APPENDIX A

MONITORING FRAMEWORK MEMORANDUM

MEMORANDUM

To:	Successor Coeur d'Alene Custodial and Work Trust	Date:	March 30, 2018
From:	Heather R. Good, LHG	Project:	0442.06.06
RE:	Monitoring Program Framework East Mission Flats Repository		

Maul Foster & Alongi, Inc., prepared this memorandum on behalf of the Successor Coeur d'Alene Custodial and Work Trust (Coeur d'Alene Trust) to provide a summary of the site location, history, regulatory context, physical setting, and conceptual site model for the East Mission Flats Repository (EMFR). This background information provides a framework for the water quality monitoring that is being conducted at EMFR and is intended to be included in an attachment to the annual water quality monitoring reports. This memorandum will be updated when new information is obtained that significantly changes our understanding of the monitoring framework.

EMFR is located in the Lower Basin of the Coeur d'Alene River (Lower Basin) in Northern Idaho (see Figure 1). The Lower Basin is included in the Bunker Hill Mining and Metallurgical Complex Superfund Site (BHSS). The Lower Basin and EMFR are located in an area of the BHSS identified in the 2002 Record of Decision (ROD) as Operable Unit 3 (U.S. Environmental Protection Agency [USEPA], 2002). Repositories, including EMFR, were constructed for disposal of metals-contaminated soils, sediments, source materials, and treatment residuals generated during cleanup activities in the BHSS. Routine monitoring and evaluation of surrounding environmental conditions are required as part of ongoing EMFR operations.

SITE LOCATION

EMFR occupies a 23-acre parcel in Kootenai County, Idaho. It is located approximately 1,500 feet north of the Coeur d'Alene River and about two miles west of the town of Cataldo, Idaho. EMFR is bounded to the northeast by Canyon Road, southwest by Interstate 90 (I-90), and north and northwest by private property. Old Mission State Park is located about a quarter mile southwest of EMFR, on the other side of I-90.

SITE HISTORY

As much as 100 million tons of mine-waste–impacted sediments have been emplaced or deposited over thousands of acres throughout the BHSS. Mine-waste–related contaminants of concern (COCs) are primarily metals, including arsenic, cadmium, lead, and zinc. In the 1930s through the 1960s, an estimated 6.6 million cubic yards of mine-waste–impacted sediments was dredged from the Coeur d'Alene River and placed on the Cataldo Mission Flats area, a Mine Owners Association site to the west of EMFR (TerraGraphics 2009b). Dredge spoils at the Mine Owners Association site cover an area larger than 130 acres and up to 36 feet thick. Lead concentrations as high as 8,000 milligrams per kilogram have been detected in dredge spoils (Brookstrom et al., 2001). There is no known history of dredge spoils disposal directly on EMFR property (Brookstrom et al., 1999).

Except for utility construction, the EMFR area was undeveloped before the repository was constructed and began receiving waste in 2009. Before construction of the repository, the EMFR area was impacted by metals-contaminated sediments, deposited by the Coeur d'Alene River from historical upstream mining and milling activities (Brookstrom et al., 2001). Historically, mine-waste–impacted sediments were transported by the Coeur d'Alene River and deposited in the area as a result of periodic flooding. Metals concentrations identified in shallow (0 to 4 feet below ground surface [bgs]) fluvial sediments before construction of the repository indicated that the area was contaminated with arsenic, cadmium, lead, and zinc (Golder, 2014). Mining-waste impacts were not identified in native soil below approximately 4 feet bgs (TerraGraphics, 2009a).

Sampling and monitoring activities began in 2007 in the EMFR area. Sampling data collected between 2007 and 2009 established a baseline for groundwater flow and water quality, as well as background concentrations before placement of repository waste. Repository monitoring was performed on a quarterly basis between 2007 and January 2015, with sampling events conducted in January, April, July, and October. After January 2015, the monitoring program was changed to semiannual sampling, and statistical evaluation procedures, including a retesting strategy, were implemented. Semiannual sampling is conducted in April and October to capture variability introduced by high and low water seasons.

REGULATORY CONTEXT

BHSS, which was added to the National Priorities List in 1983, includes mining-contaminated areas in the Coeur d'Alene River corridor, adjacent floodplains, downstream water bodies, tributaries, and fill areas. BHSS consists of three OUs. EMFR is in OU3, which includes the Lower Basin, where mining-related contamination has been found. This includes 45 miles of the South Fork of the Coeur d'Alene River and its tributaries (i.e., Upper Basin), as well as the main stem of the Coeur d'Alene River down to the depositional areas of the Spokane River, which flows from Coeur d'Alene Lake into Washington State.

BHSS is managed by USEPA Region 10 in cooperation with the Idaho Department of Environmental Quality, tribal stakeholders, and the Coeur d'Alene Trust. Consolidation of contaminated soils, sediments, and source materials into controlled repositories is a critical component of the human health remedy for BHSS, as described in the OU3 ROD (USEPA, 2002). EMFR was designed to address the ROD requirements. The ROD specifies that all repositories are subject to monitoring to demonstrate that the repository design, engineering, and maintenance are effective at preventing repository waste from impacting groundwater and surface water.

The ROD also specifies that Tier II and sections of the Tier III nonmunicipal solid waste landfill (NMSWLF) requirements under the Idaho Solid Waste Management Rules (Idaho Administrative Procedures Act 58.01.06) are relevant and appropriate to the design, operation, and closure of the repositories. Monitoring well installation and groundwater monitoring are included under Tier III NMSWLF requirements.

EMFR may have been constructed on top of contaminated sediments, which may be a potential source of metals leaching to surface water and groundwater. Monitoring activities will address evaluation of cleanup goals for OU3.

PHYSICAL SETTING

EMFR is located in a wide floodplain valley of the Coeur d'Alene River, at the base of bedrock outcrops, in an area prone to seasonal flooding. The repository lies at an elevation of approximately 2,135 feet above sea level and gently slopes from north to south.

Geology

EMFR is located on unconsolidated alluvial deposits that overlie metamorphic rocks of the Belt Supergroup, most likely the Prichard Formation (Browne, 2006). The alluvial deposits comprise Quaternary gravel, sand, and silt from the ancestral flood channel of the Coeur d'Alene River (CH2M HILL, Inc. [CH2M], 2009). Bedrock outcrops in the area, most notably east of the repository.

Shallow deposits (generally from 0 to 4 feet bgs) are composed of silts and fine-grained sands that are thought to be fluvial deposits, including mine-waste–impacted sediments from upstream mining sites deposited over the past 100 years. The thickness of mine-waste–impacted fluvial deposits and the magnitude of metals concentrations likely vary across EMFR.

A cross section of geologic units below EMFR is shown in Figure 2. Previous studies have identified the following unconsolidated deposits beneath the repository:

- Low-permeability silt and clay from the ground surface (i.e., base of the repository) to about 15 to 20 feet bgs, with mine-waste–impacted fluvial deposits included in the upper 4 feet
- An upper coarse-grained unit consisting of alluvial sand and gravel from about 15 to 105 feet bgs
- A silt unit from about 105 to 116 feet bgs, separating the upper and lower coarse-grained units
- A lower coarse-grained unit consisting of alluvial sand below about 116 feet bgs

Hydrogeology

EMFR is located in an area of transition between two hydrogeologic units; the presence of these two units may be attributable to historical fluctuations in the Coeur d'Alene River channel (Ralston, 2008).

The two units consist of 1) alluvial sand and gravel and alluvial sand, which comprise an upper alluvial aquifer and a lower alluvial aquifer which are located below and to the east of EMFR but appear to be absent to the northwest of EMFR, and 2) a sand and clay unit which comprise a sand and clay water-bearing zone (WBZ) located approximately 1,750 feet northwest of EMFR where the alluvial aquifers are absent.

Hydrogeologic units at EMFR consist of the geologic units described in the previous section (see Figure 2):

- A confined upper alluvial sand and gravel aquifer (upper alluvial aquifer) from about 15 to 105 feet bgs; a low-permeability silt and clay unit overlies the upper alluvial aquifer.
- A sand and clay WBZ is found northwest of the repository at approximately the same depth as the upper alluvial aquifer (not shown on Figure 2).
- Below the upper alluvial aquifer, from about 105 to 116 feet bgs, a silt confining unit separates the upper alluvial aquifer from a lower alluvial aquifer.
- Below the silt confining unit, a confined lower alluvial sand aquifer below about 116 feet bgs.

The silt and clay unit overlying the upper alluvial aquifer has low permeability and is thought to limit migration of repository leachate into the upper alluvial aquifer (TerraGraphics, 2009a). The weight of repository waste overlying the silt and clay unit that overlies the upper alluvial aquifer is anticipated to compact and compress the soil, further reducing the hydraulic conductivity of material underlying the repository.

The silt confining unit has not been well characterized, but it is thought to mitigate the potential migration of COCs in the upper alluvial aquifer to the lower alluvial aquifer (IDEQ, 2016).

WBZ characteristics are discussed in more detail below.

Upper and Lower Alluvial Aquifers

Monitoring wells are screened in the upper alluvial sand and gravel aquifer, outside the repository footprint, from approximately 17 to 27 feet bgs in the more transmissive gravel and sand zones. The depth to groundwater is generally measured at 2.5 to 16 feet bgs.

Groundwater levels are typically highest in the spring and lowest in the fall, and closely follow fluctuations in the Coeur d'Alene River stage. Horizontal flow is, typically, across the repository to the southwest or south, toward the Coeur d'Alene River (potentiometric surface maps included in the annual water monitoring reports). Historical monitoring data indicate that the horizontal gradient shifts to the west-northwest during flood events. Horizontal gradients on the east side of the repository have been observed to flow toward the southeast during high river flows. Vertical gradients can shift upward for short periods of time.

Groundwater in the upper alluvial aquifer is confined and typically has a downward vertical gradient. Horizontal gradients are typically shallow and are influenced by the stage of the river. The horizontal gradient varies seasonally from approximately 0.0006 to 0.001 foot per foot across the repository (TerraGraphics, 2009a).

