM	Total Dilution	2000.0000
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.168	336.119	0.3	77387.63	500	
Be	9	6	No Gas	-0.019	-38.936	2.8	202.67	1000	
B	11	6	No Gas	2.889	5778.703	3.2	10167.08	500	
Sr	88	72	No Gas	3.324	6647.848	4.6	239966.77	1000	
Zr	90	72	No Gas	0.142	283.155	6.4	7895.72	100	
Mo	95	115	No Gas	-0.058	-115.160	4.7	2039.05	1000	
Ag	107	115	No Gas	0.009	18.084	19.9	397.79	100	
Cd	111	115	No Gas	-0.017	-34.632	4.3	468.90	1000	
Sb	121	115	No Gas	0.283	565.789	6.5	13450.98	1000	
Ba	137	115	No Gas	0.565	1129.843	3.3	7320.95	1000	
Tl	205	209	No Gas	-0.129	-257.633	4.1	1896.87	1000	
Pb	208	209	No Gas	0.217	434.682	2.5	23418.92	1000	
Na	23	45	He	15.254	30507.614	3.8	43807.73	100000	
Mg	24	45	He	13.619	27237.951	4.7	5064.36	100000	
Al	27	45	He	97.394	194787.935	2.9	8936.75	20000	
Si	29	45	He	-18036.207	-36072413.550	7.5	31960.73	10000	
K	39	45	He	4.541	9081.599	1.3	51155.37	100000	
Ca	44	45	He	1159.265	2318530.967	1.6	20582.82	500000	
Ti	47	45	He	3.737	7474.637	7.7	554.70	1000	
V	51	72	He	0.122	243.660	6.0	1316.74	1000	
Cr	52	72	He	0.359	718.103	4.2	3804.99	1000	
Mn	55	72	He	2.248	4496.782	3.5	7241.85	5000	
Fe	57	72	He	45.142	90283.095	5.4	6044.82	100000	
Co	59	72	He	0.006	11.340	3.2	332.23	1000	
Ni	60	72	He	-0.033	-65.467	2.8	492.24	2000	
Cu	63	45	He	1.98	3959.779	0.4	18243.66	1000	
Zn	66	72	He	1.945	3890.834	3.8	3582.70	20000	
As	75	72	He	0.426	852.609	2.7	887.36	1000	
Se	78	72	He	-0.12	-240.022	5.8	92.17	50	
Sn	120	115	He	-0.026	-52.950	5.1	977.82	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6514894.90	6132749.07333333	106.23	
Ge	72	He	212968.96	194706.726666667	109.38	
In	115	He	2231817.82	2072569.52666667	107.68	
Lu	175	He	5160992.22	4837163.67666667	106.69	
Rh	103	He	5493515.20	5075027.71333333	108.25	
Sc	45	He	230022.81	209719.873333333	109.68	
Tb	159	He	7704681.34	7217928.22666667	106.74	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1032113.45	976725.24	105.67	
Bi	209	No Gas	10296743.39	9415604.23333333	109.36	
Ge	72	No Gas	1766860.62	1639549.58666667	107.77	
In	115	No Gas	12341528.77	10997055.3166667	112.23	
Lu	175	No Gas	15338002.69	13769018.1266667	111.4	
Rh	103	No Gas	11842338.70	10512158.1933333	112.65	
Sc	45	No Gas	6630690.85	5845931.02	113.42	
Tb	159	No Gas	15820947.68	14199586.8733333	111.42	

IX
SERIAL DILUTIONS

Report No:	<u>223072147</u>	GCAL SD ID:	<u>2503391</u>
Matrix:	<u>Solid</u>	Parent Sample ID:	<u>KCDC-SB0083-001.... (22307214721)</u>
Analyst:	<u>TDM</u>	Instrument ID:	<u>ICPMS2</u>
Analysis Date:	<u>07/24/23</u>	Time:	<u>1812</u>
		Lab File ID:	<u>2230724A_MS2.b\1310SMPL.d</u>
Analytical Method:	<u>EPA 6020B</u>	Analytical Batch:	<u>769477</u>

<i>ANALYTE</i>	<i>UNITS</i>	<i>PARENT SAMPLE RESULT</i>	<i>C</i>	<i>SERIAL DILUTION RESULT</i>	<i>C</i>	<i>% DIFF</i>	<i>Q</i>	<i>LCL</i>	<i>UCL</i>
Arsenic	ug/kg	6710		6530		2.7		0	10

FORM IX - IN

Sample Report

Sample Name	2503391	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b
File Name	1310SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/24/2023 6:12:34 PM	Total Dilution	2000.0000
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.568	1136.643	1.5	78587.52	500	
Be	9	6	No Gas	0.035	70.543	9.5	361.34	1000	
B	11	6	No Gas	3.016	6031.284	6.5	10137.05	500	
Sr	88	72	No Gas	37.013	74026.672	1.0	2756336.83	1000	
Zr	90	72	No Gas	0.465	930.074	0.7	23167.63	100	
Mo	95	115	No Gas	0.283	566.564	2.3	6871.73	1000	
Ag	107	115	No Gas	0.011	22.102	3.9	487.79	100	
Cd	111	115	No Gas	-0.013	-26.401	9.3	521.13	1000	
Sb	121	115	No Gas	0.436	871.089	7.7	19539.28	1000	
Ba	137	115	No Gas	1.811	3621.505	0.4	23739.19	1000	
Tl	205	209	No Gas	-0.128	-255.840	8.1	2030.23	1000	
Pb	208	209	No Gas	0.899	1797.531	1.0	89378.55	1000	
Na	23	45	He	56.089	112178.304	2.3	73864.68	100000	
Mg	24	45	He	59.95	119899.393	2.5	18989.22	100000	
Al	27	45	He	508.342	1016683.389	1.9	47787.46	20000	
Si	29	45	He	-20294.547	-40589094.616	8.3	26181.54	10000	
K	39	45	He	-0.655	-1309.019	1.3	51205.34	100000	
Ca	44	45	He	9432.325	18864650.941	1.7	165260.24	500000	
Ti	47	45	He	1.84	3681.000	2.3	291.00	1000	
V	51	72	He	0.841	1682.065	3.6	5331.01	1000	
Cr	52	72	He	1.104	2208.565	1.1	9131.78	1000	
Mn	55	72	He	4.873	9746.110	1.5	15788.54	5000	
Fe	57	72	He	284.626	569251.209	0.5	37899.72	100000	
Co	59	72	He	0.114	227.272	3.0	1631.22	1000	
Ni	60	72	He	0.107	214.890	0.7	960.04	2000	
Cu	63	45	He	2.17	4340.580	3.7	20754.82	1000	
Zn	66	72	He	1.858	3716.328	5.3	3564.92	20000	
As	75	72	He	2.473	4945.018	2.7	3939.54	1000	
Se	78	72	He	-0.278	-555.024	1.1	81.79	50	
Sn	120	115	He	-0.036	-71.966	6.0	920.04	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	6605513.24	6132749.07333333	107.71	
Ge	72	He	219072.45	194706.726666667	112.51	
In	115	He	2279563.25	2072569.52666667	109.99	
Lu	175	He	5192614.71	4837163.67666667	107.35	
Rh	103	He	5597422.00	5075027.71333333	110.29	
Sc	45	He	239569.85	209719.873333333	114.23	
Tb	159	He	7803412.18	7217928.22666667	108.11	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	1003945.05	976725.24	102.79	
Bi	209	No Gas	10677025.26	9415604.23333333	113.4	
Ge	72	No Gas	1835302.57	1639549.58666667	111.94	
In	115	No Gas	12828596.02	10997055.3166667	116.65	
Lu	175	No Gas	15978153.93	13769018.1266667	116.04	
Rh	103	No Gas	12231842.57	10512158.1933333	116.36	
Sc	45	No Gas	6884658.75	5845931.02	117.77	
Tb	159	No Gas	16476528.92	14199586.8733333	116.04	

Metals

Form XIII

Preparation Logs

XIII
PREPARATION LOG

Report No: 223072147

Prep Method: EPA 3050B

Prep Batch: 769361

<i>CLIENT SAMPLE ID</i>	<i>GCAL SAMPLE ID</i>	<i>PREP DATE</i>	<i>WEIGHT</i>	<i>UNITS</i>	<i>VOLUME</i>	<i>UNITS</i>
KCDC-SB0073-001.0-20230720	22307214724	07/21/23	1.25	g	50	mL
KCDC-SB0083-001....MS	2502801	07/21/23	1.25	g	50	mL
KCDC-SB0083-001...MSD	2502802	07/21/23	1.25	g	50	mL
KCDC-SB0083-001.0-20230720	22307214721	07/21/23	1.25	g	50	mL
KCDC-SB0084-000.5-20230720	22307214722	07/21/23	1.27	g	50	mL
KCDC-SB0084-001.0-20230720	22307214723	07/21/23	1.33	g	50	mL
LCS2502760	2502760	07/21/23	1.25	g	50	mL
MB2502759	2502759	07/21/23	1.25	g	50	mL

XIII
PREPARATION LOG

Report No: 223072147

Prep Method: EPA 3050B

Prep Batch: 769363

<i>CLIENT SAMPLE ID</i>	<i>GCAL SAMPLE ID</i>	<i>PREP DATE</i>	<i>WEIGHT</i>	<i>UNITS</i>	<i>VOLUME</i>	<i>UNITS</i>
KCDC-SB0066-001.0-20230720	22307214709	07/21/23	1.34	g	50	mL
KCDC-SB0067-001.0-20230720	22307214708	07/21/23	1.28	g	50	mL
KCDC-SB0068-001....MS	2502798	07/21/23	1.25	g	50	mL
KCDC-SB0068-001...MSD	2502799	07/21/23	1.25	g	50	mL
KCDC-SB0068-001.0-20230720	22307214701	07/21/23	1.25	g	50	mL
KCDC-SB0069-001.0-20230720	22307214710	07/21/23	1.31	g	50	mL
KCDC-SB0070-001.0-20230720	22307214711	07/21/23	1.25	g	50	mL
KCDC-SB0071-001.0-20230720	22307214714	07/21/23	1.33	g	50	mL
KCDC-SB0074-001.0-20230720	22307214715	07/21/23	1.25	g	50	mL
KCDC-SB0077-000.5-20230720	22307214702	07/21/23	1.29	g	50	mL
KCDC-SB0077-001.0-20230720	22307214703	07/21/23	1.26	g	50	mL
KCDC-SB0078-000.5-20230720	22307214704	07/21/23	1.31	g	50	mL
KCDC-SB0078-001.0-20230720	22307214705	07/21/23	1.28	g	50	mL
KCDC-SB0079-000.5-20230720	22307214706	07/21/23	1.26	g	50	mL
KCDC-SB0079-001.0-20230720	22307214707	07/21/23	1.27	g	50	mL
KCDC-SB0080-000.5-20230720	22307214712	07/21/23	1.27	g	50	mL
KCDC-SB0080-001.0-20230720	22307214713	07/21/23	1.31	g	50	mL
KCDC-SB0081-000.5-20230720	22307214716	07/21/23	1.34	g	50	mL
KCDC-SB0081-001.0-20230720	22307214717	07/21/23	1.31	g	50	mL
KCDC-SB0082-000.5-20230720	22307214718	07/21/23	1.33	g	50	mL
KCDC-SB0082-001.0-20230720	22307214719	07/21/23	1.29	g	50	mL
KCDC-SB0083-000.5-20230720	22307214720	07/21/23	1.3	g	50	mL
LCS2502797	2502797	07/21/23	1.25	g	50	mL
MB2502796	2502796	07/21/23	1.25	g	50	mL

Metals

Form XIV

Run Logs

XIV
ANALYSIS RUN LOG

Report No: 223072147

Analytical Batch: 769477

Start Date: 07/24/23

Instrument ID: ICPMS2

Analytical Method: EPA 6020B

End Date: 07/24/23

CLIENT SAMPLE ID	GCAL SAMPLE ID	PF	D/F	TIME	Analyte Symbols																																			
					Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr					
ITUNE	1150	*	1	1039			X																																	
IICALB	1300	*	1	1141			X																																	
IICAL2	1302	*	1	1145			X																																	
IICAL4	1304	*	1	1149			X																																	
IICAL5	1305	*	1	1157			X																																	
IICAL6	1306	*	1	1200			X																																	
ICV	1600	*	1	1204			X																																	
ICB	1700	*	1	1208			X																																	
LLCCV	1803	*	1	1218			X																																	
ICSA	2000	*	1	1222			X																																	
ICSAB	2100	*	1	1226			X																																	
LDR	2500	*	1	1229			X																																	
CCV	1800	*	1	1538			X																																	
CCB	1900	*	1	1542			X																																	
MB2502796	2502796	*	1	1545			X																																	
LCS2502797	2502797	*	1	1549			X																																	
KCDC-SB0068-001.0-20230720	22307214701	*	10	1552			X																																	
KCDC-SB0068-001....MS	2502798	*	10	1556			X																																	
KCDC-SB0068-001...MSD	2502799	*	10	1600			X																																	
KCDC-SB0068-001...PDS	2503388	*	10	1603			X																																	
KCDC-SB0068-001....SD	2503389	*	50	1607			X																																	
KCDC-SB0077-000.5-20230720	22307214702	*	10	1610			X																																	
KCDC-SB0077-001.0-20230720	22307214703	*	10	1614			X																																	
KCDC-SB0078-000.5-20230720	22307214704	*	10	1618			X																																	
KCDC-SB0078-001.0-20230720	22307214705	*	10	1621			X																																	
KCDC-SB0079-000.5-20230720	22307214706	*	10	1625			X																																	
KCDC-SB0079-001.0-20230720	22307214707	*	10	1628			X																																	
KCDC-SB0067-001.0-20230720	22307214708	*	10	1632			X																																	
KCDC-SB0066-001.0-20230720	22307214709	*	10	1635			X																																	

FORM XIV - IN

XIV
ANALYSIS RUN LOG

Report No: 223072147
Instrument ID: ICPMS2

Analytical Batch: 769477
Analytical Method: EPA 6020B

Start Date: 07/24/23
End Date: 07/24/23

CLIENT SAMPLE ID	GCAL SAMPLE ID	PF	D/F	TIME	Analyte Symbols																																
					Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr		
KCDC-SB0069-001.0-20230720	22307214710	*	10	1639			X																														
CCV	1800	*	1	1643			X																														
CCB	1900	*	1	1646			X																														
KCDC-SB0070-001.0-20230720	22307214711	*	10	1650			X																														
KCDC-SB0080-000.5-20230720	22307214712	*	10	1653			X																														
KCDC-SB0080-001.0-20230720	22307214713	*	10	1657			X																														
KCDC-SB0071-001.0-20230720	22307214714	*	10	1700			X																														
KCDC-SB0074-001.0-20230720	22307214715	*	10	1704			X																														
KCDC-SB0081-000.5-20230720	22307214716	*	10	1708			X																														
KCDC-SB0081-001.0-20230720	22307214717	*	10	1711			X																														
KCDC-SB0082-000.5-20230720	22307214718	*	10	1715			X																														
KCDC-SB0082-001.0-20230720	22307214719	*	10	1718			X																														
KCDC-SB0083-000.5-20230720	22307214720	*	10	1722			X																														
CCV	1800	*	1	1725			X																														
CCB	1900	*	1	1729			X																														
MB2502759	2502759	*	1	1747			X																														
LCS2502760	2502760	*	1	1751			X																														
KCDC-SB0083-001.0-20230720	22307214721	*	10	1758			X																														
KCDC-SB0083-001....MS	2502801	*	10	1801			X																														
KCDC-SB0083-001...MSD	2502802	*	10	1805			X																														
KCDC-SB0083-001...PDS	2503390	*	10	1809			X																														
KCDC-SB0083-001....SD	2503391	*	50	1812			X																														
KCDC-SB0084-000.5-20230720	22307214722	*	10	1816			X																														
KCDC-SB0084-001.0-20230720	22307214723	*	10	1819			X																														
KCDC-SB0073-001.0-20230720	22307214724	*	10	1823			X																														
CCV	1800	*	1	1848			X																														
CCB	1900	*	1	1852			X																														

Metals

Form XV

Internal Standards

XV (He)
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Report No: 223072147
Instrument ID: ICPMS2
Analytical Method EPA 6020B

Start Date: 07/24/23
End Date: 07/24/23
Analytical Batch: 769477

CLIENT SAMPLE ID	GCAL SAMPLE ID	TIME	Internal Standards %RI For:						
			ISTD1 Q	ISTD2 Q	ISTD3 Q	ISTD4 Q	ISTD5 Q	ISTD6 Q	ISTD7 Q
MB2502796	2502796	1545	104	108	107	106	106	110	106
LCS2502797	2502797	1549	104	108	107	108	104	110	107
KCDC-SB0068-001.0-20230720	22307214701	1552	108	113	112	109	110	114	109
KCDC-SB0068-001....MS	2502798	1556	107	112	110	109	109	113	109
KCDC-SB0068-001....MSD	2502799	1600	107	111	109	108	108	111	108
KCDC-SB0068-001....PDS	2503388	1603	105	110	107	107	106	111	107
KCDC-SB0068-001....SD	2503389	1607	106	109	108	107	108	110	107
KCDC-SB0077-000.5-20230720	22307214702	1610	98	105	101	101	99	106	101
KCDC-SB0077-001.0-20230720	22307214703	1614	102	106	103	103	102	106	103
KCDC-SB0078-000.5-20230720	22307214704	1618	105	110	106	106	105	111	106
KCDC-SB0078-001.0-20230720	22307214705	1621	107	109	107	106	108	109	107
KCDC-SB0079-000.5-20230720	22307214706	1625	106	109	106	107	106	110	107
KCDC-SB0079-001.0-20230720	22307214707	1628	107	110	107	106	108	110	107
KCDC-SB0067-001.0-20230720	22307214708	1632	104	109	106	106	104	111	107
KCDC-SB0066-001.0-20230720	22307214709	1635	108	111	108	108	109	113	109
KCDC-SB0069-001.0-20230720	22307214710	1639	107	110	107	107	109	111	107
KCDC-SB0070-001.0-20230720	22307214711	1650	105	109	107	106	106	110	106
KCDC-SB0080-000.5-20230720	22307214712	1653	106	109	106	106	108	111	107
KCDC-SB0080-001.0-20230720	22307214713	1657	106	109	105	106	108	110	107
KCDC-SB0071-001.0-20230720	22307214714	1700	103	108	105	104	104	110	105
KCDC-SB0074-001.0-20230720	22307214715	1704	104	108	105	104	105	108	105
KCDC-SB0081-000.5-20230720	22307214716	1708	102	107	104	103	103	109	105
KCDC-SB0081-001.0-20230720	22307214717	1711	105	108	105	105	107	110	105
KCDC-SB0082-000.5-20230720	22307214718	1715	102	108	104	104	103	110	105
KCDC-SB0082-001.0-20230720	22307214719	1718	105	109	106	105	108	110	105
KCDC-SB0083-000.5-20230720	22307214720	1722	102	107	103	104	102	110	105
MB2502759	2502759	1747	104	108	106	106	107	112	106
LCS2502760	2502760	1751	103	110	107	107	105	112	107
KCDC-SB0083-001.0-20230720	22307214721	1758	108	115	111	110	109	116	110
KCDC-SB0083-001....MS	2502801	1801	107	114	110	108	109	115	109
KCDC-SB0083-001....MSD	2502802	1805	105	113	108	107	107	114	107
KCDC-SB0083-001....PDS	2503390	1809	105	111	107	107	106	115	107
KCDC-SB0083-001....SD	2503391	1812	108	113	110	107	110	114	108
KCDC-SB0084-000.5-20230720	22307214722	1816	105	111	107	106	107	113	107
KCDC-SB0084-001.0-20230720	22307214723	1819	106	112	109	106	109	114	108

ISTD 1: Bismuth (He) ISTD 4: Lutetium (He) ISTD 7: Terbium (He)
ISTD 2: Germanium (He) ISTD 5: Rhodium (He)
ISTD 3: Indium (He) ISTD 6: Scandium (He)

FORM XV - IN

XV (No Gas)
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Report No: 223072147
Instrument ID: ICPMS2
Analytical Method: EPA 6020B

Start Date: 07/24/23
End Date: 07/24/23
Analytical Batch: 769477

CLIENT SAMPLE ID	GCAL SAMPLE ID	TIME	Internal Standards %RI For:								
			ISTD8 Q	ISTD9 Q	ISTD10 Q	ISTD11 Q	ISTD12 Q	ISTD13 Q	ISTD14 Q		
MB2502796	2502796	1545	102	102	106	107	107	108	106		
LCS2502797	2502797	1549	103	104	106	108	105	109	107		
KCDC-SB0068-001.0-20230720	22307214701	1552	112	111	116	114	115	117	114		
KCDC-SB0068-001....MS	2502798	1556	110	110	113	113	113	113	113		
KCDC-SB0068-001...MSD	2502799	1600	109	108	112	112	112	112	112		
KCDC-SB0068-001...PDS	2503388	1603	107	108	110	111	109	111	110		
KCDC-SB0068-001....SD	2503389	1607	109	108	112	111	113	113	111		
KCDC-SB0077-000.5-20230720	22307214702	1610	101	103	105	107	103	107	106		
KCDC-SB0077-001.0-20230720	22307214703	1614	106	104	107	108	106	107	108		
KCDC-SB0078-000.5-20230720	22307214704	1618	109	109	113	113	109	113	113		
KCDC-SB0078-001.0-20230720	22307214705	1621	110	108	112	113	112	112	113		
KCDC-SB0079-000.5-20230720	22307214706	1625	109	108	112	113	111	113	112		
KCDC-SB0079-001.0-20230720	22307214707	1628	112	108	112	113	113	111	113		
KCDC-SB0067-001.0-20230720	22307214708	1632	109	109	113	114	109	114	113		
KCDC-SB0066-001.0-20230720	22307214709	1635	114	111	115	117	114	116	116		
KCDC-SB0069-001.0-20230720	22307214710	1639	111	109	114	113	114	114	113		
KCDC-SB0070-001.0-20230720	22307214711	1650	110	108	113	113	111	112	113		
KCDC-SB0080-000.5-20230720	22307214712	1653	111	109	112	114	114	112	114		
KCDC-SB0080-001.0-20230720	22307214713	1657	111	108	112	114	113	112	113		
KCDC-SB0071-001.0-20230720	22307214714	1700	110	108	112	113	109	111	113		
KCDC-SB0074-001.0-20230720	22307214715	1704	110	108	112	113	110	111	113		
KCDC-SB0081-000.5-20230720	22307214716	1708	109	107	111	113	108	113	112		
KCDC-SB0081-001.0-20230720	22307214717	1711	109	108	112	112	112	111	112		
KCDC-SB0082-000.5-20230720	22307214718	1715	108	107	111	113	108	111	113		
KCDC-SB0082-001.0-20230720	22307214719	1718	110	108	112	113	113	111	113		
KCDC-SB0083-000.5-20230720	22307214720	1722	108	106	110	113	108	112	113		
MB2502759	2502759	1747	107	105	108	110	110	111	110		
LCS2502760	2502760	1751	105	106	108	111	107	112	110		
KCDC-SB0083-001.0-20230720	22307214721	1758	114	112	117	118	115	120	118		
KCDC-SB0083-001....MS	2502801	1801	111	112	116	116	114	118	116		
KCDC-SB0083-001...MSD	2502802	1805	111	111	115	116	113	118	115		
KCDC-SB0083-001...PDS	2503390	1809	109	111	113	115	112	117	115		
KCDC-SB0083-001....SD	2503391	1812	113	112	117	116	116	118	116		
KCDC-SB0084-000.5-20230720	22307214722	1816	111	110	115	114	113	115	114		
KCDC-SB0084-001.0-20230720	22307214723	1819	111	111	115	114	115	116	114		

ISTD 8: Bismuth (No Gas) ISTD 11 Lutetium (No Gas) ISTD 14 Terbium (No Gas)
 ISTD 9: Germanium (No Gas) ISTD 12 Rhodium (No Gas)
 ISTD 10 Indium (No Gas) ISTD 13 Scandium (No Gas)

FORM XV - IN

XV (He)
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Report No: <u>223072147</u>	Start Date: <u>07/24/23</u>
Instrument ID: <u>ICPMS2</u>	End Date: <u>07/24/23</u>
Analytical Method: <u>EPA 6020B</u>	Analytical Batch: <u>769477</u>

Internal Standards %RI For:

CLIENT SAMPLE ID	GCAL SAMPLE ID	TIME	ISTD1 Q	ISTD2 Q	ISTD3 Q	ISTD4 Q	ISTD5 Q	ISTD6 Q	ISTD7 Q
KCDC-SB0073-001.0-20230720	22307214724	1823	104	111	107	105	106	113	106

ISTD 1: Bismuth (He)	ISTD 4: Lutetium (He)	ISTD 7: Terbium (He)
ISTD 2: Germanium (He)	ISTD 5: Rhodium (He)	
ISTD 3: Indium (He)	ISTD 6: Scandium (He)	

FORM XV - IN

XV (No Gas)
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Report No: <u>223072147</u>	Start Date: <u>07/24/23</u>
Instrument ID: <u>ICPMS2</u>	End Date: <u>07/24/23</u>
Analytical Method: <u>EPA 6020B</u>	Analytical Batch: <u>769477</u>

CLIENT SAMPLE ID	GCAL SAMPLE ID	TIME	Internal Standards %RI For:												
			ISTD8 Q	ISTD9 Q	ISTD10 Q	ISTD11 Q	ISTD12 Q	ISTD13 Q	ISTD14 Q						
KCDC-SB0073-001.0-20230720	22307214724	1823	110	109	114	115	111	118	114						

ISTD 8: Bismuth (No Gas)	ISTD 11: Lutetium (No Gas)	ISTD 14: Terbium (No Gas)
ISTD 9: Germanium (No Gas)	ISTD 12: Rhodium (No Gas)	
ISTD 10: Indium (No Gas)	ISTD 13: Scandium (No Gas)	

FORM XV - IN

Metals

ICPMS ICAL

Sample					
Data File	Acq. Date-Time	Type	Level	Sample Name	Total Dil.
001SMPL.d	7/24/2023 11:31	Sample		Blank	1
002SMPL.d	7/24/2023 11:34	Sample		Blank	1
003SMPL.d	7/24/2023 11:38	Sample		Blank	1
004CALB.d	7/24/2023 11:41	CalBlk	1	1300	1
005CAL.S.d	7/24/2023 11:45	CalStd	3	1302	1
006CAL.S.d	7/24/2023 11:49	CalStd	5	1304	1
007CAL.S.d	7/24/2023 11:53	CalStd		5 PPB	1
008CAL.S.d	7/24/2023 11:57	CalStd	6	1305	1
009CAL.S.d	7/24/2023 12:00	CalStd	7	1306	1
010_ICV.d	7/24/2023 12:04	ICV		1600	1
011_ICB.d	7/24/2023 12:08	ICB		1700	1
0120.1.d	7/24/2023 12:11	LLCCV0.1		1804	1
1210.5.d	7/24/2023 12:15	LLCCV0.5		1804	1
1211CCV1.d	7/24/2023 12:18	LLCCV1		1803	1
1212ICSA.d	7/24/2023 12:22	ICSA		2000	1
1213ICSB.d	7/24/2023 12:26	ICSB		2100	1
1214_QC1.d	7/24/2023 12:29	QC1		LDR	1
1215SMPL.d	7/24/2023 12:33	Sample		2500	1
1216SMPL.d	7/24/2023 12:36	MBWATER		2502578	1
1217SMPL.d	7/24/2023 12:40	LCS6020		2502579	1
1218SMPL.d	7/24/2023 12:43	AllRef		22307198401	100
1219SMPL.d	7/24/2023 12:47	MS		2502580	100
1220SMPL.d	7/24/2023 12:50	MSD		2502581	100
1221SMPL.d	7/24/2023 12:54	PDS		2503370	100
1222SMPL.d	7/24/2023 12:58	Sample		2503371	500
1223SMPL.d	7/24/2023 13:01	Sample		22307183201	100
1224SMPL.d	7/24/2023 13:05	Sample		22307183202	100
1225SMPL.d	7/24/2023 13:08	Sample		22307183203	100
1226_CC.V.d	7/24/2023 13:12	CCV		1800	1
1227_CCB.d	7/24/2023 13:15	CCB		1900	1
1228SMPL.d	7/24/2023 13:19	LCS6020		2501770	40
1229SMPL.d	7/24/2023 13:22	MBSOIL		2502471	40
1230SMPL.d	7/24/2023 13:26	LCS6020		2502472	40
1231SMPL.d	7/24/2023 13:30	AllRef		22307206201	40
1232SMPL.d	7/24/2023 13:33	Sample		BLANK	1
1233SMPL.d	7/24/2023 13:37	MSSOIL		2502473	40
1234SMPL.d	7/24/2023 13:40	Sample		BLANK	1
1235SMPL.d	7/24/2023 13:44	MSDSOIL		2502474	40
1236SMPL.d	7/24/2023 13:47	Sample		BLANK	1
1237SMPL.d	7/24/2023 13:51	PDS		2503375	40
1238SMPL.d	7/24/2023 13:55	Sample		BLANK	1
1239SMPL.d	7/24/2023 13:58	Sample		2503376	40
1240SMPL.d	7/24/2023 14:02	Sample		BLANK	1
1241_CC.V.d	7/24/2023 14:05	CCV		1800	1
1242_CCB.d	7/24/2023 14:09	CCB		1900	1

1243SMPL.d	7/24/2023 14:12	MBWATER		2502118	1
1244SMPL.d	7/24/2023 14:16	LCS6020		2502119	1
1245SMPL.d	7/24/2023 14:19	AllRef		22307195701	200
1246SMPL.d	7/24/2023 14:23	Sample		BLANK	1
1247SMPL.d	7/24/2023 14:27	MS		2502120	200
1248SMPL.d	7/24/2023 14:30	Sample		BLANK	1
1249SMPL.d	7/24/2023 14:34	MSD		2502121	200
1250SMPL.d	7/24/2023 14:37	Sample		BLANK	1
1251SMPL.d	7/24/2023 14:41	PDS		2502811	200
1252SMPL.d	7/24/2023 14:45	Sample		BLANK	1
1253SMPL.d	7/24/2023 14:48	Sample		2502812	1000
1254SMPL.d	7/24/2023 14:52	Sample		BLANK	1
1255SMPL.d	7/24/2023 14:55	Sample		22307195702	200
1256SMPL.d	7/24/2023 14:59	Sample		BLANK	1
1257SMPL.d	7/24/2023 15:02	Sample		22307195703	200
1258SMPL.d	7/24/2023 15:06	Sample		BLANK	1
1259SMPL.d	7/24/2023 15:10	Sample		22307195704	200
1260SMPL.d	7/24/2023 15:13	Sample		BLANK	1
1261SMPL.d	7/24/2023 15:17	Sample		22307195705	200
1262SMPL.d	7/24/2023 15:20	Sample		BLANK	1
1263SMPL.d	7/24/2023 15:24	Sample		22307195706	200
1264SMPL.d	7/24/2023 15:28	Sample		BLANK	1
1265SMPL.d	7/24/2023 15:31	Sample		22307195707	200
1266SMPL.d	7/24/2023 15:35	Sample		BLANK	1
1267_CC.V.d	7/24/2023 15:38	CCV		1800	1
1268_CCB.d	7/24/2023 15:42	CCB		1900	1
1269SMPL.d	7/24/2023 15:45	MBSOIL		2502796	40
1270SMPL.d	7/24/2023 15:49	LCS6020		2502797	40
1271SMPL.d	7/24/2023 15:52	AllRef		22307214701	400
1272SMPL.d	7/24/2023 15:56	MSSOIL		2502798	400
1273SMPL.d	7/24/2023 16:00	MSDSOIL		2502799	400
1274SMPL.d	7/24/2023 16:03	PDS		2503388	400
1275SMPL.d	7/24/2023 16:07	Sample		2503389	2000
1276SMPL.d	7/24/2023 16:10	Sample		22307214702	387.5969
1277SMPL.d	7/24/2023 16:14	Sample		22307214703	396.8254
1278SMPL.d	7/24/2023 16:18	Sample		22307214704	381.6794
1279SMPL.d	7/24/2023 16:21	Sample		22307214705	390.625
1280SMPL.d	7/24/2023 16:25	Sample		22307214706	396.8254
1281SMPL.d	7/24/2023 16:28	Sample		22307214707	393.7008
1282SMPL.d	7/24/2023 16:32	Sample		22307214708	390.625
1283SMPL.d	7/24/2023 16:35	Sample		22307214709	373.1343
1284SMPL.d	7/24/2023 16:39	Sample		22307214710	381.6794
1285_CC.V.d	7/24/2023 16:43	CCV		1800	1
1286_CCB.d	7/24/2023 16:46	CCB		1900	1
1287SMPL.d	7/24/2023 16:50	Sample		22307214711	400
1288SMPL.d	7/24/2023 16:53	Sample		22307214712	393.7008
1289SMPL.d	7/24/2023 16:57	Sample		22307214713	381.6794

1290SMPL.d	7/24/2023 17:00	Sample		22307214714	375.9398
1291SMPL.d	7/24/2023 17:04	Sample		22307214715	400
1292SMPL.d	7/24/2023 17:08	Sample		22307214716	373.1343
1293SMPL.d	7/24/2023 17:11	Sample		22307214717	381.6794
1294SMPL.d	7/24/2023 17:15	Sample		22307214718	375.9398
1295SMPL.d	7/24/2023 17:18	Sample		22307214719	387.5969
1296SMPL.d	7/24/2023 17:22	Sample		22307214720	384.6154
1297_CCV.d	7/24/2023 17:25	CCV		1800	1
1298_CCB.d	7/24/2023 17:29	CCB		1900	1
1299SMPL.d	7/24/2023 17:33	MBWATER		2503173	1
1300SMPL.d	7/24/2023 17:36	LCS6020		2503174	1
1301SMPL.d	7/24/2023 17:40	Sample		22307214601	1
1302SMPL.d	7/24/2023 17:43	Sample		BLANK	1
1303SMPL.d	7/24/2023 17:47	MBSOIL		2502759	40
1304SMPL.d	7/24/2023 17:51	LCS6020		2502760	40
1305SMPL.d	7/24/2023 17:54	Sample		22307213601	375.9398
1306SMPL.d	7/24/2023 17:58	AllRef		22307214721	400
1307SMPL.d	7/24/2023 18:01	MSSOIL		2502801	400
1308SMPL.d	7/24/2023 18:05	MSDSOIL		2502802	400
1309SMPL.d	7/24/2023 18:09	PDS		2503390	400
1310SMPL.d	7/24/2023 18:12	Sample		2503391	2000
1311SMPL.d	7/24/2023 18:16	Sample		22307214722	393.7008
1312SMPL.d	7/24/2023 18:19	Sample		22307214723	375.9398
1313SMPL.d	7/24/2023 18:23	Sample		22307214724	400
1314SMPL.d	7/24/2023 18:26	Sample		22307240301	1
1315SMPL.d	7/24/2023 18:30	AllRef		22307240302	1
1316SMPL.d	7/24/2023 18:34	MS		22307240303	1
1317SMPL.d	7/24/2023 18:37	MSD		22307240304	1
1318SMPL.d	7/24/2023 18:41	PDS		2503424	1
1319SMPL.d	7/24/2023 18:44	Sample		2503425	5
1320_CCV.d	7/24/2023 18:48	CCV		1800	1
1321_CCB.d	7/24/2023 18:52	CCB		1900	1
1322SMPL.d	7/24/2023 18:55	Sample		22307240305	1
1323SMPL.d	7/24/2023 18:59	Sample		22307240306	1
1324SMPL.d	7/24/2023 19:02	Sample		22307240307	1
1325SMPL.d	7/24/2023 19:06	Sample		22307240308	1
1326SMPL.d	7/24/2023 19:10	Sample		22307240309	1
1327SMPL.d	7/24/2023 19:13	Sample		22307240310	1
1328SMPL.d	7/24/2023 19:17	Sample		22307240311	1
1329SMPL.d	7/24/2023 19:20	Sample		22307240312	1
1330SMPL.d	7/24/2023 19:24	Sample		22307240313	1
1331_CCV.d	7/24/2023 19:27	CCV		1800	1
1332_CCB.d	7/24/2023 19:31	CCB		1900	1
1333SMPL.d	7/24/2023 19:35	Sample		BLANK	1
1334SMPL.d	7/24/2023 19:38	Sample		BLANK	1
1335SMPL.d	7/24/2023 19:42	Sample		BLANK	1

Vial Number
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2311
2312

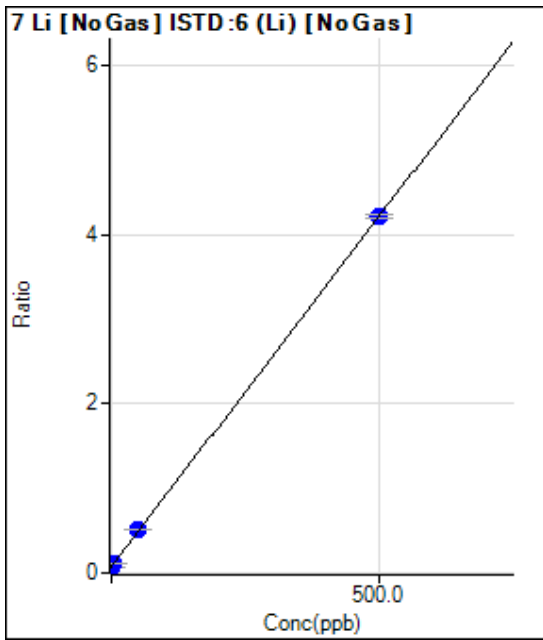
2401
2402
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2411
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4104
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4106
4107
4108
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1402
1502
4110
4111
4112
4201
4202
4203
4204
4205
4206
1401
1501
5
5
5

Tune Mode	Mass	Name	ISTD	R	a	b (blank)	DL	BEC	Units
No Gas	7	Li	6 (Li) [No Gas]	0.99997125	0.008284097	0.073587507	0.328172745	8.882984623	ppb
No Gas	9	Be	6 (Li) [No Gas]	0.999968969	0.002991361	0.000254595	0.001340947	0.085109982	ppb
No Gas	11	B	6 (Li) [No Gas]	0.999889804	0.00191731	0.004311144	0.08138397	2.248538223	ppb
He	23	Na	45 Sc [He]	0.99999637	0.002888005	0.146363491	2.173079365	50.67978396	ppb
He	24	Mg	45 Sc [He]	0.999997698	0.001236297	0.005172165	0.850849961	4.183594281	ppb
He	27	Al	45 Sc [He]	0.999996458	0.000390935	0.000771704	0.757357357	1.973995956	ppb
He	29	Si	45 Sc [He]	0.995642931	1.31E-05	0.375529453	3261.767301	28647.64304	ppb
He	39	K	45 Sc [He]	0.999997532	0.001658886	0.214880091	7.175260795	129.5327872	ppb
He	44	Ca	45 Sc [He]	0.999999249	7.26E-05	0.005344926	28.57229096	73.64159255	ppb
He	47	Ti	45 Sc [He]	0.999999269	0.000631598	5.23E-05	0.032487446	0.082865925	ppb
He	51	V	72 Ge [He]	0.999999932	0.025251554	0.003106061	0.018703396	0.123004755	ppb
He	52	Cr	72 Ge [He]	0.999999876	0.031986457	0.006378113	0.033207716	0.199400437	ppb
He	55	Mn	72 Ge [He]	0.999996858	0.014512786	0.001370677	0.030967106	0.094446186	ppb
He	57	Fe	72 Ge [He]	0.999999037	0.000604296	0.001112037	0.679168683	1.840218205	ppb
He	59	Co	72 Ge [He]	0.999998142	0.054513357	0.001251519	0.008898032	0.022958016	ppb
He	60	Ni	72 Ge [He]	0.999998376	0.014778918	0.002796479	0.061802375	0.189220802	ppb
He	63	Cu	45 Sc [He]	0.999990536	0.038288485	0.003520633	0.020867707	0.091950166	ppb
He	66	Zn	72 Ge [He]	0.999998236	0.00638544	0.004410861	0.197842548	0.690768506	ppb
He	75	As	72 Ge [He]	0.999999571	0.006753939	0.00128955	0.03538583	0.19093304	ppb
He	78	Se	72 Ge [He]	0.999993987	0.00037544	0.000477704	0.235983363	1.272383091	ppb
No Gas	88	Sr	72 Ge [No Gas]	0.999999987	0.040547324	0.001030867	0.001103039	0.025423804	ppb
No Gas	90	Zr	72 Ge [No Gas]	0.999999288	0.025209583	0.00090069	0.005554009	0.035728075	ppb
No Gas	95	Mo	115 In [No Gas]	0.999991386	0.001086732	0.00022779	0.036986488	0.209609891	ppb
No Gas	107	Ag	115 In [No Gas]	0.999999967	0.002883382	6.16E-06	0.001596165	0.002137843	ppb
No Gas	111	Cd	115 In [No Gas]	0.999999285	0.00063602	4.90E-05	0.013198468	0.077051568	ppb
No Gas	118	(Sn)	115 In [No Gas]	0.999998683	0.001898814	0.000286172	0.00693316	0.150710988	ppb
He	118	(Sn)	115 In [He]	0.999993658	0.002489825	0.00037031	0.031875095	0.148729374	ppb
He	120	Sn	115 In [He]	0.999994868	0.003610193	0.000533524	0.037403665	0.147782715	ppb
No Gas	121	Sb	115 In [No Gas]	0.999998456	0.002835999	0.000287593	0.007818431	0.10140797	ppb
No Gas	137	Ba	115 In [No Gas]	0.999996748	0.001009249	2.30E-05	0.010430307	0.022826669	ppb
He	156	[Se]	115 In [He]						ppb
No Gas	201	Hg							
No Gas	205	Tl	209 Bi [No Gas]	0.999994301	0.006583125	0.001032203	0.01845282	0.156795345	ppb
No Gas	206	(Pb)	209 Bi [No Gas]	0.99999999	0.002243107	8.03E-05	0.009713435	0.03581457	ppb
No Gas	207	(Pb)	209 Bi [No Gas]	0.999999924	0.001929235	7.75E-05	0.006950114	0.040195806	ppb
No Gas	208	Pb	209 Bi [No Gas]	0.999999768	0.008947185	0.000329602	0.002683175	0.036838635	ppb
No Gas	6	(Li)							ppb
No Gas	45	Sc							ppb
He	45	Sc							ppb
No Gas	72	Ge							ppb
He	72	Ge							ppb
No Gas	103	Rh							ppb
He	103	Rh							ppb
No Gas	115	In							ppb
He	115	In							ppb
No Gas	159	Tb							ppb
He	159	Tb							ppb
No Gas	175	Lu							ppb
He	175	Lu							ppb
No Gas	209	Bi							ppb
He	209	Bi							ppb

Calibration for 1292SMPL.d

Batch Folder: C:\Agilent\ICPMH\1\DATA\2230724A_MS2.b\
 Analysis File: 2230724A_MS2.batch.bin
 DA Date-Time: 7/24/2023 5:09:46 PM
 Calibration Title: EPA6020
 Calibration Method: External Calibration
 VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	004CALB.d	1300	7/24/2023 11:41:43 AM
2			
3	005CAL.S.d	1302	7/24/2023 11:45:16 AM
4			
5	006CAL.S.d	1304	7/24/2023 11:49:41 AM
6	008CAL.S.d	1305	7/24/2023 11:57:08 AM
7	009CAL.S.d	1306	7/24/2023 12:00:51 PM
8			



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	71873.69	0.0736	P	1.2
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.500	0.267	75870.36	0.0758	P	3.6
4	<input type="checkbox"/>	2.500					
5	<input type="checkbox"/>	5.000	5.059	117036.24	0.1155	P	2.0
6	<input type="checkbox"/>	50.000	53.646	517353.91	0.5180	P	0.4
7	<input type="checkbox"/>	500.000	499.635	4420235.87	4.2126	P	1.0
8	<input type="checkbox"/>						

$y = 0.0083 * x + 0.0736$

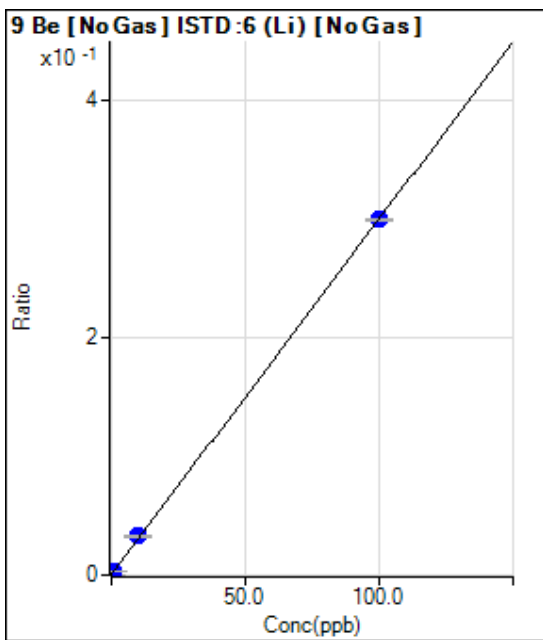
R = 1.0000

DL = 0.3282

BEC = 8.883

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	248.67	0.0003	P	0.5
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.094	534.68	0.0005	P	14.0
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.061	3474.42	0.0034	P	1.5
6	<input type="checkbox"/>	10.000	10.784	32471.76	0.0325	P	0.3
7	<input type="checkbox"/>	100.000	99.921	313900.28	0.2992	P	0.9
8	<input type="checkbox"/>						

$y = 0.0030 * x + 2.5459E-004$

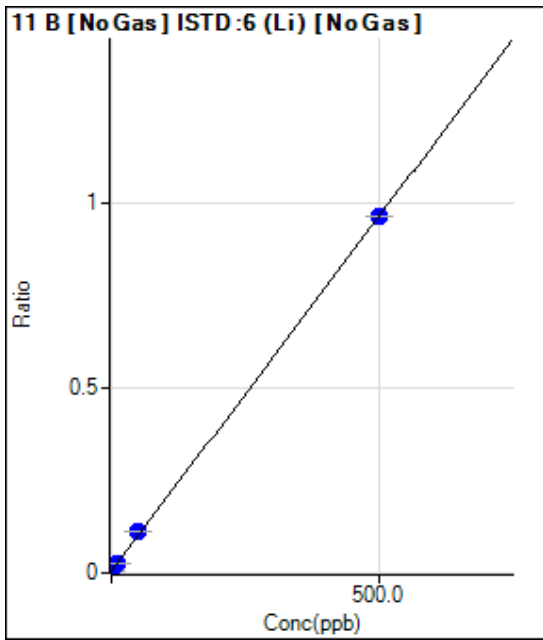
R = 1.0000

DL = 0.001341

BEC = 0.08511

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	4210.73	0.0043	P	1.2
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	1.000	0.682	5624.58	0.0056	P	4.3
4	<input type="checkbox"/>	5.000					
5	<input type="checkbox"/>	10.000	10.533	24834.22	0.0245	P	1.8
6	<input type="checkbox"/>	50.000	57.254	113946.23	0.1141	P	0.8
7	<input type="checkbox"/>	500.000	499.265	1008978.14	0.9616	P	0.1
8	<input type="checkbox"/>						

$y = 0.0019 * x + 0.0043$

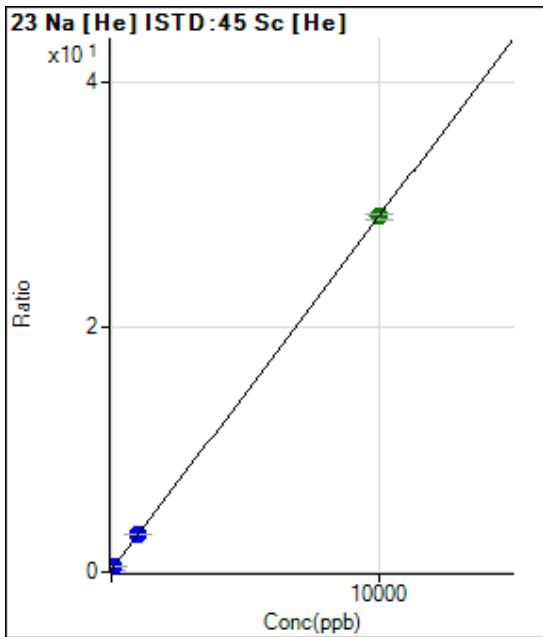
R = 0.9999

DL = 0.08138

BEC = 2.249

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	30695.40	0.1464	P	1.4
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	10.000	8.734	36484.97	0.1716	P	4.2
4	<input type="checkbox"/>	50.000					
5	<input type="checkbox"/>	100.000	101.495	93013.51	0.4395	P	1.2
6	<input type="checkbox"/>	1000.000	1026.342	630762.75	3.1104	P	2.0
7	<input type="checkbox"/>	10000.000	9997.352	5874794.91	29.0188	A	1.6
8	<input type="checkbox"/>						

$y = 0.0029 * x + 0.1464$

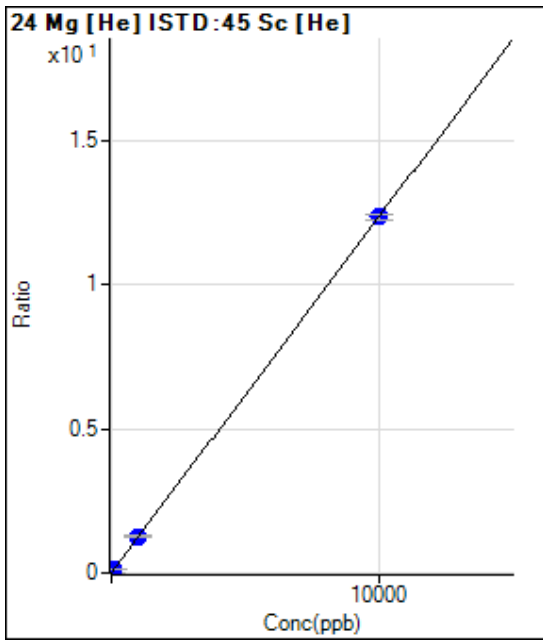
R = 1.0000

DL = 2.173

BEC = 50.68

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	1083.41	0.0052	P	6.8
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	10.000	7.053	2953.71	0.0139	P	8.6
4	<input type="checkbox"/>	50.000					
5	<input type="checkbox"/>	100.000	102.739	27976.74	0.1322	P	1.2
6	<input type="checkbox"/>	1000.000	1020.443	256876.29	1.2667	P	3.6
7	<input type="checkbox"/>	10000.000	9997.931	2503431.21	12.3656	P	1.4
8	<input type="checkbox"/>						

$y = 0.0012 * x + 0.0052$

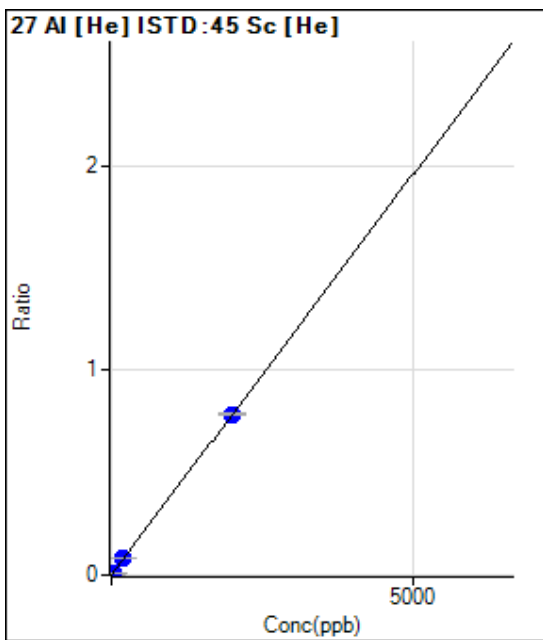
R = 1.0000

DL = 0.8508

BEC = 4.184

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	162.00	0.0008	P	12.8
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	2.000	0.994	246.67	0.0012	P	9.8
4	<input type="checkbox"/>	10.000					
5	<input type="checkbox"/>	20.000	21.483	1940.14	0.0092	P	9.7
6	<input type="checkbox"/>	200.000	204.953	16402.98	0.0809	P	3.5
7	<input type="checkbox"/>	2000.000	1999.491	158410.82	0.7824	P	1.3
8	<input type="checkbox"/>						

$y = 3.9093E-004 * x + 7.7170E-004$

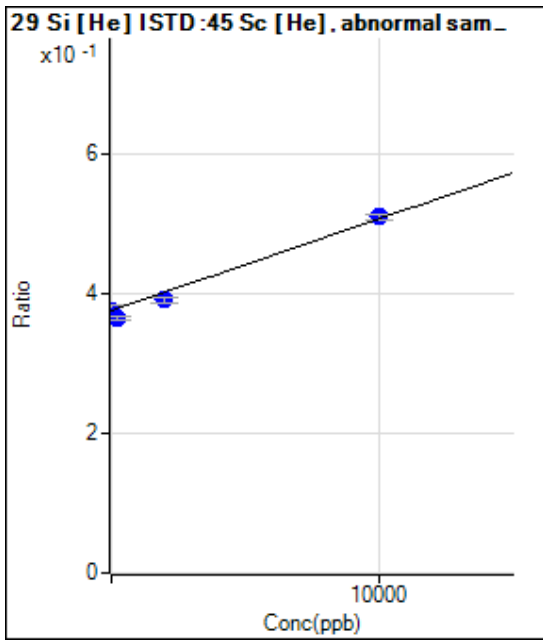
R = 1.0000

DL = 0.7574

BEC = 1.974

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	78707.80	0.3755	P	3.8
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	20.000	-748.895	77769.53	0.3657	P	0.3
4	<input type="checkbox"/>	100.000					
5	<input type="checkbox"/>	200.000	-886.798	77020.44	0.3639	P	1.1
6	<input type="checkbox"/>	2000.000	1147.763	79202.14	0.3906	P	1.9
7	<input type="checkbox"/>	10000.000	10193.721	103078.25	0.5092	P	1.4
8	<input type="checkbox"/>						

$y = 1.3109E-005 * x + 0.3755$

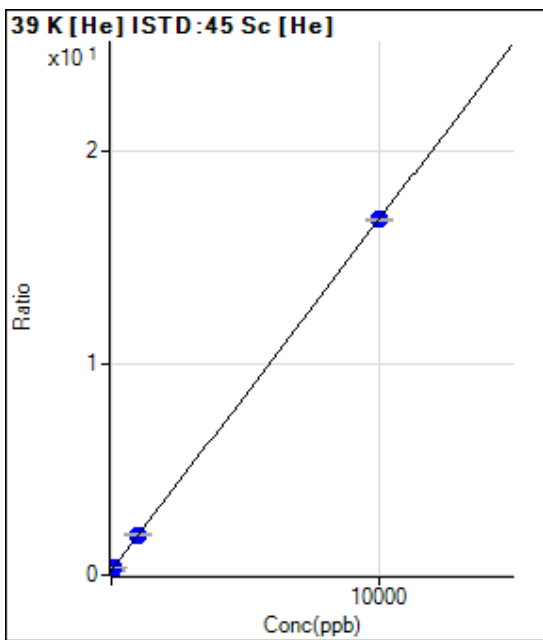
R = 0.9956

DL = 3262

BEC = 2.865E+04

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	45052.54	0.2149	P	1.8
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	10.000	6.647	48038.10	0.2259	P	1.7
4	<input type="checkbox"/>	50.000					
5	<input type="checkbox"/>	100.000	100.383	80735.39	0.3814	P	0.5
6	<input type="checkbox"/>	1000.000	1020.615	386924.00	1.9080	P	1.4
7	<input type="checkbox"/>	10000.000	9997.938	3401618.60	16.8003	P	0.4
8	<input type="checkbox"/>						

$y = 0.0017 * x + 0.2149$

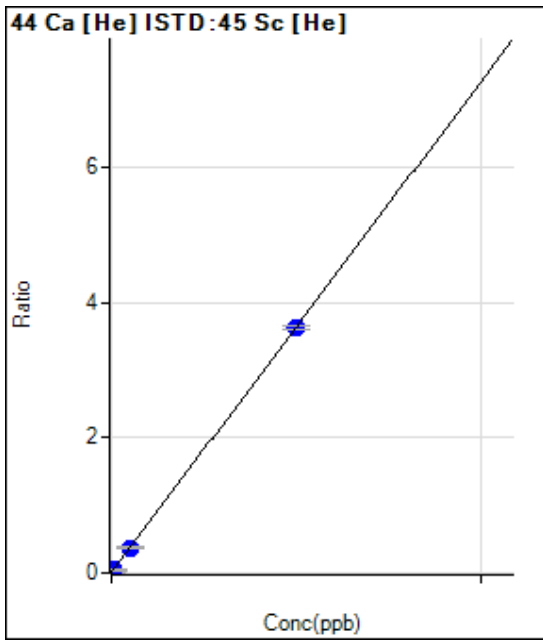
R = 1.0000

DL = 7.175

BEC = 129.5

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	1120.06	0.0053	P	12.9
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	50.000	32.625	1640.12	0.0077	P	4.4
4	<input type="checkbox"/>	250.000					
5	<input type="checkbox"/>	500.000	506.102	8907.82	0.0421	P	4.3
6	<input type="checkbox"/>	5000.000	5053.410	75462.61	0.3721	P	3.5
7	<input type="checkbox"/>	50000.000	49994.615	735740.56	3.6340	P	1.4
8	<input type="checkbox"/>						

$y = 7.2580E-005 * x + 0.0053$

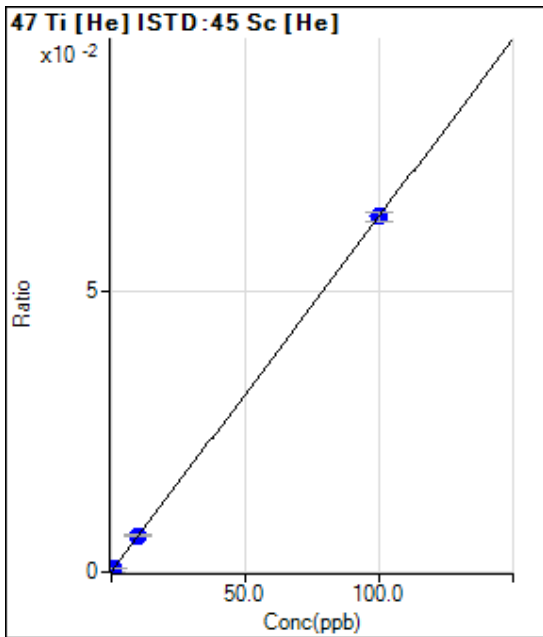
R = 1.0000

DL = 28.57

BEC = 73.64

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	11.00	0.0001	P	13.1
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.081	22.00	0.0001	P	15.3
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.004	145.33	0.0007	P	2.4
6	<input type="checkbox"/>	10.000	10.112	1305.39	0.0064	P	6.8
7	<input type="checkbox"/>	100.000	99.989	12794.50	0.0632	P	2.5
8	<input type="checkbox"/>						

$y = 6.3160E-004 * x + 5.2338E-005$

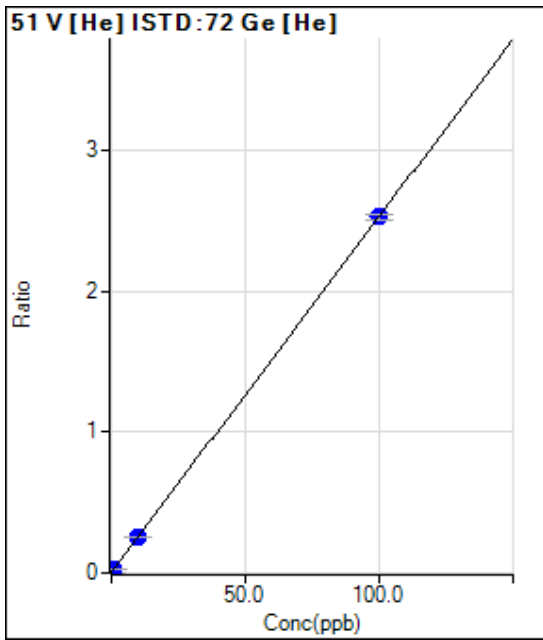
R = 1.0000

DL = 0.03249

BEC = 0.08287

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	604.46	0.0031	P	5.1
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.079	1007.83	0.0051	P	3.8
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.991	5524.42	0.0281	P	1.5
6	<input type="checkbox"/>	10.000	9.959	48322.09	0.2546	P	4.5
7	<input type="checkbox"/>	100.000	100.004	475241.82	2.5284	P	1.8
8	<input type="checkbox"/>						

$y = 0.0253 * x + 0.0031$

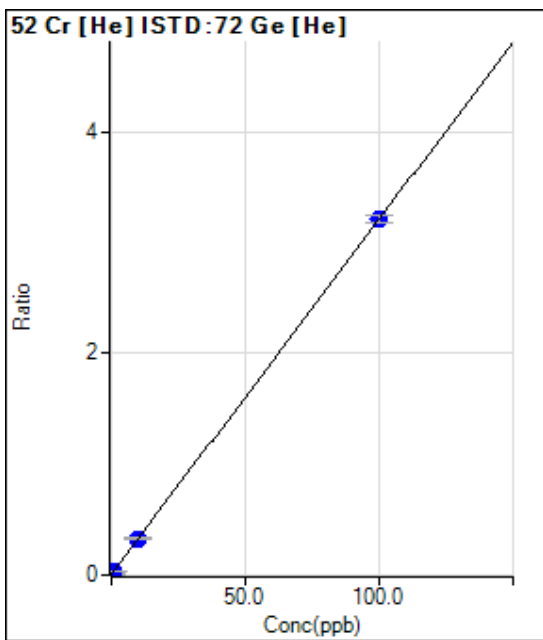
R = 1.0000

DL = 0.0187

BEC = 0.123

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	1242.29	0.0064	P	5.6
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.078	1754.57	0.0089	P	4.2
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.003	7554.24	0.0385	P	1.9
6	<input type="checkbox"/>	10.000	10.038	62146.66	0.3275	P	5.5
7	<input type="checkbox"/>	100.000	99.996	602371.59	3.2049	P	2.1
8	<input type="checkbox"/>						

$y = 0.0320 * x + 0.0064$

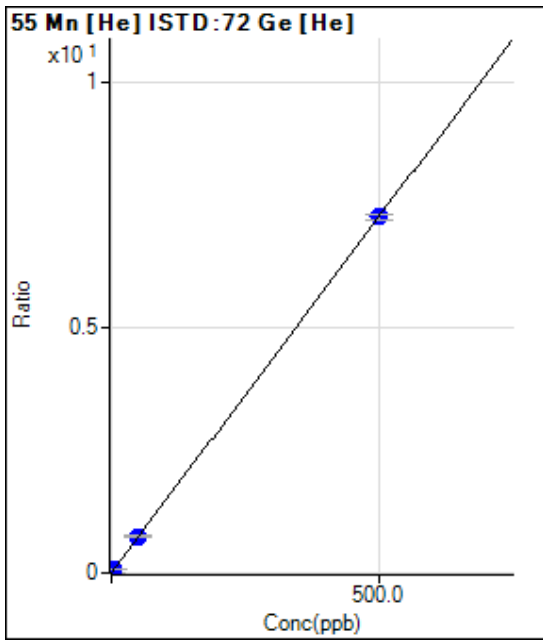
R = 1.0000

DL = 0.03321

BEC = 0.1994

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	266.67	0.0014	P	10.9
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.500	0.398	1412.31	0.0071	P	9.5
4	<input type="checkbox"/>	2.500					
5	<input type="checkbox"/>	5.000	5.219	15147.90	0.0771	P	1.7
6	<input type="checkbox"/>	50.000	51.233	141400.08	0.7449	P	3.6
7	<input type="checkbox"/>	500.000	499.875	1363869.08	7.2559	P	1.6
8	<input type="checkbox"/>						

$y = 0.0145 * x + 0.0014$

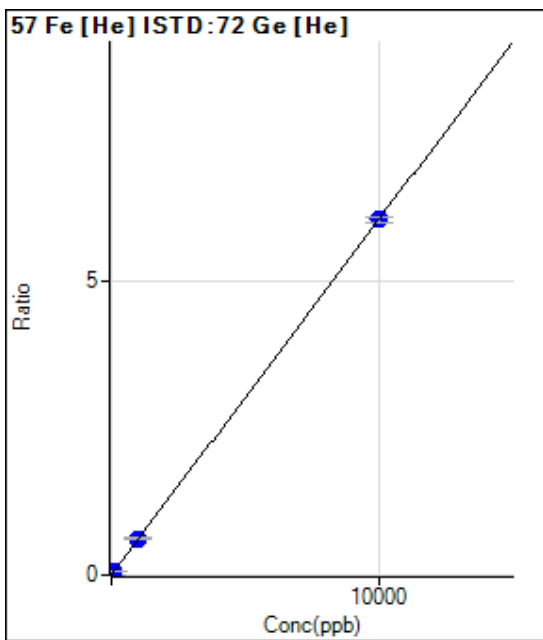
R = 1.0000

DL = 0.03097

BEC = 0.09445

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	216.68	0.0011	P	12.3
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	10.000	7.446	1110.08	0.0056	P	10.0
4	<input type="checkbox"/>	50.000					
5	<input type="checkbox"/>	100.000	104.298	12599.10	0.0641	P	3.1
6	<input type="checkbox"/>	1000.000	1012.929	116392.92	0.6132	P	4.2
7	<input type="checkbox"/>	10000.000	9998.667	1135900.32	6.0433	P	1.8
8	<input type="checkbox"/>						

$y = 6.0430E-004 * x + 0.0011$

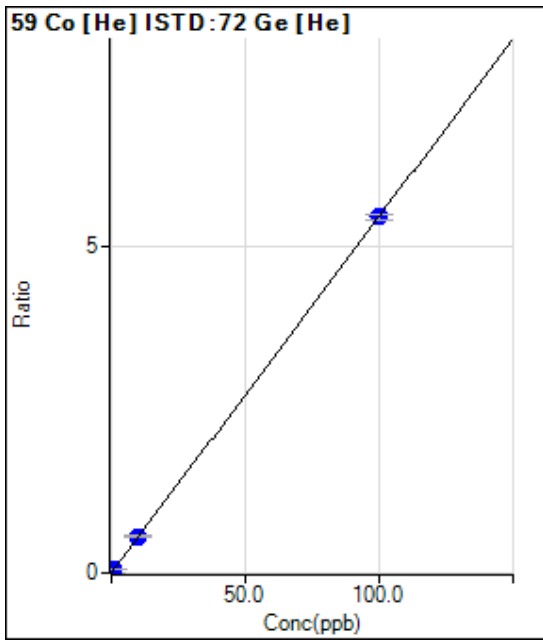
R = 1.0000

DL = 0.6792

BEC = 1.84

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	243.34	0.0013	P	12.9
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.074	1040.05	0.0053	P	14.4
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.030	11273.30	0.0574	P	3.9
6	<input type="checkbox"/>	10.000	10.184	105615.83	0.5564	P	4.5
7	<input type="checkbox"/>	100.000	99.981	1024667.46	5.4516	P	1.8
8	<input type="checkbox"/>						

$y = 0.0545 * x + 0.0013$

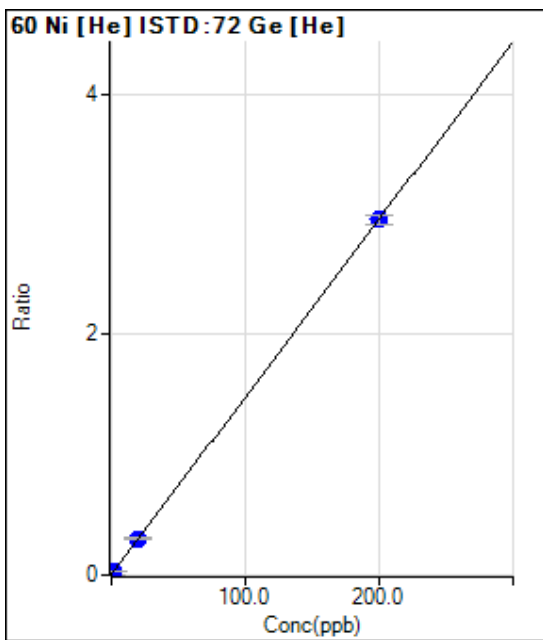
R = 1.0000

DL = 0.008898

BEC = 0.02296

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	544.46	0.0028	P	10.9
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.200	0.141	965.60	0.0049	P	4.2
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	2.000	2.036	6459.26	0.0329	P	2.7
6	<input type="checkbox"/>	20.000	20.338	57581.17	0.3034	P	4.1
7	<input type="checkbox"/>	200.000	199.966	555952.08	2.9581	P	2.4
8	<input type="checkbox"/>						

$y = 0.0148 * x + 0.0028$

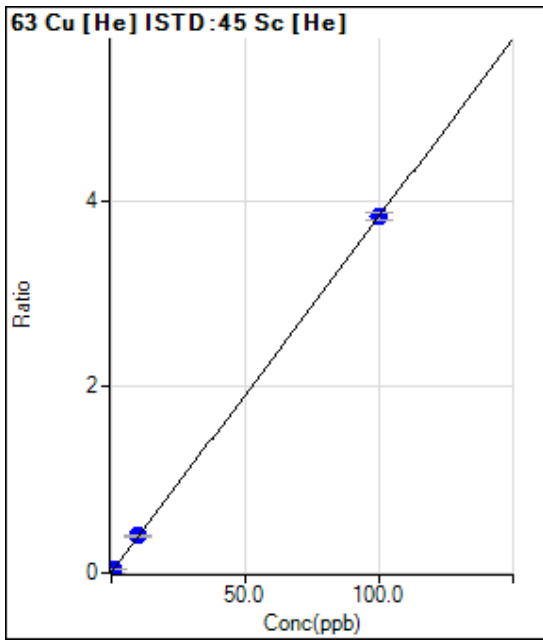
R = 1.0000

DL = 0.0618

BEC = 0.1892

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	738.92	0.0035	P	7.6
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.082	1418.97	0.0067	P	9.4
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.048	9236.33	0.0436	P	2.5
6	<input type="checkbox"/>	10.000	10.431	81699.52	0.4029	P	4.5
7	<input type="checkbox"/>	100.000	99.956	775489.05	3.8307	P	2.0
8	<input type="checkbox"/>						

$y = 0.0383 * x + 0.0035$

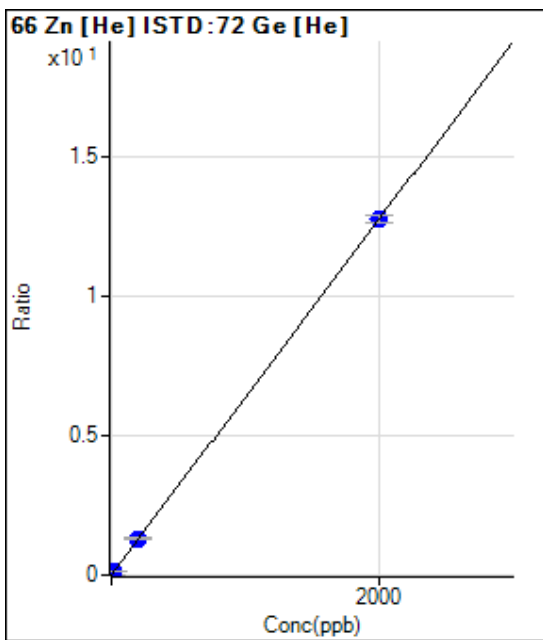
R = 1.0000

DL = 0.02087

BEC = 0.09195

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	858.92	0.0044	P	9.5
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	2.000	2.081	3500.46	0.0177	P	7.0
4	<input type="checkbox"/>	10.000					
5	<input type="checkbox"/>	20.000	20.997	27205.33	0.1385	P	1.5
6	<input type="checkbox"/>	200.000	203.888	247950.42	1.3063	P	4.2
7	<input type="checkbox"/>	2000.000	1999.601	2400751.09	12.7727	P	2.0
8	<input type="checkbox"/>						

$y = 0.0064 * x + 0.0044$

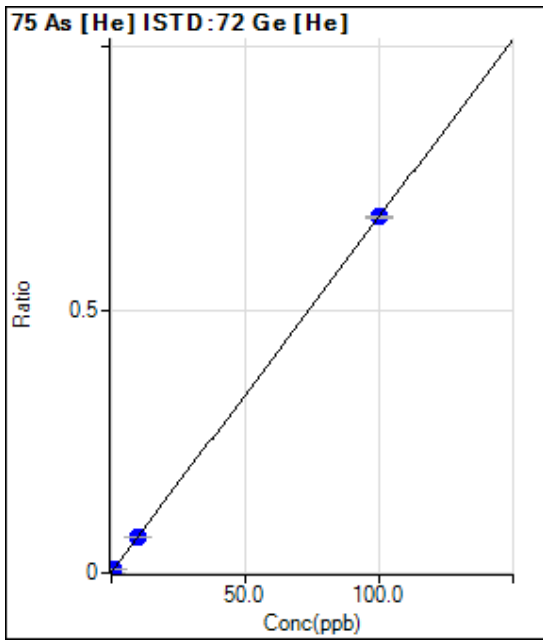
R = 1.0000

DL = 0.1978

BEC = 0.6908

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	251.00	0.0013	P	6.2
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.059	334.01	0.0017	P	9.1
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.983	1558.42	0.0079	P	1.8
6	<input type="checkbox"/>	10.000	9.898	12935.74	0.0681	P	2.5
7	<input type="checkbox"/>	100.000	100.010	127215.55	0.6768	P	0.9
8	<input type="checkbox"/>						

$y = 0.0068 * x + 0.0013$

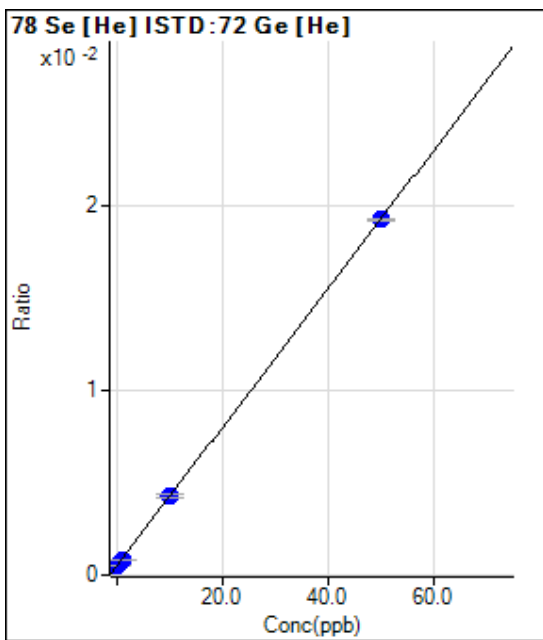
R = 1.0000

DL = 0.03539

BEC = 0.1909

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	93.07	0.0005	P	6.2
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.023	96.23	0.0005	P	2.4
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.925	162.06	0.0008	P	4.4
6	<input type="checkbox"/>	10.000	10.107	811.08	0.0043	P	3.4
7	<input type="checkbox"/>	50.000	49.980	3617.21	0.0192	P	0.6
8	<input type="checkbox"/>						

$y = 3.7544E-004 * x + 4.7770E-004$

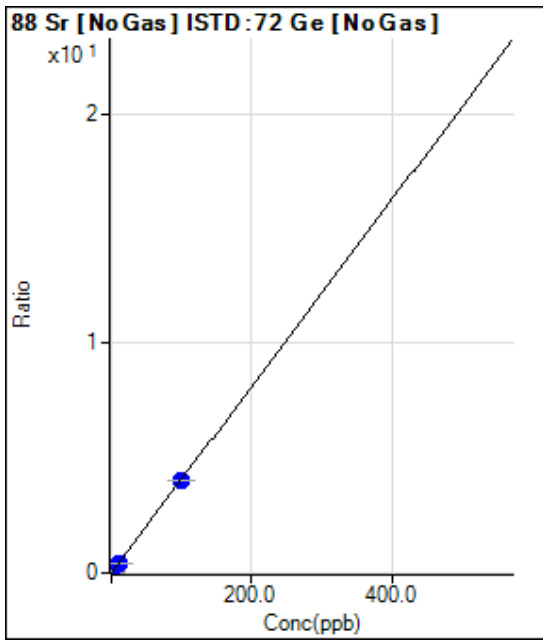
R = 1.0000

DL = 0.236

BEC = 1.272

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	1690.16	0.0010	P	1.4
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.094	8015.85	0.0049	P	0.8
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.006	68114.94	0.0418	P	1.7
6	<input type="checkbox"/>	10.000	10.013	660024.18	0.4070	P	0.3
7	<input type="checkbox"/>	100.000	99.999	6517522.82	4.0557	P	0.6
8	<input type="checkbox"/>						

$y = 0.0405 * x + 0.0010$

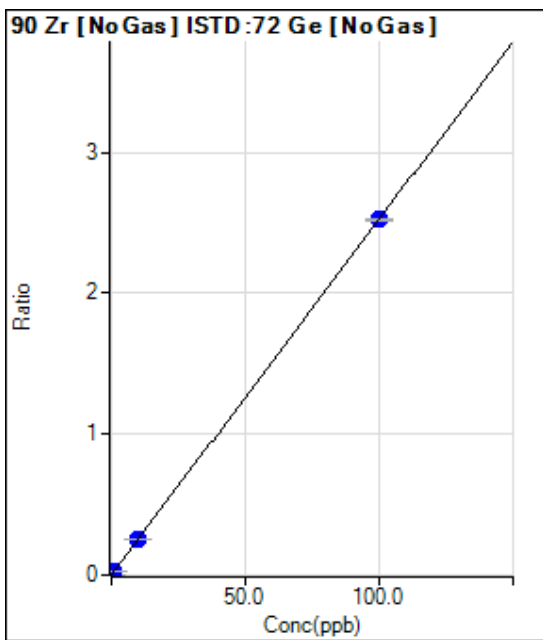
R = 1.0000

DL = 0.001103

BEC = 0.02542

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	1476.76	0.0009	P	5.2
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.077	4685.25	0.0028	P	2.5
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.880	37605.64	0.0231	P	1.6
6	<input type="checkbox"/>	10.000	10.015	410860.79	0.2534	P	0.5
7	<input type="checkbox"/>	100.000	100.000	4052651.23	2.5219	P	0.2
8	<input type="checkbox"/>						

$y = 0.0252 * x + 9.0069E-004$

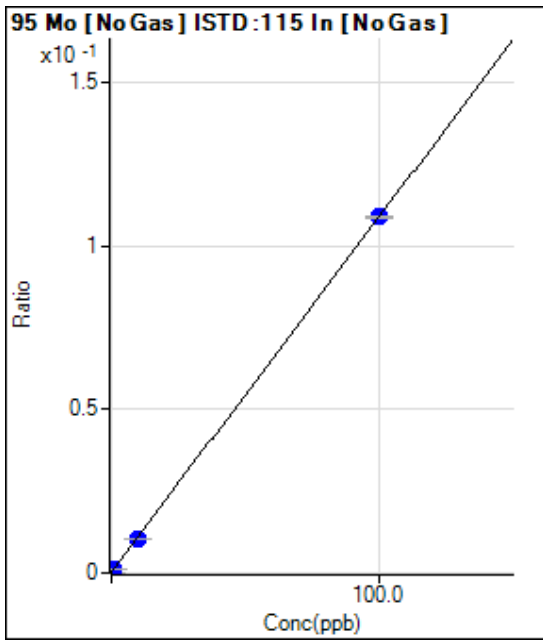
R = 1.0000

DL = 0.005554

BEC = 0.03573

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	2504.69	0.0002	P	5.9
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.038	2979.23	0.0003	P	4.3
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.864	12974.86	0.0012	P	0.2
6	<input type="checkbox"/>	10.000	9.549	116105.53	0.0106	P	0.9
7	<input type="checkbox"/>	100.000	100.047	1165311.76	0.1090	P	0.3
8	<input type="checkbox"/>						

$y = 0.0011 * x + 2.2779E-004$

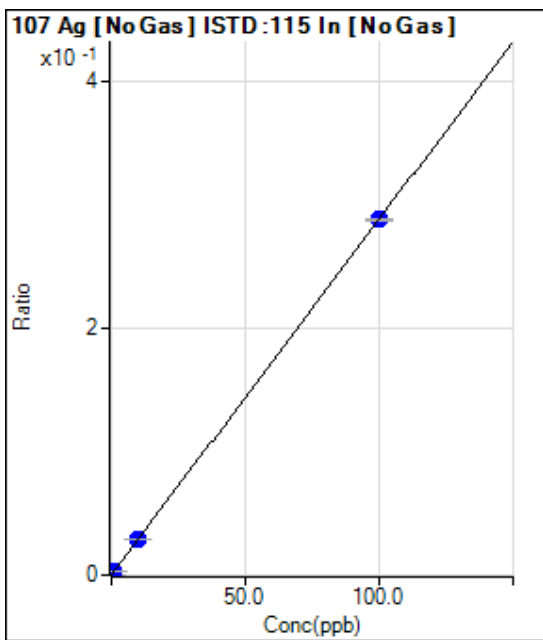
R = 1.0000

DL = 0.03699

BEC = 0.2096

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	67.78	0.0000	P	24.9
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.102	3338.20	0.0003	P	4.0
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.012	32529.35	0.0029	P	1.7
6	<input type="checkbox"/>	10.000	10.027	316619.33	0.0289	P	1.0
7	<input type="checkbox"/>	100.000	99.997	3083915.64	0.2883	P	0.5
8	<input type="checkbox"/>						

$y = 0.0029 * x + 6.1642E-006$

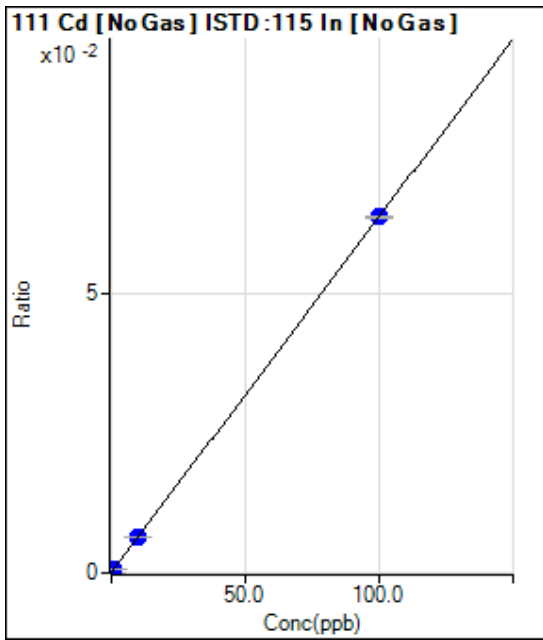
R = 1.0000

DL = 0.001596

BEC = 0.002138

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	538.90	0.0000	P	5.7
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.080	1104.50	0.0001	P	8.4
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.983	7497.60	0.0007	P	3.4
6	<input type="checkbox"/>	10.000	9.873	69286.66	0.0063	P	1.6
7	<input type="checkbox"/>	100.000	100.013	680878.53	0.0637	P	0.4
8	<input type="checkbox"/>						

$y = 6.3602E-004 * x + 4.9006E-005$

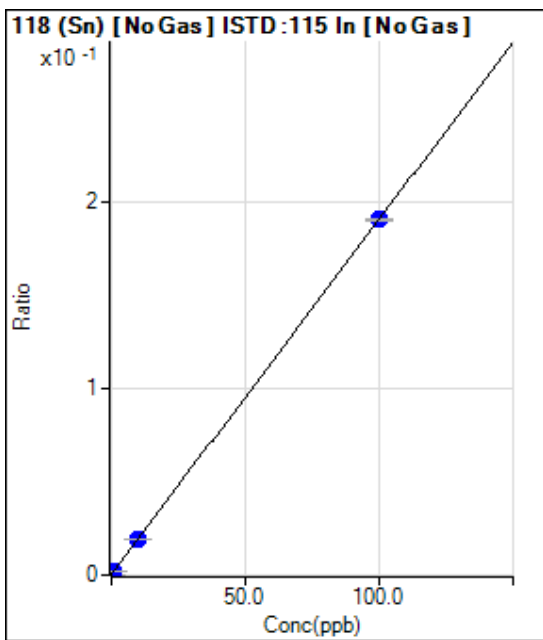
R = 1.0000

DL = 0.0132

BEC = 0.07705

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	3147.05	0.0003	P	1.5
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.097	5207.69	0.0005	P	3.5
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.976	23800.16	0.0021	P	1.8
6	<input type="checkbox"/>	10.000	9.834	207580.65	0.0190	P	0.7
7	<input type="checkbox"/>	100.000	100.017	2034314.99	0.1902	P	0.7
8	<input type="checkbox"/>						

$y = 0.0019 * x + 2.8617E-004$

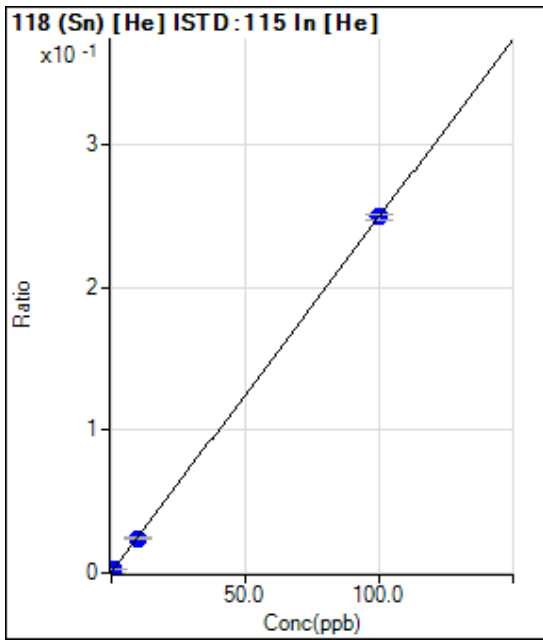
R = 1.0000

DL = 0.006933

BEC = 0.1507

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	766.70	0.0004	P	7.1
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.073	1171.18	0.0006	P	15.9
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.034	6188.09	0.0029	P	2.2
6	<input type="checkbox"/>	10.000	9.656	49581.15	0.0244	P	4.4
7	<input type="checkbox"/>	100.000	100.034	488633.14	0.2494	P	1.7
8	<input type="checkbox"/>						

$y = 0.0025 * x + 3.7031E-004$

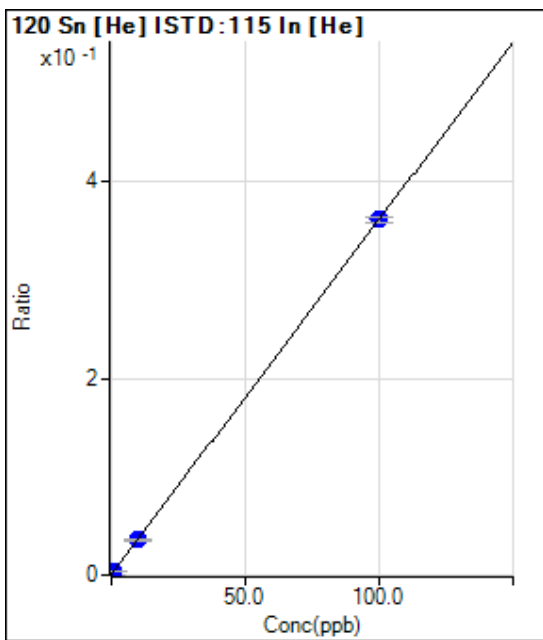
R = 1.0000

DL = 0.03188

BEC = 0.1487

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	1104.50	0.0005	P	8.4
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.076	1712.35	0.0008	P	4.5
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.012	8801.72	0.0042	P	2.0
6	<input type="checkbox"/>	10.000	9.684	72093.21	0.0355	P	4.0
7	<input type="checkbox"/>	100.000	100.032	708501.78	0.3617	P	1.4
8	<input type="checkbox"/>						

$y = 0.0036 * x + 5.3352E-004$

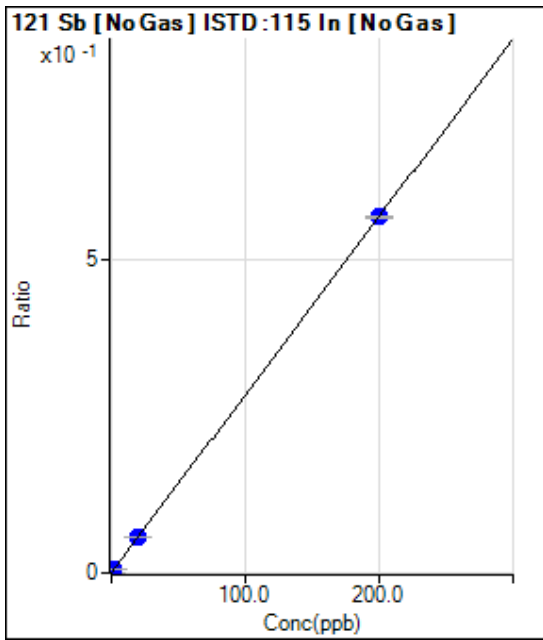
R = 1.0000

DL = 0.0374

BEC = 0.1478

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	3162.61	0.0003	P	2.6
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.200	0.192	9223.09	0.0008	P	0.8
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	2.000	2.040	67557.35	0.0061	P	0.9
6	<input type="checkbox"/>	20.000	20.351	635050.65	0.0580	P	0.6
7	<input type="checkbox"/>	200.000	199.964	6068544.06	0.5674	P	0.8
8	<input type="checkbox"/>						

$y = 0.0028 * x + 2.8759E-004$

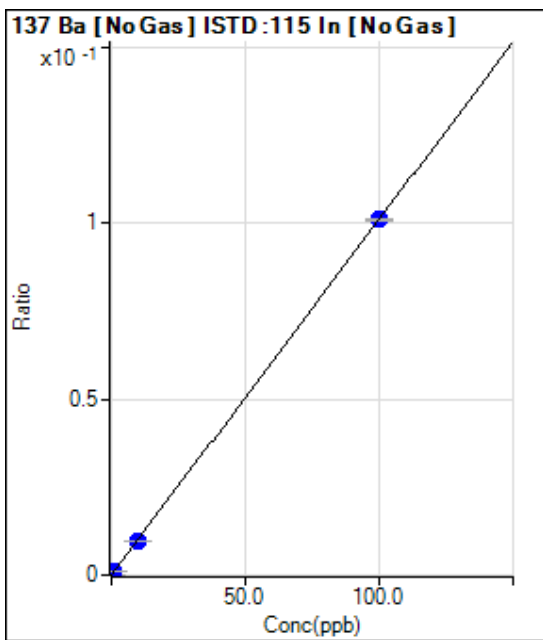
R = 1.0000

DL = 0.007818

BEC = 0.1014

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	253.34	0.0000	P	15.2
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.096	1327.86	0.0001	P	3.1
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.989	11355.80	0.0010	P	3.1
6	<input type="checkbox"/>	10.000	9.746	107939.88	0.0099	P	0.3
7	<input type="checkbox"/>	100.000	100.026	1079975.48	0.1010	P	0.7
8	<input type="checkbox"/>	1000.000					

$y = 0.0010 * x + 2.3038E-005$

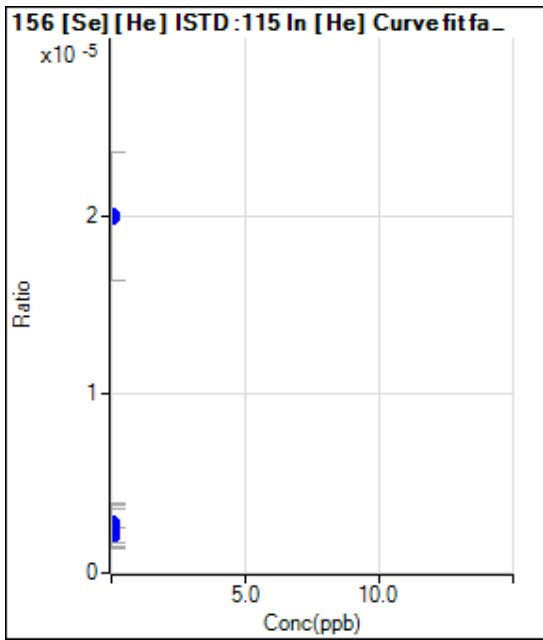
R = 1.0000

DL = 0.01043

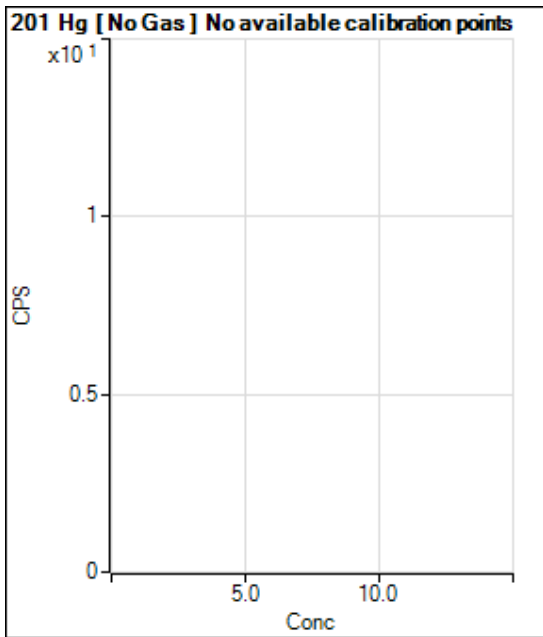
BEC = 0.02283

Weight: <None>

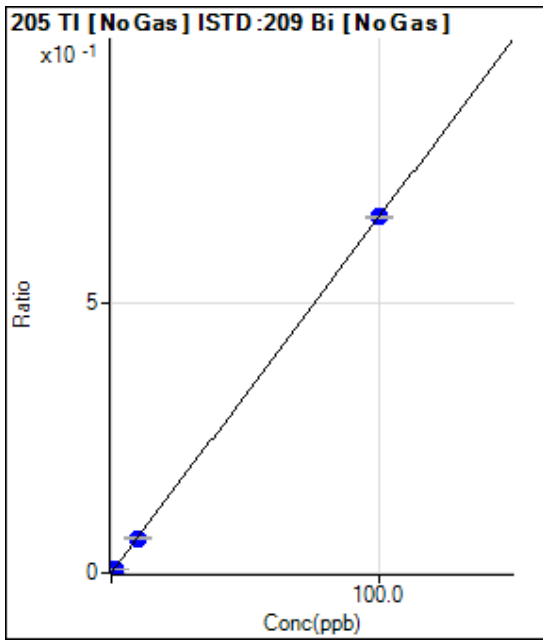
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000		4.44	0.0000	P	41.4
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.000		5.55	0.0000	P	70.5
4	<input type="checkbox"/>	0.000					
5	<input type="checkbox"/>	0.000		5.56	0.0000	P	92.0
6	<input type="checkbox"/>	0.000		5.56	0.0000	P	91.4
7	<input type="checkbox"/>	0.000		38.89	0.0000	P	36.2
8	<input type="checkbox"/>						



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>			14.33		P	8.8
2	<input type="checkbox"/>						
3	<input type="checkbox"/>			17.17		P	32.0
4	<input type="checkbox"/>						
5	<input type="checkbox"/>			18.83		P	16.0
6	<input type="checkbox"/>			30.17		P	10.7
7	<input type="checkbox"/>			62.50		P	15.3
8	<input type="checkbox"/>						



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	9717.22	0.0010	P	3.9
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.053	13220.35	0.0014	P	1.7
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.894	65736.14	0.0069	P	0.6
6	<input type="checkbox"/>	10.000	9.634	606069.22	0.0645	P	0.9
7	<input type="checkbox"/>	100.000	100.038	6055454.08	0.6596	P	0.5
8	<input type="checkbox"/>						

$y = 0.0066 * x + 0.0010$

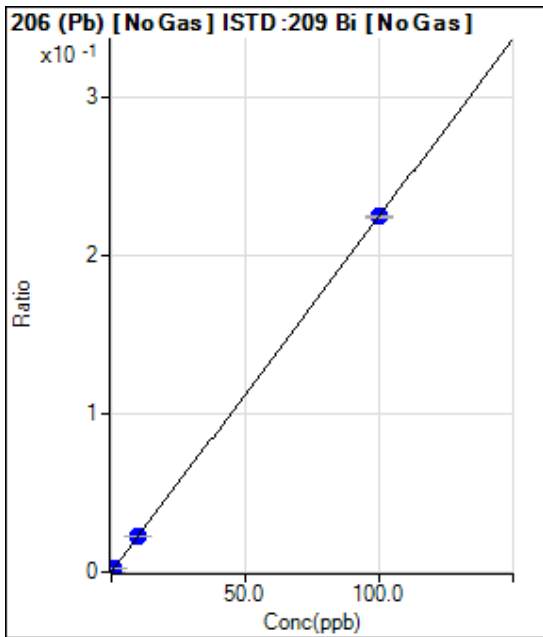
R = 1.0000

DL = 0.01845

BEC = 0.1568

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	756.72	0.0001	P	9.0
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.098	2870.43	0.0003	P	1.9
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.999	22058.95	0.0023	P	2.4
6	<input type="checkbox"/>	10.000	9.986	211376.02	0.0225	P	0.2
7	<input type="checkbox"/>	100.000	100.001	2060154.34	0.2244	P	0.6
8	<input type="checkbox"/>						

$y = 0.0022 * x + 8.0336E-005$

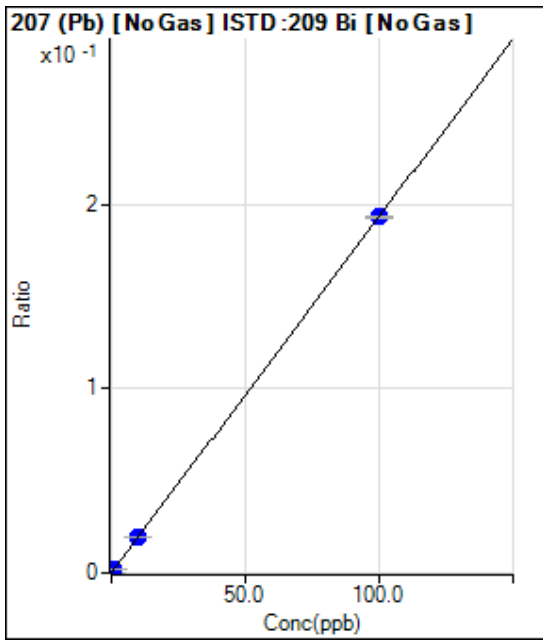
R = 1.0000

DL = 0.009713

BEC = 0.03581

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	730.05	0.0001	P	5.8
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.093	2463.65	0.0003	P	9.2
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.985	18780.44	0.0020	P	2.5
6	<input type="checkbox"/>	10.000	9.957	181359.70	0.0193	P	0.6
7	<input type="checkbox"/>	100.000	100.004	1771942.32	0.1930	P	0.5
8	<input type="checkbox"/>						

$y = 0.0019 * x + 7.7547E-005$

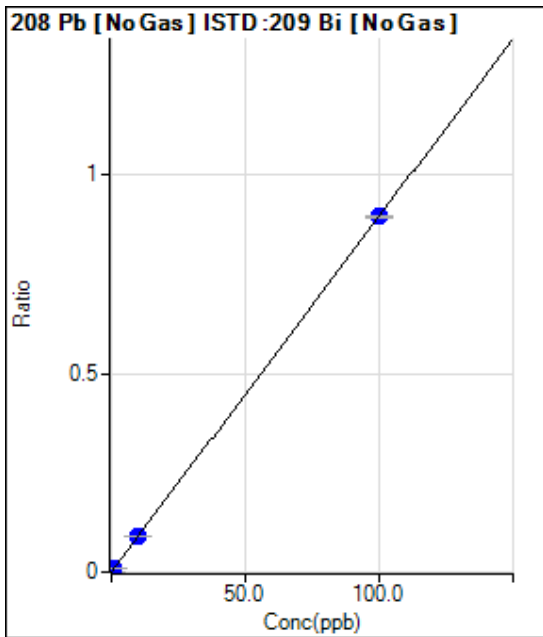
R = 1.0000

DL = 0.00695

BEC = 0.0402

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	3103.61	0.0003	P	2.4
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.093	11115.56	0.0012	P	3.7
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.985	86826.32	0.0091	P	0.8
6	<input type="checkbox"/>	10.000	9.928	838321.15	0.0892	P	0.2
7	<input type="checkbox"/>	100.000	100.007	8217668.68	0.8951	P	0.4
8	<input type="checkbox"/>						

$y = 0.0089 * x + 3.2960E-004$

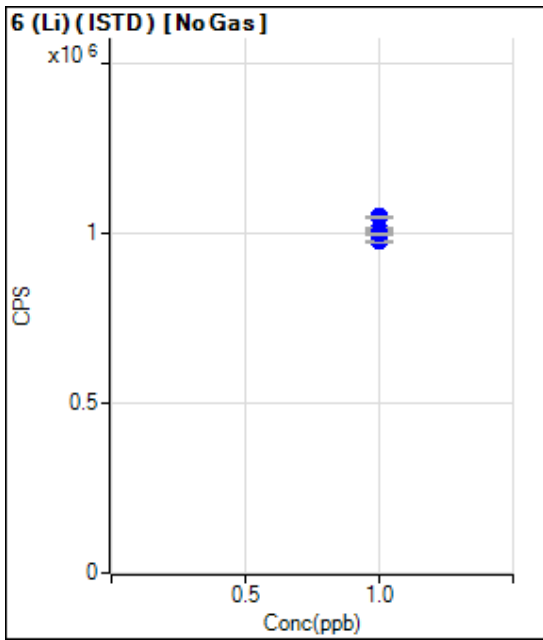
R = 1.0000

DL = 0.002683

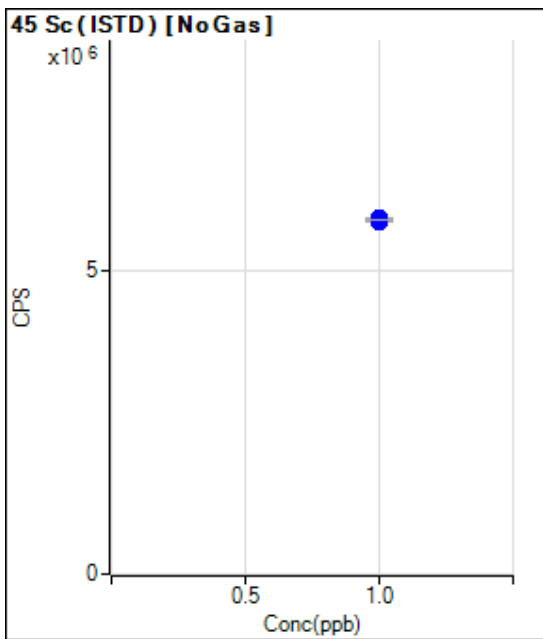
BEC = 0.03684

Weight: <None>

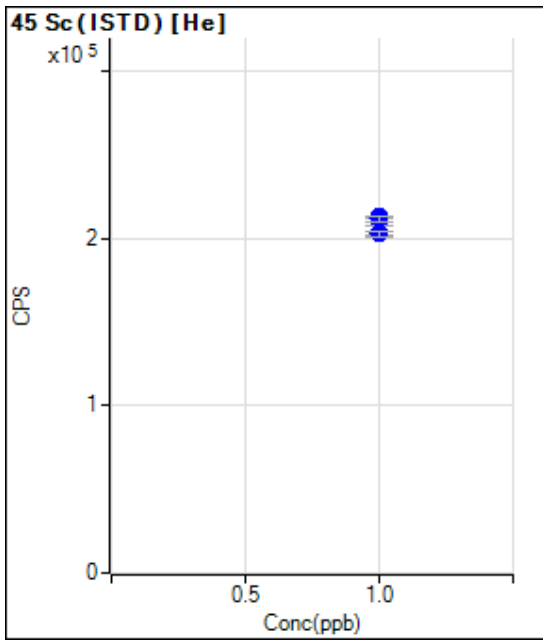
Min Conc: <None>



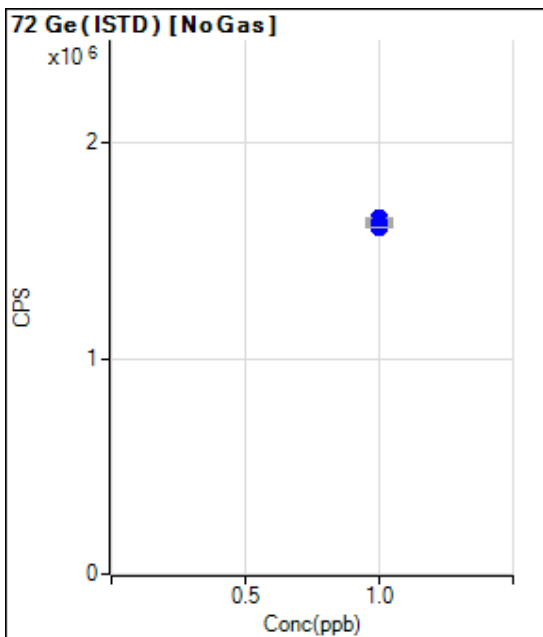
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		976725.24		P	0.5
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		1001075.64		P	0.9
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		1013422.15		P	0.5
6	<input type="checkbox"/>	1.000		998756.37		P	0.6
7	<input type="checkbox"/>	1.000		1049323.42		P	0.5
8	<input type="checkbox"/>	1.000					



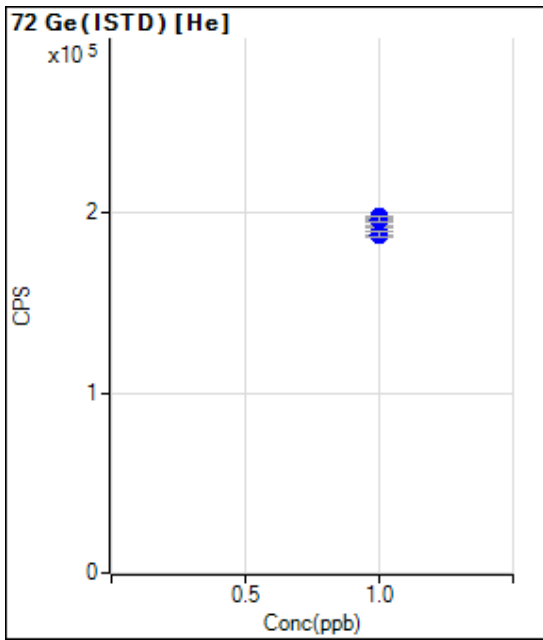
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		5845931.02		P	0.5
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		5873274.77		P	0.3
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		5874443.79		P	0.4
6	<input type="checkbox"/>	1.000		5822955.19		P	0.2
7	<input type="checkbox"/>	1.000		5865227.68		P	0.1
8	<input type="checkbox"/>	1.000					



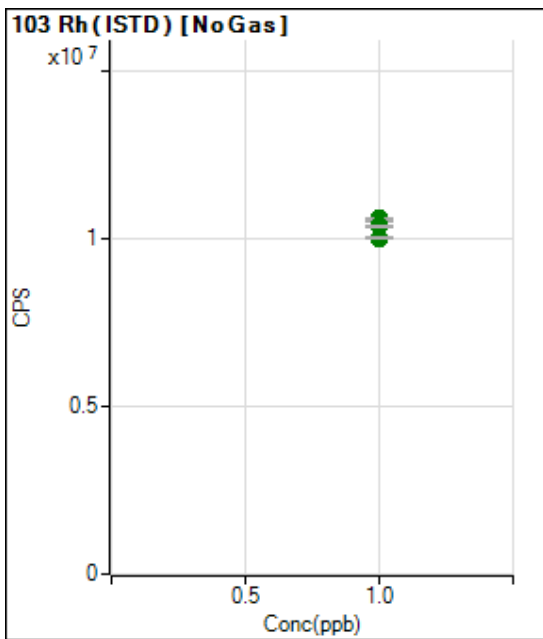
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		209719.87		P	2.7
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		212651.11		P	0.6
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		211669.10		P	1.5
6	<input type="checkbox"/>	1.000		202814.56		P	1.2
7	<input type="checkbox"/>	1.000		202477.84		P	1.6
8	<input type="checkbox"/>	1.000					



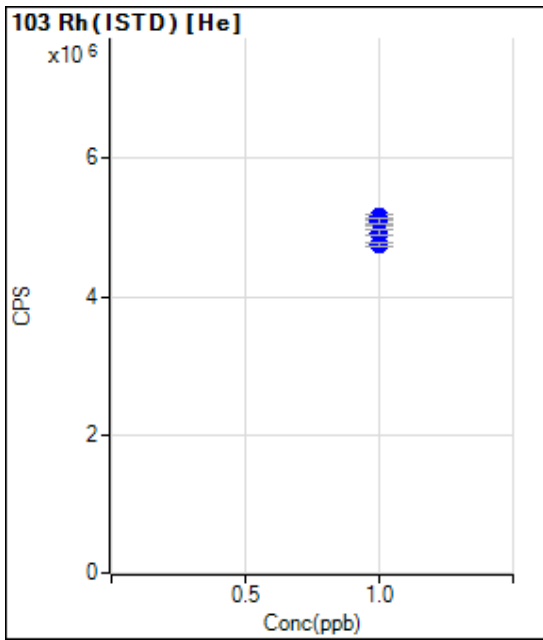
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		1639549.59		P	0.6
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		1649590.28		P	0.4
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		1629498.44		P	0.9
6	<input type="checkbox"/>	1.000		1621520.28		P	0.4
7	<input type="checkbox"/>	1.000		1607011.15		P	0.3
8	<input type="checkbox"/>	1.000					



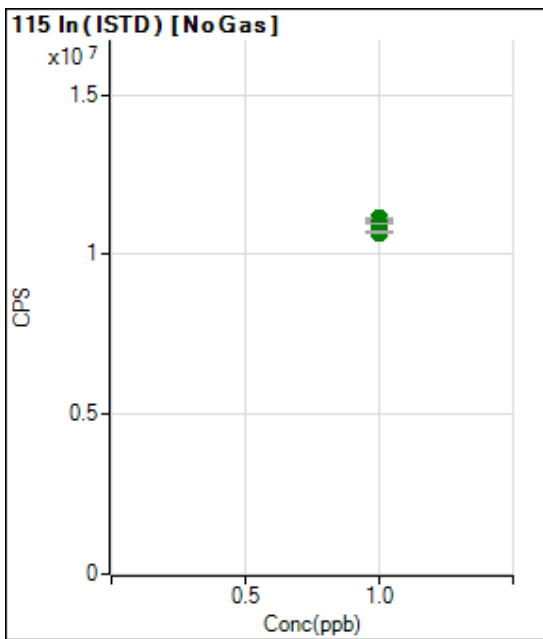
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		194706.73		P	1.6
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		197878.64		P	0.8
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		196477.12		P	1.7
6	<input type="checkbox"/>	1.000		189890.10		P	1.9
7	<input type="checkbox"/>	1.000		187995.92		P	1.8
8	<input type="checkbox"/>	1.000					



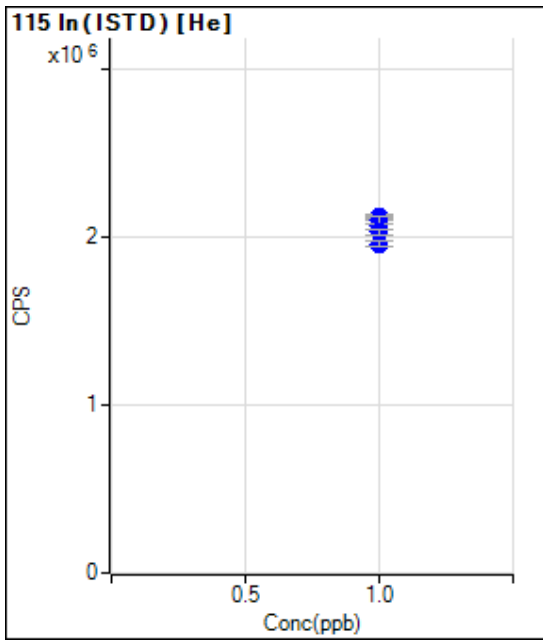
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		10512158.19		A	0.2
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		10586827.91		A	0.4
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		10598023.19		A	0.3
6	<input type="checkbox"/>	1.000		10367179.87		A	0.4
7	<input type="checkbox"/>	1.000		10019718.21		A	0.5
8	<input type="checkbox"/>	1.000					



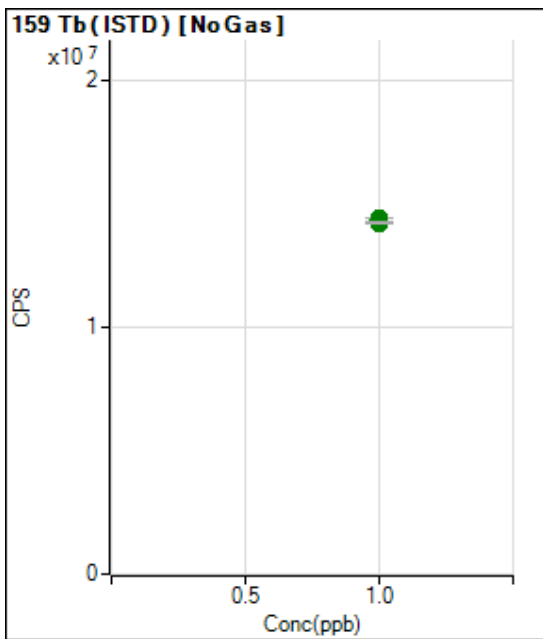
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		5075027.71		P	1.9
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		5154088.13		P	1.1
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		5097050.91		P	1.6
6	<input type="checkbox"/>	1.000		4930516.33		P	1.2
7	<input type="checkbox"/>	1.000		4758206.06		P	1.4
8	<input type="checkbox"/>	1.000					



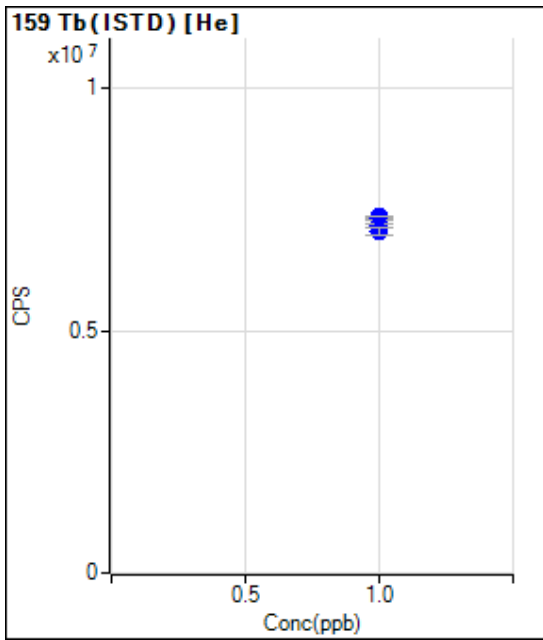
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		10997055.32		A	0.3
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		11071651.80		A	0.4
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		11122474.03		A	0.1
6	<input type="checkbox"/>	1.000		10948525.22		A	0.2
7	<input type="checkbox"/>	1.000		10695631.37		A	0.4
8	<input type="checkbox"/>	1.000					



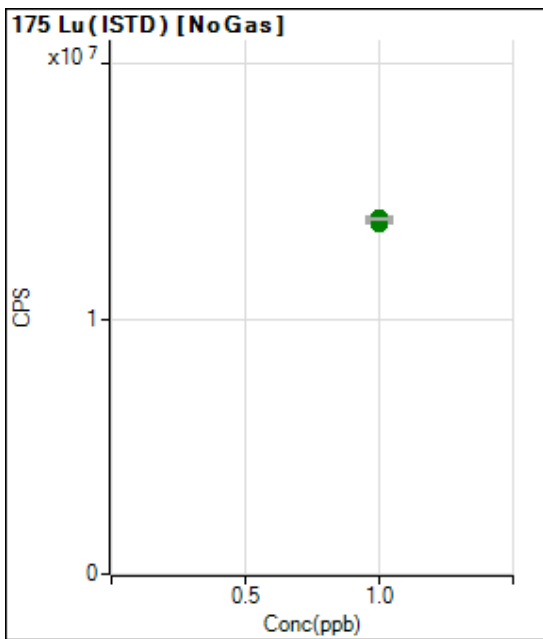
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		2072569.53		P	2.5
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		2120247.64		P	1.2
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		2102274.94		P	2.1
6	<input type="checkbox"/>	1.000		2031735.72		P	1.6
7	<input type="checkbox"/>	1.000		1959181.86		P	1.5
8	<input type="checkbox"/>	1.000					



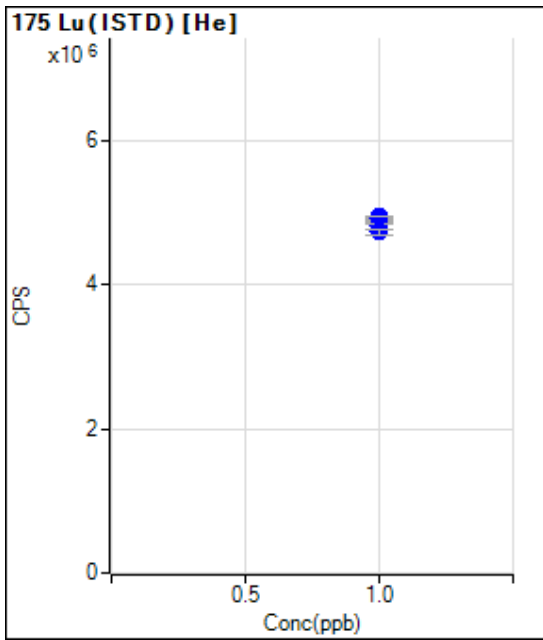
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		14199586.87		A	0.4
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		14344345.62		A	1.1
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		14399660.62		A	0.1
6	<input type="checkbox"/>	1.000		14244961.46		A	0.6
7	<input type="checkbox"/>	1.000		14244864.37		A	0.5
8	<input type="checkbox"/>	1.000					



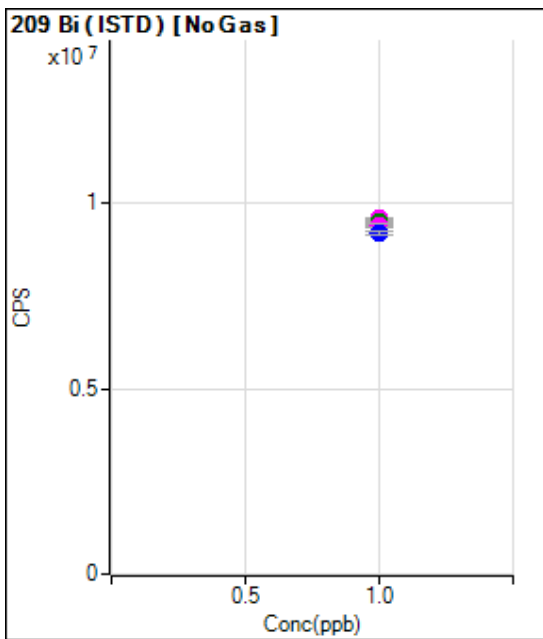
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		7217928.23		P	2.0
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		7351620.10		P	0.6
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		7317593.23		P	1.3
6	<input type="checkbox"/>	1.000		7158698.44		P	1.2
7	<input type="checkbox"/>	1.000		7064584.27		P	2.1
8	<input type="checkbox"/>	1.000					



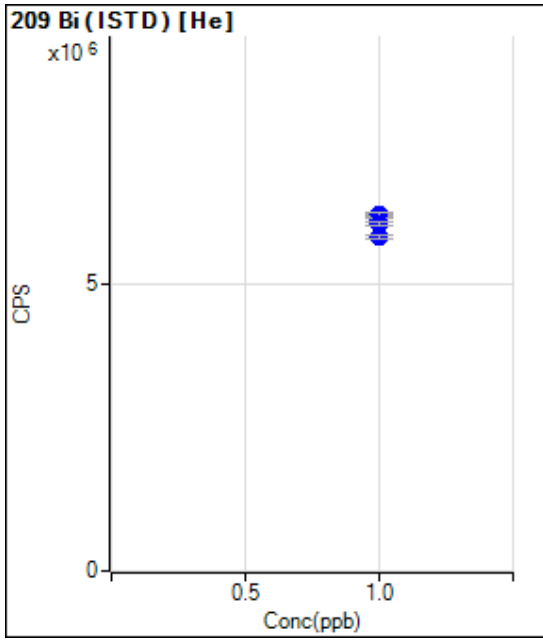
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		13769018.13		A	0.1
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		13926448.96		A	1.4
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		13948195.21		A	0.1
6	<input type="checkbox"/>	1.000		13919346.46		A	0.4
7	<input type="checkbox"/>	1.000		13929375.21		A	0.6
8	<input type="checkbox"/>	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		4837163.68		P	2.4
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		4945068.99		P	0.5
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		4919437.63		P	1.7
6	<input type="checkbox"/>	1.000		4811109.09		P	1.4
7	<input type="checkbox"/>	1.000		4735339.82		P	2.0
8	<input type="checkbox"/>	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		9415604.23		M	0.8
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		9584800.27		M	0.7
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		9498812.36		A	0.3
6	<input type="checkbox"/>	1.000		9403124.03		M	0.8
7	<input type="checkbox"/>	1.000		9180775.49		P	1.0
8	<input type="checkbox"/>	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		6132749.07		P	1.3
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		6208962.61		P	0.6
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		6215835.32		P	1.4
6	<input type="checkbox"/>	1.000		6054779.29		P	1.0
7	<input type="checkbox"/>	1.000		5829216.16		P	1.5
8	<input type="checkbox"/>	1.000					

Metals

Prep Sheets



3050B Metals Solid Preparation



ANALYST/ TECH	JEL	START DATE/TIME	7/21/2023 14:15	END DATE/TIME	7/21/2023 17:15	BATCH	769361
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#	CLIENT	TYPE	CLIENT ID	LAB ID	INITIAL WGT (g)	FINAL VOL (mL)	COMMENT	STANDARDS\ REAGENTS
1	QC	MB	MB 2502759	2502759	1.25	50		GCAL - 8 - 250uL
2	QC	LCS	LCS 2502760	2502760	1.25	50		2132617
3	0176	SAMP	BRCP 23-29	22307213601	1.33	50		Sb,Ag,Se SPIKE - 250uL
4	AL-O	SAMP	KCDC-SB0083-001.0-2023...	22307214721	1.25	50		360-8-2
5	QC	MS	KCDC-SB0083-001....(2502792MS)	2502801	1.25	50		Li,B,Zr SPIKE - 250uL
6	QC	MSD	KCDC-SB0083-001...(2502792MSD)	2502802	1.25	50		360-8-3
7	AL-O	SAMP	KCDC-SB0084-000.5-2023...	22307214722	1.27	50		Si SPIKE - 250uL
8	AL-O	SAMP	KCDC-SB0084-001.0-2023...	22307214723	1.33	50		2131076
9	AL-O	SAMP	KCDC-SB0073-001.0-2023...	22307214724	1.25	50		HNO3
10								2133188
11								H2O2
12								2133068
13								HCL
14								
15								1:1 HNO3
16								226-42-16
17								
18								
19								
20								
21								
22								
23								
24								
25								Solid Material
26								2208065-2342-WI
27								Digestion Vessel Lot #
28								30000149
29								
30								

EQUIPMENT\CONDITIONS

BALANCE ID	21	DIGESTION BLOCK\THERMOMETER ID	C1	TEMPERATURE	94
PIPETTE 1	117	PIPETTE 2	115	PIPETTE 3	

NOTES

Matrix-Soil. 6020_S_EX



3050B Metals Solid Preparation



ANALYST/ TECH	JEL	START DATE/TIME	7/21/2023 14:15	END DATE/TIME	7/21/2023 17:15	BATCH	769363
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#	CLIENT	TYPE	CLIENT ID	LAB ID	INITIAL WGT (g)	FINAL VOL (mL)	COMMENT	STANDARDS\ REAGENTS
1	QC	MB	MB 2502796	2502796	1.25	50		GCAL - 8 - 250uL
2	QC	LCS	LCS 2502797	2502797	1.25	50		2132617
3	AL-O	SAMP	KCDC-SB0068-001.0-2023...	22307214701	1.25	50		Sb,Ag,Se SPIKE - 250uL
4	QC	MS	KCDC-SB0068-001....(2502772MS)	2502798	1.25	50		360-8-2
5	QC	MSD	KCDC-SB0068-001...(2502772MSD)	2502799	1.25	50		Li,B,Zr SPIKE - 250uL
6	AL-O	SAMP	KCDC-SB0077-000.5-2023...	22307214702	1.29	50		360-8-3
7	AL-O	SAMP	KCDC-SB0077-001.0-2023...	22307214703	1.26	50		Si SPIKE - 250uL
8	AL-O	SAMP	KCDC-SB0078-000.5-2023...	22307214704	1.31	50		2131076
9	AL-O	SAMP	KCDC-SB0078-001.0-2023...	22307214705	1.28	50		HNO3
10	AL-O	SAMP	KCDC-SB0079-000.5-2023...	22307214706	1.26	50		2133188
11	AL-O	SAMP	KCDC-SB0079-001.0-2023...	22307214707	1.27	50		H2O2
12	AL-O	SAMP	KCDC-SB0067-001.0-2023...	22307214708	1.28	50		2133068
13	AL-O	SAMP	KCDC-SB0066-001.0-2023...	22307214709	1.34	50		HCL
14	AL-O	SAMP	KCDC-SB0069-001.0-2023...	22307214710	1.31	50		
15	AL-O	SAMP	KCDC-SB0070-001.0-2023...	22307214711	1.25	50		1:1 HNO3
16	AL-O	SAMP	KCDC-SB0080-000.5-2023...	22307214712	1.27	50		226-42-16
17	AL-O	SAMP	KCDC-SB0080-001.0-2023...	22307214713	1.31	50		
18	AL-O	SAMP	KCDC-SB0071-001.0-2023...	22307214714	1.33	50		
19	AL-O	SAMP	KCDC-SB0074-001.0-2023...	22307214715	1.25	50		
20	AL-O	SAMP	KCDC-SB0081-000.5-2023...	22307214716	1.34	50		
21	AL-O	SAMP	KCDC-SB0081-001.0-2023...	22307214717	1.31	50		
22	AL-O	SAMP	KCDC-SB0082-000.5-2023...	22307214718	1.33	50		
23	AL-O	SAMP	KCDC-SB0082-001.0-2023...	22307214719	1.29	50		
24	AL-O	SAMP	KCDC-SB0083-000.5-2023...	22307214720	1.30	50		
25								Solid Material
26								2208065-2342-WI
27								Digestion Vessel Lot #
28								30000149
29								
30								

EQUIPMENT\CONDITIONS

BALANCE ID	21	DIGESTION BLOCK\THERMOMETER ID	B1	TEMPERATURE	94
PIPETTE 1	117	PIPETTE 2	115	PIPETTE 3	

NOTES

Matrix-Soil. 6020_S_EX



Dry Weight/Percent Moisture



ANALYST/ TECH	LHM	START DATE/TIME	7/21/2023 14:36	END DATE/TIME	7/24/2023 10:37	BATCH	769366
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#	LAB ID	Pan ID	Pan Weight (g)	Initial Wgt (g) (Sample+Pan)	Final Wgt #1 (g) (Sample+Pan)	Final Wgt #2 (g) (Sample+Pan)	Diff (g)	Initial Wgt (g) (LessPan)	Final Wgt (g) (LessPan)	Total Solids (%)	Total Moisture (%)
1	22307214701	1	1.0039	11.0925	9.6900			10.0886	8.6861	86.1	13.9
2	2502817	2	0.9909	10.8361	9.3938			9.8452	8.4029	85.35	14.65
3	22307214702	3	0.9851	10.3226	8.5237			9.3375	7.5386	80.73	19.27
4	22307214703	4	0.9854	10.2576	8.9901			9.2722	8.0047	86.33	13.67
5	22307214704	5	0.9839	10.2790	9.0723			9.2951	8.0884	87.02	12.98
6	22307214705	6	0.9845	10.6450	9.3872			9.6605	8.4027	86.98	13.02
7	22307214706	7	0.9870	10.5313	9.0138			9.5443	8.0268	84.1	15.9
8	22307214707	8	0.9815	10.7702	8.5184			9.7887	7.5369	77	23
9	22307214708	9	0.9850	10.1737	7.5928			9.1887	6.6078	71.91	28.09
10	22307214709	10	0.9895	10.4197	8.8418			9.4302	7.8523	83.27	16.73
11	22307214710	11	0.9982	10.2228	9.3237			9.2246	8.3255	90.25	9.75
12	22307214711	12	0.9833	10.9286	8.5446			9.9453	7.5613	76.03	23.97
13	2502818	13	0.9847	10.1314	7.9200			9.1467	6.9353	75.82	24.18
14	22307214712	14	0.9833	10.1454	7.6900			9.1621	6.7067	73.2	26.8
15	22307214713	15	0.9839	10.4158	9.0399			9.4319	8.056	85.41	14.59
16	22307214714	16	0.9972	11.0334	8.5368			10.0362	7.5396	75.12	24.88
17	22307214715	17	1.0027	11.2896	9.9945			10.2869	8.9918	87.41	12.59
18	22307214716	18	0.9994	10.4183	9.2511			9.4189	8.2517	87.61	12.39
19	22307214717	19	0.9936	10.3746	8.6697			9.381	7.6761	81.83	18.17
20	22307214718	20	0.9812	10.4535	8.8566			9.4723	7.8754	83.14	16.86
21	22307214719	21	0.9912	10.8219	9.8290			9.8307	8.8378	89.9	10.1
22	22307214720	22	0.9965	10.7031	9.3381			9.7066	8.3416	85.94	14.06
23											
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EQUIPMENT/CONDITIONS

BALANCE ID	BAL25	
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NOTES

TS % = ((Final Sample Mass - Initial Sample Mass) x 100) / Initial Sample Mass;



Dry Weight/Percent Moisture



ANALYST/TECH	LHM	START DATE/TIME	7/21/2023 16:51	END DATE/TIME	7/24/2023 10:40	BATCH	769386
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#	LAB ID	Pan ID	Pan Weight (g)	Initial Wgt (g) (Sample+Pan)	Final Wgt #1 (g) (Sample+Pan)	Final Wgt #2 (g) (Sample+Pan)	Diff (g)	Initial Wgt (g) (LessPan)	Final Wgt (g) (LessPan)	Total Solids (%)	Total Moisture (%)
1	22307214721	1	1.0008	9.2226	7.2308			8.2218	6.23	75.77	24.23
2	2502975	2	0.9974	10.4354	8.1797			9.438	7.1823	76.1	23.9
3	22307214722	3	0.9921	10.4631	9.2620			9.471	8.2699	87.32	12.68
4	22307214723	4	1.0051	10.9471	9.7242			9.942	8.7191	87.7	12.3
5	22307214724	5	0.9968	10.5925	9.5117			9.5957	8.5149	88.74	11.26
6											
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EQUIPMENT/CONDITIONS

BALANCE ID	BAL25	
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NOTES

TS % = ((Final Sample Mass - Initial Sample Mass) x 100) / Initial Sample Mass;



CHAIN OF CUSTODY

SGS North America Inc. - Orlando
 4405 Vineland Road, Suite C-15 Orlando, FL 32811
 TEL. 407-425-6700 FAX: 407-425-0707
 www.sgs.com/ehsusa

FED-EX Tracking #	Bottle Order Control #
SGS Quote #	SGS Job # FC7948X

Client / Reporting Information		Project Information	
Company Name: SGS North America Inc.		Project Name: TQN 118 NASA PRLs; KSC, FL	
Street Address 4405 Vineland Rd, Suite C-15		Street	
City State Zip Orlando FL 32811	Billing Information (if different from Report to) Company Name		
Project Contact E-mail jean.dent@sgs.com	Project #		Street Address
Phone # 407-425-6700	Fax #	Client Purchase Order #	City State Zip
Sampler(s) Name(s) RLBS	Phone	Project Manager	Attention:

Client ID: AL-O - SGS Accutest - Orlando

SDG: 223072147

PM: RWe



SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection			Matrix	# of bottles	Number of preserved Bottles							% SOL, ASMS	LAB USE ONLY	
			Date	Time	Sampled by			HCl	NaOH	HNO3	H2SO4	DI Water	MEOH	ENCORE			
1X	KCDC-SB0068-001.0-20230720		7/20/23	8:48:00 AM	RLBS	SO	1								X		1
2X	KCDC-SB0077-000.5-20230720		7/20/23	8:52:00 AM	RLBS	SO	1								X		2
3X	KCDC-SB0077-001.0-20230720		7/20/23	8:53:00 AM	RLBS	SO	1								X		3
4X	KCDC-SB0078-000.5-20230720		7/20/23	8:57:00 AM	RLBS	SO	1								X		4
5X	KCDC-SB0078-001.0-20230720		7/20/23	8:58:00 AM	RLBS	SO	1								X		5
6X	KCDC-SB0079-000.5-20230720		7/20/23	9:07:00 AM	RLBS	SO	1								X		6
7X	KCDC-SB0079-001.0-20230720		7/20/23	9:08:00 AM	RLBS	SO	1								X		7
8X	KCDC-SB0067-001.0-20230720		7/20/23	10:43:00 AM	RLBS	SO	1								X		8
9X	KCDC-SB0066-001.0-20230720		7/20/23	10:38:00 AM	RLBS	SO	1								X		9
10X	KCDC-SB0069-001.0-20230720		7/20/23	9:18:00 AM	RLBS	SO	1								X		10
11X	KCDC-SB0070-001.0-20230720		7/20/23	9:23:00 AM	RLBS	SO	1								X		11
12X	KCDC-SB0080-000.5-20230720		7/20/23	9:30:00 AM	RLBS	SO	1								X		12

Turnaround Time (Business days) <input type="checkbox"/> Standard 10 Day (business) <input type="checkbox"/> 5 Business Days RUSH <input type="checkbox"/> 3 Business Days RUSH <input checked="" type="checkbox"/> 2 Business Days RUSH <input type="checkbox"/> 1 Business Day EMERGENCY <input type="checkbox"/> other _____ Emergency & Rush T/A data available via e-Link Approval needed for RUSH/Emergency TAT	Approved By (SGS PM): / Date: _____ / 7/24/2023	Data Deliverable Information <input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> REDT1 (Level 3) <input checked="" type="checkbox"/> FULL1 (Level 4) <input type="checkbox"/> Commercial "C" <input type="checkbox"/> State Forms <input checked="" type="checkbox"/> EDD Format EQUIS <input type="checkbox"/> Other _____ <input checked="" type="checkbox"/> CC Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial "C" = Results + QC Summary + Partial Raw data	Comments / Special Instructions Please subcontract to Pace Gulf Coast, Attn: Ruth Welsh 7979 Innovation Park Drive Baton Rouge, LA 70820 http://www.sgs.com/en/terms-and-conditions
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Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: <i>W. Williams</i>	Date Time: 7/20/23 17:00	Received By: <i>W. Williams</i>	Relinquished By: <i>Fred Cox</i>	Date Time: 7/20/23 19:20	Received By: <i>W. Williams</i>	
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4	
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	<input type="checkbox"/> Intact <input type="checkbox"/> Not intact	Preserved where applicable <input type="checkbox"/> Therm. ID:	<input type="checkbox"/> On Ice <input type="checkbox"/> Cooler Temp.



CHAIN OF CUSTODY

SGS North America Inc. - Orlando
 4405 Vineland Road, Suite C-15 Orlando, FL 32811
 TEL. 407-425-6700 FAX: 407-425-0707
 www.sgs.com/ehsusa

FED-EX Tracking #	Bottle Order Control #
SGS Quote #	SGS Job # FC7948X

Client / Reporting Information		Project Information	
Company Name: SGS North America Inc.		Project Name: TQN 118 NASA PRLs; KSC, FL	
Street Address: 4405 Vineland Rd, Suite C-15		Street:	
City State Zip: Orlando FL 32811	Billing Information (if different from Report to) Company Name:		
Project Contact E-mail: jean.dent@sgs.com	Project #:	Street Address:	
Phone #: 407-425-6700	Fax #:	Client Purchase Order #:	City State Zip:
Sampler(s) Name(s): RLBS	Phone:	Project Manager:	Attention:

Client ID: AL-O - SGS Accutest - Orlando

SDG: 223072147

PM: RWe



SGS Sample #	Field ID / Point of Collection	MEOH/DI/Vial #	Collection			Matrix	# of bottles	Number of preserved Bottles								%SOL, ASMS	LAB USE ONLY		
			Date	Time	Sampled by			HCl	NaOH	HNO3	H2SO4	None	DI Water	MEOH	ENCORE				
13X	KCDC-SB0080-001.0-20230720		7/20/23	9:31:00 AM	RLBS	SO	1							x				X	13
14X	KCDC-SB0071-001.0-20230720		7/20/23	9:44:00 AM	RLBS	SO	1							x				X	14
15X	KCDC-SB0074-001.0-20230720		7/20/23	9:59:00 AM	RLBS	SO	1							x				X	15
16X	KCDC-SB0081-000.5-20230720		7/20/23	10:07:00 AM	RLBS	SO	1							x				X	16
17X	KCDC-SB0081-001.0-20230720		7/20/23	10:08:00 AM	RLBS	SO	1							x				X	17
18X	KCDC-SB0082-000.5-20230720		7/20/23	10:13:00 AM	RLBS	SO	1							x				X	18
19X	KCDC-SB0082-001.0-20230720		7/20/23	10:14:00 AM	RLBS	SO	1							x				X	19
20X	KCDC-SB0083-000.5-20230720		7/20/23	10:26:00 AM	RLBS	SO	1							x				X	20
21X	KCDC-SB0083-001.0-20230720		7/20/23	10:27:00 AM	RLBS	SO	1							x				X	21
22X	KCDC-SB0084-000.5-20230720		7/20/23	10:31:00 AM	RLBS	SO	1							x				X	22
23X	KCDC-SB0084-001.0-20230720		7/20/23	10:32:00 AM	RLBS	SO	1							x				X	23
24X	KCDC-SB0073-001.0-20230720		7/20/23	9:47:00 AM	RLBS	SO	1							x				X	24

LIQ - Other Liquid
 AIR - Air
 SOL - Other Solid
 WP - Wipe
 FB-Field Blank
 EB-Equipment Blank
 RB- Rinse Blank
 TB-Trip Blank

Turnaround Time (Business days)	Approved By (SGS PM): / Date: <u>7/24/2023</u>	<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> REDT1 (Level 3) <input checked="" type="checkbox"/> FULT1 (Level 4) <input type="checkbox"/> Commercial "C" <input type="checkbox"/> State Forms <input checked="" type="checkbox"/> EDD Format EQUIS <input type="checkbox"/> Other <input checked="" type="checkbox"/> CL Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial "C" = Results + QC Summary + Partial Raw data	Comments / Special Instructions Please subcontract to Pace Gulf Coast, Attn: Ruth Welsh 7979 Innovation Park Drive Baton Rouge, LA 70820 http://www.sgs.com/en/terms-and-conditions
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Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: <i>Mina Mohammed</i>	Date Time: <i>7/21/23 17:00</i>	Received By: 1	Relinquished By: <i>Feel Cup</i>	Date Time: <i>7/21/23</i>	Received By: 2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by:	Date Time:	Received By: 5	Custody Seal #	<input type="checkbox"/> Intact <input type="checkbox"/> Not intact	Preserved where applicable <input type="checkbox"/> Therm. ID: <input type="checkbox"/> On Ice <input type="checkbox"/> Cooler Temp.

Client ID: AL-O - SGS Accutest - Orlando
 SDG: 223072147
 PM: RWE



PACE

Sample Receipt Checklist (SRC)

Client: PLS

Cooler Inspected by/date: BW 7/21/23 Workorder #: Apply Label

Means of receipt: Pace Client UPS FedEx Other 6154 661 5934

Yes No N/A Were custody seals present on the cooler?

Yes No N/A Were custody seals were present, were they intact and unbroken?

pH Strip ID: _____ Chemical Preservation Checked by: _____

Original temperature upon receipt / Derived (Corrected) temperature upon receipt (°C): 2.4

Method: Temperature Blank Against Bottles IR Gun ID: 543 IR Gun Correction Factor: 5 °C

Method of coolant: Wet Ice Ice Packs Dry Ice None

Yes No N/A Was the line and profile number listed on the COC? If yes, line and profile # _____

Yes No N/A Were all coolers received at or below 6.0°C? If no, was Project Manager notified via email?
Email Notification Date and Time: _____

Yes No N/A Is the commercial courier's packing slip attached to this form?

Yes No N/A Were proper custody procedures (ringquished/received) followed?

Yes No N/A Is the sampler's signature included on the COC?

Yes No N/A Were sample IDs listed on the COC and all sample containers?

Yes No N/A Was collection date & time listed on the COC and all sample containers?

Yes No N/A Did all container label information (ID, date, time) agree with the COC?

Yes No N/A Were tests to be performed listed on the COC?

Yes No N/A Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?

Yes No N/A Was adequate sample volume available?

Yes No N/A Were all samples received within ½ the holding time or 48 hours, whichever comes first?

Yes No N/A Were all samples containers accounted for? (No missing/excess)

Yes No N/A Were VOA, 8015C, and RSK-175 samples free of bubbles > "pea size" (1/4" or 6mm in diameter) in any of the VOA vials?
If no, list affected sample(s) in comments below.

Yes No N/A Filtered volume received for dissolved tests?
If no, list affected sample(s) in comments below.

Yes No N/A Were all DRO/metals/nutrient samples received at a pH of < 2?
If no, list affected sample(s) in comments below and record preservation in logbook.

Yes No N/A Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
If no, list affected sample(s) in comments below and record preservation in logbook.

Comments:



SAMPLE RECEIVING CHECKLIST



SAMPLE DELIVERY GROUP 223072147			CHECKLIST		YES	NO
Client AL-O - SGS Accutest - Orlando	PM R/W 	Transport Method FEDEX	Samples received with proper thermal preservation?	<input type="checkbox"/>	<input type="checkbox"/>	
			Radioactivity is <1600 cpm? If no, record cpm value in notes section.	<input type="checkbox"/>	<input type="checkbox"/>	
Profile Number 313827			Received By Roberts, George S.	COC relinquished and complete (including sampleIDs, collect times, and sampler)?	<input type="checkbox"/>	<input type="checkbox"/>
			All containers received in good condition and within hold time?	<input type="checkbox"/>	<input type="checkbox"/>	
Line Item(s) 1 - Arsenic			Receive Date(s) 07/21/23	All sample labels and containers received match the chain of custody?	<input type="checkbox"/>	<input type="checkbox"/>
			Preservative added to any containers?	<input type="checkbox"/>	<input type="checkbox"/>	
			If received, was headspace for VOC water containers < 6mm?	<input type="checkbox"/>	<input type="checkbox"/>	
			Samples collected in containers provided by Pace Gulf Coast?	<input type="checkbox"/>	<input type="checkbox"/>	
COOLERS			DISCREPANCIES	LAB PRESERVATIONS		
Airbill	Thermometer ID:	Temp °C	None	None		
NOTES						



LELAP Certificate Number: 01955
A2LA Accredited (DoD ELAP-QSM 5.4) Certificate Number: 6429.01

ANALYTICAL RESULTS

PERFORMED BY

Pace Analytical Gulf Coast
7979 Innovation Park Dr.
Baton Rouge, LA 70820
(225) 769-4900

Report Date 08/07/2023

Report # 223072853



Project FC8187X

Samples Collected 7/20/23

<i>Deliver To</i>	<i>Additional Recipients</i>
Jean Dent SGS North America Inc 4405 Vineland Rd Suite C-15 Orlando, FL 32811 407-425-6700	NONE



Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with Pace Gulf Coast's Standard Operating Procedures.

Common Abbreviations that may be Utilized in this Report

ND	Indicates the result was Not Detected at the specified reporting limit
NO	Indicates the sample did not ignite when preliminary test performed for EPA Method 1030
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
RE	Re-analysis
CF	HPLC or GC Confirmation
00:01	Reported as a time equivalent to 12:00 AM

Reporting Flags that may be Utilized in this Report

J or I	Indicates the result is between the MDL and LOQ
J	DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria
U	Indicates the compound was analyzed for but not detected
B or V	Indicates the analyte was detected in the associated Method Blank
Q	Indicates a non-compliant QC Result (See Q Flag Application Report)
*	Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
E	Organics - The result is estimated because it exceeded the instrument calibration range
E	Metals - % difference for the serial dilution is > 10%
L	Reporting Limits adjusted to meet risk-based limit.
P	RPD between primary and confirmation result is greater than 40
DL	Diluted analysis – when appended to Client Sample ID

Sample receipt at Pace Gulf Coast is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of Pace Gulf Coast. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.



Authorized Signature
Pace Gulf Coast Report 223072853

Certifications

Certification	Certification Number
A2LA Accredited (DoD ELAP-QSM 5.4)	6429.01
Alabama	01955
Arkansas	88-0655
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
Washington	C929
USDA Soil Permit	P330-16-00234

Case Narrative

Client: SGS Accutest - Orlando **Report:** 223072853

Pace Analytical Gulf Coast received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

This report was completed in accordance with DOD QSM 5.3 as specified in the contract.

METALS

In the EPA 6020B analysis for prep batch 769824, the MS and/or MSD recovery is outside the control limits for Arsenic. The LCS recovery is within control limits. This indicates the analysis is in control and the sample is affected by matrix interference or the element is non-homogeneous in the sample. A post-digestion spike was performed.

Sample Summary

Lab ID	Client ID	Matrix	Collect Date	Receive Date
22307285301	KCDC-SB0070-002.0-20230720	Solid	7/20/23 08:24	7/28/23 09:52
22307285302	KCDC-SB0079-002.0-20230720	Solid	7/20/23 09:09	7/28/23 09:52
22307285303	KCDC-SB0083-002.0-20230720	Solid	7/20/23 10:28	7/28/23 09:52
22307285304	KCDC-SB0085-000.5-20230720	Solid	7/20/23 11:18	7/28/23 09:52
22307285305	KCDC-SB0085-001.0-20230720	Solid	7/20/23 11:19	7/28/23 09:52
22307285306	KCDC-SB0085-002.0-20230720	Solid	7/20/23 11:20	7/28/23 09:52
22307285307	KCDC-SB0086-000.5-20230720	Solid	7/20/23 11:24	7/28/23 09:52
22307285308	KCDC-SB0086-001.0-20230720	Solid	7/20/23 11:25	7/28/23 09:52
22307285309	KCDC-SB0086-002.0-20230720	Solid	7/20/23 11:26	7/28/23 09:52
22307285310	KCDC-SB0087-000.5-20230720	Solid	7/20/23 11:27	7/28/23 09:52
22307285311	KCDC-SB0087-001.0-20230720	Solid	7/20/23 11:28	7/28/23 09:52
22307285312	KCDC-SB0087-002.0-20230720	Solid	7/20/23 11:29	7/28/23 09:52
22307285313	KCDC-SB0088-000.5-20230720	Solid	7/20/23 11:34	7/28/23 09:52
22307285314	KCDC-SB0088-001.0-20230720	Solid	7/20/23 11:35	7/28/23 09:52
22307285315	KCDC-SB0088-002.0-20230720	Solid	7/20/23 11:36	7/28/23 09:52
22307285316	KCDC-SB0089-000.5-20230720	Solid	7/20/23 11:43	7/28/23 09:52
22307285317	KCDC-SB0089-001.0-20230720	Solid	7/20/23 12:11	7/28/23 09:52
22307285318	KCDC-SB0089-002.0-20230720	Solid	7/20/23 12:12	7/28/23 09:52
22307285319	KCDC-SB0090-000.5-20230720	Solid	7/20/23 12:14	7/28/23 09:52
22307285320	KCDC-SB0090-001.0-20230720	Solid	7/20/23 12:15	7/28/23 09:52
22307285321	KCDC-SB0090-002.0-20230720	Solid	7/20/23 12:16	7/28/23 09:52
22307285322	KCDC-SB0091-000.5-20230720	Solid	7/20/23 12:26	7/28/23 09:52
22307285323	KCDC-SB0091-001.0-20230720	Solid	7/20/23 12:27	7/28/23 09:52
22307285324	KCDC-SB0091-002.0-20230720	Solid	7/20/23 12:28	7/28/23 09:52
22307285325	KCDC-SB0080-002.0-20230720	Solid	7/20/23 09:32	7/28/23 09:52
22307285326	KCDC-SB0067-002.0-20230720	Solid	7/20/23 10:44	7/28/23 09:52
22307285327	KCDC-SB0084-002.0-20230720	Solid	7/20/23 10:33	7/28/23 09:52
22307285328	KCDC-SB0066-002.0-20230720	Solid	7/20/23 10:39	7/28/23 09:52
22307285329	KCDC-SB0071-002.0-20230720	Solid	7/20/23 09:45	7/28/23 09:52

Test Summary

EPA 6020B					
Lab ID	Client ID	Matrix	Batch	Instru	RunDate
22307285301	KCDC-SB0070-002.0-20230720	Solid	769901	ICPMS2	7/31/23 16:01
22307285302	KCDC-SB0079-002.0-20230720	Solid	769901	ICPMS2	7/31/23 16:18
22307285303	KCDC-SB0083-002.0-20230720	Solid	769901	ICPMS2	7/31/23 16:22
22307285304	KCDC-SB0085-000.5-20230720	Solid	769901	ICPMS2	7/31/23 16:25
22307285305	KCDC-SB0085-001.0-20230720	Solid	769901	ICPMS2	7/31/23 16:29
22307285306	KCDC-SB0085-002.0-20230720	Solid	769901	ICPMS2	7/31/23 16:33
22307285307	KCDC-SB0086-000.5-20230720	Solid	769901	ICPMS2	7/31/23 16:36
22307285308	KCDC-SB0086-001.0-20230720	Solid	769901	ICPMS2	7/31/23 16:40
22307285309	KCDC-SB0086-002.0-20230720	Solid	769901	ICPMS2	7/31/23 16:43
22307285310	KCDC-SB0087-000.5-20230720	Solid	769901	ICPMS2	7/31/23 16:47
22307285311	KCDC-SB0087-001.0-20230720	Solid	769939	ICPMS2	8/01/23 10:56
22307285312	KCDC-SB0087-002.0-20230720	Solid	769939	ICPMS2	8/01/23 10:59
22307285313	KCDC-SB0088-000.5-20230720	Solid	769939	ICPMS2	8/01/23 11:03
22307285314	KCDC-SB0088-001.0-20230720	Solid	769939	ICPMS2	8/01/23 11:06
22307285315	KCDC-SB0088-002.0-20230720	Solid	769939	ICPMS2	8/01/23 11:10
22307285316	KCDC-SB0089-000.5-20230720	Solid	769939	ICPMS2	8/01/23 11:13
22307285317	KCDC-SB0089-001.0-20230720	Solid	769939	ICPMS2	8/01/23 11:17
22307285318	KCDC-SB0089-002.0-20230720	Solid	769939	ICPMS2	8/01/23 11:21
22307285319	KCDC-SB0090-000.5-20230720	Solid	769939	ICPMS2	8/01/23 11:24
22307285320	KCDC-SB0090-001.0-20230720	Solid	769939	ICPMS2	8/01/23 11:42
22307285321	KCDC-SB0090-002.0-20230720	Solid	769939	ICPMS2	8/01/23 11:45
22307285322	KCDC-SB0091-000.5-20230720	Solid	769939	ICPMS2	8/01/23 11:49
22307285323	KCDC-SB0091-001.0-20230720	Solid	769939	ICPMS2	8/01/23 11:53
22307285324	KCDC-SB0091-002.0-20230720	Solid	769939	ICPMS2	8/01/23 11:56
22307285325	KCDC-SB0080-002.0-20230720	Solid	769939	ICPMS2	8/01/23 12:00
22307285326	KCDC-SB0067-002.0-20230720	Solid	769939	ICPMS2	8/01/23 12:03
22307285327	KCDC-SB0084-002.0-20230720	Solid	769939	ICPMS2	8/01/23 12:07
22307285328	KCDC-SB0066-002.0-20230720	Solid	769939	ICPMS2	8/01/23 12:10
22307285329	KCDC-SB0071-002.0-20230720	Solid	769939	ICPMS2	8/01/23 12:14

SM 2540 G-2011					
Lab ID	Client ID	Matrix	Batch	Instru	RunDate
22307285301	KCDC-SB0070-002.0-20230720	Solid	769766	BAL15	7/28/23 16:55
22307285302	KCDC-SB0079-002.0-20230720	Solid	769766	BAL15	7/28/23 16:55
22307285303	KCDC-SB0083-002.0-20230720	Solid	769766	BAL15	7/28/23 16:55
22307285304	KCDC-SB0085-000.5-20230720	Solid	769766	BAL15	7/28/23 16:55
22307285305	KCDC-SB0085-001.0-20230720	Solid	769766	BAL15	7/28/23 16:55
22307285306	KCDC-SB0085-002.0-20230720	Solid	769766	BAL15	7/28/23 16:55
22307285307	KCDC-SB0086-000.5-20230720	Solid	769766	BAL15	7/28/23 16:55

Test Summary (Continued)

SM 2540 G-2011					
Lab ID	Client ID	Matrix	Batch	Instru	RunDate
22307285308	KCDC-SB0086-001.0-20230720	Solid	769766	BAL15	7/28/23 16:55
22307285309	KCDC-SB0086-002.0-20230720	Solid	769766	BAL15	7/28/23 16:55
22307285310	KCDC-SB0087-000.5-20230720	Solid	769766	BAL15	7/28/23 16:55
22307285311	KCDC-SB0087-001.0-20230720	Solid	769766	BAL15	7/28/23 16:55
22307285312	KCDC-SB0087-002.0-20230720	Solid	769766	BAL15	7/28/23 16:55
22307285313	KCDC-SB0088-000.5-20230720	Solid	769766	BAL15	7/28/23 16:55
22307285314	KCDC-SB0088-001.0-20230720	Solid	769766	BAL15	7/28/23 16:55
22307285315	KCDC-SB0088-002.0-20230720	Solid	769766	BAL15	7/28/23 16:55
22307285316	KCDC-SB0089-000.5-20230720	Solid	769780	BAL15	7/28/23 17:23
22307285317	KCDC-SB0089-001.0-20230720	Solid	769780	BAL15	7/28/23 17:23
22307285318	KCDC-SB0089-002.0-20230720	Solid	769780	BAL15	7/28/23 17:23
22307285319	KCDC-SB0090-000.5-20230720	Solid	769780	BAL15	7/28/23 17:23
22307285320	KCDC-SB0090-001.0-20230720	Solid	769780	BAL15	7/28/23 17:23
22307285321	KCDC-SB0090-002.0-20230720	Solid	769780	BAL15	7/28/23 17:23
22307285322	KCDC-SB0091-000.5-20230720	Solid	769780	BAL15	7/28/23 17:23
22307285323	KCDC-SB0091-001.0-20230720	Solid	769780	BAL15	7/28/23 17:23
22307285324	KCDC-SB0091-002.0-20230720	Solid	769780	BAL15	7/28/23 17:23
22307285325	KCDC-SB0080-002.0-20230720	Solid	769780	BAL15	7/28/23 17:23
22307285326	KCDC-SB0067-002.0-20230720	Solid	769780	BAL15	7/28/23 17:23
22307285327	KCDC-SB0084-002.0-20230720	Solid	769780	BAL15	7/28/23 17:23
22307285328	KCDC-SB0066-002.0-20230720	Solid	769780	BAL15	7/28/23 17:23
22307285329	KCDC-SB0071-002.0-20230720	Solid	769780	BAL15	7/28/23 17:23

Manual Integrations

Manual Integrations for LC and IC (if performed) are documented in the raw data.
No other manual integrations were performed by Pace Gulf Coast.

Q Flag Summary

NO Q FLAGS FOR THIS WORKORDER

Detect Summary

Results and Detection Limits are adjusted for dilution and moisture when applicable

EPA 6020B							
Lab ID	Client ID	Parameter	Units	Result	Dil.	%Moist	
22307285301	KCDC-SB0070-002.0-20230720	Arsenic	ug/Kg	1330	10	15.72	
22307285303	KCDC-SB0083-002.0-20230720	Arsenic	ug/Kg	132J	10	14.04	
22307285304	KCDC-SB0085-000.5-20230720	Arsenic	ug/Kg	956	10	14.91	
22307285307	KCDC-SB0086-000.5-20230720	Arsenic	ug/Kg	785	10	16.91	
22307285310	KCDC-SB0087-000.5-20230720	Arsenic	ug/Kg	2690	10	13.34	
22307285311	KCDC-SB0087-001.0-20230720	Arsenic	ug/Kg	437J	10	12.17	
22307285312	KCDC-SB0087-002.0-20230720	Arsenic	ug/Kg	174J	10	15.92	
22307285313	KCDC-SB0088-000.5-20230720	Arsenic	ug/Kg	289J	10	16.64	
22307285314	KCDC-SB0088-001.0-20230720	Arsenic	ug/Kg	182J	10	25.88	
22307285315	KCDC-SB0088-002.0-20230720	Arsenic	ug/Kg	151J	10	23.65	
22307285316	KCDC-SB0089-000.5-20230720	Arsenic	ug/Kg	222J	10	12.02	
22307285317	KCDC-SB0089-001.0-20230720	Arsenic	ug/Kg	155J	10	15.23	
22307285319	KCDC-SB0090-000.5-20230720	Arsenic	ug/Kg	1420	10	14.33	
22307285320	KCDC-SB0090-001.0-20230720	Arsenic	ug/Kg	171J	10	13.09	
22307285321	KCDC-SB0090-002.0-20230720	Arsenic	ug/Kg	213J	10	15.61	
22307285322	KCDC-SB0091-000.5-20230720	Arsenic	ug/Kg	2750	10	14.94	
22307285323	KCDC-SB0091-001.0-20230720	Arsenic	ug/Kg	559	10	11.62	

Metals

Form I

Sample Results

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0070-002.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>0824</u>	GCAL Sample ID: <u>22307285301</u>
Matrix: <u>Solid</u> % Solids: <u>84.27</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.25</u> g	Lab File ID: <u>2230731A_MS2.b\121157SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>07/31/23</u> Time: <u>1601</u>
Prep Batch: <u>769824</u>	Analytical Batch: <u>769901</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	1330	ug/kg		119	237	475

Reference Sample Report

Sample Name 22307285301
File Name 121157SMPL.d
Data Path Name C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
Acq Time 7/31/2023 4:01:03 PM
Sample Type AllRef
Total Dilution 400.0000
Comment ICPMS-2,TDM
ISTD Ref FileName 004CALB.d
Sample QC Pass/Fial Pass
ISTD QC Pass/Fail Pass

QC Analyte Table

Name	Mass	ISTD	Tune Mode	Conc.	Conc. RSD	CPS	LDR	QC Flag
Li	7	45	No Gas	72.569	62.8	63721.70	500	
Be	9	72	No Gas	15.569	11.2	198.00	1000	
B	11	45	No Gas	792.420	6.4	7798.93	500	
Sr	88	72	No Gas	24903.759	0.5	3434367.03	1000	
Zr	90	72	No Gas	323.885	5.5	28739.50	100	
Mo	95	115	No Gas	-20.034	N/A	841.15	1000	
Ag	107	115	No Gas	4.006	20.4	313.34	100	
Cd	111	115	No Gas	9.614	27.5	298.90	1000	
Sb	121	115	No Gas	13.261	5.9	2564.72	1000	
Ba	137	115	No Gas	1107.593	18.0	25335.82	1000	
Tl	205	209	No Gas	-15.009	N/A	1146.76	1000	
Pb	208	209	No Gas	573.903	1.8	48807.30	1000	
Na	23	45	He	37890.420	1.2	73882.35	100000	
Mg	24	45	He	24916.129	2.5	14974.81	100000	
Al	27	45	He	269086.705	3.6	46841.18	20000	
Si	29	45	He	-2302238.637	N/A	34395.08	10000	
K	39	45	He	8482.756	7.7	46921.51	100000	
Ca	44	45	He	4903934.615	0.8	161056.38	500000	
Ti	47	45	He	17384.710	26.0	4906.35	1000	
V	51	72	He	470.061	5.4	5470.03	1000	
Cr	52	72	He	794.873	3.4	11474.58	1000	
Mn	55	72	He	1656.051	6.9	10146.84	5000	
Fe	57	72	He	132192.935	2.4	31961.25	100000	
Co	59	72	He	29.568	17.2	772.25	1000	
Ni	60	72	He	46.776	30.3	1101.16	2000	
Cu	63	103	He	1018.095	2.9	16678.48	1000	
Zn	66	72	He	1463.142	2.6	5947.93	20000	
As	75	72	He	1120.859	1.3	3385.40	1000	
Se	78	72	He	-21.388	N/A	82.31	50	
Sn	120	115	He	3.033	155.6	613.35	1000	

QC ISTD Table

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	%QC Low	%QC High	QC Flag
(Li)	6	No Gas	837686.58	0.3	809671.036666667	103.46	70	120	
Sc	45	No Gas	5153400.90	0.2	4940195.36	104.32	70	120	
Ge	72	No Gas	1351943.11	0.4	1338255.086666667	101.02	70	120	

Reference Sample Report

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	%QC Low	%QC High	QC Flag
Rh	103	No Gas	8611056.88	0.8	8809191.87	97.75	70	120	
In	115	No Gas	8881062.39	1.1	9217317.19333333	96.35	70	120	
Tb	159	No Gas	11228306.50	0.5	11966615.65333333	93.83	70	120	
Lu	175	No Gas	10700766.51	1.2	11682743.9966667	91.59	70	120	
Bi	209	No Gas	6910763.65	1.0	7845001.13333333	88.09	70	120	
Sc	45	He	174806.27	1.7	185902.83	94.03	70	120	
Ge	72	He	156736.65	2.7	168618.47	92.95	70	120	
Rh	103	He	3841953.18	1.8	4321957.05	88.89	70	120	
In	115	He	1518491.53	2.0	1744348.13	87.05	70	120	
Tb	159	He	5039638.05	1.7	5927064.91333333	85.03	70	120	
Lu	175	He	3294824.12	1.8	3966465.46	83.07	70	120	
Bi	209	He	4136650.25	2.1	4977840.24	83.1	70	120	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0079-002.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>0909</u>	GCAL Sample ID: <u>22307285302</u>
Matrix: <u>Solid</u> % Solids: <u>84.20</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.32</u> g	Lab File ID: <u>2230731A_MS2.b\121162SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>07/31/23</u> Time: <u>1618</u>
Prep Batch: <u>769824</u>	Analytical Batch: <u>769901</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	225	ug/kg	U	112	225	450

Sample Report

Sample Name	22307285302	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name	121162SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/31/2023 4:18:50 PM	Total Dilution	378.7879
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	45	No Gas	-0.564	-213.576	2.2	53217.52	500	
Be	9	72	No Gas	-0.001	-0.567	18.9	84.67	1000	
B	11	45	No Gas	1.414	535.477	1.4	6201.49	500	
Sr	88	72	No Gas	2.902	1099.375	1.6	147340.74	1000	
Zr	90	72	No Gas	0.126	47.711	10.7	4872.99	100	
Mo	95	115	No Gas	-0.05	-18.893	1.4	740.03	1000	
Ag	107	115	No Gas	0.005	1.904	59.1	160.03	100	
Cd	111	115	No Gas	-0.007	-2.722	4.9	104.44	1000	
Sb	121	115	No Gas	0.177	66.927	2.3	5570.08	1000	
Ba	137	115	No Gas	0.825	312.521	1.6	6698.41	1000	
Tl	205	209	No Gas	-0.05	-18.970	5.9	510.03	1000	
Pb	208	209	No Gas	0.16	60.602	3.0	5281.25	1000	
Na	23	45	He	9.391	3557.271	1.9	28540.97	100000	
Mg	24	45	He	4.599	1742.194	9.7	2240.26	100000	
Al	27	45	He	61.069	23132.184	3.7	4002.58	20000	
Si	29	45	He	-3165.871	-1199193.526	9.6	37209.87	10000	
K	39	45	He	41.342	15659.964	2.0	48687.00	100000	
Ca	44	45	He	517.723	196107.298	2.0	7577.05	500000	
Ti	47	45	He	34.237	12968.595	50.6	3580.52	1000	
V	51	72	He	0.342	129.595	25.5	1940.88	1000	
Cr	52	72	He	0.522	197.772	1.9	3769.41	1000	
Mn	55	72	He	0.637	241.446	0.9	1839.02	5000	
Fe	57	72	He	29.348	11116.545	5.5	2830.38	100000	
Co	59	72	He	0.009	3.359	15.4	195.56	1000	
Ni	60	72	He	-0.179	-67.797	1.8	375.56	2000	
Cu	63	103	He	1.273	482.264	1.9	7931.12	1000	
Zn	66	72	He	0.285	108.033	5.3	2371.33	20000	
As	75	72	He	0.226	85.713	4.9	394.68	1000	
Se	78	72	He	0.078	29.620	6.2	84.84	50	
Sn	120	115	He	-0.008	-3.150	5.5	476.68	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3706354.63	4977840.24	74.46	
Ge	72	He	145527.77	168618.47	86.31	
In	115	He	1378995.69	1744348.13	79.06	
Lu	175	He	2948107.46	3966465.46	74.33	
Rh	103	He	3566159.03	4321957.05	82.51	
Sc	45	He	161152.20	185902.83	86.69	
Tb	159	He	4547638.79	5927064.91333333	76.73	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	745947.14	809671.036666667	92.13	
Bi	209	No Gas	6217049.91	7845001.13333333	79.25	
Ge	72	No Gas	1238071.79	1338255.08666667	92.51	
In	115	No Gas	7799014.65	9217317.19333333	84.61	
Lu	175	No Gas	9641761.52	11682743.99666667	82.53	
Rh	103	No Gas	7743342.19	8809191.87	87.9	
Sc	45	No Gas	4717096.06	4940195.36	95.48	
Tb	159	No Gas	10108772.77	11966615.65333333	84.47	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0083-002.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1028</u>	GCAL Sample ID: <u>22307285303</u>
Matrix: <u>Solid</u> % Solids: <u>85.95</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.23</u> g	Lab File ID: <u>2230731A_MS2.b\121163SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>07/31/23</u> Time: <u>1622</u>
Prep Batch: <u>769824</u>	Analytical Batch: <u>769901</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	132	ug/kg	J	118	236	473

Sample Report

Sample Name	22307285303	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name	121163SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/31/2023 4:22:24 PM	Total Dilution	406.5041
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	45	No Gas	-0.559	-227.197	0.7	53471.96	500	
Be	9	72	No Gas	-0.002	-0.796	14.9	84.00	1000	
B	11	45	No Gas	1.124	457.091	2.3	5747.95	500	
Sr	88	72	No Gas	2.726	1107.962	0.4	139526.46	1000	
Zr	90	72	No Gas	0.165	67.040	13.7	6141.14	100	
Mo	95	115	No Gas	-0.076	-30.911	4.2	511.13	1000	
Ag	107	115	No Gas	0.003	1.286	16.6	117.78	100	
Cd	111	115	No Gas	0.003	1.028	28.5	154.45	1000	
Sb	121	115	No Gas	0.096	39.200	5.9	3719.43	1000	
Ba	137	115	No Gas	0.981	398.916	2.1	7965.70	1000	
Tl	205	209	No Gas	-0.053	-21.373	5.1	406.69	1000	
Pb	208	209	No Gas	0.347	141.249	2.1	10971.58	1000	
Na	23	45	He	9.928	4035.770	2.1	28537.78	100000	
Mg	24	45	He	11.722	4764.853	12.4	3633.94	100000	
Al	27	45	He	113.367	46084.045	4.8	7287.32	20000	
Si	29	45	He	-2991.256	-1215957.720	9.7	37252.09	10000	
K	39	45	He	40.681	16536.864	1.3	48081.54	100000	
Ca	44	45	He	782.101	317927.145	2.2	10653.95	500000	
Ti	47	45	He	22.321	9073.634	15.7	2313.38	1000	
V	51	72	He	0.304	123.458	1.1	1812.35	1000	
Cr	52	72	He	0.589	239.243	4.9	4106.17	1000	
Mn	55	72	He	1.866	758.565	1.7	4516.33	5000	
Fe	57	72	He	59.161	24049.002	1.9	5514.62	100000	
Co	59	72	He	0.017	6.929	9.9	262.23	1000	
Ni	60	72	He	-0.121	-49.081	2.7	505.57	2000	
Cu	63	103	He	1.735	705.398	2.1	10656.18	1000	
Zn	66	72	He	0.204	83.056	7.4	2307.99	20000	
As	75	72	He	0.279	113.328	3.8	452.68	1000	
Se	78	72	He	0.061	24.697	3.0	84.16	50	
Sn	120	115	He	0.005	1.845	7.6	536.69	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3667498.07	4977840.24	73.68	
Ge	72	He	146286.34	168618.47	86.76	
In	115	He	1367334.11	1744348.13	78.39	
Lu	175	He	2923143.08	3966465.46	73.7	
Rh	103	He	3560607.36	4321957.05	82.38	
Sc	45	He	159739.19	185902.83	85.93	
Tb	159	He	4523223.27	5927064.91333333	76.31	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	751027.82	809671.036666667	92.76	
Bi	209	No Gas	6224279.28	7845001.13333333	79.34	
Ge	72	No Gas	1247744.33	1338255.08666667	93.24	
In	115	No Gas	7813860.61	9217317.19333333	84.77	
Lu	175	No Gas	9586136.52	11682743.99666667	82.05	
Rh	103	No Gas	7792697.74	8809191.87	88.46	
Sc	45	No Gas	4736453.01	4940195.36	95.88	
Tb	159	No Gas	10092961.93	11966615.65333333	84.34	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0085-000.5-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1118</u>	GCAL Sample ID: <u>22307285304</u>
Matrix: <u>Solid</u> % Solids: <u>85.09</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.27</u> g	Lab File ID: <u>2230731A_MS2.b\121164SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>07/31/23</u> Time: <u>1625</u>
Prep Batch: <u>769824</u>	Analytical Batch: <u>769901</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	956	ug/kg		116	231	463

Sample Report

Sample Name	22307285304	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name	121164SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/31/2023 4:25:57 PM	Total Dilution	393.7008
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	45	No Gas	1.02	401.450	0.5	64544.38	500	
Be	9	72	No Gas	0.111	43.772	3.7	356.01	1000	
B	11	45	No Gas	3.491	1374.538	3.8	9703.44	500	
Sr	88	72	No Gas	100.816	39691.462	1.5	5119027.53	1000	
Zr	90	72	No Gas	1.408	554.300	4.6	45294.09	100	
Mo	95	115	No Gas	0.025	9.906	1.0	1415.65	1000	
Ag	107	115	No Gas	0.097	38.075	2.1	2292.43	100	
Cd	111	115	No Gas	0.267	105.293	4.0	1514.54	1000	
Sb	121	115	No Gas	0.111	43.691	1.8	4099.53	1000	
Ba	137	115	No Gas	14.759	5810.440	1.0	119761.51	1000	
Tl	205	209	No Gas	-0.038	-15.086	8.5	1003.41	1000	
Pb	208	209	No Gas	8.839	3479.883	1.5	269422.68	1000	
Na	23	45	He	103.152	40611.076	0.9	71409.81	100000	
Mg	24	45	He	584.538	230132.984	1.5	117473.77	100000	
Al	27	45	He	2846.039	1120487.871	1.0	180935.69	20000	
Si	29	45	He	-3631.608	-1429767.062	8.8	35907.25	10000	
K	39	45	He	136.512	53744.843	3.6	73752.69	100000	
Ca	44	45	He	31414.147	12367774.245	1.1	375159.94	500000	
Ti	47	45	He	51.844	20411.220	29.3	5363.94	1000	
V	51	72	He	2.387	939.650	2.1	9594.31	1000	
Cr	52	72	He	11.807	4648.243	1.1	56532.09	1000	
Mn	55	72	He	74.692	29406.473	0.8	161157.92	5000	
Fe	57	72	He	1395.169	549279.058	0.3	124044.15	100000	
Co	59	72	He	0.302	119.020	7.5	2542.48	1000	
Ni	60	72	He	0.999	393.373	2.9	2940.33	2000	
Cu	63	103	He	52.241	20567.333	1.2	307419.24	1000	
Zn	66	72	He	55.009	21657.082	1.4	53275.30	20000	
As	75	72	He	2.067	813.864	2.1	2348.19	1000	
Se	78	72	He	0.094	37.087	5.6	85.49	50	
Sn	120	115	He	0.117	46.135	10.6	1106.74	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3782917.23	4977840.24	76	
Ge	72	He	144850.04	168618.47	85.9	
In	115	He	1378408.75	1744348.13	79.02	
Lu	175	He	3003467.35	3966465.46	75.72	
Rh	103	He	3530829.79	4321957.05	81.7	
Sc	45	He	159797.98	185902.83	85.96	
Tb	159	He	4636799.10	5927064.91333333	78.23	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	753660.03	809671.036666667	93.08	
Bi	209	No Gas	6245291.78	7845001.13333333	79.61	
Ge	72	No Gas	1244545.99	1338255.08666667	93	
In	115	No Gas	7892841.35	9217317.19333333	85.63	
Lu	175	No Gas	9813471.73	11682743.99666667	84	
Rh	103	No Gas	7647700.53	8809191.87	86.82	
Sc	45	No Gas	4751867.03	4940195.36	96.19	
Tb	159	No Gas	10314061.52	11966615.65333333	86.19	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0085-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1119</u>	GCAL Sample ID: <u>22307285305</u>
Matrix: <u>Solid</u> % Solids: <u>84.30</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.33</u> g	Lab File ID: <u>2230731A_MS2.b\121165SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>07/31/23</u> Time: <u>1629</u>
Prep Batch: <u>769824</u>	Analytical Batch: <u>769901</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	223	ug/kg	U	111	223	446

Sample Report

Sample Name	22307285305	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name	121165SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/31/2023 4:29:30 PM	Total Dilution	375.9398
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	45	No Gas	-0.053	-20.065	1.7	60280.57	500	
Be	9	72	No Gas	0.032	12.022	7.0	174.00	1000	
B	11	45	No Gas	1.258	472.823	1.9	6318.18	500	
Sr	88	72	No Gas	10.791	4056.608	0.8	576623.83	1000	
Zr	90	72	No Gas	0.838	314.925	24.1	28763.89	100	
Mo	95	115	No Gas	-0.056	-21.179	4.4	725.58	1000	
Ag	107	115	No Gas	0.023	8.553	36.0	601.28	100	
Cd	111	115	No Gas	0.052	19.589	2.1	430.01	1000	
Sb	121	115	No Gas	0.042	15.754	0.4	2605.83	1000	
Ba	137	115	No Gas	3.419	1285.406	1.0	29176.28	1000	
Tl	205	209	No Gas	-0.051	-19.176	5.0	506.70	1000	
Pb	208	209	No Gas	4.84	1819.454	0.1	157991.82	1000	
Na	23	45	He	10.548	3965.543	0.9	30107.74	100000	
Mg	24	45	He	87.086	32739.214	0.9	19440.47	100000	
Al	27	45	He	897.335	337344.170	0.5	59640.10	20000	
Si	29	45	He	-4367.196	-1641802.965	9.2	35894.59	10000	
K	39	45	He	37.137	13961.390	0.8	49239.07	100000	
Ca	44	45	He	2830.969	1064274.221	1.7	36591.88	500000	
Ti	47	45	He	36.757	13818.339	8.7	3970.00	1000	
V	51	72	He	1.114	418.815	4.8	5017.60	1000	
Cr	52	72	He	2.447	919.836	2.7	13247.18	1000	
Mn	55	72	He	12.373	4651.331	2.2	28130.32	5000	
Fe	57	72	He	452.643	170166.652	1.6	41955.10	100000	
Co	59	72	He	0.105	39.393	4.5	998.94	1000	
Ni	60	72	He	0.21	79.002	10.3	1268.96	2000	
Cu	63	103	He	5.63	2116.505	1.5	35715.71	1000	
Zn	66	72	He	3.848	1446.523	2.8	5894.58	20000	
As	75	72	He	0.265	99.672	6.0	451.01	1000	
Se	78	72	He	0.046	17.153	5.7	85.63	50	
Sn	120	115	He	0.003	1.263	6.1	557.80	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3964662.86	4977840.24	79.65	
Ge	72	He	150463.94	168618.47	89.23	
In	115	He	1437846.99	1744348.13	82.43	
Lu	175	He	3125398.29	3966465.46	78.8	
Rh	103	He	3768834.57	4321957.05	87.2	
Sc	45	He	166879.86	185902.83	89.77	
Tb	159	He	4824788.99	5927064.91333333	81.4	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	803079.02	809671.036666667	99.19	
Bi	209	No Gas	6679264.07	7845001.13333333	85.14	
Ge	72	No Gas	1308122.55	1338255.08666667	97.75	
In	115	No Gas	8280106.37	9217317.19333333	89.83	
Lu	175	No Gas	10256453.60	11682743.99666667	87.79	
Rh	103	No Gas	8375260.50	8809191.87	95.07	
Sc	45	No Gas	5013738.00	4940195.36	101.49	
Tb	159	No Gas	10726617.34	11966615.65333333	89.64	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0085-002.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1120</u>	GCAL Sample ID: <u>22307285306</u>
Matrix: <u>Solid</u> % Solids: <u>81.99</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.29</u> g	Lab File ID: <u>2230731A_MS2.b\121166SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>07/31/23</u> Time: <u>1633</u>
Prep Batch: <u>769824</u>	Analytical Batch: <u>769901</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	236	ug/kg	U	118	236	473

Sample Report

Sample Name	22307285306	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name	121166SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/31/2023 4:33:04 PM	Total Dilution	387.5969
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	45	No Gas	-0.385	-149.044	1.3	59236.18	500	
Be	9	72	No Gas	-0.005	-2.007	3.8	81.33	1000	
B	11	45	No Gas	0.62	240.243	1.6	5321.08	500	
Sr	88	72	No Gas	7.128	2762.777	1.4	387609.69	1000	
Zr	90	72	No Gas	0.335	129.905	43.4	12304.68	100	
Mo	95	115	No Gas	-0.061	-23.606	2.7	722.25	1000	
Ag	107	115	No Gas	0.007	2.611	13.8	224.45	100	
Cd	111	115	No Gas	0.01	4.066	18.1	217.79	1000	
Sb	121	115	No Gas	0.014	5.278	7.6	2021.28	1000	
Ba	137	115	No Gas	1.302	504.603	4.8	11809.30	1000	
Tl	205	209	No Gas	-0.053	-20.567	11.7	423.36	1000	
Pb	208	209	No Gas	0.857	332.171	3.2	28945.60	1000	
Na	23	45	He	10.223	3962.482	2.2	31106.37	100000	
Mg	24	45	He	30.924	11986.019	2.3	8082.43	100000	
Al	27	45	He	276.839	107301.774	1.4	19174.27	20000	
Si	29	45	He	-5620.1	-2178333.220	9.3	34402.06	10000	
K	39	45	He	18.432	7144.177	4.1	45721.16	100000	
Ca	44	45	He	2102.727	815010.277	1.0	28601.16	500000	
Ti	47	45	He	63.983	24799.586	48.1	7160.06	1000	
V	51	72	He	0.743	288.163	13.6	3683.02	1000	
Cr	52	72	He	0.909	352.346	1.2	5950.15	1000	
Mn	55	72	He	4.105	1591.216	4.2	9942.69	5000	
Fe	57	72	He	113.134	43850.476	4.3	10971.86	100000	
Co	59	72	He	0.025	9.869	19.9	350.01	1000	
Ni	60	72	He	-0.071	-27.393	10.5	651.15	2000	
Cu	63	103	He	2.821	1093.406	1.2	18690.88	1000	
Zn	66	72	He	2.116	820.229	2.3	4346.25	20000	
As	75	72	He	0.031	12.164	5.4	198.67	1000	
Se	78	72	He	-0.016	-6.251	6.3	84.02	50	
Sn	120	115	He	-0.001	-0.361	19.6	560.02	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	4088131.19	4977840.24	82.13	
Ge	72	He	154953.55	168618.47	91.9	
In	115	He	1501457.21	1744348.13	86.08	
Lu	175	He	3235214.95	3966465.46	81.56	
Rh	103	He	3893818.04	4321957.05	90.09	
Sc	45	He	173308.28	185902.83	93.23	
Tb	159	He	4983125.86	5927064.91333333	84.07	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	813792.68	809671.036666667	100.51	
Bi	209	No Gas	6815981.15	7845001.13333333	86.88	
Ge	72	No Gas	1330107.76	1338255.08666667	99.39	
In	115	No Gas	8756959.60	9217317.19333333	95.01	
Lu	175	No Gas	10571164.01	11682743.99666667	90.49	
Rh	103	No Gas	8668254.38	8809191.87	98.4	
Sc	45	No Gas	5131769.80	4940195.36	103.88	
Tb	159	No Gas	11130408.58	11966615.65333333	93.01	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0086-000.5-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1124</u>	GCAL Sample ID: <u>22307285307</u>
Matrix: <u>Solid</u> % Solids: <u>83.08</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.27</u> g	Lab File ID: <u>2230731A_MS2.b\121167SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>07/31/23</u> Time: <u>1636</u>
Prep Batch: <u>769824</u>	Analytical Batch: <u>769901</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	785	ug/kg		118	237	474

Sample Report

Sample Name	22307285307	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name	121167SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/31/2023 4:36:37 PM	Total Dilution	393.7008
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	45	No Gas	4.763	1875.166	2.0	93296.78	500	
Be	9	72	No Gas	0.429	169.040	6.7	1142.05	1000	
B	11	45	No Gas	6.167	2428.109	1.9	14607.47	500	
Sr	88	72	No Gas	368.396	145037.985	0.9	19050092.21	1000	
Zr	90	72	No Gas	1.945	765.561	1.2	63378.02	100	
Mo	95	115	No Gas	0.05	19.857	4.4	1675.68	1000	
Ag	107	115	No Gas	0.31	122.180	2.4	7410.88	100	
Cd	111	115	No Gas	0.945	371.942	2.7	5094.31	1000	
Sb	121	115	No Gas	0.056	22.029	2.4	2872.54	1000	
Ba	137	115	No Gas	48.135	18950.816	0.5	398731.91	1000	
Tl	205	209	No Gas	-0.022	-8.548	8.2	1703.51	1000	
Pb	208	209	No Gas	15.704	6182.803	1.4	480696.13	1000	
Na	23	45	He	275.396	108423.702	1.1	153135.14	100000	
Mg	24	45	He	1680.876	661762.325	1.0	340962.34	100000	
Al	27	45	He	8682.697	3418384.503	1.0	561030.71	20000	
Si	29	45	He	-5651.673	-2225068.025	9.3	32183.29	10000	
K	39	45	He	193.419	76149.161	2.0	90450.31	100000	
Ca	44	45	He	169672.748	66800294.345	1.1	2054084.24	500000	
Ti	47	45	He	17.454	6871.628	8.2	1841.65	1000	
V	51	72	He	19.49	7673.096	1.6	74148.21	1000	
Cr	52	72	He	35.542	13993.073	1.6	168725.06	1000	
Mn	55	72	He	258.076	101604.741	1.5	559646.64	5000	
Fe	57	72	He	6384.323	2513513.074	1.4	570906.42	100000	
Co	59	72	He	0.88	346.482	2.4	7214.06	1000	
Ni	60	72	He	3.334	1312.631	1.1	8084.53	2000	
Cu	63	103	He	140.092	55154.422	1.5	819950.54	1000	
Zn	66	72	He	125.462	49394.455	0.8	119649.04	20000	
As	75	72	He	1.656	652.023	2.5	1925.47	1000	
Se	78	72	He	-0.215	-84.588	20.4	66.13	50	
Sn	120	115	He	0.136	53.713	2.3	1212.29	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3806746.30	4977840.24	76.47	
Ge	72	He	145888.13	168618.47	86.52	
In	115	He	1390566.89	1744348.13	79.72	
Lu	175	He	3068068.91	3966465.46	77.35	
Rh	103	He	3514586.74	4321957.05	81.32	
Sc	45	He	162473.07	185902.83	87.4	
Tb	159	He	4752792.01	5927064.91333333	80.19	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	753044.55	809671.036666667	93.01	
Bi	209	No Gas	6275836.58	7845001.13333333	80	
Ge	72	No Gas	1267665.37	1338255.086666667	94.73	
In	115	No Gas	8061898.65	9217317.19333333	87.46	
Lu	175	No Gas	10173475.68	11682743.996666667	87.08	
Rh	103	No Gas	7672576.92	8809191.87	87.1	
Sc	45	No Gas	4904403.83	4940195.36	99.28	
Tb	159	No Gas	10634554.42	11966615.65333333	88.87	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0086-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1125</u>	GCAL Sample ID: <u>22307285308</u>
Matrix: <u>Solid</u> % Solids: <u>83.64</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.33</u> g	Lab File ID: <u>2230731A_MS2.b\121168SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>07/31/23</u> Time: <u>1640</u>
Prep Batch: <u>769824</u>	Analytical Batch: <u>769901</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	225	ug/kg	U	112	225	449