Changes in the Coeur d'Alene River stage can cause rapid responses in groundwater elevations in the monitoring wells screened in the upper aquifer. This suggests that the upper aquifer is likely hydraulically connected with the Coeur d'Alene River, which in turn likely contributes to aquifer recharge. Recharge to the aquifer is also thought to occur from the tributaries and wetlands to the north. Groundwater is thought to discharge to the Coeur d'Alene River, but variability in groundwater and surface water interactions may result in alternating gaining and losing conditions. The lack of details of surface and groundwater interactions and how they may influence mobility of metals in the area are considered a data gap.

One well (09-EMF-MW-C DEEP, see Figure 3) is screened toward the bottom of the upper aquifer (no well log is available to confirm the exact screened interval). Flowing artesian conditions have been observed during flood events in this monitoring well (IDEQ, 2016). The lower alluvial sand and gravel confined aquifer has not been well characterized, but it is not believed to influence conditions in the upper aquifer.

Sand and Clay Water-Bearing Zone

Groundwater flow in the sand and clay WBZ to the west of EMFR is not well characterized because only one monitoring well (08-EMF-MW-E; see Figure 3) is completed in this unit. Water surface elevations are typically 3 to 7 feet higher in the sand and clay WBZ than in the upper aquifer located below EMFR. The influence of the sand and clay WBZ on the geochemistry and groundwater flow directions in the upper aquifer is uncertain.

Hydrology

EMFR is located in the 100-year floodplain of the Coeur d'Alene River in an area that experiences frequent flooding, typically during spring runoff events. The Coeur d'Alene River flows east to west around EMFR and is present to the east, south, and west of EMFR. The area around EMFR is generally flooded by the Coeur d'Alene River when discharge exceeds about 20,000 cubic feet per second. There is about a 50 percent chance of flooding each year at EMFR (CH2M, 2010).

EMFR is bordered on two sides by low-lying ground and permanent wetlands. Locally, groundwater levels can rise to the ground surface in response to high river stage and inundation events, with floodwaters remaining ponded adjacent to the repository for extended periods (days to weeks) and potentially infiltrating into waste material in the repository.

Floodwater entering EMFR is primarily from the Coeur d'Alene River, with minimal contribution from wetland areas to the north. Floodwater sampling indicates that mine-waste–impacted sediment deposition on the floodplain surrounding EMFR is ongoing. In general, total lead concentrations are lower in floodwater leaving the area around the EMFR than entering it (IDEQ, 2016).

CONCEPTUAL SITE MODEL

Contaminants of Concern

The ROD identifies arsenic and lead as COCs for protection of human health for the BHSS (USEPA, 2002). In addition to arsenic and lead, waste material deposited at EMFR may be impacted with other metals that have been identified as chemicals of potential concern in the BHSS (i.e., antimony, cadmium, iron, manganese, mercury, and zinc), as identified in the ROD (USEPA, 2002); however, only those metals identified as representative of wastes at EMFR were selected as COCs for EMFR monitoring activities. The primary COCs at EMFR are arsenic, cadmium, lead, and zinc. Copper and mercury are of secondary interest, and antimony is a COC but is no longer monitored (IDEQ, 2016).

Metals Mobility

Metals mobility at EMFR is largely controlled by elemental chemical characteristics and metal complexation resulting from the local geochemical environment. In general, cadmium and zinc are more mobile in the dissolved phase, while lead tends to be particle- or colloid-associated.

Metal complexations largely affect metal mobility and include the following:

- Metals associated with iron oxides and hydroxides
- Metals associated with sulfides
- Organic/inorganic interactions

Metals complexation with iron hydroxides and sulfides can affect the solubility, leachability, and solid-partitioning tendencies of metals. Given this framework, the main factors affecting metals mobility are pH, oxidation-reduction potential (ORP) conditions, concentrations of potential complexing agents, and methylation/demethylation reactions. Therefore, prediction of metals mobility requires data on the pH, ORP, and major ion groups in water and how they vary with time.

Since arsenic can become significantly more mobile under anaerobic conditions, variability in arsenic concentrations in groundwater likely is related to variations in ORP conditions.

Groundwater Chemistry

Geochemical conditions in groundwater in the upper aquifer at EMFR, and hence metals mobility, are complex and variable as a result of fluctuating groundwater interactions with surface water; multiple sources of groundwater recharge; and potential mixing with groundwater from the sand and clay WBZ to the west.

Specific conductivity and pH concentrations in the sand and clay WBZ are elevated in comparison to groundwater in the upper aquifer at EMFR, and groundwater elevations are typically higher in the sand and clay WBZ, indicating that these are two distinct groundwater sources. Groundwater in the sand and clay WBZ generally has lower dissolved-oxygen (DO) concentrations, lower ORP, and higher arsenic concentrations, likely resulting from reducing conditions. Also, the sand and clay WBZ is closer to the dredge-spoil disposal site, which may be leaching metals. Groundwater in the upper aquifer is generally more aerobic, with lower arsenic concentrations. It is unclear if groundwater from the sand and clay WBZ to the west intermittently mixes with groundwater in the upper aquifer below EMFR, resulting in changes in the geochemistry and metals concentrations. Groundwater flow in the sand and clay WBZ has not been fully characterized.

Groundwater quality below EMFR may be altered by a variety of processes. Infiltration of meteoric water may increase DO, while stagnant water conditions or influx of natural organic matter may induce anaerobic conditions. Rising groundwater may change basic geochemistry in the repository waste. Waste materials (including organic matter) on top of the affected fluvial sediments may influence the mobility of metals in the sediments below the repository.

Spatial and temporal heterogeneity in geochemical conditions can complicate estimation of background levels of metals in underlying sediments and, ultimately, complicate assessment of the source (either repository wastes or underlying soils) of COCs in groundwater. Variable geochemical conditions, combined with complex hydrogeology, may contribute to potentially high variability in groundwater sampling results. The transient and long-term effects of geochemistry on the variability of metals concentrations are uncertain.

Groundwater Quality

Average historical zinc concentrations measured by piezometers throughout the Cataldo Mission Flats area, before the start of repository construction, ranged from less than 0.1 milligram per liter (mg/L) to more than 140 mg/L (Gill, 2003). The historical results indicate the potential for high spatial variability in groundwater metals concentrations and widespread contamination prior to repository construction. Significant metals loading to the Coeur d'Alene River from groundwater discharges in the area of Mission Flats and from the dredge spoils was not confirmed in previous evaluations (Ralston, 2008).

COC concentrations also differ between the upper alluvial aquifer and the sand and clay WBZ. The sand and clay WBZ to the west of EMFR shows the highest arsenic concentrations, with frequent exceedances of the regulatory threshold of 0.01 mg/L, while the upper alluvial aquifer shows elevated concentrations of cadmium and zinc. Spatial variability in COC concentrations is most evident in dissolved-zinc and dissolved-cadmium concentrations, as other constituents are only infrequently detected.

Downgradient wells located in the upper alluvial aquifer (wells located the farthest south and west of the repository) have historically had the highest concentrations of cadmium and zinc. The elevated COC concentrations in these wells, as compared to other monitoring wells at EMFR, likely are related to the larger area of historical contamination upgradient of this area.

Cadmium and zinc concentrations upgradient, crossgradient, and east of the repository also show evidence of contamination. Although these concentrations are lower than those observed in the downgradient wells, they are elevated in comparison to concentrations in groundwater entering the EMFR from the north, as measured in upgradient monitoring wells. During previous evaluations of EMFR data, statistically significant increases in zinc concentrations were detected in monitoring wells east of the repository. It is unlikely that the increase in zinc concentration is related to repository operations because this location is upgradient or crossgradient of the EMFR. These results indicate that sources unrelated to the repository may be contributing to increased contaminant concentrations in groundwater at EMFR (IDEQ, 2016).

Contaminant Fate and Transport

Potential contaminant fate and transport were evaluated during the design of the repository. Primary fate and transport mechanisms identified at EMFR include the following (TerraGraphics, 2009a):

- Rainwater and snowmelt percolating through the emplaced waste and, potentially, leaching metals to surface water and groundwater
- Lateral infiltration of ponded floodwater into the repository and leaching of metals to groundwater and surface water as water drains from the waste
- Upwelling of groundwater into repository waste because of seasonal fluctuations, and leaching of metals to groundwater and surface water as water drains from the waste
- Erosion by floodwater
- Erosion and transport by wind

The early design work evaluated the potential for lateral infiltration of ponded surface water and upwelling of groundwater into the repository waste. Results indicated that waste saturation due to these conditions would not be significant, based on the low hydraulic conductivity of the compacted waste and the compacted as well as low transmissivity of the silts and clays underlying the repository. With only minimal saturation of the repository materials, it was concluded that any residual water in the base of the repository would not pose a significant threat to groundwater quality.

Erosion during flooding was also evaluated during the design. The design included mitigation of the potential for erosion from floodwater by armoring the repository side slopes to an elevation equivalent to the 100-year flood.

The potential for the repository waste to leach metals to groundwater and surface water was also evaluated during the initial design. Column test data indicated that leaching of metals from repository soil by precipitation and snowmelt percolating through the repository would not release any arsenic, cadmium, or lead, and only very low concentrations of antimony and zinc. Therefore, repository soils likely pose minimal risk to groundwater quality. The column test data for the contaminated soils underlying the repository waste showed a greater potential for leaching metals to groundwater, but not at levels that posed a risk to human health.

In addition to early design work, a fate and transport model has been developed for the EMFR to estimate risk from metals leaching (Golder, 2014). The purpose of the modeling effort was to assess the possibility of repository contaminant migration to a designated compliance boundary at unacceptable concentrations after post-closure placement of a 1-foot-thick soil cover on EMFR. The model considered transport by percolation of meteoric water through the waste and the shallow subsurface silts and clays to the upper alluvial aquifer. Conservative input values (ten times maximum measured waste leachate concentrations), as well as less conservative input values (maximum measured waste leachate concentrations) were used during the modeling to account for uncertainties in current and future geochemical conditions. Results of the modeling effort indicate that there would be no exceedances of applicable or relevant and appropriate requirements at the model calculation boundary over the next several hundred years, based on the most conservative input parameters.