Sample Report

Sample Name	22307285308	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name	121168SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/31/2023 4:40:11 PM	Total Dilution	375.9398
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	45	No Gas	-0.737	-276.937	1.0	54060.19	500	
Be	9	72	No Gas	-0.004	-1.406	7.4	82.67	1000	
B	11	45	No Gas	0.793	297.974	0.8	5377.81	500	
Sr	88	72	No Gas	5.268	1980.333	1.4	278672.23	1000	
Zr	90	72	No Gas	0.246	92.347	15.0	9011.04	100	
Mo	95	115	No Gas	-0.079	-29.880	4.7	500.02	1000	
Ag	107	115	No Gas	0.007	2.811	11.9	225.56	100	
Cd	111	115	No Gas	0.007	2.446	20.9	181.11	1000	
Sb	121	115	No Gas	0.013	4.774	0.8	1852.37	1000	
Ba	137	115	No Gas	1.612	605.866	2.1	13536.78	1000	
Tl	205	209	No Gas	-0.055	-20.616	14.1	326.68	1000	
Pb	208	209	No Gas	0.947	355.960	1.5	30442.65	1000	
Na	23	45	He	7.72	2902.424	2.0	28193.69	100000	
Mg	24	45	He	18.633	7004.854	0.3	5131.05	100000	
Al	27	45	He	270.483	101685.353	3.8	17684.46	20000	
Si	29	45	He	-3585.018	-1347750.954	8.5	36864.47	10000	
K	39	45	He	36.84	13849.769	1.3	48198.65	100000	
Ca	44	45	He	1810.034	680464.049	2.7	23442.07	500000	
Ti	47	45	He	45.602	17143.585	44.5	4799.18	1000	
V	51	72	He	0.404	151.880	0.9	2231.31	1000	
Cr	52	72	He	0.68	255.667	11.2	4621.34	1000	
Mn	55	72	He	1.966	739.010	3.7	4819.75	5000	
Fe	57	72	He	72.98	27436.266	2.6	6875.35	100000	
Co	59	72	He	0.014	5.316	6.3	243.34	1000	
Ni	60	72	He	-0.083	-31.075	17.9	598.91	2000	
Cu	63	103	He	1.535	576.957	4.2	9817.83	1000	
Zn	66	72	He	1.616	607.510	1.4	3698.29	20000	
As	75	72	He	-0.025	-9.465	4.8	129.00	1000	
Se	78	72	He	0.009	3.458	2.3	82.33	50	
Sn	120	115	He	-0.017	-6.562	14.1	442.23	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3845533.07	4977840.24	77.25	
Ge	72	He	148914.87	168618.47	88.31	
In	115	He	1413432.22	1744348.13	81.03	
Lu	175	He	3044677.66	3966465.46	76.76	
Rh	103	He	3690486.52	4321957.05	85.39	
Sc	45	He	163644.98	185902.83	88.03	
Tb	159	He	4720147.01	5927064.91333333	79.64	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	758735.93	809671.036666667	93.71	
Bi	209	No Gas	6500035.94	7845001.13333333	82.86	
Ge	72	No Gas	1293013.53	1338255.08666667	96.62	
In	115	No Gas	8121103.72	9217317.19333333	88.11	
Lu	175	No Gas	10034548.39	11682743.99666667	85.89	
Rh	103	No Gas	8309670.22	8809191.87	94.33	
Sc	45	No Gas	4900790.22	4940195.36	99.2	
Tb	159	No Gas	10541954.42	11966615.65333333	88.09	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0086-002.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1126</u>	GCAL Sample ID: <u>22307285309</u>
Matrix: <u>Solid</u> % Solids: <u>81.58</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.27</u> g	Lab File ID: <u>2230731A_MS2.b\121169SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>07/31/23</u> Time: <u>1643</u>
Prep Batch: <u>769824</u>	Analytical Batch: <u>769901</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	241	ug/kg	U	121	241	483

Sample Report

Sample Name	22307285309	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name	121169SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/31/2023 4:43:44 PM	Total Dilution	393.7008
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	45	No Gas	-0.822	-323.699	0.5	53612.30	500	
Be	9	72	No Gas	0.001	0.272	21.0	93.33	1000	
B	11	45	No Gas	0.695	273.794	5.6	5227.76	500	
Sr	88	72	No Gas	6.141	2417.655	0.1	323182.13	1000	
Zr	90	72	No Gas	0.533	209.648	5.1	18322.68	100	
Mo	95	115	No Gas	-0.046	-18.195	4.5	807.81	1000	
Ag	107	115	No Gas	0.017	6.879	14.3	466.68	100	
Cd	111	115	No Gas	0.009	3.656	0.0	196.67	1000	
Sb	121	115	No Gas	0.011	4.294	5.8	1817.92	1000	
Ba	137	115	No Gas	1.276	502.167	2.8	10783.46	1000	
Tl	205	209	No Gas	-0.053	-20.959	7.8	393.36	1000	
Pb	208	209	No Gas	1.118	439.989	0.9	35595.23	1000	
Na	23	45	He	13.263	5221.789	1.5	31473.50	100000	
Mg	24	45	He	38.749	15255.613	2.4	9426.57	100000	
Al	27	45	He	2379.424	936781.154	0.1	158303.41	20000	
Si	29	45	He	-3674.747	-1446750.945	9.5	37495.33	10000	
K	39	45	He	38.689	15231.779	1.8	49770.66	100000	
Ca	44	45	He	2054.666	808923.494	1.3	26999.77	500000	
Ti	47	45	He	33.144	13048.750	34.2	3584.22	1000	
V	51	72	He	1.395	549.075	4.0	6042.42	1000	
Cr	52	72	He	1.442	567.797	4.5	8281.35	1000	
Mn	55	72	He	2.875	1131.962	6.7	6836.15	5000	
Fe	57	72	He	142.57	56129.850	2.3	13229.77	100000	
Co	59	72	He	0.032	12.609	7.0	390.01	1000	
Ni	60	72	He	-0.017	-6.505	4.8	747.81	2000	
Cu	63	103	He	2.121	835.019	2.3	13496.47	1000	
Zn	66	72	He	1.458	573.936	4.3	3547.14	20000	
As	75	72	He	0.228	89.643	3.4	405.34	1000	
Se	78	72	He	0.131	51.714	6.0	90.41	50	
Sn	120	115	He	-0.022	-8.794	12.3	417.79	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3814519.53	4977840.24	76.63	
Ge	72	He	148918.04	168618.47	88.32	
In	115	He	1417959.85	1744348.13	81.29	
Lu	175	He	3033888.50	3966465.46	76.49	
Rh	103	He	3713170.54	4321957.05	85.91	
Sc	45	He	167210.35	185902.83	89.95	
Tb	159	He	4715883.78	5927064.91333333	79.57	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	751201.53	809671.036666667	92.78	
Bi	209	No Gas	6453101.57	7845001.13333333	82.26	
Ge	72	No Gas	1286847.17	1338255.08666667	96.16	
In	115	No Gas	8160090.83	9217317.19333333	88.53	
Lu	175	No Gas	10143617.76	11682743.99666667	86.83	
Rh	103	No Gas	8296029.67	8809191.87	94.17	
Sc	45	No Gas	4915585.22	4940195.36	99.5	
Tb	159	No Gas	10556181.51	11966615.65333333	88.21	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0087-000.5-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1127</u>	GCAL Sample ID: <u>22307285310</u>
Matrix: <u>Solid</u> % Solids: <u>86.66</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.27</u> g	Lab File ID: <u>2230731A_MS2.b\121170SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>TDM</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>07/31/23</u> Time: <u>1647</u>
Prep Batch: <u>769824</u>	Analytical Batch: <u>769901</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	2690	ug/kg		114	227	454

Sample Report

Sample Name	22307285310	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name	121170SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/31/2023 4:47:17 PM	Total Dilution	393.7008
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	45	No Gas	0.819	322.298	2.1	68960.58	500	
Be	9	72	No Gas	0.164	64.681	2.3	518.68	1000	
B	11	45	No Gas	2.536	998.295	4.7	8859.59	500	
Sr	88	72	No Gas	351.293	138304.173	0.1	19115350.97	1000	
Zr	90	72	No Gas	6.758	2660.728	1.0	229350.09	100	
Mo	95	115	No Gas	0.054	21.262	1.7	1845.71	1000	
Ag	107	115	No Gas	0.069	27.078	3.3	1813.47	100	
Cd	111	115	No Gas	0.18	71.007	6.6	1178.95	1000	
Sb	121	115	No Gas	0.045	17.837	2.8	2829.20	1000	
Ba	137	115	No Gas	14.419	5676.597	0.8	129152.55	1000	
Tl	205	209	No Gas	-0.012	-4.641	4.2	2243.61	1000	
Pb	208	209	No Gas	5.378	2117.390	1.7	174523.41	1000	
Na	23	45	He	586.432	230878.904	1.2	316584.17	100000	
Mg	24	45	He	590.077	232313.818	2.1	127854.01	100000	
Al	27	45	He	2841.788	1118814.145	1.2	194779.05	20000	
Si	29	45	He	-4073.077	-1603573.714	9.8	37708.89	10000	
K	39	45	He	114.449	45058.794	1.2	73126.78	100000	
Ca	44	45	He	70713.975	27840147.544	2.0	908685.45	500000	
Ti	47	45	He	28.924	11387.391	24.0	3233.96	1000	
V	51	72	He	4.936	1943.174	1.4	20399.74	1000	
Cr	52	72	He	15.259	6007.462	1.1	77489.48	1000	
Mn	55	72	He	47.987	18892.424	0.5	110559.05	5000	
Fe	57	72	He	2355.914	927525.323	2.0	223206.62	100000	
Co	59	72	He	0.46	181.004	2.4	4052.82	1000	
Ni	60	72	He	1.273	500.987	5.7	3772.74	2000	
Cu	63	103	He	53.043	20883.079	1.7	329703.90	1000	
Zn	66	72	He	42.475	16722.482	1.9	44371.50	20000	
As	75	72	He	5.918	2329.965	1.5	6866.29	1000	
Se	78	72	He	-0.436	-171.653	5.4	55.20	50	
Sn	120	115	He	0.051	20.074	7.9	822.26	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3889122.96	4977840.24	78.13	
Ge	72	He	154448.31	168618.47	91.6	
In	115	He	1463884.37	1744348.13	83.92	
Lu	175	He	3139789.12	3966465.46	79.16	
Rh	103	He	3729410.13	4321957.05	86.29	
Sc	45	He	172277.36	185902.83	92.67	
Tb	159	He	4891563.16	5927064.91333333	82.53	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	763569.13	809671.036666667	94.31	
Bi	209	No Gas	6641101.78	7845001.13333333	84.65	
Ge	72	No Gas	1333930.78	1338255.08666667	99.68	
In	115	No Gas	8715661.66	9217317.19333333	94.56	
Lu	175	No Gas	10549002.34	11682743.99666667	90.3	
Rh	103	No Gas	8475732.16	8809191.87	96.21	
Sc	45	No Gas	5188638.68	4940195.36	105.03	
Tb	159	No Gas	11008754.01	11966615.65333333	92	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0087-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1128</u>	GCAL Sample ID: <u>22307285311</u>
Matrix: <u>Solid</u> % Solids: <u>87.82</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.27</u> g	Lab File ID: <u>2230801A_MS2.b\1217SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>LWZ</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>08/01/23</u> Time: <u>1056</u>
Prep Batch: <u>769824</u>	Analytical Batch: <u>769939</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	437	ug/kg	J	112	224	448

Sample Report

Sample Name	22307285311	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1217SMPL.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 10:56:03 AM	Total Dilution	393.7008
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.32	125.844	3.1	66542.78	500	
Be	9	6	No Gas	0.059	23.279	10.7	215.33	1000	
B	11	45	No Gas	0.79	311.139	3.1	5267.75	500	
Sr	88	72	No Gas	8.758	3448.006	1.4	458034.70	1000	
Zr	90	72	No Gas	0.222	87.341	31.7	8073.94	100	
Mo	95	115	No Gas	0.351	138.007	4.3	3810.56	1000	
Ag	107	115	No Gas	0.009	3.581	5.8	250.01	100	
Cd	111	115	No Gas	0.037	14.424	11.1	322.23	1000	
Sb	121	115	No Gas	0.441	173.786	3.1	12589.06	1000	
Ba	137	115	No Gas	1.906	750.223	1.2	16086.10	1000	
Tl	205	209	No Gas	0.028	11.004	14.0	1903.55	1000	
Pb	208	209	No Gas	1.328	522.723	1.4	42615.73	1000	
Na	23	45	He	8.557	3368.844	2.1	26977.95	100000	
Mg	24	45	He	35.478	13967.766	3.0	10724.16	100000	
Al	27	45	He	203.704	80198.605	1.8	17813.94	20000	
Si	29	45	He	-225888.219	-88932369.680	14.2	113137.06	10000	
K	39	45	He	-8.911	-3508.373	1.7	55260.09	100000	
Ca	44	45	He	2064.323	812725.415	2.3	31507.05	500000	
Ti	47	45	He	16.15	6358.234	2.4	1987.42	1000	
V	51	72	He	0.355	139.788	0.2	2593.59	1000	
Cr	52	72	He	1.004	395.349	1.9	8017.80	1000	
Mn	55	72	He	3.343	1316.334	1.8	8609.24	5000	
Fe	57	72	He	131.134	51627.623	0.9	13613.63	100000	
Co	59	72	He	0.032	12.603	9.8	408.90	1000	
Ni	60	72	He	0.183	72.221	14.0	766.70	2000	
Cu	63	45	He	5.583	2198.064	1.2	37457.78	1000	
Zn	66	72	He	4.352	1713.349	6.5	5237.66	20000	
As	75	72	He	0.974	383.450	4.5	1256.72	1000	
Se	78	72	He	-0.046	-18.144	3.4	93.29	50	
Sn	120	115	He	0.149	58.716	11.3	1113.39	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3914831.51	3919315.67	99.89	
Ge	72	He	156652.09	162135.166666667	96.62	
In	115	He	1424067.79	1476978.55	96.42	
Lu	175	He	3086875.79	3117120.786666667	99.03	
Rh	103	He	3646879.16	3761118.46	96.96	
Sc	45	He	191964.26	200611.303333333	95.69	
Tb	159	He	4645400.66	4722340.556666667	98.37	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	924578.47	887109.66	104.22	
Bi	209	No Gas	6549195.32	6378925.74	102.67	
Ge	72	No Gas	1311018.18	1353105.29	96.89	
In	115	No Gas	8445065.68	8577775.67	98.45	
Lu	175	No Gas	10131760.27	10093915.05666667	100.37	
Rh	103	No Gas	8408549.11	8537311.88333333	98.49	
Sc	45	No Gas	5171863.82	5264112.29	98.25	
Tb	159	No Gas	10680266.51	10724634.4233333	99.59	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0087-002.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1129</u>	GCAL Sample ID: <u>22307285312</u>
Matrix: <u>Solid</u> % Solids: <u>84.08</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.3</u> g	Lab File ID: <u>2230801A_MS2.b\1218SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>LWZ</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>08/01/23</u> Time: <u>1059</u>
Prep Batch: <u>769824</u>	Analytical Batch: <u>769939</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	174	ug/kg	J	114	229	457

Sample Report

Sample Name	22307285312	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1218SMPL.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 10:59:36 AM	Total Dilution	384.6154
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.338	130.126	1.3	67373.09	500	
Be	9	6	No Gas	0.033	12.882	7.3	150.67	1000	
B	11	45	No Gas	0.584	224.746	1.7	4917.62	500	
Sr	88	72	No Gas	6.463	2485.606	2.0	345087.40	1000	
Zr	90	72	No Gas	0.218	83.927	91.8	8109.96	100	
Mo	95	115	No Gas	0.147	56.638	4.1	1843.47	1000	
Ag	107	115	No Gas	0.004	1.353	21.9	112.22	100	
Cd	111	115	No Gas	0.016	6.241	7.1	212.23	1000	
Sb	121	115	No Gas	0.215	82.611	1.4	6929.55	1000	
Ba	137	115	No Gas	1.326	510.093	1.6	11451.50	1000	
Tl	205	209	No Gas	0.011	4.136	2.2	1143.43	1000	
Pb	208	209	No Gas	0.278	106.915	5.3	9230.19	1000	
Na	23	45	He	6.082	2339.242	2.2	25485.61	100000	
Mg	24	45	He	19.999	7691.907	3.0	6615.00	100000	
Al	27	45	He	95.964	36909.345	3.4	8551.84	20000	
Si	29	45	He	-276725.96	-106433061.421	7.4	100514.80	10000	
K	39	45	He	-12.998	-4999.180	1.8	53988.96	100000	
Ca	44	45	He	1299.892	499958.319	1.5	20669.56	500000	
Ti	47	45	He	23.926	9202.429	9.2	2945.38	1000	
V	51	72	He	0.276	106.036	2.7	2255.77	1000	
Cr	52	72	He	0.61	234.671	0.8	5886.79	1000	
Mn	55	72	He	1.954	751.550	2.6	5166.52	5000	
Fe	57	72	He	66.862	25716.099	4.6	7111.97	100000	
Co	59	72	He	0.021	8.105	8.0	312.23	1000	
Ni	60	72	He	0.114	43.852	6.6	598.91	2000	
Cu	63	45	He	2.274	874.707	2.1	15619.52	1000	
Zn	66	72	He	2.844	1093.659	1.2	3669.39	20000	
As	75	72	He	0.38	146.039	1.6	551.01	1000	
Se	78	72	He	-0.097	-37.276	4.1	89.82	50	
Sn	120	115	He	0.025	9.713	8.8	473.35	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3924806.30	3919315.67	100.14	
Ge	72	He	156914.84	162135.166666667	96.78	
In	115	He	1435719.24	1476978.55	97.21	
Lu	175	He	3080540.58	3117120.786666667	98.83	
Rh	103	He	3677161.94	3761118.46	97.77	
Sc	45	He	192589.24	200611.303333333	96	
Tb	159	He	4667034.30	4722340.556666667	98.83	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	934386.10	887109.66	105.33	
Bi	209	No Gas	6564000.73	6378925.74	102.9	
Ge	72	No Gas	1338009.04	1353105.29	98.88	
In	115	No Gas	8621949.23	8577775.67	100.51	
Lu	175	No Gas	10176332.97	10093915.05666667	100.82	
Rh	103	No Gas	8499773.28	8537311.88333333	99.56	
Sc	45	No Gas	5207770.49	5264112.29	98.93	
Tb	159	No Gas	10751211.09	10724634.4233333	100.25	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0088-000.5-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1134</u>	GCAL Sample ID: <u>22307285313</u>
Matrix: <u>Solid</u> % Solids: <u>83.35</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.39</u> g	Lab File ID: <u>2230801A_MS2.b\1219SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>LWZ</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>08/01/23</u> Time: <u>1103</u>
Prep Batch: <u>769824</u>	Analytical Batch: <u>769939</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	289	ug/kg	J	108	216	432

Sample Report

Sample Name	22307285313	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1219SMPL.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 11:03:10 AM	Total Dilution	359.7122
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.475	170.731	0.7	64631.74	500	
Be	9	6	No Gas	0.174	62.570	2.6	488.01	1000	
B	11	45	No Gas	0.954	343.187	2.4	5377.82	500	
Sr	88	72	No Gas	134.422	48353.362	1.0	6867407.81	1000	
Zr	90	72	No Gas	4.584	1649.016	16.9	146596.36	100	
Mo	95	115	No Gas	0.24	86.453	2.2	2640.28	1000	
Ag	107	115	No Gas	0.018	6.576	6.4	467.80	100	
Cd	111	115	No Gas	0.044	15.964	11.0	354.45	1000	
Sb	121	115	No Gas	0.194	69.784	3.8	6065.81	1000	
Ba	137	115	No Gas	27.43	9866.977	1.8	223726.06	1000	
Tl	205	209	No Gas	0.014	4.889	3.9	1223.43	1000	
Pb	208	209	No Gas	13.397	4819.165	1.4	412403.58	1000	
Na	23	45	He	8.553	3076.545	0.3	26827.86	100000	
Mg	24	45	He	118.489	42621.928	3.1	32702.97	100000	
Al	27	45	He	8100.751	2913939.065	1.3	695199.44	20000	
Si	29	45	He	-282206.031	-101512960.971	4.7	98303.13	10000	
K	39	45	He	2.363	850.160	1.7	58917.11	100000	
Ca	44	45	He	3409.459	1226424.026	1.7	50423.98	500000	
Ti	47	45	He	165.178	59416.504	5.2	20046.31	1000	
V	51	72	He	3.668	1319.334	2.8	16531.64	1000	
Cr	52	72	He	10.555	3796.892	2.6	58673.75	1000	
Mn	55	72	He	2.276	818.714	3.3	5835.70	5000	
Fe	57	72	He	148.799	53524.872	3.3	15094.96	100000	
Co	59	72	He	0.07	25.025	7.7	727.81	1000	
Ni	60	72	He	0.764	274.885	3.0	2121.29	2000	
Cu	63	45	He	4.439	1596.728	3.0	29734.72	1000	
Zn	66	72	He	4.549	1636.264	1.3	5328.82	20000	
As	75	72	He	0.669	240.580	5.3	876.03	1000	
Se	78	72	He	0.898	323.038	5.1	157.37	50	
Sn	120	115	He	0.097	35.034	8.9	832.26	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3858461.09	3919315.67	98.45	
Ge	72	He	153476.87	162135.166666667	94.66	
In	115	He	1403579.83	1476978.55	95.03	
Lu	175	He	3028785.99	3117120.786666667	97.17	
Rh	103	He	3617212.22	3761118.46	96.17	
Sc	45	He	190945.17	200611.303333333	95.18	
Tb	159	He	4610936.08	4722340.556666667	97.64	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	882619.88	887109.66	99.49	
Bi	209	No Gas	6326734.28	6378925.74	99.18	
Ge	72	No Gas	1282476.72	1353105.29	94.78	
In	115	No Gas	8189576.27	8577775.67	95.47	
Lu	175	No Gas	9808533.18	10093915.05666667	97.17	
Rh	103	No Gas	8018441.07	8537311.88333333	93.92	
Sc	45	No Gas	4979756.19	5264112.29	94.6	
Tb	159	No Gas	10346365.68	10724634.4233333	96.47	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0088-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1135</u>	GCAL Sample ID: <u>22307285314</u>
Matrix: <u>Solid</u> % Solids: <u>74.11</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.38</u> g	Lab File ID: <u>2230801A_MS2.b\1220SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>LWZ</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>08/01/23</u> Time: <u>1106</u>
Prep Batch: <u>769824</u>	Analytical Batch: <u>769939</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	182	ug/kg	J	122	244	489

Sample Report

Sample Name	22307285314	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1220SMPL.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 11:06:44 AM	Total Dilution	362.3188
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.237	85.708	1.7	64420.62	500	
Be	9	6	No Gas	0.1	36.144	6.2	312.67	1000	
B	11	45	No Gas	0.584	211.562	5.0	4854.27	500	
Sr	88	72	No Gas	48.929	17727.738	0.5	2585610.07	1000	
Zr	90	72	No Gas	1.636	592.919	3.3	54738.76	100	
Mo	95	115	No Gas	0.136	49.441	2.7	1705.68	1000	
Ag	107	115	No Gas	0.008	2.986	27.1	228.91	100	
Cd	111	115	No Gas	0.04	14.632	7.8	344.45	1000	
Sb	121	115	No Gas	0.115	41.771	2.3	4256.24	1000	
Ba	137	115	No Gas	10.961	3971.290	0.5	92571.28	1000	
Tl	205	209	No Gas	0.013	4.615	3.6	1220.10	1000	
Pb	208	209	No Gas	3.932	1424.627	1.2	124650.93	1000	
Na	23	45	He	11.144	4037.542	2.9	29576.36	100000	
Mg	24	45	He	52.652	19076.767	0.6	15825.42	100000	
Al	27	45	He	3143.865	1139081.688	1.0	280607.12	20000	
Si	29	45	He	-272740.46	-98819007.385	5.6	104622.36	10000	
K	39	45	He	-8.286	-3002.053	2.0	57367.97	100000	
Ca	44	45	He	2025.055	733715.513	1.0	31998.04	500000	
Ti	47	45	He	70.316	25476.950	7.6	8870.20	1000	
V	51	72	He	2.294	830.980	4.2	11232.20	1000	
Cr	52	72	He	3.849	1394.671	1.8	24069.77	1000	
Mn	55	72	He	5.488	1988.544	1.8	14294.82	5000	
Fe	57	72	He	211.434	76606.581	1.0	22310.93	100000	
Co	59	72	He	0.058	21.124	1.1	658.91	1000	
Ni	60	72	He	0.481	174.177	3.0	1520.10	2000	
Cu	63	45	He	1.963	711.051	2.9	13966.74	1000	
Zn	66	72	He	5.625	2037.886	3.4	6727.18	20000	
As	75	72	He	0.373	135.230	9.5	557.01	1000	
Se	78	72	He	0.327	118.313	6.5	123.02	50	
Sn	120	115	He	0.134	48.670	6.5	1062.30	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	4022865.56	3919315.67	102.64	
Ge	72	He	160682.21	162135.166666667	99.1	
In	115	He	1460271.72	1476978.55	98.87	
Lu	175	He	3146788.39	3117120.786666667	100.95	
Rh	103	He	3777122.76	3761118.46	100.43	
Sc	45	He	198494.98	200611.303333333	98.95	
Tb	159	He	4778891.39	4722340.556666667	101.2	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	903669.33	887109.66	101.87	
Bi	209	No Gas	6502029.70	6378925.74	101.93	
Ge	72	No Gas	1326328.00	1353105.29	98.02	
In	115	No Gas	8478418.91	8577775.67	98.84	
Lu	175	No Gas	10090187.56	10093915.05666667	99.96	
Rh	103	No Gas	8445294.39	8537311.88333333	98.92	
Sc	45	No Gas	5140002.02	5264112.29	97.64	
Tb	159	No Gas	10695896.51	10724634.4233333	99.73	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0088-002.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1136</u>	GCAL Sample ID: <u>22307285315</u>
Matrix: <u>Solid</u> % Solids: <u>76.35</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.29</u> g	Lab File ID: <u>2230801A_MS2.b\1221SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>LWZ</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>08/01/23</u> Time: <u>1110</u>
Prep Batch: <u>769824</u>	Analytical Batch: <u>769939</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	151	ug/kg	J	127	254	508

Sample Report

Sample Name	22307285315	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1221SMPL.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 11:10:17 AM	Total Dilution	387.5969
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.265	102.889	0.5	61863.83	500	
Be	9	6	No Gas	0.029	11.141	12.5	128.00	1000	
B	11	45	No Gas	0.581	225.194	3.7	4717.55	500	
Sr	88	72	No Gas	6.894	2672.245	0.9	357100.28	1000	
Zr	90	72	No Gas	0.154	59.728	8.7	5828.92	100	
Mo	95	115	No Gas	0.104	40.207	2.0	1332.30	1000	
Ag	107	115	No Gas	0.003	1.160	34.1	93.33	100	
Cd	111	115	No Gas	0.012	4.761	17.7	180.00	1000	
Sb	121	115	No Gas	0.108	41.900	2.3	3927.26	1000	
Ba	137	115	No Gas	1.726	668.880	1.1	14117.29	1000	
Tl	205	209	No Gas	0.007	2.760	5.6	940.07	1000	
Pb	208	209	No Gas	0.427	165.644	4.2	13397.20	1000	
Na	23	45	He	7.516	2913.124	1.9	26327.05	100000	
Mg	24	45	He	16.557	6417.627	1.5	5677.93	100000	
Al	27	45	He	400.601	155271.635	0.8	34819.45	20000	
Si	29	45	He	-196454.269	-76145065.517	6.7	120670.92	10000	
K	39	45	He	1.086	420.817	1.4	58837.41	100000	
Ca	44	45	He	1828.879	708867.838	2.2	28172.00	500000	
Ti	47	45	He	39.027	15126.922	2.3	4776.85	1000	
V	51	72	He	0.75	290.657	2.5	4289.55	1000	
Cr	52	72	He	0.409	158.479	2.8	4780.83	1000	
Mn	55	72	He	1.479	573.351	1.9	3972.80	5000	
Fe	57	72	He	39.965	15490.137	4.2	4367.45	100000	
Co	59	72	He	0.034	13.144	14.5	424.46	1000	
Ni	60	72	He	0.232	89.870	4.2	881.15	2000	
Cu	63	45	He	0.649	251.579	1.3	4818.63	1000	
Zn	66	72	He	17.662	6845.566	3.3	19088.14	20000	
As	75	72	He	0.297	115.243	4.5	452.01	1000	
Se	78	72	He	0.298	115.360	7.8	117.59	50	
Sn	120	115	He	0.064	24.955	11.2	671.14	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3825455.26	3919315.67	97.61	
Ge	72	He	156522.27	162135.166666667	96.54	
In	115	He	1419726.88	1476978.55	96.12	
Lu	175	He	2992308.29	3117120.786666667	96	
Rh	103	He	3662192.63	3761118.46	97.37	
Sc	45	He	192102.05	200611.303333333	95.76	
Tb	159	He	4555632.33	4722340.556666667	96.47	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	864985.12	887109.66	97.51	
Bi	209	No Gas	6278121.16	6378925.74	98.42	
Ge	72	No Gas	1297598.70	1353105.29	95.9	
In	115	No Gas	8175830.97	8577775.67	95.31	
Lu	175	No Gas	9731293.60	10093915.05666667	96.41	
Rh	103	No Gas	8256033.28	8537311.88333333	96.71	
Sc	45	No Gas	5001052.44	5264112.29	95	
Tb	159	No Gas	10315323.39	10724634.4233333	96.18	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0089-000.5-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1143</u>	GCAL Sample ID: <u>22307285316</u>
Matrix: <u>Solid</u> % Solids: <u>87.97</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.26</u> g	Lab File ID: <u>2230801A_MS2.b\1222SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>LWZ</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>08/01/23</u> Time: <u>1113</u>
Prep Batch: <u>769824</u>	Analytical Batch: <u>769939</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	222	ug/kg	J	113	226	451

Sample Report

Sample Name	22307285316	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1222SMPL.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 11:13:51 AM	Total Dilution	396.8254
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.425	168.580	3.1	65733.41	500	
Be	9	6	No Gas	0.16	63.383	3.3	463.34	1000	
B	11	45	No Gas	0.912	361.906	3.8	5704.59	500	
Sr	88	72	No Gas	216.587	85947.186	1.0	11760136.91	1000	
Zr	90	72	No Gas	3.485	1383.094	8.7	118796.30	100	
Mo	95	115	No Gas	0.19	75.572	5.2	2323.55	1000	
Ag	107	115	No Gas	0.012	4.638	11.1	328.90	100	
Cd	111	115	No Gas	0.044	17.357	8.8	376.68	1000	
Sb	121	115	No Gas	0.1	39.509	2.8	3998.39	1000	
Ba	137	115	No Gas	47.132	18703.342	0.9	412796.82	1000	
Tl	205	209	No Gas	0.006	2.273	5.1	923.40	1000	
Pb	208	209	No Gas	9.139	3626.551	0.1	292375.12	1000	
Na	23	45	He	9.046	3589.764	2.8	29506.30	100000	
Mg	24	45	He	71.247	28272.748	2.3	21916.68	100000	
Al	27	45	He	8414.144	3338946.004	1.7	785027.50	20000	
Si	29	45	He	-228188.39	-90550948.345	5.6	121673.81	10000	
K	39	45	He	14.246	5653.362	1.9	68612.05	100000	
Ca	44	45	He	3768.83	1495567.507	1.7	60358.92	500000	
Ti	47	45	He	112.551	44662.933	1.7	14851.20	1000	
V	51	72	He	4.504	1787.343	2.2	21621.52	1000	
Cr	52	72	He	9.438	3745.059	2.6	56828.67	1000	
Mn	55	72	He	2.374	942.183	1.2	6545.97	5000	
Fe	57	72	He	245.691	97496.366	0.6	26634.91	100000	
Co	59	72	He	0.097	38.586	3.1	1043.38	1000	
Ni	60	72	He	0.929	368.842	4.1	2708.06	2000	
Cu	63	45	He	3.565	1414.612	0.6	26064.32	1000	
Zn	66	72	He	7.352	2917.337	1.8	8827.19	20000	
As	75	72	He	0.492	195.253	1.3	721.69	1000	
Se	78	72	He	0.678	269.176	11.4	153.12	50	
Sn	120	115	He	0.079	31.462	25.0	790.07	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	4066789.21	3919315.67	103.76	
Ge	72	He	165404.33	162135.166666667	102.02	
In	115	He	1495273.90	1476978.55	101.24	
Lu	175	He	3212053.39	3117120.786666667	103.05	
Rh	103	He	3836587.77	3761118.46	102.01	
Sc	45	He	207576.10	200611.303333333	103.47	
Tb	159	He	4878960.65	4722340.556666667	103.32	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	902817.10	887109.66	101.77	
Bi	209	No Gas	6573620.53	6378925.74	103.05	
Ge	72	No Gas	1363142.51	1353105.29	100.74	
In	115	No Gas	8795612.00	8577775.67	102.54	
Lu	175	No Gas	10418402.97	10093915.05666667	103.21	
Rh	103	No Gas	8723328.54	8537311.88333333	102.18	
Sc	45	No Gas	5358802.70	5264112.29	101.8	
Tb	159	No Gas	10980564.00	10724634.4233333	102.39	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0089-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1211</u>	GCAL Sample ID: <u>22307285317</u>
Matrix: <u>Solid</u> % Solids: <u>84.77</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.29</u> g	Lab File ID: <u>2230801A_MS2.b\1223SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>LWZ</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>08/01/23</u> Time: <u>1117</u>
Prep Batch: <u>769824</u>	Analytical Batch: <u>769939</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	155	ug/kg	J	114	229	457

Sample Report

Sample Name	22307285317	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1223SMPL.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 11:17:25 AM	Total Dilution	387.5969
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.443	171.643	0.6	64779.28	500	
Be	9	6	No Gas	0.119	46.008	6.0	354.01	1000	
B	11	45	No Gas	0.758	293.840	4.9	5414.47	500	
Sr	88	72	No Gas	86.686	33599.378	0.1	4706959.09	1000	
Zr	90	72	No Gas	4.953	1919.644	1.1	168394.60	100	
Mo	95	115	No Gas	0.181	70.156	2.4	2196.87	1000	
Ag	107	115	No Gas	0.011	4.449	7.3	318.90	100	
Cd	111	115	No Gas	0.047	18.263	6.9	391.12	1000	
Sb	121	115	No Gas	0.097	37.420	0.6	3865.02	1000	
Ba	137	115	No Gas	17.244	6683.590	1.7	149032.44	1000	
Tl	205	209	No Gas	0.009	3.365	12.4	1046.74	1000	
Pb	208	209	No Gas	10.604	4109.965	1.4	336760.60	1000	
Na	23	45	He	7.396	2866.540	2.0	28250.46	100000	
Mg	24	45	He	50.762	19675.195	0.9	15935.63	100000	
Al	27	45	He	5752.202	2229535.541	2.0	534411.90	20000	
Si	29	45	He	-192710.737	-74694084.127	6.6	130860.57	10000	
K	39	45	He	11.909	4615.864	2.1	67427.29	100000	
Ca	44	45	He	5103.337	1978037.473	1.6	80584.37	500000	
Ti	47	45	He	184.934	71679.833	3.4	24285.97	1000	
V	51	72	He	4.988	1933.428	3.3	23914.00	1000	
Cr	52	72	He	7.512	2911.471	1.2	45939.14	1000	
Mn	55	72	He	4.108	1592.390	1.2	11132.10	5000	
Fe	57	72	He	207.336	80362.747	4.2	22621.51	100000	
Co	59	72	He	0.078	30.211	8.7	866.70	1000	
Ni	60	72	He	0.674	261.250	6.7	2063.50	2000	
Cu	63	45	He	4.174	1617.891	1.1	30289.17	1000	
Zn	66	72	He	5.87	2275.316	2.8	7224.08	20000	
As	75	72	He	0.339	131.283	3.8	531.01	1000	
Se	78	72	He	0.717	277.829	5.1	156.45	50	
Sn	120	115	He	0.104	40.134	8.7	918.93	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	4017100.15	3919315.67	102.49	
Ge	72	He	165995.27	162135.166666667	102.38	
In	115	He	1494468.34	1476978.55	101.18	
Lu	175	He	3172156.41	3117120.786666667	101.77	
Rh	103	He	3808725.54	3761118.46	101.27	
Sc	45	He	206664.45	200611.303333333	103.02	
Tb	159	He	4807682.53	4722340.556666667	101.81	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	887797.06	887109.66	100.08	
Bi	209	No Gas	6525893.86	6378925.74	102.3	
Ge	72	No Gas	1362999.81	1353105.29	100.73	
In	115	No Gas	8677815.54	8577775.67	101.17	
Lu	175	No Gas	10357968.80	10093915.0566667	102.62	
Rh	103	No Gas	8635407.16	8537311.88333333	101.15	
Sc	45	No Gas	5370607.56	5264112.29	102.02	
Tb	159	No Gas	10927546.09	10724634.4233333	101.89	

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INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0089-002.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1212</u>	GCAL Sample ID: <u>22307285318</u>
Matrix: <u>Solid</u> % Solids: <u>84.96</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.26</u> g	Lab File ID: <u>2230801A_MS2.b\1224SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>LWZ</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>08/01/23</u> Time: <u>1121</u>
Prep Batch: <u>769824</u>	Analytical Batch: <u>769939</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	234	ug/kg	U	117	234	467

Sample Report

Sample Name	22307285318	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1224SMPL.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 11:21:00 AM	Total Dilution	396.8254
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.232	92.241	1.1	62238.15	500	
Be	9	6	No Gas	0.01	4.139	21.4	84.67	1000	
B	11	45	No Gas	0.277	109.727	2.8	4360.77	500	
Sr	88	72	No Gas	3.544	1406.175	1.0	190267.51	1000	
Zr	90	72	No Gas	0.229	91.059	19.7	8552.76	100	
Mo	95	115	No Gas	0.056	22.264	7.0	903.37	1000	
Ag	107	115	No Gas	0.003	1.114	13.8	91.11	100	
Cd	111	115	No Gas	0.01	4.017	13.5	173.34	1000	
Sb	121	115	No Gas	0.05	19.796	3.0	2555.81	1000	
Ba	137	115	No Gas	1.222	484.725	5.4	10294.12	1000	
Tl	205	209	No Gas	-0.003	-1.201	9.2	513.36	1000	
Pb	208	209	No Gas	0.665	263.827	1.3	20716.59	1000	
Na	23	45	He	2.438	967.407	0.3	23335.36	100000	
Mg	24	45	He	5.584	2215.999	5.2	2773.69	100000	
Al	27	45	He	280.445	111287.855	2.6	24688.99	20000	
Si	29	45	He	-114186.363	-45312048.613	7.6	143061.17	10000	
K	39	45	He	11.417	4530.477	2.8	63104.80	100000	
Ca	44	45	He	390.001	154762.485	1.9	7707.11	500000	
Ti	47	45	He	28.348	11249.256	14.8	3508.34	1000	
V	51	72	He	0.71	281.679	2.4	4150.63	1000	
Cr	52	72	He	0.56	222.300	2.7	5644.51	1000	
Mn	55	72	He	0.825	327.430	2.9	2367.99	5000	
Fe	57	72	He	29.288	11622.245	2.5	3310.47	100000	
Co	59	72	He	0.01	3.810	3.6	211.11	1000	
Ni	60	72	He	0.134	53.074	13.1	651.13	2000	
Cu	63	45	He	0.912	361.750	1.5	6620.45	1000	
Zn	66	72	He	4.919	1951.940	2.2	5864.57	20000	
As	75	72	He	0.053	20.957	2.5	162.67	1000	
Se	78	72	He	0.101	40.123	2.3	104.42	50	
Sn	120	115	He	0.022	8.534	5.0	444.46	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3810255.05	3919315.67	97.22	
Ge	72	He	157694.68	162135.166666667	97.26	
In	115	He	1407093.97	1476978.55	95.27	
Lu	175	He	2994203.29	3117120.786666667	96.06	
Rh	103	He	3609826.24	3761118.46	95.98	
Sc	45	He	193954.37	200611.303333333	96.68	
Tb	159	He	4537268.37	4722340.556666667	96.08	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	873587.36	887109.66	98.48	
Bi	209	No Gas	6300470.53	6378925.74	98.77	
Ge	72	No Gas	1342645.12	1353105.29	99.23	
In	115	No Gas	8415269.98	8577775.67	98.11	
Lu	175	No Gas	9929405.27	10093915.05666667	98.37	
Rh	103	No Gas	8481843.28	8537311.88333333	99.35	
Sc	45	No Gas	5245818.82	5264112.29	99.65	
Tb	159	No Gas	10568554.84	10724634.4233333	98.54	

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INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0090-000.5-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1214</u>	GCAL Sample ID: <u>22307285319</u>
Matrix: <u>Solid</u> % Solids: <u>85.67</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.36</u> g	Lab File ID: <u>2230801A_MS2.b\1225SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>LWZ</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>08/01/23</u> Time: <u>1124</u>
Prep Batch: <u>769824</u>	Analytical Batch: <u>769939</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	1420	ug/kg		107	215	429

Sample Report

Sample Name	22307285319	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1225SMPL.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 11:24:34 AM	Total Dilution	367.6471
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	1.982	728.540	1.5	72942.66	500	
Be	9	6	No Gas	0.212	77.903	4.5	562.01	1000	
B	11	45	No Gas	3.5	1286.672	0.6	10257.06	500	
Sr	88	72	No Gas	352.306	129524.421	0.2	18356731.40	1000	
Zr	90	72	No Gas	1.083	397.996	1.1	36010.76	100	
Mo	95	115	No Gas	0.145	53.476	4.2	1729.01	1000	
Ag	107	115	No Gas	0.097	35.736	3.5	2394.67	100	
Cd	111	115	No Gas	0.309	113.605	1.6	1785.69	1000	
Sb	121	115	No Gas	0.103	37.898	2.8	3800.56	1000	
Ba	137	115	No Gas	16.915	6218.714	2.2	137700.49	1000	
Tl	205	209	No Gas	0.033	12.042	7.4	1970.21	1000	
Pb	208	209	No Gas	7.496	2756.066	2.4	223026.34	1000	
Na	23	45	He	420.777	154697.570	1.3	295130.34	100000	
Mg	24	45	He	561.538	206447.674	1.8	154687.24	100000	
Al	27	45	He	2704.714	994380.045	0.7	238996.43	20000	
Si	29	45	He	-167041.842	-61412441.785	8.9	131167.53	10000	
K	39	45	He	105.961	38956.072	1.1	98159.11	100000	
Ca	44	45	He	56868.744	20907626.548	0.6	832201.47	500000	
Ti	47	45	He	14.879	5470.175	3.1	1875.18	1000	
V	51	72	He	4.555	1674.548	1.5	20904.83	1000	
Cr	52	72	He	16.519	6073.149	1.5	93227.07	1000	
Mn	55	72	He	70.837	26043.049	1.5	178120.93	5000	
Fe	57	72	He	2295.202	843824.259	1.0	235432.51	100000	
Co	59	72	He	0.501	184.209	3.2	4627.44	1000	
Ni	60	72	He	1.534	564.139	3.3	4061.72	2000	
Cu	63	45	He	99.135	36446.864	1.4	671771.81	1000	
Zn	66	72	He	61.445	22590.250	1.6	65383.96	20000	
As	75	72	He	3.305	1215.256	1.0	4067.91	1000	
Se	78	72	He	-0.25	-91.728	7.6	79.48	50	
Sn	120	115	He	0.153	56.349	12.1	1135.61	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3768955.26	3919315.67	96.16	
Ge	72	He	158275.34	162135.166666667	97.62	
In	115	He	1424343.58	1476978.55	96.44	
Lu	175	He	2999147.25	3117120.786666667	96.22	
Rh	103	He	3550175.97	3761118.46	94.39	
Sc	45	He	196462.92	200611.303333333	97.93	
Tb	159	He	4565642.43	4722340.556666667	96.68	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	853100.82	887109.66	96.17	
Bi	209	No Gas	6109897.20	6378925.74	95.78	
Ge	72	No Gas	1308262.52	1353105.29	96.69	
In	115	No Gas	8172423.19	8577775.67	95.27	
Lu	175	No Gas	9678983.82	10093915.05666667	95.89	
Rh	103	No Gas	7916789.69	8537311.88333333	92.73	
Sc	45	No Gas	5099380.08	5264112.29	96.87	
Tb	159	No Gas	10254542.56	10724634.4233333	95.62	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0090-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1215</u>	GCAL Sample ID: <u>22307285320</u>
Matrix: <u>Solid</u> % Solids: <u>86.91</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.35</u> g	Lab File ID: <u>2230801A_MS2.b\1230SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>LWZ</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>08/01/23</u> Time: <u>1142</u>
Prep Batch: <u>769825</u>	Analytical Batch: <u>769939</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	171	ug/kg	J	107	213	426

Sample Report

Sample Name	22307285320	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1230SMPL.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 11:42:23 AM	Total Dilution	370.3704
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.41	151.735	2.2	62857.28	500	
Be	9	6	No Gas	0.042	15.455	25.4	159.33	1000	
B	11	45	No Gas	2.699	999.700	10.1	8405.93	500	
Sr	88	72	No Gas	21.431	7937.537	1.7	1080535.19	1000	
Zr	90	72	No Gas	0.248	91.828	3.3	8628.56	100	
Mo	95	115	No Gas	0.049	17.985	3.0	782.25	1000	
Ag	107	115	No Gas	0.025	9.322	2.9	616.69	100	
Cd	111	115	No Gas	0.043	15.965	9.1	336.68	1000	
Sb	121	115	No Gas	0.05	18.601	4.5	2421.35	1000	
Ba	137	115	No Gas	2.537	939.566	0.4	20119.08	1000	
Tl	205	209	No Gas	0.009	3.154	8.8	963.40	1000	
Pb	208	209	No Gas	1.066	394.883	1.6	31708.50	1000	
Na	23	45	He	29.36	10874.218	2.1	38463.32	100000	
Mg	24	45	He	61.744	22868.041	1.2	16980.11	100000	
Al	27	45	He	368.939	136644.136	0.7	30705.98	20000	
Si	29	45	He	-240188.827	-88958824.839	7.3	104818.34	10000	
K	39	45	He	9.711	3596.516	2.6	59231.74	100000	
Ca	44	45	He	4226.152	1565241.330	0.9	59696.32	500000	
Ti	47	45	He	10.625	3935.164	5.1	1258.08	1000	
V	51	72	He	0.35	129.697	5.0	2481.35	1000	
Cr	52	72	He	1.993	738.246	2.7	12920.19	1000	
Mn	55	72	He	10.263	3801.165	3.1	24898.93	5000	
Fe	57	72	He	212.407	78669.278	4.0	21092.48	100000	
Co	59	72	He	0.055	20.523	6.0	595.57	1000	
Ni	60	72	He	0.247	91.366	3.4	885.59	2000	
Cu	63	45	He	16.74	6200.098	1.6	106560.60	1000	
Zn	66	72	He	7.034	2605.203	3.1	7746.57	20000	
As	75	72	He	0.401	148.612	7.7	555.68	1000	
Se	78	72	He	0.021	7.868	9.0	94.68	50	
Sn	120	115	He	0.04	14.977	11.4	521.13	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3678390.78	3919315.67	93.85	
Ge	72	He	151145.39	162135.166666667	93.22	
In	115	He	1353095.90	1476978.55	91.61	
Lu	175	He	2882792.14	3117120.786666667	92.48	
Rh	103	He	3446889.31	3761118.46	91.65	
Sc	45	He	183830.96	200611.303333333	91.64	
Tb	159	He	4403894.10	4722340.556666667	93.26	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	864705.95	887109.66	97.47	
Bi	209	No Gas	6052180.54	6378925.74	94.88	
Ge	72	No Gas	1264874.43	1353105.29	93.48	
In	115	No Gas	7938871.30	8577775.67	92.55	
Lu	175	No Gas	9536003.61	10093915.05666667	94.47	
Rh	103	No Gas	7759614.69	8537311.88333333	90.89	
Sc	45	No Gas	4890334.80	5264112.29	92.9	
Tb	159	No Gas	10012955.06	10724634.4233333	93.36	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0090-002.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1216</u>	GCAL Sample ID: <u>22307285321</u>
Matrix: <u>Solid</u> % Solids: <u>84.39</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.32</u> g	Lab File ID: <u>2230801A_MS2.b\1231SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>LWZ</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>08/01/23</u> Time: <u>1145</u>
Prep Batch: <u>769825</u>	Analytical Batch: <u>769939</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	213	ug/kg	J	112	224	449

Sample Report

Sample Name	22307285321	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1231SMPL.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 11:45:56 AM	Total Dilution	378.7879
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.242	91.686	0.5	62957.91	500	
Be	9	6	No Gas	0.028	10.523	25.8	128.00	1000	
B	11	45	No Gas	1.253	474.758	3.8	5991.38	500	
Sr	88	72	No Gas	62.673	23739.686	1.4	3260175.37	1000	
Zr	90	72	No Gas	0.372	141.032	64.1	12883.66	100	
Mo	95	115	No Gas	0.04	15.086	1.5	732.25	1000	
Ag	107	115	No Gas	0.013	5.097	14.8	353.34	100	
Cd	111	115	No Gas	0.034	12.789	4.8	300.01	1000	
Sb	121	115	No Gas	0.034	12.870	2.4	2119.07	1000	
Ba	137	115	No Gas	2.759	1045.083	1.0	22838.16	1000	
Tl	205	209	No Gas	0.002	0.928	10.6	740.05	1000	
Pb	208	209	No Gas	0.835	316.200	3.8	25738.99	1000	
Na	23	45	He	126.866	48055.190	2.4	102252.88	100000	
Mg	24	45	He	57.261	21689.797	3.7	16579.63	100000	
Al	27	45	He	295.063	111766.140	0.1	25749.35	20000	
Si	29	45	He	-266459.764	-100931728.957	8.6	102961.51	10000	
K	39	45	He	8.766	3320.532	1.2	61651.48	100000	
Ca	44	45	He	13875.158	5255741.481	1.9	200438.96	500000	
Ti	47	45	He	13.51	5117.413	3.7	1670.10	1000	
V	51	72	He	0.414	156.892	4.9	2861.42	1000	
Cr	52	72	He	1.849	700.395	2.1	12655.52	1000	
Mn	55	72	He	10.662	4038.496	2.3	26900.19	5000	
Fe	57	72	He	196.742	74523.338	4.1	20358.06	100000	
Co	59	72	He	0.061	22.968	6.5	666.69	1000	
Ni	60	72	He	0.222	84.193	5.4	863.37	2000	
Cu	63	45	He	9.573	3626.168	1.1	64002.38	1000	
Zn	66	72	He	7.85	2973.620	2.9	8916.14	20000	
As	75	72	He	0.474	179.369	8.0	665.02	1000	
Se	78	72	He	-0.064	-24.114	7.3	92.48	50	
Sn	120	115	He	0.039	14.916	8.3	542.24	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3806897.44	3919315.67	97.13	
Ge	72	He	157314.14	162135.166666667	97.03	
In	115	He	1422179.38	1476978.55	96.29	
Lu	175	He	2997108.70	3117120.78666667	96.15	
Rh	103	He	3597948.74	3761118.46	95.66	
Sc	45	He	192430.11	200611.303333333	95.92	
Tb	159	He	4565155.97	4722340.55666667	96.67	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	882642.86	887109.66	99.5	
Bi	209	No Gas	6255791.99	6378925.74	98.07	
Ge	72	No Gas	1305655.29	1353105.29	96.49	
In	115	No Gas	8289749.17	8577775.67	96.64	
Lu	175	No Gas	9827767.15	10093915.0566667	97.36	
Rh	103	No Gas	8055181.07	8537311.88333333	94.35	
Sc	45	No Gas	5036400.49	5264112.29	95.67	
Tb	159	No Gas	10390765.68	10724634.4233333	96.89	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0091-000.5-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1226</u>	GCAL Sample ID: <u>22307285322</u>
Matrix: <u>Solid</u> % Solids: <u>85.06</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.28</u> g	Lab File ID: <u>2230801A_MS2.b\1232SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>LWZ</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>08/01/23</u> Time: <u>1149</u>
Prep Batch: <u>769825</u>	Analytical Batch: <u>769939</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	2750	ug/kg		115	230	459

Sample Report

Sample Name	22307285322	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1232SMPL.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 11:49:30 AM	Total Dilution	390.6250
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	5.931	2316.922	0.3	102508.38	500	
Be	9	6	No Gas	0.417	162.810	6.7	1072.04	1000	
B	11	45	No Gas	5.033	1966.010	4.3	12955.91	500	
Sr	88	72	No Gas	444.614	173677.322	0.2	22875318.83	1000	
Zr	90	72	No Gas	1.479	577.769	2.7	48272.45	100	
Mo	95	115	No Gas	0.15	58.592	2.5	1762.35	1000	
Ag	107	115	No Gas	0.235	91.832	0.7	5727.87	100	
Cd	111	115	No Gas	0.609	237.717	1.1	3387.11	1000	
Sb	121	115	No Gas	0.136	52.956	0.9	4579.69	1000	
Ba	137	115	No Gas	37.007	14455.731	1.6	299404.92	1000	
Tl	205	209	No Gas	0.04	15.760	3.1	2310.30	1000	
Pb	208	209	No Gas	12.222	4774.070	1.0	367799.97	1000	
Na	23	45	He	496.563	193970.032	0.5	337602.21	100000	
Mg	24	45	He	1137.063	444165.213	1.4	305857.40	100000	
Al	27	45	He	7486.863	2924555.899	1.1	648293.54	20000	
Si	29	45	He	-309111.32	-120746609.532	8.2	92218.76	10000	
K	39	45	He	139.689	54566.147	1.6	108247.70	100000	
Ca	44	45	He	145174.439	56708765.153	1.4	2080085.91	500000	
Ti	47	45	He	12.163	4751.133	17.5	1507.83	1000	
V	51	72	He	8.909	3479.896	2.0	39373.49	1000	
Cr	52	72	He	26.711	10433.940	2.2	147296.62	1000	
Mn	55	72	He	176.018	68756.923	1.7	436629.81	5000	
Fe	57	72	He	4307.23	1682511.665	1.9	436075.58	100000	
Co	59	72	He	0.671	262.171	4.4	6079.09	1000	
Ni	60	72	He	2.806	1095.912	1.3	7069.55	2000	
Cu	63	45	He	113.887	44487.169	1.7	756741.69	1000	
Zn	66	72	He	156.756	61232.989	1.4	163633.70	20000	
As	75	72	He	5.983	2336.991	2.0	7192.79	1000	
Se	78	72	He	-0.221	-86.458	1.0	80.58	50	
Sn	120	115	He	0.157	61.231	7.0	1124.50	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3756919.11	3919315.67	95.86	
Ge	72	He	156295.06	162135.166666667	96.4	
In	115	He	1389406.05	1476978.55	94.07	
Lu	175	He	3016235.27	3117120.786666667	96.76	
Rh	103	He	3500387.64	3761118.46	93.07	
Sc	45	He	192668.09	200611.303333333	96.04	
Tb	159	He	4594978.06	4722340.556666667	97.3	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	871006.39	887109.66	98.18	
Bi	209	No Gas	6184837.62	6378925.74	96.96	
Ge	72	No Gas	1291746.37	1353105.29	95.47	
In	115	No Gas	8124718.45	8577775.67	94.72	
Lu	175	No Gas	9918739.44	10093915.05666667	98.26	
Rh	103	No Gas	7750001.36	8537311.88333333	90.78	
Sc	45	No Gas	5036722.30	5264112.29	95.68	
Tb	159	No Gas	10513607.76	10724634.4233333	98.03	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0091-001.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1227</u>	GCAL Sample ID: <u>22307285323</u>
Matrix: <u>Solid</u> % Solids: <u>88.37</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.28</u> g	Lab File ID: <u>2230801A_MS2.b\1233SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>LWZ</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>08/01/23</u> Time: <u>1153</u>
Prep Batch: <u>769825</u>	Analytical Batch: <u>769939</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	559	ug/kg		110	221	442

Sample Report

Sample Name	22307285323	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1233SMPL.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 11:53:05 AM	Total Dilution	390.6250
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	1.311	512.204	2.4	70785.21	500	
Be	9	6	No Gas	0.144	56.300	8.3	415.34	1000	
B	11	45	No Gas	1.518	592.913	5.6	6594.94	500	
Sr	88	72	No Gas	258.047	100799.661	0.7	13637219.80	1000	
Zr	90	72	No Gas	1.383	540.251	2.5	46418.18	100	
Mo	95	115	No Gas	0.043	16.833	5.4	780.03	1000	
Ag	107	115	No Gas	0.02	7.669	9.7	517.79	100	
Cd	111	115	No Gas	0.046	18.146	8.4	377.79	1000	
Sb	121	115	No Gas	0.104	40.604	2.7	3956.15	1000	
Ba	137	115	No Gas	7.144	2790.631	1.1	60245.05	1000	
Tl	205	209	No Gas	0.01	3.886	5.1	1083.42	1000	
Pb	208	209	No Gas	4.126	1611.765	1.8	129095.25	1000	
Na	23	45	He	489.203	191094.736	0.6	340547.60	100000	
Mg	24	45	He	172.854	67521.133	1.4	48649.48	100000	
Al	27	45	He	1686.479	658781.024	0.1	149552.94	20000	
Si	29	45	He	-312240.26	-121968851.570	9.8	93537.86	10000	
K	39	45	He	6.903	2696.669	2.5	62471.89	100000	
Ca	44	45	He	61152.264	23887603.195	1.4	897426.97	500000	
Ti	47	45	He	15.347	5995.099	9.0	1939.23	1000	
V	51	72	He	2.271	886.985	0.5	11055.33	1000	
Cr	52	72	He	3.444	1345.334	2.2	21675.10	1000	
Mn	55	72	He	12.879	5030.869	2.8	32920.51	5000	
Fe	57	72	He	893.402	348985.045	0.5	92608.09	100000	
Co	59	72	He	0.195	76.064	3.4	1891.25	1000	
Ni	60	72	He	0.663	258.880	3.0	1957.93	2000	
Cu	63	45	He	6.494	2536.700	1.0	44635.52	1000	
Zn	66	72	He	6.74	2632.893	3.3	7872.21	20000	
As	75	72	He	1.264	493.730	4.9	1632.43	1000	
Se	78	72	He	-0.057	-22.249	6.5	94.23	50	
Sn	120	115	He	0.029	11.273	13.2	494.46	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3891902.65	3919315.67	99.3	
Ge	72	He	159658.22	162135.166666667	98.47	
In	115	He	1440607.63	1476978.55	97.54	
Lu	175	He	3056146.10	3117120.786666667	98.04	
Rh	103	He	3625651.66	3761118.46	96.4	
Sc	45	He	197053.80	200611.303333333	98.23	
Tb	159	He	4672303.68	4722340.556666667	98.94	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	884524.06	887109.66	99.71	
Bi	209	No Gas	6417730.74	6378925.74	100.61	
Ge	72	No Gas	1326734.18	1353105.29	98.05	
In	115	No Gas	8461343.32	8577775.67	98.64	
Lu	175	No Gas	10085215.48	10093915.05666667	99.91	
Rh	103	No Gas	8108148.84	8537311.88333333	94.97	
Sc	45	No Gas	5127454.52	5264112.29	97.4	
Tb	159	No Gas	10621864.84	10724634.4233333	99.04	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0091-002.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1228</u>	GCAL Sample ID: <u>22307285324</u>
Matrix: <u>Solid</u> % Solids: <u>84.59</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.35</u> g	Lab File ID: <u>2230801A_MS2.b\1234SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>LWZ</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>08/01/23</u> Time: <u>1156</u>
Prep Batch: <u>769825</u>	Analytical Batch: <u>769939</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	219	ug/kg	U	109	219	438

Sample Report

Sample Name	22307285324	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1234SMPL.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 11:56:39 AM	Total Dilution	370.3704
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.14	51.858	1.4	63108.57	500	
Be	9	6	No Gas	0.017	6.336	12.4	103.33	1000	
B	11	45	No Gas	0.501	185.479	3.0	4777.55	500	
Sr	88	72	No Gas	17.209	6373.878	1.0	925903.53	1000	
Zr	90	72	No Gas	0.158	58.502	15.5	6194.64	100	
Mo	95	115	No Gas	0.018	6.586	4.0	551.13	1000	
Ag	107	115	No Gas	0.007	2.605	15.4	206.67	100	
Cd	111	115	No Gas	0.015	5.515	7.4	208.89	1000	
Sb	121	115	No Gas	0.045	16.693	2.2	2548.03	1000	
Ba	137	115	No Gas	1.477	546.925	2.3	13021.75	1000	
Tl	205	209	No Gas	-0.005	-1.682	3.3	466.69	1000	
Pb	208	209	No Gas	0.703	260.240	4.6	22743.60	1000	
Na	23	45	He	21.848	8091.836	2.7	36929.18	100000	
Mg	24	45	He	30.146	11165.191	3.1	9703.44	100000	
Al	27	45	He	199.009	73707.076	2.5	18161.07	20000	
Si	29	45	He	-313746.742	-116202497.085	8.7	94566.62	10000	
K	39	45	He	-14.128	-5232.466	1.4	55708.23	100000	
Ca	44	45	He	4122.991	1527033.540	2.1	63495.39	500000	
Ti	47	45	He	15.029	5566.481	4.9	1931.48	1000	
V	51	72	He	0.298	110.369	3.6	2444.67	1000	
Cr	52	72	He	2.825	1046.404	3.8	18651.90	1000	
Mn	55	72	He	4.915	1820.530	0.9	13028.08	5000	
Fe	57	72	He	130.709	48410.650	0.8	14123.94	100000	
Co	59	72	He	0.042	15.710	9.7	522.24	1000	
Ni	60	72	He	0.223	82.578	5.1	895.59	2000	
Cu	63	45	He	3.831	1418.861	1.8	26981.58	1000	
Zn	66	72	He	5.078	1880.864	2.0	6238.07	20000	
As	75	72	He	0.15	55.639	3.5	288.67	1000	
Se	78	72	He	-0.082	-30.505	4.9	94.47	50	
Sn	120	115	He	0.044	16.236	19.3	584.46	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3980839.52	3919315.67	101.57	
Ge	72	He	163131.49	162135.166666667	100.61	
In	115	He	1467938.52	1476978.55	99.39	
Lu	175	He	3105050.06	3117120.786666667	99.61	
Rh	103	He	3778732.63	3761118.46	100.47	
Sc	45	He	200267.74	200611.303333333	99.83	
Tb	159	He	4720808.58	4722340.556666667	99.97	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	895137.38	887109.66	100.9	
Bi	209	No Gas	6551810.11	6378925.74	102.71	
Ge	72	No Gas	1349604.95	1353105.29	99.74	
In	115	No Gas	8805030.53	8577775.67	102.65	
Lu	175	No Gas	10280355.47	10093915.056666667	101.85	
Rh	103	No Gas	8534200.49	8537311.88333333	99.96	
Sc	45	No Gas	5226597.57	5264112.29	99.29	
Tb	159	No Gas	10879239.84	10724634.4233333	101.44	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0080-002.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>0932</u>	GCAL Sample ID: <u>22307285325</u>
Matrix: <u>Solid</u> % Solids: <u>84.98</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.39</u> g	Lab File ID: <u>2230801A_MS2.b\1235SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>LWZ</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>08/01/23</u> Time: <u>1200</u>
Prep Batch: <u>769825</u>	Analytical Batch: <u>769939</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	212	ug/kg	U	106	212	423

Sample Report

Sample Name	22307285325	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1235SMPL.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 12:00:13 PM	Total Dilution	359.7122
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.039	13.865	0.7	61940.25	500	
Be	9	6	No Gas	0.005	1.624	7.1	71.33	1000	
B	11	45	No Gas	0.473	170.311	2.4	4760.90	500	
Sr	88	72	No Gas	1.833	659.266	2.0	100185.64	1000	
Zr	90	72	No Gas	0.191	68.869	57.0	7380.48	100	
Mo	95	115	No Gas	0.017	6.059	7.9	540.02	1000	
Ag	107	115	No Gas	0.002	0.693	14.1	72.22	100	
Cd	111	115	No Gas	0.004	1.548	6.0	146.67	1000	
Sb	121	115	No Gas	0.028	9.963	1.7	2077.96	1000	
Ba	137	115	No Gas	0.923	331.978	2.1	8143.61	1000	
Tl	205	209	No Gas	-0.005	-1.904	10.4	440.02	1000	
Pb	208	209	No Gas	0.227	81.823	1.4	7729.19	1000	
Na	23	45	He	-0.901	-324.141	1.8	22343.69	100000	
Mg	24	45	He	2.047	736.496	7.7	1916.85	100000	
Al	27	45	He	78.24	28144.044	1.3	7448.56	20000	
Si	29	45	He	-285746.893	-102786652.168	9.5	104231.63	10000	
K	39	45	He	-12.222	-4396.577	0.8	57598.49	100000	
Ca	44	45	He	333.052	119802.799	1.0	7258.55	500000	
Ti	47	45	He	24.427	8786.536	5.6	3189.76	1000	
V	51	72	He	0.433	155.602	5.0	3094.81	1000	
Cr	52	72	He	0.239	85.906	4.4	4086.20	1000	
Mn	55	72	He	0.65	233.972	2.5	2030.16	5000	
Fe	57	72	He	24.487	8808.138	1.0	2963.73	100000	
Co	59	72	He	0.006	2.196	2.0	188.89	1000	
Ni	60	72	He	0.039	14.000	11.5	441.12	2000	
Cu	63	45	He	0.391	140.524	3.5	3307.09	1000	
Zn	66	72	He	13.94	5014.506	3.6	16113.44	20000	
As	75	72	He	0.143	51.455	8.6	284.67	1000	
Se	78	72	He	-0.005	-1.929	2.0	101.77	50	
Sn	120	115	He	0.021	7.576	15.7	466.68	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3983243.38	3919315.67	101.63	
Ge	72	He	165771.74	162135.166666667	102.24	
In	115	He	1482652.34	1476978.55	100.38	
Lu	175	He	3145620.47	3117120.786666667	100.91	
Rh	103	He	3856807.35	3761118.46	102.54	
Sc	45	He	204443.40	200611.303333333	101.91	
Tb	159	He	4766155.97	4722340.556666667	100.93	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	889007.52	887109.66	100.21	
Bi	209	No Gas	6653853.86	6378925.74	104.31	
Ge	72	No Gas	1361400.26	1353105.29	100.61	
In	115	No Gas	8779729.35	8577775.67	102.35	
Lu	175	No Gas	10416123.80	10093915.0566667	103.19	
Rh	103	No Gas	8770164.37	8537311.88333333	102.73	
Sc	45	No Gas	5266222.01	5264112.29	100.04	
Tb	159	No Gas	11000988.17	10724634.4233333	102.58	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0067-002.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1044</u>	GCAL Sample ID: <u>22307285326</u>
Matrix: <u>Solid</u> % Solids: <u>85.96</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.27</u> g	Lab File ID: <u>2230801A_MS2.b\1236SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>LWZ</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>08/01/23</u> Time: <u>1203</u>
Prep Batch: <u>769825</u>	Analytical Batch: <u>769939</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	229	ug/kg	U	115	229	458

Sample Report

Sample Name	22307285326	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1236SMPL.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 12:03:48 PM	Total Dilution	393.7008
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.006	2.241	1.2	61203.91	500	
Be	9	6	No Gas	0.012	4.640	6.5	88.67	1000	
B	11	45	No Gas	0.492	193.673	4.4	4810.92	500	
Sr	88	72	No Gas	10.968	4318.175	0.8	595333.73	1000	
Zr	90	72	No Gas	0.254	100.152	29.1	9490.73	100	
Mo	95	115	No Gas	0.028	11.074	8.4	656.69	1000	
Ag	107	115	No Gas	0.008	3.237	13.5	237.78	100	
Cd	111	115	No Gas	0.017	6.785	8.3	222.23	1000	
Sb	121	115	No Gas	0.021	8.400	8.2	1913.49	1000	
Ba	137	115	No Gas	1.639	645.406	1.8	14435.33	1000	
Tl	205	209	No Gas	-0.004	-1.395	2.2	516.70	1000	
Pb	208	209	No Gas	1.563	615.312	3.0	50720.89	1000	
Na	23	45	He	8.479	3338.126	0.7	28688.38	100000	
Mg	24	45	He	37.486	14758.083	4.2	12001.87	100000	
Al	27	45	He	312.916	123195.349	1.2	29020.67	20000	
Si	29	45	He	-276902.948	-109016908.829	8.4	106654.70	10000	
K	39	45	He	1.696	667.780	2.6	62890.22	100000	
Ca	44	45	He	2949.816	1161345.077	0.9	47029.48	500000	
Ti	47	45	He	21.323	8394.818	16.5	2785.28	1000	
V	51	72	He	0.307	120.875	3.9	2490.24	1000	
Cr	52	72	He	0.724	285.111	3.1	6783.84	1000	
Mn	55	72	He	3.482	1370.765	2.8	9341.95	5000	
Fe	57	72	He	106.791	42043.534	7.0	11631.65	100000	
Co	59	72	He	0.019	7.329	17.3	303.34	1000	
Ni	60	72	He	0.189	74.217	1.3	812.26	2000	
Cu	63	45	He	2.914	1147.099	1.7	21097.54	1000	
Zn	66	72	He	3.453	1359.446	7.1	4491.85	20000	
As	75	72	He	0.05	19.515	3.7	164.67	1000	
Se	78	72	He	-0.064	-25.019	5.2	96.10	50	
Sn	120	115	He	0.022	8.730	11.3	472.24	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3997194.42	3919315.67	101.99	
Ge	72	He	163575.45	162135.166666667	100.89	
In	115	He	1481954.27	1476978.55	100.34	
Lu	175	He	3137866.10	3117120.786666667	100.67	
Rh	103	He	3824196.65	3761118.46	101.68	
Sc	45	He	204561.90	200611.303333333	101.97	
Tb	159	He	4772200.66	4722340.556666667	101.06	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	881814.20	887109.66	99.4	
Bi	209	No Gas	6626172.40	6378925.74	103.88	
Ge	72	No Gas	1360864.39	1353105.29	100.57	
In	115	No Gas	8797792.79	8577775.67	102.56	
Lu	175	No Gas	10455686.51	10093915.05666667	103.58	
Rh	103	No Gas	8693225.21	8537311.88333333	101.83	
Sc	45	No Gas	5282129.93	5264112.29	100.34	
Tb	159	No Gas	11059955.25	10724634.4233333	103.13	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0084-002.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1033</u>	GCAL Sample ID: <u>22307285327</u>
Matrix: <u>Solid</u> % Solids: <u>82.81</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.31</u> g	Lab File ID: <u>2230801A_MS2.b\1237SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>LWZ</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>08/01/23</u> Time: <u>1207</u>
Prep Batch: <u>769825</u>	Analytical Batch: <u>769939</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	230	ug/kg	U	115	230	461

FORM I - IN

Sample Report

Sample Name	22307285327	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1237SMPL.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 12:07:22 PM	Total Dilution	381.6794
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.42	160.403	1.4	63279.27	500	
Be	9	6	No Gas	0.051	19.370	10.6	182.00	1000	
B	11	45	No Gas	0.941	359.050	2.5	5664.61	500	
Sr	88	72	No Gas	80.043	30550.799	1.4	4306923.37	1000	
Zr	90	72	No Gas	0.453	172.873	19.5	16080.15	100	
Mo	95	115	No Gas	0.03	11.427	3.2	676.69	1000	
Ag	107	115	No Gas	0.011	4.388	2.4	324.45	100	
Cd	111	115	No Gas	0.039	14.973	4.9	351.12	1000	
Sb	121	115	No Gas	0.029	11.064	1.1	2120.18	1000	
Ba	137	115	No Gas	3.521	1343.947	1.6	30964.48	1000	
Tl	205	209	No Gas	0.001	0.252	12.0	693.38	1000	
Pb	208	209	No Gas	1.14	435.059	1.7	36477.57	1000	
Na	23	45	He	106.822	40771.717	2.5	93402.13	100000	
Mg	24	45	He	145.987	55720.065	3.5	42086.28	100000	
Al	27	45	He	542.992	207248.808	2.0	49252.26	20000	
Si	29	45	He	-275061.287	-104985224.199	8.2	105231.08	10000	
K	39	45	He	31.454	12005.278	0.5	72744.43	100000	
Ca	44	45	He	13829.52	5278442.579	1.2	208503.01	500000	
Ti	47	45	He	12.594	4806.905	8.6	1624.51	1000	
V	51	72	He	1.082	412.991	1.3	5983.49	1000	
Cr	52	72	He	2.172	828.916	2.3	15001.08	1000	
Mn	55	72	He	8.389	3201.974	3.1	22095.54	5000	
Fe	57	72	He	481.68	183847.225	2.9	51370.32	100000	
Co	59	72	He	0.074	28.257	3.7	817.81	1000	
Ni	60	72	He	0.322	123.005	4.2	1150.06	2000	
Cu	63	45	He	7.784	2970.884	2.7	54423.84	1000	
Zn	66	72	He	8.918	3403.950	1.3	10438.23	20000	
As	75	72	He	0.244	93.285	4.6	406.68	1000	
Se	78	72	He	-0.08	-30.488	8.7	95.02	50	
Sn	120	115	He	0.031	11.798	8.5	516.68	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3949567.13	3919315.67	100.77	
Ge	72	He	163675.91	162135.166666667	100.95	
In	115	He	1474405.66	1476978.55	99.83	
Lu	175	He	3122482.77	3117120.786666667	100.17	
Rh	103	He	3749049.57	3761118.46	99.68	
Sc	45	He	200819.08	200611.303333333	100.1	
Tb	159	He	4714796.70	4722340.556666667	99.84	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	869400.70	887109.66	98	
Bi	209	No Gas	6517145.94	6378925.74	102.17	
Ge	72	No Gas	1350613.94	1353105.29	99.82	
In	115	No Gas	8811878.06	8577775.67	102.73	
Lu	175	No Gas	10347198.39	10093915.05666667	102.51	
Rh	103	No Gas	8486093.00	8537311.88333333	99.4	
Sc	45	No Gas	5269177.15	5264112.29	100.1	
Tb	159	No Gas	10901877.34	10724634.4233333	101.65	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0066-002.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>1039</u>	GCAL Sample ID: <u>22307285328</u>
Matrix: <u>Solid</u> % Solids: <u>74.23</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.33</u> g	Lab File ID: <u>2230801A_MS2.b\1238SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>LWZ</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>08/01/23</u> Time: <u>1210</u>
Prep Batch: <u>769825</u>	Analytical Batch: <u>769939</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	253	ug/kg	U	127	253	506

Sample Report

Sample Name	22307285328	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1238SMPL.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 12:10:57 PM	Total Dilution	375.9398
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.149	56.125	2.1	61903.62	500	
Be	9	6	No Gas	0.004	1.545	27.7	69.33	1000	
B	11	45	No Gas	0.499	187.586	2.6	4777.58	500	
Sr	88	72	No Gas	5.665	2129.746	1.9	304607.00	1000	
Zr	90	72	No Gas	0.166	62.576	26.8	6463.50	100	
Mo	95	115	No Gas	0.018	6.901	6.3	552.24	1000	
Ag	107	115	No Gas	0.005	2.061	10.0	164.45	100	
Cd	111	115	No Gas	0.019	7.085	9.5	230.01	1000	
Sb	121	115	No Gas	0.015	5.733	1.5	1736.80	1000	
Ba	137	115	No Gas	1.251	470.190	3.2	10943.31	1000	
Tl	205	209	No Gas	-0.007	-2.561	11.1	363.35	1000	
Pb	208	209	No Gas	0.644	242.174	2.6	20720.13	1000	
Na	23	45	He	3.299	1240.394	1.0	24503.87	100000	
Mg	24	45	He	17.389	6537.229	4.1	6111.44	100000	
Al	27	45	He	208.77	78484.812	0.9	18919.27	20000	
Si	29	45	He	-265228.562	-99709985.720	9.8	106815.34	10000	
K	39	45	He	2.392	899.083	2.3	61427.04	100000	
Ca	44	45	He	1924.147	723363.588	3.6	30576.71	500000	
Ti	47	45	He	19.541	7346.426	12.4	2486.50	1000	
V	51	72	He	0.235	88.195	3.3	2149.09	1000	
Cr	52	72	He	0.358	134.767	2.4	4671.89	1000	
Mn	55	72	He	1.728	649.492	2.3	4756.37	5000	
Fe	57	72	He	64.675	24313.837	6.5	7125.33	100000	
Co	59	72	He	0.02	7.444	2.7	311.12	1000	
Ni	60	72	He	0.084	31.609	14.1	544.46	2000	
Cu	63	45	He	1.328	499.109	1.9	9646.61	1000	
Zn	66	72	He	2.288	860.240	5.7	3197.05	20000	
As	75	72	He	0.077	28.951	7.2	197.33	1000	
Se	78	72	He	0.019	7.158	3.3	101.42	50	
Sn	120	115	He	0.01	3.937	21.2	398.90	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3916383.38	3919315.67	99.93	
Ge	72	He	162248.81	162135.166666667	100.07	
In	115	He	1444806.52	1476978.55	97.82	
Lu	175	He	3052272.25	3117120.786666667	97.92	
Rh	103	He	3751321.38	3761118.46	99.74	
Sc	45	He	199005.77	200611.303333333	99.2	
Tb	159	He	4635355.76	4722340.556666667	98.16	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	877164.84	887109.66	98.88	
Bi	209	No Gas	6499663.44	6378925.74	101.89	
Ge	72	No Gas	1346317.13	1353105.29	99.5	
In	115	No Gas	8728913.44	8577775.67	101.76	
Lu	175	No Gas	10277743.39	10093915.0566667	101.82	
Rh	103	No Gas	8589226.60	8537311.88333333	100.61	
Sc	45	No Gas	5230312.57	5264112.29	99.36	
Tb	159	No Gas	10805591.51	10724634.4233333	100.75	

I
INORGANIC ANALYSIS DATA SHEET

Report No: <u>223072853</u>	Client Sample ID: <u>KCDC-SB0071-002.0-20230720</u>
Collect Date: <u>07/20/23</u> Time: <u>0945</u>	GCAL Sample ID: <u>22307285329</u>
Matrix: <u>Solid</u> % Solids: <u>77.82</u>	Instrument ID: <u>ICPMS2</u>
Sample Amt: <u>1.28</u> g	Lab File ID: <u>2230801A_MS2.b\1239SMPL.d</u>
Prep Vol.: <u>50</u> (mL)	Dilution Factor: <u>10</u> Analyst: <u>LWZ</u>
Prep Date: <u>07/31/23</u>	Analysis Date: <u>08/01/23</u> Time: <u>1214</u>
Prep Batch: <u>769825</u>	Analytical Batch: <u>769939</u>
Prep Method: <u>3050B</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	251	ug/kg	U	125	251	502

Sample Report

Sample Name	22307285329	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1239SMPL.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 12:14:31 PM	Total Dilution	390.6250
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	6	No Gas	0.191	74.604	2.5	61806.74	500	
Be	9	6	No Gas	0.012	4.758	20.3	88.67	1000	
B	11	45	No Gas	0.795	310.524	7.8	5304.41	500	
Sr	88	72	No Gas	11.977	4678.400	1.3	637796.34	1000	
Zr	90	72	No Gas	0.27	105.402	5.9	9834.07	100	
Mo	95	115	No Gas	0.03	11.752	11.1	664.47	1000	
Ag	107	115	No Gas	0.005	1.949	5.9	150.00	100	
Cd	111	115	No Gas	0.026	10.337	13.6	271.12	1000	
Sb	121	115	No Gas	0.071	27.927	3.6	3190.41	1000	
Ba	137	115	No Gas	3.729	1456.633	1.2	32134.90	1000	
Tl	205	209	No Gas	-0.001	-0.333	21.2	620.04	1000	
Pb	208	209	No Gas	3.588	1401.389	0.9	112793.48	1000	
Na	23	45	He	17.082	6672.830	0.7	33451.38	100000	
Mg	24	45	He	23.688	9252.958	8.7	7822.32	100000	
Al	27	45	He	221.995	86716.677	1.6	20036.88	20000	
Si	29	45	He	-263245.393	-102830231.669	11.2	106944.55	10000	
K	39	45	He	6.996	2732.619	1.0	62906.61	100000	
Ca	44	45	He	2618.967	1023033.874	2.5	40729.34	500000	
Ti	47	45	He	19.811	7738.512	8.4	2512.96	1000	
V	51	72	He	0.608	237.570	5.9	3807.20	1000	
Cr	52	72	He	0.507	198.171	4.9	5491.09	1000	
Mn	55	72	He	1.926	752.190	5.4	5255.45	5000	
Fe	57	72	He	163.159	63733.987	1.2	17410.89	100000	
Co	59	72	He	0.048	18.641	4.2	566.68	1000	
Ni	60	72	He	0.429	167.699	1.6	1402.31	2000	
Cu	63	45	He	0.651	254.106	3.6	4987.58	1000	
Zn	66	72	He	23.64	9234.334	3.0	26162.33	20000	
As	75	72	He	0.165	64.258	9.9	304.34	1000	
Se	78	72	He	-0.03	-11.769	3.3	97.50	50	
Sn	120	115	He	0.043	16.861	6.8	572.24	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3918939.11	3919315.67	99.99	
Ge	72	He	161781.11	162135.166666667	99.78	
In	115	He	1448983.64	1476978.55	98.1	
Lu	175	He	3061686.21	3117120.786666667	98.22	
Rh	103	He	3786303.04	3761118.46	100.67	
Sc	45	He	198366.36	200611.303333333	98.88	
Tb	159	He	4648774.83	4722340.556666667	98.44	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	871581.62	887109.66	98.25	
Bi	209	No Gas	6446698.86	6378925.74	101.06	
Ge	72	No Gas	1335310.29	1353105.29	98.68	
In	115	No Gas	8635787.24	8577775.67	100.68	
Lu	175	No Gas	10170976.10	10093915.05666667	100.76	
Rh	103	No Gas	8582431.88	8537311.88333333	100.53	
Sc	45	No Gas	5191188.54	5264112.29	98.61	
Tb	159	No Gas	10768405.67	10724634.4233333	100.41	

Metals

Form II

Calibration Verifications

II
INITIAL CALIBRATION VERIFICATION (ICV) STANDARD

Report No: 223072853 GCAL QC ID: 1600
Instrument ID: ICPMS2 Lab File ID: 2230731A_MS2.b\010_ICV.d
Analyst: TDM Analytical Batch: 769901
Analysis Date: 07/31/23 Time: 1101 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>TRUE</i>	<i>FOUND</i>	<i>%RECOVERY</i>	<i>Q</i>	<i>UNITS</i>
Arsenic	50.0	48.6	97		ug/L

CONTROL LIMITS 90-110%

Initial Calibration Verification (ICV) Report

Sample Name	1600	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name	010_ICV.d	Comment	ICPMS-2,TDM
Acq Time	7/31/2023 11:01:01 AM	Total Dilution	1.0000
Sample Type	ICV	Sample Pass/Fail	Fail
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Recovery Limits: 90-110%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	Rec	QC Flag
Li	7	45	No Gas	250.767	0.9	1842805.91	250	100.31	
Be	9	72	No Gas	49.731	0.6	127467.17	50	99.46	
B	11	45	No Gas	253.619	0.5	438566.60	250	101.45	
Sr	88	72	No Gas	49.015	1.1	2649166.32	50	98.03	
Zr	90	72	No Gas	45.726	0.7	1535112.75	50	91.45	
Mo	95	115	No Gas	47.705	1.4	482740.90	50	95.41	
Ag	107	115	No Gas	51.014	0.9	1345564.84	50	102.03	
Cd	111	115	No Gas	48.837	0.8	284593.06	50	97.67	
Sb	121	115	No Gas	50.088	0.5	1332460.81	50	100.18	
Ba	137	115	No Gas	49.061	0.2	451802.59	50	98.12	
Tl	205	209	No Gas	48.715	0.9	2511943.50	50	97.43	
Pb	208	209	No Gas	47.959	0.9	1802718.10	50	95.92	
Na	23	45	He	5027.293	0.8	2480378.66	5000	100.55	
Mg	24	45	He	4974.063	0.7	1051221.57	5000	99.48	
Al	27	45	He	998.074	0.3	67443.22	1000	99.81	
Si	29	45	He	4264.905	3.5	55773.52	5000	85.3	> +/- 10%
K	39	45	He	5029.245	1.0	1468396.90	5000	100.58	
Ca	44	45	He	24953.797	0.7	316777.92	25000	99.82	
Ti	47	45	He	49.432	1.4	5421.67	50	98.86	
V	51	72	He	48.707	0.7	200882.92	50	97.41	
Cr	52	72	He	49.273	0.9	254405.44	50	98.55	
Mn	55	72	He	48.620	0.9	115326.18	50	97.24	
Fe	57	72	He	4940.265	0.8	481561.85	5000	98.81	
Co	59	72	He	49.978	0.9	438912.20	50	99.96	
Ni	60	72	He	98.945	1.4	237520.22	100	98.94	
Cu	63	103	He	51.638	1.6	347500.27	50	103.28	
Zn	66	72	He	1003.190	1.5	1026889.86	1000	100.32	
As	75	72	He	48.629	0.9	56877.96	50	97.26	
Se	78	72	He	24.594	1.9	1807.36	25	98.38	
Sn	120	115	He	49.239	1.5	293899.20	50	98.48	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	4744753.99	4977840.24	95.32	
Ge	72	He	159009.32	168618.47	94.3	
In	115	He	1631175.09	1744348.13	93.51	
Lu	175	He	3804339.84	3966465.46	95.91	
Rh	103	He	4037553.03	4321957.05	93.42	
Sc	45	He	169727.96	185902.83	91.3	
Tb	159	He	5697922.21	5927064.91333333	96.13	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	815776.39	809671.036666667	100.75	
Bi	209	No Gas	7711410.30	7845001.13333333	98.3	
Ge	72	No Gas	1324542.94	1338255.08666667	98.98	
In	115	No Gas	8934170.03	9217317.19333333	96.93	
Lu	175	No Gas	11615463.58	11682743.99666667	99.42	
Rh	103	No Gas	8489296.05	8809191.87	96.37	
Sc	45	No Gas	4894654.11	4940195.36	99.08	
Tb	159	No Gas	11808436.49	11966615.65333333	98.68	

II
 LOW LEVEL CONTINUING CALIBRATION VERIFICATION (LLCCV) STANDARD

Report No: <u>223072853</u>	GCAL QC ID: <u>1803</u>
Instrument ID: <u>ICPMS2</u>	Lab File ID: <u>2230731A_MS2.b\121114CCV1.d</u>
Analyst: <u>TDM</u>	Analytical Batch: <u>769901</u>
Analysis Date: <u>07/31/23</u> Time: <u>1140</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>TRUE</i>	<i>FOUND</i>	<i>%RECOVERY</i>	<i>Q</i>	<i>UNITS</i>
Arsenic	1.00	0.950	95		ug/L

CONTROL LIMITS 80-120%

FORM II - IN

Low Level Continuing Calibration Verification(LLCCV) Report

Sample Name 1803 Data Path Name C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
 File Name 121114CCV1.d Comment ICPMS-2,TDM
 Acq Time 7/31/2023 11:40:27 AM Total Dilution 1.0000
 Sample Type LLCCV1 Sample Pass/Fail Fail
 ISTD Ref FileName 004CALB.d ISTD Pass/Fail Pass

Units : ppb

QC Analyte Table Recovery Limits: Initial 6020B DOD 80-120% / 70-130% 6020B and 200.8

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	Rec	QC Flag
Li	7	45	No Gas	6.176	1.1	88799.18	5	123.52	> +/- 20%
Be	9	72	No Gas	1.065	2.2	2436.21	1	106.5	
B	11	45	No Gas	11.696	3.7	20708.15	10	116.96	
Sr	88	72	No Gas	1.015	1.6	48071.46	1	101.5	
Zr	90	72	No Gas	1.067	2.7	31759.56	1	106.7	
Mo	95	115	No Gas	0.949	2.2	9241.94	1	94.9	
Ag	107	115	No Gas	1.023	1.2	22861.73	1	102.3	
Cd	111	115	No Gas	1.008	4.9	5100.96	1	100.8	
Sb	121	115	No Gas	2.052	0.7	47553.32	2	102.6	
Ba	137	115	No Gas	0.988	0.7	7777.81	1	98.8	
Tl	205	209	No Gas	0.931	1.1	43160.76	1	93.1	
Pb	208	209	No Gas	1.017	2.1	32697.56	1	101.7	
Na	23	45	He	100.706	0.4	67180.66	100	100.71	
Mg	24	45	He	102.363	1.4	20694.87	100	102.36	
Al	27	45	He	22.678	1.5	1461.41	20	113.39	
Si	29	45	He	1090.236	7.8	43801.22	200	545.12	> +/- 20%
K	39	45	He	128.738	1.8	68487.90	100	128.74	> +/- 20%
Ca	44	45	He	511.349	5.2	7103.46	500	102.27	
Ti	47	45	He	0.893	6.9	102.00	1	89.3	
V	51	72	He	0.986	5.5	4276.23	1	98.6	
Cr	52	72	He	1.037	4.1	6056.86	1	103.7	
Mn	55	72	He	4.941	0.6	10901.88	5	98.82	
Fe	57	72	He	97.174	2.2	8686.19	100	97.17	
Co	59	72	He	1.007	3.1	8035.60	1	100.7	
Ni	60	72	He	1.969	2.5	4966.45	2	98.45	
Cu	63	103	He	1.044	3.0	6587.11	1	104.4	
Zn	66	72	He	19.963	1.9	20316.46	20	99.82	
As	75	72	He	0.954	2.5	1146.05	1	95.4	
Se	78	72	He	1.079	5.0	145.73	1	107.9	
Sn	120	115	He	1.046	2.9	5994.67	1	104.6	

QC ISTD Table Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	4078092.96	4977840.24	81.92	
Ge	72	He	142400.58	168618.47	84.45	
In	115	He	1434265.12	1744348.13	82.22	
Lu	175	He	3256141.62	3966465.46	82.09	
Rh	103	He	3575697.91	4321957.05	82.73	
Sc	45	He	152765.55	185902.83	82.17	
Tb	159	He	4837877.64	5927064.91333333	81.62	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	725022.38	809671.036666667	89.55	
Bi	209	No Gas	6507419.07	7845001.13333333	82.95	
Ge	72	No Gas	1143412.35	1338255.08666667	85.44	
In	115	No Gas	7579244.24	9217317.19333333	82.23	
Lu	175	No Gas	9823918.60	11682743.99666667	84.09	
Rh	103	No Gas	7398241.09	8809191.87	83.98	
Sc	45	No Gas	4213346.78	4940195.36	85.29	
Tb	159	No Gas	9960401.94	11966615.6533333	83.23	

II
LINEAR DYNAMIC RANGE (LDR) STANDARD

Report No: 223072853 GCAL QC ID: 2500
Instrument ID: ICPMS2 Lab File ID: 2230731A_MS2.b\121115_QC1.d
Analyst: TDM Analytical Batch: 769901
Analysis Date: 07/31/23 Time: 1144 Analytical Method: EPA 6020B

ANALYTE	TRUE	FOUND	%RECOVERY	Q	UNITS
Arsenic	1000	1000	100		ug/L

CONTROL LIMITS 90-110%

Linear Dynamic Range Check (LDR) Report

Sample Name	LDR	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name	121115_QC1.d	Comment	ICPMS-2,TDM
Acq Time	7/31/2023 11:44:00 AM	Total Dilution	1.0000
Sample Type	QC1	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Recovery Limits: 90-110%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	Rec	QC Flag
Be	9	72	No Gas	1049.899	0.7	2237225.33	1000	104.99	
Sr	88	72	No Gas	951.113	0.2	42750814.36	1000	95.11	
Mo	95	115	No Gas	1026.916	0.4	8028381.07	1000	102.69	
Cd	111	115	No Gas	991.182	0.5	4472041.07	1000	99.12	
Sb	121	115	No Gas	1028.991	0.9	21180176.38	1000	102.9	
Ba	137	115	No Gas	999.825	1.2	7131324.99	1000	99.98	
Tl	205	209	No Gas	976.456	0.7	38682921.92	1000	97.65	
Pb	208	209	No Gas	980.107	0.7	28330087.91	1000	98.01	
Na	23	45	He	99760.455	1.3	41876157.71	100000	99.76	
Mg	24	45	He	99523.917	0.8	18046199.31	100000	99.52	
Al	27	45	He	19969.177	1.3	1157810.50	20000	99.85	
K	39	45	He	99777.912	1.6	24388999.63	100000	99.78	
Ca	44	45	He	497935.131	1.1	5407008.04	500000	99.59	
Ti	47	45	He	977.703	1.5	91869.90	1000	97.77	
V	51	72	He	992.178	1.4	3465727.92	1000	99.22	
Cr	52	72	He	970.396	1.4	4235048.30	1000	97.04	
Mn	55	72	He	4859.706	1.5	9754087.67	5000	97.19	
Fe	57	72	He	97523.388	1.5	8075295.92	100000	97.52	
Co	59	72	He	963.329	1.4	7187531.94	1000	96.33	
Ni	60	72	He	1902.900	1.5	3868862.48	2000	95.14	
Cu	63	103	He	997.951	1.6	5343667.15	1000	99.8	
Zn	66	72	He	19109.479	1.6	16587775.45	20000	95.55	
As	75	72	He	1004.940	1.3	996089.98	1000	100.49	
Sn	120	115	He	1025.371	2.1	4831045.23	1000	102.54	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3724765.68	4977840.24	74.83	
Ge	72	He	135123.04	168618.47	80.14	
In	115	He	1295373.65	1744348.13	74.26	
Lu	175	He	3158924.95	3966465.46	79.64	
Rh	103	He	3216374.87	4321957.05	74.42	
Sc	45	He	145803.81	185902.83	78.43	
Tb	159	He	4648193.68	5927064.91333333	78.42	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	666994.36	809671.036666667	82.38	
Bi	209	No Gas	5932191.16	7845001.13333333	75.62	
Ge	72	No Gas	1101914.33	1338255.08666667	82.34	
In	115	No Gas	6942347.09	9217317.19333333	75.32	
Lu	175	No Gas	9470371.31	11682743.99666667	81.06	
Rh	103	No Gas	6646642.38	8809191.87	75.45	
Sc	45	No Gas	4104853.86	4940195.36	83.09	
Tb	159	No Gas	9503712.15	11966615.6533333	79.42	

II
CONTINUING CALIBRATION VERIFICATION (CCV) STANDARD

Report No: 223072853 GCAL QC ID: 1800
Instrument ID: ICPMS2 Lab File ID: 2230731A_MS2.b\121152_CCV.d
Analyst: TDM Analytical Batch: 769901
Analysis Date: 07/31/23 Time: 1356 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>TRUE</i>	<i>FOUND</i>	<i>%RECOVERY</i>	<i>Q</i>	<i>UNITS</i>
Arsenic	10.0	10.8	108		ug/L