The model results have not been confirmed (or refuted) by site data in the intervening years. The EMFR-specific fate and transport of metals under the highly variable hydrologic and geochemical conditions is a potential data gap. Geochemical modeling may reduce uncertainty in interpreting the results of the fate and transport model.

ATTACHMENTS

Figures

REFERENCES

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FIGURES

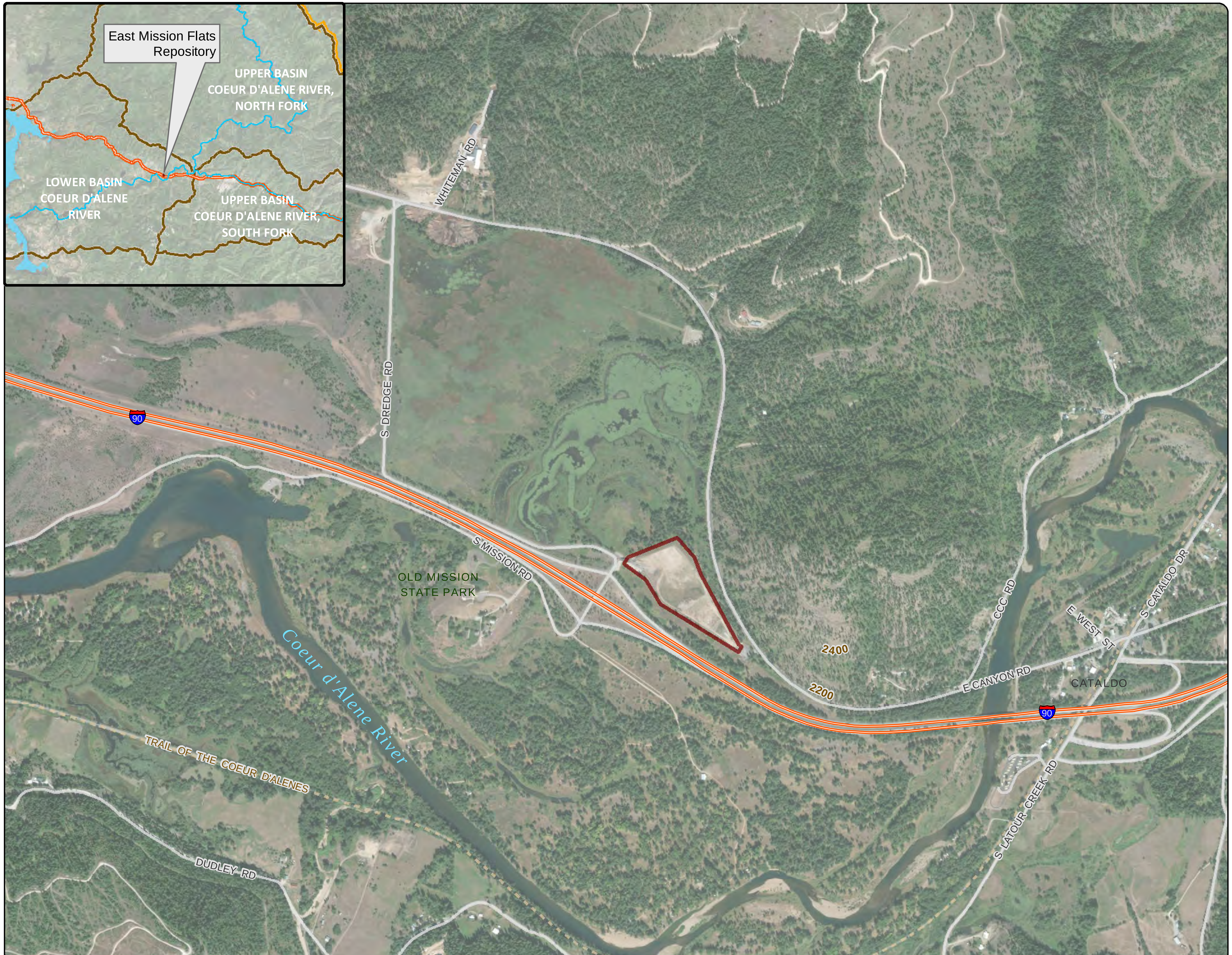

Figure 1
Vicinity Map

Coeur d'Alene Trust
East Mission Flats Repository
Lower Coeur d'Alene Basin, Idaho

Legend

- Interstate Highway
- Road
- Trail
- State Boundary
- Basin Boundary
- East Mission Flats Repository Boundary

0 500 1,000
Feet

Source: Aerial photograph obtained from ESRI, Inc. ArcGIS Online; watershed and rivers datasets obtained from Idaho Dept. of Water Resources; roads dataset obtained from TerraGraphics; elevation contours obtained from U.S. Geological Survey.

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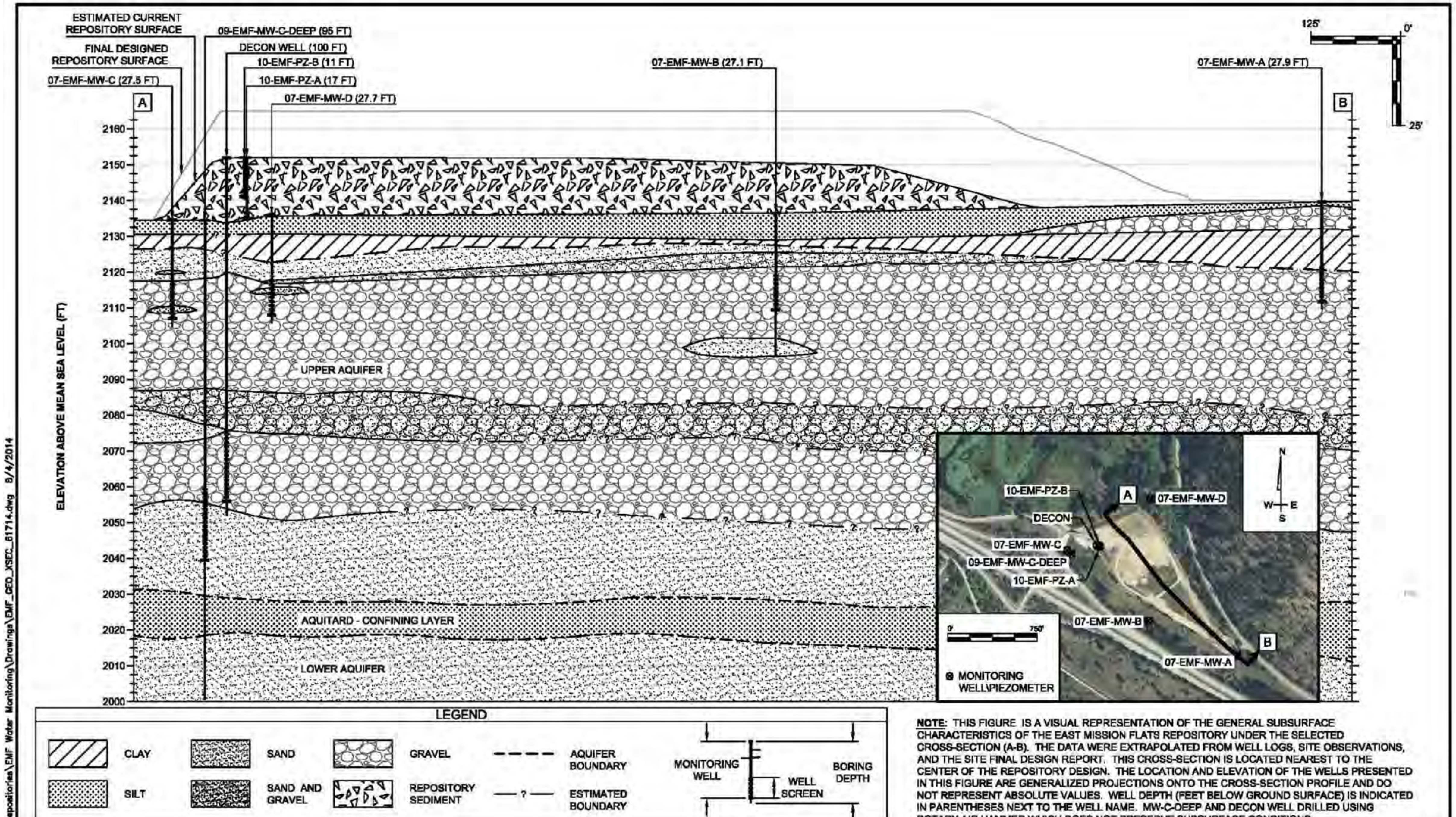
Print Date: 3/6/2018
Approved By: H. Good
Produced By: estrandhagen
Project: 0442.06.05

Figure 2
Geologic Cross Section

Coeur d'Alene Trust
East Mission Flats Repository
Lower Coeur d'Alene Basin, Idaho



NOTE: THIS FIGURE IS A VISUAL REPRESENTATION OF THE GENERAL SUBSURFACE CHARACTERISTICS OF THE EAST MISSION FLATS REPOSITORY UNDER THE SELECTED CROSS-SECTION (A-B). THE DATA WERE EXTRAPOLATED FROM WELL LOGS, SITE OBSERVATIONS, AND THE SITE FINAL DESIGN REPORT. THIS CROSS-SECTION IS LOCATED NEAREST TO THE CENTER OF THE REPOSITORY DESIGN. THE LOCATION AND ELEVATION OF THE WELLS PRESENTED IN THIS FIGURE ARE GENERALIZED PROJECTIONS ONTO THE CROSS-SECTION PROFILE AND DO NOT REPRESENT ABSOLUTE VALUES. WELL DEPTH (FEET BELOW GROUND SURFACE) IS INDICATED IN PARENTHESES NEXT TO THE WELL NAME. MW-C-DEEP AND DECON WELL DRILLED USING ROTARY AIR HAMMER WHICH DOES NOT PRESERVE SUBSURFACE CONDITIONS.