CONTROL LIMITS 90-110%

FORM II - IN

Continuing Calibration Verification (CCV) Report

Sample Name	1800	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name	121152_CCV.d	Comment	ICPMS-2,TDM
Acq Time	7/31/2023 1:56:43 PM	Total Dilution	1.0000
Sample Type	CCV	Sample Pass/Fail	Fail
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Recovery Limits: 90-110%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	Rec	QC Flag
Li	7	45	No Gas	55.765	0.6	430744.49	50	111.53	> +/- 10%
Be	9	72	No Gas	10.474	1.1	25063.23	10	104.74	
B	11	45	No Gas	65.128	0.9	109234.79	50	130.26	> +/- 10%
Sr	88	72	No Gas	10.281	0.6	517949.72	10	102.81	
Zr	90	72	No Gas	10.982	2.4	343915.33	10	109.82	
Mo	95	115	No Gas	10.489	1.0	95239.01	10	104.89	
Ag	107	115	No Gas	10.798	0.2	253078.39	10	107.98	
Cd	111	115	No Gas	10.532	1.0	54639.13	10	105.32	
Sb	121	115	No Gas	21.320	1.4	504783.59	20	106.6	
Ba	137	115	No Gas	10.445	0.7	85524.56	10	104.45	
Tl	205	209	No Gas	10.463	1.0	465387.18	10	104.63	
Pb	208	209	No Gas	10.455	1.4	337797.69	10	104.55	
Na	23	45	He	1193.484	1.1	544091.93	1000	119.35	> +/- 10%
Mg	24	45	He	1117.137	0.2	212126.10	1000	111.71	> +/- 10%
Al	27	45	He	216.408	1.2	13146.44	200	108.2	
Si	29	45	He	-4753.645	6.3	31885.84	2000	-237.68	> +/- 10%
K	39	45	He	1120.510	0.8	320089.31	1000	112.05	> +/- 10%
Ca	44	45	He	5242.000	1.5	60537.98	5000	104.84	
Ti	47	45	He	10.800	3.0	1070.38	10	108	
V	51	72	He	10.619	1.9	39187.34	10	106.19	
Cr	52	72	He	10.907	1.8	50736.79	10	109.07	
Mn	55	72	He	53.209	1.8	111454.60	50	106.42	
Fe	57	72	He	1080.467	0.5	93188.54	1000	108.05	
Co	59	72	He	10.958	1.4	85104.40	10	109.58	
Ni	60	72	He	21.746	0.4	46684.96	20	108.73	
Cu	63	103	He	11.214	1.9	66253.10	10	112.14	> +/- 10%
Zn	66	72	He	219.621	0.8	200151.09	200	109.81	
As	75	72	He	10.764	2.3	11236.66	10	107.64	
Se	78	72	He	10.767	1.0	742.24	10	107.67	
Sn	120	115	He	10.575	2.3	53247.82	10	105.75	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3954299.63	4977840.24	79.44	
Ge	72	He	140452.96	168618.47	83.3	
In	115	He	1370982.24	1744348.13	78.6	
Lu	175	He	3076374.23	3966465.46	77.56	
Rh	103	He	3529225.69	4321957.05	81.66	
Sc	45	He	151786.46	185902.83	81.65	
Tb	159	He	4689610.03	5927064.91333333	79.12	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	791247.47	809671.036666667	97.72	
Bi	209	No Gas	6621086.57	7845001.13333333	84.4	
Ge	72	No Gas	1233171.27	1338255.08666667	92.15	
In	115	No Gas	7961912.35	9217317.19333333	86.38	
Lu	175	No Gas	10290522.35	11682743.9966667	88.08	
Rh	103	No Gas	7786043.86	8809191.87	88.39	
Sc	45	No Gas	4625043.84	4940195.36	93.62	
Tb	159	No Gas	10643081.09	11966615.65333333	88.94	

II
CONTINUING CALIBRATION VERIFICATION (CCV) STANDARD

Report No:	<u>223072853</u>	GCAL QC ID:	<u>1800</u>
Instrument ID:	<u>ICPMS2</u>	Lab File ID:	<u>2230731A_MS2.b\121173_CCV.d</u>
Analyst:	<u>TDM</u>	Analytical Batch:	<u>769901</u>
Analysis Date:	<u>07/31/23</u>	Time:	<u>1657</u>
		Analytical Method:	<u>EPA 6020B</u>

<i>ANALYTE</i>	<i>TRUE</i>	<i>FOUND</i>	<i>%RECOVERY</i>	<i>Q</i>	<i>UNITS</i>
Arsenic	10.0	10.5	105		ug/L

CONTROL LIMITS 90-110%

FORM II - IN

Continuing Calibration Verification (CCV) Report

Sample Name	1800	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name	121173_CCV.d	Comment	ICPMS-2,TDM
Acq Time	7/31/2023 4:57:55 PM	Total Dilution	1.0000
Sample Type	CCV	Sample Pass/Fail	Fail
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table Recovery Limits: 90-110%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	Rec	QC Flag
Li	7	45	No Gas	47.190	0.7	396646.34	50	94.38	
Be	9	72	No Gas	9.812	0.9	24490.30	10	98.12	
B	11	45	No Gas	58.456	0.3	104640.30	50	116.91	> +/- 10%
Sr	88	72	No Gas	10.174	2.1	534584.67	10	101.74	
Zr	90	72	No Gas	10.096	1.7	329863.59	10	100.96	
Mo	95	115	No Gas	10.270	1.0	95991.65	10	102.7	
Ag	107	115	No Gas	10.585	0.9	255324.18	10	105.85	
Cd	111	115	No Gas	10.455	1.1	55824.81	10	104.55	
Sb	121	115	No Gas	20.720	1.1	504917.20	20	103.6	
Ba	137	115	No Gas	10.035	1.4	84575.65	10	100.35	
Tl	205	209	No Gas	10.184	1.6	441859.21	10	101.84	
Pb	208	209	No Gas	10.182	1.5	320875.53	10	101.82	
Na	23	45	He	1122.675	0.9	551668.30	1000	112.27	> +/- 10%
Mg	24	45	He	1074.655	1.0	219415.68	1000	107.47	
Al	27	45	He	215.508	1.2	14074.63	200	107.75	
Si	29	45	He	-3045.630	8.9	37923.30	2000	-152.28	> +/- 10%
K	39	45	He	1106.608	1.0	340322.46	1000	110.66	> +/- 10%
Ca	44	45	He	5204.836	0.3	64618.48	5000	104.1	
Ti	47	45	He	10.058	4.3	1072.04	10	100.58	
V	51	72	He	10.301	1.2	40168.86	10	103.01	
Cr	52	72	He	10.730	1.4	52744.89	10	107.3	
Mn	55	72	He	52.750	1.6	116714.80	50	105.5	
Fe	57	72	He	1056.297	1.2	96237.87	1000	105.63	
Co	59	72	He	10.712	1.4	87879.45	10	107.12	
Ni	60	72	He	20.961	1.2	47563.44	20	104.8	
Cu	63	103	He	10.966	0.9	67872.71	10	109.66	
Zn	66	72	He	217.517	0.4	209402.62	200	108.76	
As	75	72	He	10.510	2.2	11593.62	10	105.1	
Se	78	72	He	10.420	0.8	761.34	10	104.2	
Sn	120	115	He	10.367	1.5	54305.06	10	103.67	

QC ISTD Table Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3817128.17	4977840.24	76.68	
Ge	72	He	148361.23	168618.47	87.99	
In	115	He	1425996.18	1744348.13	81.75	
Lu	175	He	3027050.89	3966465.46	76.32	
Rh	103	He	3697690.55	4321957.05	85.56	
Sc	45	He	163186.21	185902.83	87.78	
Tb	159	He	4696661.28	5927064.91333333	79.24	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	760589.14	809671.036666667	93.94	
Bi	209	No Gas	6457955.32	7845001.13333333	82.32	
Ge	72	No Gas	1286057.38	1338255.086666667	96.1	
In	115	No Gas	8194455.81	9217317.19333333	88.9	
Lu	175	No Gas	10159050.26	11682743.99666667	86.96	
Rh	103	No Gas	8126528.57	8809191.87	92.25	
Sc	45	No Gas	4916788.69	4940195.36	99.53	
Tb	159	No Gas	10606914.42	11966615.65333333	88.64	

II
INITIAL CALIBRATION VERIFICATION (ICV) STANDARD

Report No: 223072853 GCAL QC ID: 1600
Instrument ID: ICPMS2 Lab File ID: 2230801A_MS2.b\010_ICV.d
Analyst: LWZ Analytical Batch: 769939
Analysis Date: 08/01/23 Time: 1009 Analytical Method: EPA 6020B

ANALYTE	TRUE	FOUND	%RECOVERY	Q	UNITS
Arsenic	50.0	48.0	96		ug/L

CONTROL LIMITS 90-110%

FORM II - IN

Initial Calibration Verification (ICV) Report

Sample Name 1600 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name 010_ICV.d **Comment** ICPMS-2,TDM
Acq Time 8/1/2023 10:09:18 AM **Total Dilution** 1.0000
Sample Type ICV **Sample Pass/Fail** Fail
ISTD Ref FileName 004CALB.d **ISTD Pass/Fail** Pass
Units : ppb

QC Analyte Table

Recovery Limits: 90-110%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	Rec	QC Flag
Li	7	6	No Gas	249.365	0.9	1912928.93	250	99.75	
Be	9	6	No Gas	50.678	0.4	128779.50	50	101.36	
B	11	45	No Gas	252.752	1.9	479747.01	250	101.1	
Sr	88	72	No Gas	49.067	0.9	2608911.37	50	98.13	
Zr	90	72	No Gas	45.629	0.4	1511566.37	50	91.26	
Mo	95	115	No Gas	48.146	1.2	467421.08	50	96.29	
Ag	107	115	No Gas	51.365	1.1	1275443.11	50	102.73	
Cd	111	115	No Gas	48.824	1.2	268806.57	50	97.65	
Sb	121	115	No Gas	50.907	0.8	1283459.98	50	101.81	
Ba	137	115	No Gas	49.305	1.1	407894.82	50	98.61	
Tl	205	209	No Gas	48.239	0.9	2041656.95	50	96.48	
Pb	208	209	No Gas	47.597	0.9	1453560.34	50	95.19	
Na	23	45	He	5005.846	1.2	3204493.08	5000	100.12	
Mg	24	45	He	4923.219	0.9	1318983.99	5000	98.46	
Al	27	45	He	987.414	0.7	85641.33	1000	98.74	
Si	29	45	He	-13651.094	4.3	167603.72	5000	-273.02	> +/- 10%
K	39	45	He	4989.750	1.4	1829686.64	5000	99.8	
Ca	44	45	He	24879.537	1.8	357916.37	25000	99.52	
Ti	47	45	He	49.070	1.6	6013.56	50	98.14	
V	51	72	He	48.485	1.3	212220.53	50	96.97	
Cr	52	72	He	49.062	0.6	271749.93	50	98.12	
Mn	55	72	He	48.344	0.6	121646.26	50	96.69	
Fe	57	72	He	4803.764	0.9	492414.19	5000	96.08	
Co	59	72	He	49.585	1.5	445548.66	50	99.17	
Ni	60	72	He	97.953	1.5	238891.60	100	97.95	
Cu	63	45	He	52.110	1.4	346231.56	50	104.22	
Zn	66	72	He	991.724	1.7	1044632.98	1000	99.17	
As	75	72	He	48.011	1.0	57747.09	50	96.02	
Se	78	72	He	23.724	2.4	1807.84	25	94.9	
Sn	120	115	He	49.186	2.3	252736.74	50	98.37	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3781231.40	3919315.67	96.48	
Ge	72	He	158288.79	162135.166666667	97.63	
In	115	He	1408139.06	1476978.55	95.34	
Lu	175	He	3056111.20	3117120.78666667	98.04	
Rh	103	He	3600285.97	3761118.46	95.72	
Sc	45	He	192500.74	200611.303333333	95.96	
Tb	159	He	4634737.95	4722340.55666667	98.14	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	910359.61	887109.66	102.62	
Bi	209	No Gas	6280894.70	6378925.74	98.46	
Ge	72	No Gas	1334527.13	1353105.29	98.63	
In	115	No Gas	8308521.84	8577775.67	96.86	
Lu	175	No Gas	9909377.77	10093915.0566667	98.17	
Rh	103	No Gas	8084491.62	8537311.88333333	94.7	
Sc	45	No Gas	5145933.41	5264112.29	97.76	
Tb	159	No Gas	10487556.51	10724634.4233333	97.79	

II
 LOW LEVEL CONTINUING CALIBRATION VERIFICATION (LLCCV) STANDARD

Report No: <u>223072853</u>	GCAL QC ID: <u>1803</u>
Instrument ID: <u>ICPMS2</u>	Lab File ID: <u>2230801A_MS2.b\1211CCV1.d</u>
Analyst: <u>LWZ</u>	Analytical Batch: <u>769939</u>
Analysis Date: <u>08/01/23</u> Time: <u>1032</u>	Analytical Method: <u>EPA 6020B</u>

<i>ANALYTE</i>	<i>TRUE</i>	<i>FOUND</i>	<i>%RECOVERY</i>	<i>Q</i>	<i>UNITS</i>
Arsenic	1.00	0.960	96		ug/L

CONTROL LIMITS 80-120%

Low Level Continuing Calibration Verification(LLCCV) Report

Sample Name	1803	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1211CCV1.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 10:32:15 AM	Total Dilution	1.0000
Sample Type	LLCCV1	Sample Pass/Fail	Fail
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table **Recovery Limits: Initial 6020B DOD 80-120% / 70-130% 6020B and 200.8**

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	Rec	QC Flag
Li	7	6	No Gas	5.446	1.4	101009.34	5	108.92	
Be	9	6	No Gas	0.999	2.6	2536.22	1	99.9	
B	11	45	No Gas	10.791	2.1	24994.62	10	107.91	
Sr	88	72	No Gas	1.003	3.7	55444.51	1	100.3	
Zr	90	72	No Gas	0.946	1.1	33014.56	1	94.6	
Mo	95	115	No Gas	0.973	1.0	10283.76	1	97.3	
Ag	107	115	No Gas	1.004	0.4	26214.23	1	100.4	
Cd	111	115	No Gas	1.020	3.7	6020.22	1	102	
Sb	121	115	No Gas	1.984	0.8	53851.16	2	99.2	
Ba	137	115	No Gas	0.990	2.2	8678.35	1	99	
Tl	205	209	No Gas	0.979	1.5	43769.32	1	97.9	
Pb	208	209	No Gas	0.973	1.1	31267.69	1	97.3	
Na	23	45	He	99.670	1.5	89548.55	100	99.67	
Mg	24	45	He	101.448	2.4	29940.48	100	101.45	
Al	27	45	He	20.660	2.5	2142.17	20	103.3	
Si	29	45	He	-40382.785	6.1	169443.75	200	-20191.39	> +/- 20%
K	39	45	He	97.868	1.5	98317.00	100	97.87	
Ca	44	45	He	534.170	3.5	10233.68	500	106.83	
Ti	47	45	He	1.096	10.4	161.67	1	109.6	
V	51	72	He	1.017	1.5	5675.59	1	101.7	
Cr	52	72	He	1.024	2.8	8468.06	1	102.4	
Mn	55	72	He	5.155	3.7	13668.66	5	103.1	
Fe	57	72	He	98.809	2.9	10774.34	100	98.81	
Co	59	72	He	1.065	3.3	10000.14	1	106.5	
Ni	60	72	He	2.093	1.9	5595.58	2	104.65	
Cu	63	45	He	1.032	3.8	7769.90	1	103.2	
Zn	66	72	He	21.181	3.2	23734.94	20	105.9	
As	75	72	He	0.961	2.9	1294.06	1	96.1	
Se	78	72	He	1.066	4.2	179.89	1	106.6	
Sn	120	115	He	1.001	7.2	5736.78	1	100.1	

QC ISTD Table **Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8**

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3965137.55	3919315.67	101.17	
Ge	72	He	163278.66	162135.166666667	100.71	
In	115	He	1475092.31	1476978.55	99.87	
Lu	175	He	3127872.25	3117120.78666667	100.34	
Rh	103	He	3790526.10	3761118.46	100.78	
Sc	45	He	202828.83	200611.303333333	101.11	
Tb	159	He	4748215.97	4722340.55666667	100.55	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	888155.91	887109.66	100.12	
Bi	209	No Gas	6535038.23	6378925.74	102.45	
Ge	72	No Gas	1367606.23	1353105.29	101.07	
In	115	No Gas	8729709.14	8577775.67	101.77	
Lu	175	No Gas	10252671.51	10093915.0566667	101.57	
Rh	103	No Gas	8687287.99	8537311.88333333	101.76	
Sc	45	No Gas	5340960.48	5264112.29	101.46	
Tb	159	No Gas	10847824.84	10724634.4233333	101.15	

II
LINEAR DYNAMIC RANGE (LDR) STANDARD

Report No: 223072853 GCAL QC ID: 2500
Instrument ID: ICPMS2 Lab File ID: 2230801A_MS2.b\1215_QC1.d
Analyst: LWZ Analytical Batch: 769939
Analysis Date: 08/01/23 Time: 1046 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>TRUE</i>	<i>FOUND</i>	<i>%RECOVERY</i>	<i>Q</i>	<i>UNITS</i>
Arsenic	1000	965	96		ug/L

CONTROL LIMITS 90-110%

FORM II - IN

Linear Dynamic Range Check (LDR) Report

Sample Name	LDR	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1215_QC1.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 10:46:30 AM	Total Dilution	1.0000
Sample Type	QC1	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Recovery Limits: 90-110%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	Rec	QC Flag
Be	9	6	No Gas	1065.843	0.7	2415683.08	1000	106.58	
Sr	88	72	No Gas	950.209	0.3	48324765.95	1000	95.02	
Mo	95	115	No Gas	990.442	0.4	9025079.36	1000	99.04	
Cd	111	115	No Gas	964.576	0.9	4986077.72	1000	96.46	
Sb	121	115	No Gas	971.756	0.3	22990966.86	1000	97.18	
Ba	137	115	No Gas	995.683	0.7	7735801.36	1000	99.57	
Tl	205	209	No Gas	960.847	0.7	38258596.10	1000	96.08	
Pb	208	209	No Gas	970.638	0.3	27888429.59	1000	97.06	
Na	23	45	He	94099.828	1.2	59429082.45	100000	94.1	
Mg	24	45	He	94846.361	0.9	25206032.12	100000	94.85	
Al	27	45	He	19170.671	1.0	1646386.83	20000	95.85	
K	39	45	He	95091.427	1.5	33568894.50	100000	95.09	
Ca	44	45	He	488076.194	1.9	6932805.11	500000	97.62	
Ti	47	45	He	964.559	1.5	117035.28	1000	96.46	
V	51	72	He	994.677	1.5	4217858.45	1000	99.47	
Cr	52	72	He	971.368	1.5	5190951.46	1000	97.14	
Mn	55	72	He	4835.427	1.2	11816063.70	5000	96.71	
Fe	57	72	He	95164.852	1.2	9490615.90	100000	95.16	
Co	59	72	He	958.651	1.1	8382788.00	1000	95.87	
Ni	60	72	He	1879.578	1.2	4456424.41	2000	93.98	
Cu	63	45	He	922.171	1.2	6074520.59	1000	92.22	
Zn	66	72	He	18542.501	1.5	19000646.47	20000	92.71	
As	75	72	He	964.604	1.6	1127662.54	1000	96.46	
Sn	120	115	He	1000.816	2.1	4902827.44	1000	100.08	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3647962.03	3919315.67	93.08	
Ge	72	He	154080.06	162135.166666667	95.03	
In	115	He	1344490.52	1476978.55	91.03	
Lu	175	He	3084931.41	3117120.786666667	98.97	
Rh	103	He	3401642.99	3761118.46	90.44	
Sc	45	He	191117.26	200611.303333333	95.27	
Tb	159	He	4601903.58	4722340.556666667	97.45	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	812324.05	887109.66	91.57	
Bi	209	No Gas	5910338.87	6378925.74	92.65	
Ge	72	No Gas	1276803.04	1353105.29	94.36	
In	115	No Gas	7804041.03	8577775.67	90.98	
Lu	175	No Gas	9813239.02	10093915.056666667	97.22	
Rh	103	No Gas	7548029.98	8537311.883333333	88.41	
Sc	45	No Gas	4976671.47	5264112.29	94.54	
Tb	159	No Gas	10230137.55	10724634.423333333	95.39	

II
CONTINUING CALIBRATION VERIFICATION (CCV) STANDARD

Report No: 223072853 GCAL QC ID: 1800
Instrument ID: ICPMS2 Lab File ID: 2230801A_MS2.b\1226_CCV.d
Analyst: LWZ Analytical Batch: 769939
Analysis Date: 08/01/23 Time: 1128 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>TRUE</i>	<i>FOUND</i>	<i>%RECOVERY</i>	<i>Q</i>	<i>UNITS</i>
Arsenic	10.0	10.3	103		ug/L

CONTROL LIMITS 90-110%

FORM II - IN

Continuing Calibration Verification (CCV) Report

Sample Name 1800 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name 1226_CCV.d **Comment** ICPMS-2,TDM
Acq Time 8/1/2023 11:28:07 AM **Total Dilution** 1.0000
Sample Type CCV **Sample Pass/Fail** Fail
ISTD Ref FileName 004CALB.d **ISTD Pass/Fail** Pass

Units : ppb

QC Analyte Table

Recovery Limits: 90-110%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	Rec	QC Flag
Li	7	6	No Gas	54.816	0.9	455298.35	50	109.63	
Be	9	6	No Gas	10.887	0.9	26860.95	10	108.87	
B	11	45	No Gas	56.602	0.2	109882.86	50	113.2	> +/- 10%
Sr	88	72	No Gas	10.404	0.5	551117.62	10	104.04	
Zr	90	72	No Gas	10.033	1.6	331485.75	10	100.33	
Mo	95	115	No Gas	10.100	1.7	99093.79	10	101	
Ag	107	115	No Gas	10.329	1.1	258493.74	10	103.29	
Cd	111	115	No Gas	10.186	0.6	56610.09	10	101.86	
Sb	121	115	No Gas	20.270	0.7	515794.72	20	101.35	
Ba	137	115	No Gas	10.269	0.4	85672.34	10	102.69	
Tl	205	209	No Gas	10.160	1.4	431732.70	10	101.6	
Pb	208	209	No Gas	10.246	0.4	314034.40	10	102.46	
Na	23	45	He	1061.460	0.8	705525.80	1000	106.15	
Mg	24	45	He	1049.076	0.9	285708.86	1000	104.91	
Al	27	45	He	213.940	0.3	18990.67	200	106.97	
Si	29	45	He	-155817.899	8.9	132925.11	2000	-7790.89	> +/- 10%
K	39	45	He	1065.323	1.3	442374.46	1000	106.53	
Ca	44	45	He	5312.751	1.1	79065.94	5000	106.26	
Ti	47	45	He	10.535	1.3	1323.73	10	105.35	
V	51	72	He	10.290	0.8	46264.38	10	102.9	
Cr	52	72	He	10.597	1.5	61238.38	10	105.97	
Mn	55	72	He	52.608	1.1	133453.89	50	105.22	
Fe	57	72	He	1042.272	3.6	108012.50	1000	104.23	
Co	59	72	He	10.640	1.3	96491.77	10	106.4	
Ni	60	72	He	20.864	1.1	51562.30	20	104.32	
Cu	63	45	He	10.732	0.8	72650.82	10	107.32	
Zn	66	72	He	210.473	1.8	224103.87	200	105.24	
As	75	72	He	10.328	2.9	12608.12	10	103.28	
Se	78	72	He	10.406	2.4	854.66	10	104.06	
Sn	120	115	He	10.360	2.7	54081.01	10	103.6	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3832189.63	3919315.67	97.78	
Ge	72	He	159599.95	162135.166666667	98.44	
In	115	He	1423404.56	1476978.55	96.37	
Lu	175	He	3023407.04	3117120.786666667	96.99	
Rh	103	He	3651837.08	3761118.46	97.09	
Sc	45	He	195013.98	200611.303333333	97.21	
Tb	159	He	4585710.45	4722340.556666667	97.11	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	882359.20	887109.66	99.46	
Bi	209	No Gas	6298175.95	6378925.74	98.73	
Ge	72	No Gas	1328055.60	1353105.29	98.15	
In	115	No Gas	8373186.13	8577775.67	97.61	
Lu	175	No Gas	9873771.31	10093915.05666667	97.82	
Rh	103	No Gas	8282039.95	8537311.88333333	97.01	
Sc	45	No Gas	5124374.38	5264112.29	97.35	
Tb	159	No Gas	10409764.01	10724634.4233333	97.06	

II
CONTINUING CALIBRATION VERIFICATION (CCV) STANDARD

Report No:	<u>223072853</u>	GCAL QC ID:	<u>1800</u>
Instrument ID:	<u>ICPMS2</u>	Lab File ID:	<u>2230801A_MS2.b\1240_CCV.d</u>
Analyst:	<u>LWZ</u>	Analytical Batch:	<u>769939</u>
Analysis Date:	<u>08/01/23</u>	Time:	<u>1218</u>
		Analytical Method:	<u>EPA 6020B</u>

<i>ANALYTE</i>	<i>TRUE</i>	<i>FOUND</i>	<i>%RECOVERY</i>	<i>Q</i>	<i>UNITS</i>
Arsenic	10.0	10.0	100		ug/L

CONTROL LIMITS 90-110%

FORM II - IN

Continuing Calibration Verification (CCV) Report

Sample Name 1800 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name 1240_CCV.d **Comment** ICPMS-2,TDM
Acq Time 8/1/2023 12:18:04 PM **Total Dilution** 1.0000
Sample Type CCV **Sample Pass/Fail** Fail
ISTD Ref FileName 004CALB.d **ISTD Pass/Fail** Pass

Units : ppb

QC Analyte Table

Recovery Limits: 90-110%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	Rec	QC Flag
Li	7	6	No Gas	53.772	1.0	451964.22	50	107.54	
Be	9	6	No Gas	10.681	0.6	26599.14	10	106.81	
B	11	45	No Gas	55.853	0.2	110840.68	50	111.71	> +/- 10%
Sr	88	72	No Gas	10.156	0.4	548568.96	10	101.56	
Zr	90	72	No Gas	9.814	1.5	330643.42	10	98.14	
Mo	95	115	No Gas	9.555	1.8	97663.05	10	95.55	
Ag	107	115	No Gas	9.920	1.3	258554.77	10	99.2	
Cd	111	115	No Gas	9.750	0.6	56438.30	10	97.5	
Sb	121	115	No Gas	19.509	0.4	517084.16	20	97.54	
Ba	137	115	No Gas	9.781	0.3	84989.10	10	97.81	
Tl	205	209	No Gas	9.956	0.4	436349.15	10	99.56	
Pb	208	209	No Gas	9.988	0.8	315763.58	10	99.88	
Na	23	45	He	1042.666	1.5	701604.00	1000	104.27	
Mg	24	45	He	1026.643	0.1	282868.99	1000	102.66	
Al	27	45	He	204.756	1.4	18400.58	200	102.38	
Si	29	45	He	-248764.230	9.0	110225.65	2000	-12438.21	> +/- 10%
K	39	45	He	1030.161	1.1	434728.98	1000	103.02	
Ca	44	45	He	5046.794	1.4	76090.58	5000	100.94	
Ti	47	45	He	10.106	4.1	1285.73	10	101.06	
V	51	72	He	10.027	1.6	45757.19	10	100.27	
Cr	52	72	He	10.247	2.4	60161.68	10	102.47	
Mn	55	72	He	51.152	1.5	131643.40	50	102.3	
Fe	57	72	He	1017.141	1.0	106891.19	1000	101.71	
Co	59	72	He	10.287	1.6	94647.53	10	102.87	
Ni	60	72	He	20.549	1.8	51519.91	20	102.74	
Cu	63	45	He	10.589	2.3	72537.20	10	105.89	
Zn	66	72	He	207.281	0.8	223863.64	200	103.64	
As	75	72	He	9.995	2.2	12378.92	10	99.95	
Se	78	72	He	9.868	4.6	827.58	10	98.68	
Sn	120	115	He	10.040	1.6	53206.52	10	100.4	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3916444.84	3919315.67	99.93	
Ge	72	He	161884.13	162135.166666667	99.85	
In	115	He	1444901.39	1476978.55	97.83	
Lu	175	He	3082667.04	3117120.786666667	98.89	
Rh	103	He	3741833.46	3761118.46	99.49	
Sc	45	He	197266.12	200611.303333333	98.33	
Tb	159	He	4689066.59	4722340.556666667	99.3	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	890552.77	887109.66	100.39	
Bi	209	No Gas	6495987.61	6378925.74	101.84	
Ge	72	No Gas	1354181.47	1353105.29	100.08	
In	115	No Gas	8720644.35	8577775.67	101.67	
Lu	175	No Gas	10241908.39	10093915.0566667	101.47	
Rh	103	No Gas	8579403.82	8537311.88333333	100.49	
Sc	45	No Gas	5235821.60	5264112.29	99.46	
Tb	159	No Gas	10776170.67	10724634.4233333	100.48	

Metals

Form III

Blanks

III
INITIAL CALIBRATION BLANK

Report No: 223072853 Blank ID: 1700
Instrument ID: ICPMS2 Lab File ID: 2230731A_MS2.b\011_ICB.d
Analyst: TDM Analytical Batch: 769901
Analysis Date: 07/31/23 Time: 1105 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	0.50	ug/L	U	0.25	0.50	1.00

FORM III - IN

Initial Calibration Blank (ICB) Report

Sample Name 1700 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name 011_ICB.d **Comment** ICPMS-2,TDM
Acq Time 7/31/2023 11:05:05 AM **Total Dilution** 1.0000
Sample Type ICB **Sample Pass/Fail** Pass
ISTD Ref FileName 004CALB.d **ISTD Pass/Fail** Pass
Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	Conc	RSD	CPS	Limit	QC Flag
Li	7	45	No Gas	0.011	0.6	58463.32	2.5	
Be	9	72	No Gas	0.012	18.3	122.00	0.5	
B	11	45	No Gas	4.164	2.7	10987.62	5	
Sr	88	72	No Gas	0.002	21.5	936.73	0.5	
Zr	90	72	No Gas	0.014	11.6	1433.42	0.5	
Mo	95	115	No Gas	0.033	5.6	1664.56	0.5	
Ag	107	115	No Gas	0.003	1.4	142.23	0.5	
Cd	111	115	No Gas	-0.002	14.2	151.11	0.5	
Sb	121	115	No Gas	0.087	3.2	3982.83	1	
Ba	137	115	No Gas	0.002	11.1	121.11	0.5	
Tl	205	209	No Gas	-0.029	8.5	1730.17	0.5	
Pb	208	209	No Gas	0.003	11.8	643.38	0.5	
Na	23	45	He	-7.631	0.6	21125.39	50	
Mg	24	45	He	-2.618	14.4	813.39	50	
Al	27	45	He	0.128	14.3	99.33	10	
Si	29	45	He	-407.328	5.4	44086.51	100	
K	39	45	He	9.434	2.7	41010.59	50	
Ca	44	45	He	-22.945	6.9	1113.40	250	
Ti	47	45	He	0.043	7.8	19.67	0.5	
V	51	72	He	0.012	4.2	756.70	0.5	
Cr	52	72	He	0.000	6.7	1412.30	0.5	
Mn	55	72	He	-0.003	16.1	488.90	2.5	
Fe	57	72	He	0.914	18.0	316.68	50	
Co	59	72	He	-0.004	3.8	102.22	0.5	
Ni	60	72	He	-0.059	3.7	685.58	1	
Cu	63	103	He	0.022	11.9	563.35	0.5	
Zn	66	72	He	-1.311	20.7	944.49	10	
As	75	72	He	-0.051	22.1	105.33	0.5	
Se	78	72	He	-0.053	9.2	82.17	0.5	
Sn	120	115	He	0.038	9.9	827.81	0.5	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	4682403.58	4977840.24	94.06	
Ge	72	He	156205.33	168618.47	92.64	
In	115	He	1604933.75	1744348.13	92.01	
Lu	175	He	3701554.63	3966465.46	93.32	
Rh	103	He	4007013.59	4321957.05	92.71	
Sc	45	He	164903.38	185902.83	88.7	
Tb	159	He	5557202.00	5927064.91333333	93.76	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	794852.65	809671.036666667	98.17	
Bi	209	No Gas	7802701.97	7845001.13333333	99.46	
Ge	72	No Gas	1305056.58	1338255.08666667	97.52	
In	115	No Gas	8862785.55	9217317.19333333	96.15	
Lu	175	No Gas	11424191.08	11682743.99666667	97.79	
Rh	103	No Gas	8542414.10	8809191.87	96.97	
Sc	45	No Gas	4824641.89	4940195.36	97.66	
Tb	159	No Gas	11595889.83	11966615.65333333	96.9	

III
CONTINUING CALIBRATION BLANK

Report No: 223072853 Blank ID: 1900
Instrument ID: ICPMS2 Lab File ID: 2230731A_MS2.b\121153_CCB.d
Analyst: TDM Analytical Batch: 769901
Analysis Date: 07/31/23 Time: 1400 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	0.50	ug/L	U	0.25	0.50	1.00

FORM III - IN

Continuing Calibration Blank (CCB) Report

Sample Name	1900	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name	121153_CCB.d	Comment	ICPMS-2,TDM
Acq Time	7/31/2023 2:00:15 PM	Total Dilution	1.0000
Sample Type	CCB	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	Conc	RSD	CPS	Limit	QC Flag
Li	7	45	No Gas	0.323	0.7	60930.55	2.5	
Be	9	72	No Gas	0.003	29.3	99.33	0.5	
B	11	45	No Gas	3.440	2.2	9810.14	5	
Sr	88	72	No Gas	0.002	5.4	926.73	0.5	
Zr	90	72	No Gas	0.006	6.3	1138.95	0.5	
Mo	95	115	No Gas	-0.064	8.0	666.69	0.5	
Ag	107	115	No Gas	0.002	11.2	91.11	0.5	
Cd	111	115	No Gas	-0.004	7.9	128.89	0.5	
Sb	121	115	No Gas	0.085	2.1	3753.87	1	
Ba	137	115	No Gas	-0.004	37.1	61.11	0.5	
Tl	205	209	No Gas	-0.049	5.5	633.37	0.5	
Pb	208	209	No Gas	0.002	21.2	563.37	0.5	
Na	23	45	He	30.115	0.8	38005.42	50	
Mg	24	45	He	-3.351	27.5	643.38	50	
Al	27	45	He	5.618	77.4	439.38	10	
Si	29	45	He	-7281.678	8.0	28431.00	100	
K	39	45	He	24.034	1.7	43835.46	50	
Ca	44	45	He	-17.229	6.2	1151.73	250	
Ti	47	45	He	0.317	51.2	47.00	0.5	
V	51	72	He	0.062	10.4	908.93	0.5	
Cr	52	72	He	0.054	1.8	1596.78	0.5	
Mn	55	72	He	-0.070	11.0	316.68	2.5	
Fe	57	72	He	1.279	51.7	330.04	50	
Co	59	72	He	-0.004	9.1	96.67	0.5	
Ni	60	72	He	-0.258	10.3	205.56	1	
Cu	63	103	He	0.011	4.4	463.35	0.5	
Zn	66	72	He	-1.731	20.9	494.46	10	
As	75	72	He	-0.065	4.1	85.00	0.5	
Se	78	72	He	-0.008	5.1	80.75	0.5	
Sn	120	115	He	-0.034	20.3	365.57	0.5	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	4100705.35	4977840.24	82.38	
Ge	72	He	147974.51	168618.47	87.76	
In	115	He	1453322.55	1744348.13	83.32	
Lu	175	He	3225005.78	3966465.46	81.31	
Rh	103	He	3785832.49	4321957.05	87.6	
Sc	45	He	160703.93	185902.83	86.45	
Tb	159	He	4918446.70	5927064.91333333	82.98	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	816164.45	809671.036666667	100.8	
Bi	209	No Gas	6954980.10	7845001.13333333	88.65	
Ge	72	No Gas	1279053.00	1338255.08666667	95.58	
In	115	No Gas	8485980.74	9217317.19333333	92.07	
Lu	175	No Gas	10717201.92	11682743.99666667	91.74	
Rh	103	No Gas	8378390.50	8809191.87	95.11	
Sc	45	No Gas	4846716.75	4940195.36	98.11	
Tb	159	No Gas	11110375.67	11966615.65333333	92.84	



III
METHOD BLANK

Report No: 223072853 Blank ID: MB2505293
Instrument ID: ICPMS2 Lab File ID: 2230731A_MS2.b\121155SMPL.d
Analyst: TDM Analytical Batch: 769901
Analysis Date: 07/31/23 Time: 1553 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	20.0	ug/kg	U	10.0	20.0	40.0

FORM III - IN

Method Blank (MB) Report

Sample Name 2505293 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name 121155SMPL.d **Comment** ICPMS-2,TDM
Acq Time 7/31/2023 3:53:56 PM **Total Dilution** 40.0000
Sample Type MBSOIL **Sample Pass/Fail** Fail
ISTD Ref FileName 004CALB.d **ISTD Pass/Fail** Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	Conc	RSD	CPS	Limit	QC Flag
Li	7	45	No Gas	-13.326	3.0	53879.58	2.5	
Be	9	72	No Gas	-0.302	12.5	66.67	0.5	
B	11	45	No Gas	37.001	3.8	5304.42	5	
Sr	88	72	No Gas	6.368	1.3	8429.49	0.5	
Zr	90	72	No Gas	2.556	7.7	2791.42	0.5	
Mo	95	115	No Gas	-3.170	8.0	461.13	0.5	
Ag	107	115	No Gas	0.318	1.8	217.78	0.5	
Cd	111	115	No Gas	-0.188	8.6	112.23	0.5	
Sb	121	115	No Gas	-0.662	8.2	1054.50	1	
Ba	137	115	No Gas	8.993	6.7	1809.03	0.5	
Tl	205	209	No Gas	-1.596	15.8	893.39	0.5	
Pb	208	209	No Gas	0.892	11.2	1066.74	0.5	
Na	23	45	He	11642.911	35.7	164905.63	50	> 1/2 LOQ
Mg	24	45	He	1909.556	52.5	11363.42	50	
Al	27	45	He	537.589	23.1	987.38	10	> 1/2 LOQ
Si	29	45	He	-200086.475	15.9	34387.33	100	
K	39	45	He	1773.504	6.0	51253.25	50	
Ca	44	45	He	7086.225	16.5	3618.87	250	
Ti	47	45	He	8.160	37.6	37.33	0.5	
V	51	72	He	4.157	32.5	1063.40	0.5	
Cr	52	72	He	7.846	9.7	2255.76	0.5	
Mn	55	72	He	99.281	11.4	5869.06	2.5	
Fe	57	72	He	777.353	31.9	1963.60	50	
Co	59	72	He	6.633	47.4	1471.27	0.5	
Ni	60	72	He	2.009	31.2	885.60	1	
Cu	63	103	He	11.408	31.5	2103.55	0.5	
Zn	66	72	He	269.861	10.8	8470.35	10	
As	75	72	He	3.883	31.7	258.67	0.5	
Se	78	72	He	9.767	5.5	96.16	0.5	
Sn	120	115	He	8.926	17.1	1682.36	0.5	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3851428.38	4977840.24	77.37	
Ge	72	He	146439.17	168618.47	86.85	
In	115	He	1413376.49	1744348.13	81.03	
Lu	175	He	3105968.81	3966465.46	78.31	
Rh	103	He	3611555.41	4321957.05	83.56	
Sc	45	He	166837.71	185902.83	89.74	
Tb	159	He	4687550.24	5927064.91333333	79.09	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	747929.05	809671.036666667	92.37	
Bi	209	No Gas	5960208.87	7845001.13333333	75.97	
Ge	72	No Gas	1180021.83	1338255.08666667	88.18	
In	115	No Gas	7467859.16	9217317.19333333	81.02	
Lu	175	No Gas	9197439.45	11682743.99666667	78.73	
Rh	103	No Gas	7445744.70	8809191.87	84.52	
Sc	45	No Gas	4637502.87	4940195.36	93.87	
Tb	159	No Gas	9720915.69	11966615.6533333	81.23	

III
CONTINUING CALIBRATION BLANK

Report No: 223072853 Blank ID: 1900
Instrument ID: ICPMS2 Lab File ID: 2230731A_MS2.b\121172_CCB.d
Analyst: TDM Analytical Batch: 769901
Analysis Date: 07/31/23 Time: 1654 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	0.50	ug/L	U	0.25	0.50	1.00

FORM III - IN

Continuing Calibration Blank (CCB) Report

Sample Name	1900	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name	121172_CCB.d	Comment	ICPMS-2,TDM
Acq Time	7/31/2023 4:54:22 PM	Total Dilution	1.0000
Sample Type	CCB	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	Conc	RSD	CPS	Limit	QC Flag
Li	7	45	No Gas	-0.951	0.4	52243.81	2.5	
Be	9	72	No Gas	-0.011	14.3	64.00	0.5	
B	11	45	No Gas	1.100	9.8	5874.66	5	
Sr	88	72	No Gas	0.001	6.3	873.39	0.5	
Zr	90	72	No Gas	0.001	4.4	990.05	0.5	
Mo	95	115	No Gas	-0.086	7.7	435.57	0.5	
Ag	107	115	No Gas	0.001	8.3	61.11	0.5	
Cd	111	115	No Gas	-0.008	13.1	105.56	0.5	
Sb	121	115	No Gas	0.048	6.4	2696.95	1	
Ba	137	115	No Gas	-0.003	12.8	65.56	0.5	
Tl	205	209	No Gas	-0.053	5.0	416.69	0.5	
Pb	208	209	No Gas	0.002	23.4	506.69	0.5	
Na	23	45	He	3.827	1.5	26420.37	50	
Mg	24	45	He	-3.839	8.9	560.03	50	
Al	27	45	He	0.330	3.1	112.00	10	
Si	29	45	He	-3996.899	11.3	36056.17	100	
K	39	45	He	30.380	2.1	46543.27	50	
Ca	44	45	He	-1.030	11.7	1373.42	250	
Ti	47	45	He	-0.045	43.6	10.33	0.5	
V	51	72	He	-0.013	13.4	623.35	0.5	
Cr	52	72	He	0.086	2.7	1754.57	0.5	
Mn	55	72	He	-0.122	2.5	202.23	2.5	
Fe	57	72	He	0.213	16.0	236.68	50	
Co	59	72	He	-0.005	21.4	86.67	0.5	
Ni	60	72	He	-0.275	25.9	170.00	1	
Cu	63	103	He	0.013	0.4	467.79	0.5	
Zn	66	72	He	-1.817	13.2	413.35	10	
As	75	72	He	-0.097	16.0	50.67	0.5	
Se	78	72	He	-0.002	7.1	81.24	0.5	
Sn	120	115	He	-0.056	18.2	240.00	0.5	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3692484.42	4977840.24	74.18	
Ge	72	He	148264.55	168618.47	87.93	
In	115	He	1402567.83	1744348.13	80.41	
Lu	175	He	2943275.69	3966465.46	74.2	
Rh	103	He	3681631.80	4321957.05	85.18	
Sc	45	He	164020.72	185902.83	88.23	
Tb	159	He	4594759.31	5927064.91333333	77.52	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	737821.82	809671.036666667	91.13	
Bi	209	No Gas	6364211.36	7845001.13333333	81.12	
Ge	72	No Gas	1273611.41	1338255.08666667	95.17	
In	115	No Gas	8108803.13	9217317.19333333	87.97	
Lu	175	No Gas	10018105.27	11682743.99666667	85.75	
Rh	103	No Gas	8305043.84	8809191.87	94.28	
Sc	45	No Gas	4874017.58	4940195.36	98.66	
Tb	159	No Gas	10494079.84	11966615.65333333	87.69	



III
INITIAL CALIBRATION BLANK

Report No: 223072853 Blank ID: 1700
Instrument ID: ICPMS2 Lab File ID: 2230801A_MS2.b\011_ICB.d
Analyst: LWZ Analytical Batch: 769939
Analysis Date: 08/01/23 Time: 1012 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	0.50	ug/L	U	0.25	0.50	1.00

FORM III - IN

Initial Calibration Blank (ICB) Report

Sample Name 1700 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name 011_ICB.d **Comment** ICPMS-2,TDM
Acq Time 8/1/2023 10:12:57 AM **Total Dilution** 1.0000
Sample Type ICB **Sample Pass/Fail** Pass
ISTD Ref FileName 004CALB.d **ISTD Pass/Fail** Pass
Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	Conc	RSD	CPS	Limit	QC Flag
Li	7	6	No Gas	0.245	1.3	61826.45	2.5	
Be	9	6	No Gas	0.022	18.7	111.33	0.5	
B	11	45	No Gas	4.737	7.0	12645.67	5	
Sr	88	72	No Gas	0.001	9.7	826.72	0.5	
Zr	90	72	No Gas	0.008	12.5	1166.73	0.5	
Mo	95	115	No Gas	0.141	6.2	1742.35	0.5	
Ag	107	115	No Gas	0.003	8.1	85.55	0.5	
Cd	111	115	No Gas	0.001	3.1	124.45	0.5	
Sb	121	115	No Gas	0.105	7.2	3952.82	1	
Ba	137	115	No Gas	0.000	25.4	72.22	0.5	
Tl	205	209	No Gas	0.030	7.0	1880.20	0.5	
Pb	208	209	No Gas	0.004	20.7	456.69	0.5	
Na	23	45	He	-0.323	0.9	21776.39	50	
Mg	24	45	He	-1.383	5.0	903.40	50	
Al	27	45	He	-0.227	6.5	230.67	10	
Si	29	45	He	-2768.322	6.5	173318.03	100	
K	39	45	He	-2.911	1.6	58555.85	50	
Ca	44	45	He	-6.617	3.0	2011.84	250	
Ti	47	45	He	0.019	22.1	22.33	0.5	
V	51	72	He	-0.040	4.6	905.59	0.5	
Cr	52	72	He	-0.015	3.0	2520.25	0.5	
Mn	55	72	He	0.012	10.4	337.78	2.5	
Fe	57	72	He	0.461	10.8	370.02	50	
Co	59	72	He	0.001	2.9	131.12	0.5	
Ni	60	72	He	-0.021	5.0	277.78	1	
Cu	63	45	He	-0.001	4.2	523.35	0.5	
Zn	66	72	He	-0.209	7.9	491.12	10	
As	75	72	He	0.003	8.9	103.67	0.5	
Se	78	72	He	0.000	3.3	97.99	0.5	
Sn	120	115	He	0.017	9.0	427.79	0.5	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3826560.57	3919315.67	97.63	
Ge	72	He	158912.98	162135.166666667	98.01	
In	115	He	1433663.96	1476978.55	97.07	
Lu	175	He	3030935.48	3117120.786666667	97.24	
Rh	103	He	3673563.74	3761118.46	97.67	
Sc	45	He	195909.90	200611.303333333	97.66	
Tb	159	He	4589576.49	4722340.556666667	97.19	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	866442.68	887109.66	97.67	
Bi	209	No Gas	6241926.78	6378925.74	97.85	
Ge	72	No Gas	1330783.39	1353105.29	98.35	
In	115	No Gas	8422444.86	8577775.67	98.19	
Lu	175	No Gas	9729645.27	10093915.0566667	96.39	
Rh	103	No Gas	8338038.00	8537311.88333333	97.67	
Sc	45	No Gas	5132415.21	5264112.29	97.5	
Tb	159	No Gas	10353499.43	10724634.4233333	96.54	

III
CONTINUING CALIBRATION BLANK

Report No: 223072853 Blank ID: 1900
Instrument ID: ICPMS2 Lab File ID: 2230801A_MS2.b\1227_CCB.d
Analyst: LWZ Analytical Batch: 769939
Analysis Date: 08/01/23 Time: 1131 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	0.50	ug/L	U	0.25	0.50	1.00

FORM III - IN

Continuing Calibration Blank (CCB) Report

Sample Name	1900	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1227_CCB.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 11:31:40 AM	Total Dilution	1.0000
Sample Type	CCB	Sample Pass/Fail	Fail
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	Conc	RSD	CPS	Limit	QC Flag
Li	7	6	No Gas	0.113	0.2	60591.54	2.5	
Be	9	6	No Gas	0.002	12.9	62.67	0.5	
B	11	45	No Gas	1.157	8.9	5761.27	5	
Sr	88	72	No Gas	0.016	4.1	1593.48	0.5	
Zr	90	72	No Gas	0.020	2.9	1498.99	0.5	
Mo	95	115	No Gas	0.034	10.8	666.69	0.5	
Ag	107	115	No Gas	0.001	25.7	45.56	0.5	
Cd	111	115	No Gas	0.004	12.4	132.23	0.5	
Sb	121	115	No Gas	0.076	9.2	3112.60	1	
Ba	137	115	No Gas	0.020	17.6	230.00	0.5	
Tl	205	209	No Gas	-0.002	16.9	563.37	0.5	
Pb	208	209	No Gas	0.012	10.1	693.38	0.5	
Na	23	45	He	14.425	1.1	30595.04	50	
Mg	24	45	He	-1.626	15.7	816.72	50	
Al	27	45	He	0.302	2.4	270.67	10	
Si	29	45	He	-143409.320	8.9	133668.99	100	
K	39	45	He	19.917	1.6	65246.58	50	
Ca	44	45	He	24.431	7.6	2405.24	250	
Ti	47	45	He	0.021	12.0	22.00	0.5	
V	51	72	He	-0.062	7.4	790.03	0.5	
Cr	52	72	He	0.018	4.4	2649.16	0.5	
Mn	55	72	He	4.697	2.3	11900.45	2.5	> LOD
Fe	57	72	He	0.834	9.0	400.02	50	
Co	59	72	He	0.002	10.6	136.67	0.5	
Ni	60	72	He	0.103	5.6	568.91	1	
Cu	63	45	He	2.271	1.1	15498.30	0.5	> LOD
Zn	66	72	He	9.791	3.6	10839.66	10	
As	75	72	He	-0.020	10.1	74.33	0.5	
Se	78	72	He	-0.036	7.9	93.48	0.5	
Sn	120	115	He	0.220	5.4	1453.43	0.5	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3768987.86	3919315.67	96.16	
Ge	72	He	155725.54	162135.166666667	96.05	
In	115	He	1398103.62	1476978.55	94.66	
Lu	175	He	2954145.89	3117120.786666667	94.77	
Rh	103	He	3598682.91	3761118.46	95.68	
Sc	45	He	191332.62	200611.303333333	95.37	
Tb	159	He	4501014.10	4722340.556666667	95.31	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	862101.73	887109.66	97.18	
Bi	209	No Gas	6142467.82	6378925.74	96.29	
Ge	72	No Gas	1298951.13	1353105.29	96	
In	115	No Gas	8138377.56	8577775.67	94.88	
Lu	175	No Gas	9673545.27	10093915.0566667	95.84	
Rh	103	No Gas	8219738.56	8537311.88333333	96.28	
Sc	45	No Gas	4992213.97	5264112.29	94.83	
Tb	159	No Gas	10192026.72	10724634.4233333	95.03	



III
METHOD BLANK

Report No: 223072853 Blank ID: MB2505297
Instrument ID: ICPMS2 Lab File ID: 2230801A_MS2.b\1228SMPL.d
Analyst: LWZ Analytical Batch: 769939
Analysis Date: 08/01/23 Time: 1135 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	20.0	ug/kg	U	10.0	20.0	40.0

FORM III - IN

Method Blank (MB) Report

Sample Name 2505297 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name 1228SMPL.d **Comment** ICPMS-2,TDM
Acq Time 8/1/2023 11:35:15 AM **Total Dilution** 40.0000
Sample Type MBSOIL **Sample Pass/Fail** Fail
ISTD Ref FileName 004CALB.d **ISTD Pass/Fail** Pass
Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	Conc	RSD	CPS	Limit	QC Flag
Li	7	6	No Gas	3.626	2.9	56469.15	2.5	
Be	9	6	No Gas	0.553	17.6	85.33	0.5	
B	11	45	No Gas	61.017	3.6	5881.32	5	
Sr	88	72	No Gas	4.641	8.1	6108.21	0.5	
Zr	90	72	No Gas	4.183	12.3	3815.01	0.5	
Mo	95	115	No Gas	2.611	2.9	862.26	0.5	
Ag	107	115	No Gas	0.155	21.0	102.22	0.5	
Cd	111	115	No Gas	0.257	5.2	132.22	0.5	
Sb	121	115	No Gas	5.487	9.0	4151.77	1	
Ba	137	115	No Gas	9.071	4.1	1713.46	0.5	
Tl	205	209	No Gas	0.706	16.0	1233.44	0.5	
Pb	208	209	No Gas	4.533	3.8	3397.24	0.5	
Na	23	45	He	291.464	1.2	24177.15	50	
Mg	24	45	He	216.584	6.1	2493.61	50	
Al	27	45	He	415.201	5.3	1054.71	10	> 1/2 LOQ
Si	29	45	He	-11810090.296	10.6	88063.47	100	
K	39	45	He	211.539	1.7	55684.74	50	
Ca	44	45	He	4113.779	6.3	3262.08	250	
Ti	47	45	He	2.814	52.3	25.67	0.5	
V	51	72	He	-6.335	6.5	351.12	0.5	
Cr	52	72	He	3.815	4.1	2848.09	0.5	
Mn	55	72	He	79.031	3.5	4815.28	2.5	
Fe	57	72	He	350.762	7.6	1113.42	50	
Co	59	72	He	0.553	11.1	228.89	0.5	
Ni	60	72	He	3.125	8.0	473.35	1	
Cu	63	45	He	16.082	3.8	2940.33	0.5	
Zn	66	72	He	994.288	2.8	24571.80	10	> 1/2 LOQ
As	75	72	He	-0.788	3.0	69.67	0.5	
Se	78	72	He	0.942	11.7	90.89	0.5	
Sn	120	115	He	9.080	7.3	1390.09	0.5	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3528679.64	3919315.67	90.03	
Ge	72	He	144733.84	162135.166666667	89.27	
In	115	He	1304687.77	1476978.55	88.33	
Lu	175	He	2822884.95	3117120.786666667	90.56	
Rh	103	He	3345434.24	3761118.46	88.95	
Sc	45	He	177387.07	200611.303333333	88.42	
Tb	159	He	4265714.10	4722340.556666667	90.33	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	805489.01	887109.66	90.8	
Bi	209	No Gas	5596975.54	6378925.74	87.74	
Ge	72	No Gas	1170032.45	1353105.29	86.47	
In	115	No Gas	7306711.61	8577775.67	85.18	
Lu	175	No Gas	8736000.50	10093915.056666667	86.55	
Rh	103	No Gas	7272342.49	8537311.883333333	85.18	
Sc	45	No Gas	4562382.18	5264112.29	86.67	
Tb	159	No Gas	9246085.28	10724634.4233333	86.21	

III
CONTINUING CALIBRATION BLANK

Report No: 223072853 Blank ID: 1900
Instrument ID: ICPMS2 Lab File ID: 2230801A_MS2.b\1241_CCB.d
Analyst: LWZ Analytical Batch: 769939
Analysis Date: 08/01/23 Time: 1221 Analytical Method: EPA 6020B

<i>ANALYTE</i>	<i>RESULT</i>	<i>UNITS</i>	<i>Q</i>	<i>DL</i>	<i>LOD</i>	<i>LOQ</i>
Arsenic	0.50	ug/L	U	0.25	0.50	1.00

FORM III - IN

Continuing Calibration Blank (CCB) Report

Sample Name	1900	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1241_CCB.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 12:21:37 PM	Total Dilution	1.0000
Sample Type	CCB	Sample Pass/Fail	Fail
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	Conc	RSD	CPS	Limit	QC Flag
Li	7	6	No Gas	0.031	0.4	61117.71	2.5	
Be	9	6	No Gas	0.004	1.7	68.67	0.5	
B	11	45	No Gas	1.021	8.6	5731.27	5	
Sr	88	72	No Gas	0.008	10.4	1253.44	0.5	
Zr	90	72	No Gas	0.016	3.4	1446.76	0.5	
Mo	95	115	No Gas	0.021	9.6	574.46	0.5	
Ag	107	115	No Gas	0.001	9.4	54.44	0.5	
Cd	111	115	No Gas	-0.001	17.4	116.67	0.5	
Sb	121	115	No Gas	0.054	2.2	2741.41	1	
Ba	137	115	No Gas	0.018	19.1	232.23	0.5	
Tl	205	209	No Gas	-0.004	19.5	476.69	0.5	
Pb	208	209	No Gas	0.011	6.5	696.71	0.5	
Na	23	45	He	11.937	3.0	30211.06	50	
Mg	24	45	He	-1.882	1.3	780.05	50	
Al	27	45	He	0.513	8.4	300.67	10	
Si	29	45	He	-245127.330	8.4	112265.72	100	
K	39	45	He	14.560	2.2	65943.24	50	
Ca	44	45	He	4.779	10.0	2211.88	250	
Ti	47	45	He	-0.026	31.1	17.00	0.5	
V	51	72	He	-0.089	7.0	703.36	0.5	
Cr	52	72	He	-0.010	4.1	2598.04	0.5	
Mn	55	72	He	4.541	0.7	11997.19	2.5	> LOD
Fe	57	72	He	0.352	5.7	366.69	50	
Co	59	72	He	0.002	3.4	147.78	0.5	
Ni	60	72	He	0.094	4.8	568.91	1	
Cu	63	45	He	2.166	2.1	15404.87	0.5	> LOD
Zn	66	72	He	9.416	2.4	10887.47	10	
As	75	72	He	-0.028	8.6	68.33	0.5	
Se	78	72	He	-0.117	6.1	91.40	0.5	
Sn	120	115	He	0.202	4.5	1411.20	0.5	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3894505.05	3919315.67	99.37	
Ge	72	He	162266.44	162135.166666667	100.08	
In	115	He	1450108.75	1476978.55	98.18	
Lu	175	He	3072232.98	3117120.786666667	98.56	
Rh	103	He	3766811.52	3761118.46	100.15	
Sc	45	He	199149.55	200611.303333333	99.27	
Tb	159	He	4673784.41	4722340.556666667	98.97	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	878055.53	887109.66	98.98	
Bi	209	No Gas	6461802.40	6378925.74	101.3	
Ge	72	No Gas	1344686.23	1353105.29	99.38	
In	115	No Gas	8678823.06	8577775.67	101.18	
Lu	175	No Gas	10256675.89	10093915.0566667	101.61	
Rh	103	No Gas	8687404.93	8537311.88333333	101.76	
Sc	45	No Gas	5188382.71	5264112.29	98.56	
Tb	159	No Gas	10801872.34	10724634.4233333	100.72	

Metals

Form IV

Interference Checks

IV
ICPMS INTERFERENCE CHECKS

Report No: <u>223072853</u>	ICSA \ AB ID: <u>2000 \ 2100</u>
Instrument ID: <u>ICPMS2</u>	Analytical Batch: <u>769901</u>
Analyst: <u>TDM</u>	Analytical Method: <u>EPA 6020B</u>
Lab File ID ICSA1: <u>2230731A_MS2.b\121112ICSA.d</u>	Lab File ID ICSAB1: <u>2230731A_MS2.b\121113ICSB.d</u>
Lab File ID ICSA2: _____	Lab File ID ICSAB2: _____

Concentration Units: ug/L

Analyzed (A/AB):			07/31/23 1132	07/31/23 1135				
ANALYTE	TRUE A	TRUE AB	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R
Aluminum	1000	1000	1020	1030	103			
Antimony	0	0	0.010	0.064				
Arsenic	0	10.0	-0.083	9.76	98			
Barium	0	0	0.011	0.015				
Beryllium	0	0	-0.0010	-0.0070				
Boron	0	20.0	-0.024	23.2	116			
Cadmium	0	10.0	0.0040	11.4	114			
Calcium	3000	3000	2970	2990	100			
Chromium	0	20.0	0.11	19.2	96			
Cobalt	0	20.0	0.022	19.3	96			
Copper	0	20.0	0.067	20.2	101			
Iron	2500	2500	2510	2510	100			
Lead	0	0	0.0050	0.0050				
Lithium	0	20.0	0.42	21.7	108			
Magnesium	1000	1000	1030	1040	104			
Manganese	0	20.0	0.053	20.0	100			
Molybdenum	20.0	20.0	19.0	19.0	95			
Nickel	0	20.0	0.090	19.6	98			
Potassium	1000	1000	1050	1050	105			
Selenium	0	10.0	0.20	10.1	101			
Silicon	0	1000	573	1370	137			
Silver	0	5.00	0.0020	5.15	103			
Sodium	2500	2500	2520	2530	101			
Strontium	0	10.0	0.023	9.44	94			
Thallium	0	0	-0.048	-0.051				
Tin	0	10.0	0.030	9.53	95			
Titanium	20.0	20.0	19.2	19.5	98			
Vanadium	0	20.0	-0.014	18.8	94			
Zinc	0	20.0	-0.80	19.5	98			
Zirconium	0	20.0	0.017	18.5	92			

FORM IV - IN

Interference Check Solution A (ICS-A) Report

Sample Name 2000 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name 121112ICSA.d **Comment** ICPMS-2,TDM
Acq Time 7/31/2023 11:32:13 AM **Total Dilution** 1.0000
Sample Type ICSA **Sample Pass/Fail** Fail
ISTD Ref FileName 004CALB.d **ISTD Pass/Fail** Pass
Units : ppb

QC Analyte Table

Spiked Element Recovery: 80-120%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	QC Flag
Li	7	45	No Gas	0.422	0.3	54729.44	2.5	
Be	9	72	No Gas	-0.001	12.2	80.67	0.5	
B	11	45	No Gas	-0.024	7.0	3493.84	5	
Sr	88	72	No Gas	0.023	7.3	1873.52	0.5	
Zr	90	72	No Gas	0.017	5.8	1396.76	0.5	
Mo	95	115	No Gas	18.994	1.2	166641.41	20	
Ag	107	115	No Gas	0.002	10.3	81.11	0.5	
Cd	111	115	No Gas	0.004	11.0	160.00	0.5	
Sb	121	115	No Gas	0.010	4.8	1706.79	1	
Ba	137	115	No Gas	0.011	5.1	173.34	0.5	
Tl	205	209	No Gas	-0.048	11.2	626.70	0.5	
Pb	208	209	No Gas	0.005	9.8	616.71	0.5	
Na	23	45	He	2517.867	1.2	1160529.36	2500	
Mg	24	45	He	1034.131	0.6	203095.74	1000	
Al	27	45	He	1015.898	1.0	63476.23	1000	
Si	29	45	He	573.113	5.1	43946.80	100	> LOD
K	39	45	He	1047.745	1.7	311801.93	1000	
Ca	44	45	He	2973.375	0.8	36063.98	3000	
Ti	47	45	He	19.229	3.6	1959.14	20	
V	51	72	He	-0.014	3.8	613.35	0.5	
Cr	52	72	He	0.111	4.6	1847.92	0.5	
Mn	55	72	He	0.053	6.7	578.91	2.5	
Fe	57	72	He	2506.176	0.8	224720.14	2500	
Co	59	72	He	0.022	4.8	303.34	0.5	
Ni	60	72	He	0.090	3.7	968.93	1	
Cu	63	103	He	0.067	7.0	781.14	0.5	
Zn	66	72	He	-0.805	7.3	1358.97	10	
As	75	72	He	-0.083	18.9	64.67	0.5	
Se	78	72	He	0.197	1.4	92.98	0.5	
Sn	120	115	He	0.030	8.5	712.27	0.5	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	4167470.04	4977840.24	83.72	
Ge	72	He	146211.01	168618.47	86.71	
In	115	He	1470886.47	1744348.13	84.32	
Lu	175	He	3347949.33	3966465.46	84.41	
Rh	103	He	3610896.38	4321957.05	83.55	
Sc	45	He	156922.84	185902.83	84.41	
Tb	159	He	4977837.84	5927064.91333333	83.98	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	732945.32	809671.036666667	90.52	
Bi	209	No Gas	6622698.23	7845001.13333333	84.42	
Ge	72	No Gas	1177268.01	1338255.08666667	87.97	
In	115	No Gas	7737183.10	9217317.19333333	83.94	
Lu	175	No Gas	9942268.81	11682743.99666667	85.1	
Rh	103	No Gas	7417256.93	8809191.87	84.2	
Sc	45	No Gas	4304722.88	4940195.36	87.14	
Tb	159	No Gas	10062087.35	11966615.65333333	84.08	

Interference Check Solution AB (ICS-AB) Report

Sample Name	2100	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name	121113ICSB.d	Comment	ICPMS-2,TDM
Acq Time	7/31/2023 11:35:47 AM	Total Dilution	1.0000
Sample Type	ICSB	Sample Pass/Fail	Fail
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table **Spiked Element Recovery: 80-120%**

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	QC Flag
Li	7	45	No Gas	21.738	0.4	186862.56	20	
Be	9	72	No Gas	-0.007	9.6	66.67	0.5	
B	11	45	No Gas	23.226	1.0	38282.19	20	
Sr	88	72	No Gas	9.443	1.1	451859.66	10	
Zr	90	72	No Gas	18.494	1.5	549487.84	20	
Mo	95	115	No Gas	19.039	0.1	166105.82	20	
Ag	107	115	No Gas	5.152	0.8	116712.67	5	
Cd	111	115	No Gas	11.385	1.8	57070.82	10	
Sb	121	115	No Gas	0.064	0.6	2934.78	1	
Ba	137	115	No Gas	0.015	10.1	206.67	0.5	
Tl	205	209	No Gas	-0.051	24.0	486.70	0.5	
Pb	208	209	No Gas	0.005	5.7	630.04	0.5	
Na	23	45	He	2526.637	1.1	1148447.61	2500	
Mg	24	45	He	1040.977	0.9	201609.37	1000	
Al	27	45	He	1031.880	0.8	63584.58	1000	
Si	29	45	He	1373.933	3.5	44980.39	1000	> +/- 20%
K	39	45	He	1052.593	0.6	308739.86	1000	
Ca	44	45	He	2987.441	1.1	35733.16	3000	
Ti	47	45	He	19.474	0.8	1955.80	20	
V	51	72	He	18.846	1.2	71602.11	20	
Cr	52	72	He	19.216	0.9	91695.14	20	
Mn	55	72	He	20.013	0.9	43760.24	20	
Fe	57	72	He	2513.056	2.7	224575.73	2500	
Co	59	72	He	19.296	1.7	155329.88	20	
Ni	60	72	He	19.626	1.4	43776.04	20	
Cu	63	103	He	20.168	1.9	121885.47	20	
Zn	66	72	He	19.538	1.8	20383.21	20	
As	75	72	He	9.755	1.9	10575.84	10	
Se	78	72	He	10.104	3.0	727.35	10	
Sn	120	115	He	9.529	1.2	51293.95	10	

QC ISTD Table **Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8**

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	4171200.98	4977840.24	83.8	
Ge	72	He	145680.10	168618.47	86.4	
In	115	He	1464145.31	1744348.13	83.94	
Lu	175	He	3323197.56	3966465.46	83.78	
Rh	103	He	3619132.22	4321957.05	83.74	
Sc	45	He	154760.87	185902.83	83.25	
Tb	159	He	4929527.01	5927064.91333333	83.17	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	721286.52	809671.036666667	89.08	
Bi	209	No Gas	6568505.32	7845001.13333333	83.73	
Ge	72	No Gas	1171066.17	1338255.08666667	87.51	
In	115	No Gas	7694251.82	9217317.19333333	83.48	
Lu	175	No Gas	9871536.94	11682743.99666667	84.5	
Rh	103	No Gas	7446035.26	8809191.87	84.53	
Sc	45	No Gas	4277100.66	4940195.36	86.58	
Tb	159	No Gas	10087617.35	11966615.65333333	84.3	

IV
ICPMS INTERFERENCE CHECKS

Report No: <u>223072853</u>	ICSA \ AB ID: <u>2000 \ 2100</u>
Instrument ID: <u>ICPMS2</u>	Analytical Batch: <u>769939</u>
Analyst: <u>LWZ</u>	Analytical Method: <u>EPA 6020B</u>
Lab File ID ICSA1: <u>2230801A_MS2.b\1212\ICSA.d</u>	Lab File ID ICSAB1: <u>2230801A_MS2.b\1213\ICSB.d</u>
Lab File ID ICSA2: _____	Lab File ID ICSAB2: _____

Concentration Units: ug/L

Analyzed (A/AB):			08/01/23 1035	08/01/23 1039				
ANALYTE	TRUE A	TRUE AB	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R
Aluminum	1000	1000	986	981	98			
Antimony	0	0	0.014	0.071				
Arsenic	0	10.0	-0.021	9.32	93			
Barium	0	0	0.017	0.012				
Beryllium	0	0	0.0070	0.0010				
Boron	0	20.0	0.18	21.4	107			
Cadmium	0	10.0	0.012	11.0	110			
Calcium	3000	3000	2920	2930	98			
Chromium	0	20.0	0.052	19.0	95			
Cobalt	0	20.0	0.024	19.3	96			
Copper	0	20.0	0.079	19.7	98			
Iron	2500	2500	2440	2440	98			
Lead	0	0	0.0080	0.0070				
Lithium	0	20.0	0.11	20.6	103			
Magnesium	1000	1000	998	1010	101			
Manganese	0	20.0	0.48	19.5	98			
Molybdenum	20.0	20.0	18.5	18.8	94			
Nickel	0	20.0	0.026	19.5	98			
Potassium	1000	1000	1000	995	100			
Selenium	0	10.0	-0.080	9.32	93			
Silicon	0	1000	-73000	-68000	-6780			
Silver	0	5.00	0.0030	5.02	100			
Sodium	2500	2500	2480	2470	99			
Strontium	0	10.0	0.030	9.60	96			
Thallium	0	0	-0.0040	-0.0040				
Tin	0	10.0	0.071	9.40	94			
Titanium	20.0	20.0	19.2	19.5	98			
Vanadium	0	20.0	-0.046	18.7	94			
Zinc	0	20.0	3.26	20.6	103			
Zirconium	0	20.0	0.022	18.7	94			

FORM IV - IN

Interference Check Solution A (ICS-A) Report

Sample Name 2000 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name 1212ICSA.d **Comment** ICPMS-2,TDM
Acq Time 8/1/2023 10:35:50 AM **Total Dilution** 1.0000
Sample Type ICSA **Sample Pass/Fail** Fail
ISTD Ref FileName 004CALB.d **ISTD Pass/Fail** Pass
Units : ppb

QC Analyte Table

Spiked Element Recovery: 80-120%

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	QC Flag
Li	7	6	No Gas	0.110	2.4	61431.29	2.5	
Be	9	6	No Gas	0.007	6.0	76.67	0.5	
B	11	45	No Gas	0.184	4.0	4170.72	5	
Sr	88	72	No Gas	0.030	1.2	2426.96	0.5	
Zr	90	72	No Gas	0.022	6.2	1635.67	0.5	
Mo	95	115	No Gas	18.467	1.2	187030.30	20	
Ag	107	115	No Gas	0.003	11.9	96.66	0.5	
Cd	111	115	No Gas	0.012	6.2	188.89	0.5	
Sb	121	115	No Gas	0.014	5.3	1695.68	1	
Ba	137	115	No Gas	0.017	6.0	225.56	0.5	
Tl	205	209	No Gas	-0.004	12.1	496.69	0.5	
Pb	208	209	No Gas	0.008	14.3	620.04	0.5	
Na	23	45	He	2479.979	1.5	1659772.06	2500	
Mg	24	45	He	998.034	1.1	278663.67	1000	
Al	27	45	He	986.406	1.5	88837.04	1000	
Si	29	45	He	-73436.001	7.0	158087.31	100	> LOD
K	39	45	He	1000.171	1.5	429389.80	1000	
Ca	44	45	He	2922.792	1.3	45549.87	3000	
Ti	47	45	He	19.237	2.1	2460.88	20	
V	51	72	He	-0.046	4.6	905.59	0.5	
Cr	52	72	He	0.052	2.2	2971.45	0.5	
Mn	55	72	He	0.485	6.9	1574.55	2.5	
Fe	57	72	He	2441.230	1.8	259057.01	2500	
Co	59	72	He	0.024	6.8	353.34	0.5	
Ni	60	72	He	0.026	11.4	404.46	1	
Cu	63	45	He	0.079	7.5	1087.83	0.5	
Zn	66	72	He	3.264	5.0	4289.57	10	
As	75	72	He	-0.021	11.7	77.33	0.5	
Se	78	72	He	-0.080	5.0	94.99	0.5	
Sn	120	115	He	0.071	14.5	724.47	0.5	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3893356.71	3919315.67	99.34	
Ge	72	He	163756.58	162135.166666667	101	
In	115	He	1462377.34	1476978.55	99.01	
Lu	175	He	3095682.56	3117120.78666667	99.31	
Rh	103	He	3724910.68	3761118.46	99.04	
Sc	45	He	199880.07	200611.303333333	99.64	
Tb	159	He	4683239.09	4722340.55666667	99.17	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	874443.70	887109.66	98.57	
Bi	209	No Gas	6457027.19	6378925.74	101.22	
Ge	72	No Gas	1357774.57	1353105.29	100.35	
In	115	No Gas	8656947.16	8577775.67	100.92	
Lu	175	No Gas	10178408.60	10093915.0566667	100.84	
Rh	103	No Gas	8500051.88	8537311.88333333	99.56	
Sc	45	No Gas	5224790.21	5264112.29	99.25	
Tb	159	No Gas	10760395.26	10724634.4233333	100.33	

Interference Check Solution AB (ICS-AB) Report

Sample Name	2100	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1213ICSB.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 10:39:23 AM	Total Dilution	1.0000
Sample Type	ICSB	Sample Pass/Fail	Fail
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table **Spiked Element Recovery: 80-120%**

Name	Mass	ISTD	Mode	Conc	RSD	CPS	ExpValue	QC Flag
Li	7	6	No Gas	20.630	1.1	208434.04	20	
Be	9	6	No Gas	0.001	15.7	62.67	0.5	
B	11	45	No Gas	21.443	3.1	44820.67	20	
Sr	88	72	No Gas	9.600	0.6	516271.36	10	
Zr	90	72	No Gas	18.731	1.7	627386.76	20	
Mo	95	115	No Gas	18.778	1.2	188224.72	20	
Ag	107	115	No Gas	5.016	1.0	128458.98	5	
Cd	111	115	No Gas	10.972	1.7	62388.53	10	
Sb	121	115	No Gas	0.071	2.3	3148.16	1	
Ba	137	115	No Gas	0.012	3.3	173.33	0.5	
Tl	205	209	No Gas	-0.004	24.5	470.03	0.5	
Pb	208	209	No Gas	0.007	9.4	590.03	0.5	
Na	23	45	He	2466.920	0.6	1639326.54	2500	
Mg	24	45	He	1009.818	1.0	279928.50	1000	
Al	27	45	He	980.645	1.1	87685.73	1000	
Si	29	45	He	-67779.582	6.0	158530.78	1000	> +/- 20%
K	39	45	He	995.247	1.1	424524.34	1000	
Ca	44	45	He	2931.381	0.6	45350.92	3000	
Ti	47	45	He	19.487	1.2	2474.55	20	
V	51	72	He	18.747	0.8	85242.69	20	
Cr	52	72	He	19.025	0.4	110249.65	20	
Mn	55	72	He	19.492	0.5	50738.08	20	
Fe	57	72	He	2438.096	1.8	257784.53	2500	
Co	59	72	He	19.304	1.6	178855.31	20	
Ni	60	72	He	19.547	1.8	49408.39	20	
Cu	63	45	He	19.741	1.8	135554.39	20	
Zn	66	72	He	20.620	2.5	23103.87	20	
As	75	72	He	9.324	1.8	11643.32	10	
Se	78	72	He	9.323	2.0	793.25	10	
Sn	120	115	He	9.396	2.1	50099.77	10	

QC ISTD Table **Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8**

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3897051.40	3919315.67	99.43	
Ge	72	He	163144.30	162135.166666667	100.62	
In	115	He	1453285.83	1476978.55	98.4	
Lu	175	He	3083672.04	3117120.78666667	98.93	
Rh	103	He	3720254.85	3761118.46	98.91	
Sc	45	He	198438.67	200611.303333333	98.92	
Tb	159	He	4666205.03	4722340.55666667	98.81	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	877795.66	887109.66	98.95	
Bi	209	No Gas	6472057.19	6378925.74	101.46	
Ge	72	No Gas	1348080.78	1353105.29	99.63	
In	115	No Gas	8568249.05	8577775.67	99.89	
Lu	175	No Gas	10178910.06	10093915.0566667	100.84	
Rh	103	No Gas	8465880.22	8537311.88333333	99.16	
Sc	45	No Gas	5225318.54	5264112.29	99.26	
Tb	159	No Gas	10774654.84	10724634.4233333	100.47	

Metals

Form V1

Matrix Spikes

V1
MS/MSD RECOVERY

Report No:	<u>223072853</u>	Parent Sample ID:	<u>KCDC-SB0070-002.0-20230720</u>
Prep Method:	<u>3050B</u>	Parent GCAL ID:	<u>22307285301</u>
Prep Date:	<u>07/31/23</u> Time: <u>0945</u>	Prep Batch:	<u>769824</u>
Analytical Method:	<u>EPA 6020B</u>	Analytical Batch:	<u>769901</u>

GCAL QC ID: 2505295 MS	Instrument ID: ICPMS2
Analyst: TDM	Lab File ID: 2230731A_MS2.b\121158SMPL.d
Analysis Date: 07/31/23 1604	Dilution: 10

ANALYTE	UNITS	SPIKE ADDED	SAMPLE RESULT	MS RESULT	MS % REC	#	QC LIMITS
Arsenic	ug/kg	2370	1330	3030	71	*	80 - 120

GCAL QC ID: 2505296 MSD	Instrument ID: ICPMS2
Analyst: TDM	Lab File ID: 2230731A_MS2.b\121159SMPL.d
Analysis Date: 07/31/23 1608	Dilution: 10

ANALYTE	UNITS	SPIKE ADDED	MSD RESULT	MSD % REC	#	% RPD	#	QC LIMITS %REC	RPD
Arsenic	ug/kg	2370	3240	80		7		80 - 120	0 - 20

RPD : 0 out of 1 outside limits
Spike Recovery: 1 out of 2 outside limits

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

FORM V (PART 1) - IN

MS Report

Sample Name	2505295	Total Dilution	400.0000
File Name	121158SMPL.d	Comment	ICPMS-2, TDM
Data Path Name	C:\Agilent\ICPMH1\DATA\2230731A_MS2.b	ISTD Ref FileName	004CALB.d
Acq Time	7/31/2023 4:04:37 PM	Sample QC Pass/Fail	Fail
Sample Type	MSSOIL	ISTD QC Pass/Fail	Pass

Analyte Table

Units : ppb

Name	Mass	ISTD	Mode	MeasValue	FinalConc	RSD	CPS	Ref Conc	%Rec	QC Flag
Ag	107	115	No Gas	5.304	2121.626	1.9	134553.31	4.00596635713901	105.88100728232	
Al	27	45	He	595.217	238086.816	0.4	41301.11	269086.705065333	-77.499722496862	> +/- 20%
As	75	72	He	6.375	2550.179	2.0	7446.25	1120.85862391293	71.4660156152822	> +/- 20%
B	11	45	No Gas	25.564	10225.791	0.6	49615.03	792.419855625869	94.3337107989291	
Ba	137	115	No Gas	6.873	2749.001	1.2	60928.20	1107.59283993781	82.0703853568246	
Be	9	72	No Gas	4.892	1956.775	1.9	12685.32	15.5694355253657	97.0602607294502	
Ca	44	45	He	6181.517	2472606.858	1.8	81619.48	4903934.61534866	-243.132775748266	> +/- 20%
Cd	111	115	No Gas	5.025	2009.970	1.9	28293.80	9.61364625572503	100.017801239012	
Co	59	72	He	5.324	2129.637	0.8	45904.76	29.5677893922417	105.003447636597	
Cr	52	72	He	7.227	2890.699	1.6	37749.30	794.872565187491	104.791317248416	
Cu	63	103	He	8.788	3515.032	0.1	56333.17	1018.09461157626	124.846845421146	> +/- 20%
Fe	57	72	He	723.01	289203.956	2.5	69226.77	132192.934897429	78.5055104391879	> +/- 20%
K	39	45	He	566.124	226449.761	2.3	205586.16	8482.75601537722	108.983502578727	
Li	7	45	No Gas	25.182	10072.723	0.9	247300.26	72.5690285836191	100.001535740198	
Mg	24	45	He	575.924	230369.449	0.9	126129.41	24916.129181271	102.726660038517	
Mn	55	72	He	8.757	3502.820	1.2	20749.12	1656.05090798739	92.3384364613764	
Mo	95	115	No Gas	4.97	1987.889	1.6	49515.10	-20.0340877076646	100.396168525468	
Na	23	45	He	596.23	238492.114	0.8	324833.91	37890.4196352384	100.300846989893	
Ni	60	72	He	10.917	4366.997	1.5	26398.17	46.7763004240332	108.005523395451	
Pb	208	209	No Gas	6.379	2551.474	0.1	209679.66	573.903145364618	98.8785367034797	
Sb	121	115	No Gas	9.771	3908.302	0.8	251198.60	13.2607086994483	97.3760215339061	
Se	78	72	He	1.049	419.761	4.0	157.44	-21.3882322000983	110.287197122053	
Si	29	45	He	-4555.607	-1822242.616	10.1	36993.22	-2302238.63657826	239.998010188643	> +/- 20%
Sn	120	115	He	5.049	2019.712	1.8	28074.65	3.03295010470862	100.833964505125	
Sr	88	72	No Gas	21.633	8653.092	0.8	1175256.52	24903.7589696161	-812.533343597718	> +/- 20%
Ti	47	45	He	44.174	17669.691	26.2	4978.72	17384.7104326543	14.2490116788998	> +/- 20%
Tl	205	209	No Gas	4.956	1982.440	0.2	225565.68	-15.0087807056696	99.8724222852891	
V	51	72	He	5.98	2391.818	1.0	24767.98	470.061181878976	96.0878264566508	
Zn	66	72	He	114.133	45653.140	2.0	116424.89	1463.14218705992	110.47499559073	
Zr	90	72	No Gas	1.921	768.283	26.3	65679.27	323.885331315047	111.099455006136	

QC ISTD Table

Recovery Limits: 70 - 120%

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	4051645.15	4977840.24	81.39	
Ge	72	He	155739.65	168618.47	92.36	
In	115	He	1498297.19	1744348.13	85.89	
Lu	175	He	3249495.27	3966465.46	81.92	
Rh	103	He	3824556.93	4321957.05	88.49	
Sc	45	He	174110.22	185902.83	93.66	
Tb	159	He	4965824.20	5927064.91333333	83.78	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	802403.64	809671.036666667	99.1	
Bi	209	No Gas	6730466.98	7845001.13333333	85.79	
Ge	72	No Gas	1330910.19	1338255.08666667	99.45	
In	115	No Gas	8616800.79	9217317.19333333	93.48	
Lu	175	No Gas	10415622.97	11682743.99666667	89.15	
Rh	103	No Gas	8475416.05	8809191.87	96.21	
Sc	45	No Gas	5078900.08	4940195.36	102.81	
Tb	159	No Gas	10956573.59	11966615.65333333	91.56	

Matrix Spike Duplicate (MSD) Sample Report

Sample Name 2505296 **Data Path Name** C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name 121159SMPL.d **Comment** ICPMS-2,TDM
Acq Time 7/31/2023 4:08:10 PM **Total Dilution** 400.0000
Sample Type MSDSOIL **Sample Pass/Fail** Fail
ISTD Ref FileName 004CALB.d **ISTD Pass/Fail** Pass

Units : ppb

QC Analyte Table

RPD Limits: 0-20%

Name	Mass	Mode	MeasValue	Final Conc	RSD	CPS	RefConc	RPD	Flag
Li	7	No Gas	25.776	10310.528	0.9	247564.42	25.1818065065085	2.33	
Be	9	No Gas	4.971	1988.310	0.8	12637.94	4.89193662528592	1.6	
B	11	No Gas	26.66	10664.019	1.9	50719.05	25.5644773387969	4.2	
Sr	88	No Gas	17.429	6971.746	0.0	928731.39	21.6327302441544	21.52	> 20%
Zr	90	No Gas	1.676	670.551	5.0	56408.32	1.92070787834898	13.58	
Mo	95	No Gas	5.102	2040.825	2.3	49946.53	4.96972320700426	2.63	
Ag	107	No Gas	5.428	2171.297	0.8	135388.47	5.30406528000885	2.31	
Cd	111	No Gas	5.139	2055.717	2.1	28443.05	5.02492417758993	2.25	
Sb	121	No Gas	9.778	3911.300	1.0	247188.69	9.77075392513923	0.08	
Ba	137	No Gas	6.854	2741.597	1.0	59747.46	6.87250136768576	0.27	
Tl	205	No Gas	5.095	2037.802	1.4	226166.64	4.95609916250028	2.75	
Pb	208	No Gas	6.353	2541.109	1.4	203766.20	6.37868469858553	0.41	
Na	23	He	568.627	227450.670	1.4	303449.28	596.230284037561	4.74	
Mg	24	He	589.488	235795.254	0.8	125921.56	575.92362314576	2.33	
Al	27	He	794.398	317759.210	0.3	53748.75	595.217040166471	28.67	> 20%
Si	29	He	-3518.906	-1407562.594	9.7	38430.16	-4555.60654050244	-25.68	
K	39	He	587.658	235063.024	1.8	206686.51	566.124402932078	3.73	
Ca	44	He	5472.982	2189192.894	0.5	70660.75	6181.51714466499	12.16	
Ti	47	He	37.683	15073.272	24.6	4144.68	44.1742266655807	15.86	
V	51	He	6.107	2442.696	1.8	24867.69	5.97954427752998	2.1	
Cr	52	He	7.418	2967.262	0.8	38061.51	7.22674727538951	2.61	
Mn	55	He	8.261	3304.338	2.0	19273.78	8.75704909303728	5.83	
Fe	57	He	815.023	326009.273	1.5	76700.80	723.009889439512	11.97	
Co	59	He	5.377	2150.917	1.9	45601.53	5.32409185531046	0.99	
Ni	60	He	10.714	4285.528	1.4	25488.89	10.9174930906052	1.88	
Cu	63	He	8.692	3476.926	1.6	54594.41	8.78757879999794	1.09	
Zn	66	He	111.897	44758.676	1.2	112273.91	114.13285105838	1.98	
As	75	He	6.826	2730.600	2.3	7829.11	6.37544734054644	6.83	
Se	78	He	1.063	425.384	3.7	155.72	1.04940139072029	1.33	
Sn	120	He	4.962	1984.875	0.8	26843.47	5.04928060051804	1.74	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3949390.15	4977840.24	79.34	
Ge	72	He	153149.87	168618.47	90.83	
In	115	He	1457249.79	1744348.13	83.54	
Lu	175	He	3178907.45	3966465.46	80.14	
Rh	103	He	3745602.35	4321957.05	86.66	
Sc	45	He	169857.37	185902.83	91.37	
Tb	159	He	4892209.41	5927064.91333333	82.54	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	779675.08	809671.036666667	96.3	
Bi	209	No Gas	6567133.44	7845001.13333333	83.71	
Ge	72	No Gas	1305178.59	1338255.08666667	97.53	
In	115	No Gas	8472642.57	9217317.19333333	91.92	
Lu	175	No Gas	10255173.18	11682743.99666667	87.78	
Rh	103	No Gas	8201782.73	8809191.87	93.1	
Sc	45	No Gas	4995501.88	4940195.36	101.12	
Tb	159	No Gas	10778431.92	11966615.65333333	90.07	

Metals

Form V2

Post Digestion Spikes

V2
POST DIGEST SPIKE SAMPLE RECOVERY

Report No:	<u>223072853</u>	GCAL PDS ID:	<u>2505694</u>
Matrix:	<u>Solid</u>	Parent Sample ID:	<u>KCDC-SB0070-002... (22307285301)</u>
Analyst:	<u>TDM</u>	Instrument ID:	<u>ICPMS2</u>
Analysis Date:	<u>07/31/23</u> Time: <u>1611</u>	Lab File ID:	<u>2230731A_MS2.b\121160SMPL.d</u>
Analytical Method:	<u>EPA 6020B</u>	Analytical Batch:	<u>769901</u>

ANALYTE	UNITS	SPIKED SAMPLE RESULT C		SAMPLE RESULT C		SPIKE ADDED	% R	Q	LCL	UCL
Arsenic	ug/kg	25800		1330		23700	103		75	125

Post Digestion Spike (PDS) Report

Sample Name 2505694
File Name 121160SMPL.d
Data Path Name C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
Acq Time 7/31/2023 4:11:44 PM
Sample Type PDS
Total Dilution 400.0000
Comment ICPMS-2.TDM
ISTD Ref FileName 004CALB.d
Sample QC Pass/Fial Fail
ISTD QC Pass/Fail Pass
QC Ref File Name 121157SMPL.d

QC Analyte Table

Name	Mass	Tune	Conc.	Conc. RSD	CPS	Reference Conc	Spk Amt	% Rec	%Low	%High	Flag
Li	7	No Gas	95375.186	1.2	1770534.09	0.181422571459048	250	95.31	75	125	
Be	9	No Gas	19384.595	1.3	120974.16	0.0389235888134142	50	96.85	75	125	
B	11	No Gas	97074.810	0.8	423547.27	1.98104963906467	250	96.31	75	125	
Sr	88	No Gas	44792.561	0.7	5893423.66	62.2593974240403	50	99.75	75	125	
Zr	90	No Gas	19618.425	1.1	1603699.66	0.809713328287618	10	453.72	75	125	> +/- 25%
Mo	95	No Gas	21043.909	0.8	482632.71	-0.0500852192691615	50	105.33	75	125	
Ag	107	No Gas	21157.600	0.5	1265184.19	0.0100149158928475	50	105.77	75	125	
Cd	111	No Gas	20488.245	0.4	270661.33	0.0240341156393126	50	102.39	75	125	
Sb	121	No Gas	39570.304	1.2	2385034.90	0.0331517717486207	100	98.89	75	125	
Ba	137	No Gas	21207.888	3.3	442722.55	2.76898209984454	50	100.48	75	125	
Tl	205	No Gas	20167.008	0.2	2180904.03	-0.0375219517641739	50	100.91	75	125	
Pb	208	No Gas	20366.547	0.6	1605573.57	1.43475786341155	50	98.99	75	125	
Na	23	He	2190580.060	0.9	2665764.86	94.7260490880961	5000	107.49	75	125	
Mg	24	He	2112973.459	0.8	1102227.74	62.2903229531775	5000	104.35	75	125	
Al	27	He	681537.875	0.7	113626.49	672.716762663333	1000	101.86	75	125	
Si	29	He	-1627198.466	N/A	36693.31	-5755.59659144565	5000	538.38	75	125	> +/- 25%
K	39	He	2134129.047	0.4	1535824.72	21.2068900384431	5000	106.26	75	125	
Ca	44	He	15074542.183	0.3	471670.61	12259.8365383716	25000	101.14	75	125	
Ti	47	He	35497.445	10.0	9595.92	43.4617760816357	50	94.95	75	125	
V	51	He	20649.961	1.1	204012.66	1.17515295469744	50	100.88	75	125	
Cr	52	He	21284.484	1.7	263156.02	1.98718141296873	50	102.35	75	125	
Mn	55	He	22357.718	1.0	126994.27	4.14012726996846	50	103.24	75	125	
Fe	57	He	2174628.645	1.0	507859.48	330.482337243572	5000	101.99	75	125	
Co	59	He	20453.094	1.1	430335.02	0.0739194734806043	50	102.11	75	125	
Ni	60	He	40743.422	1.7	234267.67	0.116940751060083	100	101.74	75	125	
Cu	63	He	22337.773	1.0	338141.05	2.54523652894065	50	106.28	75	125	
Zn	66	He	414042.303	1.0	1015308.54	3.65785546764979	1000	103.13	75	125	
As	75	He	21732.516	1.1	60879.64	2.80214655978233	50	102.9	75	125	
Se	78	He	4112.114	1.7	772.91	-0.0534705805002459	10	103.36	75	125	
Sn	120	He	20536.987	0.2	266603.23	0.00758237526177156	50	102.67	75	125	

QC ISTD Table

Post Digestion Spike (PDS) Report

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	%QC Low	%QC High	QC Flag
(Li)	6	No Gas	804043.07	0.6	809671.036666667	99.3	70	120	
Sc	45	No Gas	4937879.25	0.8	4940195.36	99.95	70	120	
Ge	72	No Gas	1290049.64	1.1	1338255.086666667	96.4	70	120	
Rh	103	No Gas	7920493.85	0.8	8809191.87	89.91	70	120	
In	115	No Gas	8126662.89	0.7	9217317.193333333	88.17	70	120	
Tb	159	No Gas	10584498.17	0.5	11966615.65333333	88.45	70	120	
Lu	175	No Gas	10135372.97	0.6	11682743.9966667	86.76	70	120	
Bi	209	No Gas	6469439.28	1.1	7845001.133333333	82.47	70	120	
Sc	45	He	167562.84	1.2	185902.83	90.13	70	120	
Ge	72	He	152398.87	2.4	168618.47	90.38	70	120	
Rh	103	He	3633581.80	2.3	4321957.05	84.07	70	120	
In	115	He	1424752.78	2.4	1744348.13	81.68	70	120	
Tb	159	He	4840023.99	1.6	5927064.913333333	81.66	70	120	
Lu	175	He	3150012.97	1.9	3966465.46	79.42	70	120	
Bi	209	He	3877164.32	1.4	4977840.24	77.89	70	120	

Metals

Form VII

Lab Control Spikes

VII
LABORATORY CONTROL SAMPLE

Report No:	223072853	GCAL ID:	2505294 (LCS)
Matrix:	Solid	Instrument ID:	ICPMS2
Analyst:	TDM	Lab File ID:	2230731A_MS2.b\121156SMPL.d
Prep Date:	07/31/23	Time:	0945
		Analysis Date:	07/31/23
		Time:	1557
Prep Batch:	769824	Analytical Batch:	769901
Prep Method:	3050B	Analytical Method:	EPA 6020B

<i>ANALYTE</i>	<i>UNITS</i>	<i>TRUE</i>	<i>FOUND</i>	<i>% R</i>	<i>Q</i>	<i>LCL</i>	<i>UCL</i>
Arsenic	ug/kg	2000	2160	108		80	120

FORM VII - IN

Laboratory Control Sample (LCS) Report

Sample Name	2505294	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name	121156SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/31/2023 3:57:29 PM	Total Dilution	40.0000
Sample Type	LCS6020	Sample Pass/Fail	Fail
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Recovery Limits: 80-120% 6020B / 85-115% 200.8

Name	Mass	ISTD	Mode	Conc	RSD	CPS	SpkAmt	Rec	QC Flag
Li	7	45	No Gas	11360.268	2.3	2010880.59	250	113.6	
Be	9	72	No Gas	2133.584	1.6	125723.36	50	106.68	
B	11	45	No Gas	10756.202	0.9	449450.03	250	107.56	
Sr	88	72	No Gas	2099.944	1.2	2609145.17	50	105	
Zr	90	72	No Gas	430.771	0.8	333131.12	10	107.69	
Mo	95	115	No Gas	2236.868	1.3	488241.60	50	111.84	
Ag	107	115	No Gas	2250.327	1.1	1280766.65	50	112.52	
Cd	111	115	No Gas	2136.635	2.1	268689.29	50	106.83	
Sb	121	115	No Gas	4301.500	1.6	2467672.19	100	107.54	
Ba	137	115	No Gas	2091.955	1.7	415713.48	50	104.6	
Tl	205	209	No Gas	2134.676	2.1	2210991.38	50	106.73	
Pb	208	209	No Gas	2106.795	1.9	1590841.17	50	105.34	
Na	23	45	He	227982.906	1.5	2702260.27	5000	113.99	
Mg	24	45	He	225189.724	0.7	1144385.22	5000	112.59	
Al	27	45	He	44719.702	1.1	72669.95	1000	111.8	
Si	29	45	He	-52764.580	8.2	41639.66	5000	-26.38	LCS6020 Main CR1 Failed
K	39	45	He	221858.445	1.2	1554063.15	5000	110.93	
Ca	44	45	He	1076627.839	1.6	328618.85	25000	107.66	
Ti	47	45	He	2102.087	0.3	5543.05	50	105.1	
V	51	72	He	2182.255	1.3	207119.02	50	109.11	
Cr	52	72	He	2196.725	0.4	260920.95	50	109.84	
Mn	55	72	He	2301.234	1.0	125574.14	50	115.06	
Fe	57	72	He	220927.770	1.0	495731.31	5000	110.46	
Co	59	72	He	2191.786	1.0	443090.47	50	109.59	
Ni	60	72	He	4329.438	0.9	239160.00	100	108.24	
Cu	63	103	He	2232.484	0.9	330913.96	50	111.62	
Zn	66	72	He	42907.913	1.3	1010922.43	1000	107.27	
As	75	72	He	2163.911	1.4	58248.34	50	108.2	
Se	78	72	He	433.124	3.5	777.95	10	108.28	
Sn	120	115	He	2153.162	2.8	278943.77	50	107.66	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3927515.26	4977840.24	78.9	
Ge	72	He	146426.59	168618.47	86.84	
In	115	He	1421903.05	1744348.13	81.51	
Lu	175	He	3173385.47	3966465.46	80.01	
Rh	103	He	3557809.86	4321957.05	82.32	
Sc	45	He	163274.00	185902.83	87.83	
Tb	159	He	4805803.26	5927064.91333333	81.08	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	810378.46	809671.036666667	100.09	
Bi	209	No Gas	6196698.87	7845001.13333333	78.99	
Ge	72	No Gas	1218042.76	1338255.08666667	91.02	
In	115	No Gas	7735770.33	9217317.19333333	83.93	
Lu	175	No Gas	9814695.90	11682743.99666667	84.01	
Rh	103	No Gas	7486655.54	8809191.87	84.99	
Sc	45	No Gas	4733418.84	4940195.36	95.81	
Tb	159	No Gas	10219537.56	11966615.65333333	85.4	

VII
LABORATORY CONTROL SAMPLE

Report No:	<u>223072853</u>	GCAL ID:	<u>2505298 (LCS)</u>
Matrix:	<u>Solid</u>	Instrument ID:	<u>ICPMS2</u>
Analyst:	<u>LWZ</u>	Lab File ID:	<u>2230801A_MS2.b\1229SMPL.d</u>
Prep Date:	<u>07/31/23</u> Time: <u>0945</u>	Analysis Date:	<u>08/01/23</u> Time: <u>1138</u>
Prep Batch:	<u>769825</u>	Analytical Batch:	<u>769939</u>
Prep Method:	<u>3050B</u>	Analytical Method:	<u>EPA 6020B</u>

<i>ANALYTE</i>	<i>UNITS</i>	<i>TRUE</i>	<i>FOUND</i>	<i>% R</i>	<i>Q</i>	<i>LCL</i>	<i>UCL</i>
Arsenic	ug/kg	2000	2020	101		80	120

FORM VII - IN

Laboratory Control Sample (LCS) Report

Sample Name	2505298	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b
File Name	1229SMPL.d	Comment	ICPMS-2,TDM
Acq Time	8/1/2023 11:38:49 AM	Total Dilution	40.0000
Sample Type	LCS6020	Sample Pass/Fail	Fail
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Recovery Limits: 80-120% 6020B / 85-115% 200.8

Name	Mass	ISTD	Mode	Conc	RSD	CPS	SpkAmt	Rec	QC Flag
Li	7	6	No Gas	11081.989	1.4	1971869.29	250	110.82	
Be	9	6	No Gas	2098.514	1.3	124101.43	50	104.93	
B	11	45	No Gas	10296.645	1.9	434483.08	250	102.97	
Sr	88	72	No Gas	2064.602	1.3	2428655.17	50	103.23	
Zr	90	72	No Gas	418.600	1.0	307418.49	10	104.65	
Mo	95	115	No Gas	2094.151	1.3	450900.49	50	104.71	
Ag	107	115	No Gas	2130.523	2.3	1173473.29	50	106.53	
Cd	111	115	No Gas	2030.004	1.4	247883.02	50	101.5	
Sb	121	115	No Gas	4095.384	0.9	2288914.35	100	102.39	
Ba	137	115	No Gas	2055.659	1.6	377204.25	50	102.78	
Tl	205	209	No Gas	2026.692	1.6	1923159.76	50	101.33	
Pb	208	209	No Gas	2046.677	1.4	1401333.73	50	102.33	
Na	23	45	He	208136.893	1.8	3024227.35	5000	104.07	
Mg	24	45	He	210044.094	1.6	1277420.60	5000	105.02	
Al	27	45	He	42184.167	1.9	83051.02	1000	105.46	
Si	29	45	He	-12015673.051	6.5	85680.89	5000	-6007.84	LCS6020 Main CR1 Failed
K	39	45	He	203912.456	1.6	1696217.32	5000	101.96	
Ca	44	45	He	1052656.055	1.4	343628.50	25000	105.27	
Ti	47	45	He	2070.517	3.3	5762.13	50	103.53	
V	51	72	He	2071.356	1.8	207737.04	50	103.57	
Cr	52	72	He	2080.412	1.2	263986.19	50	104.02	
Mn	55	72	He	2190.470	1.6	126305.19	50	109.52	
Fe	57	72	He	208148.773	0.9	488972.74	5000	104.07	
Co	59	72	He	2089.957	1.5	430403.98	50	104.5	
Ni	60	72	He	4171.219	1.5	233138.28	100	104.28	
Cu	63	45	He	2142.695	1.6	323171.03	50	107.13	
Zn	66	72	He	40716.564	1.6	982943.68	1000	101.79	
As	75	72	He	2022.626	1.5	55756.40	50	101.13	
Se	78	72	He	404.465	3.8	757.84	10	101.12	
Sn	120	115	He	2057.658	2.2	245472.87	50	102.88	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3546552.55	3919315.67	90.49	
Ge	72	He	145123.34	162135.166666667	89.51	
In	115	He	1307979.11	1476978.55	88.56	
Lu	175	He	2855238.91	3117120.786666667	91.6	
Rh	103	He	3309445.84	3761118.46	87.99	
Sc	45	He	174813.80	200611.303333333	87.14	
Tb	159	He	4297275.14	4722340.556666667	91	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	847414.14	887109.66	95.53	
Bi	209	No Gas	5632480.13	6378925.74	88.3	
Ge	72	No Gas	1180986.27	1353105.29	87.28	
In	115	No Gas	7371201.73	8577775.67	85.93	
Lu	175	No Gas	8984666.53	10093915.0566667	89.01	
Rh	103	No Gas	7156204.72	8537311.88333333	83.82	
Sc	45	No Gas	4576761.35	5264112.29	86.94	
Tb	159	No Gas	9448547.57	10724634.4233333	88.1	

Metals

Form VIII

Tunes

VIII
ICP-MS TUNE

Report No: 223072853 GCAL QC ID: 1150
 Instrument ID: ICPMS2 Lab File ID: 2230731A_MS2.b\QCTune\2230731A_MS2-QCTu
 Analyst: LWZ Analytical Batch: 769901
 Analysis Date: 07/31/23 Time: 1011 Analytical Method: EPA 6020B

<i>ELEMENT - MASS</i>	<i>AVG MEASURED MASS (amu)</i>	<i>PEAK WIDTH AT 5% PEAK HEIGHT (amu)</i>	<i>%RSD</i>
Be-9	9	.7802	1.8466
Mg-24	24	.7547	4.0359
Mg-25	25	.7428	3.6522
Mg-26	26	.7865	3.2365
Co-59	59	.8053	.2311
In-115	115	.7265	.2756
Pb-206	206.05	.7815	.7398
Pb-207	207	.752	.5366
Pb-208	208	.798	.8585

FORM VIII - IN

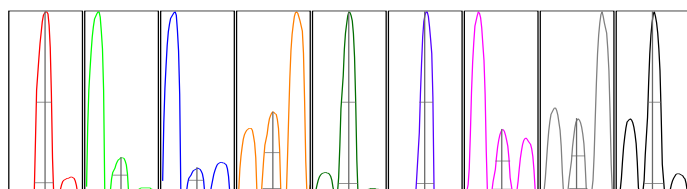
US EPA Tune Check Sample Report

Batch Folder C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
Report Comment
Instrument Name G8403A JP14170244

[No Gas]				
Mass	Count (Mean)	RSD% (Actual)	RSD% (Required)	RSD% (Flag)
9	5387	1.85	5.00	
24	97411	4.04	5.00	
25	12912	3.65	5.00	
26	16607	3.24	5.00	
59	139445	0.23	5.00	
115	134594	0.28	5.00	
206	32568	0.74	5.00	
207	27978	0.54	5.00	
208	68772	0.86	5.00	

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
9	5384	5554	5363	5347	5289
24	102620	99611	97263	95104	92460
25	13404	13296	13021	12461	12378
26	17352	16886	16545	16296	15957
59	139124	139192	139877	139676	139356
115	134111	134883	134727	134297	134951
206	32501	32735	32190	32803	32609
207	27982	28174	28038	27934	27763
208	69427	69223	68315	68862	68034

Integration Time [sec] = 0.1



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	Width-X% (Actual)	Width-X% (Required)	Width-X% (Flag)
9	914	9.00	8.9 - 9.1		0.780	0.849	
24	16475	24.00	23.9 - 24.1		0.755	0.849	
25	2200	25.00	24.9 - 25.1		0.743	0.849	
26	2736	26.00	25.9 - 26.1		0.786	0.849	
59	24627	59.00	58.9 - 59.1		0.805	0.849	
115	25116	115.00	114.9 - 115.1		0.727	0.849	
206	5982	206.05	205.9 - 206.1		0.781	0.849	
207	5197	207.00	206.9 - 207.1		0.752	0.849	
208	12774	208.00	207.9 - 208.1		0.798	0.849	

X% = 5 Integration Time [sec] = 0.1 Acquisition Time [sec] = 235 Y Axis = Linear

Tune Parameters

Plasma Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit	ParameterName	Value	Unit
RF Power	1550	W	Carrier Gas	1.00	L/min	S/C Temp		2 °C
RF Matching	1.60	V	Option Gas		%	Gas Switch		Dilution Gas
Smpl Depth	8.0	mm	Nebulizer Pump	0.10	rps	Makeup/Dilution Gas		0.20 L/min

Lenses Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit	ParameterName	Value	Unit
Extract 1	0.0	V	Omega Lens	11.5	V	Deflect	15.6	V
Extract 2	-250.0	V	Cell Entrance	-30	V	Plate Bias	-35	V
Omega Bias	-110	V	Cell Exit	-50	V			

Cell Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit	ParameterName	Value	Unit
Use Gas	false		3rd Gas Flow	0	%	Energy Discrimination	4.0	V
He Flow	0.0	mL/min	OctP Bias	-8.0	V			
H2 Flow	0.0	mL/min	OctP RF	200	V			

VIII
ICP-MS TUNE

Report No: 223072853 GCAL QC ID: 1150
 Instrument ID: ICPMS2 Lab File ID: 2230731A_MS2.b\QCTune\2230731A_MS2-QCTu
 Analyst: LWZ Analytical Batch: 769939
 Analysis Date: 08/01/23 Time: 0900 Analytical Method: EPA 6020B

<i>ELEMENT - MASS</i>	<i>AVG MEASURED MASS (amu)</i>	<i>PEAK WIDTH AT 5% PEAK HEIGHT (amu)</i>	<i>%RSD</i>
Be-9	9	.7377	1.0109
Mg-24	23.95	.7534	3.2383
Mg-25	24.95	.7409	3.1495
Mg-26	25.95	.7841	2.3177
Co-59	58.95	.7739	.3435
In-115	115	.7466	.5585
Pb-206	205.95	.7419	.6866
Pb-207	206.95	.7677	.9086
Pb-208	207.95	.7652	.7752

FORM VIII - IN

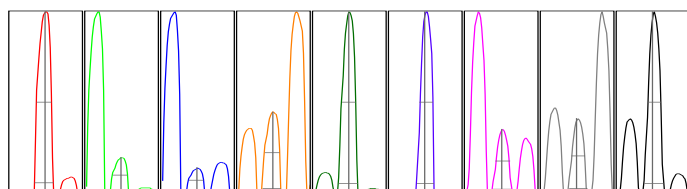
US EPA Tune Check Sample Report

Batch Folder C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
Report Comment
Instrument Name G8403A JP14170244

[No Gas]				
Mass	Count (Mean)	RSD% (Actual)	RSD% (Required)	RSD% (Flag)
9	5387	1.85	5.00	
24	97411	4.04	5.00	
25	12912	3.65	5.00	
26	16607	3.24	5.00	
59	139445	0.23	5.00	
115	134594	0.28	5.00	
206	32568	0.74	5.00	
207	27978	0.54	5.00	
208	68772	0.86	5.00	

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
9	5384	5554	5363	5347	5289
24	102620	99611	97263	95104	92460
25	13404	13296	13021	12461	12378
26	17352	16886	16545	16296	15957
59	139124	139192	139877	139676	139356
115	134111	134883	134727	134297	134951
206	32501	32735	32190	32803	32609
207	27982	28174	28038	27934	27763
208	69427	69223	68315	68862	68034

Integration Time [sec] = 0.1



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	Width-X% (Actual)	Width-X% (Required)	Width-X% (Flag)
9	914	9.00	8.9 - 9.1		0.780	0.849	
24	16475	24.00	23.9 - 24.1		0.755	0.849	
25	2200	25.00	24.9 - 25.1		0.743	0.849	
26	2736	26.00	25.9 - 26.1		0.786	0.849	
59	24627	59.00	58.9 - 59.1		0.805	0.849	
115	25116	115.00	114.9 - 115.1		0.727	0.849	
206	5982	206.05	205.9 - 206.1		0.781	0.849	
207	5197	207.00	206.9 - 207.1		0.752	0.849	
208	12774	208.00	207.9 - 208.1		0.798	0.849	

X% = 5 Integration Time [sec] = 0.1 Acquisition Time [sec] = 235 Y Axis = Linear

Tune Parameters

Plasma Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit	ParameterName	Value	Unit
RF Power	1550	W	Carrier Gas	1.00	L/min	S/C Temp		2 °C
RF Matching	1.60	V	Option Gas		%	Gas Switch		Dilution Gas
Smpl Depth	8.0	mm	Nebulizer Pump	0.10	rps	Makeup/Dilution Gas		0.20 L/min

Lenses Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit	ParameterName	Value	Unit
Extract 1	0.0	V	Omega Lens	11.5	V	Deflect	15.6	V
Extract 2	-250.0	V	Cell Entrance	-30	V	Plate Bias	-35	V
Omega Bias	-110	V	Cell Exit	-50	V			

Cell Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit	ParameterName	Value	Unit
Use Gas	false		3rd Gas Flow	0	%	Energy Discrimination	4.0	V
He Flow	0.0	mL/min	OctP Bias	-8.0	V			
H2 Flow	0.0	mL/min	OctP RF	200	V			

Metals

Form IX

Serial Dilutions

IX
SERIAL DILUTIONS

Report No:	<u>223072853</u>	GCAL SD ID:	<u>2505695</u>
Matrix:	<u>Solid</u>	Parent Sample ID:	<u>KCDC-SB0070-002.... (22307285301)</u>
Analyst:	<u>TDM</u>	Instrument ID:	<u>ICPMS2</u>
Analysis Date:	<u>07/31/23</u> Time: <u>1615</u>	Lab File ID:	<u>2230731A_MS2.b\121161SMPL.d</u>
Analytical Method:	<u>EPA 6020B</u>	Analytical Batch:	<u>769901</u>

<i>ANALYTE</i>	<i>UNITS</i>	<i>PARENT SAMPLE RESULT</i>	<i>C</i>	<i>SERIAL DILUTION RESULT</i>	<i>C</i>	<i>% DIFF</i>	<i>Q</i>	<i>LCL</i>	<i>UCL</i>
Arsenic	ug/kg	1330		1220	J				

FORM IX - IN

Sample Report

Sample Name	2505695	Data Path Name	C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b
File Name	121161SMPL.d	Comment	ICPMS-2,TDM
Acq Time	7/31/2023 4:15:17 PM	Total Dilution	2000.0000
Sample Type	Sample	Sample Pass/Fail	Pass
ISTD Ref FileName	004CALB.d	ISTD Pass/Fail	Pass

Units : ppb

QC Analyte Table

Name	Mass	ISTD	Mode	MeasValue	Final Conc	RSD	CPS	LDR	QC Flag
Li	7	45	No Gas	-0.408	-816.642	1.1	55298.20	500	
Be	9	72	No Gas	0.015	29.556	9.0	126.67	1000	
B	11	45	No Gas	2.986	5972.054	5.0	8962.93	500	
Sr	88	72	No Gas	12.849	25697.736	1.0	666499.05	1000	
Zr	90	72	No Gas	0.269	537.441	26.3	9594.92	100	
Mo	95	115	No Gas	-0.02	-40.948	8.3	1028.94	1000	
Ag	107	115	No Gas	0.005	9.006	14.3	153.34	100	
Cd	111	115	No Gas	0.003	6.100	16.9	161.11	1000	
Sb	121	115	No Gas	0.503	1005.886	7.2	13509.96	1000	
Ba	137	115	No Gas	0.524	1048.808	2.0	4420.76	1000	
Tl	205	209	No Gas	-0.045	-90.837	8.2	713.38	1000	
Pb	208	209	No Gas	0.301	601.164	6.6	9687.24	1000	
Na	23	45	He	23.144	46287.653	2.1	35422.35	100000	
Mg	24	45	He	10.292	20584.426	5.5	3430.59	100000	
Al	27	45	He	140.913	281825.466	2.8	9253.36	20000	
Si	29	45	He	-3872.915	-7745830.976	11.3	36203.23	10000	
K	39	45	He	38.669	77338.107	1.2	48663.67	100000	
Ca	44	45	He	2586.743	5173485.929	0.4	32874.94	500000	
Ti	47	45	He	8.932	17863.569	37.8	960.24	1000	
V	51	72	He	0.239	478.028	7.6	1594.55	1000	
Cr	52	72	He	0.468	936.973	1.0	3597.15	1000	
Mn	55	72	He	0.822	1644.214	1.4	2287.98	5000	
Fe	57	72	He	66.917	133833.318	3.3	6315.18	100000	
Co	59	72	He	0.016	31.849	7.5	257.78	1000	
Ni	60	72	He	-0.197	-394.388	6.1	343.34	2000	
Cu	63	103	He	0.548	1095.404	4.3	3667.17	1000	
Zn	66	72	He	-0.224	-448.782	8.8	1937.93	20000	
As	75	72	He	0.512	1024.088	6.8	715.35	1000	
Se	78	72	He	0.028	56.979	3.8	83.51	50	
Sn	120	115	He	0.004	8.735	7.3	547.80	1000	

QC ISTD Table

Recovery Limits: 30 - 120% DOD 6020B / 70-130% 6020B / 60-125% 200.8

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
Bi	209	He	3763328.69	4977840.24	75.6	
Ge	72	He	148770.18	168618.47	88.23	
In	115	He	1399421.59	1744348.13	80.23	
Lu	175	He	3003884.64	3966465.46	75.73	
Rh	103	He	3607190.14	4321957.05	83.46	
Sc	45	He	163515.19	185902.83	87.96	
Tb	159	He	4602294.20	5927064.91333333	77.65	

Name	Mass	Mode	CPS	Ref CPS	Rec	Flag
(Li)	6	No Gas	745244.14	809671.036666667	92.04	
Bi	209	No Gas	6309310.12	7845001.13333333	80.42	
Ge	72	No Gas	1270058.08	1338255.08666667	94.9	
In	115	No Gas	8041181.51	9217317.19333333	87.24	
Lu	175	No Gas	9727286.73	11682743.99666667	83.26	
Rh	103	No Gas	7966907.74	8809191.87	90.44	
Sc	45	No Gas	4805045.37	4940195.36	97.26	
Tb	159	No Gas	10246350.05	11966615.65333333	85.62	

Metals

Form XIII

Preparation Logs

XIII
PREPARATION LOG

Report No: 223072853

Prep Method: EPA 3050B

Prep Batch: 769824

<i>CLIENT SAMPLE ID</i>	<i>GCAL SAMPLE ID</i>	<i>PREP DATE</i>	<i>WEIGHT</i>	<i>UNITS</i>	<i>VOLUME</i>	<i>UNITS</i>
KCDC-SB0070-002....MS	2505295	07/31/23	1.25	g	50	mL
KCDC-SB0070-002....MSD	2505296	07/31/23	1.25	g	50	mL
KCDC-SB0070-002.0-20230720	22307285301	07/31/23	1.25	g	50	mL
KCDC-SB0079-002.0-20230720	22307285302	07/31/23	1.32	g	50	mL
KCDC-SB0083-002.0-20230720	22307285303	07/31/23	1.23	g	50	mL
KCDC-SB0085-000.5-20230720	22307285304	07/31/23	1.27	g	50	mL
KCDC-SB0085-001.0-20230720	22307285305	07/31/23	1.33	g	50	mL
KCDC-SB0085-002.0-20230720	22307285306	07/31/23	1.29	g	50	mL
KCDC-SB0086-000.5-20230720	22307285307	07/31/23	1.27	g	50	mL
KCDC-SB0086-001.0-20230720	22307285308	07/31/23	1.33	g	50	mL
KCDC-SB0086-002.0-20230720	22307285309	07/31/23	1.27	g	50	mL
KCDC-SB0087-000.5-20230720	22307285310	07/31/23	1.27	g	50	mL
KCDC-SB0087-001.0-20230720	22307285311	07/31/23	1.27	g	50	mL
KCDC-SB0087-002.0-20230720	22307285312	07/31/23	1.3	g	50	mL
KCDC-SB0088-000.5-20230720	22307285313	07/31/23	1.39	g	50	mL
KCDC-SB0088-001.0-20230720	22307285314	07/31/23	1.38	g	50	mL
KCDC-SB0088-002.0-20230720	22307285315	07/31/23	1.29	g	50	mL
KCDC-SB0089-000.5-20230720	22307285316	07/31/23	1.26	g	50	mL
KCDC-SB0089-001.0-20230720	22307285317	07/31/23	1.29	g	50	mL
KCDC-SB0089-002.0-20230720	22307285318	07/31/23	1.26	g	50	mL
KCDC-SB0090-000.5-20230720	22307285319	07/31/23	1.36	g	50	mL
LCS2505294	2505294	07/31/23	1.25	g	50	mL
MB2505293	2505293	07/31/23	1.25	g	50	mL

XIII
PREPARATION LOG

Report No: 223072853

Prep Method: EPA 3050B

Prep Batch: 769825

<i>CLIENT SAMPLE ID</i>	<i>GCAL SAMPLE ID</i>	<i>PREP DATE</i>	<i>WEIGHT</i>	<i>UNITS</i>	<i>VOLUME</i>	<i>UNITS</i>
KCDC-SB0066-002.0-20230720	22307285328	07/31/23	1.33	g	50	mL
KCDC-SB0067-002.0-20230720	22307285326	07/31/23	1.27	g	50	mL
KCDC-SB0071-002.0-20230720	22307285329	07/31/23	1.28	g	50	mL
KCDC-SB0080-002.0-20230720	22307285325	07/31/23	1.39	g	50	mL
KCDC-SB0084-002.0-20230720	22307285327	07/31/23	1.31	g	50	mL
KCDC-SB0090-001.0-20230720	22307285320	07/31/23	1.35	g	50	mL
KCDC-SB0090-002.0-20230720	22307285321	07/31/23	1.32	g	50	mL
KCDC-SB0091-000.5-20230720	22307285322	07/31/23	1.28	g	50	mL
KCDC-SB0091-001.0-20230720	22307285323	07/31/23	1.28	g	50	mL
KCDC-SB0091-002.0-20230720	22307285324	07/31/23	1.35	g	50	mL
LCS2505298	2505298	07/31/23	1.25	g	50	mL
MB2505297	2505297	07/31/23	1.25	g	50	mL
SD07-09_072723 MS	22307285003	07/31/23	1.25	g	50	mL
SD07-09_072723 MSD	22307285004	07/31/23	1.25	g	50	mL

Metals

Form XIV

Run Logs

XIV
ANALYSIS RUN LOG

Report No: 223072853
Instrument ID: ICPMS2

Analytical Batch: 769901
Analytical Method: EPA 6020B

Start Date: 07/31/23
End Date: 07/31/23

CLIENT SAMPLE ID	GCAL		TIME	Analyte Symbols																																		
	SAMPLE ID	PF		D/F	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr			
ITUNE	1150	*	1	1011			X																															
IICALB	1300	*	1	1037			X																															
IICAL2	1302	*	1	1041			X																															
IICAL4	1304	*	1	1046			X																															
IICAL5	1305	*	1	1053			X																															
IICAL6	1306	*	1	1057			X																															
ICV	1600	*	1	1101			X																															
ICB	1700	*	1	1105			X																															
ICSA	2000	*	1	1132			X																															
ICSAB	2100	*	1	1135			X																															
LLCCV	1803	*	1	1140			X																															
LDR	2500	*	1	1144			X																															
CCV	1800	*	1	1356			X																															
CCB	1900	*	1	1400			X																															
MB2505293	2505293	*	1	1553			X																															
LCS2505294	2505294	*	1	1557			X																															
KCDC-SB0070-002.0-20230720	22307285301	*	10	1601			X																															
KCDC-SB0070-002....MS	2505295	*	10	1604			X																															
KCDC-SB0070-002...MSD	2505296	*	10	1608			X																															
KCDC-SB0070-002...PDS	2505694	*	10	1611			X																															
KCDC-SB0070-002....SD	2505695	*	50	1615			X																															
KCDC-SB0079-002.0-20230720	22307285302	*	10	1618			X																															
KCDC-SB0083-002.0-20230720	22307285303	*	10	1622			X																															
KCDC-SB0085-000.5-20230720	22307285304	*	10	1625			X																															
KCDC-SB0085-001.0-20230720	22307285305	*	10	1629			X																															
KCDC-SB0085-002.0-20230720	22307285306	*	10	1633			X																															
KCDC-SB0086-000.5-20230720	22307285307	*	10	1636			X																															
KCDC-SB0086-001.0-20230720	22307285308	*	10	1640			X																															
KCDC-SB0086-002.0-20230720	22307285309	*	10	1643			X																															

XIV
ANALYSIS RUN LOG

Report No: 223072853

Analytical Batch: 769939

Start Date: 08/01/23

Instrument ID: ICPMS2

Analytical Method: EPA 6020B

End Date: 08/01/23

GCAL SAMPLE ID		Analyte Symbols																																		
CLIENT SAMPLE ID		PF	D/F	TIME	Al	Sb	As	Ba	Be	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	K	Se	Si	Ag	Na	Sr	Tl	Sn	Ti	V	Zn	Zr	
KCDC-SB0091-002.0-20230720	22307285324	*	10	1156			X																													
KCDC-SB0080-002.0-20230720	22307285325	*	10	1200			X																													
KCDC-SB0067-002.0-20230720	22307285326	*	10	1203			X																													
KCDC-SB0084-002.0-20230720	22307285327	*	10	1207			X																													
KCDC-SB0066-002.0-20230720	22307285328	*	10	1210			X																													
KCDC-SB0071-002.0-20230720	22307285329	*	10	1214			X																													
CCV	1800	*	1	1218			X																													
CCB	1900	*	1	1221			X																													

FORM XIV - IN

Metals

Form XV

Internal Standards

XV (He)
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Report No: 223072853
Instrument ID: ICPMS2
Analytical Method: EPA 6020B

Start Date: 07/31/23
End Date: 07/31/23
Analytical Batch: 769901

		Internal Standards %RI For:										
		GCAL SAMPLE ID										
CLIENT SAMPLE ID		TIME	ISTD1 Q	ISTD2 Q	ISTD3 Q	ISTD4 Q	ISTD5 Q	ISTD6 Q	ISTD7 Q			
MB2505293	2505293	1553	77	87	81	78	84	90	79			
LCS2505294	2505294	1557	79	87	82	80	82	88	81			
KCDC-SB0070-002.0-20230720	22307285301	1601	83	93	87	83	89	94	85			
KCDC-SB0070-002....MS	2505295	1604	81	92	86	82	88	94	84			
KCDC-SB0070-002...MSD	2505296	1608	79	91	84	80	87	91	83			
KCDC-SB0070-002...PDS	2505694	1611	78	90	82	79	84	90	82			
KCDC-SB0070-002....SD	2505695	1615	76	88	80	76	83	88	78			
KCDC-SB0079-002.0-20230720	22307285302	1618	74	86	79	74	83	87	77			
KCDC-SB0083-002.0-20230720	22307285303	1622	74	87	78	74	82	86	76			
KCDC-SB0085-000.5-20230720	22307285304	1625	76	86	79	76	82	86	78			
KCDC-SB0085-001.0-20230720	22307285305	1629	80	89	82	79	87	90	81			
KCDC-SB0085-002.0-20230720	22307285306	1633	82	92	86	82	90	93	84			
KCDC-SB0086-000.5-20230720	22307285307	1636	76	87	80	77	81	87	80			
KCDC-SB0086-001.0-20230720	22307285308	1640	77	88	81	77	85	88	80			
KCDC-SB0086-002.0-20230720	22307285309	1643	77	88	81	76	86	90	80			
KCDC-SB0087-000.5-20230720	22307285310	1647	78	92	84	79	86	93	83			

ISTD 1: Bismuth (He)	ISTD 4: Lutetium (He)	ISTD 7: Terbium (He)
ISTD 2: Germanium (He)	ISTD 5: Rhodium (He)	
ISTD 3: Indium (He)	ISTD 6: Scandium (He)	

FORM XV - IN

XV (No Gas)
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Report No: <u>223072853</u>	Start Date: <u>07/31/23</u>
Instrument ID: <u>ICPMS2</u>	End Date: <u>07/31/23</u>
Analytical Method: <u>EPA 6020B</u>	Analytical Batch: <u>769901</u>

Internal Standards %RI For:

CLIENT SAMPLE ID	GCAL SAMPLE ID	TIME	ISTD8 Q	ISTD9 Q	ISTD10 Q	ISTD11 Q	ISTD12 Q	ISTD13 Q	ISTD14 Q
MB2505293	2505293	1553	76	88	81	79	85	94	81
LCS2505294	2505294	1557	79	91	84	84	85	96	85
KCDC-SB0070-002.0-20230720	22307285301	1601	88	101	96	92	98	104	94
KCDC-SB0070-002....MS	2505295	1604	86	99	93	89	96	103	92
KCDC-SB0070-002...MSD	2505296	1608	84	98	92	88	93	101	90
KCDC-SB0070-002...PDS	2505694	1611	82	96	88	87	90	100	88
KCDC-SB0070-002....SD	2505695	1615	80	95	87	83	90	97	86
KCDC-SB0079-002.0-20230720	22307285302	1618	79	93	85	83	88	95	84
KCDC-SB0083-002.0-20230720	22307285303	1622	79	93	85	82	88	96	84
KCDC-SB0085-000.5-20230720	22307285304	1625	80	93	86	84	87	96	86
KCDC-SB0085-001.0-20230720	22307285305	1629	85	98	90	88	95	101	90
KCDC-SB0085-002.0-20230720	22307285306	1633	87	99	95	90	98	104	93
KCDC-SB0086-000.5-20230720	22307285307	1636	80	95	87	87	87	99	89
KCDC-SB0086-001.0-20230720	22307285308	1640	83	97	88	86	94	99	88
KCDC-SB0086-002.0-20230720	22307285309	1643	82	96	89	87	94	100	88
KCDC-SB0087-000.5-20230720	22307285310	1647	85	100	95	90	96	105	92

ISTD 8: Bismuth (No Gas)	ISTD 11: Lutetium (No Gas)	ISTD 14: Terbium (No Gas)
ISTD 9: Germanium (No Gas)	ISTD 12: Rhodium (No Gas)	
ISTD 10: Indium (No Gas)	ISTD 13: Scandium (No Gas)	

FORM XV - IN

XV (He)
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Report No: 223072853
Instrument ID: ICPMS2
Analytical Method: EPA 6020B

Start Date: 08/01/23
End Date: 08/01/23
Analytical Batch: 769939

		Internal Standards %RI For:										
GCAL SAMPLE ID												
CLIENT SAMPLE ID		TIME	ISTD1 Q	ISTD2 Q	ISTD3 Q	ISTD4 Q	ISTD5 Q	ISTD6 Q	ISTD7 Q			
KCDC-SB0087-001.0-20230720	22307285311	1056	100	97	96	99	97	96	98			
KCDC-SB0087-002.0-20230720	22307285312	1059	100	97	97	99	98	96	99			
KCDC-SB0088-000.5-20230720	22307285313	1103	98	95	95	97	96	95	98			
KCDC-SB0088-001.0-20230720	22307285314	1106	103	99	99	101	100	99	101			
KCDC-SB0088-002.0-20230720	22307285315	1110	98	97	96	96	97	96	96			
KCDC-SB0089-000.5-20230720	22307285316	1113	104	102	101	103	102	103	103			
KCDC-SB0089-001.0-20230720	22307285317	1117	102	102	101	102	101	103	102			
KCDC-SB0089-002.0-20230720	22307285318	1121	97	97	95	96	96	97	96			
KCDC-SB0090-000.5-20230720	22307285319	1124	96	98	96	96	94	98	97			
MB2505297	2505297	1135	90	89	88	91	89	88	90			
LCS2505298	2505298	1138	90	90	89	92	88	87	91			
KCDC-SB0090-001.0-20230720	22307285320	1142	94	93	92	92	92	92	93			
KCDC-SB0090-002.0-20230720	22307285321	1145	97	97	96	96	96	96	97			
KCDC-SB0091-000.5-20230720	22307285322	1149	96	96	94	97	93	96	97			
KCDC-SB0091-001.0-20230720	22307285323	1153	99	98	98	98	96	98	99			
KCDC-SB0091-002.0-20230720	22307285324	1156	102	101	99	100	100	100	100			
KCDC-SB0080-002.0-20230720	22307285325	1200	102	102	100	101	103	102	101			
KCDC-SB0067-002.0-20230720	22307285326	1203	102	101	100	101	102	102	101			
KCDC-SB0084-002.0-20230720	22307285327	1207	101	101	100	100	100	100	100			
KCDC-SB0066-002.0-20230720	22307285328	1210	100	100	98	98	100	99	98			
KCDC-SB0071-002.0-20230720	22307285329	1214	100	100	98	98	101	99	98			

ISTD 1: Bismuth (He) ISTD 4: Lutetium (He) ISTD 7: Terbium (He)
 ISTD 2: Germanium (He) ISTD 5: Rhodium (He)
 ISTD 3: Indium (He) ISTD 6: Scandium (He)

FORM XV - IN

XV (No Gas)
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Report No: 223072853
Instrument ID: ICPMS2
Analytical Method: EPA 6020B

Start Date: 08/01/23
End Date: 08/01/23
Analytical Batch: 769939

Internal Standards %RI For:

CLIENT SAMPLE ID	GCAL SAMPLE ID	TIME	Internal Standards %RI For:									
			ISTD8 Q	ISTD9 Q	ISTD10 Q	ISTD11 Q	ISTD12 Q	ISTD13 Q	ISTD14 Q			
KCDC-SB0087-001.0-20230720	22307285311	1056	103	97	98	100	98	98	100			
KCDC-SB0087-002.0-20230720	22307285312	1059	103	99	101	101	100	99	100			
KCDC-SB0088-000.5-20230720	22307285313	1103	99	95	95	97	94	95	96			
KCDC-SB0088-001.0-20230720	22307285314	1106	102	98	99	100	99	98	100			
KCDC-SB0088-002.0-20230720	22307285315	1110	98	96	95	96	97	95	96			
KCDC-SB0089-000.5-20230720	22307285316	1113	103	101	103	103	102	102	102			
KCDC-SB0089-001.0-20230720	22307285317	1117	102	101	101	103	101	102	102			
KCDC-SB0089-002.0-20230720	22307285318	1121	99	99	98	98	99	100	99			
KCDC-SB0090-000.5-20230720	22307285319	1124	96	97	95	96	93	97	96			
MB2505297	2505297	1135	88	86	85	87	85	87	86			
LCS2505298	2505298	1138	88	87	86	89	84	87	88			
KCDC-SB0090-001.0-20230720	22307285320	1142	95	93	93	94	91	93	93			
KCDC-SB0090-002.0-20230720	22307285321	1145	98	96	97	97	94	96	97			
KCDC-SB0091-000.5-20230720	22307285322	1149	97	95	95	98	91	96	98			
KCDC-SB0091-001.0-20230720	22307285323	1153	101	98	99	100	95	97	99			
KCDC-SB0091-002.0-20230720	22307285324	1156	103	100	103	102	100	99	101			
KCDC-SB0080-002.0-20230720	22307285325	1200	104	101	102	103	103	100	103			
KCDC-SB0067-002.0-20230720	22307285326	1203	104	101	103	104	102	100	103			
KCDC-SB0084-002.0-20230720	22307285327	1207	102	100	103	103	99	100	102			
KCDC-SB0066-002.0-20230720	22307285328	1210	102	99	102	102	101	99	101			
KCDC-SB0071-002.0-20230720	22307285329	1214	101	99	101	101	101	99	100			

ISTD 8: Bismuth (No Gas) ISTD 11: Lutetium (No Gas) ISTD 14: Terbium (No Gas)
 ISTD 9: Germanium (No Gas) ISTD 12: Rhodium (No Gas)
 ISTD 10: Indium (No Gas) ISTD 13: Scandium (No Gas)

FORM XV - IN

Metals

ICPMS ICALS

Sample					
Data File	Acq. Date-Time	Type	Level	Sample Name	Total Dil.
001SMPL.d	7/31/2023 10:27	Sample		Blank	1
002SMPL.d	7/31/2023 10:30	Sample		Blank	1
003SMPL.d	7/31/2023 10:34	Sample		Blank	1
004CALB.d	7/31/2023 10:37	CalBlk	1	1300	1
005CAL.S.d	7/31/2023 10:41	CalStd	3	1302	1
006CAL.S.d	7/31/2023 10:46	CalStd	5	1304	1
007CAL.S.d	7/31/2023 10:49	CalStd		5 PPB	1
008CAL.S.d	7/31/2023 10:53	CalStd	6	1305	1
009CAL.S.d	7/31/2023 10:57	CalStd	7	1306	1
010_ICV.d	7/31/2023 11:01	ICV		1600	1
011_ICB.d	7/31/2023 11:05	ICB		1700	1
0120.1.d	7/31/2023 11:08	LLCCV0.1		X1804	1
1210.1.d	7/31/2023 11:12	LLCCV0.1		X1804	1
12110.1.d	7/31/2023 11:21	LLCCV0.1		1804	1
121110.5.d	7/31/2023 11:25	LLCCV0.5		1804	1
121111CCV1.d	7/31/2023 11:28	LLCCV1		X1803	1
121112ICSA.d	7/31/2023 11:32	ICSA		2000	1
121113ICSB.d	7/31/2023 11:35	ICSB		2100	1
121114CCV1.d	7/31/2023 11:40	LLCCV1		1803	1
121115_QC1.d	7/31/2023 11:44	QC1		LDR	1
121116SMPL.d	7/31/2023 11:47	Sample		2500	1
121117SMPL.d	7/31/2023 11:51	MBSOIL		2504620	40
121118SMPL.d	7/31/2023 11:54	LCS6020		2504621	40
121119SMPL.d	7/31/2023 11:58	LCS6020		2504622	40
121120SMPL.d	7/31/2023 12:01	Sample		22307274401 100X	4000
121121SMPL.d	7/31/2023 12:05	Sample		BLANK	1
121122SMPL.d	7/31/2023 12:09	Sample		22307274401	400
121123SMPL.d	7/31/2023 12:12	Sample		BLANK	1
121124_CC.V.d	7/31/2023 12:16	CCV		1800	1
121125_CCB.d	7/31/2023 12:19	CCB		1900	1
121126SMPL.d	7/31/2023 12:23	MBSOIL		2504620 HCl	40
121127SMPL.d	7/31/2023 12:27	Sample		BLANK	1
121128SMPL.d	7/31/2023 12:30	LCS6020		2504621 HCl	40
121129SMPL.d	7/31/2023 12:34	Sample		BLANK	1
121130SMPL.d	7/31/2023 12:37	LCS6020		2504622 HCl	40
121131SMPL.d	7/31/2023 12:41	Sample		BLANK	1
121132SMPL.d	7/31/2023 12:45	Sample		22307274401 HCl 100	4000
121133SMPL.d	7/31/2023 12:48	Sample		BLANK	1
121134SMPL.d	7/31/2023 12:52	Sample		22307274401 HCl	400
121135SMPL.d	7/31/2023 12:55	Sample		BLANK	1
121136_CC.V.d	7/31/2023 12:59	CCV		1800	1
121137_CCB.d	7/31/2023 13:02	CCB		1900	1
121138SMPL.d	7/31/2023 13:06	Sample		22307273501	1
121139SMPL.d	7/31/2023 13:10	Sample		22307280601	1
121140SMPL.d	7/31/2023 13:13	MBWATER		2505301	1

121141SMPL.d	7/31/2023 13:17	LCS6020		2505302	1
121142SMPL.d	7/31/2023 13:20	Sample		22307285401	1
121143SMPL.d	7/31/2023 13:24	Sample		22307285501	1
121144SMPL.d	7/31/2023 13:28	Sample		22307284715	1
121145SMPL.d	7/31/2023 13:31	Sample		22307285005	1
121146SMPL.d	7/31/2023 13:35	Sample		22307285006	1
121147SMPL.d	7/31/2023 13:38	AllRef		22307285009	1
121148SMPL.d	7/31/2023 13:42	MS		22307285010	1
121149SMPL.d	7/31/2023 13:46	MSD		22307285011	1
121150SMPL.d	7/31/2023 13:49	PDS		2505691	1
121151SMPL.d	7/31/2023 13:53	Sample		2505692	5
121152_CC.V.d	7/31/2023 13:56	CCV		1800	1
121153_CCB.d	7/31/2023 14:00	CCB		1900	1
121154SMPL.d	7/31/2023 15:50	Sample		BLANK	1
121155SMPL.d	7/31/2023 15:53	MBSOIL		2505293	40
121156SMPL.d	7/31/2023 15:57	LCS6020		2505294	40
121157SMPL.d	7/31/2023 16:01	AllRef		22307285301	400
121158SMPL.d	7/31/2023 16:04	MSSOIL		2505295	400
121159SMPL.d	7/31/2023 16:08	MSDSOIL		2505296	400
121160SMPL.d	7/31/2023 16:11	PDS		2505694	400
121161SMPL.d	7/31/2023 16:15	Sample		2505695	2000
121162SMPL.d	7/31/2023 16:18	Sample		22307285302	378.7879
121163SMPL.d	7/31/2023 16:22	Sample		22307285303	406.5041
121164SMPL.d	7/31/2023 16:25	Sample		22307285304	393.7008
121165SMPL.d	7/31/2023 16:29	Sample		22307285305	375.9398
121166SMPL.d	7/31/2023 16:33	Sample		22307285306	387.5969
121167SMPL.d	7/31/2023 16:36	Sample		22307285307	393.7008
121168SMPL.d	7/31/2023 16:40	Sample		22307285308	375.9398
121169SMPL.d	7/31/2023 16:43	Sample		22307285309	393.7008
121170SMPL.d	7/31/2023 16:47	Sample		22307285310	393.7008
121171_CC.V.d	7/31/2023 16:50	CCV		x1800	1
121172_CCB.d	7/31/2023 16:54	CCB		1900	1
121173_CC.V.d	7/31/2023 16:57	CCV		1800	1
121174SMPL.d	8/1/2023 9:28	Sample		Blank	1
121175SMPL.d	8/1/2023 9:32	Sample		Blank	1

Vial Number
1101
1102
1103
1104
1105
1106
1312
1107
1108
1109
1111
1112
1112
1112
1201
1202
1203
1204
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1206
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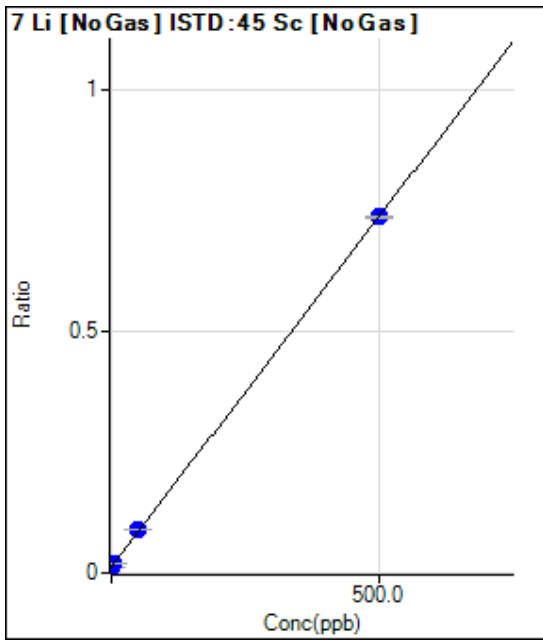
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2110
2111
2112
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2202
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3104
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3106
3107
3108
3109
3110
3111
3112
3201
3202
3203
3204
1403
1503
1401
1101
1102

Tune Mode	Mass	Name	ISTD	R	a	b (blank)	DL	BEC	Units
No Gas	7	Li	45 Sc [No Gas]	0.99998186	0.001453112	0.012101526	0.183579866	8.328006283	ppb
No Gas	9	Be	72 Ge [No Gas]	0.999993682	0.001933747	7.12E-05	0.022337754	0.036803723	ppb
No Gas	11	B	45 Sc [No Gas]	0.999886816	0.000350058	0.000819891	0.127660937	2.342156242	ppb
He	23	Na	45 Sc [He]	0.999994758	0.002877789	0.150069976	1.466116778	52.14767092	ppb
He	24	Mg	45 Sc [He]	0.999994673	0.001243751	0.008187895	2.783525861	6.58322615	ppb
He	27	Al	45 Sc [He]	0.999987219	0.000397669	0.000551724	0.429813754	1.38739334	ppb
He	29	Si	45 Sc [He]	0.98907374	1.32E-05	0.272716477	4379.716861	20720.91395	ppb
He	39	K	45 Sc [He]	0.999991875	0.001674229	0.232887801	2.366094649	139.1015629	ppb
He	44	Ca	45 Sc [He]	0.999996281	7.45E-05	0.008461303	15.14080863	113.6236503	ppb
He	47	Ti	45 Sc [He]	0.999997808	0.000644413	9.16E-05	0.071433363	0.142141143	ppb
He	51	V	72 Ge [He]	0.999998479	0.025846355	0.004545869	0.010323115	0.175880455	ppb
He	52	Cr	72 Ge [He]	0.999999571	0.03228922	0.009055264	0.047019324	0.280442324	ppb
He	55	Mn	72 Ge [He]	0.999995187	0.014853443	0.003174277	0.146426705	0.213706496	ppb
He	57	Fe	72 Ge [He]	0.999996514	0.000612793	0.001466826	1.730941634	2.393673333	ppb
He	59	Co	72 Ge [He]	0.999992674	0.055216813	0.000852495	0.011441347	0.015439051	ppb
He	60	Ni	72 Ge [He]	0.999992247	0.0150437	0.005273709	0.102682533	0.350559277	ppb
He	63	Cu	103 Rh [He]	0.999997015	0.001664786	0.000104608	0.017395872	0.06283579	ppb
He	66	Zn	72 Ge [He]	0.999993471	0.006423203	0.014457813	0.243363633	2.250872923	ppb
He	75	As	72 Ge [He]	0.999998752	0.007334525	0.001051431	0.014712686	0.143353715	ppb
He	78	Se	72 Ge [He]	0.999976859	0.000439857	0.000549071	0.090537348	1.248294517	ppb
No Gas	88	Sr	72 Ge [No Gas]	0.999995317	0.040791327	0.000650423	0.004172455	0.015945117	ppb
No Gas	90	Zr	72 Ge [No Gas]	0.999997658	0.025329656	0.000749167	0.005347229	0.029576656	ppb
No Gas	95	Mo	115 In [No Gas]	0.999999269	0.001126016	0.000151051	0.010179029	0.134146303	ppb
No Gas	107	Ag	115 In [No Gas]	0.99999697	0.002943143	5.79E-06	0.002603871	0.001968674	ppb
No Gas	111	Cd	115 In [No Gas]	0.99999786	0.000649892	1.81E-05	0.018527171	0.027799338	ppb
No Gas	118	(Sn)	115 In [No Gas]	0.999999748	0.001932343	0.000172917	0.023883816	0.089485474	ppb
He	118	(Sn)	115 In [He]	0.99999902	0.002500256	0.000261947	0.037258546	0.104768172	ppb
He	120	Sn	115 In [He]	0.99999844	0.003637266	0.000375779	0.012202219	0.10331349	ppb
No Gas	121	Sb	115 In [No Gas]	0.99999945	0.002964709	0.000190474	0.000953325	0.064247231	ppb
No Gas	137	Ba	115 In [No Gas]	0.999999565	0.001027367	1.12E-05	0.001960574	0.010914355	ppb
He	156	[Se]	115 In [He]						ppb
No Gas	201	Hg							
No Gas	205	Tl	209 Bi [No Gas]	0.999999171	0.00667816	0.000416499	0.005113347	0.06236734	ppb
No Gas	206	(Pb)	209 Bi [No Gas]	0.999999499	0.002288243	3.27E-05	0.000774385	0.014297813	ppb
No Gas	207	(Pb)	209 Bi [No Gas]	0.999997502	0.001967185	2.76E-05	0.004015184	0.014039572	ppb
No Gas	208	Pb	209 Bi [No Gas]	0.999999619	0.004873063	7.01E-05	0.007144604	0.014385507	ppb
No Gas	6	(Li)							ppb
No Gas	45	Sc							ppb
He	45	Sc							ppb
No Gas	72	Ge							ppb
He	72	Ge							ppb
No Gas	103	Rh							ppb
He	103	Rh							ppb
No Gas	115	In							ppb
He	115	In							ppb
No Gas	159	Tb							ppb
He	159	Tb							ppb
No Gas	175	Lu							ppb
He	175	Lu							ppb
No Gas	209	Bi							ppb
He	209	Bi							ppb

Calibration for 121146SMPL.d

Batch Folder: C:\Agilent\ICPMH\1\DATA\2230731A_MS2.b\
 Analysis File: 2230731A_MS2.batch.bin
 DA Date-Time: 8/1/2023 10:05:04 AM
 Calibration Title: EPA6020
 Calibration Method: External Calibration
 VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	004CALB.d	1300	7/31/2023 10:37:58 AM
2			
3	005CAL.S.d	1302	7/31/2023 10:41:32 AM
4			
5	006CAL.S.d	1304	7/31/2023 10:46:01 AM
6	008CAL.S.d	1305	7/31/2023 10:53:31 AM
7	009CAL.S.d	1306	7/31/2023 10:57:17 AM
8			



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	59781.76	0.0121	P	0.7
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.500	0.215	62368.64	0.0124	P	1.3
4	<input type="checkbox"/>	2.500					
5	<input type="checkbox"/>	5.000	5.095	98721.31	0.0195	P	1.9
6	<input type="checkbox"/>	50.000	52.872	432039.50	0.0889	P	1.2
7	<input type="checkbox"/>	500.000	499.712	3687762.13	0.7382	P	0.3
8	<input type="checkbox"/>						

$y = 0.0015 * x + 0.0121$

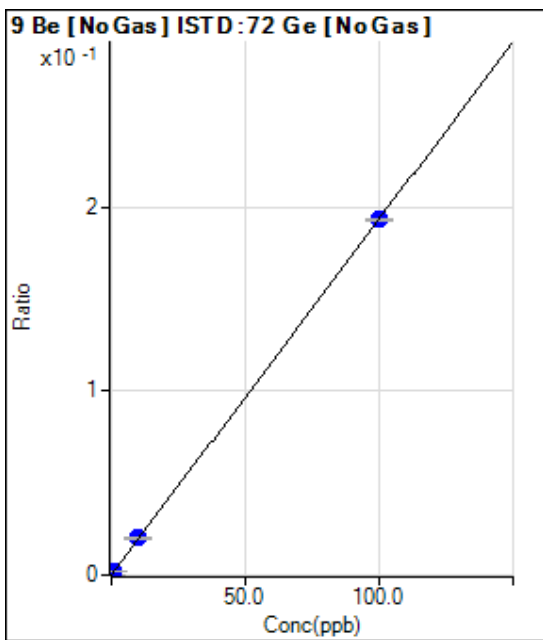
R = 1.0000

DL = 0.1836

BEC = 8.328

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	95.33	0.0001	P	20.2
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.082	314.67	0.0002	P	4.8
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.010	2783.60	0.0020	P	2.2
6	<input type="checkbox"/>	10.000	10.345	26583.15	0.0201	P	1.1
7	<input type="checkbox"/>	100.000	99.965	258626.48	0.1934	P	0.9
8	<input type="checkbox"/>						

$y = 0.0019 * x + 7.1169E-005$

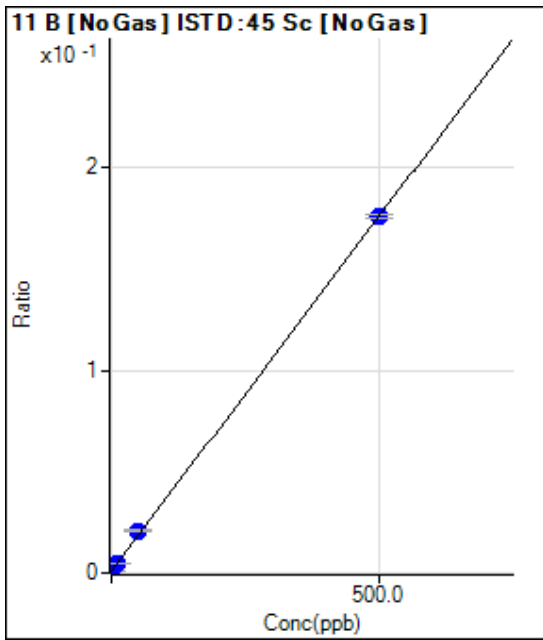
R = 1.0000

DL = 0.02234

BEC = 0.0368

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	4050.66	0.0008	P	1.8
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	1.000	1.052	5968.03	0.0012	P	5.7
4	<input type="checkbox"/>	5.000					
5	<input type="checkbox"/>	10.000	9.973	21819.64	0.0043	P	2.5
6	<input type="checkbox"/>	50.000	57.331	101481.07	0.0209	P	2.0
7	<input type="checkbox"/>	500.000	499.267	877130.33	0.1756	P	1.0
8	<input type="checkbox"/>						

$y = 3.5006E-004 * x + 8.1989E-004$

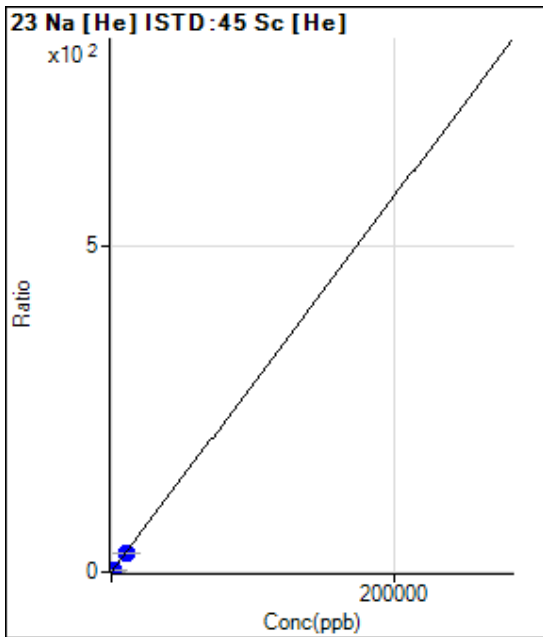
R = 0.9999

DL = 0.1277

BEC = 2.342

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	27896.37	0.1501	P	0.9
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	10.000	7.611	32262.07	0.1720	P	2.2
4	<input type="checkbox"/>	50.000					
5	<input type="checkbox"/>	100.000	96.415	79634.21	0.4275	P	3.5
6	<input type="checkbox"/>	1000.000	1029.789	540967.70	3.1136	P	2.5
7	<input type="checkbox"/>	10000.000	9997.059	5003485.55	28.9195	P	1.3
8	<input type="checkbox"/>						

$y = 0.0029 * x + 0.1501$

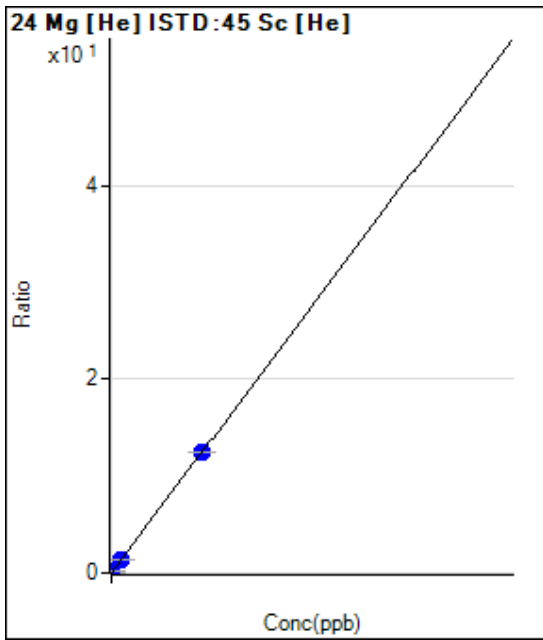
R = 1.0000

DL = 1.466

BEC = 52.15

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	1520.14	0.0082	P	14.1
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	10.000	5.175	2743.68	0.0146	P	9.6
4	<input type="checkbox"/>	50.000					
5	<input type="checkbox"/>	100.000	96.374	23849.53	0.1281	P	4.4
6	<input type="checkbox"/>	1000.000	1029.189	223819.92	1.2882	P	2.7
7	<input type="checkbox"/>	10000.000	9997.122	2152691.79	12.4421	P	1.0
8	<input type="checkbox"/>						

$y = 0.0012 * x + 0.0082$

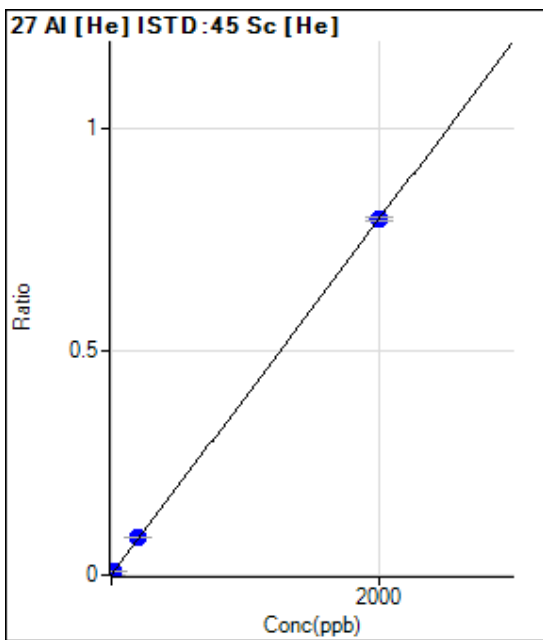
R = 1.0000

DL = 2.784

BEC = 6.583

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	102.67	0.0006	P	10.3
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	2.000	1.517	216.67	0.0012	P	9.5
4	<input type="checkbox"/>	10.000					
5	<input type="checkbox"/>	20.000	20.548	1624.77	0.0087	P	5.0
6	<input type="checkbox"/>	200.000	209.875	14595.13	0.0840	P	4.0
7	<input type="checkbox"/>	2000.000	1999.008	137631.28	0.7955	P	1.2
8	<input type="checkbox"/>						

$y = 3.9767E-004 * x + 5.5172E-004$

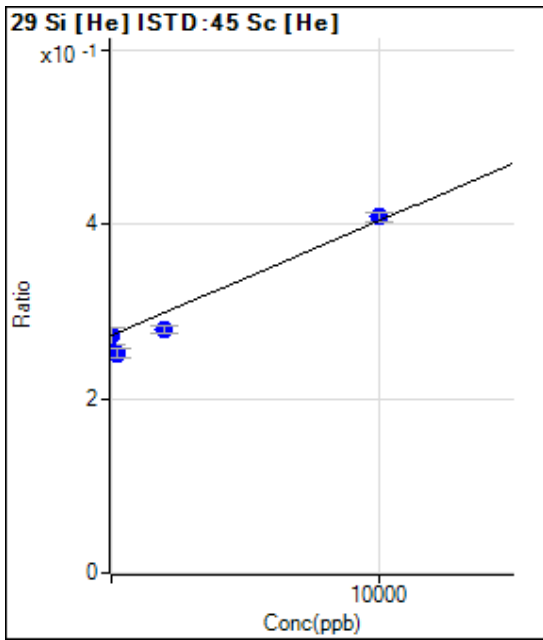
R = 1.0000

DL = 0.4298

BEC = 1.387

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	50647.06	0.2727	P	7.0
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	20.000	-1433.074	47622.44	0.2539	P	0.1
4	<input type="checkbox"/>	100.000					
5	<input type="checkbox"/>	200.000	-1548.001	46997.24	0.2523	P	3.7
6	<input type="checkbox"/>	2000.000	533.160	48602.18	0.2797	P	2.6
7	<input type="checkbox"/>	10000.000	10331.234	70704.24	0.4087	P	2.5
8	<input type="checkbox"/>						

$y = 1.3161E-005 * x + 0.2727$

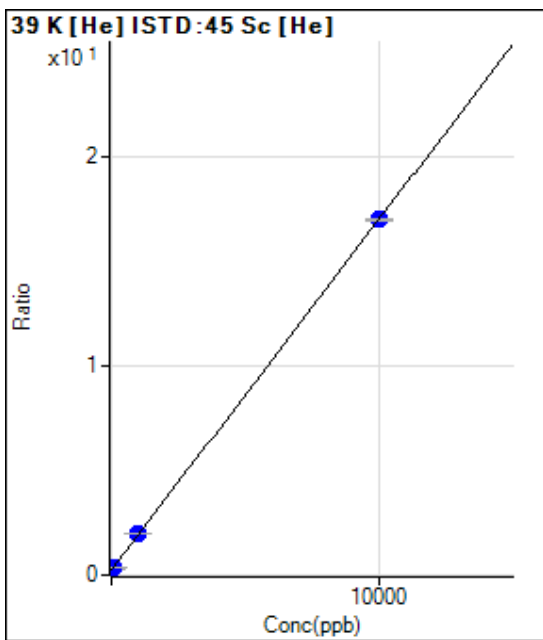
R = 0.9891

DL = 4380

BEC = 2.072E+04

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	43297.09	0.2329	P	0.6
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	10.000	5.973	45563.86	0.2429	P	1.4
4	<input type="checkbox"/>	50.000					
5	<input type="checkbox"/>	100.000	98.970	74255.30	0.3986	P	0.9
6	<input type="checkbox"/>	1000.000	1037.802	342387.60	1.9704	P	1.1
7	<input type="checkbox"/>	10000.000	9996.234	2936053.29	16.9689	P	0.4
8	<input type="checkbox"/>						

$y = 0.0017 * x + 0.2329$

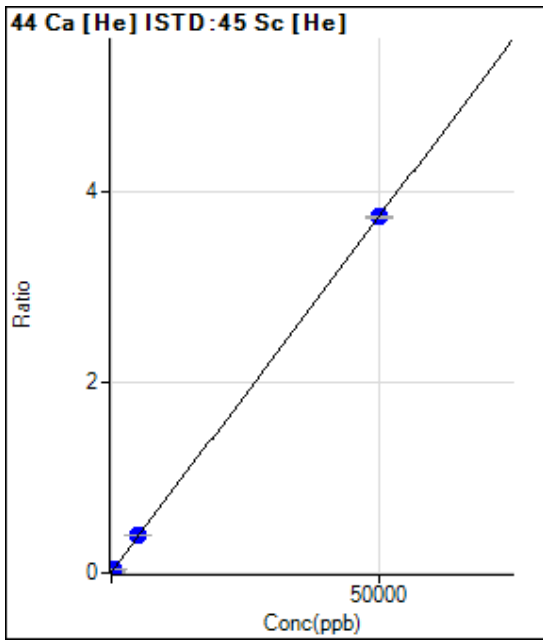
R = 1.0000

DL = 2.366

BEC = 139.1

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	1573.44	0.0085	P	4.4
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	50.000	26.566	1958.50	0.0104	P	4.9
4	<input type="checkbox"/>	250.000					
5	<input type="checkbox"/>	500.000	484.737	8297.45	0.0446	P	9.0
6	<input type="checkbox"/>	5000.000	5120.650	67725.56	0.3898	P	2.0
7	<input type="checkbox"/>	50000.000	49988.111	645534.59	3.7310	P	0.7
8	<input type="checkbox"/>						

$y = 7.4468E-005 * x + 0.0085$

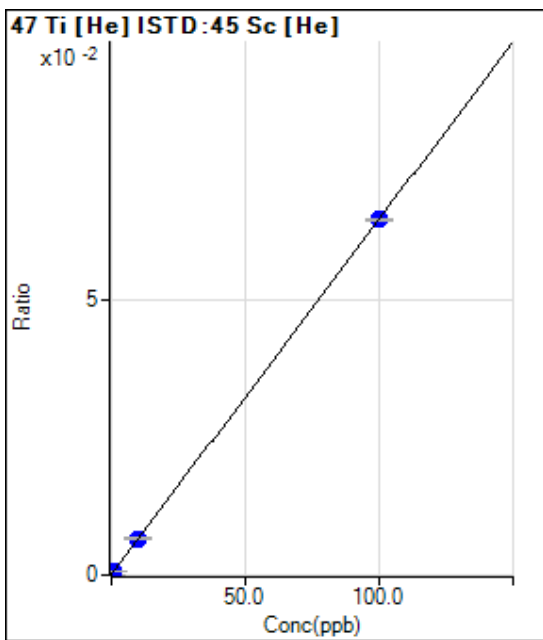
R = 1.0000

DL = 15.14

BEC = 113.6

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	17.00	0.0001	P	16.8
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.032	21.00	0.0001	P	16.6
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.891	124.00	0.0007	P	8.1
6	<input type="checkbox"/>	10.000	10.133	1150.38	0.0066	P	3.6
7	<input type="checkbox"/>	100.000	99.988	11164.53	0.0645	P	0.3
8	<input type="checkbox"/>						

$y = 6.4441E-004 * x + 9.1598E-005$

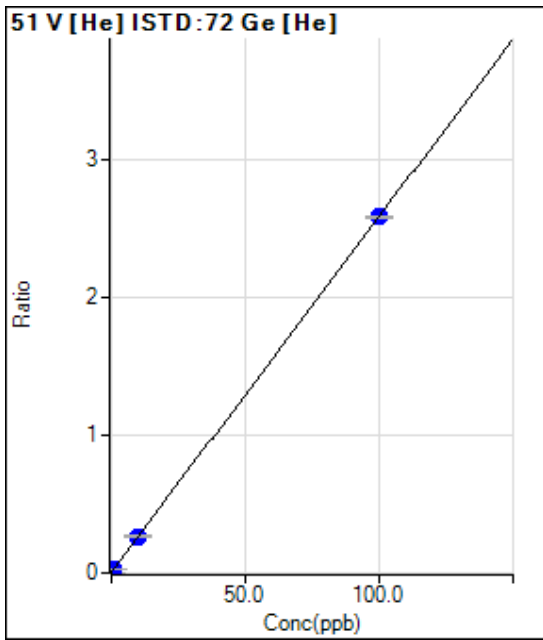
R = 1.0000

DL = 0.07143

BEC = 0.1421

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	766.69	0.0045	P	2.0
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.075	1117.83	0.0065	P	8.7
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.948	5020.91	0.0290	P	8.1
6	<input type="checkbox"/>	10.000	10.143	43166.09	0.2667	P	3.1
7	<input type="checkbox"/>	100.000	99.986	414254.99	2.5888	P	0.5
8	<input type="checkbox"/>						

$y = 0.0258 * x + 0.0045$

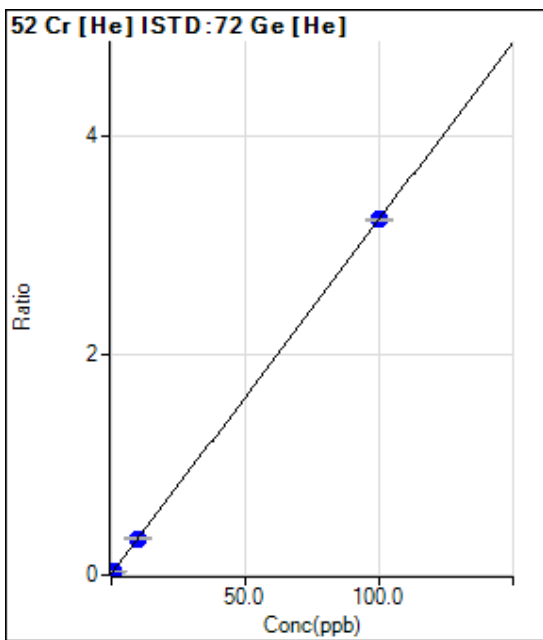
R = 1.0000

DL = 0.01032

BEC = 0.1759

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	1527.88	0.0091	P	5.6
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.066	1925.70	0.0112	P	7.4
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.974	7005.07	0.0405	P	4.7
6	<input type="checkbox"/>	10.000	10.068	54086.31	0.3342	P	2.4
7	<input type="checkbox"/>	100.000	99.993	518078.85	3.2378	P	0.7
8	<input type="checkbox"/>						

$y = 0.0323 * x + 0.0091$

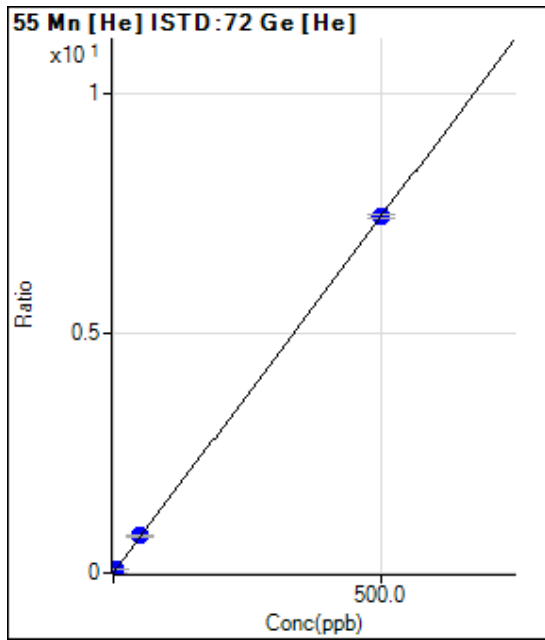
R = 1.0000

DL = 0.04702

BEC = 0.2804

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	536.68	0.0032	P	22.8
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.500	0.403	1577.88	0.0092	P	12.2
4	<input type="checkbox"/>	2.500					
5	<input type="checkbox"/>	5.000	4.976	13322.84	0.0771	P	7.0
6	<input type="checkbox"/>	50.000	51.480	124278.99	0.7678	P	2.7
7	<input type="checkbox"/>	500.000	499.852	1188477.18	7.4277	P	1.1
8	<input type="checkbox"/>						

$y = 0.0149 * x + 0.0032$

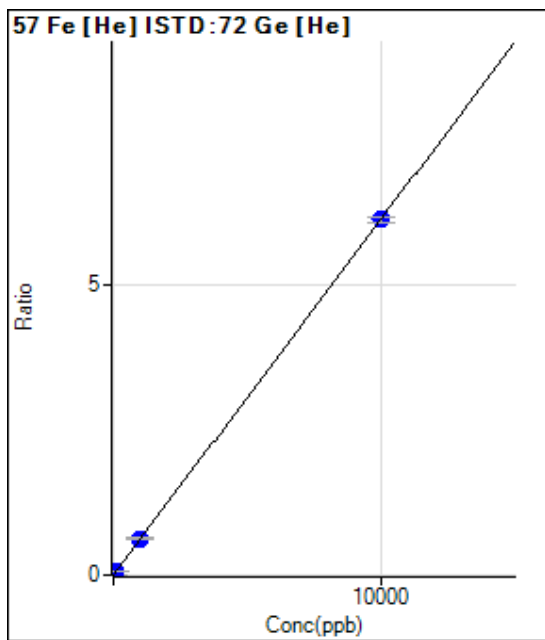
R = 1.0000

DL = 0.1464

BEC = 0.2137

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	246.68	0.0015	P	24.1
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	10.000	8.225	1120.09	0.0065	P	17.6
4	<input type="checkbox"/>	50.000					
5	<input type="checkbox"/>	100.000	95.961	10417.40	0.0603	P	9.5
6	<input type="checkbox"/>	1000.000	1023.926	101788.31	0.6289	P	3.5
7	<input type="checkbox"/>	10000.000	9997.650	980505.17	6.1280	P	1.2
8	<input type="checkbox"/>						

$y = 6.1279E-004 * x + 0.0015$

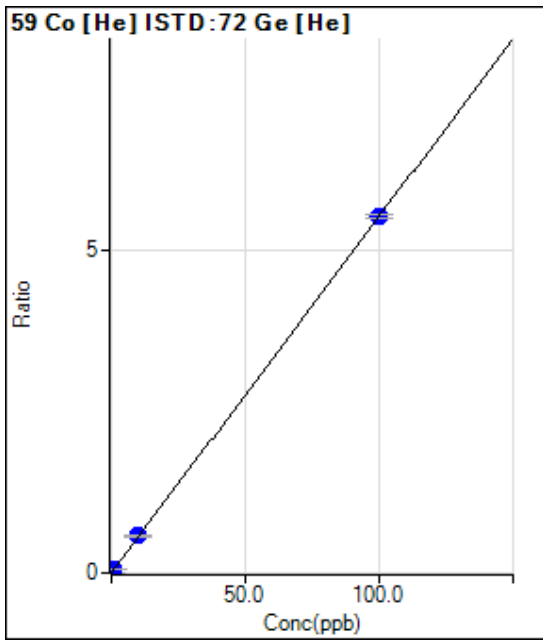
R = 1.0000

DL = 1.731

BEC = 2.394

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	143.34	0.0009	P	24.7
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.072	834.48	0.0048	P	18.1
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.976	9459.80	0.0547	P	6.7
6	<input type="checkbox"/>	10.000	10.358	92711.79	0.5728	P	3.0
7	<input type="checkbox"/>	100.000	99.964	883329.69	5.5206	P	1.0
8	<input type="checkbox"/>						

$y = 0.0552 * x + 8.5250E-004$

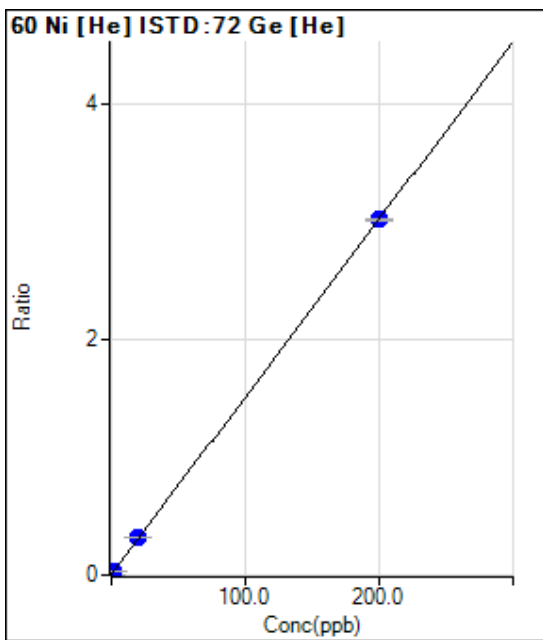
R = 1.0000

DL = 0.01144

BEC = 0.01544

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	888.93	0.0053	P	9.8
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.200	0.119	1215.62	0.0071	P	11.9
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	2.000	1.963	6014.64	0.0348	P	7.2
6	<input type="checkbox"/>	20.000	20.733	51337.02	0.3172	P	2.7
7	<input type="checkbox"/>	200.000	199.927	482096.07	3.0129	P	0.8
8	<input type="checkbox"/>						

$y = 0.0150 * x + 0.0053$

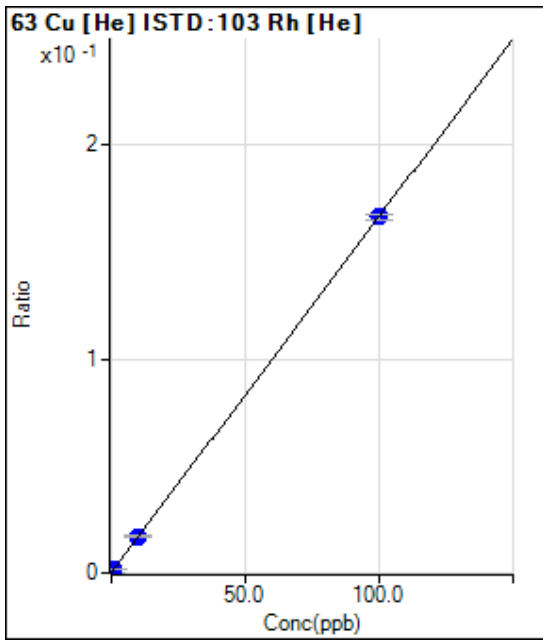
R = 1.0000

DL = 0.1027

BEC = 0.3506

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	452.23	0.0001	P	9.2
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.096	1168.95	0.0003	P	1.8
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.966	7584.26	0.0017	P	6.4
6	<input type="checkbox"/>	10.000	10.226	71347.94	0.0171	P	3.5
7	<input type="checkbox"/>	100.000	99.978	675397.73	0.1665	P	1.6
8	<input type="checkbox"/>						

$y = 0.0017 * x + 1.0461E-004$

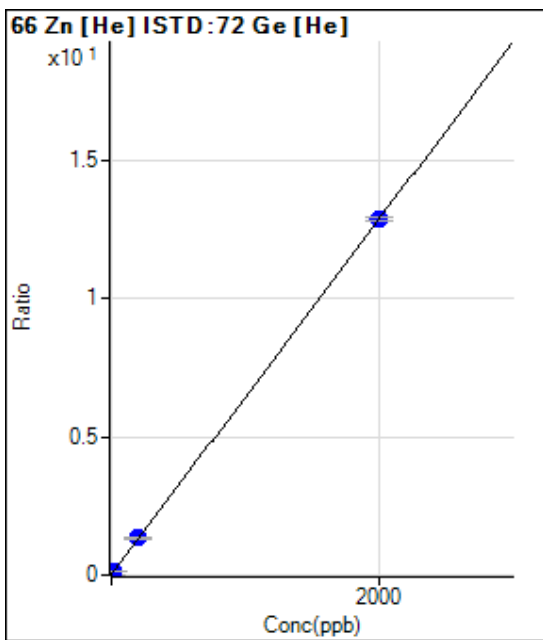
R = 1.0000

DL = 0.0174

BEC = 0.06284

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	-1.656	645.58	0.0038	P	13.6
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	2.000	0.282	2802.52	0.0163	P	3.1
4	<input type="checkbox"/>	10.000					
5	<input type="checkbox"/>	20.000	18.335	22860.16	0.1322	P	5.4
6	<input type="checkbox"/>	200.000	205.578	216069.31	1.3349	P	2.6
7	<input type="checkbox"/>	2000.000	1999.461	2057254.99	12.8574	P	1.1
8	<input type="checkbox"/>						

$y = 0.006423 * x + 0.014458$

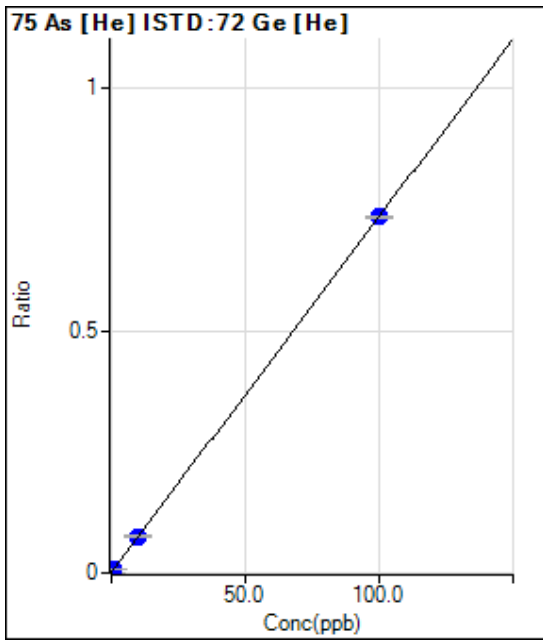
R = 1.0000

DL = 0.2434

BEC = 2.251

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	177.33	0.0011	P	3.4
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.050	243.67	0.0014	P	9.3
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.909	1334.40	0.0077	P	4.7
6	<input type="checkbox"/>	10.000	10.095	12153.07	0.0751	P	3.7
7	<input type="checkbox"/>	100.000	99.991	117519.22	0.7344	P	0.7
8	<input type="checkbox"/>						

$y = 0.0073 * x + 0.0011$

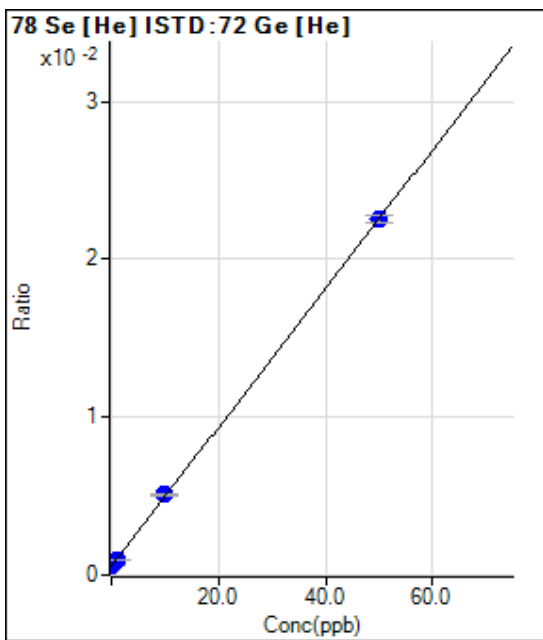
R = 1.0000

DL = 0.01471

BEC = 0.1434

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	92.58	0.0005	P	2.4
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.090	101.42	0.0006	P	0.4
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.027	173.08	0.0010	P	2.2
6	<input type="checkbox"/>	10.000	10.318	823.44	0.0051	P	2.9
7	<input type="checkbox"/>	50.000	49.936	3602.20	0.0225	P	2.0
8	<input type="checkbox"/>						

$y = 4.3986E-004 * x + 5.4907E-004$

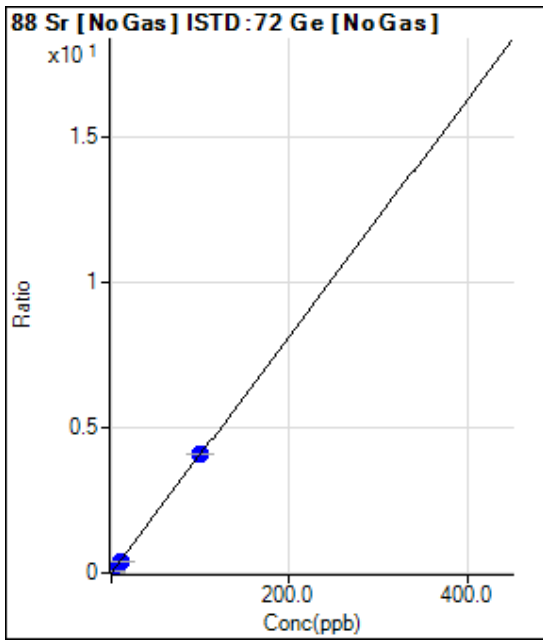
R = 1.0000

DL = 0.09054

BEC = 1.248

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	870.06	0.0007	P	8.7
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.103	6611.77	0.0048	P	0.4
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.998	56883.17	0.0414	P	0.9
6	<input type="checkbox"/>	10.000	10.300	557210.11	0.4208	P	0.2
7	<input type="checkbox"/>	100.000	99.970	5454930.12	4.0786	P	0.4
8	<input type="checkbox"/>						

$y = 0.0408 * x + 6.5042E-004$

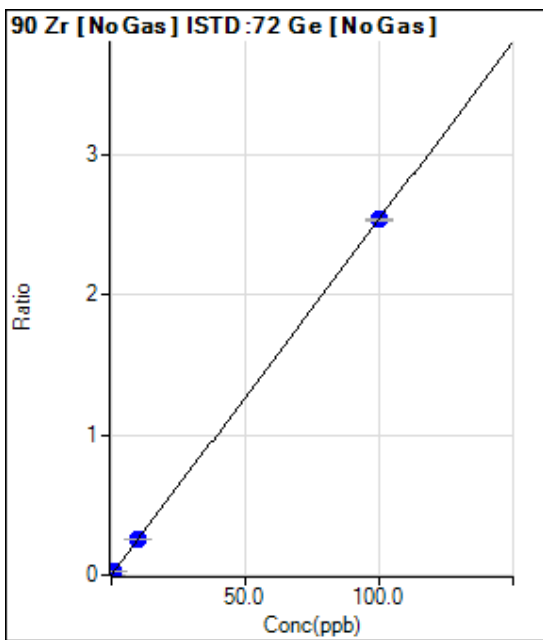
R = 1.0000

DL = 0.004172

BEC = 0.01595

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	1002.27	0.0007	P	6.0
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.087	4022.83	0.0029	P	4.6
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.935	33608.10	0.0244	P	0.8
6	<input type="checkbox"/>	10.000	10.182	342500.76	0.2587	P	0.4
7	<input type="checkbox"/>	100.000	99.982	3388155.49	2.5333	P	0.3
8	<input type="checkbox"/>						

$y = 0.0253 * x + 7.4917E-004$

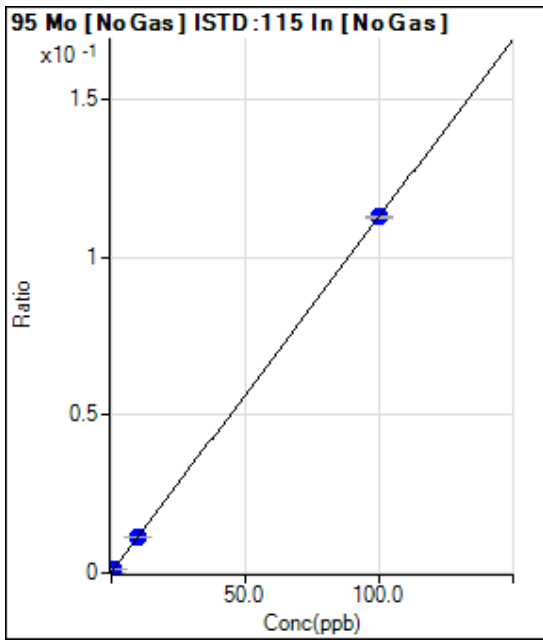
R = 1.0000

DL = 0.005347

BEC = 0.02958

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	1392.31	0.0002	P	2.5
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.071	2139.08	0.0002	P	3.2
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.888	10779.70	0.0012	P	1.0
6	<input type="checkbox"/>	10.000	9.884	101261.74	0.0113	P	0.5
7	<input type="checkbox"/>	100.000	100.013	998913.95	0.1128	P	0.8
8	<input type="checkbox"/>						

$y = 0.0011 * x + 1.5105E-004$

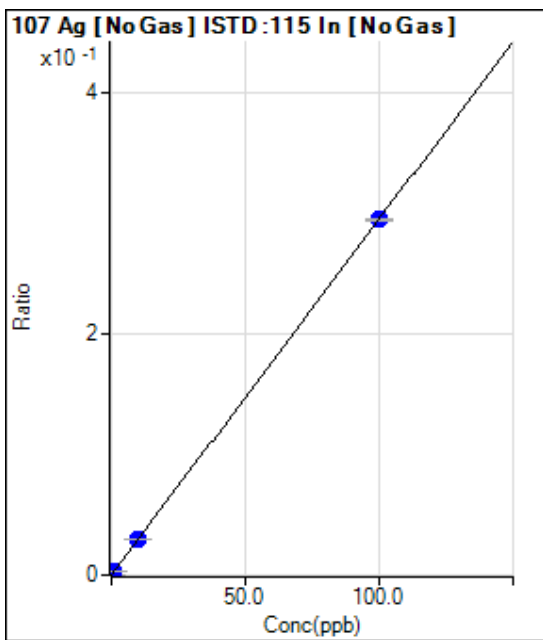
R = 1.0000

DL = 0.01018

BEC = 0.1341

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	53.33	0.0000	P	44.1
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.102	2848.09	0.0003	P	6.4
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.013	27976.42	0.0030	P	0.9
6	<input type="checkbox"/>	10.000	10.245	270726.27	0.0302	P	0.7
7	<input type="checkbox"/>	100.000	99.975	2606483.02	0.2942	P	0.2
8	<input type="checkbox"/>						

$y = 0.0029 * x + 5.7941E-006$

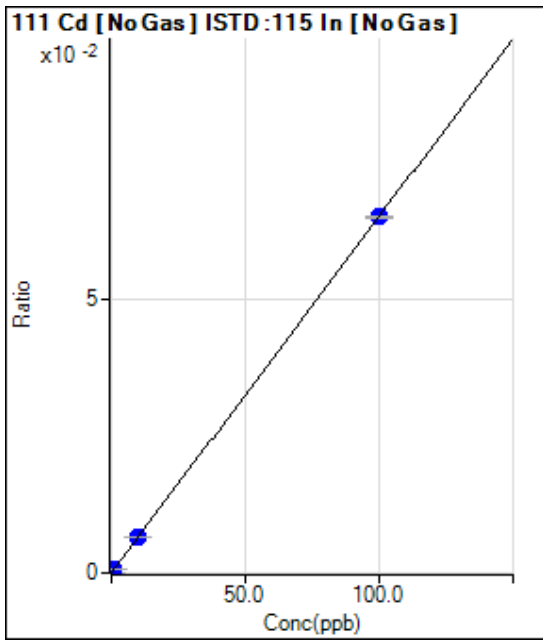
R = 1.0000

DL = 0.002604

BEC = 0.001969

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	166.67	0.0000	P	22.2
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.103	786.70	0.0001	P	2.5
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.996	6229.21	0.0007	P	2.2
6	<input type="checkbox"/>	10.000	10.202	59679.17	0.0066	P	0.7
7	<input type="checkbox"/>	100.000	99.980	575722.70	0.0650	P	0.4
8	<input type="checkbox"/>						