TerraGraphics Environmental Engineering, Inc.	DRAWN: D. PFEIFER	PROJECT NO.: 13011-08-02	EAST MISSION FLATS REPOSITORY	GENERAL GEOLOGIC CROSS-SECTION
	PROJECT MANAGER: R. NIMMER	SCALE: AS NOTED	CATALDO, IDAHO	
	DATE: 8/4/2014	COORDINATE SYSTEM: NAD83 ISP, West, US FT, NGVD29		

M:\Basin\Basin Repositories\EMF Water Monitoring\Drawings\EMF_GEO_XSEC_81714.dwg 8/4/2014

Source: East Mission Flats Repository 2015 annual water quality report prepared by Idaho Department of Environmental Quality. November 2016.

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Print Date: 3/6/2018
Approved By: H. Good
Produced By: estrandhagen
Project: 0442.06.05

Figure 3
Monitoring Network and Site Features

Coeur d'Alene Trust
East Mission Flats Repository
Lower Coeur d'Alene Basin, Idaho

Legend

- 90
- Interstate Highway
- Road
- Floodwater Level Recorder
- Piezometer
- Decontamination Well
- Monitoring Well
- Surface Water Monitoring Location
- Culvert Location
- East Mission Flats Repository Boundary

0 180 360
Feet

Source: Aerial photograph obtained from ESRI, Inc. ArcGIS Online; watershed and rivers datasets obtained from Idaho Dept. of Water Resources; roads and cities datasets obtained from ESRI Online Services.

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APPENDIX B

FIGURES FROM PREVIOUS INVESTIGATIONS

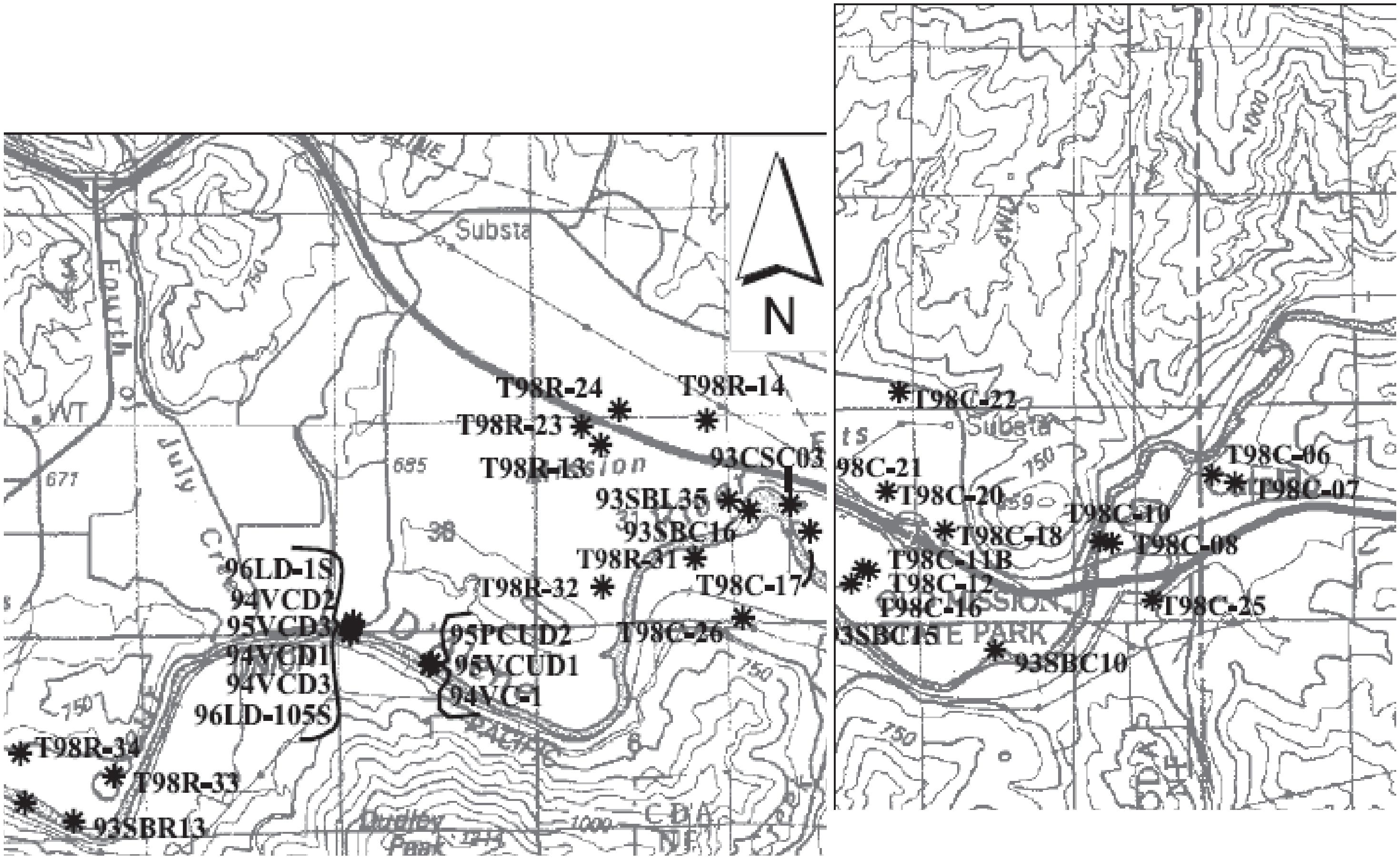

Figure 11 Location Map for Soil Sampling Sites
by Box and others (2001)

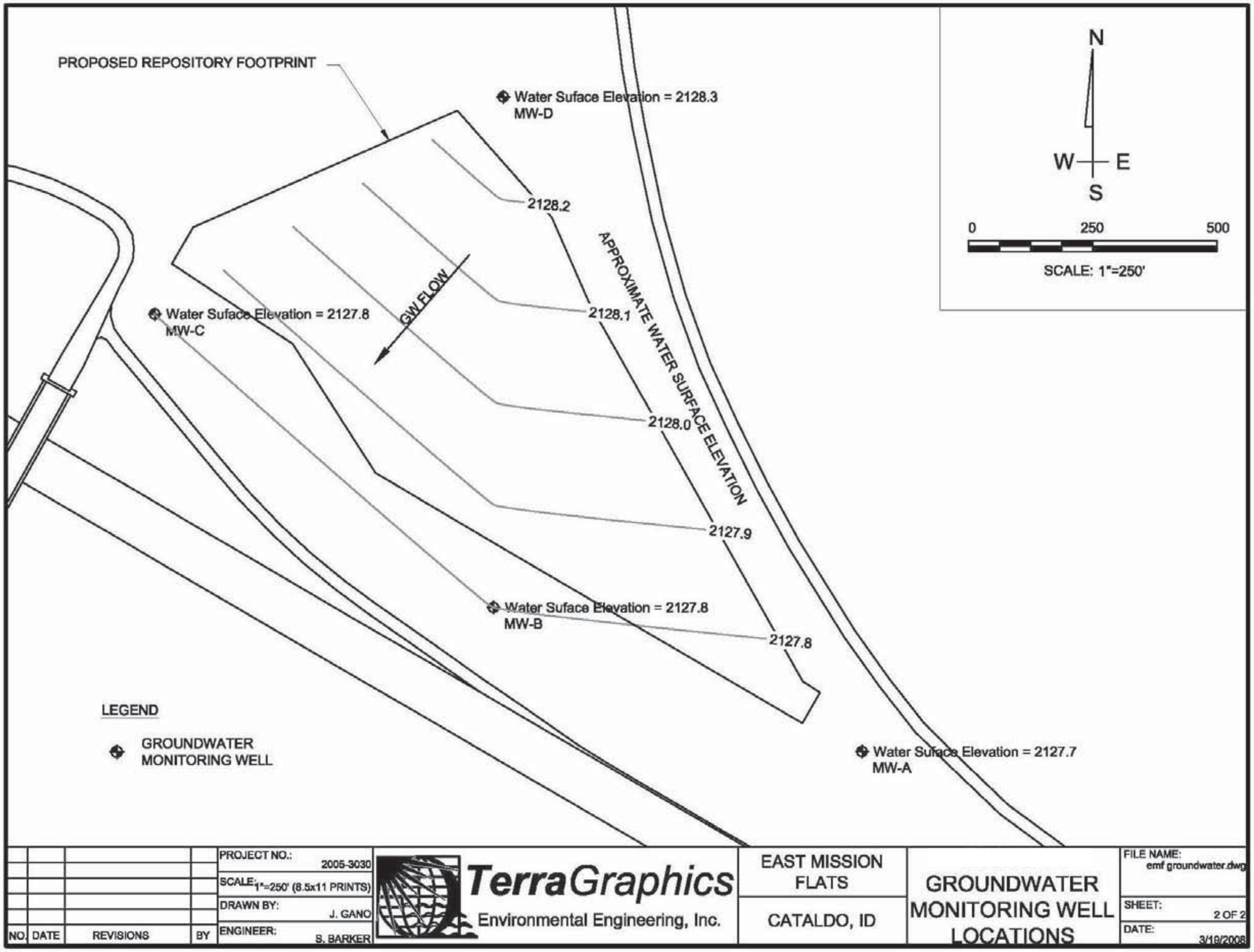
PROPOSED REPOSITORY FOOTPRINT
Water Suface Elevation = 2128.3
MW-D
Water Suface Elevation = 2127.8
MW-C
Water Suface Elevation = 2127.8
MW-B
Water Suface Elevation = 2127.7
MW-A
GW FLOW
APPROXIMATE WATER SURFACE ELEVATION
2128.2
2128.1
2128.0
2127.9
2127.8
N
W
E
S
0
250
500
SCALE: 1"=250'
LEGEND
GROUNDWATER MONITORING WELL
NO.
DATE
REVISIONS
BY
PROJECT NO.: 2005-3030
SCALE: 1"=250' (8.5x11 PRINTS)
DRAWN BY: J. GANO
ENGINEER: S. BARKER
TerraGraphics
Environmental Engineering, Inc.
EAST MISSION FLATS
CATALDO, ID
GROUNDWATER MONITORING WELL LOCATIONS
FILE NAME: emf groundwater.dwg
SHEET: 2 OF 2
DATE: 3/19/2008

Figure 5

APPENDIX C

2017 SITE-SPECIFIC WATER SAMPLING AND ANALYSIS PLAN

SITE-SPECIFIC WATER SAMPLING AND ANALYSIS PLAN
Project Area: East Mission Flats Repository
COEUR D'ALENE TRUST
LOWER COEUR D'ALENE BASIN, IDAHO

SSAP Number: 2017-02

Project Schedule: April and October

Site Background: The Coeur d'Alene Trust assumed water monitoring at the East Mission Flats Repository (EMFR) from the Idaho Department of Environmental Quality beginning in the spring of 2016. The repository was constructed on contaminated soil and has been receiving waste materials from a variety of sources (including the Basin Property Remediation Program, Institutional Controls Program, and development projects).