$y = 6.4989E-004 * x + 1.8067E-005$

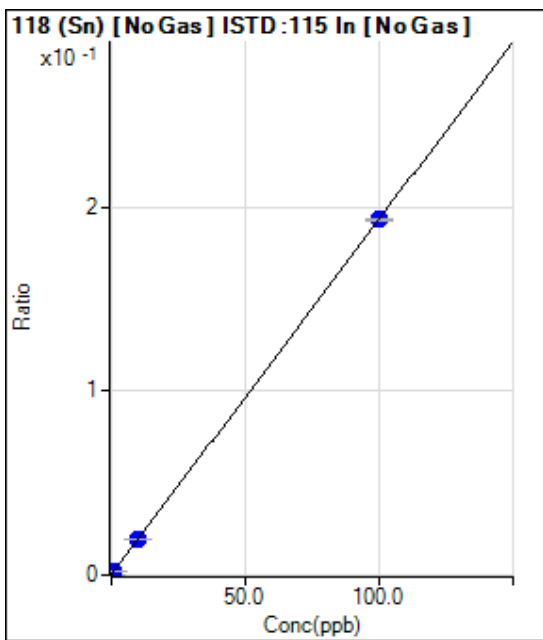
R = 1.0000

DL = 0.01853

BEC = 0.0278

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	1593.44	0.0002	P	8.9
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.105	3487.14	0.0004	P	6.8
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.967	19128.59	0.0020	P	0.9
6	<input type="checkbox"/>	10.000	10.053	175935.82	0.0196	P	1.0
7	<input type="checkbox"/>	100.000	99.995	1713139.10	0.1934	P	0.6
8	<input type="checkbox"/>						

$y = 0.0019 * x + 1.7292E-004$

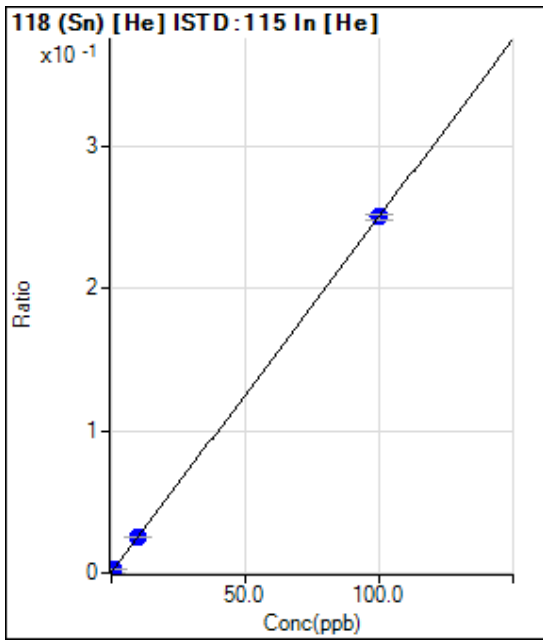
R = 1.0000

DL = 0.02388

BEC = 0.08949

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	457.79	0.0003	P	11.9
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.110	966.71	0.0005	P	2.7
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.966	4804.21	0.0027	P	7.2
6	<input type="checkbox"/>	10.000	9.971	42517.12	0.0252	P	2.8
7	<input type="checkbox"/>	100.000	100.003	415313.61	0.2503	P	1.4
8	<input type="checkbox"/>						

$y = 0.0025 * x + 2.6195E-004$

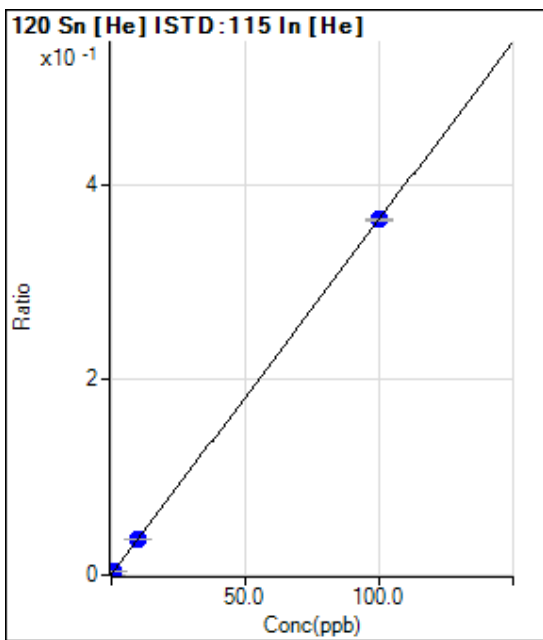
R = 1.0000

DL = 0.03726

BEC = 0.1048

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	655.58	0.0004	P	3.9
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.097	1310.08	0.0007	P	6.6
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.954	6903.98	0.0038	P	4.9
6	<input type="checkbox"/>	10.000	10.022	62158.23	0.0368	P	2.7
7	<input type="checkbox"/>	100.000	99.998	604204.96	0.3641	P	0.7
8	<input type="checkbox"/>						

$y = 0.0036 * x + 3.7578E-004$

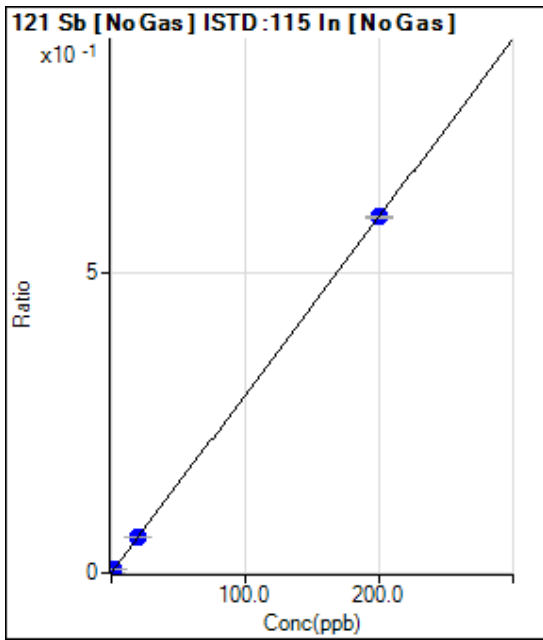
R = 1.0000

DL = 0.0122

BEC = 0.1033

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	1755.68	0.0002	P	0.5
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.200	0.198	7210.81	0.0008	P	2.3
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	2.000	1.953	56006.16	0.0060	P	0.6
6	<input type="checkbox"/>	20.000	19.937	532281.02	0.0593	P	0.5
7	<input type="checkbox"/>	200.000	200.007	5254212.15	0.5932	P	0.3
8	<input type="checkbox"/>						

$y = 0.0030 * x + 1.9047E-004$

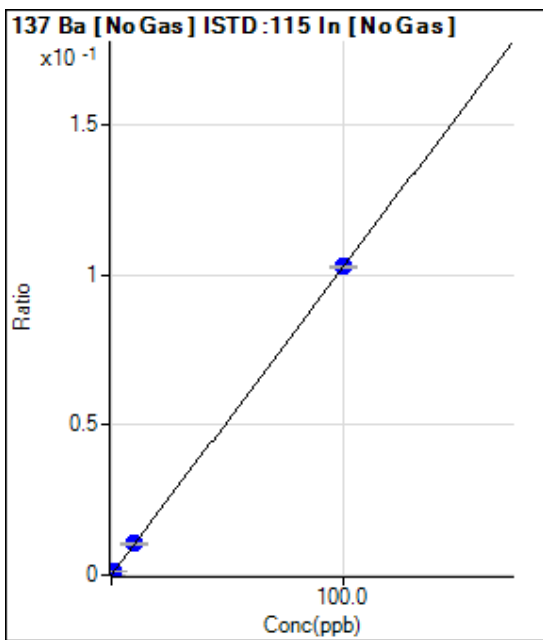
R = 1.0000

DL = 0.0009533

BEC = 0.06425

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	103.34	0.0000	P	6.0
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.097	1031.17	0.0001	P	2.0
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.988	9615.62	0.0010	P	1.6
6	<input type="checkbox"/>	10.000	10.087	93121.20	0.0104	P	0.6
7	<input type="checkbox"/>	100.000	99.991	910075.28	0.1027	P	0.2
8	<input type="checkbox"/>	1000.000					

$y = 0.0010 * x + 1.1213E-005$

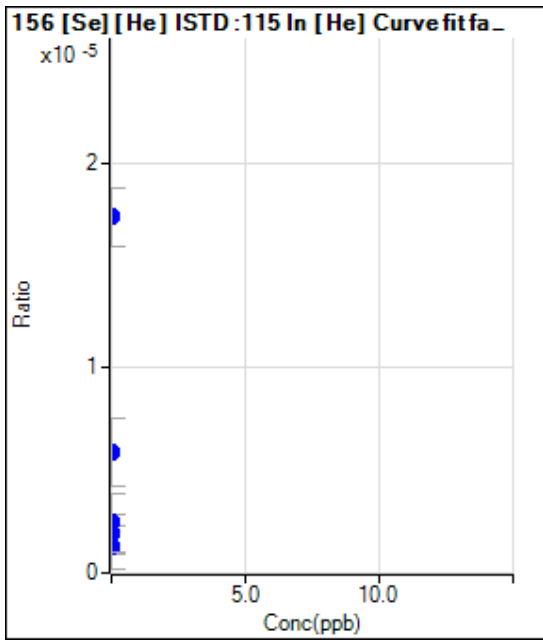
R = 1.0000

DL = 0.001961

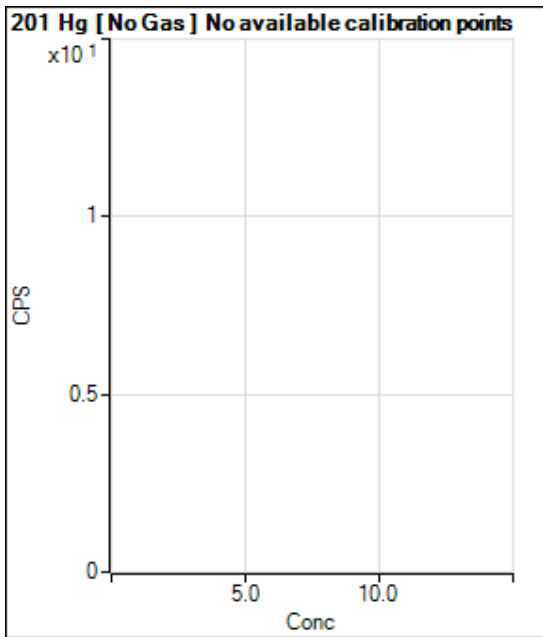
BEC = 0.01091

Weight: <None>

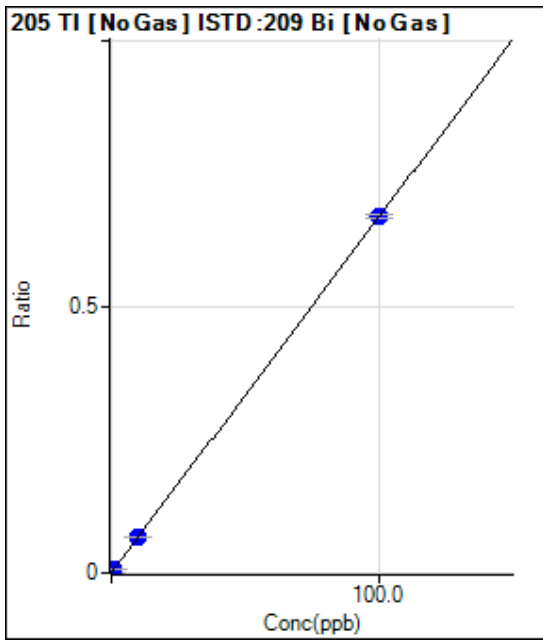
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000		3.33	0.0000	P	98.5
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.000		2.22	0.0000	P	173.2
4	<input type="checkbox"/>	0.000					
5	<input type="checkbox"/>	0.000		4.44	0.0000	P	114.1
6	<input type="checkbox"/>	0.000		10.00	0.0000	P	56.4
7	<input type="checkbox"/>	0.000		28.89	0.0000	P	16.3
8	<input type="checkbox"/>						



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>			17.50		P	24.7
2	<input type="checkbox"/>						
3	<input type="checkbox"/>			32.67		P	11.9
4	<input type="checkbox"/>						
5	<input type="checkbox"/>			29.50		P	25.0
6	<input type="checkbox"/>			33.83		P	11.9
7	<input type="checkbox"/>			57.00		P	11.2
8	<input type="checkbox"/>						



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	3267.19	0.0004	P	2.7
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.081	7702.50	0.0010	P	1.4
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.942	54046.95	0.0067	P	2.4
6	<input type="checkbox"/>	10.000	9.860	520084.35	0.0663	P	0.6
7	<input type="checkbox"/>	100.000	100.015	5159235.65	0.6683	P	0.9
8	<input type="checkbox"/>						

$y = 0.0067 * x + 4.1650E-004$

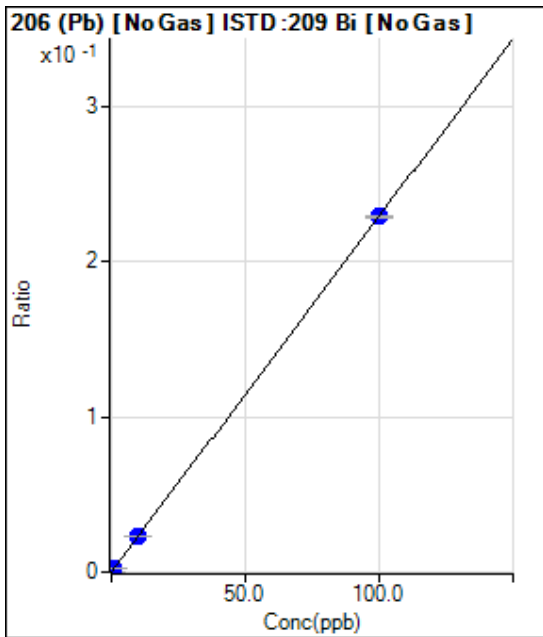
R = 1.0000

DL = 0.005113

BEC = 0.06237

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	256.68	0.0000	P	1.8
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.094	1996.90	0.0002	P	6.9
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.984	18389.92	0.0023	P	0.8
6	<input type="checkbox"/>	10.000	10.090	181465.50	0.0231	P	1.4
7	<input type="checkbox"/>	100.000	99.991	1766534.35	0.2288	P	0.8
8	<input type="checkbox"/>						

$y = 0.0023 * x + 3.2717E-005$

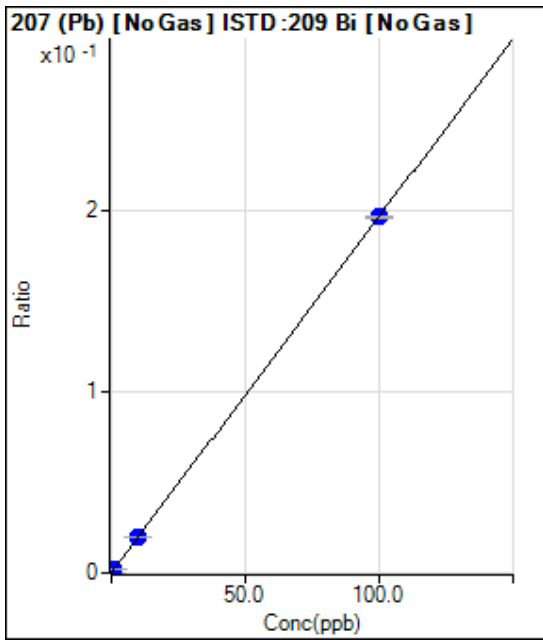
R = 1.0000

DL = 0.0007744

BEC = 0.0143

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	216.68	0.0000	P	9.5
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.100	1810.20	0.0002	P	12.4
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.976	15689.80	0.0019	P	3.2
6	<input type="checkbox"/>	10.000	10.211	157870.03	0.0201	P	1.4
7	<input type="checkbox"/>	100.000	99.979	1518508.88	0.1967	P	0.5
8	<input type="checkbox"/>						

$y = 0.0020 * x + 2.7618E-005$

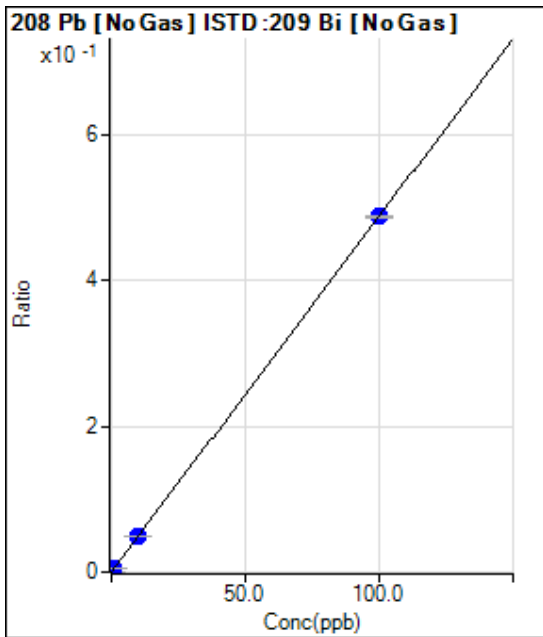
R = 1.0000

DL = 0.004015

BEC = 0.01404

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	550.03	0.0001	P	16.6
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.102	4567.60	0.0006	P	4.3
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.978	38937.75	0.0048	P	1.4
6	<input type="checkbox"/>	10.000	9.911	379632.92	0.0484	P	0.8
7	<input type="checkbox"/>	100.000	100.009	3762709.63	0.4874	P	0.8
8	<input type="checkbox"/>						

$y = 0.0049 * x + 7.0101E-005$

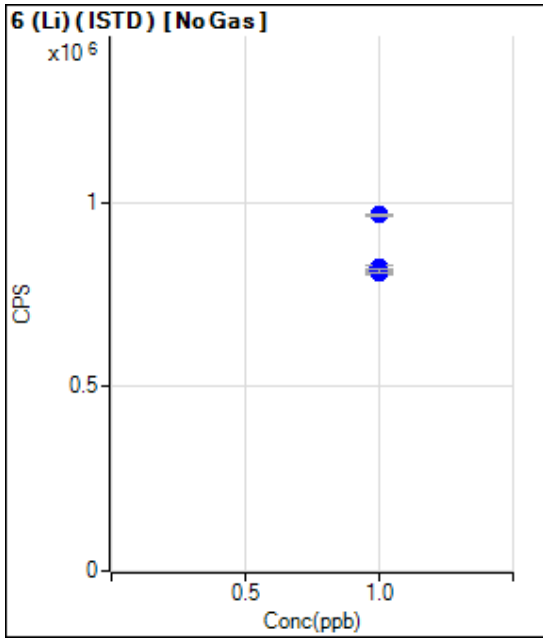
R = 1.0000

DL = 0.007145

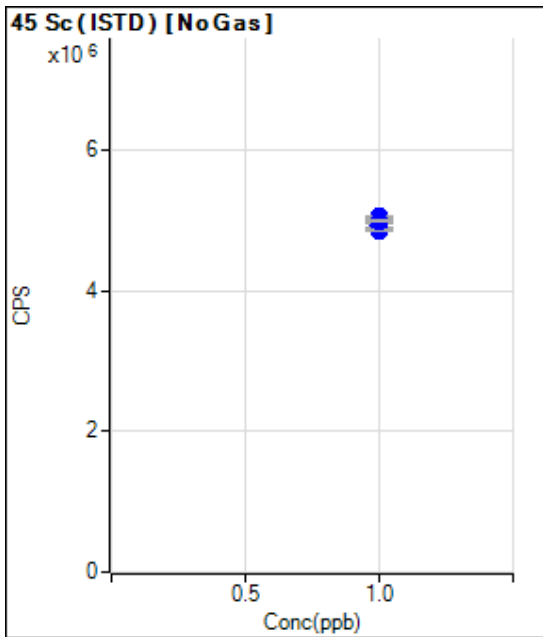
BEC = 0.01439

Weight: <None>

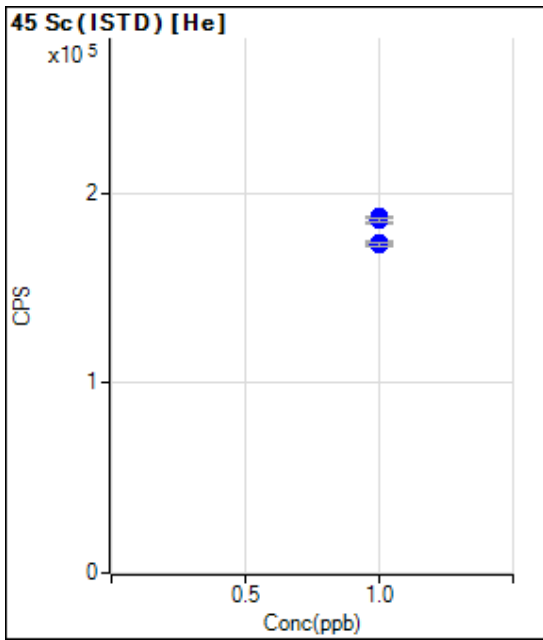
Min Conc: <None>



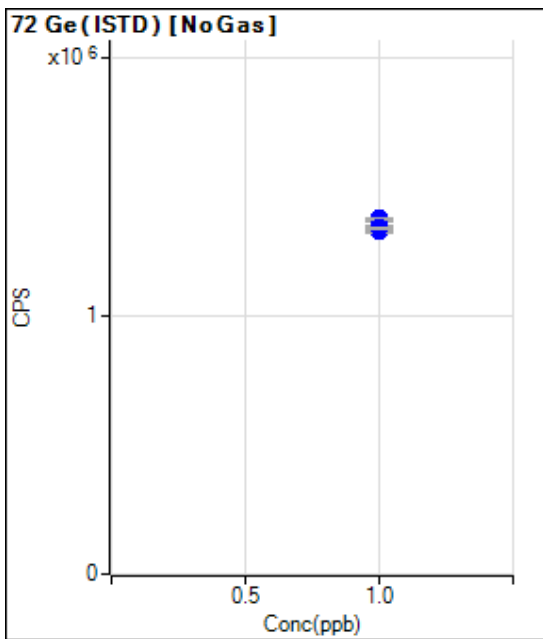
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		811763.40		P	0.6
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		809635.82		P	0.7
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		825908.42		P	0.9
6	<input type="checkbox"/>	1.000		815827.62		P	1.1
7	<input type="checkbox"/>	1.000		967356.03		P	0.8
8	<input type="checkbox"/>	1.000					



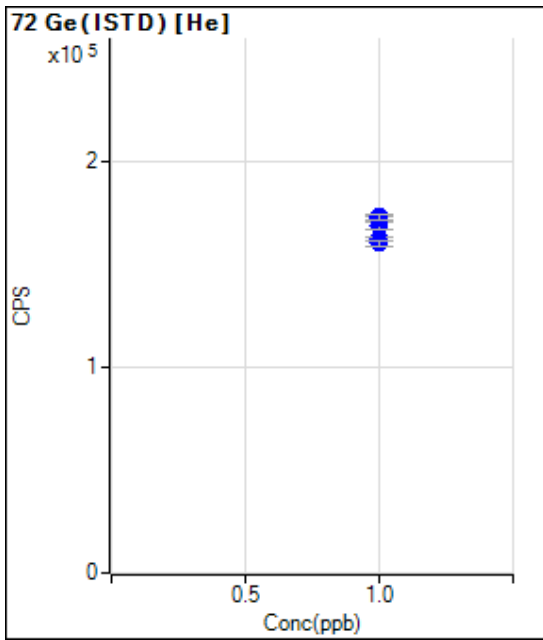
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		4940195.36		P	0.8
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		5023870.22		P	0.2
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		5061182.58		P	0.5
6	<input type="checkbox"/>	1.000		4858425.09		P	0.6
7	<input type="checkbox"/>	1.000		4995378.97		P	0.4
8	<input type="checkbox"/>	1.000					



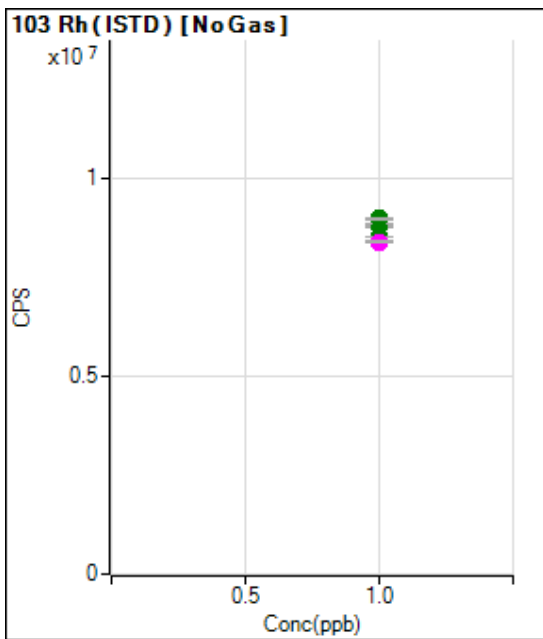
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		185902.83		P	2.2
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		187596.71		P	0.3
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		186287.08		P	1.0
6	<input type="checkbox"/>	1.000		173778.57		P	1.2
7	<input type="checkbox"/>	1.000		173029.81		P	1.3
8	<input type="checkbox"/>	1.000					



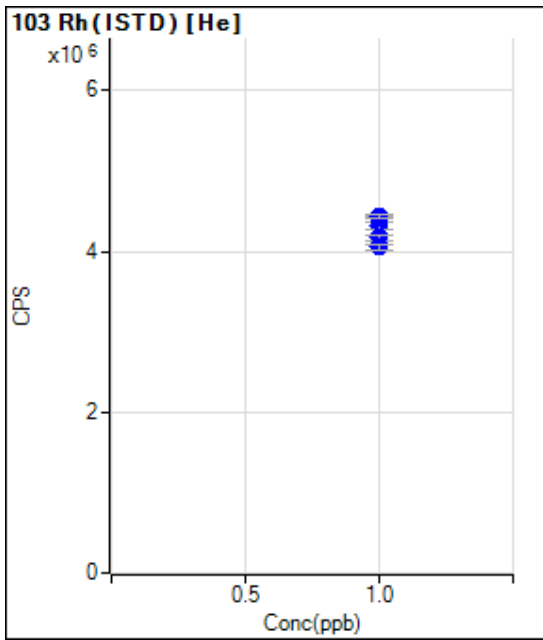
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		1338255.09		P	1.0
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		1366393.42		P	0.5
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		1374926.20		P	0.4
6	<input type="checkbox"/>	1.000		1324189.32		P	0.4
7	<input type="checkbox"/>	1.000		1337455.92		P	0.6
8	<input type="checkbox"/>	1.000					



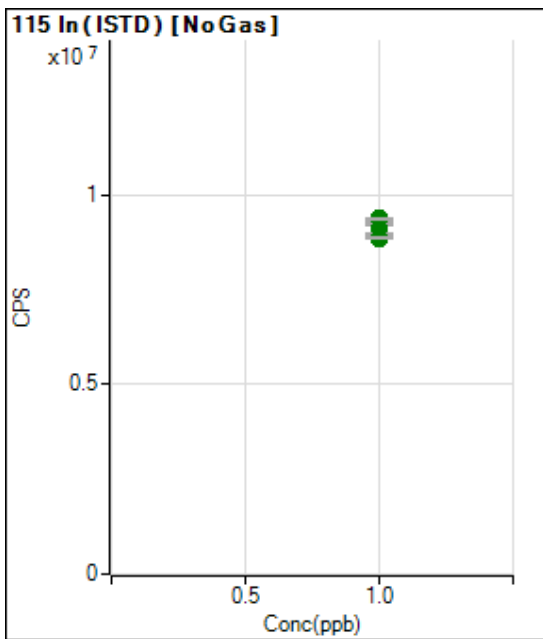
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		168618.47		P	1.8
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		172242.52		P	0.8
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		172956.54		P	1.8
6	<input type="checkbox"/>	1.000		161892.36		P	1.2
7	<input type="checkbox"/>	1.000		160021.06		P	1.4
8	<input type="checkbox"/>	1.000					



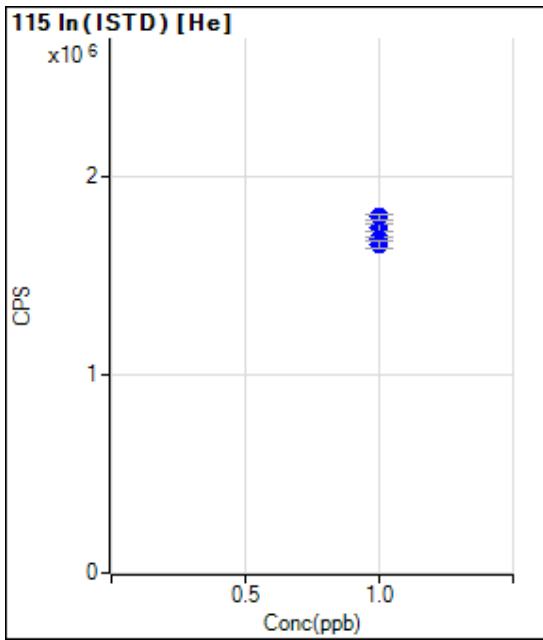
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		8809191.87		A	0.3
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		8876349.65		A	0.4
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		8999510.20		A	0.6
6	<input type="checkbox"/>	1.000		8529812.99		A	0.4
7	<input type="checkbox"/>	1.000		8418160.78		M	0.7
8	<input type="checkbox"/>	1.000					



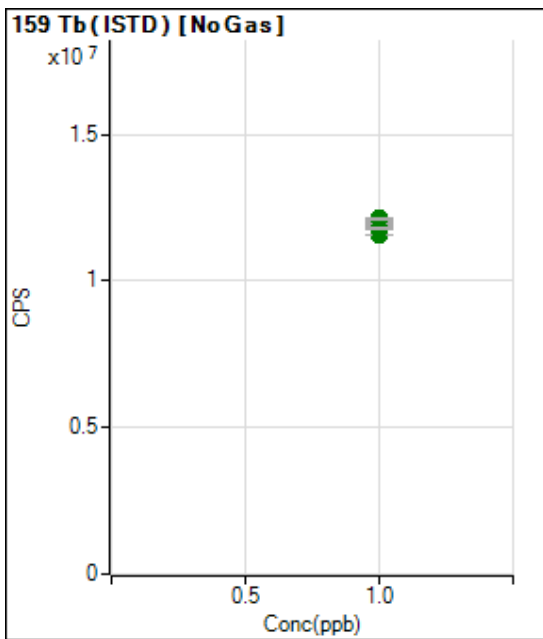
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		4321957.05		P	2.1
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		4420530.24		P	0.8
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		4427193.16		P	1.2
6	<input type="checkbox"/>	1.000		4166661.36		P	1.7
7	<input type="checkbox"/>	1.000		4056093.59		P	1.8
8	<input type="checkbox"/>	1.000					



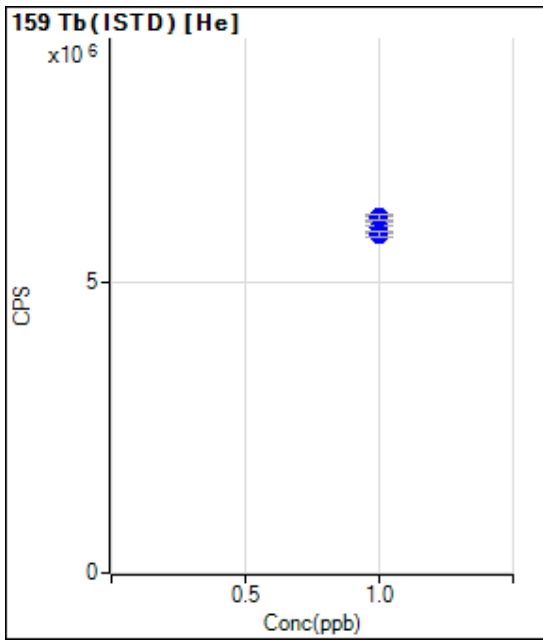
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		9217342.69		A	0.6
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		9265106.30		A	0.6
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		9365417.40		A	0.6
6	<input type="checkbox"/>	1.000		8976486.31		A	0.4
7	<input type="checkbox"/>	1.000		8858102.98		A	0.2
8	<input type="checkbox"/>	1.000					



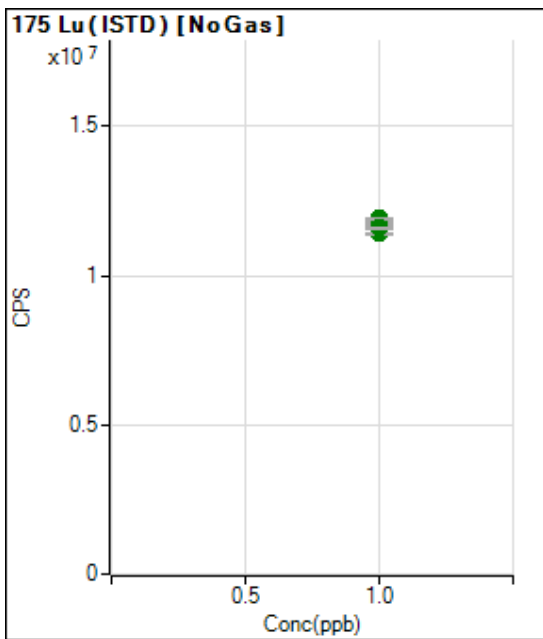
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		1744355.45		P	2.4
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		1796905.48		P	1.4
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		1795686.66		P	1.6
6	<input type="checkbox"/>	1.000		1688139.03		P	1.2
7	<input type="checkbox"/>	1.000		1659622.44		P	2.1
8	<input type="checkbox"/>	1.000					



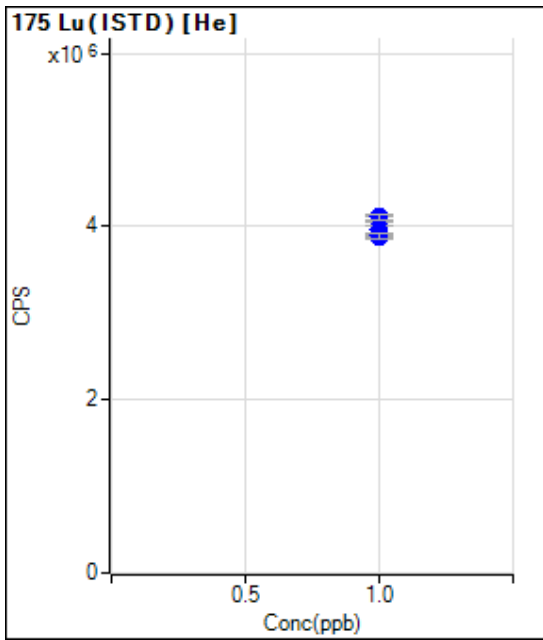
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		11966615.65		A	0.7
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		12000241.07		A	0.4
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		12132750.24		A	0.4
6	<input type="checkbox"/>	1.000		11600736.91		A	0.1
7	<input type="checkbox"/>	1.000		11786008.16		A	0.4
8	<input type="checkbox"/>	1.000					



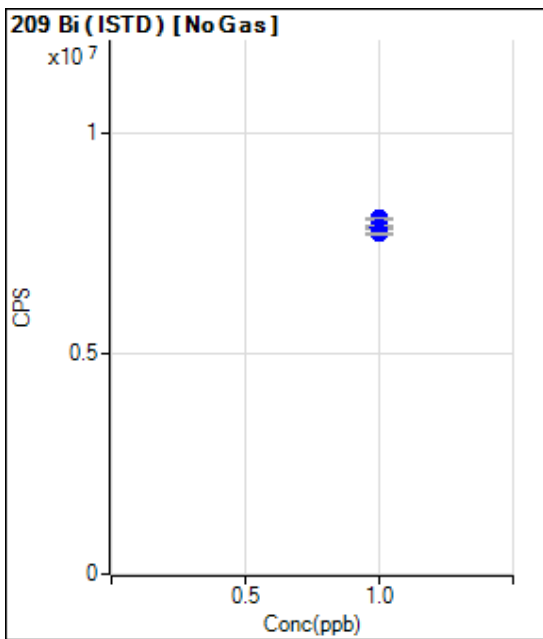
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		5927064.91		P	1.8
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		6084459.07		P	1.8
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		6118132.82		P	1.4
6	<input type="checkbox"/>	1.000		5797272.00		P	1.2
7	<input type="checkbox"/>	1.000		5822214.70		P	1.5
8	<input type="checkbox"/>	1.000					



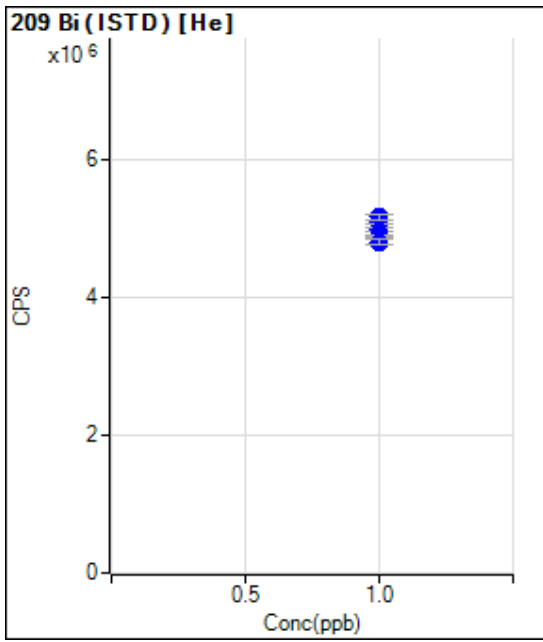
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		11682744.00		A	0.3
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		11782981.07		A	0.7
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		11904455.24		A	0.4
6	<input type="checkbox"/>	1.000		11416838.58		A	0.5
7	<input type="checkbox"/>	1.000		11597485.25		A	0.6
8	<input type="checkbox"/>	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		3966465.46		P	2.3
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		4081519.83		P	1.9
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		4110520.88		P	1.7
6	<input type="checkbox"/>	1.000		3887277.55		P	0.8
7	<input type="checkbox"/>	1.000		3890093.38		P	1.5
8	<input type="checkbox"/>	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		7845001.13		P	0.6
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		8055024.67		P	0.3
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		8054376.76		P	0.2
6	<input type="checkbox"/>	1.000		7848865.51		P	1.0
7	<input type="checkbox"/>	1.000		7719915.30		P	0.7
8	<input type="checkbox"/>	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		4977840.24		P	1.4
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		5083987.42		P	1.4
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		5157899.30		P	1.4
6	<input type="checkbox"/>	1.000		4885232.64		P	0.5
7	<input type="checkbox"/>	1.000		4794683.89		P	1.4
8	<input type="checkbox"/>	1.000					

Sample					
Data File	Acq. Date-Time	Type	Level	Sample Name	Total Dil.
001SMPL.d	8/1/2023 9:36	Sample		Blank	1
002SMPL.d	8/1/2023 9:39	Sample		Blank	1
003SMPL.d	8/1/2023 9:43	Sample		Blank	1
004CALB.d	8/1/2023 9:46	CalBlk	1	1300	1
005CAL.S.d	8/1/2023 9:50	CalStd	3	1302	1
006CAL.S.d	8/1/2023 9:54	CalStd	5	1304	1
007CAL.S.d	8/1/2023 9:58	CalStd		5 PPB	1
008CAL.S.d	8/1/2023 10:01	CalStd	6	1305	1
009CAL.S.d	8/1/2023 10:05	CalStd	7	1306	1
010_ICV.d	8/1/2023 10:09	ICV		1600	1
011_ICB.d	8/1/2023 10:12	ICB		1700	1
0120.1.d	8/1/2023 10:25	LLCCV0.1		1804	1
1210.5.d	8/1/2023 10:28	LLCCV0.5		1804	1
1211CCV1.d	8/1/2023 10:32	LLCCV1		1803	1
1212ICSA.d	8/1/2023 10:35	ICSA		2000	1
1213ICSB.d	8/1/2023 10:39	ICSB		2100	1
1214CCV1.d	8/1/2023 10:42	LLCCV1		X1803	1
1215_QC1.d	8/1/2023 10:46	QC1		LDR	1
1216SMPL.d	8/1/2023 10:50	Sample		2500	1
1217SMPL.d	8/1/2023 10:56	Sample		22307285311	393.7008
1218SMPL.d	8/1/2023 10:59	Sample		22307285312	384.6154
1219SMPL.d	8/1/2023 11:03	Sample		22307285313	359.7122
1220SMPL.d	8/1/2023 11:06	Sample		22307285314	362.3188
1221SMPL.d	8/1/2023 11:10	Sample		22307285315	387.5969
1222SMPL.d	8/1/2023 11:13	Sample		22307285316	396.8254
1223SMPL.d	8/1/2023 11:17	Sample		22307285317	387.5969
1224SMPL.d	8/1/2023 11:21	Sample		22307285318	396.8254
1225SMPL.d	8/1/2023 11:24	Sample		22307285319	367.6471
1226_CC.V.d	8/1/2023 11:28	CCV		1800	1
1227_CCB.d	8/1/2023 11:31	CCB		1900	1
1228SMPL.d	8/1/2023 11:35	MBSOIL		2505297	40
1229SMPL.d	8/1/2023 11:38	LCS6020		2505298	40
1230SMPL.d	8/1/2023 11:42	Sample		22307285320	370.3704
1231SMPL.d	8/1/2023 11:45	Sample		22307285321	378.7879
1232SMPL.d	8/1/2023 11:49	Sample		22307285322	390.625
1233SMPL.d	8/1/2023 11:53	Sample		22307285323	390.625
1234SMPL.d	8/1/2023 11:56	Sample		22307285324	370.3704
1235SMPL.d	8/1/2023 12:00	Sample		22307285325	359.7122
1236SMPL.d	8/1/2023 12:03	Sample		22307285326	393.7008
1237SMPL.d	8/1/2023 12:07	Sample		22307285327	381.6794
1238SMPL.d	8/1/2023 12:10	Sample		22307285328	375.9398
1239SMPL.d	8/1/2023 12:14	Sample		22307285329	390.625
1240_CC.V.d	8/1/2023 12:18	CCV		1800	1
1241_CCB.d	8/1/2023 12:21	CCB		1900	1
1242SMPL.d	8/1/2023 12:25	AllRef		22307285002	400

1243SMPL.d	8/1/2023 12:28	MSSOIL		22307285003	400
1244SMPL.d	8/1/2023 12:32	MSDSOIL		22307285004	400
1245SMPL.d	8/1/2023 12:35	PDS		2505696	400
1246SMPL.d	8/1/2023 12:39	Sample		2505697	2000
1247SMPL.d	8/1/2023 12:43	Sample		22307285007	378.7879
1248SMPL.d	8/1/2023 12:46	Sample		22307285008	367.6471
1249SMPL.d	8/1/2023 12:50	Sample		22307290301	387.5969
1250SMPL.d	8/1/2023 12:53	Sample		22307290303	396.8254
1251_CCV.d	8/1/2023 12:57	CCV		1800	1
1252_CCB.d	8/1/2023 13:00	CCB		1900	1
1253SMPL.d	8/1/2023 13:04	Sample		22307273501	1
1254SMPL.d	8/1/2023 13:08	Sample		22307280601	1
1255SMPL.d	8/1/2023 13:11	MBSOIL		2505497	40
1256SMPL.d	8/1/2023 13:15	LCS6020		2505498	40
1257SMPL.d	8/1/2023 13:18	AIRef		22307311001	400
1258SMPL.d	8/1/2023 13:22	MSSOIL		2505499	400
1259SMPL.d	8/1/2023 13:25	MSDSOIL		2505500	400
1260SMPL.d	8/1/2023 13:29	PDS		2505813	400
1261SMPL.d	8/1/2023 13:33	Sample		2505814	2000
1262SMPL.d	8/1/2023 13:36	Sample		22307311002	370.3704
1263SMPL.d	8/1/2023 13:40	Sample		22307311003	381.6794
1264SMPL.d	8/1/2023 13:43	Sample		22307283301	373.1343
1265SMPL.d	8/1/2023 13:47	Sample		22307283401	400
1266SMPL.d	8/1/2023 13:50	Sample		BLANK	1
1267SMPL.d	8/1/2023 13:54	Sample		22307283501	384.6154
1268_CCV.d	8/1/2023 13:58	CCV		1800	1
1269_CCB.d	8/1/2023 14:01	CCB		1900	1
1270SMPL.d	8/1/2023 14:05	Sample		BLANK	1
1271SMPL.d	8/1/2023 14:08	Sample		BLANK	1
1272SMPL.d	8/1/2023 14:12	Sample		BLANK	1

Vial Number
1101
1102
1103
1104
1105
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1107
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1109
1111
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1202
1203
1204
1202
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3205
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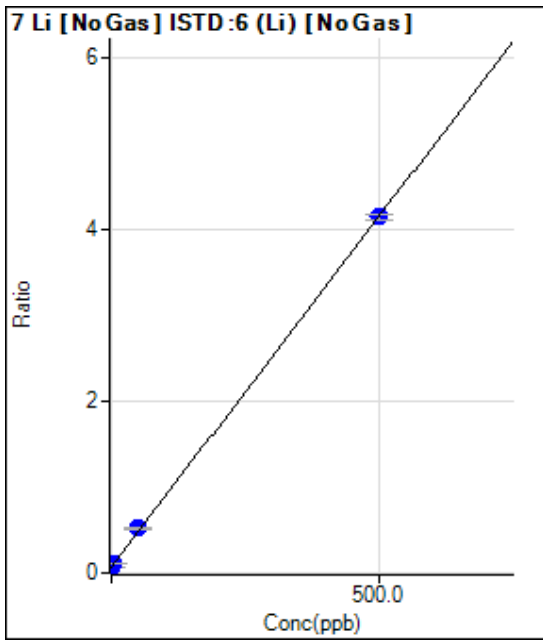
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2506
2507
2508
2509
2510
2511
5
2512
1404
1504
5
5
5

Tune Mode	Mass	Name	ISTD	R	a	b (blank)	DL	BEC	Units
No Gas	7	Li	6 (Li) [No Gas]	0.999952687	0.008148487	0.069359898	0.504809983	8.511997683	ppb
No Gas	9	Be	6 (Li) [No Gas]	0.999957808	0.002790126	6.77E-05	0.01311994	0.024253554	ppb
No Gas	11	B	45 Sc [No Gas]	0.999928086	0.000365942	0.000730798	0.354548979	1.997032194	ppb
He	23	Na	45 Sc [He]	0.999990963	0.003303429	0.112263221	0.745473657	33.98385026	ppb
He	24	Mg	45 Sc [He]	0.999990861	0.001390541	0.006533615	0.647194616	4.698613135	ppb
He	27	Al	45 Sc [He]	0.995754329	0.000449311	0.001279123	0.651973728	2.846852217	ppb
He	29	Si	45 Sc [He]	0.642246337	1.33E-06	0.889282851	136114.7797	670410.2908	ppb
He	39	K	45 Sc [He]	0.999992973	0.001843926	0.304285225	6.44034993	165.0203036	ppb
He	44	Ca	45 Sc [He]	0.999993145	7.43E-05	0.010759604	31.84242188	144.8163595	ppb
He	47	Ti	45 Sc [He]	0.999996855	0.000634766	0.000101452	0.139836097	0.159826286	ppb
He	51	V	72 Ge [He]	0.999999724	0.027515718	0.006788547	0.043875473	0.246715226	ppb
He	52	Cr	72 Ge [He]	0.999997524	0.034668037	0.016369746	0.032697069	0.472185545	ppb
He	55	Mn	72 Ge [He]	0.999998094	0.015860659	0.001930876	0.023043559	0.121739982	ppb
He	57	Fe	72 Ge [He]	0.999998765	0.000647286	0.002033292	0.629024544	3.141259937	ppb
He	59	Co	72 Ge [He]	0.999995396	0.056756975	0.000793678	0.00448395	0.013983792	ppb
He	60	Ni	72 Ge [He]	0.999998629	0.015388282	0.0020656	0.046079989	0.134232028	ppb
He	63	Cu	45 Sc [He]	0.999986758	0.034464546	0.002718597	0.023329392	0.078880984	ppb
He	66	Zn	72 Ge [He]	0.99999306	0.006650602	0.004475988	0.175186669	0.673019955	ppb
He	75	As	72 Ge [He]	0.99999863	0.007586875	0.000631091	0.00335179	0.083181928	ppb
He	78	Se	72 Ge [He]	0.999994957	0.000455431	0.000616396	0.329881097	1.353435824	ppb
No Gas	88	Sr	72 Ge [No Gas]	0.999996506	0.039830834	0.000596193	0.000453346	0.01496812	ppb
No Gas	90	Zr	72 Ge [No Gas]	0.999998632	0.024810516	0.000670034	0.007588571	0.027006043	ppb
No Gas	95	Mo	115 In [No Gas]	0.999999216	0.001167629	4.18E-05	0.004254948	0.035827876	ppb
No Gas	107	Ag	115 In [No Gas]	0.999997546	0.002988609	2.46E-06	0.000811225	0.000823545	ppb
No Gas	111	Cd	115 In [No Gas]	0.999999563	0.000662363	1.39E-05	0.004125425	0.020920929	ppb
No Gas	118	(Sn)	115 In [No Gas]	0.999999983	0.001931034	9.59E-05	0.01483973	0.049661665	ppb
He	118	(Sn)	115 In [He]	0.999997449	0.002510633	0.000160006	0.0215322	0.063731305	ppb
He	120	Sn	115 In [He]	0.99999984	0.003644314	0.000237452	0.015806848	0.065156717	ppb
No Gas	121	Sb	115 In [No Gas]	0.999999925	0.003031554	0.000152739	0.00323094	0.05038299	ppb
No Gas	137	Ba	115 In [No Gas]	0.999999485	0.000995562	8.68E-06	0.006457591	0.008719195	ppb
He	156	[Se]	115 In [He]						ppb
No Gas	201	Hg							
No Gas	205	Tl	209 Bi [No Gas]	0.999999756	0.006736803	0.000101838	0.003535628	0.015116734	ppb
No Gas	206	(Pb)	209 Bi [No Gas]	0.999998914	0.002304618	2.88E-05	0.003071786	0.012485224	ppb
No Gas	207	(Pb)	209 Bi [No Gas]	0.999998257	0.00196502	2.67E-05	0.006758553	0.013580615	ppb
No Gas	208	Pb	209 Bi [No Gas]	0.999998874	0.004861332	5.60E-05	0.003942286	0.011517445	ppb
No Gas	6	(Li)							ppb
No Gas	45	Sc							ppb
He	45	Sc							ppb
No Gas	72	Ge							ppb
He	72	Ge							ppb
No Gas	103	Rh							ppb
He	103	Rh							ppb
No Gas	115	In							ppb
He	115	In							ppb
No Gas	159	Tb							ppb
He	159	Tb							ppb
No Gas	175	Lu							ppb
He	175	Lu							ppb
No Gas	209	Bi							ppb
He	209	Bi							ppb

Calibration for 1262SMPL.d

Batch Folder: C:\Agilent\ICPMH\1\DATA\2230801A_MS2.b\
 Analysis File: 2230801A_MS2.batch.bin
 DA Date-Time: 8/1/2023 2:27:55 PM
 Calibration Title: EPA6020
 Calibration Method: External Calibration
 VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	004CALB.d	1300	8/1/2023 9:46:48 AM
2			
3	005CAL.S.d	1302	8/1/2023 9:50:21 AM
4			
5	006CAL.S.d	1304	8/1/2023 9:54:24 AM
6	008CAL.S.d	1305	8/1/2023 10:01:52 AM
7	009CAL.S.d	1306	8/1/2023 10:05:35 AM
8			



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	61532.29	0.0694	P	2.0
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.500	0.640	65528.80	0.0746	P	0.3
4	<input type="checkbox"/>	2.500					
5	<input type="checkbox"/>	5.000	5.568	103558.44	0.1147	P	0.6
6	<input type="checkbox"/>	50.000	54.936	447982.39	0.5170	P	0.9
7	<input type="checkbox"/>	500.000	499.501	3843153.17	4.1395	P	1.7
8	<input type="checkbox"/>						

$y = 0.0081 * x + 0.0694$

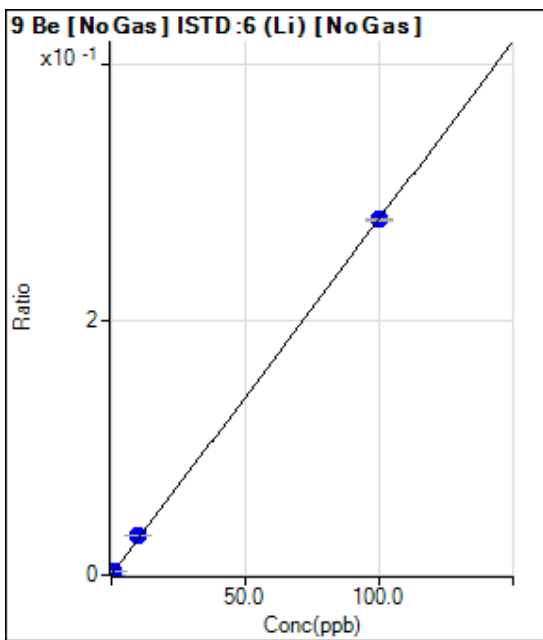
R = 1.0000

DL = 0.5048

BEC = 8.512

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	60.00	0.0001	P	18.0
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.117	346.01	0.0004	P	4.2
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.045	2692.25	0.0030	P	2.5
6	<input type="checkbox"/>	10.000	10.915	26446.90	0.0305	P	0.6
7	<input type="checkbox"/>	100.000	99.908	258883.66	0.2788	P	0.9
8	<input type="checkbox"/>						

$y = 0.0028 * x + 6.7670E-005$

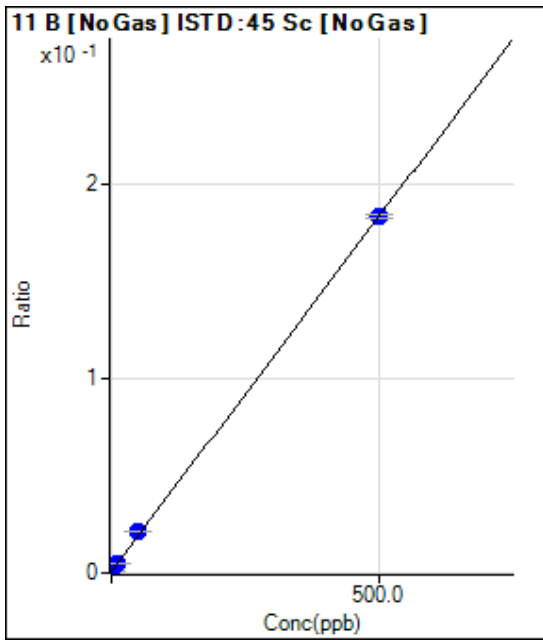
R = 1.0000

DL = 0.01312

BEC = 0.02425

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	3847.28	0.0007	P	5.9
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	1.000	1.199	6154.77	0.0012	P	7.6
4	<input type="checkbox"/>	5.000					
5	<input type="checkbox"/>	10.000	10.044	23729.08	0.0044	P	0.4
6	<input type="checkbox"/>	50.000	55.912	108556.86	0.0212	P	0.8
7	<input type="checkbox"/>	500.000	499.408	953103.45	0.1835	P	1.0
8	<input type="checkbox"/>						

$y = 3.6594E-004 * x + 7.3080E-004$

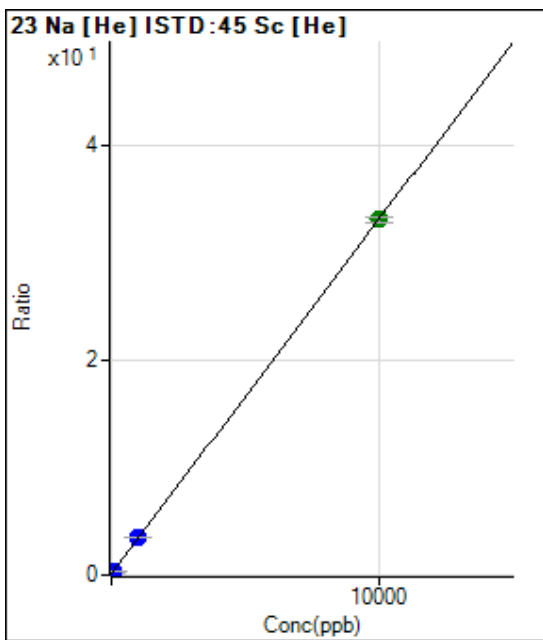
R = 0.9999

DL = 0.3545

BEC = 1.997

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	22520.73	0.1123	P	0.7
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	10.000	9.714	29038.71	0.1444	P	2.8
4	<input type="checkbox"/>	50.000					
5	<input type="checkbox"/>	100.000	98.106	89847.95	0.4363	P	0.7
6	<input type="checkbox"/>	1000.000	1040.921	683176.60	3.5509	P	1.0
7	<input type="checkbox"/>	10000.000	9995.927	6378202.41	33.1331	A	1.9
8	<input type="checkbox"/>						

$y = 0.0033 * x + 0.1123$

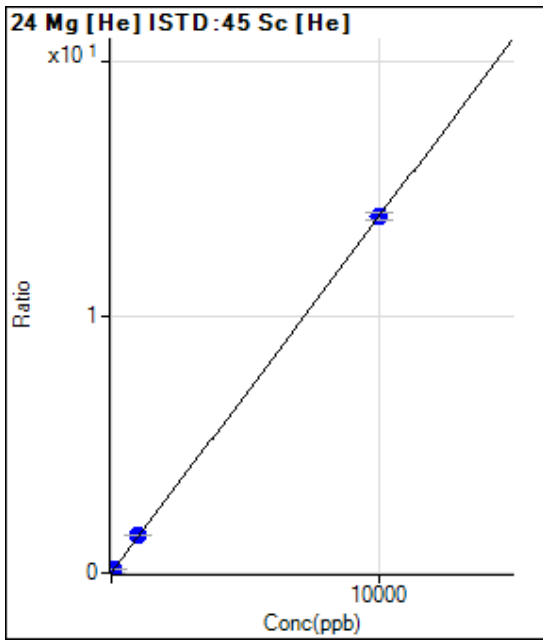
R = 1.0000

DL = 0.7455

BEC = 33.98

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	1310.10	0.0065	P	4.6
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	10.000	8.925	3810.63	0.0189	P	7.6
4	<input type="checkbox"/>	50.000					
5	<input type="checkbox"/>	100.000	99.201	29746.79	0.1445	P	1.0
6	<input type="checkbox"/>	1000.000	1041.264	279795.52	1.4545	P	1.9
7	<input type="checkbox"/>	10000.000	9995.883	2676930.79	13.9062	P	2.1
8	<input type="checkbox"/>						

$y = 0.0014 * x + 0.0065$

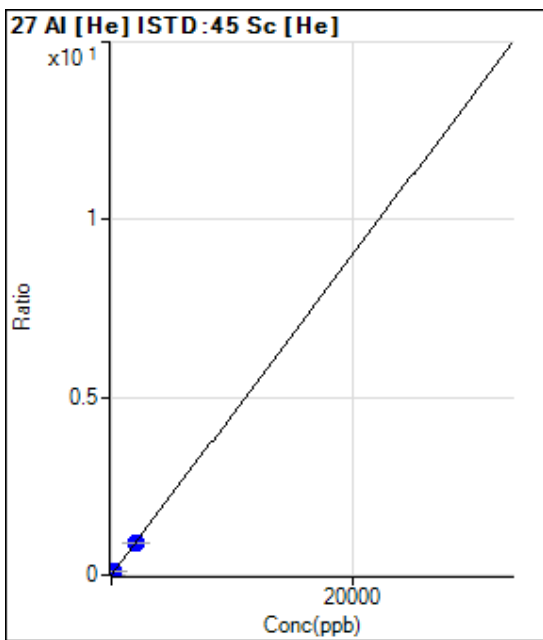
R = 1.0000

DL = 0.6472

BEC = 4.699

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	256.67	0.0013	P	7.6
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	2.000	1.771	417.34	0.0021	P	7.6
4	<input type="checkbox"/>	10.000					
5	<input type="checkbox"/>	20.000	205.060	19230.96	0.0934	P	2.0
6	<input type="checkbox"/>	200.000	209.201	18328.51	0.0953	P	1.8
7	<input type="checkbox"/>	2000.000	1997.230	173006.67	0.8987	P	1.2
8	<input type="checkbox"/>						

$y = 4.4931E-004 * x + 0.0013$

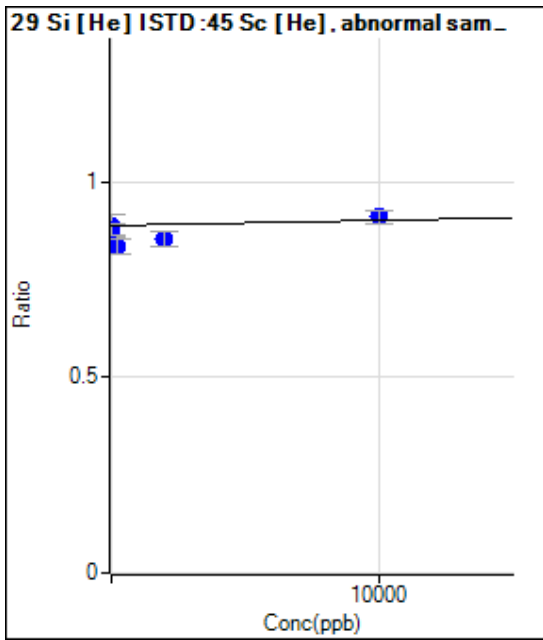
R = 0.9958

DL = 0.652

BEC = 2.847

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	178283.02	0.8893	P	6.8
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	20.000	-8738.428	176554.17	0.8777	P	3.3
4	<input type="checkbox"/>	100.000					
5	<input type="checkbox"/>	200.000	-42214.000	171511.78	0.8333	P	4.6
6	<input type="checkbox"/>	2000.000	-25952.621	164379.21	0.8549	P	5.0
7	<input type="checkbox"/>	10000.000	16456.321	175365.44	0.9111	P	3.4
8	<input type="checkbox"/>						

$y = 1.3265E-006 * x + 0.8893$

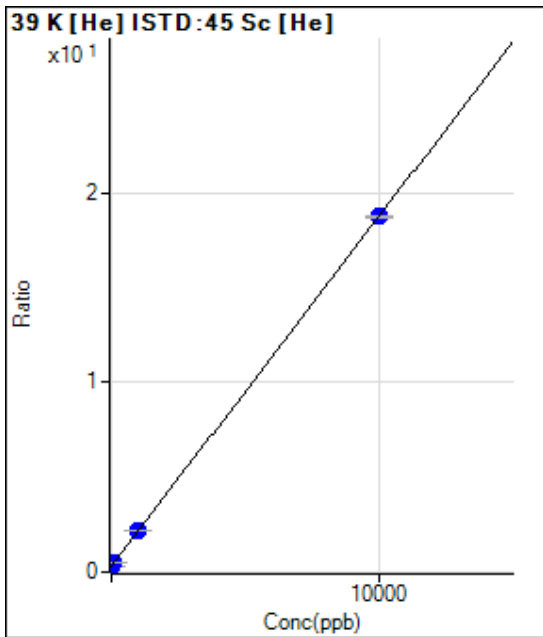
R = 0.6422

DL = 1.361E+05

BEC = 6.704E+05

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	61049.17	0.3043	P	1.3
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	10.000	10.436	65096.41	0.3235	P	1.5
4	<input type="checkbox"/>	50.000					
5	<input type="checkbox"/>	100.000	90.889	97173.09	0.4719	P	1.5
6	<input type="checkbox"/>	1000.000	1033.121	425003.13	2.2093	P	1.9
7	<input type="checkbox"/>	10000.000	9996.779	3607592.65	18.7376	P	0.6
8	<input type="checkbox"/>						

$y = 0.0018 * x + 0.3043$

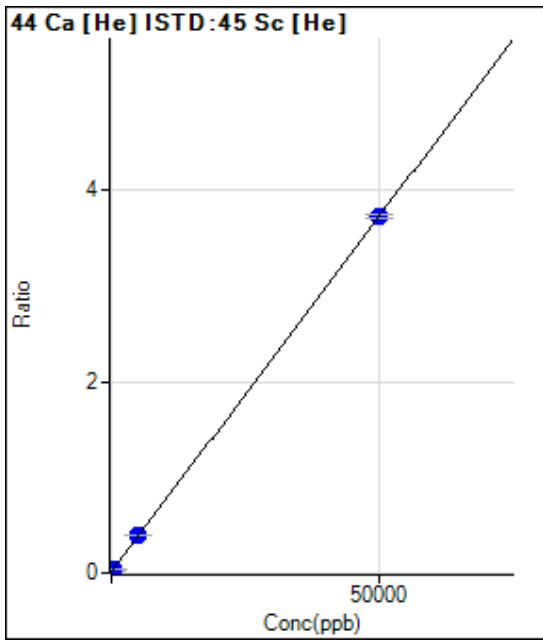
R = 1.0000

DL = 6.44

BEC = 165

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	2156.87	0.0108	P	7.3
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	50.000	52.927	2955.34	0.0147	P	3.8
4	<input type="checkbox"/>	250.000					
5	<input type="checkbox"/>	500.000	507.297	9973.46	0.0485	P	3.1
6	<input type="checkbox"/>	5000.000	5184.076	76157.31	0.3959	P	2.7
7	<input type="checkbox"/>	50000.000	49981.517	717013.17	3.7243	P	0.9
8	<input type="checkbox"/>						

$y = 7.4298E-005 * x + 0.0108$

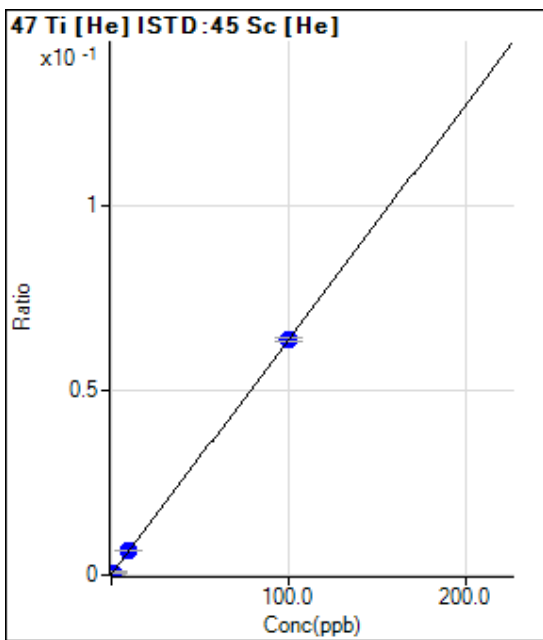
R = 1.0000

DL = 31.84

BEC = 144.8

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	20.33	0.0001	P	29.2
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.104	33.67	0.0002	P	21.9
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.038	156.67	0.0008	P	6.7
6	<input type="checkbox"/>	10.000	10.255	1272.06	0.0066	P	0.6
7	<input type="checkbox"/>	100.000	99.974	12236.05	0.0636	P	1.7
8	<input type="checkbox"/>						

$y = 6.3477E-004 * x + 1.0145E-004$

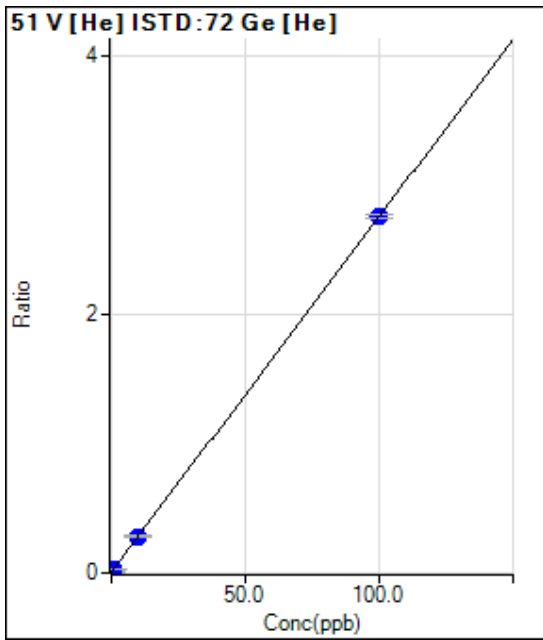
R = 1.0000

DL = 0.1398

BEC = 0.1598

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	1101.16	0.0068	P	5.9
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.074	1433.42	0.0088	P	11.6
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.947	5443.27	0.0328	P	2.9
6	<input type="checkbox"/>	10.000	10.036	44678.33	0.2829	P	2.5
7	<input type="checkbox"/>	100.000	99.997	430877.77	2.7583	P	1.1
8	<input type="checkbox"/>						

$y = 0.0275 * x + 0.0068$

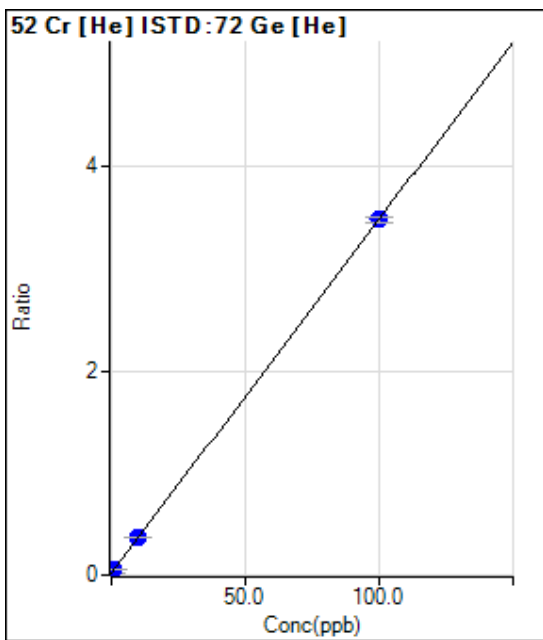
R = 1.0000

DL = 0.04388

BEC = 0.2467

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	2654.71	0.0164	P	2.3
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.128	3377.10	0.0208	P	2.6
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.166	9416.41	0.0568	P	1.5
6	<input type="checkbox"/>	10.000	10.223	58550.93	0.3708	P	2.2
7	<input type="checkbox"/>	100.000	99.976	543972.67	3.4823	P	1.4
8	<input type="checkbox"/>						

$y = 0.0347 * x + 0.0164$

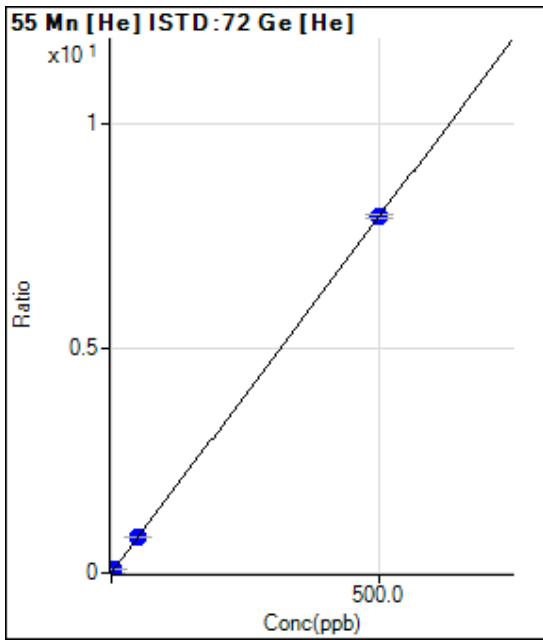
R = 1.0000

DL = 0.0327

BEC = 0.4722

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	313.34	0.0019	P	6.3
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.500	0.552	1734.57	0.0107	P	6.4
4	<input type="checkbox"/>	2.500					
5	<input type="checkbox"/>	5.000	5.197	13985.62	0.0844	P	2.4
6	<input type="checkbox"/>	50.000	51.015	128091.41	0.8111	P	1.6
7	<input type="checkbox"/>	500.000	499.896	1238886.13	7.9306	P	1.0
8	<input type="checkbox"/>						

$y = 0.0159 * x + 0.0019$

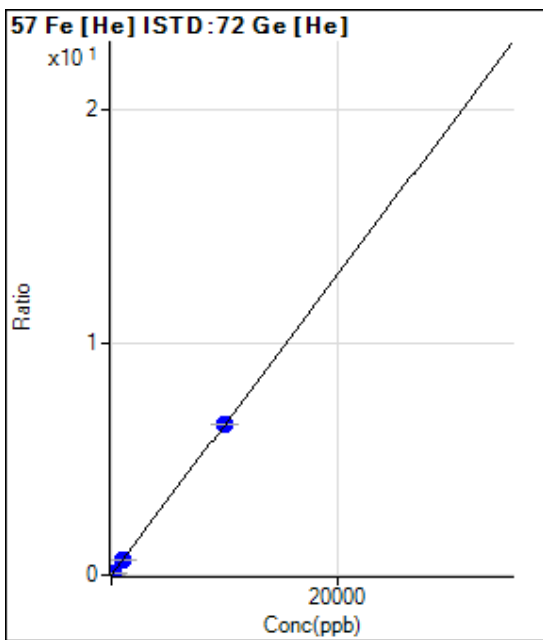
R = 1.0000

DL = 0.02304

BEC = 0.1217

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	330.02	0.0020	P	6.7
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	10.000	8.338	1206.75	0.0074	P	11.0
4	<input type="checkbox"/>	50.000					
5	<input type="checkbox"/>	100.000	104.791	11581.52	0.0699	P	3.0
6	<input type="checkbox"/>	1000.000	1015.351	104131.38	0.6593	P	1.3
7	<input type="checkbox"/>	10000.000	9998.419	1011351.47	6.4739	P	0.4
8	<input type="checkbox"/>						

$y = 6.4729E-004 * x + 0.0020$

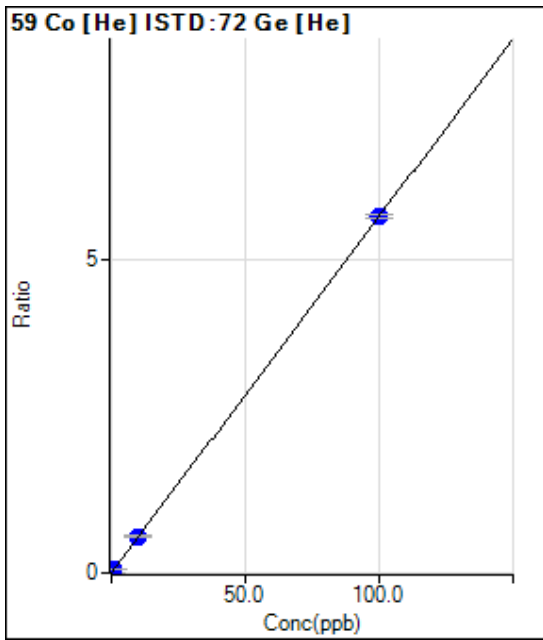
R = 1.0000

DL = 0.629

BEC = 3.141

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	128.89	0.0008	P	10.7
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.098	1031.16	0.0064	P	21.0
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.016	9693.28	0.0585	P	2.5
6	<input type="checkbox"/>	10.000	10.301	92456.28	0.5854	P	2.2
7	<input type="checkbox"/>	100.000	99.970	886474.82	5.6748	P	1.0
8	<input type="checkbox"/>						

$y = 0.0568 * x + 7.9368E-004$

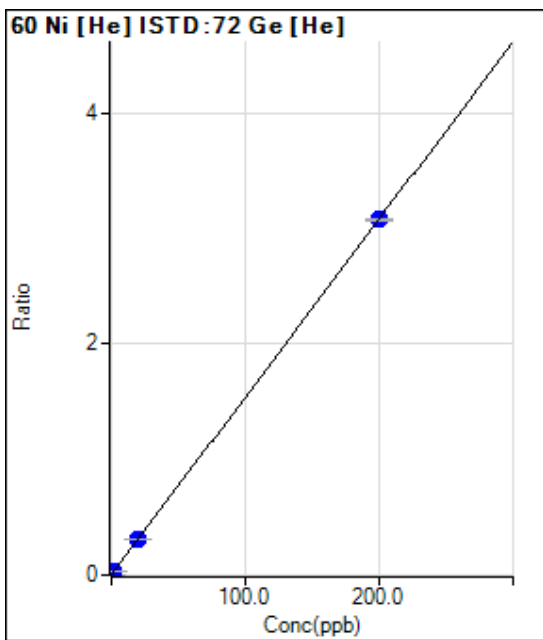
R = 1.0000

DL = 0.004484

BEC = 0.01398

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	334.45	0.0021	P	11.4
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.200	0.189	807.81	0.0050	P	3.6
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	2.000	2.108	5718.95	0.0345	P	3.3
6	<input type="checkbox"/>	20.000	20.335	49746.16	0.3150	P	1.9
7	<input type="checkbox"/>	200.000	199.965	481017.74	3.0792	P	0.9
8	<input type="checkbox"/>						

$y = 0.0154 * x + 0.0021$

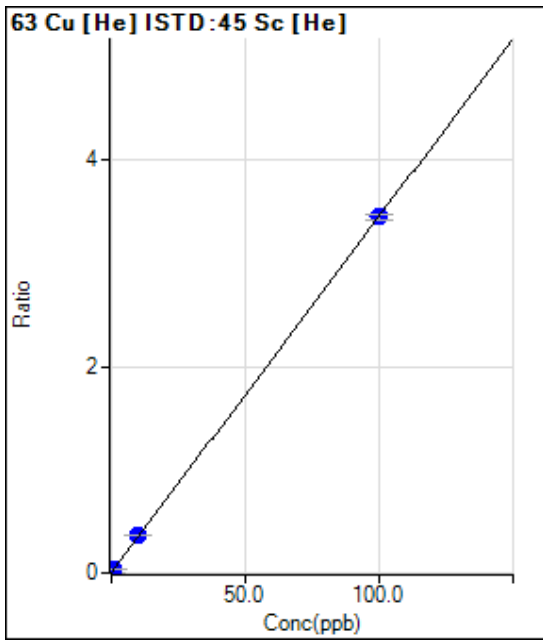
R = 1.0000

DL = 0.04608

BEC = 0.1342

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	545.57	0.0027	P	9.9
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.087	1147.84	0.0057	P	9.3
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.046	7981.16	0.0388	P	3.2
6	<input type="checkbox"/>	10.000	10.510	70211.44	0.3650	P	1.7
7	<input type="checkbox"/>	100.000	99.949	663676.08	3.4474	P	1.4
8	<input type="checkbox"/>						

$y = 0.0345 * x + 0.0027$

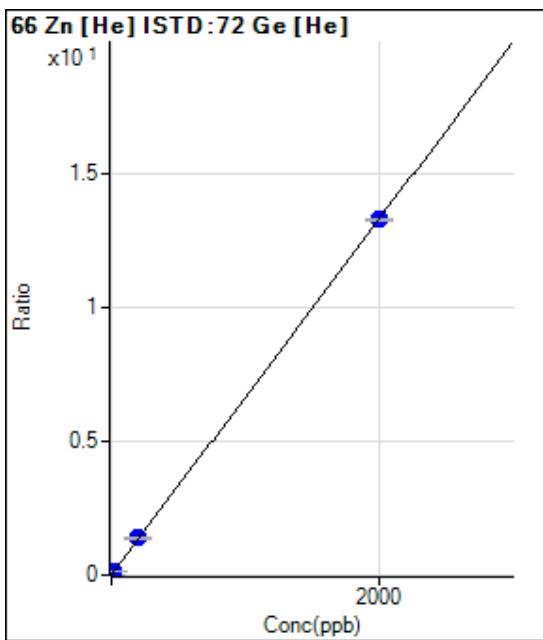
R = 1.0000

DL = 0.02333

BEC = 0.07888

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	726.69	0.0045	P	8.7
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	2.000	1.941	2823.64	0.0174	P	4.3
4	<input type="checkbox"/>	10.000					
5	<input type="checkbox"/>	20.000	21.032	23938.58	0.1443	P	0.7
6	<input type="checkbox"/>	200.000	207.511	218656.99	1.3846	P	1.8
7	<input type="checkbox"/>	2000.000	1999.239	2077832.76	13.3006	P	0.3
8	<input type="checkbox"/>						

$y = 0.0067 * x + 0.0045$

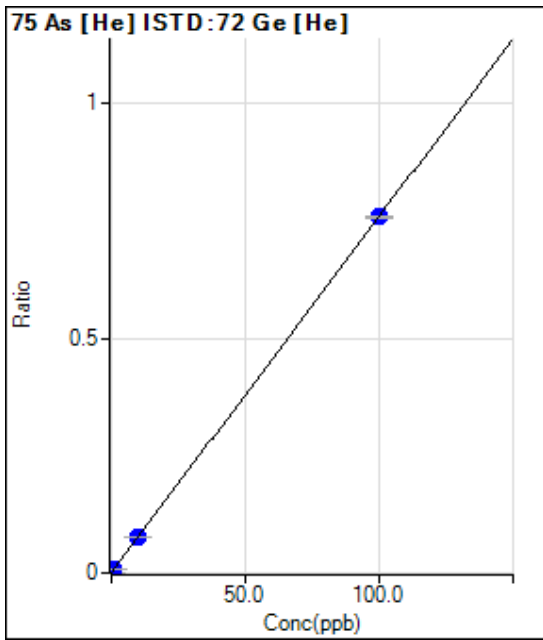
R = 1.0000

DL = 0.1752

BEC = 0.673

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	102.33	0.0006	P	1.3
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.088	210.67	0.0013	P	10.6
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.975	1331.73	0.0080	P	3.6
6	<input type="checkbox"/>	10.000	10.150	12260.83	0.0776	P	2.1
7	<input type="checkbox"/>	100.000	99.985	118604.42	0.7592	P	0.8
8	<input type="checkbox"/>						

$y = 0.0076 * x + 6.3109E-004$

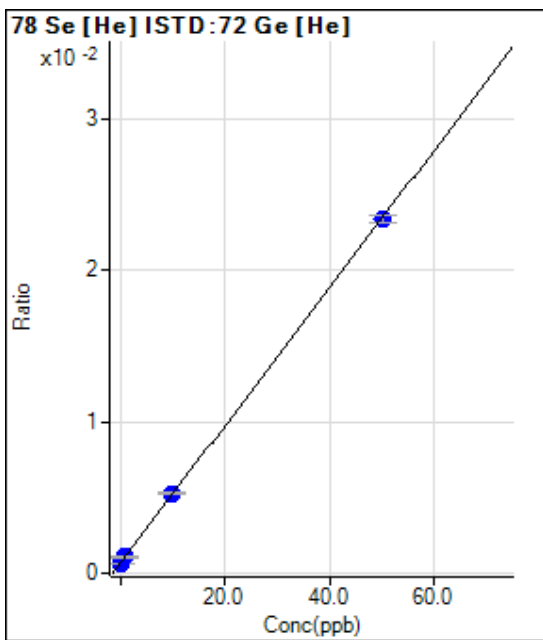
R = 1.0000

DL = 0.003352

BEC = 0.08318

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	100.00	0.0006	P	8.1
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.102	107.65	0.0007	P	1.5
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.969	175.47	0.0011	P	5.2
6	<input type="checkbox"/>	10.000	10.137	826.58	0.0052	P	2.3
7	<input type="checkbox"/>	50.000	49.973	3651.45	0.0234	P	1.6
8	<input type="checkbox"/>						

$y = 4.5543E-004 * x + 6.1640E-004$

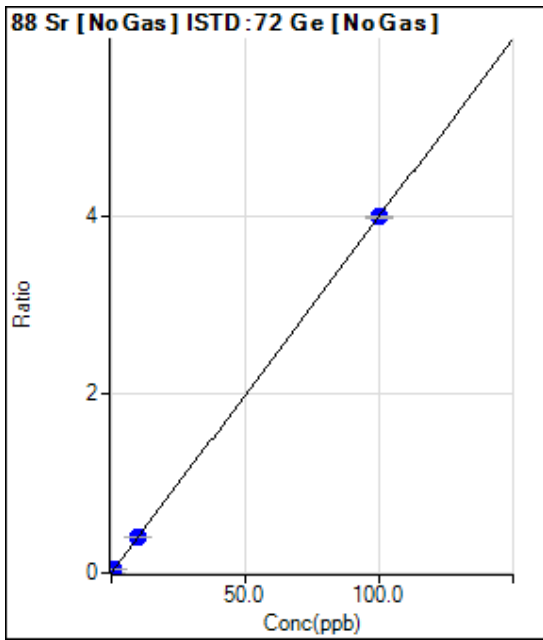
R = 1.0000

DL = 0.3299

BEC = 1.353

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	806.72	0.0006	P	1.0
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.099	6161.53	0.0045	P	5.8
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.001	55547.94	0.0405	P	2.7
6	<input type="checkbox"/>	10.000	10.259	539574.11	0.4092	P	0.7
7	<input type="checkbox"/>	100.000	99.974	5269777.52	3.9826	P	0.6
8	<input type="checkbox"/>						

$y = 0.0398 * x + 5.9619E-004$

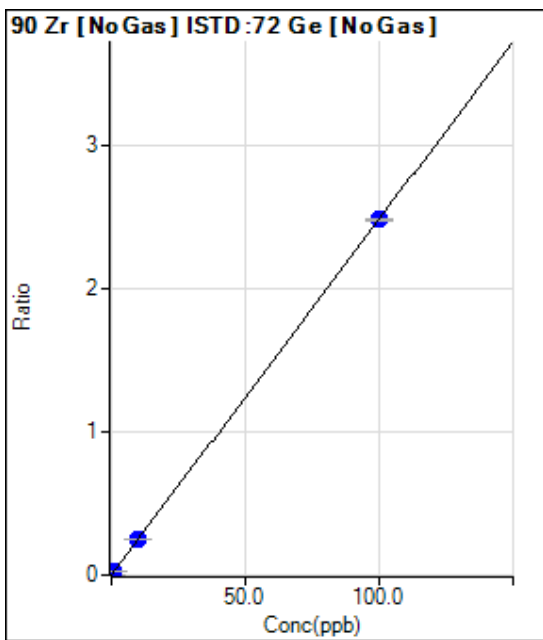
R = 1.0000

DL = 0.0004533

BEC = 0.01497

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	906.70	0.0007	P	9.4
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.084	3730.53	0.0028	P	2.9
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.898	31499.00	0.0230	P	1.3
6	<input type="checkbox"/>	10.000	10.102	331351.81	0.2513	P	0.9
7	<input type="checkbox"/>	100.000	99.991	3283363.13	2.4815	P	0.3
8	<input type="checkbox"/>						

$y = 0.0248 * x + 6.7003E-004$

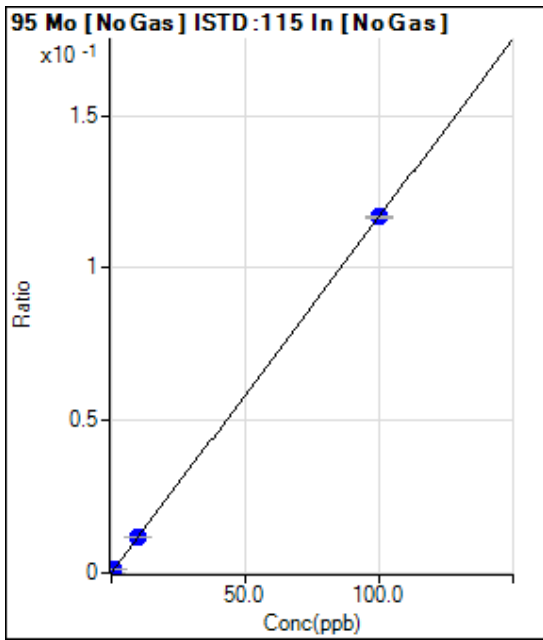
R = 1.0000

DL = 0.007589

BEC = 0.02701

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	358.90	0.0000	P	4.0
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.106	1417.87	0.0002	P	5.0
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.917	9677.81	0.0011	P	1.7
6	<input type="checkbox"/>	10.000	9.884	96549.78	0.0116	P	1.1
7	<input type="checkbox"/>	100.000	100.012	965228.33	0.1168	P	0.7
8	<input type="checkbox"/>						

$y = 0.0012 * x + 4.1834E-005$

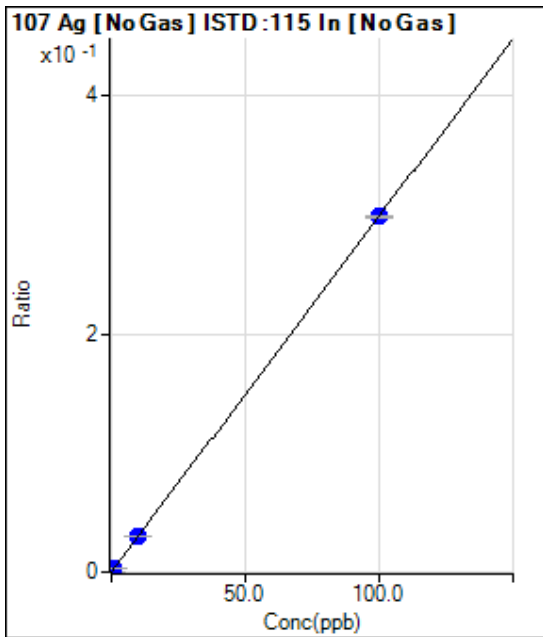
R = 1.0000

DL = 0.004255

BEC = 0.03583

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	21.11	0.0000	P	32.8
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.105	2702.51	0.0003	P	4.2
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.990	25753.35	0.0030	P	0.8
6	<input type="checkbox"/>	10.000	10.215	254515.51	0.0305	P	0.5
7	<input type="checkbox"/>	100.000	99.979	2468840.18	0.2988	P	0.2
8	<input type="checkbox"/>						

$y = 0.0030 * x + 2.4613E-006$

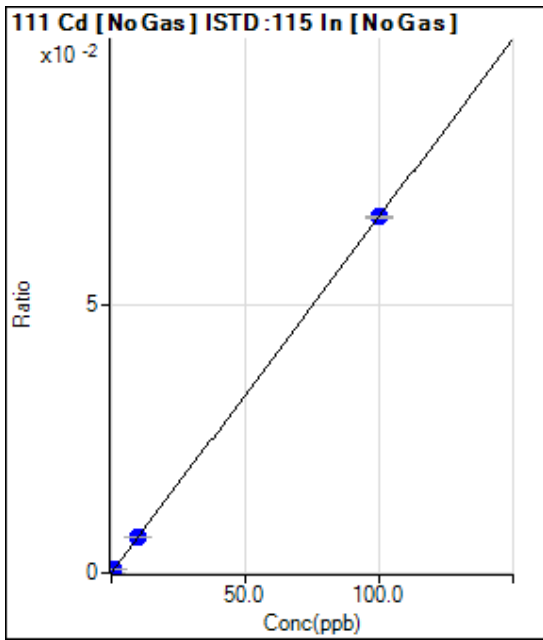
R = 1.0000

DL = 0.0008112

BEC = 0.0008235

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	118.89	0.0000	P	6.6
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.103	701.14	0.0001	P	6.4
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.997	5864.61	0.0007	P	2.1
6	<input type="checkbox"/>	10.000	10.091	55835.95	0.0067	P	0.5
7	<input type="checkbox"/>	100.000	99.991	547344.44	0.0662	P	0.3
8	<input type="checkbox"/>						

$y = 6.6236E-004 * x + 1.3857E-005$

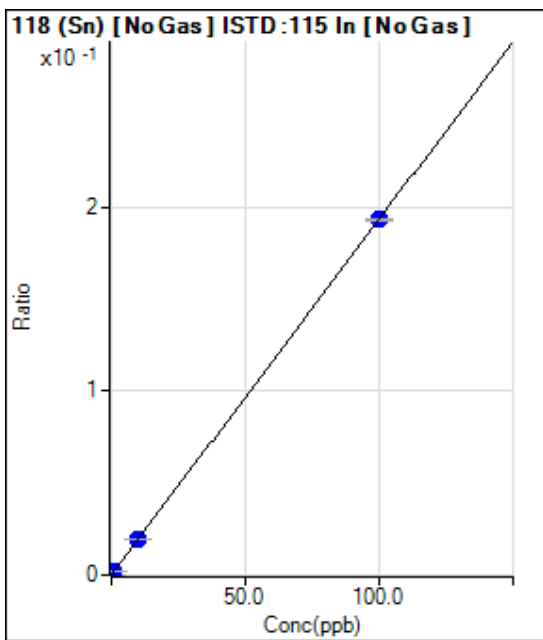
R = 1.0000

DL = 0.004125

BEC = 0.02092

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	822.25	0.0001	P	10.0
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.114	2703.63	0.0003	P	5.9
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.998	17592.15	0.0020	P	1.5
6	<input type="checkbox"/>	10.000	10.015	162025.39	0.0194	P	0.9
7	<input type="checkbox"/>	100.000	99.999	1596302.82	0.1932	P	0.5
8	<input type="checkbox"/>						

$y = 0.0019 * x + 9.5898E-005$

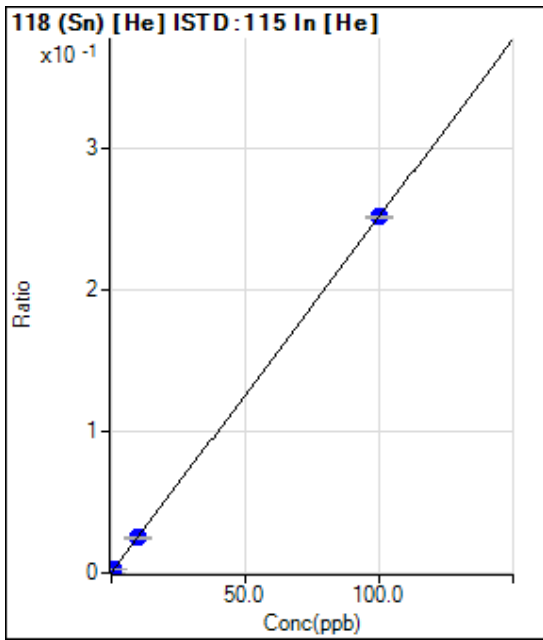
R = 1.0000

DL = 0.01484

BEC = 0.04966

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	236.67	0.0002	P	11.3
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.103	621.13	0.0004	P	11.2
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.017	4103.98	0.0027	P	1.6
6	<input type="checkbox"/>	10.000	9.785	35426.59	0.0247	P	0.8
7	<input type="checkbox"/>	100.000	100.021	353343.46	0.2513	P	0.9
8	<input type="checkbox"/>						

$y = 0.0025 * x + 1.6001E-004$

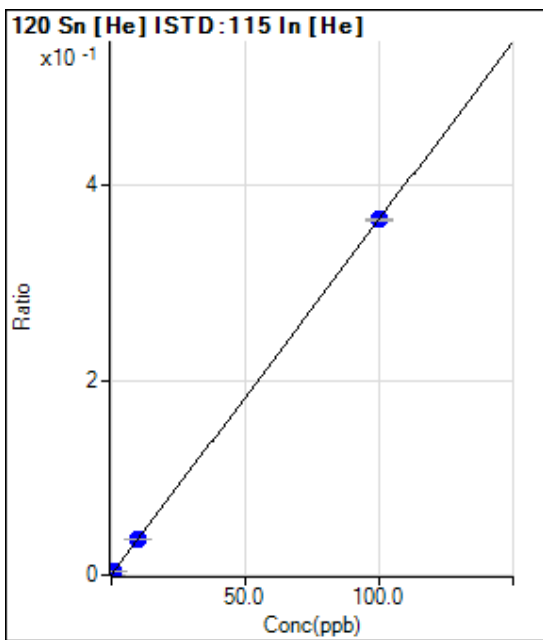
R = 1.0000

DL = 0.02153

BEC = 0.06373

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	351.12	0.0002	P	8.1
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.106	927.82	0.0006	P	13.8
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.007	5910.19	0.0039	P	3.0
6	<input type="checkbox"/>	10.000	10.059	52846.25	0.0369	P	1.8
7	<input type="checkbox"/>	100.000	99.994	512764.51	0.3646	P	0.7
8	<input type="checkbox"/>						

$y = 0.0036 * x + 2.3745E-004$

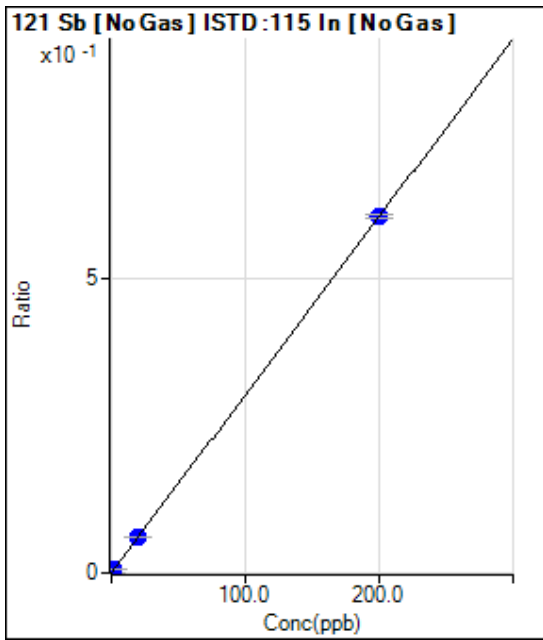
R = 1.0000

DL = 0.01581

BEC = 0.06516

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	1310.08	0.0002	P	2.1
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.200	0.207	6673.88	0.0008	P	1.5
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	2.000	1.977	53466.38	0.0061	P	0.4
6	<input type="checkbox"/>	20.000	20.067	508418.66	0.0610	P	0.4
7	<input type="checkbox"/>	200.000	199.994	5010844.66	0.6064	P	1.1
8	<input type="checkbox"/>						

$y = 0.0030 * x + 1.5274E-004$

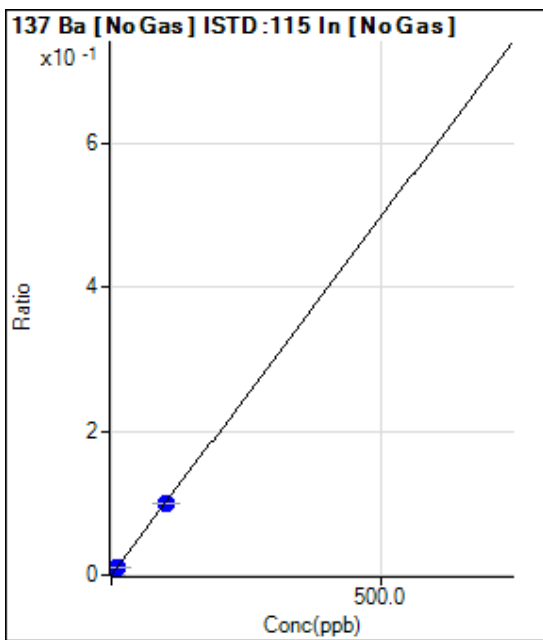
R = 1.0000

DL = 0.003231

BEC = 0.05038

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	74.44	0.0000	P	24.7
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.099	921.15	0.0001	P	3.5
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.972	8490.46	0.0010	P	1.5
6	<input type="checkbox"/>	10.000	10.087	83792.02	0.0101	P	0.4
7	<input type="checkbox"/>	100.000	99.992	822594.24	0.0996	P	0.7
8	<input type="checkbox"/>	1000.000					

$y = 9.9556E-004 * x + 8.6805E-006$

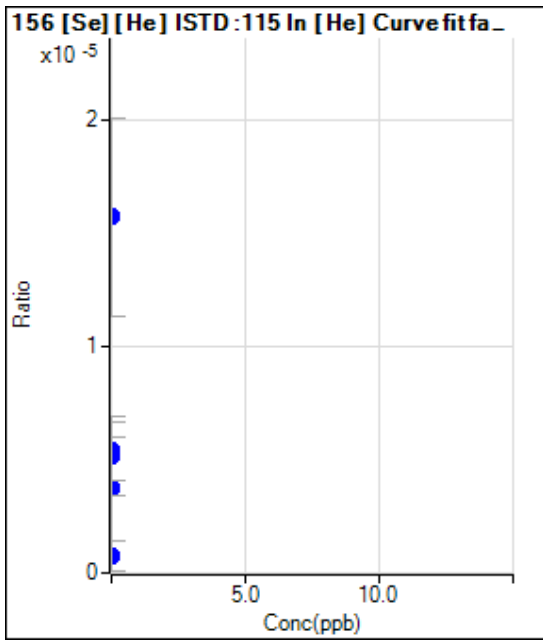
R = 1.0000

DL = 0.006458

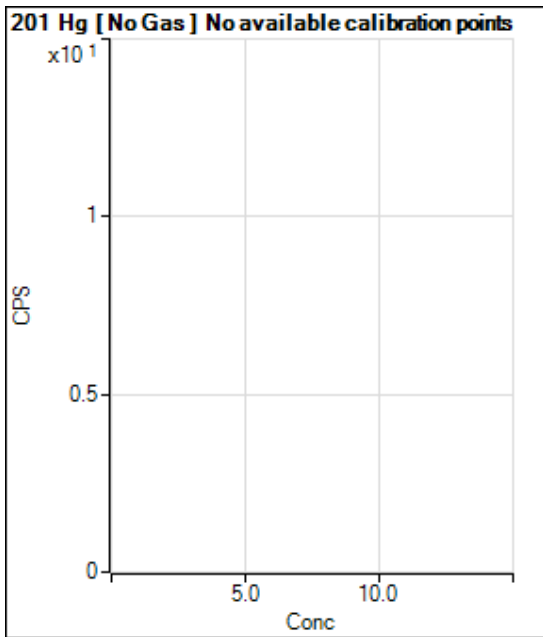
BEC = 0.008719

Weight: <None>

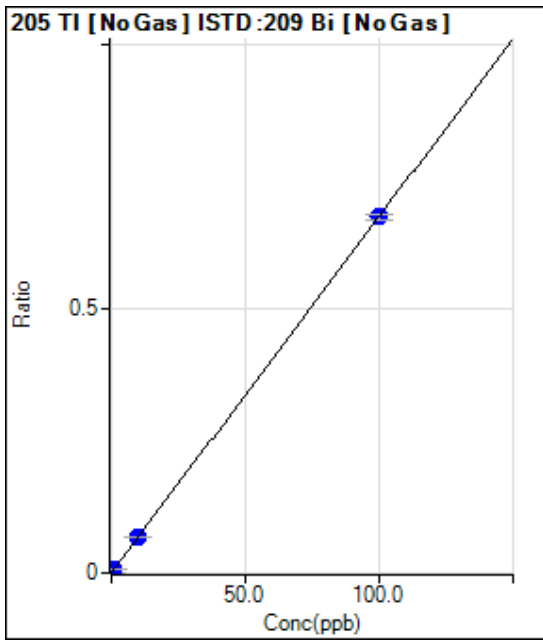
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000		1.11	0.0000	P	173.2
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.000		5.55	0.0000	P	124.1
4	<input type="checkbox"/>	0.000					
5	<input type="checkbox"/>	0.000		7.78	0.0000	P	66.6
6	<input type="checkbox"/>	0.000		7.78	0.0000	P	48.3
7	<input type="checkbox"/>	0.000		22.22	0.0000	P	55.4
8	<input type="checkbox"/>						



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>			15.50		P	23.3
2	<input type="checkbox"/>						
3	<input type="checkbox"/>			23.00		P	8.7
4	<input type="checkbox"/>						
5	<input type="checkbox"/>			26.17		P	17.1
6	<input type="checkbox"/>			30.67		P	8.0
7	<input type="checkbox"/>			49.33		P	18.6
8	<input type="checkbox"/>						



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	650.04	0.0001	P	7.8
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.099	4937.79	0.0008	P	2.4
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.971	43017.14	0.0066	P	2.3
6	<input type="checkbox"/>	10.000	10.054	423169.85	0.0678	P	1.4
7	<input type="checkbox"/>	100.000	99.995	4218990.35	0.6737	P	1.3
8	<input type="checkbox"/>						

$y = 0.0067 * x + 1.0184E-004$

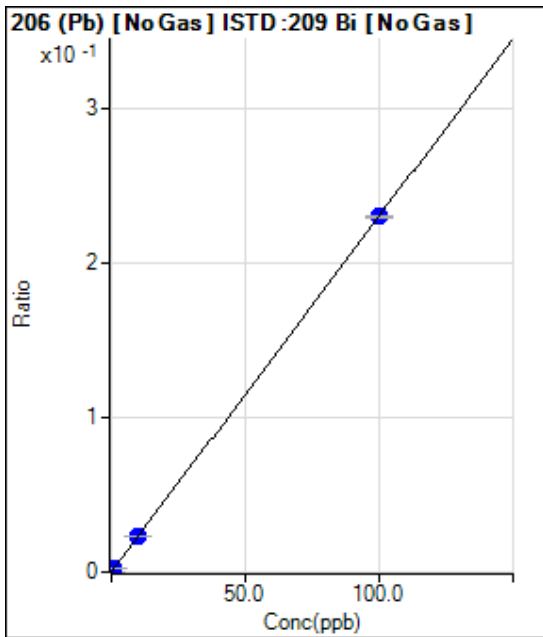
R = 1.0000

DL = 0.003536

BEC = 0.01512

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	183.34	0.0000	P	8.2
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.103	1706.84	0.0003	P	3.2
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	1.008	15232.58	0.0024	P	1.6
6	<input type="checkbox"/>	10.000	10.147	146070.97	0.0234	P	0.9
7	<input type="checkbox"/>	100.000	99.985	1443207.22	0.2305	P	0.7
8	<input type="checkbox"/>						

$y = 0.0023 * x + 2.8774E-005$

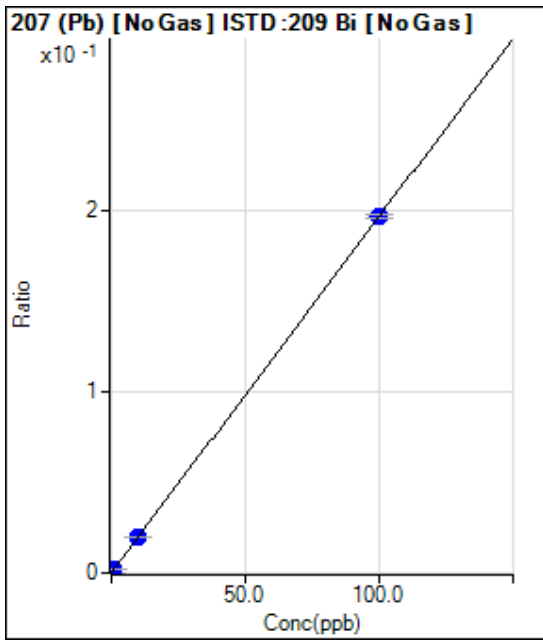
R = 1.0000

DL = 0.003072

BEC = 0.01249

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	170.01	0.0000	P	16.6
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.100	1430.13	0.0002	P	5.1
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.980	12643.02	0.0020	P	2.4
6	<input type="checkbox"/>	10.000	10.176	124923.78	0.0200	P	0.5
7	<input type="checkbox"/>	100.000	99.983	1230479.12	0.1965	P	1.1
8	<input type="checkbox"/>						

$y = 0.0020 * x + 2.6686E-005$

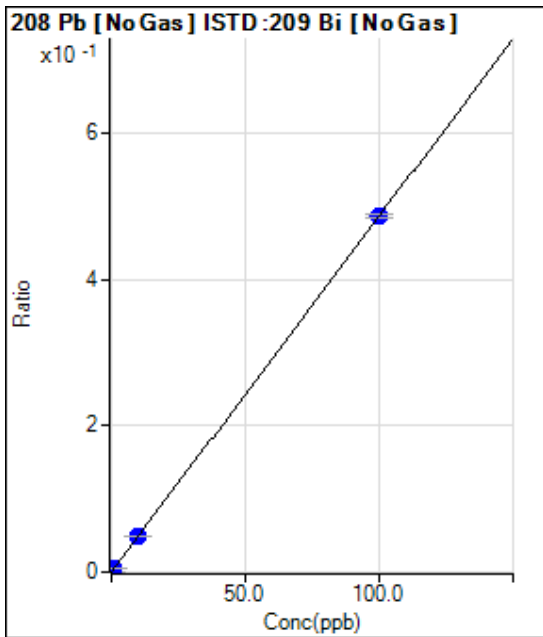
R = 1.0000

DL = 0.006759

BEC = 0.01358

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	0.000	0.000	356.68	0.0001	P	11.4
2	<input type="checkbox"/>	0.000					
3	<input type="checkbox"/>	0.100	0.106	3657.31	0.0006	P	5.5
4	<input type="checkbox"/>	0.500					
5	<input type="checkbox"/>	1.000	0.991	31548.35	0.0049	P	2.7
6	<input type="checkbox"/>	10.000	10.145	308036.23	0.0494	P	0.7
7	<input type="checkbox"/>	100.000	99.986	3044228.29	0.4861	P	0.9
8	<input type="checkbox"/>						

$y = 0.0049 * x + 5.5990E-005$

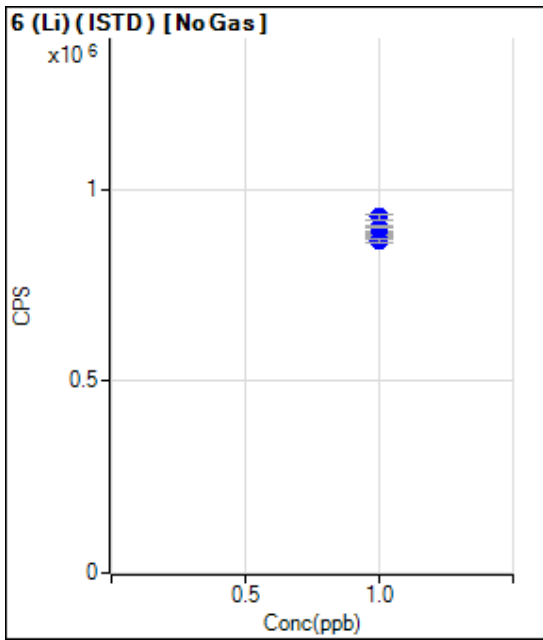
R = 1.0000

DL = 0.003942

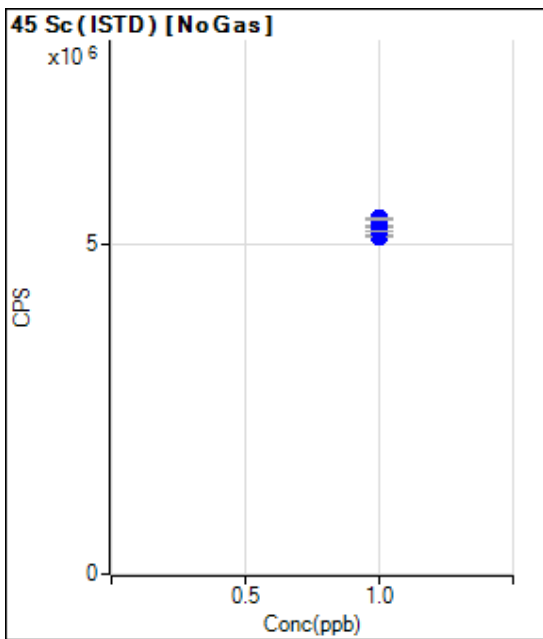
BEC = 0.01152

Weight: <None>

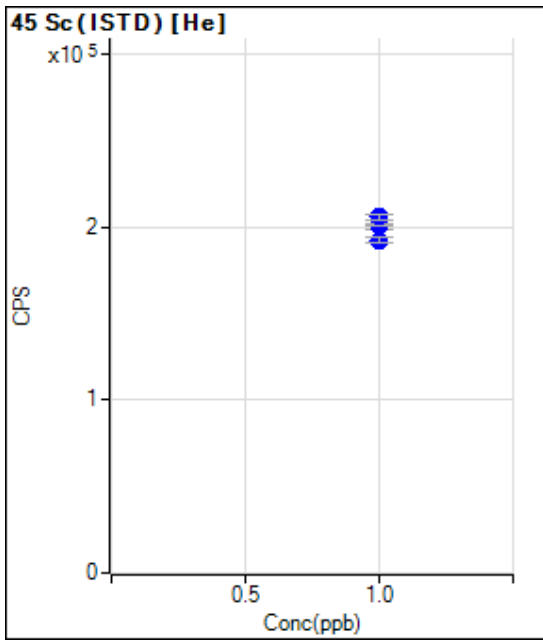
Min Conc: <None>



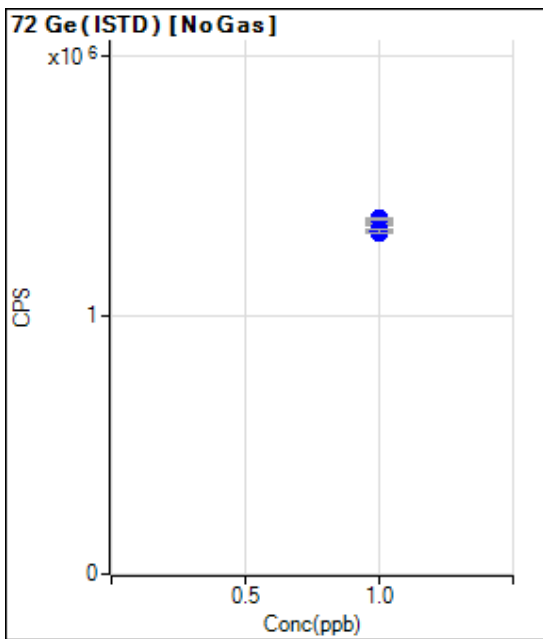
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		887109.66		P	0.5
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		878671.45		P	0.8
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		902625.36		P	0.3
6	<input type="checkbox"/>	1.000		866515.06		P	0.7
7	<input type="checkbox"/>	1.000		928542.33		P	1.3
8	<input type="checkbox"/>	1.000					



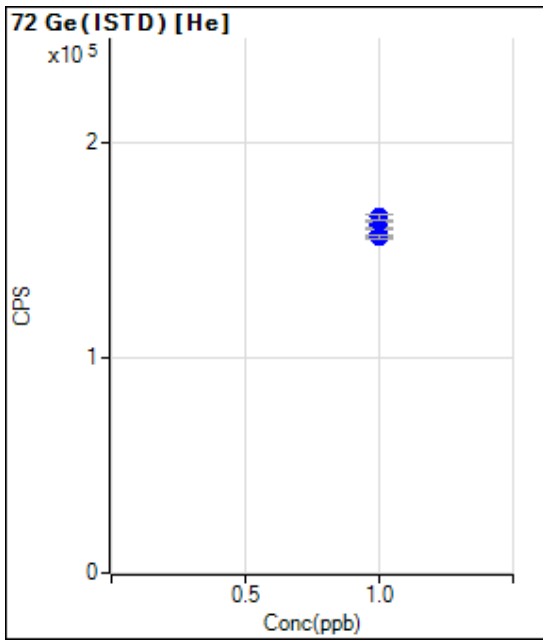
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		5264112.29		P	0.4
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		5261617.43		P	0.1
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		5385346.73		P	0.3
6	<input type="checkbox"/>	1.000		5122506.88		P	0.7
7	<input type="checkbox"/>	1.000		5194520.90		P	0.3
8	<input type="checkbox"/>	1.000					



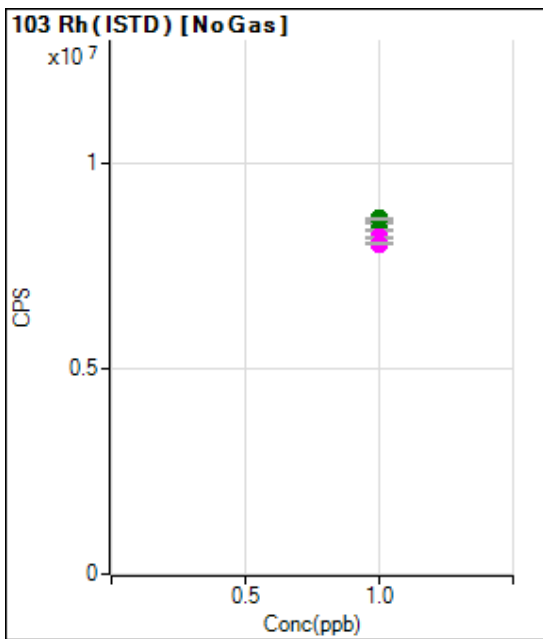
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		200611.30		P	1.6
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		201189.65		P	0.9
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		205902.44		P	1.3
6	<input type="checkbox"/>	1.000		192420.63		P	2.0
7	<input type="checkbox"/>	1.000		192538.91		P	1.5
8	<input type="checkbox"/>	1.000					



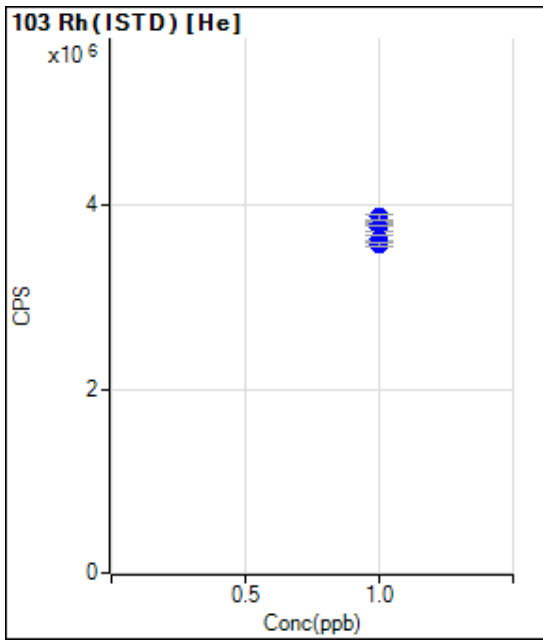
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		1353105.29		P	0.8
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		1354684.87		P	0.4
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		1372176.99		P	0.4
6	<input type="checkbox"/>	1.000		1318559.78		P	0.3
7	<input type="checkbox"/>	1.000		1323156.20		P	0.8
8	<input type="checkbox"/>	1.000					



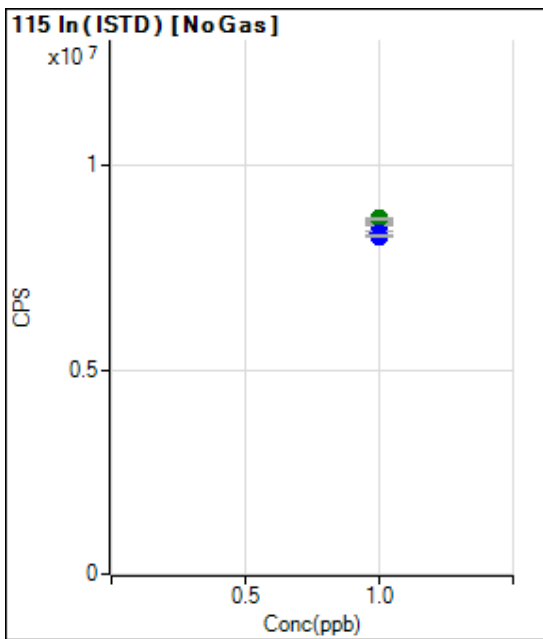
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		162135.17		P	2.6
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		162406.40		P	1.5
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		165836.18		P	1.9
6	<input type="checkbox"/>	1.000		157965.36		P	2.1
7	<input type="checkbox"/>	1.000		156223.73		P	1.1
8	<input type="checkbox"/>	1.000					



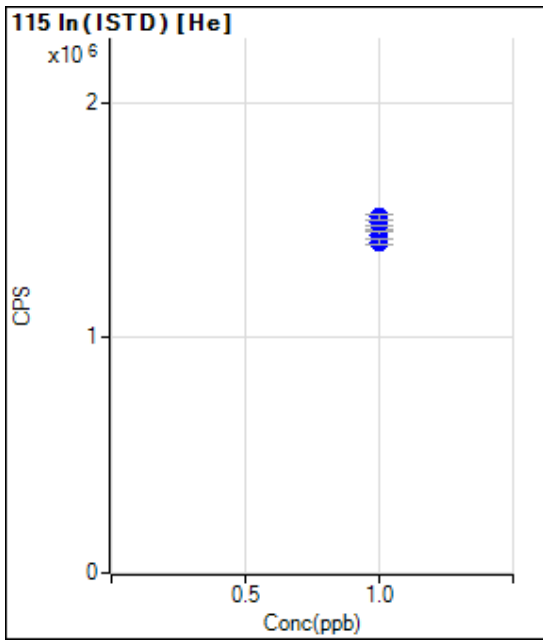
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		8537311.88		A	0.5
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		8393779.39		A	0.6
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		8656224.38		A	0.3
6	<input type="checkbox"/>	1.000		8191996.62		M	0.3
7	<input type="checkbox"/>	1.000		8044089.68		M	0.4
8	<input type="checkbox"/>	1.000					



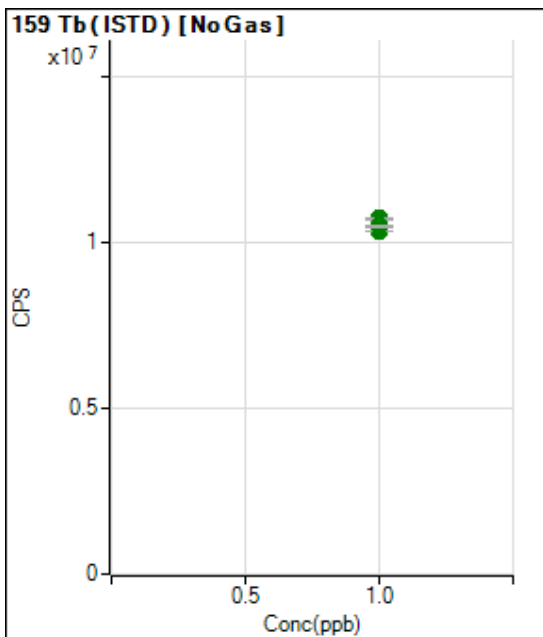
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		3761118.46		P	2.3
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		3795511.10		P	1.2
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		3876113.74		P	1.8
6	<input type="checkbox"/>	1.000		3643579.58		P	1.5
7	<input type="checkbox"/>	1.000		3581670.00		P	1.2
8	<input type="checkbox"/>	1.000					



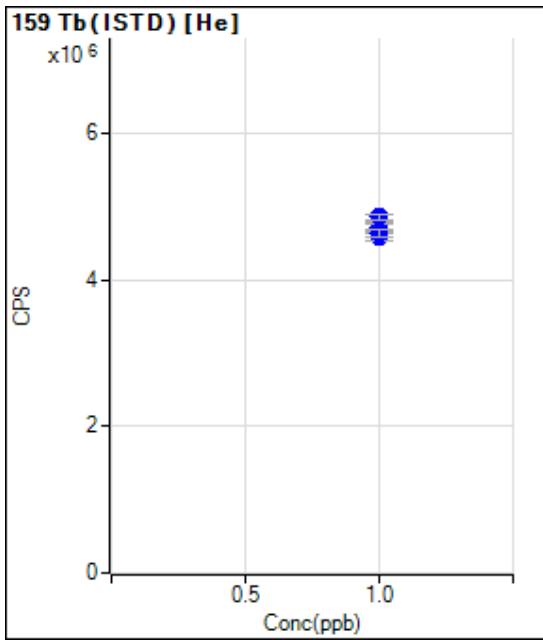
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		8577775.67		M	0.6
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		8560761.41		P	0.2
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		8700174.01		A	0.4
6	<input type="checkbox"/>	1.000		8336680.32		P	1.3
7	<input type="checkbox"/>	1.000		8262496.61		P	0.4
8	<input type="checkbox"/>	1.000					



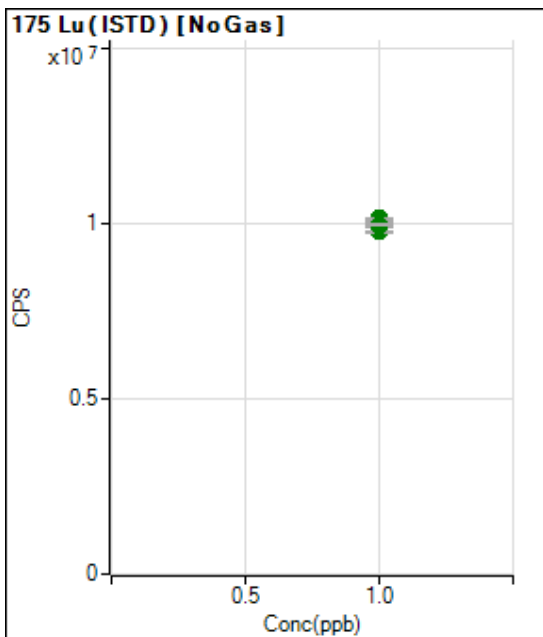
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		1476978.55		P	2.5
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		1487743.30		P	1.2
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		1512765.28		P	1.5
6	<input type="checkbox"/>	1.000		1432736.00		P	2.3
7	<input type="checkbox"/>	1.000		1406305.82		P	1.7
8	<input type="checkbox"/>	1.000					



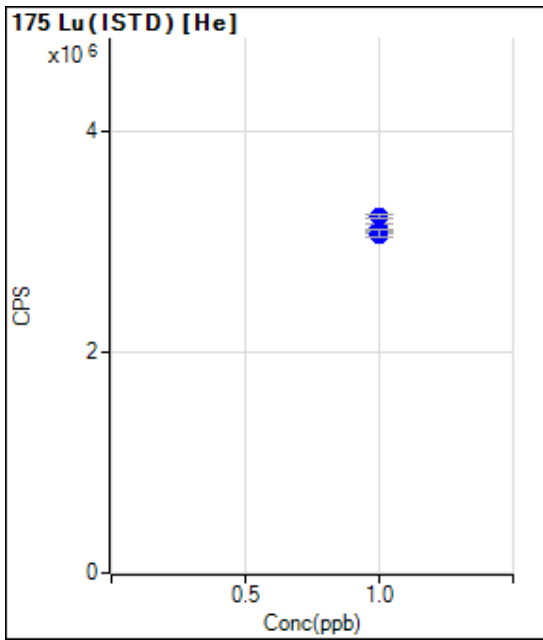
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		10724634.42		A	0.7
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		10513787.34		A	0.3
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		10702056.51		A	0.3
6	<input type="checkbox"/>	1.000		10359222.77		A	0.1
7	<input type="checkbox"/>	1.000		10490931.09		A	0.1
8	<input type="checkbox"/>	1.000					



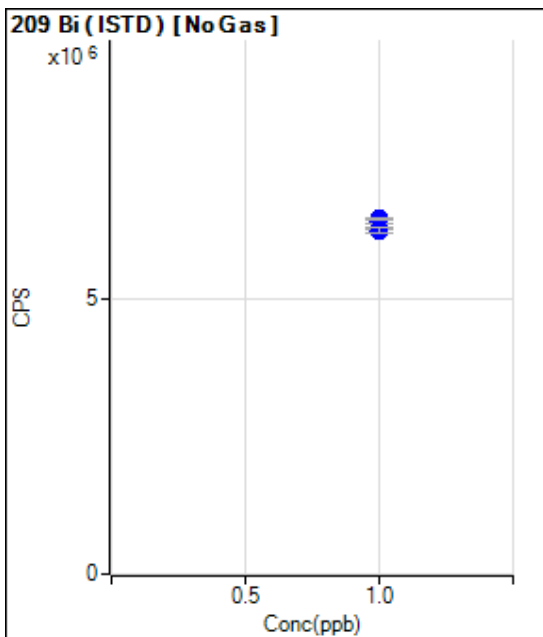
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		4722340.56		P	2.7
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		4726801.39		P	2.1
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		4867288.99		P	1.5
6	<input type="checkbox"/>	1.000		4594762.43		P	1.9
7	<input type="checkbox"/>	1.000		4643210.03		P	2.1
8	<input type="checkbox"/>	1.000					



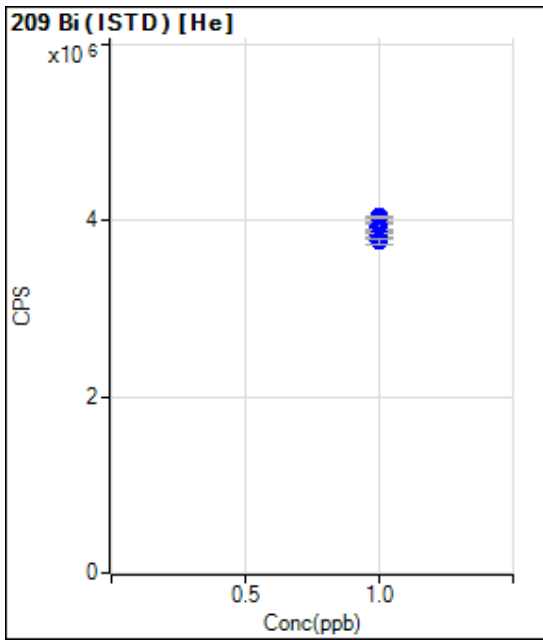
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		10093915.06		A	0.8
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		9900489.85		A	0.4
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		10147905.89		A	0.5
6	<input type="checkbox"/>	1.000		9766916.93		A	0.2
7	<input type="checkbox"/>	1.000		9959252.14		A	0.5
8	<input type="checkbox"/>	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		3117120.79		P	2.7
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		3124302.97		P	2.3
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		3220052.24		P	1.2
6	<input type="checkbox"/>	1.000		3058930.27		P	1.8
7	<input type="checkbox"/>	1.000		3072896.52		P	1.9
8	<input type="checkbox"/>	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		6378925.74		P	2.0
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		6423799.91		P	0.8
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		6476175.53		P	0.4
6	<input type="checkbox"/>	1.000		6238912.62		P	1.2
7	<input type="checkbox"/>	1.000		6262824.70		P	1.5
8	<input type="checkbox"/>	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	<input type="checkbox"/>	1.000		3919315.67		P	1.8
2	<input type="checkbox"/>	1.000					
3	<input type="checkbox"/>	1.000		3943818.07		P	2.3
4	<input type="checkbox"/>	1.000					
5	<input type="checkbox"/>	1.000		4041968.69		P	0.6
6	<input type="checkbox"/>	1.000		3832246.72		P	1.0
7	<input type="checkbox"/>	1.000		3760627.76		P	1.7
8	<input type="checkbox"/>	1.000					

Metals

Prep Sheets



3050B Metals Solid Preparation



ANALYST/ TECH	JEL	START DATE/TIME	7/31/2023 09:45	END DATE/TIME	7/31/2023 12:45	BATCH	769825
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#	CLIENT	TYPE	CLIENT ID	LAB ID	INITIAL WGT (g)	FINAL VOL (mL)	COMMENT	STANDARDS\ REAGENTS
1	QC	MB	MB 2505297	2505297	1.25	50		GCAL - 8 - 250uL
2	QC	LCS	LCS 2505298	2505298	1.25	50		2132617
3	AL-O	SAMP	KCDC-SB0090-001.0-2023...	22307285320	1.35	50		Sb,Ag,Se SPIKE - 250uL
4	AL-O	SAMP	KCDC-SB0090-002.0-2023...	22307285321	1.32	50		360-10-2
5	AL-O	SAMP	KCDC-SB0091-000.5-2023...	22307285322	1.28	50		Li,B,Zr SPIKE - 250uL
6	AL-O	SAMP	KCDC-SB0091-001.0-2023...	22307285323	1.28	50		360-10-3
7	AL-O	SAMP	KCDC-SB0091-002.0-2023...	22307285324	1.35	50		Si SPIKE - 250uL
8	AL-O	SAMP	KCDC-SB0080-002.0-2023...	22307285325	1.39	50		2131076
9	AL-O	SAMP	KCDC-SB0067-002.0-2023...	22307285326	1.27	50		HNO3
10	AL-O	SAMP	KCDC-SB0084-002.0-2023...	22307285327	1.31	50		2133188
11	AL-O	SAMP	KCDC-SB0066-002.0-2023...	22307285328	1.33	50		H2O2
12	AL-O	SAMP	KCDC-SB0071-002.0-2023...	22307285329	1.28	50		2133068
13	4878	SAMP	SD07-09_072723	22307285002	1.25	50		HCL
14	4878	MS	SD07-09_072723 MS	22307285003	1.25	50		
15	4878	MSD	SD07-09_072723 MSD	22307285004	1.25	50		1:1 HNO3
16	4878	SAMP	SD07-10_072723	22307285007	1.32	50		226-42-16
17	4878	FD	SD07-10FD_072723	22307285008	1.36	50		
18	5356	SAMP	IDW-SOIL-072723	22307290301	1.29	50		
19	5356	SAMP	IDW-GAC-072723	22307290303	1.26	50		
20								
21								
22								
23								
24								
25								Solid Material
26								2208065-2342-WI
27								Digestion Vessel Lot #
28								30000147
29								
30								

EQUIPMENT\CONDITIONS

BALANCE ID	21	DIGESTION BLOCK\THERMOMETER ID	A1	TEMPERATURE	93
PIPETTE 1	117	PIPETTE 2	115	PIPETTE 3	

NOTES

Matrix-Soil. 6020_S_EX



3050B Metals Solid Preparation



ANALYST/TECH	JEL	START DATE/TIME	7/31/2023 09:45	END DATE/TIME	7/31/2023 12:45	BATCH	769824
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#	CLIENT	TYPE	CLIENT ID	LAB ID	INITIAL WGT (g)	FINAL VOL (mL)	COMMENT	STANDARDS\ REAGENTS
1	QC	MB	MB 2505293	2505293	1.25	50		GCAL - 8 - 250uL
2	QC	LCS	LCS 2505294	2505294	1.25	50		2132617
3	AL-O	SAMP	KCDC-SB0070-002.0-2023...	22307285301	1.25	50		Sb,Ag,Se SPIKE - 250uL
4	QC	MS	KCDC-SB0070-002....(2504910MS)	2505295	1.25	50		360-10-2
5	QC	MSD	KCDC-SB0070-002...(2504910MSD)	2505296	1.25	50		Li,B,Zr SPIKE - 250uL
6	AL-O	SAMP	KCDC-SB0079-002.0-2023...	22307285302	1.32	50		360-10-3
7	AL-O	SAMP	KCDC-SB0083-002.0-2023...	22307285303	1.23	50		Si SPIKE - 250uL
8	AL-O	SAMP	KCDC-SB0085-000.5-2023...	22307285304	1.27	50		2131076
9	AL-O	SAMP	KCDC-SB0085-001.0-2023...	22307285305	1.33	50		HNO3
10	AL-O	SAMP	KCDC-SB0085-002.0-2023...	22307285306	1.29	50		2133292
11	AL-O	SAMP	KCDC-SB0086-000.5-2023...	22307285307	1.27	50		H2O2
12	AL-O	SAMP	KCDC-SB0086-001.0-2023...	22307285308	1.33	50		2133068
13	AL-O	SAMP	KCDC-SB0086-002.0-2023...	22307285309	1.27	50		HCL
14	AL-O	SAMP	KCDC-SB0087-000.5-2023...	22307285310	1.27	50		
15	AL-O	SAMP	KCDC-SB0087-001.0-2023...	22307285311	1.27	50		1:1 HNO3
16	AL-O	SAMP	KCDC-SB0087-002.0-2023...	22307285312	1.30	50		22-42-16
17	AL-O	SAMP	KCDC-SB0088-000.5-2023...	22307285313	1.39	50		
18	AL-O	SAMP	KCDC-SB0088-001.0-2023...	22307285314	1.38	50		
19	AL-O	SAMP	KCDC-SB0088-002.0-2023...	22307285315	1.29	50		
20	AL-O	SAMP	KCDC-SB0089-000.5-2023...	22307285316	1.26	50		
21	AL-O	SAMP	KCDC-SB0089-001.0-2023...	22307285317	1.29	50		
22	AL-O	SAMP	KCDC-SB0089-002.0-2023...	22307285318	1.26	50		
23	AL-O	SAMP	KCDC-SB0090-000.5-2023...	22307285319	1.36	50		
24								
25								Solid Material
26								2208065-2342-WI
27								Digestion Vessel Lot #
28								300000147
29								
30								

EQUIPMENT\CONDITIONS

BALANCE ID	21	DIGESTION BLOCK\THERMOMETER ID	A1	TEMPERATURE	93
PIPETTE 1	117	PIPETTE 2	115	PIPETTE 3	

NOTES

Matrix-Soil. 6020_S_EX



Dry Weight/Percent Moisture



ANALYST/TECH	AMH	START DATE/TIME	7/28/2023 16:55	END DATE/TIME	7/29/2023 13:10	BATCH	769766
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#	LAB ID	Pan ID	Pan Weight (g)	Initial Wgt (g) (Sample+Pan)	Final Wgt #1 (g) (Sample+Pan)	Final Wgt #2 (g) (Sample+Pan)	Diff (g)	Initial Wgt (g) (LessPan)	Final Wgt (g) (LessPan)	Total Solids (%)	Total Moisture (%)
1	22307284801	1	1.0113	9.2264	7.0011			8.2151	5.9898	72.91	27.09
2	22307284802	2	0.9996	11.9449	10.8789			10.9453	9.8793	90.26	9.74
3	22307284803	3	0.9900	11.4584	9.6365			10.4684	8.6465	82.6	17.4
4	2505137	4	0.9862	11.5439	9.8645			10.5577	8.8783	84.09	15.91
5	22307284804	5	0.9915	10.6739	9.3336			9.6824	8.3421	86.16	13.84
6	22307284805	6	1.0000	11.6567	9.5907			10.6567	8.5907	80.61	19.39
7	22307285301	7	0.9956	11.0644	9.4815			10.0688	8.4859	84.28	15.72
8	22307285302	8	1.0057	9.9218	8.5133			8.9161	7.5076	84.2	15.8
9	22307285303	9	0.9959	10.0584	8.7859			9.0625	7.79	85.96	14.04
10	22307285304	10	0.9904	10.2147	8.8397			9.2243	7.8493	85.09	14.91
11	22307285305	11	0.9817	10.8612	9.3109			9.8795	8.3292	84.31	15.69
12	2505138	12	0.9855	11.4087	9.7501			10.4232	8.7646	84.09	15.91
13	22307285306	13	0.9991	10.4310	8.7327			9.4319	7.7336	81.99	18.01
14	22307285307	14	0.9906	9.5862	8.1325			8.5956	7.1419	83.09	16.91
15	22307285308	15	1.0012	11.3088	9.6232			10.3076	8.622	83.65	16.35
16	22307285309	16	1.0016	11.9335	9.9209			10.9319	8.9193	81.59	18.41
17	22307285310	17	1.0065	9.5659	8.4243			8.5594	7.4178	86.66	13.34
18	22307285311	18	0.9895	11.0607	9.8350			10.0712	8.8455	87.83	12.17
19	22307285312	19	1.0003	11.1849	9.5639			10.1846	8.5636	84.08	15.92
20	22307285313	20	0.9953	10.4283	8.8584			9.433	7.8631	83.36	16.64
21	22307285314	21	1.0105	10.4403	7.9998			9.4298	6.9893	74.12	25.88
22	22307285315	22	1.0113	10.9291	8.5840			9.9178	7.5727	76.35	23.65
23											
24											
25											
26											
27											
28											
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EQUIPMENT/CONDITIONS

BALANCE ID	BAL15	
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NOTES

TS % = ((Final Sample Mass - Initial Sample Mass) x 100) / Initial Sample Mass;



Dry Weight/Percent Moisture



ANALYST/ TECH	AMH	START DATE/TIME	7/28/2023 17:23	END DATE/TIME	7/29/2023 13:01	BATCH	769780
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#	LAB ID	Pan ID	Pan Weight (g)	Initial Wgt (g) (Sample+Pan)	Final Wgt #1 (g) (Sample+Pan)	Final Wgt #2 (g) (Sample+Pan)	Diff (g)	Initial Wgt (g) (LessPan)	Final Wgt (g) (LessPan)	Total Solids (%)	Total Moisture (%)
1	22307285316	1	0.9988	10.5257	9.3803			9.5269	8.3815	87.98	12.02
2	22307285317	2	0.9856	10.5970	9.1333			9.6114	8.1477	84.77	15.23
3	22307285318	3	0.9856	11.6557	10.0519			10.6701	9.0663	84.97	15.03
4	22307285319	4	1.0048	10.5617	9.1924			9.5569	8.1876	85.67	14.33
5	22307285320	5	0.9927	10.9189	9.6196			9.9262	8.6269	86.91	13.09
6	22307285321	6	0.9982	12.6974	10.8717			11.6992	9.8735	84.39	15.61
7	22307285322	7	1.0017	10.3312	8.9378			9.3295	7.9361	85.06	14.94
8	22307285323	8	1.0056	10.7648	9.6307			9.7592	8.6251	88.38	11.62
9	22307285324	9	0.9815	10.8372	9.3187			9.8557	8.3372	84.59	15.41
10	22307285325	10	0.9950	10.8309	9.3537			9.8359	8.3587	84.98	15.02
11	2505149	11	0.9997	11.1555	9.6473			10.1558	8.6476	85.15	14.85
12	22307285326	12	0.9865	10.7895	9.4132			9.803	8.4267	85.96	14.04
13	2505150	13	0.9788	10.8180	9.3688			9.8392	8.39	85.27	14.73
14	22307285327	14	0.9975	11.0030	9.2831			10.0055	8.2856	82.81	17.19
15	22307285328	15	0.9777	10.9505	8.3809			9.9728	7.4032	74.23	25.77
16	22307285329	16	0.9951	10.3974	8.3126			9.4023	7.3175	77.83	22.17
17											
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EQUIPMENT\CONDITIONS

BALANCE ID	BAL15	
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NOTES

TS % = ((Final Sample Mass - Initial Sample Mass) x 100) / Initial Sample Mass;



CHAIN OF CUSTODY

SGS North America Inc. - Orlando
 4405 Vineland Road, Suite C-15 Orlando, FL 32811
 TEL: 407-425-6700 FAX: 407-425-0707
 www.sgs.com/ehsusa

Client / Reporting Information		Project Information										Requester			
Company Name: SGS North America Inc.		Project Name: FC8187X										FED-EX Tracking #			
Street Address: 4405 Vineland Rd, Suite C-15		Street										Bottle Order Control #			
City State Zip: Orlando FL 32811		Billing Information (if different from Report to)										SGS Quote #			
Project Contact E-mail: jean.dent@sgs.com		Company Name										SGS Job # FC8187X			
Phone # Fax #: 407-425-6700		Project # Street Address										Client ID: AL-O - SGS Accutest - Orlando SDG: 223072853 PM: RWe			
Sampler(s) Name(s): RL		Client Purchase Order # City State Zip													
Project Manager		Attention:										AIR - Air SOL - Other Solid WP - Wipe FB-Field Blank EB-Equipment Blank RB- Rinse Blank TB-Trip Blank LAB USE ONLY 1 2 3 4 5 6 7 8 9 10 11 12			
Turnaround Time (Business days)		Data Deliverable Information												Comments / Special Instructions	
<input type="checkbox"/> Standard 10 Day (business) <input type="checkbox"/> 5 Business Days RUSH <input type="checkbox"/> 3 Business Days RUSH <input type="checkbox"/> 2 Business Days RUSH <input type="checkbox"/> 1 Business Day EMERGENCY <input checked="" type="checkbox"/> other Due 7/28/2023		Approved By (SGS PM): / Date: _____ <input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> State Forms <input checked="" type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> EDD Format <input type="checkbox"/> REDT1 (Level 3) <input checked="" type="checkbox"/> Other narrative <input type="checkbox"/> FULT1 (Level 4) <input type="checkbox"/> <input type="checkbox"/> Commercial "C" <input type="checkbox"/> Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial "C" = Results + QC Summary + Partial Raw data												Pace,LA http://www.sgs.com/en/terms-and-conditions	
Sample Custody must be documented below each time samples change possession, including courier delivery.															
Relinquished by Sampler: 1		Date Time:		Received By: 1		Relinquished By: 2		Date Time: 7/27/23		Received By: 2					
Relinquished by Sampler: 3		Date Time: 7/28/23		Received By: 3		Relinquished By: 4		Date Time:		Received By: 4					
Relinquished by:		Date Time:		Received By: 5		Custody Seal #		<input type="checkbox"/> Intact Preserved where applicable <input type="checkbox"/> Not intact <input type="checkbox"/> Therm. ID:		<input type="checkbox"/> On Ice <input type="checkbox"/> Cooler Temp.					



CHAIN OF CUSTODY

SGS North America Inc. - Orlando
 4405 Vineland Road, Suite C-15 Orlando, FL 32811
 TEL: 407-425-6700 FAX: 407-425-0707
 www.sgs.com/ehsusa

FED-EX Tracking #	Bottle Order Control #
SGS Quote #	SGS Job # FC8187X

Client / Reporting Information		Project Information	
Company Name: SGS North America Inc.	Project Name: FC8187X		
Street Address 4405 Vineland Rd, Suite C-15	Street		
City State Zip Orlando FL 32811	City State	Billing Information (if different from Report to) Company Name	
Project Contact E-mail jean.dent@sgs.com	Project #	Street Address	
Phone # 407-425-6700	Fax #	Client Purchase Order #	City State Zip
Sampler(s) Name(s) RL	Phone	Project Manager	Attention:

Requester

Client ID: AL-O - SGS Accutest - Orlando

SDG: 223072853

PM: RWe

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection		Sampled by	Matrix	# of bottles	Number of preserved Bottles							%SOL /ASMS	LAB USE ONLY			
			Date	Time				HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH			ENCORE		
13X	KCDC-SB0088-000.5-20230720		7/20/23	11:34:00 AM	RL	SO	1						1					X	13
14X	KCDC-SB0088-001.0-20230720		7/20/23	11:35:00 AM	RL	SO	1						1					X	14
15X	KCDC-SB0088-002.0-20230720		7/20/23	11:36:00 AM	RL	SO	1						1					X	15
16X	KCDC-SB0089-000.5-20230720		7/20/23	11:43:00 AM	RL	SO	1						1					X	16
17X	KCDC-SB0089-001.0-20230720		7/20/23	12:11:00 PM	RL	SO	1						1					X	17
18X	KCDC-SB0089-002.0-20230720		7/20/23	12:12:00 PM	RL	SO	1						1					X	18
19X	KCDC-SB0090-000.5-20230720		7/20/23	12:14:00 PM	RL	SO	1						1					X	19
20X	KCDC-SB0090-001.0-20230720		7/20/23	12:15:00 PM	RL	SO	1						1					X	20
21X	KCDC-SB0090-002.0-20230720		7/20/23	12:16:00 PM	RL	SO	1						1					X	21
22X	KCDC-SB0091-000.5-20230720		7/20/23	12:26:00 PM	RL	SO	1						1					X	22
23X	KCDC-SB0091-001.0-20230720		7/20/23	12:27:00 PM	RL	SO	1						1					X	23
24X	KCDC-SB0091-002.0-20230720		7/20/23	12:28:00 PM	RL	SO	1						1					X	24

Turnaround Time (Business days)	Data Deliverable Information	Comments / Special Instructions
<input type="checkbox"/> Standard 10 Day (business) <input type="checkbox"/> 5 Business Days RUSH <input type="checkbox"/> 3 Business Days RUSH <input type="checkbox"/> 2 Business Days RUSH <input type="checkbox"/> 1 Business Day EMERGENCY <input checked="" type="checkbox"/> other Due 7/28/2023 <small>Emergency & Rush T/A data available via Lablink Approval needed for RUSH/Emergency TAT</small>	<input type="checkbox"/> Commercial "A" (Level 1) <input checked="" type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> REDT1 (Level 3) <input type="checkbox"/> FULT1 (Level 4) <input type="checkbox"/> Commercial "C" <input type="checkbox"/> State Forms <input type="checkbox"/> EDD Format <input checked="" type="checkbox"/> Other narrative <small>Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial "C" = Results + QC Summary + Partial Raw data</small>	Pace,LA http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.				
Relinquished by Sampler: 1 <i>Jed Lee</i>	Date Time: 7/28/23 4:52	Received By: 1 <i>[Signature]</i>	Relinquished By: 2	Date Time: 2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	<input type="checkbox"/> Intact <input type="checkbox"/> Not intact
			Preserved where applicable	<input type="checkbox"/> On Ice <input type="checkbox"/> Cooler Temp.
			Therm. ID:	



CHAIN OF CUSTODY

SGS North America Inc. - Orlando
 4405 Vineland Road, Suite C-15 Orlando, FL 32811
 TEL. 407-425-6700 FAX: 407-425-0707
 www.sgs.com/ehsusa

FED-EX Tracking #	Bottle Order Control #
SGS Quote #	SGS Job # FC8187X

Client / Reporting Information			Project Information																
Company Name: SGS North America Inc.			Project Name: FC8187X																
Street Address 4405 Vineland Rd, Suite C-15			Street																
City State Zip Orlando FL 32811			Billing Information (if different from Report to) Company Name																
Project Contact E-mail jean.dent@sgs.com			Project # Street Address																
Phone # Fax # 407-425-6700			Client Purchase Order # City State Zip																
Sampler(s) Name(s) RL			Project Manager Attention:																
SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection			Matrix	# of bottles	Number of preserved Bottles								%SOL_ASHs			
			Date	Time	Sampled by			HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE				
25X	KCDC-SB0080-002.0-20230720		7/20/23	9:32:00 AM	RL	SO	1											X	
26X	KCDC-SB0067-002.0-20230720		7/20/23	10:44:00 AM	RL	SO	1											X	
27X	KCDC-SB0084-002.0-20230720		7/20/23	10:33:00 AM	RL	SO	1											X	
28X	KCDC-SB0066-002.0-20230720		7/20/23	10:39:00 AM	RL	SO	1											X	
29X	KCDC-SB0071-002.0-20230720		7/20/23	9:45:00 AM	RL	SO	1											X	

Client ID: AL-O - SGS Accutest - Orlando

SDG: 223072853

PM: RWe

- LIQ - Other Liquid
- AIR - Air
- SOL - Other Solid
- WP - Wipe
- FB-Field Blank
- EB-Equipment Blank
- RB- Rinse Blank
- TB-Trip Blank

LAB USE ONLY

25

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Turnaround Time (Business days)	Data Deliverable Information	Comments / Special Instructions
----------------------------------	------------------------------	---------------------------------

<input type="checkbox"/> Standard 10 Day (business) <input type="checkbox"/> 5 Business Days RUSH <input type="checkbox"/> 3 Business Days RUSH <input type="checkbox"/> 2 Business Days RUSH <input type="checkbox"/> 1 Business Day EMERGENCY <input checked="" type="checkbox"/> other Due 7/28/2023 <small>Emergency & Rush T/A data available via Lablink Approval needed for RUSH/Emergency TAT</small>	Approved By (SGS PM) / Date: _____	<input type="checkbox"/> Commercial "A" (Level 1) <input checked="" type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> REDT1 (Level 3) <input type="checkbox"/> FULT1 (Level 4) <input type="checkbox"/> Commercial "C" <small>Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial "C" = Results + QC Summary + Partial Raw data</small>	<input type="checkbox"/> State Forms <input type="checkbox"/> EDD Format <input checked="" type="checkbox"/> Other narrative	Pace, LA http://www.sgs.com/en/terms-and-conditions
---	------------------------------------	---	--	---

Sample Custody must be documented below each time samples change possession, including courier delivery.					
Relinquished by Sampler: 1 <i>Jed</i>	Date Time: 7/28/23	Received By: 1 <i>[Signature]</i>	Relinquished By: 2	Date Time:	Received By: 2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	<input type="checkbox"/> Intact <input type="checkbox"/> Not intact	Preserved where applicable <input type="checkbox"/> Therm. ID: <input type="checkbox"/> On Ice <input type="checkbox"/> Cooler Temp.

Pace

Sample Condition Upon Receipt

Workorder #: _____

79791 Innovation Park Dr. Baton Rouge, LA 70806
Cooler Inspected by/date: BRP1 7/18/23

Means of receipt: Pace Client UPS FedEx Other: 6134 6611 9149

Yes No NA If custody seals were present, were they intact and unbroken?

Yes No NA If custody seals were present, were they intact and unbroken?

Method: Temperature Blank Against Bottles IR Gun ID: 545 IR Gun Correction Factor: 0 °C

Cooler #1 Cooler Temp °C: 2.1 (Actual/True) Samples on Ice Yes No pH Strip Lot #

Cooler #2 Cooler Temp °C: _____ (Actual/True) Method of coolant: Wet Ice Packs Dry Ice None

Cooler #3 Cooler Temp °C: _____ (Actual/True)


Cooler #4 Cooler Temp °C: _____ (Actual/True)

Tracking #: _____

<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA	Is a temperature blank present?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Was a chain of custody (COC) reviewed?		
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA	Was the line and profile number listed on the COC?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Were all coolers received at or below 6.0°C? If no, notify Project Manager notified via email.		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Were proper custody procedures (relinquished/received) followed?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Is the sampler name and signature on the COC?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Were sample IDs listed on the COC and all sample containers?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Was collection date & time listed on the COC and all sample containers?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Did all container label information (ID, date, time) agree with the COC?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Were tests to be performed listed on the COC?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Was adequate sample volume available?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Were all samples received within 1/2 the holding time or 48 hours, whichever comes first?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Were all samples containers accounted for? (No missing / excess)		
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Were VOA, 3015C (GRO/VPH), and RSK-175 samples free of bubbles > "pea size" (1/4" or 5mm in diameter) in any of the VOA vials?		
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Trip blank present?		
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Filtered volume received for dissolved tests?		
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	If no, list affected sample(s) in comments below.		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Were all metals/nutrient samples received at a pH of < 2?		
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?		

Comments:

Client ID: AL-O - SGS Accutest - Orlando
 SDG: 223072853
 PM: RWe





SAMPLE RECEIVING CHECKLIST



SAMPLE DELIVERY GROUP 223072853			CHECKLIST		YES	NO
Client AL-O - SGS Accutest - Orlando	PM R/W	Transport Method fedex	Samples received with proper thermal preservation?	<input type="checkbox"/>	<input type="checkbox"/>	
			Radioactivity is <1600 cpm? If no, record cpm value in notes section.	<input type="checkbox"/>	<input type="checkbox"/>	
Profile Number 313827		Received By Roberts, George S.	COC relinquished and complete (including sampleIDs, collect times, and sampler)?	<input type="checkbox"/>	<input type="checkbox"/>	
			All containers received in good condition and within hold time?	<input type="checkbox"/>	<input type="checkbox"/>	
Line Item(s) 1 - Arsenic		Receive Date(s) 07/28/23	All sample labels and containers received match the chain of custody?	<input type="checkbox"/>	<input type="checkbox"/>	
			Preservative added to any containers?	<input type="checkbox"/>	<input type="checkbox"/>	
			If received, was headspace for VOC water containers < 6mm?	<input type="checkbox"/>	<input type="checkbox"/>	
			Samples collected in containers provided by Pace Gulf Coast?	<input type="checkbox"/>	<input type="checkbox"/>	
COOLERS			DISCREPANCIES	LAB PRESERVATIONS		
Airbill	Thermometer ID:	Temp °C	None	None		
NOTES						

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Hydrogeologic, Inc.

TQN 118 NASA PRLs; KSC, FL

NS1005.15.05

SGS Job Number: FC6133

Sampling Date: 05/16/23

Report to:

jtracy@hgl.com
drivers@hgl.com

ATTN: Distribution3

Total number of pages in report: 61



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink that reads "Norm Farmer".

Norm Farmer
Technical Director

Client Service contact: Ariel Hartney 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001)
DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177),
AL, AK, AR, CT, IA, KY, MA, MI, MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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Test results relate only to samples analyzed.

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Sample Summary

Hydrogeologic, Inc.

Job No: FC6133

TQN 118 NASA PRLs; KSC, FL
 Project No: NS1005.15.05

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
FC6133-1	05/16/23	08:35 RLDL	05/17/23	SO	Soil	KCDC-SB0050-000.5-20230516
FC6133-2	05/16/23	08:36 RLDL	05/17/23	SO	Soil	KCDC-SB0050-001.0-20230516
FC6133-3	05/16/23	08:37 RLDL	05/17/23	SO	Soil	KCDC-SB0050-002.0-20230516
FC6133-4	05/16/23	08:46 RLDL	05/17/23	SO	Soil	KCDC-SB0051-000.5-20230516
FC6133-5	05/16/23	08:47 RLDL	05/17/23	SO	Soil	KCDC-SB0051-001.0-20230516
FC6133-6	05/16/23	08:48 RLDL	05/17/23	SO	Soil	KCDC-SB0051-002.0-20230516
FC6133-7	05/16/23	08:55 RLDL	05/17/23	SO	Soil	KCDC-SB0052-000.5-20230516
FC6133-8	05/16/23	08:56 RLDL	05/17/23	SO	Soil	KCDC-SB0052-001.0-20230516
FC6133-9	05/16/23	08:57 RLDL	05/17/23	SO	Soil	KCDC-SB0052-002.0-20230516
FC6133-10	05/16/23	09:10 RLDL	05/17/23	SO	Soil	KCDC-SB0053-000.5-20230516
FC6133-11	05/16/23	09:11 RLDL	05/17/23	SO	Soil	KCDC-SB0053-001.0-20230516
FC6133-12	05/16/23	09:12 RLDL	05/17/23	SO	Soil	KCDC-SB0053-002.0-20230516
FC6133-13	05/16/23	09:23 RLDL	05/17/23	SO	Soil	KCDC-SB0054-000.5-20230516

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



Sample Summary

(continued)

Hydrogeologic, Inc.

Job No: FC6133

TQN 118 NASA PRLs; KSC, FL
 Project No: NS1005.15.05

Sample Number	Collected		Matrix Code	Received	Type	Client Sample ID
	Date	Time By				
FC6133-14	05/16/23	09:24 RLDL	05/17/23	SO	Soil	KCDC-SB0054-001.0-20230516
FC6133-15	05/16/23	09:25 RLDL	05/17/23	SO	Soil	KCDC-SB0054-002.0-20230516
FC6133-16	05/16/23	09:37 RLDL	05/17/23	SO	Soil	KCDC-SB0055-000.5-20230516
FC6133-17	05/16/23	09:38 RLDL	05/17/23	SO	Soil	KCDC-SB0055-001.0-20230516
FC6133-18	05/16/23	09:39 RLDL	05/17/23	SO	Soil	KCDC-SB0055-002.0-20230516
FC6133-19	05/16/23	09:46 RLDL	05/17/23	SO	Soil	KCDC-SB0056-000.5-20230516
FC6133-20	05/16/23	09:47 RLDL	05/17/23	SO	Soil	KCDC-SB0056-001.0-20230516
FC6133-21	05/16/23	09:48 RLDL	05/17/23	SO	Soil	KCDC-SB0056-002.0-20230516
FC6133-22	05/16/23	10:00 RLDL	05/17/23	SO	Soil	KCDC-SB0057-000.5-20230516
FC6133-23	05/16/23	10:01 RLDL	05/17/23	SO	Soil	KCDC-SB0057-001.0-20230516
FC6133-24	05/16/23	10:02 RLDL	05/17/23	SO	Soil	KCDC-SB0057-002.0-20230516
FC6133-25	05/16/23	10:06 RLDL	05/17/23	SO	Soil	KCDC-SB0058-000.5-20230516
FC6133-26	05/16/23	10:07 RLDL	05/17/23	SO	Soil	KCDC-SB0058-001.0-20230516

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



Sample Summary (continued)

Hydrogeologic, Inc.

Job No: FC6133

TQN 118 NASA PRLs; KSC, FL
Project No: NS1005.15.05

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC6133-27	05/16/23	10:08	RLDL 05/17/23	SO	Soil	KCDC-SB0058-002.0-20230516

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Hydrogeologic, Inc.

Job No: FC6133

Site: TQN 118 NASA PRLs; KSC, FL

Report Date: 6/1/2023 1:16:00 PM

On 05/17/2023, 27 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando, at a maximum corrected temperature of 2.9 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC6133 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Metals Analysis By Method SW846 6020B

Matrix: SO **Batch ID:** MP42279

Sample(s) FC6064-12DUP, FC6064-12MS, FC6064-12MSD, FC6064-12SDL were used as the QC samples for metals.

Matrix: SO **Batch ID:** MP42305

Sample(s) FC6286-1PS, FC6286-1DUP, FC6286-1MSD were used as the QC samples for metals.

Matrix Spike Recovery(s) for Arsenic are outside control limits. Spike recovery indicates possible matrix interference and/or sample non-homogeneity.

RPD(s) for Duplicate for Arsenic are outside control limits for sample MP42305-D1. High RPD due to possible sample non-homogeneity.

RPD(s) for MSD for Arsenic are outside control limits for sample MP42305-S2. High RPD due to possible sample non-homogeneity.

Matrix: SO **Batch ID:** MP42310

Sample(s) FC6133-18MS, FC6133-18MSD, FC6133-18SDL, FC6133-18DUP were used as the QC samples for metals.

RPD(s) for Duplicate for Arsenic are outside control limits for sample MP42310-D1. RPD acceptable due to low duplicate and sample concentrations.

RPD(s) for Serial Dilution for Arsenic are outside control limits for sample MP42310-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

General Chemistry By Method SM19 2540G

Matrix: SO **Batch ID:** GN94239

Sample(s) FC6147-1DUP were used as the QC samples for Solids, Percent.

Matrix: SO **Batch ID:** GN94249

Sample(s) FC6133-1DUP were used as the QC samples for Solids, Percent.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

Kim Benham, Client Services (Signature on File)

Summary of Hits

Job Number: FC6133
Account: Hydrogeologic, Inc.
Project: TQN 118 NASA PRLs; KSC, FL
Collected: 05/16/23



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC6133-1	KCDC-SB0050-000.5-20230516					
Arsenic		0.31	0.25	0.12	mg/kg	SW846 6020B
FC6133-2	KCDC-SB0050-001.0-20230516					
Arsenic		0.20 J	0.25	0.13	mg/kg	SW846 6020B
FC6133-3	KCDC-SB0050-002.0-20230516					
Arsenic		0.14 J	0.28	0.14	mg/kg	SW846 6020B
FC6133-4	KCDC-SB0051-000.5-20230516					
Arsenic		0.084 J	0.21	0.11	mg/kg	SW846 6020B
FC6133-5	KCDC-SB0051-001.0-20230516					
Arsenic		0.064 J	0.19	0.096	mg/kg	SW846 6020B
FC6133-6	KCDC-SB0051-002.0-20230516					
Arsenic		0.047 J	0.21	0.11	mg/kg	SW846 6020B
FC6133-7	KCDC-SB0052-000.5-20230516					
Arsenic		0.37	0.23	0.12	mg/kg	SW846 6020B
FC6133-8	KCDC-SB0052-001.0-20230516					
Arsenic		0.51	0.27	0.14	mg/kg	SW846 6020B
FC6133-9	KCDC-SB0052-002.0-20230516					
Arsenic		0.072 J	0.21	0.10	mg/kg	SW846 6020B
FC6133-10	KCDC-SB0053-000.5-20230516					
Arsenic		0.79	0.24	0.12	mg/kg	SW846 6020B
FC6133-11	KCDC-SB0053-001.0-20230516					
Arsenic		1.2	0.25	0.12	mg/kg	SW846 6020B

Summary of Hits

Job Number: FC6133
Account: Hydrogeologic, Inc.
Project: TQN 118 NASA PRLs; KSC, FL
Collected: 05/16/23



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC6133-12	KCDC-SB0053-002.0-20230516					
Arsenic		0.26	0.26	0.13	mg/kg	SW846 6020B
FC6133-13	KCDC-SB0054-000.5-20230516					
Arsenic		0.23 J	0.26	0.13	mg/kg	SW846 6020B
FC6133-14	KCDC-SB0054-001.0-20230516					
Arsenic		0.18 J	0.27	0.13	mg/kg	SW846 6020B
FC6133-15	KCDC-SB0054-002.0-20230516					
Arsenic		0.36	0.29	0.14	mg/kg	SW846 6020B
FC6133-16	KCDC-SB0055-000.5-20230516					
Arsenic		0.58	0.27	0.14	mg/kg	SW846 6020B
FC6133-17	KCDC-SB0055-001.0-20230516					
Arsenic		0.19 J	0.26	0.13	mg/kg	SW846 6020B
FC6133-18	KCDC-SB0055-002.0-20230516					
Arsenic		0.091 J	0.27	0.14	mg/kg	SW846 6020B
FC6133-19	KCDC-SB0056-000.5-20230516					
Arsenic		0.55	0.27	0.14	mg/kg	SW846 6020B
FC6133-20	KCDC-SB0056-001.0-20230516					
Arsenic		0.11 J	0.24	0.12	mg/kg	SW846 6020B
FC6133-21	KCDC-SB0056-002.0-20230516					
Arsenic		0.070 J	0.25	0.13	mg/kg	SW846 6020B
FC6133-22	KCDC-SB0057-000.5-20230516					
Arsenic		0.11 J	0.24	0.12	mg/kg	SW846 6020B

Summary of Hits

Job Number: FC6133
Account: Hydrogeologic, Inc.
Project: TQN 118 NASA PRLs; KSC, FL
Collected: 05/16/23



Lab Sample ID Analyte	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC6133-23	KCDC-SB0057-001.0-20230516					
Arsenic		0.051 J	0.29	0.14	mg/kg	SW846 6020B
FC6133-24	KCDC-SB0057-002.0-20230516					
Arsenic		0.075 J	0.30	0.15	mg/kg	SW846 6020B
FC6133-25	KCDC-SB0058-000.5-20230516					
Arsenic		0.060 J	0.23	0.11	mg/kg	SW846 6020B
FC6133-26	KCDC-SB0058-001.0-20230516					
Arsenic		0.032 J	0.27	0.14	mg/kg	SW846 6020B
FC6133-27	KCDC-SB0058-002.0-20230516					
Arsenic		0.027 J	0.23	0.11	mg/kg	SW846 6020B

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	KCDC-SB0050-000.5-20230516		
Lab Sample ID:	FC6133-1	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
Project:	TQN 118 NASA PRLs; KSC, FL	Percent Solids:	97.9

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.31	0.25	0.12	0.025	mg/kg	5	05/22/23	05/24/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19441

(2) Prep QC Batch: MP42279

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

4.1
4

Report of Analysis

Client Sample ID:	KCDC-SB0050-001.0-20230516		
Lab Sample ID:	FC6133-2	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
		Percent Solids:	96.6
Project:	TQN 118 NASA PRLs; KSC, FL		

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.20 J	0.25	0.13	0.025	mg/kg	5	05/22/23	05/24/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19441

(2) Prep QC Batch: MP42279

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0050-002.0-20230516		
Lab Sample ID:	FC6133-3	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
Project:	TQN 118 NASA PRLs; KSC, FL	Percent Solids:	85.8

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.14 J	0.28	0.14	0.028	mg/kg	5	05/22/23	05/24/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19441

(2) Prep QC Batch: MP42279

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0051-000.5-20230516		
Lab Sample ID:	FC6133-4	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
Project:	TQN 118 NASA PRLs; KSC, FL	Percent Solids:	95.5

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.084 J	0.21	0.11	0.021	mg/kg	5	05/26/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42305

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0051-001.0-20230516		
Lab Sample ID:	FC6133-5	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
		Percent Solids:	93.2
Project:	TQN 118 NASA PRLs; KSC, FL		

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.064 J	0.19	0.096	0.019	mg/kg	5	05/26/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42305

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0051-002.0-20230516		
Lab Sample ID:	FC6133-6	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
Project:	TQN 118 NASA PRLs; KSC, FL	Percent Solids:	87.0

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.047 J	0.21	0.11	0.021	mg/kg	5	05/26/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42305

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0052-000.5-20230516		
Lab Sample ID:	FC6133-7	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
		Percent Solids:	92.4
Project:	TQN 118 NASA PRLs; KSC, FL		

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.37	0.23	0.12	0.023	mg/kg	5	05/26/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42305

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

4.7
4

Report of Analysis

Client Sample ID:	KCDC-SB0052-001.0-20230516		
Lab Sample ID:	FC6133-8	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
		Percent Solids:	84.6
Project:	TQN 118 NASA PRLs; KSC, FL		

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.51	0.27	0.14	0.027	mg/kg	5	05/26/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42305

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0052-002.0-20230516		
Lab Sample ID:	FC6133-9	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
Project:	TQN 118 NASA PRLs; KSC, FL		
		Percent Solids:	86.9

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.072 J	0.21	0.10	0.021	mg/kg	5	05/26/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42305

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0053-000.5-20230516		
Lab Sample ID:	FC6133-10	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
		Percent Solids:	92.3
Project:	TQN 118 NASA PRLs; KSC, FL		

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.79	0.24	0.12	0.024	mg/kg	5	05/26/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42305

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0053-001.0-20230516		
Lab Sample ID:	FC6133-11	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
		Percent Solids:	84.7
Project:	TQN 118 NASA PRLs; KSC, FL		

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	1.2	0.25	0.12	0.025	mg/kg	5	05/26/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42305

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0053-002.0-20230516		
Lab Sample ID:	FC6133-12	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
		Percent Solids:	79.1
Project:	TQN 118 NASA PRLs; KSC, FL		

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.26	0.26	0.13	0.026	mg/kg	5	05/26/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42305

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0054-000.5-20230516		
Lab Sample ID:	FC6133-13	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
		Percent Solids:	91.3
Project:	TQN 118 NASA PRLs; KSC, FL		

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.23 J	0.26	0.13	0.026	mg/kg	5	05/26/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42305

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0054-001.0-20230516		
Lab Sample ID:	FC6133-14	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
		Percent Solids:	82.8
Project:	TQN 118 NASA PRLs; KSC, FL		

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.18 J	0.27	0.13	0.027	mg/kg	5	05/26/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42305

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0054-002.0-20230516		
Lab Sample ID:	FC6133-15	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
		Percent Solids:	74.1
Project:	TQN 118 NASA PRLs; KSC, FL		

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.36	0.29	0.14	0.029	mg/kg	5	05/26/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42305

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0055-000.5-20230516		
Lab Sample ID:	FC6133-16	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
		Percent Solids:	91.9
Project:	TQN 118 NASA PRLs; KSC, FL		

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.58	0.27	0.14	0.027	mg/kg	5	05/26/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42305

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0055-001.0-20230516		
Lab Sample ID:	FC6133-17	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
		Percent Solids:	89.1
Project:	TQN 118 NASA PRLs; KSC, FL		

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.19 J	0.26	0.13	0.026	mg/kg	5	05/26/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42305

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0055-002.0-20230516		
Lab Sample ID:	FC6133-18	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
		Percent Solids:	84.3
Project:	TQN 118 NASA PRLs; KSC, FL		

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.091 J	0.27	0.14	0.027	mg/kg	5	05/27/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42310

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0056-000.5-20230516		
Lab Sample ID:	FC6133-19	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
		Percent Solids:	88.8
Project:	TQN 118 NASA PRLs; KSC, FL		

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.55	0.27	0.14	0.027	mg/kg	5	05/27/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42310

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0056-001.0-20230516		
Lab Sample ID:	FC6133-20	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
		Percent Solids:	89.9
Project:	TQN 118 NASA PRLs; KSC, FL		

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.11 J	0.24	0.12	0.024	mg/kg	5	05/27/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42310

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0056-002.0-20230516		
Lab Sample ID:	FC6133-21	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
		Percent Solids:	84.6
Project:	TQN 118 NASA PRLs; KSC, FL		

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.070 J	0.25	0.13	0.025	mg/kg	5	05/27/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42310

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0057-000.5-20230516		
Lab Sample ID:	FC6133-22	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
		Percent Solids:	88.0
Project:	TQN 118 NASA PRLs; KSC, FL		

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.11 J	0.24	0.12	0.024	mg/kg	5	05/27/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42310

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0057-001.0-20230516		
Lab Sample ID:	FC6133-23	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
		Percent Solids:	84.7
Project:	TQN 118 NASA PRLs; KSC, FL		

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.051 J	0.29	0.14	0.029	mg/kg	5	05/27/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42310

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0057-002.0-20230516	
Lab Sample ID:	FC6133-24	Date Sampled: 05/16/23
Matrix:	SO - Soil	Date Received: 05/17/23
Project:	TQN 118 NASA PRLs; KSC, FL	Percent Solids: 75.6

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.075 J	0.30	0.15	0.030	mg/kg	5	05/27/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42310

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0058-000.5-20230516		
Lab Sample ID:	FC6133-25	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
		Percent Solids:	90.3
Project:	TQN 118 NASA PRLs; KSC, FL		

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.060 J	0.23	0.11	0.023	mg/kg	5	05/27/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42310

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0058-001.0-20230516		
Lab Sample ID:	FC6133-26	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
Project:	TQN 118 NASA PRLs; KSC, FL	Percent Solids:	86.4

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.032 J	0.27	0.14	0.027	mg/kg	5	05/27/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42310

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Report of Analysis

Client Sample ID:	KCDC-SB0058-002.0-20230516		
Lab Sample ID:	FC6133-27	Date Sampled:	05/16/23
Matrix:	SO - Soil	Date Received:	05/17/23
		Percent Solids:	82.3
Project:	TQN 118 NASA PRLs; KSC, FL		

Metals Analysis

Analyte	Result	LOQ	LOD	DL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	0.027 J	0.23	0.11	0.023	mg/kg	5	05/27/23	05/31/23 JC	SW846 6020B ¹	SW846 3050B ²

(1) Instrument QC Batch: MA19451

(2) Prep QC Batch: MP42310

LOQ = Limit of Quantitation DL = Detection Limit U = Indicates a result < LOD
 LOD = Limit of Detection B = Analyte found in associated blank J = Indicates a result > = DL (MDL) but < LOQ

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits



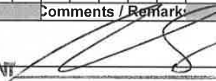

SGS North America Inc - Orlando
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, FL 32811
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FC6133

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Client / Reporting Information		Project Information		Analytical Information												Matrix Codes	
Company Name: HGL, Inc.		Project Name: KCDC Soil Sampling														DW - Drinking Water	
Address: 2405 N. Courtney Parkway, STE 203		Street: Kennedy Space Center														GW - Ground Water	
City: Merritt Island State: FL Zip: 32937		City: Merritt Island State: FL														WW - Water	
Project Contact: Denise Rivers Email: drivers@hgl.com		Project # NS1005.15.05														SW - Surface Water	
Phone #: 910-233-8460		Fax #														SO - Soil	
Sampler(s) Name(s) (Printed) Sampler 1: Robert Long Sampler 2: Dustin Lewis		Client Purchase Order #														SL - Sludge	
SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION			CONTAINER INFORMATION												LAB USE ONLY
		DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	ICI	NI/OH	NI/OS	NI/OS4	NI/OS-ZN/C	DI WATER	MICH		
1	KCDC-SB0050-000.5-20230516	5-16-23	0835	RL	SO	1		X									
2	KCDC-SB0050-001.0-20230516		0836	RL				X									
3	KCDC-SB0050-002.0-20230516		0837	RL				X									
4	KCDC-SB0051-000.5-20230516		0846	RL				X									
5	KCDC-SB0051-001.0-20230516		0847	RL				X									
6	KCDC-SB0051-002.0-20230516		0848	RL				X									
7	KCDC-SB0052-000.5-20230516		0855	RL				X									
8	KCDC-SB0052-001.0-20230516		0856	RL				X									
9	KCDC-SB0052-002.0-20230516		0857	RL				X									
10	KCDC-SB0053-000.5-20230516		0910	RL				X									
11	KCDC-SB0053-001.0-20230516		0911	RL				X									
12	KCDC-SB0053-002.0-20230516		0912	RL				X									
Turnaround Time (Business days)		Data Deliverable Information		Comments / Remarks													
<input checked="" type="checkbox"/> 10 Day (Business) <input type="checkbox"/> 7 Day <input type="checkbox"/> 5 Day <input type="checkbox"/> 3 Day RUSH <input type="checkbox"/> 2 Day RUSH <input type="checkbox"/> 1 Day RUSH <input type="checkbox"/> Other		Approved By: / Date:		<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input type="checkbox"/> FULLT1 (EPA LEVEL 4) <input type="checkbox"/> EDD'S													
Rush T/A Data Available VIA Email or Lablink				INITIAL ASSESSMENT  LABEL VERIFICATION 													
Sample Custody must be documented below each time samples change possession, including courier delivery.																	
Relinquished by Sampler/Affiliation 1 Dustin Lewis HGL	Date Time: 05/17/23 12:50	Received By/Affiliation 2 [Signature]	Date Time: 5/17/23 12:50	Relinquished By/Affiliation 3 [Signature]	Date Time: 5/17/23 14:30	Received By/Affiliation 4 [Signature]											
Relinquished by/Affiliation 5	Date Time:	Received By/Affiliation 6	Date Time:	Relinquished By/Affiliation 7	Date Time:	Received By/Affiliation 8											
Lab Use Only : Cooler Temperature (s) Celsius (corrected):		30.28															

COC Rev 031318

FC6133: Chain of Custody

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SGS North America Inc - Orlando
Chain of Custody

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SGS - ORLANDO JOB #:

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Client / Reporting Information		Project Information										Analytical Information										Matrix Codes
Company Name: HGL, Inc.		Project Name: KCDC Soil Sampling																				DW - Drinking Water
Address: 2405 N. Courtney Parkway, STE 203		Street: Kennedy Space Center																				GW - Ground Water
City: Merritt Island State: FL Zip: 32937		City: Merritt Island State: FL																				WW - Water
Project Contact: Denise Rivers Email: drivers@hgl.com		Project # NS1005.15.05																				SW - Surface Water
Phone #: 910-233-8460		Fax #																				SO - Soil
Sampler(s) Name(s) (Printed) Sampler 1: Robert Bunch Sampler 2: Dortha Lewis		Client Purchase Order #																				SL - Sludge
SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION				CONTAINER INFORMATION										Asbestos (SW6202B)	LAB USE ONLY					
		DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	PCB	NaOH	PHOS	PERCH	NaOH/PNA	DI WATER	MEOH							
13	KCDC-SB0054-000.5-20230516	5-16-23	0923	RL	SO	1		X														
14	KCDC-SB0054-001.0-20230516		0924																			
15	KCDC-SB0054-002.0-20230516		0925																			
16	KCDC-SB0055-000.5-20230516		0937																			
17	KCDC-SB0055-001.0-20230516		0938																			
18	KCDC-SB0055-002.0-20230516		0939																			
19	KCDC-SB0056-000.5-20230516		0946																			
20	KCDC-SB0056-001.0-20230516		0947																			
21	KCDC-SB0056-002.0-20230516		0948																			
22	KCDC-SB0057-000.5-20230516		1000																			
23	KCDC-SB0057-001.0-20230516		1001																			
24	KCDC-SB0057-002.0-20230516		1002																			
Turnaround Time (Business days)		Data Deliverable Information										Comments / Remark:										
<input checked="" type="checkbox"/> 10 Day (Business) Approved By: / Date: _____ <input type="checkbox"/> 7 Day _____ <input type="checkbox"/> 5 Day _____ <input type="checkbox"/> 3 Day RUSH _____ <input type="checkbox"/> 2 Day RUSH _____ <input type="checkbox"/> 1 Day RUSH _____ <input type="checkbox"/> Other _____ Rush T/A Data Available VIA Email or Lablink		<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input type="checkbox"/> FULLT1 (EPA LEVEL 4) <input type="checkbox"/> EDD'S																				
Sample Custody must be documented below each time samples change possession, including courier delivery.																						
Relinquished by Sampler/Affiliation		Date Time:		Received By/Affiliation		Relinquished By/Affiliation		Date Time:		Received By/Affiliation		Relinquished By/Affiliation		Date Time:		Received By/Affiliation						
1 Dortha Lewis HGL		05/17/23 12:50		2 [Signature] S/17/23 12:50		3 [Signature] S/17/23 12:50		4 [Signature] S/17/23 12:50		5 [Signature] S/17/23 12:50		6 [Signature] S/17/23 12:50		7 [Signature] S/17/23 12:50		8 [Signature] S/17/23 12:50						
5				6		7				8												
Lab Use Only : Cooler Temperature (s) Celsius (corrected): _____ http://www.sgs.com/en/terms-and-conditions																						

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FC6133: Chain of Custody

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SGS North America Inc - Orlando
Chain of Custody

4405 Vineland Road, Suite C-15 Orlando, FL 32811
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www.sgs.com

FC6133

SGS - ORLANDO JOB #: PAGE 3 OF 3

Client / Reporting Information		Project Information		Analytical Information										Matrix Codes			
Company Name: HGL, Inc.		Project Name: KCDC Soil Sampling												DW - Drinking Water			
Address: 2405 N. Courtney Parkway, STE 203		Street: Kennedy Space Center												GW - Ground Water			
City: Merritt Island State: FL Zip: 32937		City: Merritt Island State: FL												WW - Water			
Project Contact: Denise Rivers Email: drivers@hgl.com		Project # NS1005.15.05												SW - Surface Water			
Phone #: 910-233-8460		Fax #												SO - Soil			
Sampler(s) Name(s) (Printed)		Client Purchase Order #												SL - Sludge			
Sampler 1: Robert Lynch Sampler 2: Dustin Luv's														OI - Oil			
SGS Oriando Sample #	Field ID / Point of Collection	COLLECTION		CONTAINER INFORMATION										LAB USE ONLY			
		DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	ROBE	PC	NIOSH	PHOS	P2804	NACHS/ENH		DI WATER	MEOH	
25	KCDC-SB0058-00015-20230516	5-16-23	1006	RL	SO	1		X								X	
26	KCDC-SB0058-00110-20230516		1007	RL	SO	1		X								X	
27	KCDC-SB0058-00210-20230516		1008	RL	SO	1		X								X	
Turnaround Time (Business days)		Data Deliverable Information		Comments / Remark:													
<input checked="" type="checkbox"/> 10 Day (Business) Approved By: / Date: _____ <input type="checkbox"/> 7 Day _____ <input type="checkbox"/> 5 Day _____ <input type="checkbox"/> 3 Day RUSH _____ <input type="checkbox"/> 2 Day RUSH _____ <input type="checkbox"/> 1 Day RUSH _____ <input type="checkbox"/> Other _____ Rush T/A Data Available VIA Email or Lablink		<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input type="checkbox"/> FULLT1 (EPA LEVEL 4) <input type="checkbox"/> EDD'S															
Sample Custody must be documented below each time samples change possession, including courier delivery.																	
Relinquished by Sampler/Affiliation		Date Time:		Received By/Affiliation		Date Time:		Relinquished By/Affiliation		Date Time:		Received By/Affiliation					
1 Dustin Luv's HGL		05/17/23 12:50		2 [Signature] HGL		5/17/23 12:50		3 [Signature] HGL		5/17/23 14:00		4 [Signature] HGL					
5				6				7				8					
Lab Use Only : Cooler Temperature (s) Celsius (corrected): _____													http://www.sgs.com/en/terms-and-conditions				

COC Rev 031318

FC6133: Chain of Custody

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5.1
5

QC Evaluation: DOD QSM5.x Limits

Job Number: FC6133
Account: Hydrogeologic, Inc.
Project: TQN 118 NASA PRLs; KSC, FL
Collected: 05/16/23

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
MP42279 SW846 6020B							
MP42279-B1	7440-38-2	Arsenic	BSP	REC	102.4	%	82-118
MP42279-S1*	7440-38-2	Arsenic	MS	REC	104.2	%	82-118
MP42279-S2*	7440-38-2	Arsenic	MSD	REC	98.7	%	82-118
MP42279-S2*	7440-38-2	Arsenic	MSD	RPD	9.1	%	20
MP42279-D1*	7440-38-2	Arsenic	DUP	RPD	2.3	%	20
MP42305 SW846 6020B							
MP42305-B1	7440-38-2	Arsenic	BSP	REC	101.2	%	82-118
MP42305-S1*	7440-38-2	Arsenic	MS	REC	70.8 ^a	%	82-118
MP42305-S2*	7440-38-2	Arsenic	MSD	REC	80.4	%	82-118
MP42305-S2*	7440-38-2	Arsenic	MSD	RPD	24 ^b	%	20
MP42305-D1*	7440-38-2	Arsenic	DUP	RPD	21.4 ^b	%	20
MP42310 SW846 6020B							
MP42310-B1	7440-38-2	Arsenic	BSP	REC	100.4	%	82-118
MP42310-S1	7440-38-2	Arsenic	MS	REC	99.6	%	82-118
MP42310-S2	7440-38-2	Arsenic	MSD	REC	101.2	%	82-118
MP42310-S2	7440-38-2	Arsenic	MSD	RPD	13.9	%	20
MP42310-D1	7440-38-2	Arsenic	DUP	RPD	35.3 ^c	%	20

(a) Spike recovery indicates possible matrix interference and/or sample non-homogeneity.

(b) High RPD due to possible sample non-homogeneity.

(c) RPD acceptable due to low duplicate and sample concentrations.