Problem Statement: Historically deposited tailings beneath the EMFR and the waste materials disposed of in the repository contain inorganic metals, which are the contaminants of concern in groundwater for protection of human health and the environment.

SSAP Objectives: Monitor groundwater elevations, floodwater elevations, and contaminants during waste placement to evaluate the performance of the EMFR.

Plan Attachments: Figure 2017-02

Field Task Manager: Christina Johnson **E-mail:** cjohnson@maulfoster.com **Phone:** 360-977-8561

Field Investigation Contractor: TerraGraphics Environmental Engineering, Inc**.**

Field Team Leader: Robin Nimmer **E-mail:** robin.nimmer@terragraphics.com **Phone:** 208-882-7858

Site	Primary Site Type	Sample Type	Field Measurements	Analysis		Schedule	Predetermined Location[a]	Notes
Surface Water								
LL-1	Surface Water	Performance Monitoring	None	None		Event Timing: • April and October	Yes ☒ No ☐ Specify: X Coordinate: 2476131.8 Y Coordinate: 2145635.9	• Download pressure transducer data.
LL-2	Surface Water	Performance Monitoring	None	None		Event Timing: • April and October	Yes ☒ No ☐ Specify: X Coordinate: 2477316.0 Y Coordinate: 2144684.9	• Download pressure transducer data.
Monitoring Wells								
07-EMF-MW-A	Groundwater Well	Performance Monitoring	• pH, specific conductance, temperature • Turbidity, DO, ORP • Water level	• Dissolved metals As, Cd, Pb, and Zn • Dissolved cations Ca, Mg, K, and Na	• Anions chloride and sulfate • Alkalinity (includes bicarbonate, carbonate, and hydroxide)	Event Timing: • April and October	Yes ☒ No ☐ Specify: X Coordinate: 2477532.1 Y Coordinate: 2144700.9	• Download pressure transducer data.
07-EMF-MW-B	Groundwater Well	Performance Monitoring	• pH, specific conductance, temperature • Turbidity, DO, ORP • Water level	• Dissolved metals As, Cd, Pb, and Zn • Dissolved cations Ca, Mg, K, and Na	• Anions chloride and sulfate • Alkalinity (includes bicarbonate, carbonate, and hydroxide)	Event Timing: • April and October	Yes ☒ No ☐ Specify: X Coordinate: 2476790.6 Y Coordinate: 2144991.8	• Download pressure transducer data.
07-EMF-MW-C	Groundwater Well	Performance Monitoring	• pH, specific conductance, temperature • Turbidity, DO, ORP • Water level	• Dissolved metals As, Cd, Pb, and Zn • Dissolved cations Ca, Mg, K, and Na	• Anions chloride and sulfate • Alkalinity (includes bicarbonate, carbonate, and hydroxide)	Event Timing: • April and October	Yes ☒ No ☐ Specify: X Coordinate: 2476109.1 Y Coordinate: 2145582.5	• Download pressure transducer data.
09-EMF-MW-C Deep	Groundwater Well	Performance Monitoring	• pH, specific conductance, temperature • Turbidity, DO, ORP • Water level	• Dissolved metals As, Cd, Pb, and Zn • Dissolved cations Ca, Mg, K, and Na	• Anions chloride and sulfate • Alkalinity (includes bicarbonate, carbonate, and hydroxide)	Event Timing: • April and October	Yes ☒ No ☐ Specify: X Coordinate: 2476145.4 Y Coordinate: 2145552.7	• Download pressure transducer data.
07-EMF-MW-D	Groundwater Well	Performance Monitoring	• pH, specific conductance, temperature • Turbidity, DO, ORP • Water level	• Dissolved metals As, Cd, Pb, and Zn • Dissolved cations Ca, Mg, K, and Na	• Anions chloride and sulfate • Alkalinity (includes bicarbonate, carbonate, and hydroxide)	Event Timing: • April and October	Yes ☒ No ☐ Specify: X Coordinate: 2476810.3 Y Coordinate: 2146019.7	• Download pressure transducer data.
08-EMF-MW-E	Groundwater Well	Performance Monitoring	• pH, specific conductance, temperature • Turbidity, DO, ORP • Water level	• Dissolved metals As, Cd, Pb, and Zn • Dissolved cations Ca, Mg, K, and Na	• Anions chloride and sulfate • Alkalinity (includes bicarbonate, carbonate, and hydroxide)	Event Timing: • April and October	Yes ☒ No ☐ Specify: X Coordinate: 2474351.5 Y Coordinate: 2146279.6	• Download pressure transducer data.

Site	Primary Site Type	Sample Type	Field Measurements	Analysis		Schedule	Predetermined Location[a]	Notes
08-EMF-MW-F	Groundwater Well	Performance Monitoring	• pH, specific conductance, temperature • Turbidity, DO, ORP • Water level	• Dissolved metals As, Cd, Pb, and Zn • Dissolved cations Ca, Mg, K, and Na	• Anions chloride and sulfate • Alkalinity (includes bicarbonate, carbonate, and hydroxide)	Event Timing: • April and October	Yes ☒ No ☐ Specify: X Coordinate: 2476172.7 Y Coordinate: 2144530.9	• Download pressure transducer data.
Piezometers (Repository Water)								
10-EMF-PZ-A	Piezometer	Performance Monitoring	• pH; ORP; conductivity • Water level	None		Event Timing: • April and October	Yes ☒ No ☐ Specify: X Coordinate: 2476381.8 Y Coordinate: 2145615.8	• Field parameter meter deployed prior to anticipated high water. • Download pressure transducer data.
10-EMF-PZ-B	Piezometer	Performance Monitoring	• Water level	None		Event Timing: • April and October	Yes ☒ No ☐ Specify: X Coordinate: 2476382.0 Y Coordinate: 2145621.0	• Download pressure transducer data.

Type	Frequency	Analysis	Number Anticipated per Event
Equipment rinsate blanks	One per every 20 samples (or fewer) each day of sample collection	• Dissolved metals As, Cd, Pb, and Zn • Dissolved cations Ca, Mg, K, and Na • Anions chloride and sulfate, alkalinity (includes bicarbonate, carbonate, and hydroxide)	2
Filter blank	One per every 20 samples (or fewer)	• Dissolved metals As, Cd, Pb, and Zn • Dissolved cations Ca, Mg, K, and Na	1
Field duplicate samples	One per every ten samples (or fewer) per sample matrix	• Dissolved metals As, Cd, Pb, and Zn • Dissolved cations Ca, Mg, K, and Na • Anions chloride and sulfate, alkalinity (includes bicarbonate, carbonate, and hydroxide)	1
Laboratory matrix spike/matrix spike duplicate	Each analytical batch of samples for every 20 (or fewer) samples received	• Dissolved metals As, Cd, Pb, and Zn • Dissolved cations Ca, Mg, K, and Na • Anions chloride and sulfate, alkalinity (includes bicarbonate, carbonate, and hydroxide)	1

Samples for metals, cations and hardness will be shipped to: Pace Minneapolis Lab 1700 Elm Street SE Minneapolis, MN 55414	Samples for alkalinity and anions will be delivered to: SVL Analytical One Government Gulch Kellogg, ID 83837-0929

Notes:
This SSAP was designed to be used in conjunction with the Programmatic Quality Assurance Project Plan (2017; tables listed below) prepared by MFA on behalf of the Coeur d'Alene Trust.
Water monitoring data needs guidelines can be found in Programmatic QAPP Table 1-2.
Quality control samples to be collected per Programmatic QAPP Table C-1.
Container, preservation, and holding time requirements per Programmatic QAPP Table C-2.
Analytical methods, performance criteria, and reporting limits per Programmatic QAPP Table C-3.
Field measurement performance criteria per Programmatic QAPP Table C-4.
As = arsenic.
EMFR = East Mission Flats Repository.
Ca = calcium.
Cd = cadmium.
Coeur d'Alene Trust = Successor Coeur d'Alene Custodial and Work Trust.
DO = dissolved oxygen.
K = potassium.
Mg = magnesium.
Na = sodium.
ORP = oxidation reduction potential.
Pb = lead.
Zn = zinc.
[a]Coordinates presented in North American Datum 1983 State Plane Idaho West FIPS 1103 in feet.

Signature ______________________

Name (print) Christina Johnson

Maul Foster & Alongi, Inc., Project Manager

Date: March 24, 2017

Signature ______________________

Name (print) Brian Fauth

Maul Foster & Alongi, Inc., Quality Assurance Manager

Date: March 24, 2017

Figure SSAP 2017-02 Monitoring Locations

Coeur d'Alene Trust
East Mission Flats Repository
Lower Coeur d'Alene Basin, Idaho

Legend

- Interstate Highway
- Road
- Surface Water Location
- Piezometer
- Monitoring Well
- Culvert Location
- East Mission Flats Repository Boundary

0 180 360
Feet

Source: Aerial photograph obtained from ESRI, Inc. ArcGIS Online; watershed and rivers datasets obtained from Idaho Dept. of Water Resources; roads and cities datasets obtained from ESRI Online Services.