* Sample used for QC is not from job FC6133

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FC6133
Account: HGLFLMI - Hydrogeologic, Inc.
Project: TQN 118 NASA PRLs; KSC, FL

QC Batch ID: MP42279
Matrix Type: SOLID

Methods: SW846 6020B
Units: mg/kg

Prep Date: 05/22/23

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	1.1	1.1		
Antimony	0.25	.025	.025		
Arsenic	0.25	.025	.025	0.010	<0.25
Barium	0.25	.025	.025		
Beryllium	0.25	.025	.027		
Cadmium	0.25	.025	.025		
Calcium	25	1.8	1.8		
Chromium	0.25	.025	.025		
Cobalt	0.25	.025	.025		
Copper	0.25	.025	.025		
Iron	25	2	2		
Lead	0.25	.025	.025		
Magnesium	25	1.3	1.3		
Manganese	0.25	.025	.025		
Molybdenum	0.25	.025	.025		
Nickel	0.25	.025	.025		
Potassium	25	1.6	1.6		
Selenium	0.25	.028	.045		
Silver	0.25	.025	.025		
Sodium	25	1.2	1.2		
Strontium	0.25	.025	.025		
Thallium	0.25	.025	.025		
Tin	0.25	.025	.025		
Titanium	0.25	.076	.076		
Vanadium	0.25	.025	.025		
Zinc	0.25	.073	.073		

Associated samples MP42279: FC6133-1, FC6133-2, FC6133-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

6.1.1
6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FC6133
 Account: HGLFLMI - Hydrogeologic, Inc.
 Project: TQN 118 NASA PRLs; KSC, FL

QC Batch ID: MP42279
 Matrix Type: SOLID

Methods: SW846 6020B
 Units: mg/kg

Prep Date: 05/22/23 05/22/23

Metal	FC6064-12 Original	DUP	RPD	QC Limits	FC6064-12 Original MS	Spikelot MPICPMS1	% Rec	QC Limits	
Aluminum									
Antimony	anr								
Arsenic	0.44	0.43	2.3	0-20	0.44	23.1	21.7	104.2	80-120
Barium	anr								
Beryllium	anr								
Cadmium	anr								
Calcium									
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron									
Lead	anr								
Magnesium									
Manganese	anr								
Molybdenum									
Nickel	anr								
Potassium									
Selenium	anr								
Silver	anr								
Sodium									
Strontium									
Thallium	anr								
Tin									
Titanium									
Vanadium	anr								
Zinc	anr								

Associated samples MP42279: FC6133-1, FC6133-2, FC6133-3

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FC6133
 Account: HGLFLMI - Hydrogeologic, Inc.
 Project: TQN 118 NASA PRLs; KSC, FL

QC Batch ID: MP42279
 Matrix Type: SOLID

Methods: SW846 6020B
 Units: mg/kg

Prep Date: 05/22/23

Metal	FC6064-12 Original MSD		SpikeLot MPICPMS1 % Rec		MSD RPD	QC Limit
Aluminum						
Antimony	anr					
Arsenic	0.44	25.3	25.2	98.7	9.1	20
Barium	anr					
Beryllium	anr					
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt	anr					
Copper	anr					
Iron						
Lead	anr					
Magnesium						
Manganese	anr					
Molybdenum						
Nickel	anr					
Potassium						
Selenium	anr					
Silver	anr					
Sodium						
Strontium						
Thallium	anr					
Tin						
Titanium						
Vanadium	anr					
Zinc	anr					

Associated samples MP42279: FC6133-1, FC6133-2, FC6133-3

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

6.1.2
6

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FC6133
 Account: HGLFLMI - Hydrogeologic, Inc.
 Project: TQN 118 NASA PRLs; KSC, FL

QC Batch ID: MP42279
 Matrix Type: SOLID

Methods: SW846 6020B
 Units: mg/kg

Prep Date: 05/22/23

Metal	BSP Result	Spikelot MPICPMS1	% Rec	QC Limits
Aluminum				
Antimony	anr			
Arsenic	25.6	25	102.4	80-120
Barium	anr			
Beryllium	anr			
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt	anr			
Copper	anr			
Iron				
Lead	anr			
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	anr			
Potassium				
Selenium	anr			
Silver	anr			
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Vanadium	anr			
Zinc	anr			

Associated samples MP42279: FC6133-1, FC6133-2, FC6133-3

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

6.1.3
 6

SERIAL DILUTION RESULTS SUMMARY

Login Number: FC6133
 Account: HGLFLMI - Hydrogeologic, Inc.
 Project: TQN 118 NASA PRLs; KSC, FL

QC Batch ID: MP42279
 Matrix Type: SOLID

Methods: SW846 6020B
 Units: ug/l

Prep Date: 05/22/23

Metal	FC6064-12	Original	SDL 5:25	%DIF	QC Limits
Aluminum					
Antimony	anr				
Arsenic	9.94	9.46	4.9		0-10
Barium	anr				
Beryllium	anr				
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt	anr				
Copper	anr				
Iron					
Lead	anr				
Magnesium					
Manganese	anr				
Molybdenum					
Nickel	anr				
Potassium					
Selenium	anr				
Silver	anr				
Sodium					
Strontium					
Thallium	anr				
Tin					
Titanium					
Vanadium	anr				
Zinc	anr				

Associated samples MP42279: FC6133-1, FC6133-2, FC6133-3

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

6.1.4
 6

POST DIGESTATE SPIKE SUMMARY

Login Number: FC6133
 Account: HGLFLMI - Hydrogeologic, Inc.
 Project: TQN 118 NASA PRLs; KSC, FL

QC Batch ID: MP42279
 Matrix Type: SOLID

Methods: SW846 6020B
 Units: ug/l

Prep Date:

05/22/23

Metal	Sample ml	Final ml	FC6064-12 Raw	PS Corr.** ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron									
Lead									
Magnesium									
Manganese									
Molybdenum									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Strontium									
Thallium									
Tin									
Titanium									
Vanadium									
Zinc									

Associated samples MP42279: FC6133-1, FC6133-2, FC6133-3

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (**) Corr. sample result = Raw * (sample volume / final volume)
 (anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FC6133
Account: HGLFLMI - Hydrogeologic, Inc.
Project: TQN 118 NASA PRLs; KSC, FL

QC Batch ID: MP42305
Matrix Type: SOLID

Methods: SW846 6020B
Units: mg/kg

Prep Date: 05/26/23

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	1.1	1.1		
Antimony	0.25	.025	.025		
Arsenic	0.25	.025	.025	0.012	<0.25
Barium	0.25	.025	.025		
Beryllium	0.25	.025	.027		
Cadmium	0.25	.025	.025		
Calcium	25	1.8	1.8		
Chromium	0.25	.025	.025		
Cobalt	0.25	.025	.025		
Copper	0.25	.025	.025		
Iron	25	2	2		
Lead	0.25	.025	.025		
Magnesium	25	1.3	1.3		
Manganese	0.25	.025	.025		
Molybdenum	0.25	.025	.025		
Nickel	0.25	.025	.025		
Potassium	25	1.6	1.6		
Selenium	0.25	.028	.045		
Silver	0.25	.025	.025		
Sodium	25	1.2	1.2		
Strontium	0.25	.025	.025		
Thallium	0.25	.025	.025		
Tin	0.25	.025	.025		
Titanium	0.25	.076	.076		
Vanadium	0.25	.025	.025		
Zinc	0.25	.073	.073		

Associated samples MP42305: FC6133-4, FC6133-5, FC6133-6, FC6133-7, FC6133-8, FC6133-9, FC6133-10, FC6133-11, FC6133-12, FC6133-13, FC6133-14, FC6133-15, FC6133-16, FC6133-17

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FC6133
 Account: HGLFLMI - Hydrogeologic, Inc.
 Project: TQN 118 NASA PRLs; KSC, FL

QC Batch ID: MP42305
 Matrix Type: SOLID

Methods: SW846 6020B
 Units: mg/kg

Prep Date: 05/26/23 05/26/23

Metal	FC6286-1 Original	DUP	RPD	QC Limits	FC6286-1 Original MS	Spikelot MPICPMS1	% Rec	QC Limits
Aluminum								
Antimony	anr							
Arsenic	6.3	5.0 (a)	21.4*(b)	0-20	6.2	22.2 (a)	22.6	70.8N(c) 80-120
Barium								
Beryllium	anr							
Cadmium	anr							
Calcium								
Chromium	anr							
Cobalt	anr							
Copper	anr							
Iron								
Lead	anr							
Magnesium								
Manganese	anr							
Molybdenum								
Nickel	anr							
Potassium								
Selenium	anr							
Silver	anr							
Sodium								
Strontium								
Thallium	anr							
Tin								
Titanium								
Vanadium	anr							
Zinc	anr							

Associated samples MP42305: FC6133-4, FC6133-5, FC6133-6, FC6133-7, FC6133-8, FC6133-9, FC6133-10, FC6133-11, FC6133-12, FC6133-13, FC6133-14, FC6133-15, FC6133-16, FC6133-17

Results < IDL are shown as zero for calculation purposes

- (*) Outside of QC limits
- (N) Matrix Spike Rec. outside of QC limits
- (anr) Analyte not requested
- (a) Sample dilution required due to difficult matrix.
- (b) High RPD due to possible sample non-homogeneity.
- (c) Spike recovery indicates possible matrix interference and/or sample non-homogeneity.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FC6133
 Account: HGLFLMI - Hydrogeologic, Inc.
 Project: TQN 118 NASA PRLs; KSC, FL

QC Batch ID: MP42305
 Matrix Type: SOLID

Methods: SW846 6020B
 Units: mg/kg

Prep Date: 05/26/23

Metal	FC6286-1 Original MSD	Spike MPICPMS1	lot % Rec	MSD RPD	QC Limit
Aluminum					
Antimony	anr				
Arsenic	6.2	28.9 (a)	28.2	80.4	24.0 (b) 20
Barium	anr				
Beryllium	anr				
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt	anr				
Copper	anr				
Iron					
Lead	anr				
Magnesium					
Manganese	anr				
Molybdenum					
Nickel	anr				
Potassium					
Selenium	anr				
Silver	anr				
Sodium					
Strontium					
Thallium	anr				
Tin					
Titanium					
Vanadium	anr				
Zinc	anr				

Associated samples MP42305: FC6133-4, FC6133-5, FC6133-6, FC6133-7, FC6133-8, FC6133-9, FC6133-10, FC6133-11, FC6133-12, FC6133-13, FC6133-14, FC6133-15, FC6133-16, FC6133-17

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested
 (a) Sample dilution required due to difficult matrix.
 (b) High RPD due to possible sample non-homogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FC6133
 Account: HGLFLMI - Hydrogeologic, Inc.
 Project: TQN 118 NASA PRLs; KSC, FL

QC Batch ID: MP42305
 Matrix Type: SOLID

Methods: SW846 6020B
 Units: mg/kg

Prep Date: 05/26/23

Metal	BSP Result	Spikelot MPICPMS1	% Rec	QC Limits
Aluminum				
Antimony	anr			
Arsenic	25.3	25	101.2	80-120
Barium	anr			
Beryllium	anr			
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt	anr			
Copper	anr			
Iron				
Lead	anr			
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	anr			
Potassium				
Selenium	anr			
Silver	anr			
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Vanadium	anr			
Zinc	anr			

Associated samples MP42305: FC6133-4, FC6133-5, FC6133-6, FC6133-7, FC6133-8, FC6133-9, FC6133-10, FC6133-11, FC6133-12, FC6133-13, FC6133-14, FC6133-15, FC6133-16, FC6133-17

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FC6133
 Account: HGLFLMI - Hydrogeologic, Inc.
 Project: TQN 118 NASA PRLs; KSC, FL

QC Batch ID: MP42305
 Matrix Type: SOLID

Methods: SW846 6020B
 Units: ug/l

Prep Date: 05/26/23

Metal	Original	%DIF	QC Limits
Aluminum			
Antimony			
Arsenic			
Barium			
Beryllium			
Cadmium			
Calcium			
Chromium			
Cobalt			
Copper			
Iron			
Lead			
Magnesium			
Manganese			
Molybdenum			
Nickel			
Potassium			
Selenium			
Silver			
Sodium			
Strontium			
Thallium			
Tin			
Titanium			
Vanadium			
Zinc			

Associated samples MP42305: FC6133-4, FC6133-5, FC6133-6, FC6133-7, FC6133-8, FC6133-9, FC6133-10, FC6133-11, FC6133-12, FC6133-13, FC6133-14, FC6133-15, FC6133-16, FC6133-17

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

6.2.4
 6

POST DIGESTATE SPIKE SUMMARY

Login Number: FC6133
 Account: HGLFLMI - Hydrogeologic, Inc.
 Project: TQN 118 NASA PRLs; KSC, FL

QC Batch ID: MP42305
 Matrix Type: SOLID

Methods: SW846 6020B
 Units: ug/l

Prep Date:

05/26/23

Metal	Sample ml	Final ml	FC6286-1 Raw	Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Aluminum										
Antimony										
Arsenic	9.8	10	109.9658	106.9036	117.4462	0.2	0.5	10	105.4	80-120
Barium										
Beryllium										
Cadmium										
Calcium										
Chromium										
Cobalt										
Copper										
Iron										
Lead										
Magnesium										
Manganese										
Molybdenum										
Nickel										
Potassium										
Selenium										
Silver										
Sodium										
Strontium										
Thallium										
Tin										
Titanium										
Vanadium										
Zinc										

Associated samples MP42305: FC6133-4, FC6133-5, FC6133-6, FC6133-7, FC6133-8, FC6133-9, FC6133-10, FC6133-11, FC6133-12, FC6133-13, FC6133-14, FC6133-15, FC6133-16, FC6133-17

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (**) Corr. sample result = Raw * (sample volume / final volume)
 (anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FC6133
Account: HGLFLMI - Hydrogeologic, Inc.
Project: TQN 118 NASA PRLs; KSC, FL

QC Batch ID: MP42310
Matrix Type: SOLID

Methods: SW846 6020B
Units: mg/kg

Prep Date: 05/27/23

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	1.1	1.1		
Antimony	0.25	.025	.025		
Arsenic	0.25	.025	.025	0.021	<0.25
Barium	0.25	.025	.025		
Beryllium	0.25	.025	.027		
Cadmium	0.25	.025	.025		
Calcium	25	1.8	1.8		
Chromium	0.25	.025	.025		
Cobalt	0.25	.025	.025		
Copper	0.25	.025	.025		
Iron	25	2	2		
Lead	0.25	.025	.025		
Magnesium	25	1.3	1.3		
Manganese	0.25	.025	.025		
Molybdenum	0.25	.025	.025		
Nickel	0.25	.025	.025		
Potassium	25	1.6	1.6		
Selenium	0.25	.028	.045		
Silver	0.25	.025	.025		
Sodium	25	1.2	1.2		
Strontium	0.25	.025	.025		
Thallium	0.25	.025	.025		
Tin	0.25	.025	.025		
Titanium	0.25	.076	.076		
Vanadium	0.25	.025	.025		
Zinc	0.25	.073	.073		

Associated samples MP42310: FC6133-18, FC6133-19, FC6133-20, FC6133-21, FC6133-22, FC6133-23, FC6133-24, FC6133-25, FC6133-26, FC6133-27

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FC6133
 Account: HGLFLMI - Hydrogeologic, Inc.
 Project: TQN 118 NASA PRLs; KSC, FL

QC Batch ID: MP42310
 Matrix Type: SOLID

Methods: SW846 6020B
 Units: mg/kg

Prep Date: 05/27/23 05/27/23

Metal	FC6133-18 Original	DUP	RPD	QC Limits	FC6133-18 Original MS	Spikelot MPICPMS1	% Rec	QC Limits
Aluminum								
Antimony	anr							
Arsenic	0.091	0.13	35.3 (a)	0-20	0.091	24.7	24.7	99.6
Barium	anr							
Beryllium	anr							
Cadmium	anr							
Calcium								
Chromium	anr							
Cobalt	anr							
Copper								
Iron								
Lead	anr							
Magnesium								
Manganese								
Molybdenum								
Nickel								
Potassium								
Selenium	anr							
Silver	anr							
Sodium								
Strontium								
Thallium	anr							
Tin								
Titanium								
Vanadium	anr							
Zinc								

Associated samples MP42310: FC6133-18, FC6133-19, FC6133-20, FC6133-21, FC6133-22, FC6133-23, FC6133-24, FC6133-25, FC6133-26, FC6133-27

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FC6133
 Account: HGLFLMI - Hydrogeologic, Inc.
 Project: TQN 118 NASA PRLs; KSC, FL

QC Batch ID: MP42310
 Matrix Type: SOLID

Methods: SW846 6020B
 Units: mg/kg

Prep Date: 05/27/23

Metal	FC6133-18 Original MSD		SpikeLot MPICPMS1 % Rec	MSD RPD	QC Limit	
Aluminum						
Antimony	anr					
Arsenic	0.091	28.4	28	101.2	13.9	20
Barium	anr					
Beryllium	anr					
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt	anr					
Copper						
Iron						
Lead	anr					
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium	anr					
Silver	anr					
Sodium						
Strontium						
Thallium	anr					
Tin						
Titanium						
Vanadium	anr					
Zinc						

Associated samples MP42310: FC6133-18, FC6133-19, FC6133-20, FC6133-21, FC6133-22, FC6133-23, FC6133-24, FC6133-25, FC6133-26, FC6133-27

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FC6133
 Account: HGLFLMI - Hydrogeologic, Inc.
 Project: TQN 118 NASA PRLs; KSC, FL

QC Batch ID: MP42310
 Matrix Type: SOLID

Methods: SW846 6020B
 Units: mg/kg

Prep Date: 05/27/23

Metal	BSP Result	Spikelot MPICPMS1	% Rec	QC Limits
Aluminum				
Antimony	anr			
Arsenic	25.1	25	100.4	80-120
Barium	anr			
Beryllium	anr			
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt	anr			
Copper				
Iron				
Lead	anr			
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium	anr			
Silver	anr			
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Vanadium	anr			
Zinc				

Associated samples MP42310: FC6133-18, FC6133-19, FC6133-20, FC6133-21, FC6133-22, FC6133-23, FC6133-24, FC6133-25, FC6133-26, FC6133-27

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: FC6133
 Account: HGLFLMI - Hydrogeologic, Inc.
 Project: TQN 118 NASA PRLs; KSC, FL

QC Batch ID: MP42310
 Matrix Type: SOLID

Methods: SW846 6020B
 Units: ug/l

Prep Date: 05/27/23

Metal	FC6133-18	Original	SDL 5:25	%DIF	QC Limits
Aluminum					
Antimony	anr				
Arsenic	1.66	0.00		100.0 (a)	0-10
Barium	anr				
Beryllium	anr				
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt	anr				
Copper					
Iron					
Lead	anr				
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium	anr				
Silver	anr				
Sodium					
Strontium					
Thallium	anr				
Tin					
Titanium					
Vanadium	anr				
Zinc					

Associated samples MP42310: FC6133-18, FC6133-19, FC6133-20, FC6133-21, FC6133-22, FC6133-23, FC6133-24, FC6133-25, FC6133-26, FC6133-27

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

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**APPENDIX F ARSENIC
CONTAMINATION RELEASE
DOCUMENTATION**

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September 27, 2023

Mr. Christopher Adkison
National Aeronautics and Space Administration
Christopher.D.Adkison@nasa.gov
Mail Code: SI-E2
Kennedy Space Center, FL 32899

SUBJECT: WO# T202308-45703 Spill Tracking #: S2023030 Kennedy Space Center (KSC), Child Development Center (CDC) (M6-0883) Contamination Investigation and Confirmatory Sampling Results: August 2023 - REVISED

SUMMARY

At the request of the NASA Remediation Office, the NASA Environmental and Medical Contract (NEMCON) Spill Cleanup Team (SCT), responded on July 21, 2023, to the subject site for reconnaissance purposes. The assigned task involved the removal of arsenic-impacted soil, backfill the resultant excavation with certified clean fill, and return the area to the original condition, including grade and sod. Arsenic concentrations above the residential allowance were discovered in soil on the east side of the Child Development Center (CDC) (M6-0883). NASA Environmental Assurance Branch (EAB) requested NEMCON manage this project as a spill cleanup. A deadline for finishing the project no later than August 8, 2023, was stated as a priority in the request.

A small area northeast of the CDC was excavated by NEMCON Sub-Contractor Alpha Omega. The excavation had an average width of 2 feet and an average length of 3 feet with a final depth of 12 inches in order for a sample to be collected from the west wall of what would be the final excavation. The final excavation had an average width of 22 feet and an average length of 109 feet with average depths varying from 6 inches to 12 inches. The excavation boundaries and depths of the final excavation were determined based on pre-excavation soil sampling results provided by NASA.

A second location, northeast of the CDC and west of the area detailed above, was also excavated by NEMCON Sub-Contractor Alpha Omega. The excavation had an average width of 3 feet and an average length of 4 feet with an average depth of 12 inches. The dimensions were determined based on pre-excavation soil sampling results provided by NASA.

The contaminated soil from both excavations was containerized in a roll-off with other soil excavated for the NASA Comprehensive Mitigation and Restoration project which was managed by the NEMCON Spill Cleanup Team.

On August 3, 2023, John Williams, NEMCON ESAM, collected two separate soil confirmatory soil

samples from two different depths from the west wall of the east excavation as requested. Composite soil sample number S2023030-0-6inch was collected from the soil surface to 6 inches below land surface (bls). Composite soil sample number S2023030-6-12inch was collected from 6 inches to 12 inches bls. The soil samples were submitted to the NEMCON contract laboratory under chain of custody documentation for analysis of Arsenic (EPA 6020B). Results of analysis showed that Arsenic concentrations were below the respective Residential Soil Cleanup Target Levels (R-SCTLs) in the two samples collected. The results indicated that no additional soil sampling or excavation would be needed.

Laboratory analytical results for detected analytes in soil samples are summarized in **Table 1**. Photo documentation of the spill site, excavation and sample locations are provided in **Figures 2 through 4**. Field notes and field forms completed during the sampling event are provided in **Appendix A**. Spatial data collection notes for GPS data are provided in **Figure 1**. A copy of the complete laboratory analytical package for the samples collected are provided in **Appendix B**. The contaminated soil disposal manifests are provided in **Appendix C**.

CONCLUSION

Based upon the findings of the August 3, 2023, sampling event, NEMCON ESAM recommends no further sampling or excavation at the specified location. The contaminated soil waste containerized by the NEMCON Spill Cleanup Team and managed for proper disposal.

Should there be any questions regarding the results or the attachments, please contact Sarah Hausman at 867-1928.

Brittany Mcleod
(affiliate)

Digitally signed by
Brittany Mcleod (affiliate)
Date: 2023.09.27
10:23:13 -04'00'

For Sarah S. Hausman
Environmental Engineer
NEMCON ESAM

ATTACHMENTS

- Table 1: Detected Analytical Results in Soil Samples
- Figure 1: Location Map of Excavation and Sample Locations
- Figure 2: Photo of Excavation to be Sampled - August 3, 2023
- Figure 3: Photo of Excavation Location and Dimensions - August 3, 2023
- Figure 4: Photo of Excavation Sample Locations - August 3, 2023

APPENDICES

- Appendix A: Field Data, Notes and Spill Cleanup Report
- Appendix B: Analytical Laboratory Report
- Appendix C: Disposal Manifests

CC

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M. Moore, Michelle.Moore@nasa.gov, NEM-022
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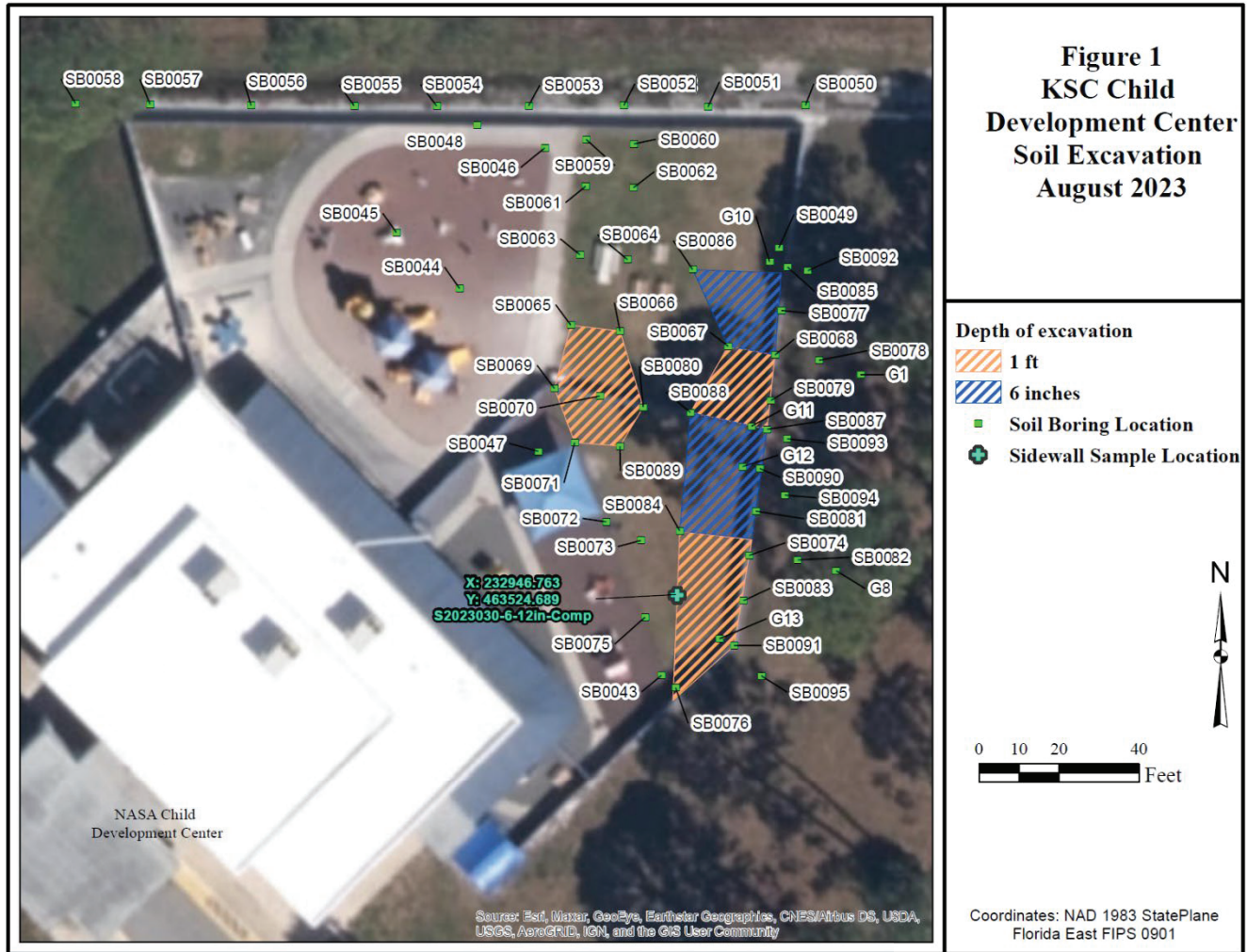
Table 1. Detected Analytical Results in Soil Samples

	Sample ID	S2023030-0-6inch		S2023030-6-12inch		R-SCTL mg/kg	I-SCTL mg/kg	LGW mg/kg
	Sample Date / Time	08/3/2023 13:00		08/3/2023 13:05				
	Sample Depth (bls)	Surface to 6 inches		6 to 12 inches				
Method	Analyte	Result mg/kg	Qual	Result mg/kg	Qual			
EPA 6020B	Arsenic	0.61	I	No Detection		2.1	12	N/A

Notes:

1. Screening Criteria as provided in FDEP Ch. 62-777, FAC, Soil Cleanup Target Levels (SCTL), R-SCTL = Residential, I-SCTL = Industrial, LGW = Groundwater Leachability (4/05)
2. Qual – Qualifier
3. “I” Denotes the parameter was detected at a concentration above the laboratories Method Detection Limit, but below the Reporting Limit.

Figure 1: Location Map of Excavation and Sample Location



Spatial Data Collection Notes:

Datum: North American Datum (NAD) 1983 (2011)

Projection: State Plane Florida East Federal Information Processing Standard (FIPS) 0901 Feet

GPS Data Correction Type: Satellite-based Augmentation System

**Figure 2: Photo of Excavation to be Sampled:
August 3, 2023**



**Figure 3: Photo of Excavation Location and Dimensions
August 3, 2023**

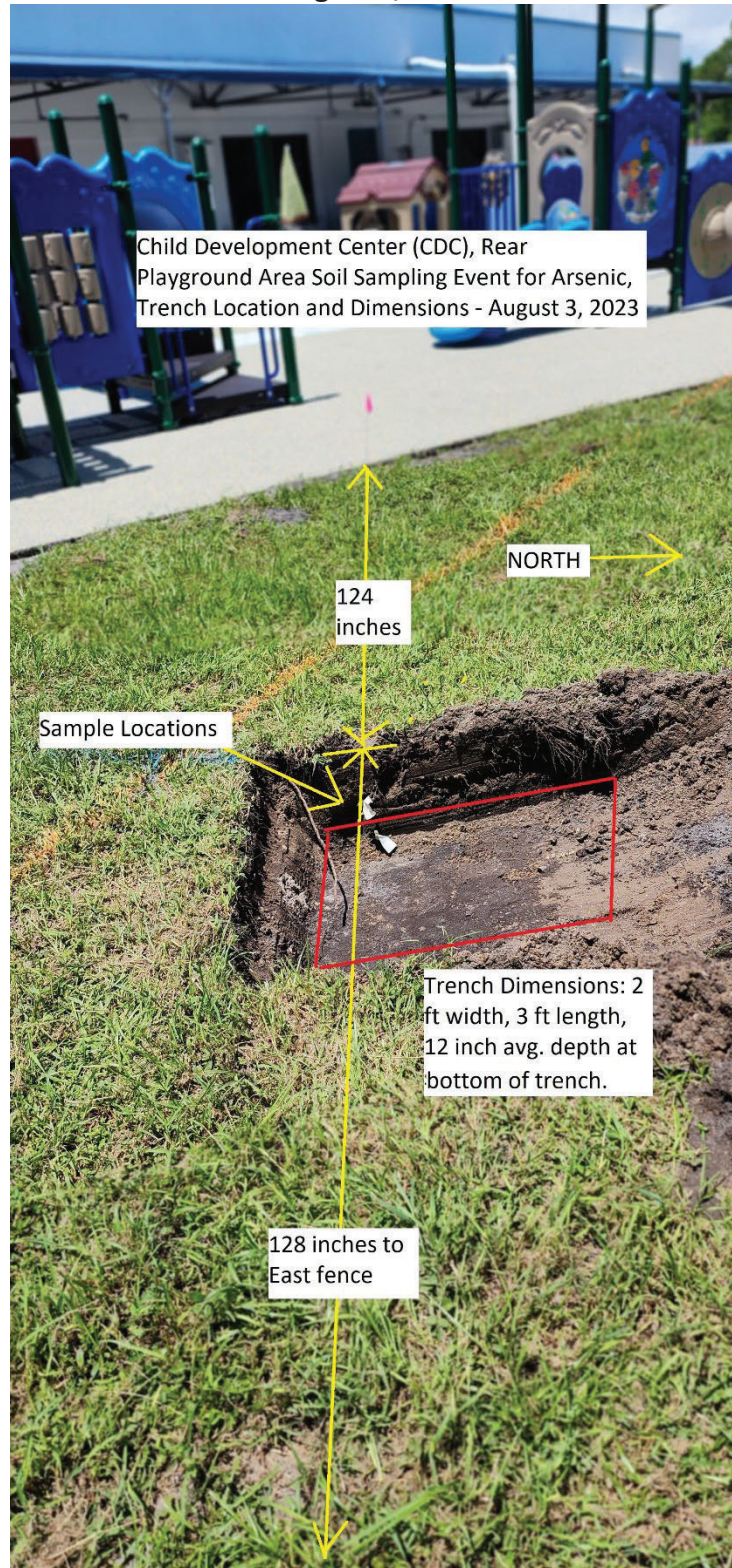


Figure 4: Photo of Excavation Sample Locations: August 3, 2023



Appendix A: Field Data, Notes and Spill Cleanup Report

ESAM FIELD NOTES

Child Development Center (CDC) Soil Sampling

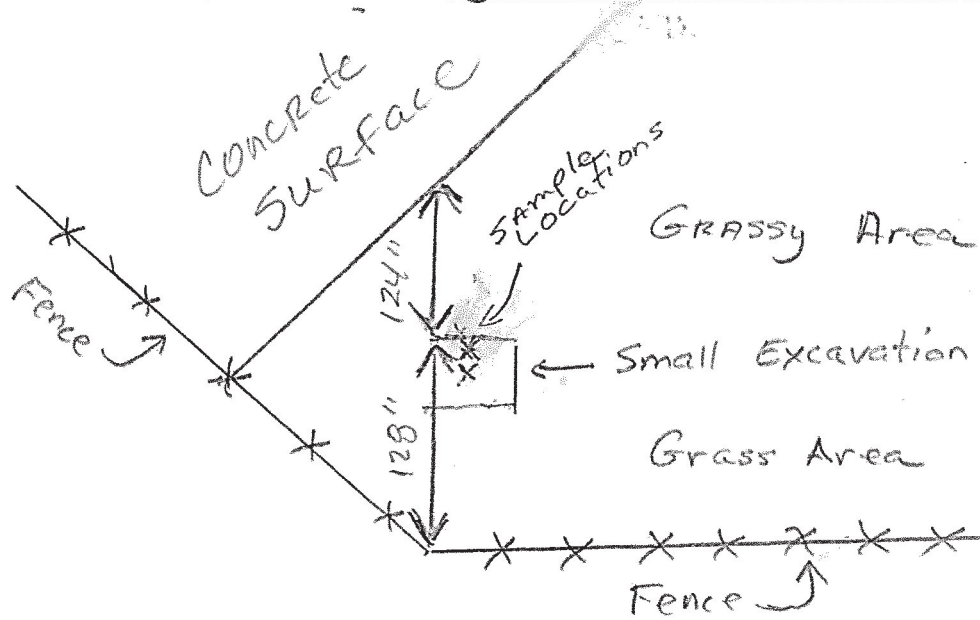
8-3-23

Spill # S2023030

Sample ID	Sample Time	Sample Depth
# S2023030-0-6 inch	1300	Surface to 6 inches
# S2023030-6-12 inch	1305	6 inches to 12 inches

Each sample collected from soil sidewall in excavation.

Using: single use scoops, AEC 8 oz soil jars, (lot # 2048004), gloves,



Analysis Requested: Arsenic

NORTH →

MAP NOT TO SCALE

Project Name: CDC Special Request Soil Sampling Event	Date: 8/3/23	Page: 1 of 1	Environmental Sampling, Analysis & Monitoring
	Task No: 7202308-45703	EH Specialist: John Williams Signature: John Williams	



Waste Management Post Emergency Spill Cleanup Action Report

Spill Tracking#: S2023030

Spill Location: M6-0883: KSC Child
Development Center

Spill Date: 7/21/2023

Responsible Organization: Other (See Cleanup Actions)

Spill Time: 1100

Priority: Non-Emergency

Cleanup Organization and Phone: KSC Waste Management (321) 360-2219

GIS Map X-Coordinate: 28.3110

GIS Map Y-Coordinate: -80.3848

Incident Description:

Arsenic concentrations above the residential allowance was discovered in soil on the east side of facility M6-0883. NASA Environmental Assurance Branch (EAB), requested NEMCON manage this project as a spill cleanup.

Material Spilled: Other (See Cleanup Actions)

Spilled Amount: Other (See Cleanup Actions)

Surface Type: Soil/Sand

Surface Area of Spill: 100 Ft. 0 In. X 12 Ft. In.

Cleanup Brief:

At the request of the NASA Remediation Office, the NASA Environmental and Medical Contract (NEMCON) Spill Cleanup Team (SCT), responded on 21 July 2023 to the site for reconnaissance purposes. The assigned task involved the removal of arsenic-impacted soil, backfill the resultant excavation with certified clean fill, and return the area to the original condition, including grade and sod.

Note: A deadline for finishing the project no later than 08 August 2023 was stated as a priority in the request.

The SCT mobilized Sub-Contractor Alpha Omega to the site as soon as possible following the necessary planning, permitting and utility locates. On 03 August 2023 the NEMCON SCT commenced work on an excavation guided by a delineation map provided by the NASA Remediation Group Project Manager, Deda Johansen. The map indicated an irregular footprint located on the east side of facility M6-0883 consisting of four discrete shapes. These areas collectively amounted to approximately 1,200 linear ft. of grass and soil be removed.

Note: The timeline for this comprehensive mitigation and restoration effort necessitated a dedicated five-person excavation crew, partial fence removal, timely delivery to the site of heavy equipment machinery, including one track-type excavator, one skid steer, one off-road forklift and four twenty cubic yard waste containers. Additionally, eight pallets of Bahia-mix sod was ordered and delivered to the site. Following the excavation and restoration work, the adjacent field was graded and seeded with the intent of leaving the entire site stabilized and esthetically pleasing.

Note: The work spanned a total of four ten-hour work days to meet the deadline for completion. Work was completed on 08 August 2023.

Note: At the direction of NASA Remediation a midfield confirmatory sample was facilitated by the NEMCON Environmental Sampling Group,(ESAM) on 03 August 2023. No further sampling for this project was requested.

Waste material has been removed from the site and staged near the NASA Treatment Storage and Disposal Facility (TSDF) pending JED Landfill approval as the disposal facility.

E. L. Coyle CHMM

Waste Generated: Four rolloff type containers. (approximately eighty cubic yards of top soil and grass)

Waste Disposition: Transported to KSC Waste Storage Complex for management

Response Time: 0 hours, 10 minutes

Spill Team Leader: Edward Coyle

Appendix B: Analytical Laboratory Report

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Sarah S Hausman
HSG LLC
Logistics Bldg. K6-1547
Room 2504
Kennedy Space Center, Florida 32899

Generated 8/9/2023 7:53:23 AM

JOB DESCRIPTION

Spill Support Sampling for S2023030
SDG NUMBER T202308-45703-3033

JOB NUMBER

670-24474-1

Eurofins Orlando

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Southeast, LLC Project Manager.

Authorization



Generated
8/9/2023 7:53:23 AM

Authorized for release by
David Camacho, Senior Project Manager
david.camacho@et.eurofinsus.com
(321)282-6400



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Sample Summary

Client: HSG LLC
Project/Site: Spill Support Sampling for S2023030

Job ID: 670-24474-1
SDG: T202308-45703-3033

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
670-24474-1	S2023030-0-6 inch	Solid	08/03/23 01:00	08/04/23 15:50
670-24474-2	S2023030-6-12 inch	Solid	08/03/23 01:05	08/04/23 15:50

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- 11
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- 14

Detection Summary

Client: HSG LLC
Project/Site: Spill Support Sampling for S2023030

Job ID: 670-24474-1
SDG: T202308-45703-3033

Client Sample ID: S2023030-0-6 inch

Lab Sample ID: 670-24474-1

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.61	I	1.1	0.54	mg/Kg	5	✱	6020B	Total/NA

Client Sample ID: S2023030-6-12 inch

Lab Sample ID: 670-24474-2

No Detections.

- 1
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- 9
- 10
- 11
- 12
- 13
- 14

This Detection Summary does not include radiochemical test results.

Definitions/Glossary

Client: HSG LLC
Project/Site: Spill Support Sampling for S2023030

Job ID: 670-24474-1
SDG: T202308-45703-3033

Qualifiers

Metals

Qualifier	Qualifier Description
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
U	Indicates that the compound was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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

Case Narrative

Client: HSG LLC
Project/Site: Spill Support Sampling for S2023030

Job ID: 670-24474-1
SDG: T202308-45703-3033

Job ID: 670-24474-1

Laboratory: Eurofins Orlando

Narrative

Job Narrative
670-24474-1

Receipt

The samples were received on 8/4/2023 3:50 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.0°C

Metals

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

General Chemistry

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

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Client Sample Results

Client: HSG LLC
Project/Site: Spill Support Sampling for S2023030

Job ID: 670-24474-1
SDG: T202308-45703-3033

Client Sample ID: S2023030-0-6 inch

Lab Sample ID: 670-24474-1

Date Collected: 08/03/23 01:00

Matrix: Solid

Date Received: 08/04/23 15:50

Percent Solids: 92.7

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.61	I	1.1	0.54	mg/Kg	☼	08/08/23 09:09	08/08/23 13:21	5

- 1
- 2
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- 11
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- 13
- 14

Client Sample Results

Client: HSG LLC
Project/Site: Spill Support Sampling for S2023030

Job ID: 670-24474-1
SDG: T202308-45703-3033

Client Sample ID: S2023030-6-12 inch

Lab Sample ID: 670-24474-2

Date Collected: 08/03/23 01:05

Matrix: Solid

Date Received: 08/04/23 15:50

Percent Solids: 90.3

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.54	U	1.1	0.54	mg/Kg	☼	08/08/23 09:09	08/08/23 13:24	5

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- 11
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- 13
- 14

QC Sample Results

Client: HSG LLC
 Project/Site: Spill Support Sampling for S2023030

Job ID: 670-24474-1
 SDG: T202308-45703-3033

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 670-47507/3-A
Matrix: Solid
Analysis Batch: 47622

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 47507

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
. rKenic	0.10	9	0.20	0.10	mg/Eg		08/08/23 0s:0s	08/08/23 13:07	1

Lab Sample ID: LCS 670-47507/1-A
Matrix: Solid
Analysis Batch: 47622

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 47507

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
. rKenic	10.0	5.26		mg/Eg		s3	80 - 120

Lab Sample ID: LCSD 670-47507/2-A
Matrix: Solid
Analysis Batch: 47622

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 47507

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
. rKenic	10.0	5.18		mg/Eg		s2	80 - 120	1	20

Lab Sample ID: 670-24553-B-1-A MS
Matrix: Solid
Analysis Batch: 47622

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 47507

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
. rKenic	1.5		10.0	10.0		mg/Eg	o	s1	75 - 125

Lab Sample ID: 670-24553-B-1-B MSD
Matrix: Solid
Analysis Batch: 47622

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 47507

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
. rKenic	1.5		10.0	10.0		mg/Eg	o	s0	75 - 125	1	20

QC Association Summary

Client: HSG LLC
 Project/Site: Spill Support Sampling for S2023030

Job ID: 670-24474-1
 SDG: T202308-45703-3033

Metals

Prep Batch: 47507

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-24474-1	S2023030-0-6 inch	Total/NA	Solid	3050B	
670-24474-2	S2023030-6-12 inch	Total/NA	Solid	3050B	
MB 670-47507/3-A	Method Blank	Total/NA	Solid	3050B	
LCS 670-47507/1-A	Lab Control Sample	Total/NA	Solid	3050B	
LCSD 670-47507/2-A	Lab Control Sample Dup	Total/NA	Solid	3050B	
670-24553-B-1-A MS	Matrix Spike	Total/NA	Solid	3050B	
670-24553-B-1-B MSD	Matrix Spike Duplicate	Total/NA	Solid	3050B	

Analysis Batch: 47622

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-24474-1	S2023030-0-6 inch	Total/NA	Solid	6020B	47507
670-24474-2	S2023030-6-12 inch	Total/NA	Solid	6020B	47507
MB 670-47507/3-A	Method Blank	Total/NA	Solid	6020B	47507
LCS 670-47507/1-A	Lab Control Sample	Total/NA	Solid	6020B	47507
LCSD 670-47507/2-A	Lab Control Sample Dup	Total/NA	Solid	6020B	47507
670-24553-B-1-A MS	Matrix Spike	Total/NA	Solid	6020B	47507
670-24553-B-1-B MSD	Matrix Spike Duplicate	Total/NA	Solid	6020B	47507

General Chemistry

Analysis Batch: 47386

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
670-24474-1	S2023030-0-6 inch	Total/NA	Solid	Moisture	
670-24474-2	S2023030-6-12 inch	Total/NA	Solid	Moisture	
670-24474-1 DU	S2023030-0-6 inch	Total/NA	Solid	Moisture	

Lab Chronicle

Client: HSG LLC
 Project/Site: Spill Support Sampling for S2023030

Job ID: 670-24474-1
 SDG: T202308-45703-3033

Client Sample ID: S2023030-0-6 inch

Lab Sample ID: 670-24474-1

Date Collected: 08/03/23 01:00

Matrix: Solid

Date Received: 08/04/23 15:50

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			47386	08/07/23 12:52	JA	EET ORL

Client Sample ID: S2023030-0-6 inch

Lab Sample ID: 670-24474-1

Date Collected: 08/03/23 01:00

Matrix: Solid

Date Received: 08/04/23 15:50

Percent Solids: 92.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.501 g	50 mL	47507	08/08/23 09:09	JR	EET ORL
Total/NA	Analysis	6020B		5			47622	08/08/23 13:21	JA	EET ORL

Client Sample ID: S2023030-6-12 inch

Lab Sample ID: 670-24474-2

Date Collected: 08/03/23 01:05

Matrix: Solid

Date Received: 08/04/23 15:50

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			47386	08/07/23 12:52	JA	EET ORL

Client Sample ID: S2023030-6-12 inch

Lab Sample ID: 670-24474-2

Date Collected: 08/03/23 01:05

Matrix: Solid

Date Received: 08/04/23 15:50

Percent Solids: 90.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.514 g	50 mL	47507	08/08/23 09:09	JR	EET ORL
Total/NA	Analysis	6020B		5			47622	08/08/23 13:24	JA	EET ORL

Laboratory References:

EET ORL = Eurofins Orlando, 481 Newburyport Avenue, Altamonte Springs, FL 32701, TEL (407)339-5984

Accreditation/Certification Summary

Client: HSG LLC
Project/Site: Spill Support Sampling for S2023030

Job ID: 670-24474-1
SDG: T202308-45703-3033

Laboratory: Eurofins Orlando

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Florida	NELAP	E83018	06-30-24

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Method Summary

Client: HSG LLC
Project/Site: Spill Support Sampling for S2023030

Job ID: 670-24474-1
SDG: T202308-45703-3033

Method	Method Description	Protocol	Laboratory
6020B	Metals (ICP/MS)	SW846	EET ORL
Moisture	Percent Moisture	EPA	EET ORL
3050B	Preparation, Metals	SW846	EET ORL

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET ORL = Eurofins Orlando, 481 Newburyport Avenue, Altamonte Springs, FL 32701, TEL (407)339-5984



Environmental Sample Chain Of Custody

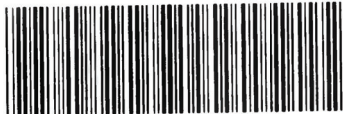
Kennedy Space Center, FL 32899

Task Number:T202308-45703-3033

Task Definition:Spill Support Sampling for S2023030

Results Due Date:8/17/2023

Charge String:NCNASA.1013.4060Z.CSO.S2023030

Comment	Custody
<p>Total Container Count: 2 Total Sample Count: 2 Container Types: 2 - 8 oz clear glass jar</p> <p>Child Development Center (CDC) Soil Samples</p> <div style="text-align: right; margin-top: 20px;">  670-24474 Chain of Custody </div>	<p>Sample</p>
	<p>Digitally signed by kemconteam.ksc.nasa.gov Date: 2023.08.03 13:57:46 -04:00 Reason: Sampled by: John Leslie Williams</p> <p>Sample Storage:Cool to 4 Deg. C Signature:John Leslie Williams</p>
	<p>Concur</p>
	<p>Digitally signed by kemconteam.ksc.nasa.gov Date: 2023.08.03 14:22:09 -04:00 Reason: Concurred by: Sarah S Hausman</p>
	<p>Courier</p>
	<p>Courier: Date: Time: Signature:</p>
<p>Laboratory</p>	
<p>Laboratory:Eurofins ET Date: 8/19/23 Time: 1550 Signature: Amyc [Signature]</p>	

center 35/30 596



Sample Label	Grab/Comp	Sample Date Time	Volume	Sample Matrix	No. Count	Minutes	EPA 6020B Arsenic
S2023030-0-6inch	Grab	8/3/2023 1:00:00 PM	0 grams	Soil	1		X
S2023030-6-12inch	Grab	8/3/2023 1:05:00 PM	0 grams	Soil	1		X

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Login Sample Receipt Checklist

Client: HSG LLC

Job Number: 670-24474-1
SDG Number: T202308-45703-3033

Login Number: 24474

List Number: 1

Creator: Bittle, David W

List Source: Eurofins Orlando

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Appendix C: Disposal Manifests

Follott (P)

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of 1	3. Emergency Response Phone	4. Waste Tracking Number
5. Generator's Name and Mailing Address Kennedy Space Center John F Kennedy Space Center, FL 32899		Generator's Site Address (if different than mailing address) KDC 06-0883 John F Kennedy Space Center, FL		
6. Transporter 1 Company Name Alpha Omega Training and Compliance, Inc.		U.S. EPA ID Number		
7. Transporter 2 Company Name		U.S. EPA ID Number		
8. Designated Facility Name and Site Address Waste Connections 1501 Omni Way S. Goud, FL 34773 907-891-3720		U.S. EPA ID Number		
9. Waste Shipping Name and Description		10. Containers		11. Total Quantity
		No.	Type	12. Unit Wt./Vol.
1. Non-RCRA, Non-DOT Regulated Material		01	MIS	Y
2.				
3.				
4.				
13. Special Handling Instructions and Additional Information contaminated soil		WCM Customer Alpha Omega Training and Compliance P.O. Box 236727 Cocoa, FL 32923		
14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.				
Generator's/Offoror's Printed/Typed Name E.L. Coyle		Signature <i>[Signature]</i>		Month Day Year 8 14 23
15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____				
16. Transporter Acknowledgment of Receipt of Materials				
Transporter 1 Printed/Typed Name Bryan Hamilton		Signature <i>[Signature]</i>		Month Day Year 8 14 23
Transporter 2 Printed/Typed Name		Signature		Month Day Year
17. Discrepancy				
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection				
17b. Alternate Facility (or Generator)		Manifest Reference Number: _____ U.S. EPA ID Number _____		
Facility's Phone:				
17c. Signature of Alternate Facility (or Generator)		Month Day Year		
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a				
Printed/Typed Name		Signature		Month Day Year

JED LANDFILL
 WASTE CONNECTIONS OF GSCEDLA
 1501 OMRI WAY
 ST. CLOUD, FL 34773

Weighted: KAYLA

Deposit: KAYLA

BILL TO: 2740
 ALPHA-OMEGA TRAINING AND COMPL
 P. O. BOX 236727
 COCOA FL 32923

Vehicle ID:
 Reference: 23-125
 BILL TO: NASA-KENNEDY SPACE CENTER

WO/INFEST: 7543-NM#

ROUTE/PO#: NASA-KENNEDY SPACE CENTER

PROFILE#: 23-125

Origin: BREVARD

DATE IN: 08/21/2023 TIME IN: 14:45:25
 DATE OUT: 08/21/2023 TIME OUT: 15:27:31

INBOUND TICKET Number: 01-00336859

SCALE 2 GROSS WT. 65220 LB
 SCALE 3 TARE WT. 37520 LB
 NET WEIGHT 27700 LB

Qty	Description	Amount
13.850	Contaminated Soil	
1.000	Processing Fee	

2. Page 1 of		3. Emergency Response Phone		4. Waste Tracking Number	
Generator's Site Address (if different than mailing address) RDC 46-0883 John F Kennedy Space Center, FL nter. FL 32899					
Appliance, etc.				U.S. EPA ID Number	
				U.S. EPA ID Number	
				U.S. EPA ID Number	
		10. Containers		11. Total Quantity	12. Unit Wt/Vol.
		No.	Type		
		1	DRUM	15	Y
13. Description of Contents (if different than shipping name) RDC Box 236727 Cocoa, FL 32923					

Contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, transport according to applicable international and national governmental regulations.

Generators/Originator's Printed/Typed Name: E. L. Coyle Signature: [Signature] Month: 8 Day: 21 Year: 23

15. International Shipments Import to U.S. Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____

16. Transporter Acknowledgment of Receipt of Materials
 Transporter Signature (for exports only): _____

Transporter 1 Printed/Typed Name: [Signature] Signature: [Signature] Month: 8 Day: 21 Year: 23

Transporter 2 Printed/Typed Name: _____ Signature: _____ Month: _____ Day: _____ Year: _____

17. Discrepancy
 17a. Discrepancy Indication Space Quantity Type Residue Partial Rejection Full Rejection

Manifest Reference Number: _____ U.S. EPA ID Number: _____

17b. Alternate Facility (or Generator) Facility's Phone: _____

17c. Signature of Alternate Facility (or Generator) _____ Month: _____ Day: _____ Year: _____

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
 Printed/Typed Name: [Signature] Signature: [Signature] Month: 8 Day: 21 Year: 23

Rupoff (2)

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of 1	3. Emergency Response Phone	4. Waste Tracking Number
	5. Generator's Name and Mailing Address NASA - Kennedy Space Center John F. Kennedy Space Center, FL 32899		Generator's Site Address (if different than mailing address) KDC MC-0883 John F Kennedy Space Center, FL	
6. Transporter 1 Company Name Alpha Omega Training and Compliance, Inc.	Generator's Phone:			U.S. EPA ID Number
7. Transporter 2 Company Name				U.S. EPA ID Number
8. Designated Facility Name and Site Address Waste Connections 1501 Omni Way St. Cloud, FL 34773	Facility's Phone: 807-891-3720			U.S. EPA ID Number
9. Waste Shipping Name and Description	10. Containers		11. Total Quantity	12. Unit Wt./Vol.
	No.	Type		
	1.	1 CM ^{III}	15	Y
	2.			
	3.			
4.				
13. Special Handling Instructions and Additional Information Waste profile number 73-125 contaminated soil WCH Customer Alpha Omega Training and Compliance P.O. Box 296727 Cocoa, FL 32923				
14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.				
Generator's/Offoror's Printed/Typed Name Robert Boyle		Signature <i>[Signature]</i>		Month Day Year 8 21 15
15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____				
16. Transporter Acknowledgment of Receipt of Materials				
Transporter 1 Printed/Typed Name BRIANA HAMILTON		Signature <i>[Signature]</i>		Month Day Year 8 21 15
Transporter 2 Printed/Typed Name		Signature		Month Day Year
17. Discrepancy				
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection				
17b. Alternate Facility (or Generator) Manifest Reference Number: _____ U.S. EPA ID Number _____				
17c. Signature of Alternate Facility (or Generator) _____ Month Day Year _____				
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a				
Printed/Typed Name		Signature		Month Day Year

Rolloff #3

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number <i>17758</i> ¹¹⁴ <i>17756</i>
5. Generator's Name and Mailing Address <i>Kennedy Space Center</i> <i>John F. Kennedy Space Center, FL 32899</i>		Generator's Site Address (if different than mailing address) <i>John F. Kennedy Space Center, FL</i>		
6. Transporter 1 Company Name <i>Alpha Omega Training and Compliance, Inc.</i>		U.S. EPA ID Number		
7. Transporter 2 Company Name		U.S. EPA ID Number		
8. Designated Facility Name and Site Address <i>Waste Connections</i> <i>1501 Omni Way</i> <i>407-891-3720</i> <i>St. Cloud, FL 34773</i>		U.S. EPA ID Number		
9. Waste Shipping Name and Description		10. Containers		11. Total Quantity
		No.	Type	12. Unit Wt./Vol.
1. <i>Non-RCRA, Non-DOT Regulated Material</i>		<i>1</i>	<i>UM</i>	<i>15</i>
2.				
3.				
4.				
13. Special Handling Instructions and Additional Information <i>Waste profile number 23-125</i> <i>contaminated soil</i> <i>Box # (S1730)</i>		<i>WCI Customer Alpha Omega Training and Compliance</i> <i>P.O. Box 236727</i> <i>Cocoa, FL 32923</i>		
14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.				
Generator's/Offoror's Printed/Typed Name <i>Michael J. Hovak</i>		Signature <i>Michael J. Hovak</i>		Month Day Year <i>08 23 23</i>
15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____				
16. Transporter Acknowledgment of Receipt of Materials				
Transporter 1 Printed/Typed Name <i>Briana Hamilton</i>		Signature <i>Briana Hamilton</i>		Month Day Year <i>08 22 23</i>
Transporter 2 Printed/Typed Name		Signature		Month Day Year
17. Discrepancy				
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection				
Manifest Reference Number:				
17b. Alternate Facility (or Generator)		U.S. EPA ID Number		
Facility's Phone:				
17c. Signature of Alternate Facility (or Generator)		Month Day Year		
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a				
Printed/Typed Name		Signature		Month Day Year

4

3

JED LANDFILL
WASTE CONNECTIONS OF OSCEOLA
1501 OMNI WAY
ST. CLOUD, FL 34773

Weighed: KAYLA

Deposit: CAREN

BILL TO: 2740
ALPHA-OMEGA TRAINING AND COMPL
P. O. BOX 236727
COCOA FL 32923

Vehicle ID:
Reference: 23-125
BILLTO: NASA-KENNEDY SPACE CENTER

WO/MFEST: 7543-17756

ROUTE/PO#: NASA-KENNEDY SPACE CENTER

PROFILE#: 23-125

Origin: BREVARD

DATE IN: 08/23/2023 TIME IN: 09:56:35
DATE OUT: 08/23/2023 TIME OUT: 10:39:44

INBOUND TICKET Number: 01-00337213

SCALE 2 GROSS WT. 67100 LB
SCALE 3 TARE WT. 37340 LB
NET WEIGHT 29760 LB

Qty Description Amount
14.880 Contaminated Soil

2. Page 1 of		3. Emergency Response Phone		4. Waste Tracking Number 17756 17756	
Generator's Site Address (if different than mailing address) John F Kennedy Space Center, FL					
U.S. EPA ID Number				U.S. EPA ID Number	
U.S. EPA ID Number				U.S. EPA ID Number	
10. Containers		11. Total Quantity	12. Unit Wt./Vol.		
No.	Type				
1	CM	15	Y		
WCI Customer Alpha Omega Training and Com					
PO Box 236727 Cocoa, FL 32923					

X

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeor's Printed/Typed Name: MICHAEL J. HOVANIC
Signature: [Signature]
Month: 08 Day: 23 Year: 23

15. International Shipments Import to U.S. Export from U.S.
Port of entry/exit: _____
Date leaving U.S.: _____

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: [Name]
Signature: [Signature] Month: 08 Day: 23 Year: 23
Transporter 2 Printed/Typed Name: _____
Signature: _____ Month: _____ Day: _____ Year: _____

17. Discrepancy
17a. Discrepancy Indication Space Quantity Type Residue Partial Rejection Full Rejection

17b. Alternate Facility (or Generator) Manifest Reference Number: _____ U.S. EPA ID Number: _____
Facility's Phone: _____
17c. Signature of Alternate Facility (or Generator) Month: _____ Day: _____ Year: _____

18. Designated Facility Owner or Operator. Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: [Name] Signature: [Signature] Month: 08 Day: 23 Year: 23

Follow # 4

GENERATOR	NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number	2. Page 1 of 1	3. Emergency Response Phone	4. Waste Tracking Number 17757			
	5. Generator's Name and Mailing Address NASA - Kennedy Space Center				Generator's Site Address (if different than mailing address) KDC 06-0883 John F Kennedy Space Center, FL				
	Generator's Phone: John F Kennedy Space Center, FL 32899								
	6. Transporter 1 Company Name Alpha Omega Training and Compliance, Inc.				U.S. EPA ID Number				
	7. Transporter 2 Company Name				U.S. EPA ID Number				
TRANSPORTER INT'L	8. Designated Facility Name and Site Address Waste Connections 1501 Omni Way St. Cloud, FL 34773				U.S. EPA ID Number				
	Facility's Phone: 807-891-3720								
	9. Waste Shipping Name and Description		10. Containers		11. Total Quantity	12. Unit Wt./Vol.			
			No.	Type					
	1. Non-RCRA, Non-DOT Regulated Material		1	55 ^{TI}	15	Y			
DESIGNATED FACILITY	13. Special Handling Instructions and Additional Information Waste profile number 23-125 Contaminated soil WCI Customer Alpha Omega Training and Compliance P.O. Box 236727 Cocoa, FL 32923 <i>Waste in 2013 03/27</i>								
	14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.								
	Generator's/Offoror's Printed/Typed Name MICHAEL J. HCVANIK				Signature <i>[Signature]</i>		Month	Day	Year
							08	22	23
	15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.				Port of entry/exit: Date leaving U.S.:				
TRANSPORTER	16. Transporter Acknowledgment of Receipt of Materials								
	Transporter 1 Printed/Typed Name Diana J. [unclear]				Signature <i>[Signature]</i>		Month	Day	Year
							08	22	23
Transporter 2 Printed/Typed Name				Signature		Month	Day	Year	
17. Discrepancy									
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection									
Manifest Reference Number:									
17b. Alternate Facility (or Generator)				U.S. EPA ID Number					
Facility's Phone:									
17c. Signature of Alternate Facility (or Generator)				Signature		Month	Day	Year	
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a									
Printed/Typed Name				Signature		Month	Day	Year	

3

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JED LANDFILL
WASTE CONNECTIONS OF OSCEOLA
1501 GANE WAY
ST. CLOUD, FL 34773

2. Page 1 of 1	3. Emergency Response Phone	4. Waste Tracking Number 17757
----------------	-----------------------------	-----------------------------------

Generator's Site Address (if different than mailing address)
Center
KIDC M6-0883
John F Kennedy Space Center, FL
Center, FL 32899

Compliance, Inc.	U.S. EPA ID Number
	U.S. EPA ID Number
ptions	U.S. EPA ID Number
by 34773	

Material	10. Containers		11. Total Quantity	12. Unit W/L/Vol.	
	No.	Type			
	1	CM	15	Y	

MFL Container Medical Chemical Training and Co
P.O. Box 236727
Cocoa, FL 32923

Weighted: CAREN
Deposit: KAYLA
BILL TO: 2740
ALPHA-OMEGA TRAINING AND COMPL
P. O. BOX 236727
COCOA FL 32923
Vehicle ID:
Reference: 23-125
BILL TO: NASA-KENNEDY SPACE CENTER
WO/MFEST: 7543-17757
ROUTE/PO#: NASA-KENNEDY SPACE CENTER
PROFILE#:: 23-125
Origin: BREVARD
DATE IN: 08/22/2023 TIME IN: 13:29:50
DATE OUT: 08/22/2023 TIME OUT: 13:50:16
INBOUND TICKET Number: 01-00337059
SCALE 2 GROSS WT. 70920 LB
SCALE 3 TARE WT. 34540 LB
NET WEIGHT 36380 LB

Qty	Description	Amount
18.190	Contaminated Soil	

X
The contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

TRANSPORTER	Generator's/Officer's Printed/Typed Name Michael J. Hovanik	Signature <i>Michael J. Hovanik</i>	Month 08	Day 22	Year 23	
	15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.	Port of entry/exit:	Date leaving U.S.:			
TRANSPORTER	16. Transporter Acknowledgment of Receipt of Materials	Transporter 1 Printed/Typed Name BRAND Hamilton	Signature <i>Brand Hamilton</i>	Month 08	Day 22	Year 23
	Transporter 2 Printed/Typed Name	Signature	Month	Day	Year	
DESIGNATED FACILITY	17. Discrepancy	Manifest Reference Number:				
	17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection	U.S. EPA ID Number				
	17b. Alternate Facility (or Generator)	Facility's Phone:				
	17c. Signature of Alternate Facility (or Generator)	Month Day Year				
	18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a					
	Printed/Typed Name	Signature	Month	Day	Year	

JED LANDFILL
 WASTE CONNECTIONS OF OSCEOLA
 1501 OMNI WAY
 ST. CLOUD, FL 34773

Weighed: KAYLA

Deposit: KAYLA

BILL TO: 2740
 ALPHA-OMEGA TRAINING AND COMPL.
 P. O. BOX 236727
 COCOA FL 32923

Vehicle ID:
 Reference: 23-125
 BILLTO: NASA-KENNEDY SPACE CENTER

WO/MEST: 7543-NM#

ROUTE/PO#: NASA-KENNEDY SPACE CENTER

PROFILE#:: 23-125

Origin: BREVARD

DATE IN: 08/21/2023 TIME IN: 14:45:25
 DATE OUT: 08/21/2023 TIME OUT: 15:27:31

INBOUND TICKET Number: 01-00336859

SCALE 2 GROSS WT. 65220 LB
 SCALE 3 TARE WT. 37520 LB
 NET WEIGHT 27700 LB

Qty	Description	Amount
13.850	Contaminated Soil	
1.000	Processing Fee	

2. Page 1 of 1		3. Emergency Response Phone		4. Waste Tracking Number	
Generator's Site Address (if different than mailing address) KDC 46-0883 John F Kennedy Space Center, FL enter, FL 32899					
Compliance, Inc.				U.S. EPA ID Number	
				U.S. EPA ID Number	
				U.S. EPA ID Number	
		10. Containers		11. Total Quantity	12. Unit Wt./Vol.
		No.	Type		
Material		1	CM	15	Y
Customer Alpha Omega Training and Compliance P.O. Box 236727 Cocoa, FL 32923					

Contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, transport according to applicable international and national governmental regulations.

TRANSPORTER INT'L	Generators/Officer's Printed/Typed Name E. L. Coyle		Signature [Signature]		Month	Day	Year
	15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.		Port of entry/exit:		Date leaving U.S.:		
TRANSPORTER	16. Transporter Acknowledgment of Receipt of Materials						
	Transporter 1 Printed/Typed Name		Signature		Month	Day	Year
	Transporter 2 Printed/Typed Name		Signature		Month	Day	Year
DESIGNATED FACILITY	17. Discrepancy						
	17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection						
	17b. Alternate Facility (or Generator)			Manifest Reference Number:			
	Facility's Phone:			U.S. EPA ID Number			
17c. Signature of Alternate Facility (or Generator)					Month	Day	Year
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a							
Printed/Typed Name		Signature		Month	Day	Year	

2

2

JED LANDFILL
WASTE CONNECTIONS OF OSCEOLA
1501 OMNI WAY
ST. CLOUD, FL 34773

Weighed: CAREN

Deposit: KAYLA

BILL TO: 2740
ALPHA-OMEGA TRAINING AND COMPL
P. O. BOX 236727
COCOA FL 32923

Vehicle ID:
Reference: 23-125
BILL TO: NASA-KENNEDY SPACE CENTER

WO/MFEST: 7543-NM#

ROUTE/PO#: NASA-KENNEDY SPACE CENTER

PROFILE#: 23-125

Origin: BREVARD

DATE IN: 08/22/2023 TIME IN: 08:57:02
DATE OUT: 08/22/2023 TIME OUT: 09:26:28

BOUND TICKET Number: 01-00336982

SCALE 1 GROSS WT. 72080 LB
SCALE 3 TARE WT. 36100 LB
NET WEIGHT 35980 LB

Description Amount
7.990 Contaminated Soil

2. Page 1 of 1		3. Emergency Response Phone		4. Waste Tracking Number	
Generator's Site Address (if different than mailing address)					
Center		KDC M6-0883 John F Kennedy Space Center, FL			
Center, R. 32899					
Compliance, Inc.				U.S. EPA ID Number	
				U.S. EPA ID Number	
				U.S. EPA ID Number	
10. Containers		11. Total Quantity	12. Unit Wt./Vol.		
No.	Type				
1	CM ³	15	Y		
Material					
Customer Alpha Omega Training and Compliance P.O. Box 236727 Cocoa, R. 32923					

are that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Officer's Printed/Typed Name: *K. Coyle* Signature: *[Signature]* Month: 8 Day: 21 Year: 23

15. International Shipments Import to U.S. Export from U.S. Port of entry/exit: Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: *BRIANA HAMILTON* Signature: *[Signature]* Month: 8 Day: 22 Year: 23
Transporter 2 Printed/Typed Name: Signature: Month: Day: Year:

17. Discrepancy
17a. Discrepancy Indication Space Quantity Type Residue Partial Rejection Full Rejection
Manifest Reference Number:

17b. Alternate Facility (or Generator) U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) Month: Day: Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Signature: Month: Day: Year:

3

3

JED LANDFILL
 WASTE CONNECTIONS OF OSCEOLA
 1501 OMNE WAY
 ST. CLOUD, FL 34773

2. Page 1 of
 1

3. Emergency Response Phone

4. Waste Tracking Number
 17757

Generator's Site Address (if different than mailing address)

KCDC M6-0883
 John F Kennedy Space Center, FL

Center, FL 32899

U.S. EPA ID Number

U.S. EPA ID Number

U.S. EPA ID Number

1543
 10520

Weighed: CAREN

Deposit: KAYLA

BILL TO: 2740

ALPHA-OMEGA TRAINING AND COMPL
 P. O. BOX 236727
 COCOA FL 32923

Vehicle ID:

Reference: 23-125

BILL TO: NASA-KENNEDY SPACE CENTER

WO/MFEST: 7543-17757

ROUTE/PO#: NASA-KENNEDY SPACE CENTER

PROFILE#: 23-125

Origin: BREVARD

DATE IN: 08/22/2023 TIME IN: 13:29:50

DATE OUT: 08/22/2023 TIME OUT: 13:50:16

INBOUND TICKET Number: 01-00337059

SCALE 2 GROSS WT. 70920 LB
 SCALE 3 TARE WT. 34540 LB
 NET WEIGHT 36380 LB

Qty Description Amount
 18.190 Contaminated Soil

Material	10. Containers		11. Total Quantity	12. Unit Wt./Vol.
	No.	Type		
	1	CM ³	15	Y

WCI Customer Alpha Omega Training and Compliance

P.O. Box 236727
 Cocoa, FL 32923

RT >

marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offor's Printed/Typed Name: MICHAEL J. HOVANIL Signature: [Signature] Month: 08 Day: 22 Year: 23

15. International Shipments Import to U.S. Export from U.S. Port of entry/exit: Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
 Transporter 1 Printed/Typed Name: BRIANNA HAMILTON Signature: [Signature] Month: 08 Day: 22 Year: 23
 Transporter 2 Printed/Typed Name: Signature: Month: Day: Year:

17. Discrepancy
 17a. Discrepancy Indication Space Quantity Type Residue Partial Rejection Full Rejection
 Manifest Reference Number:

17b. Alternate Facility (or Generator) U.S. EPA ID Number
 Facility's Phone:

17c. Signature of Alternate Facility (or Generator) Month: Day: Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Signature: Month: Day: Year:

4

4

NON-HAZARDOUS WASTE
JED LANDFILL
 WASTE CONNECTIONS OF OSCEOLA
 1501 OMNI WAY
 ST. CLOUD, FL 34773

Weighed: KAYLA

Deposit: CAREN

BILL TO: 2740
 ALPHA-OMEGA TRAINING AND COMPL
 P. O. BOX 236727
 COCOA FL 32923

Vehicle ID:
 Reference: 23-125
 BILL TO: NASA-KENNEDY SPACE CENTER

WO/MFEST: 7543-17756

ROUTE/PO#: NASA-KENNEDY SPACE CENTER

PROFILE#: 23-125

Origin: BREVARD

DATE IN: 08/23/2023 TIME IN: 09:56:35
 DATE OUT: 08/23/2023 TIME OUT: 10:39:44

INBOUND TICKET Number: 01-00337213

SCALE 2 GROSS WT. 67100 LB
 SCALE 3 TARE WT. 37340 LB
 NET WEIGHT 29760 LB

Qty	Description	Amount
14.880	Contaminated Soil	

X

2. Page 1 of		3. Emergency Response Phone		4. Waste Tracking Number 17758 MH 17756	
Generator's Site Address (if different than mailing address) K.L.C. Mb-0883 John F Kennedy Space Center, FL enter, R. 32899					
Compliance, Inc.				U.S. EPA ID Number	
				U.S. EPA ID Number	
				U.S. EPA ID Number	
		10. Containers		11. Total	12. Unit
		No.	Type	Quantity	Wt./Vol.
		1	CM ^T	15	Y
Material					
W&I Customer Alpha Omega Training and Compliance P.O. Box 236727 Cocoa, FL 32923					

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offero's Printed/Typed Name <i>MICHAEL J. HOVANIC</i>		Signature <i>[Signature]</i>		Month	Day	Year
				08	23	23

15. International Shipments Import to U.S. Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name <i>[Signature]</i>	Signature <i>[Signature]</i>	Month	Day	Year
Transporter 2 Printed/Typed Name	Signature			

17. Discrepancy

17a. Discrepancy Indication Space Quantity Type Residue Partial Rejection Full Rejection

Manifest Reference Number: _____

17b. Alternate Facility (or Generator) U.S. EPA ID Number _____

Facility's Phone: _____

17c. Signature of Alternate Facility (or Generator) Month Day Year _____

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name <i>[Signature]</i>	Signature <i>[Signature]</i>	Month	Day	Year
		08	23	23

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APPENDIX G
INTERIM MEASURE WORK PLAN

**KSC CHILD DEVELOPMENT CENTER
(PRL 149)
INTERIM MEASURES WORK PLAN
KENNEDY SPACE CENTER, FLORIDA**

Prepared for:



**National Aeronautics and Space Administration
Kennedy Space Center, Florida**

**June 2024
Revision 0**

Prepared by:

**HydroGeoLogic, Inc.
2405 Courtenay Parkway, Suite 203
Merritt Island, FL 32953
(407) 737-1881**

INTERIM MEASURES WORK PLAN FOR LEAD AND BAP EQUIVALENTS - CONTAMINATED SOIL

Facility Name: Kennedy Space Center (KSC) Child Development Center (KCDC),
KSC, Florida

PRL No.: 149

Consultant: Hydrogeologic, Inc.

NASA RPM: Ms. Deda Johansen

CAMP Date: July 30, 2024

GENERAL

1. What is the purpose of this proposed Interim Measures? Include a list of the parameter groups being addressed by the Interim Measure.

The purpose of the KCDC Potential Release Location (PRL) 149 interim measures (IM) is to mitigate human health receptor risk associated with arsenic (As) impacts in exposed soil exceeding the residential and industrial soil cleanup target levels (SCTLs). The human health risks are quantified by comparing the As concentrations to the state of Florida residential and industrial direct exposure SCTLs.

2. Describe facility usage.

The KCDC site is located on the southwestern portion of the KSC industrial area. The facility is comprised of classrooms, offices, open play areas, staff lounge, lunch room, kitchen, and outside playgrounds. The outside playground areas are located on the northeast side of the building and enclosed with plastic privacy fencing. Within the fenced area, the playground consists of grassy areas with picnic tables, areas sealed with a pour-in-place rubberized surface, and concrete walkways. The playground equipment currently consists of modular plastic structures.

3. Is the facility normally occupied? Describe how site controls will be performed and how area workers will be informed of health and safety issues associated with the IM.

There are full-time personnel on site from 0600 to 1800 hours Monday through Friday. The KCDC facility manager and the Child Development Center Administrator will be notified prior to any IM activities. IM activities must be coordinated in advance and weekend work may be required. This notification will also outline the health and safety practices that will be utilized during the IM. Any worker who may access the site on an infrequent basis for a short period of time will be informed of health and safety issues through the proper chain of command. The existing Land Use Control Implementation Plan (LUCIP) is adequate to address the remaining contamination exceeding the residential SCTL (rSCTL) beneath the rubberized play surface and its concrete pad.

The KCDC is not considered ecological habitat.

INTERIM MEASURES INFORMATION

4. List the specific contaminants being addressed by the IM, maximum facility concentrations, and the associated proposed cleanup goals and source(s) (iSCTL, etc.)

Contaminant of Concern	Matrix	Maximum Concentration (mg/kg)	Cleanup Goal (mg/kg)	Cleanup Goal Source
As	Soil	18.4	2.1	State of Florida Industrial SCTL

Definitions: mg/kg = milligram per kilogram

5. Will a LUCIP be required following completion of the IM (i.e., will residual concentrations of any contaminant exceed applicable residential criteria)?

The existing LUCIP is in place for soils above the rSCTL but below the iSCTL for As after the soil IM.

6. List each proposed excavation area, contaminants of concern, area of excavation, and associated depth intervals. Include figure(s) showing the horizontal extent of each proposed excavation area.

Area	Contaminant of Concern	Concentration (mg/kg)	Area of Excavation	Depth Interval (ft bgs)	Excavation Volume	Comments
LOC 2 (SB0048 and SB007)	As	6.7 mg/kg	147.09 ft ²	0-0.5 ft bgs	2.72 cubic yards	Soil containing exceedances to rSCTL concentrations (2.1 mg/kg)
LOC 2 (SB0041)	As	5.7 mg/kg	149.25 ft ²	0.5 ft bgs	2.72 cubic yards	Soil containing exceedances to rSCTL concentrations
LOC 4 (SB0077, SB0078, SB0079, SB0068, SB0081, SB0074, SB0083, SB0087, and SB0091)	As	2.29 mg/kg to 18.4 mg/kg	4 footprints that total 903.76 ft ²	0-0.5 and 0-1.0 ft bgs	17.4 cubic yards	Soil containing exceedances to iSCTL concentrations (12 mg/kg)

Definitions: ft² = square feet ft = feet bgs = below ground surface

7. Will confirmation samples be required? If so, describe. Consider the need for both vertical and

horizontal extent samples and indicate sampling frequencies (number of samples per square foot, etc.).

Yes, confirmation samples are required in LOC 2 for SB007 and SB0041. Historical soil borings have not been delineated vertically to below the rSCTL. LOC 2 SB0048 and LOC 4 IM footprint areas have all been both vertically and horizontally delineated, however a confirmatory sample east of SB0077 is planned to verify the floor meets the rSCTL.

8. Will shoring or dewatering be required? If so, describe.

No shoring or dewatering will be required. The maximum excavation depth is 1.0 feet (ft) below ground surface (bgs).

9. Are there any special decontamination requirements? If so, describe.

Equipment and hand tools that come in contact with contaminated media should be decontaminated by dry brushing in the exclusion zone.

WASTE HANDLING AND DISPOSAL

10. How will the excavated soil be stored prior to disposal?

Drums Roll-offs Other (describe): The IM contractor will direct-load waste into lined roll off containers, transporters will pickup the rolloff containers for shipment to the disposal facility. If a non-contaminated location is used for temporary staging, proper controls, such as lining the stockpile area with visqueen plastic sheeting, would be used to avoid potential contaminant migration. The excavated waste material will be manifested and transported to an approved and certified landfill for disposal.

11. How will miscellaneous debris and decontamination fluids be stored prior to disposal?

Drums Roll-offs Other (describe): Expendable personal protective equipment, plastic sheeting, etc., that comes in contact with the contaminated soil will be disposed of off-site with the contaminated soil. General trash generated during the IM will be placed in KSC dumpsters for disposal by the KSC normal trash removal process. If generated, decontamination fluids will be containerized in drums.

12. Are there any special waste segregation requirements? If so, describe.

No segregation is required for the media and/or associated decontamination fluids, if generated.

13. How will the waste be characterized for disposal?

Prior to IM activities, the proposed landfill will be contacted to confirm required laboratory analysis of waste characterization samples that will be collected. Since the contaminant is metals, the waste characterization sample likely will be analyzed for total PCBs, semivolatile organic compounds, pesticides, herbicides and leachable metals (As, barium, cadmium, chromium, lead, mercury, selenium and silver) by the toxicity characteristic leaching procedure.

14. Are there any special fill characterization or compaction requirements? If so, describe.

Backfill will be analyzed to confirm that it is free from contaminants to meet regulatory requirements. Due to the shallow depth of the excavation (1.0 ft bgs), compaction of backfill material will be completed through the use of onsite equipment with no compaction testing requirements.

OTHER ISSUES

15. Are there any other specific issues, including health and safety, that need to be considered? If so, describe.

- (a) Work will be coordinated with the KCDC Administrator and conducted in a manner that prevents potential exposure of children and staff at the center.
- (b) Dust generation from site activities will be minimized through the use of water suppression.
- (c) The IM contractor will coordinate with the KSC Remediation Project Manager (RPM), appropriate KSC Utility Manager, KCDC Administrator, and Facility Manager to discuss excavation approach around the existing fence. Demarcation of site utilities will be completed prior to the coordination meeting to allow for an accurate discussion on the excavation approach.
- (d) Following the approval of an Excavation Permit request, an underground utility survey utilizing GPR shall be performed by KSC Utility Manager prior to excavation activities to identify known and unknown subsurface utilities and anomalies.
- (e) While the site is less than 1.0 acre in area and does not meet Stormwater Pollution Prevention Plan requirements, Best Management Practices will be utilized during all intrusive activities as needed. Installation of erosion and sediment controls are recommended.
- (f) The contractor will complete an Environmental Checklist (KSC Form 21-608) prior to IM activities.
- (g) The contractor will prepare a Site-Specific Health and Safety Plan and conduct a Site Safety Orientation, as well as a Nuts and Bolts Meeting with NASA Safety.
- (h) The KSC RPM and contractor will meet with the Facility Manager and KCDC Administrator to discuss the project approach, coordinate activities, and establish work zones.
- (i) The contractor will submit waste profile information and disposal authorization request to the disposal facility, following review and approval by the KSC RPM.
- (j) Each waste manifest will be assigned a unique number and completed/signed by a Government Representative for each waste shipment. All shipments of manifested material are tracked within a Truck Log and truck numbers are captured on their respective manifest.
- (k) The off-site disposal facility will complete disposal and/or treatment of the waste in accordance with its federal, state, and local permits. The original manifests, completed by the facility, and Certificate(s) of Disposal shall be returned to the KSC RPM within 45 days. Documentation related to waste transportation and disposal shall be supplied to the KSC RPM.
- (l) The total excavation area is approximately 903 square ft. No clearing will be needed, but

objects may require moving in order to access the excavation footprints. HGL will coordinate with the KCDC Facility Manager and KCDC Administrator if large items need to be moved.

(m) The contractor will re-grade and place backfill and sod on the southeast, backfill and gravel on the north to the excavation areas.

16. Work Schedule. This IM will be contracted and scheduled after the Work Plan is approved.

ATTACHMENTS

Table 1: Coordinates of Soil Borings and Excavation Limits

Figure 1: Site Location Map

Figure 2: Site Layout

Figure 3: LOC 2 Soil Arsenic Assessment and Proposed IM Areas

Figure 4: 2023 Soil Arsenic Assessment/Excavations and Proposed IM Areas

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Table 1
Coordinates of Soil Borings and Excavation Limits
2023 Confirmatory Sampling Report
KSC Child Development Center, Kennedy Space Center, Florida

Sample Location	Location ID	Matrix	Easting (m)	Northing (m)
LOC 2 Areas beneath the Wooden Fences	SB0048	Soil	232933.49	463557.66
	SB0053		232936.92	463557.34
	SB0054		232930.76	463557.28
Arsenic Contamination Release Investigation	SB0068	Soil	232953.54	463540.72
	SB0074		232951.81	463527.32
	SB0077		232953.95	463543.69
	SB0078		232956.49	463540.38
	SB0079		232953.26	463537.68
	SB0081		232952.27	463530.28
	SB0082		232955.07	463527.02
	SB0083		232951.44	463524.29
	SB0085		232954.36	463546.60
	SB0087		232953.01	463535.75
	SB0090		232952.54	463533.14
	SB0091		232950.84	463521.28
	SB0092		232955.72	463546.36
	SB0093		232954.37	463535.12
	SB0094		232954.23	463531.36
SB0095	232952.68	463519.28		

Notes:

All locations begin with prefix KCDC.

Spatial coordinates provided in U.S. State Plane North American Datum of 1983, Florida East (meters).

Acronyms:

ID = identification

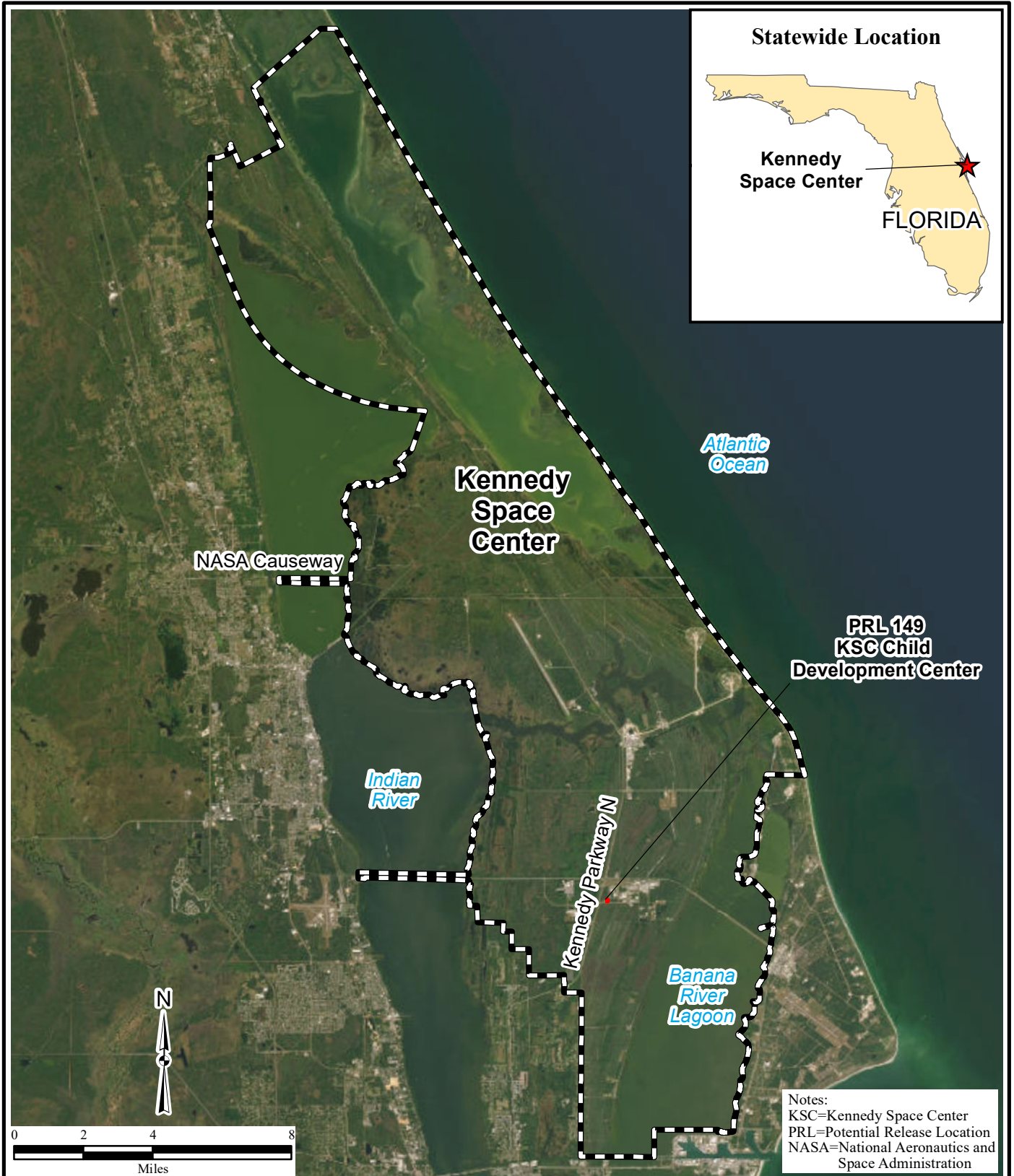
KCDC = KSC Child Development Center

KSC = Kennedy Space Center

LOC = location of concern

m = meters

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\\Gst-srv-01\hglgis\KSC_NS1002\PRL_148(KSCD)\CS and IM Work Plan(2-01)\PRL149_Location.mxd
 12/8/2023 TH
 Source: HGL, NASA
 ArcGIS Online Imagery

Legend





-  Site Location
-  PRL 149 - KSC Child Development Center
-  Kennedy Space Center

Figure 1
Site Location Map

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Figure 2 KSC Child Development Center Site Layout

Legend

 PRL 149 Boundary

Notes:
KCDC=KSC Child Development Center
KSC=Kennedy Space Center
PRL=potential release location

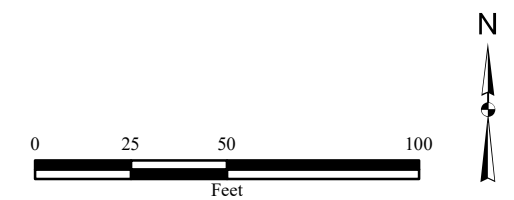
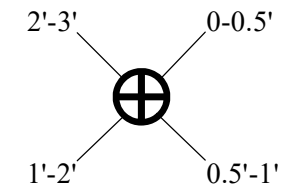


Figure 3
LOC 2
Soil Arsenic Assessment
and Proposed IM Areas



Legend



- Soil Sample Not Collected or Interval Not Analyzed
- Soil Sample Below Residential SCTL
- Soil Sample Exceeds Residential SCTL
- Former Fence
- Proposed Remedial Action Area (0-0.5' ft bgs)
- LOC 2 - Area Beneath Former Wooden Fence
- LOC 4 - Sealed Playground Areas
- 2007 Soil Excavation Area 2 Backfilled with Clean Fill
- PRL 149 Boundary

Notes:
A confirmatory soil sample will be collected near SB0048 and the blue plastic fence following the soil remedial action.
The sidewalk and rubberized play surface provide engineering controls preventing potential human exposure to potential contaminant of concern. In the future if the engineering controls are removed, additional assessment is warranted prior to site closure.
SCTL criteria are from the Final Technical Report: Development of Cleanup Target Levels for Chapter 62-777, Florida Administrative Code, University of Florida, February 2005.
All location IDs begin with KCDC-

*=2007 Soil Sample Locations
ft bgs=feet below ground surface
ID=identification
KCDC=KSC Child Development Center
KSC=Kennedy Space Center
LOC=Location of Concern
PRL=potential release location
SCTL=soil cleanup target level

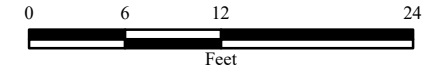
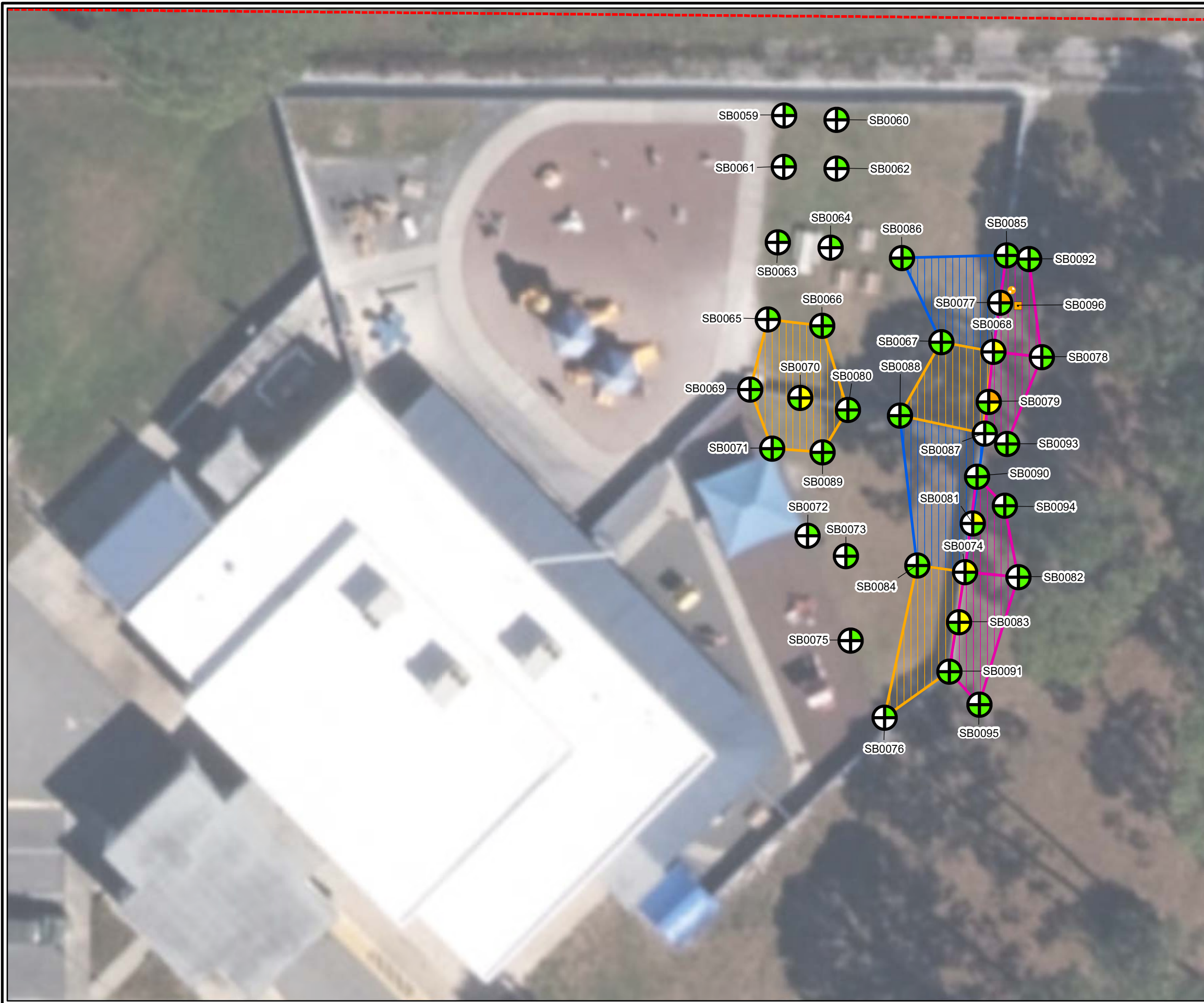
















Figure 4
2023 Soil Arsenic
Assessment/Excavations
and Proposed IM Areas

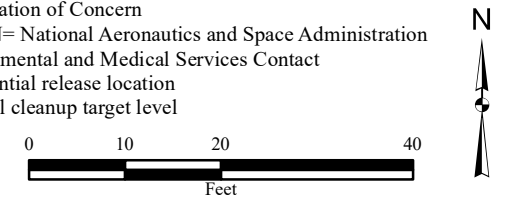


Legend

-  2'-3'
-  0-0.5'
-  1'-2'
-  0.5'-1'
-  Soil Sample Not Collected or Interval Not Analyzed
-  Soil Sample Below Residential SCTL
-  Soil Sample Exceeds Residential SCTL
-  Soil Sample Exceeds Industrial SCTL
-  Proposed Monitoring Well
-  Proposed Confirmatory Floor Sample
-  Excavation Footprint for Arsenic Completed by NEMCON (0-1.0' ft bgs)
-  Excavation Footprint for Arsenic Completed by NEMCON (0-0.5' ft bgs)
-  Proposed Remedial Action Areas
-  PRL 149 Boundary

Notes:
SCTL criteria are from the Final Technical Report: Development of Cleanup Target Levels for Chapter 62-777, Florida Administrative Code, University of Florida, February 2005.
All location IDs begin with KCDC-

ft bgs=feet below ground surface
ID=identification
IM=interim measure
KCDC=KSC Child Development Center
KSC=Kennedy Space Center
LOC=Location of Concern
NEMCON= National Aeronautics and Space Administration
Environmental and Medical Services Contact
PRL=potential release location
SCTL=soil cleanup target level



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5/30/2024 TB
Source: HGL, ArcGIS Online Imagery