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Project: 0442.06.03-02 Produced By: estrandhagen Approved By: K. Roslund Print Date: 3/17/2017 Path: X:\CdA\0442\06.05_2017 Water Monitoring\2016 EMFR Monitoring Report\Projects\Fig_SSAP_2017_02_Monitoring Network and Site Features.mxd

SITE-SPECIFIC WATER SAMPLING AND ANALYSIS PLAN
Project Area: East Mission Flats Repository
COEUR D'ALENE TRUST
LOWER COEUR D'ALENE BASIN, IDAHO

SSAP Number: 2017-02rev1

Project Schedule: October

Site Background: The Coeur d'Alene Trust assumed water monitoring at the East Mission Flats Repository (EMFR) from the Idaho Department of Environmental Quality beginning in the spring of 2016. The repository was constructed on contaminated soil and has been receiving waste materials from a variety of sources (including the Basin Property Remediation Program, Institutional Controls Program, and development projects).

Problem Statement: Historically deposited tailings beneath the EMFR and the waste materials disposed of in the repository contain inorganic metals, which are the contaminants of concern in groundwater for protection of human health and the environment.

SSAP Objectives: Monitor groundwater elevations, floodwater elevations, and contaminants during waste placement to evaluate the performance of the EMFR.

Plan Attachments: Figure 2017-02

Field Task Manager: Christina Johnson **E-mail:** cjohnson@maulfoster.com **Phone:** 360-977-8561

Field Investigation Contractor: TerraGraphics Environmental Engineering, Inc**.**

Field Team Leader: Robin Nimmer **E-mail:** robin.nimmer@terragraphics.com **Phone:** 208-882-7858

Site	Primary Site Type	Sample Type	Field Measurements	Analysis		Schedule	Predetermined Location[a]	Notes
Surface Water								
LL-1	Surface Water	Performance Monitoring	None	None		Event Timing: • October	Yes ☒ No ☐ Specify: X Coordinate: 2476131.8 Y Coordinate: 2145635.9	• Download pressure transducer data.
LL-2	Surface Water	Performance Monitoring	None	None		Event Timing: • October	Yes ☒ No ☐ Specify: X Coordinate: 2477316.0 Y Coordinate: 2144684.9	• Download pressure transducer data.
Monitoring Wells								
07-EMF-MW-A	Groundwater Well	Performance Monitoring	• pH, specific conductance, temperature, turbidity, DO, ORP • Ferrous iron (October) • Water level	• Dissolved metals As, Cd, Pb, and Zn • Dissolved and total cations Ca, Fe, Mn, Mg, K, and Na	• Anions chloride and sulfate • Alkalinity (includes bicarbonate, carbonate, and hydroxide) • Hardness	Event Timing: • October	Yes ☒ No ☐ Specify: X Coordinate: 2477532.1 Y Coordinate: 2144700.9	• Download pressure transducer data.
07-EMF-MW-B	Groundwater Well	Performance Monitoring	• pH, specific conductance, temperature, turbidity, DO, ORP • Ferrous iron (October) • Water level	• Dissolved metals As, Cd, Pb, and Zn • Dissolved and total cations Ca, Fe, Mn, Mg, K, and Na	• Anions chloride and sulfate • Alkalinity (includes bicarbonate, carbonate, and hydroxide) • Hardness	Event Timing: • October	Yes ☒ No ☐ Specify: X Coordinate: 2476790.6 Y Coordinate: 2144991.8	• Download pressure transducer data.
07-EMF-MW-C	Groundwater Well	Performance Monitoring	• pH, specific conductance, temperature, turbidity, DO, ORP • Ferrous iron (October) • Water level	• Dissolved metals As, Cd, Pb, and Zn • Dissolved and total cations Ca, Fe, Mn, Mg, K, and Na	• Anions chloride and sulfate • Alkalinity (includes bicarbonate, carbonate, and hydroxide) • Hardness	Event Timing: • October	Yes ☒ No ☐ Specify: X Coordinate: 2476109.1 Y Coordinate: 2145582.5	• Download pressure transducer data.
09-EMF-MW-C Deep	Groundwater Well	Performance Monitoring	• pH, specific conductance, temperature, turbidity, DO, ORP • Ferrous iron (October) • Water level	• Dissolved metals As, Cd, Pb, and Zn • Dissolved and total cations Ca, Fe, Mn, Mg, K, and Na	• Anions chloride and sulfate • Alkalinity (includes bicarbonate, carbonate, and hydroxide) • Hardness	Event Timing: • October	Yes ☒ No ☐ Specify: X Coordinate: 2476145.4 Y Coordinate: 2145552.7	• Download pressure transducer data.

Site	Primary Site Type	Sample Type	Field Measurements	Analysis		Schedule	Predetermined Location[a]	Notes
07-EMF-MW-D	Groundwater Well	Performance Monitoring	• pH, specific conductance, temperature, turbidity, DO, ORP • Ferrous iron (October) • Water level	• Dissolved metals As, Cd, Pb, and Zn • Dissolved and total cations Ca, Fe, Mn, Mg, K, and Na	• Anions chloride and sulfate • Alkalinity (includes bicarbonate, carbonate, and hydroxide) • Hardness	Event Timing: • October	Yes ☒ No ☐ Specify: X Coordinate: 2476810.3 Y Coordinate: 2146019.7	• Download pressure transducer data.
08-EMF-MW-E	Groundwater Well	Performance Monitoring	• pH, specific conductance, temperature, turbidity, DO, ORP • Ferrous iron (October) • Water level	• Dissolved metals As, Cd, Pb, and Zn • Dissolved and total cations Ca, Fe, Mn, Mg, K, and Na	• Anions chloride and sulfate • Alkalinity (includes bicarbonate, carbonate, and hydroxide) • Hardness	Event Timing: • October	Yes ☒ No ☐ Specify: X Coordinate: 2474351.5 Y Coordinate: 2146279.6	• Download pressure transducer data.
08-EMF-MW-F	Groundwater Well	Performance Monitoring	• pH, specific conductance, temperature, turbidity, DO, ORP • Ferrous iron (October) • Water level	• Dissolved metals As, Cd, Pb, and Zn • Dissolved and total cations Ca, Fe, Mn, Mg, K, and Na	• Anions chloride and sulfate • Alkalinity (includes bicarbonate, carbonate, and hydroxide) • Hardness	Event Timing: • October	Yes ☒ No ☐ Specify: X Coordinate: 2476172.7 Y Coordinate: 2144530.9	• Download pressure transducer data.
Piezometers (Repository Water)								
10-EMF-PZ-A	Piezometer	Performance Monitoring	• pH; ORP; conductivity • Water level	None		Event Timing: • October	Yes ☒ No ☐ Specify: X Coordinate: 2476381.8 Y Coordinate: 2145615.8	• Field parameter meter deployed prior to anticipated high water. • Download pressure transducer data.
10-EMF-PZ-B	Piezometer	Performance Monitoring	• Water level	None		Event Timing: • October	Yes ☒ No ☐ Specify: X Coordinate: 2476382.0 Y Coordinate: 2145621.0	• Download pressure transducer data.

Type	Frequency	Analysis	Number Anticipated per Event
Equipment rinsate blanks	One per every 20 samples (or fewer) each day of sample collection	• Dissolved metals As, Cd, Pb, and Zn • Dissolved and total cations Ca, Fe, Mg, Mn, K, and Na • Anions chloride and sulfate, alkalinity (includes bicarbonate, carbonate, and hydroxide) • Hardness	2
Filter blank	One per every 20 samples (or fewer)	• Dissolved metals As, Cd, Pb, and Zn • Dissolved cations Ca, Fe, Mg, Mn, K, and Na	1
Field duplicate samples	One per every ten samples (or fewer) per sample matrix	• Dissolved metals As, Cd, Pb, and Zn • Dissolved and total cations Ca, Fe, Mg, Mn, K, and Na • Anions chloride and sulfate, alkalinity (includes bicarbonate, carbonate, and hydroxide) • Hardness	1
Laboratory matrix spike/matrix spike duplicate	Each analytical batch of samples for every 20 (or fewer) samples received	• Dissolved metals As, Cd, Pb, and Zn • Dissolved and total cations Ca, Fe, Mg, Mn, K, and Na • Anions chloride and sulfate, alkalinity (includes bicarbonate, carbonate, and hydroxide) • Hardness	1

Samples for metals, cations and hardness will be shipped to: Pace Minneapolis Lab 1700 Elm Street SE Minneapolis, MN 55414	Samples for alkalinity and anions will be delivered to: SVL Analytical One Government Gulch Kellogg, ID 83837-0929

Notes:
This SSAP was designed to be used in conjunction with the Programmatic Quality Assurance Project Plan (2017; tables listed below) prepared by MFA on behalf of the Coeur d'Alene Trust.
Water monitoring data needs guidelines can be found in Programmatic QAPP Table 1-2.
Quality control samples to be collected per Programmatic QAPP Table C-1.
Container, preservation, and holding time requirements per Programmatic QAPP Table C-2.
Analytical methods, performance criteria, and reporting limits per Programmatic QAPP Table C-3.
Field measurement performance criteria per Programmatic QAPP Table C-4.
As = arsenic.
EMFR = East Mission Flats Repository.
Ca = calcium.
Cd = cadmium.
Coeur d'Alene Trust = Successor Coeur d'Alene Custodial and Work Trust.
DO = dissolved oxygen.
Fe = iron.
K = potassium.
Mg = magnesium.
Mn = manganese.
Na = sodium.
ORP = oxidation reduction potential.
Pb = lead.
Zn = zinc.
[a]Coordinates presented in North American Datum 1983 State Plane Idaho West FIPS 1103 in feet.

Signature ______________________

Name (print) Christina Johnson

Maul Foster & Alongi, Inc., Project Manager

Date: March 24, 2017

Signature ______________________

Name (print) Brian Fauth

Maul Foster & Alongi, Inc., Quality Assurance Manager

Date: March 24, 2017

Figure
SSAP 2017-02
Monitoring Locations

Coeur d'Alene Trust
East Mission Flats Repository
Lower Coeur d'Alene Basin, Idaho

Legend

- Interstate Highway
- Road
- Surface Water Location
- Piezometer
- Monitoring Well
- Culvert Location
- East Mission Flats Repository Boundary

0 180 360
Feet

Source: Aerial photograph obtained from ESRI, Inc. ArcGIS Online; watershed and rivers datasets obtained from Idaho Dept. of Water Resources; roads and cities datasets obtained from ESRI Online Services.

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Path: X:\CdA\0442\06.05_2017 Water Monitoring\2016 EMFR Monitoring Report\Projects\Fig_SSAP_2017_02_Monitoring Network and Site Features.mxd
Print Date: 3/17/2017
Approved By: K. Roslund
Produced By: estrandhagen
Project: 0442.06.03-02

APPENDIX D
FIELD DOCUMENTATION

3/14/17 EMFR GM
FLOODWATER

- CDA RIVER @ CATALDO WAS @ 39.6 FT @ 11:00

- 11:32 TOOK DTW @ PZ-A

PZ-A DTW = 19.37 FT / DTB = 19.44 FT

- REMOVED pH CAP FROM TROLL
- TROLL IS LOGGING ~~EVERY~~ 1 HOUR
- CDA RIVER IS PROJECTED TO PEAK AROUND 45 FT. ON 3/16/17

- WILL KEEP AN EYE ON THIS

3/16/17 EMFR GM
FLOODWATER

DTW @ PZ-A @ 9:40 = 19.37 FT.

- NO CHANGE FROM ~~YESTER~~ 2 DAYS AGO.

- CDA RIVER @ CATALDO IS PEAKING RIGHT NOW @ ABOUT 45.8 FT.
- FLOODWATER IS ALL AROUND THE REPOSITORY

4/11/17 EMFR GM
FLOODWATER

2:30 - DOWNLOAD PZ-A
TROLL 9500

DTW WITHOUT PROBE
= 18.38 FT

DTW WITH PROBE DEPLOYED
= 18.08 FT

DTB = 19.44 FT
PZ-B : DRY

GTM

TerraGraphics
Environmental Engineering, Inc.

www.terragraphics.com

220 East 5th Street, Suite 325
Moscow, Idaho 83843
Ph: (208) 882-7858; Fax: (208) 883-3785

Office Locations:
Kellogg, Idaho
Boise, Idaho
Las Vegas, Nevada
Pasco, Washington
Richland, Washington

TECHNICAL MEMORANDUM

To: Christina Johnson, MFA, Kellogg

CC: Alan Hughes, MFA, Vancouver

From: Greg Malone, TerraGraphics, Kellogg
Robin Nimmer, TerraGraphics, Moscow

Date: May 3, 2017

Project Code: 17001-03

Subject: **Field Summary for the East Mission Flats Repository (EMFR) First 2017 Bi-Annual Sampling Event**

The purpose of this technical memorandum is to summarize the field activities for ongoing bi-annual monitoring at the East Mission Flats Repository (EMFR). This technical memorandum contains a description of the first 2017 bi-annual sampling event, as well as any deviations from the sampling plans. The field crew followed the Site-Specific Water Sampling and Analysis Plan (SSAP) for East Mission Flats Repository (MFA 2017). The field crew also followed the Maul Foster & Alongi, Inc. Programmatic Quality Assurance Project Plan (QAPP) for Upper and Lower Basins of the Coeur d'Alene River, Idaho (MFA 2016).

1 Field Trip Summary

TerraGraphics' field crew conducted water sampling on April 17 and 18, 2017 at EMFR. The field crew visited a total of seven groundwater monitoring locations as listed below.

- 07-EMF-MW-A
- 07-EMF-MW-B
- 07-EMF-MW-C
- 07-EMF-MW-D
- 08-EMF-MW-E
- 08-EMF-MW-F
- 09-EMF-MW-C-DEEP

Groundwater sample collection, handling, and labeling followed the SSAP and QAPP, with any deviations listed in Section 2. The field crew also visited the two piezometers located in the waste mass, 10-EMF-PZ-A and 10-EMF-PZ-B, to download water level data. Site 10-EMF-PZ-B was dry upon arrival. Site 10-EMF-PZ-A was visited on April 11 and the Troll 9500 was downloaded. The water column in 10-EMF-PZ-A was 1.36 feet, enough to submerge the entire probe. MFA was notified immediately upon discovery of water in the piezometer and all electronic data were submitted to MFA.

2 Sample Collection and Field Data

The field crew collected a total of 12 samples: 7 groundwater sites and 5 quality assurance/quality control (QA/QC) samples. A "sample" represents all of the bottles collected at a particular site. All samples were collected in accordance with the SSAP and QAPP, with the exception of 07-EMF-MW-B. This site was purged for 63 minutes, with turbidity ranging from 1 Nephelometric Turbidity Units (NTU) to 421 NTU. While every other parameter had stabilized, turbidity was greatly fluctuating. The field crew decided to take an additional turbidity reading, post flow cell, with another turbidity meter. The turbidity of the purge water post flow cell measured 4.26 NTU. It was decided to stop purging and collect samples because turbidity values were below the QAPP specified 5 NTU.

QA/QC samples were collected from the following locations:

- Duplicate sample: 07-EMF-MW-B
- Filter blank sample: 08-EMF-MW-E
- Equipment Rinsate blank sample: 07-EMF-MW-C and 08-EMF-MW-F
- Matrix spike/matrix spike duplicate sample: 09-EMF-MW-C-DEEP

Groundwater samples were shipped to Pace Laboratory for analysis of dissolved metals and cations. Short hold time samples were submitted to Silver Valley Laboratory (SVL) for analysis of alkalinity and anions.

Low-flow sampling techniques were implemented using dedicated QED micropurge pumps to collect water quality samples at all groundwater sites. Field parameters were measured at all monitoring locations and include pH, temperature (in degrees Celsius [°C]), specific conductance (in microSiemens per centimeter [µS/cm]), dissolved oxygen (DO, in milligrams per liter [mg/L]), oxidation-reduction potential (ORP, in millivolts [mV]), and turbidity (in NTU). Depth to water was also measured. Field parameter data are presented in Table 1 and depth to water and calculated water column heights for all groundwater wells are presented in Table 2. It should be noted that depths to bottom for each well were not measured in the field at the time of sample. The depth to bottom values presented in Table 2, were measured as part of the October 2016 event. Also, depth to water at 10-EMF-PZ-A was again measured on April 18 and the water column had only decreased by 0.02 feet from the measurement on April 11.

Table 1. Water Quality Parameters

Site	Date	Parameter					
		pH	Specific Conductance (µS/cm)	Temperature (°C)	DO (mg/L)	ORP (mV)	Turbidity (NTU)
07-EMF-MW-A	4-17-2017	4.90	204.57	8.19	0.05	271.7	149.56
07-EMF-MW-B	4-17-2017	4.90	165.77	8.83	1.45	411.1	4.26
07-EMF-MW-C	4-17-2017	6.95	0.45	9.19	10.12	363.3	0.83
07-EMF-MW-D	4-18-2017	6.16	85.99	8.82	1.68	237.1	64.76
08-EMF-MW-E	4-18-2017	6.52	2076.4	9.02	0.34	119.8	23.13
08-EMF-MW-F	4-18-2017	5.56	294.64	8.68	1.01	308.2	12.62
09-EMF-MW-C DEEP	4-17-2017	6.50	74.79	9.11	9.45	361.0	0.92

Table 2. EMFR Depth to Water and Water Column Heights

Site	Date	Depth to Water (feet)	Depth to Bottom (feet)	Height of Water Column (feet)
07-EMF-MW-A	4-17-2017	9.23	29.61	20.38
07-EMF-MW-B	4-17-2017	6.91	30.30	23.39
07-EMF-MW-C	4-17-2017	4.30	30.35	26.05
07-EMF-MW-D	4-18-2017	5.13	30.35	25.22
08-EMF-MW-E	4-18-2017	5.00	27.44	22.44
08-EMF-MW-F	4-18-2017	6.95	31.69	24.74
09-EMF-MW-C DEEP	4-17-2017	4.37	98.27	93.90
10-EMF-PZ-A	4-18-2017	18.06	19.44	1.38
10-EMF-PZ-B	4-18-2017	Dry	13.12	N/A

3 Electronic Data

All seven electronic pressure transducers at groundwater sites, plus two piezometer sites in the repository and two surface water sites were downloaded and corrected with the barometric pressure transducer installed in monitoring well BH-SF-E-0104-U, as part of OU2, because the barologger installed at 08-EMF-MW-F was submerged by floodwater from March 15 to March 26. A manual elevation offset was applied to the final water level data as instructed by the Solinst user manual. All data were of acceptable quality and submitted to MFA. TerraGraphics' field crew will move the location of the barometric pressure transducer to a higher on-site elevation.

4 References

Maul Foster and Alongi (MFA), 2016. Programmatic Quality Assurance Project Plan (QAPP) for Upper and Lower Basins of the Coeur d'Alene River, Idaho. December 5.

MFA, 2017. Site-Specific Water Sampling and Analysis Plan (SSAP). Project Area: East Mission Flats Repository. SSAP Number 2017-02. March 17.

TerraGraphics
Environmental Engineering, Inc.

Groundwater Sampling Record

Project: EMFR	Well Number: 07-EMF-MW-A
Project Number: 17001-03	Sample Number: 07-EMF-MW-A-20170417-GW
Location:	Weather: Light rain, 40F
Date: 04/17/17	Sampler(s): GM, SH
[De-Ionized Water Date:]	
Depth to Bottom (ft):	Purge Time: 50 minutes
Depth to Water (ft): 9.23	Purge Method: Low Flow
DTB-DTW (ft): ~~9.23~~ SH	Volume Measurement Method: calculated
1 Well Volume (gal):	Purge Volume (Volume x 3) (gal): 6.75

Conversion Factors (height x factor= 1 well volume)	¾" diameter	1" diameter	1 ½" diameter	2" diameter	4" diameter	6" diameter	8" diameter
	0.023	0.041	0.092	0.163	0.652	1.469	2.611

GROUNDWATER DATA [1 L = 0.2642 gal • 1 gal = 3.7854 L]

Purged Volume (gal)	Time	pH	Spec. Cond. (µS/cm)	Temp (°C)	D.O. mg/L	ORP (mV)	Turbidity (NTU)
	0:00	5.46	166.50	8.84	0.15	247.3	497.85
	44:45	4.99	205.68	8.20	0.05	266.3	150.03
	47:45	4.94	205.32	8.20	0.06	269.0	148.83
	50:45	4.90	204.57	8.19	0.05	271.7	149.56

Sampling Date: 04/17/17 | Sampling Method: Low Flow | Time Sampled: 11:50

Container	Volume	Preservative	Cooled	Filtered	Analyte	Lab
Poly	250mL	HNO3	Yes	Yes	DM, cations	Pace
Poly	500mL	None	Yes	No	Anions	SVL
Poly	500mL	None	Yes	No	Alkalinity	SVL

Chain-of-Custody:	Duplicate Sample Number:
Chain-of-Custody Number:	QC Sample Number: Time:

Notes:

☐ Check if Lower Level Mercury analysis is required. ☐ Check if sulfide interference procedure is required.

Deviations/Observations:

Picture Log: ON TABLET EMF-07-MW-A_20170417.jpg

Expendable Supplies Used: 1 Hi-cap

TerraGraphics
Environmental Engineering, Inc.

Groundwater Sampling Record

Project: EMFR	Well Number: 07-EMF-MW-B
Project Number: 17001-03	Sample Number: 07-EMF-MW-B-20170417-GW
Location:	Weather: Raining, 45F
Date: 04/17/17	Sampler(s): GM, SH
[De-Ionized Water Date:]	
Depth to Bottom (ft):	Purge Time: 1 hour 3 minutes
Depth to Water (ft): 6.91	Purge Method: Low Flow
DTB-DTW (ft): ~~6.91~~ SH	Volume Measurement Method: calculated
1 Well Volume (gal):	Purge Volume (Volume x 3) (gal): 7.90

Conversion Factors (height x factor= 1 well volume)	¾" diameter 0.023	1" diameter 0.041	1 ½" diameter 0.092	2" diameter 0.163	4" diameter 0.652	6" diameter 1.469	8" diameter 2.611

GROUNDWATER DATA [1 L = 0.2642 gal • 1 gal = 3.7854 L]

Purged Volume (gal)	Time	pH	Spec. Cond. (μ S/cm)	Temp (°C)	D.O. mg/L	ORP (mV)	Turbidity (NTU)
	0:00	4.95	150.73	8.66	5.26	168.5	1.03
	56:59	4.85	165.65	8.86	1.47	412.0	212.87
	59:59	4.87	166.14	8.84	1.46	~~69.24~~ (411.8)	69.24
	1:02:59	4.90	165.77	8.83	1.45	411.1	82.70

Sampling Date: 04/17/17	Sampling Method: Low Flow	Time Sampled: 13:20

Container	Volume	Preservative	Cooled	Filtered	Analyte	Lab
Poly	250mL	HNO3	Yes	Yes	DM, cations	Pace
Poly	500mL	None	Yes	No	Alkalinity	SVL
Poly	500mL	None	Yes	No	Anions	SVL

Chain-of-Custody:	Duplicate Sample Number: 07-EMF-MW-B-20170417-GW-B
Chain-of-Custody Number:	QC Sample Number: Time: 13:20

Notes:

☐ Check if Lower Level Mercury analysis is required. ☐ Check if sulfide interference procedure is required.

Deviations/Observations:

Turbidity: 4.26 on separate meter

Picture Log: On tablet 07-EMF-MW-B_20170417

Expendable Supplies Used: 1 standard

TerraGraphics
Environmental Engineering, Inc.

Groundwater Sampling Record

Project: EMFR	Well Number: 07-EMF-MW-C
Project Number: 17001-03	Sample Number: 07-EMF-MW-C-20170417-GW
Location:	Weather: Raining, 43F
Date: 04/17/17	Sampler(s): GM, SH
[De-Ionized Water Date: Pace: 032717-01]	
Depth to Bottom (ft):	Purge Time: 18 minutes
Depth to Water (ft): 4.30	Purge Method: Low Flow
DTB-DTW (ft): ~~4.3~~ SH	Volume Measurement Method: calculated
1 Well Volume (gal):	Purge Volume (Volume x 3) (gal): 2.26

Conversion Factors (height x factor= 1 well volume)	¾" diameter 0.023	1" diameter 0.041	1 ½" diameter 0.092	2" diameter 0.163	4" diameter 0.652	6" diameter 1.469	8" diameter 2.611

GROUNDWATER DATA [1 L = 0.2642 gal • 1 gal = 3.7854 L]

Purged Volume (gal)	Time	pH	Spec. Cond. (μS/cm)	Temp (°C)	D.O. mg/L	ORP (mV)	Turbidity (NTU)
	0:00	7.56	0.45	9.37	10.52	477.9	0.81
	11:59	6.98	0.45	9.13	10.17	367.4	0.83
	14:59	6.99	0.45	9.15	10.14	358.7	0.81
	17:59	6.95	0.45	9.19	10.12	363.3	0.83

Sampling Date: 04/17/17 | Sampling Method: Low Flow | Time Sampled: 16:12

Container	Volume	Preservative	Cooled	Filtered	Analyte	Lab
Poly	250mL	HNO3	Yes	Yes	DM, cations	Pace
Poly	500mL	None	Yes	No	Alkalinity	SVL
Poly	500mL	None	Yes	No	Anions	SVL

Chain-of-Custody:	Duplicate Sample Number:
Chain-of-Custody Number:	QC Sample Number: 07-EMF-MW-C-20170417-EB Time: 16:30

Notes:

☐ Check if Lower Level Mercury analysis is required. ☐ Check if sulfide interference procedure is required.

Equipment blank collected on e-tape.

Deviations/Observations:

Picture Log: On tablet 07-EMF-MW-C_20170417.jpg

Expendable Supplies Used: 1 standard

TerraGraphics Environmental Engineering, Inc.

Groundwater Sampling Record

Project: EMFR	Well Number: 09-EMF-MW-C-DEEP
Project Number: 17001-03	Sample Number: 09-EMF-MW-C-DEEP-20170417-GW
Location:	Weather: Raining, 43F
Date: 04/17/17	Sampler(s): GM, SH
[De-Ionized Water Date:]	
Depth to Bottom (ft):	Purge Time: 1 hour 36 minutes
Depth to Water (ft): ~~4.35~~ 4.37 SH	Purge Method: Low Flow
DTB-DTW (ft): ~~4.35~~ SH	Volume Measurement Method: calculated
1 Well Volume (gal):	Purge Volume (Volume x 3) (gal): 12.04

Conversion Factors (height x factor= 1 well volume)	¾" diameter 0.023	1" diameter 0.041	1 ½" diameter 0.092	2" diameter 0.163	4" diameter 0.652	6" diameter 1.469	8" diameter 2.611

GROUNDWATER DATA [1 L = 0.2642 gal • 1 gal = 3.7854 L]

Purged Volume (gal)	Time	pH	Spec. Cond. (µS/cm)	Temp (°C)	D.O. mg/L	ORP (mV)	Turbidity (NTU)
	0:00	5.92	44.01	9.20	10.25	789.8	0.97
	1:29:56	6.60	74.27	9.13	9.48	360.9	0.92
	1:32:56	6.53	74.80	9.10	9.46	358.1	0.93
	1:35:56	6.50	74.79	9.11	9.45	361.0	0.92

Sampling Date: 04/17/17 | Sampling Method: Low Flow | Time Sampled: 15:22

Container	Volume	Preservative	Cooled	Filtered	Analyte	Lab
Poly	250mL	HNO3	Yes	Yes	DM, cations	Pace
Poly	500mL	None	Yes	No	Alkalinity	SVL
Poly	500mL	None	Yes	No	Anions	SVL

Chain-of-Custody: | Duplicate Sample Number:

Chain-of-Custody Number: | QC Sample Number: MS/D | Time: 15:22

Notes:

☐ Check if Lower Level Mercury analysis is required. ☐ Check if sulfide interference procedure is required.

Deviations/Observations:

Picture Log: On tablet 09-EMF-MW-C-DEEP_20170417.jpg

Expendable Supplies Used: 1 standard

TerraGraphics Environmental Engineering, Inc.

Groundwater Sampling Record

Project: EMFR	Well Number: 07-EMF-MW-D
Project Number: 17001-03	Sample Number: 07-EMF-MW-D-20170418-GW
Location:	Weather: Partly cloudy, 45F
Date: 04/18/17	Sampler(s): GM, SH
[De-Ionized Water Date:]	
Depth to Bottom (ft):	Purge Time: 1 hour 27 minutes
Depth to Water (ft): 5.13	Purge Method: Low Flow
DTB-DTW (ft): ~~5.13~~ GH	Volume Measurement Method: calculated
1 Well Volume (gal):	Purge Volume (Volume x 3) (gal): 10.91

Conversion Factors (height x factor= 1 well volume)	¾" diameter 0.023	1" diameter 0.041	1 ½" diameter 0.092	2" diameter 0.163	4" diameter 0.652	6" diameter 1.469	8" diameter 2.611

GROUNDWATER DATA [1 L = 0.2642 gal • 1 gal = 3.7854 L]

Purged Volume (gal)	Time	pH	Spec. Cond. (μS/cm)	Temp (°C)	D.O. mg/L	ORP (mV)	Turbidity (NTU)
	0:00	6.25	95.12	13.32	7.27	238.6	170.56
	1:20:56	6.16	83.63	8.80	1.92	240.8	64.41
	1:23:56	6.14	85.67	8.82	1.73	239.5	63.09
	1:26:55	6.16	85.99	8.82	1.68	237.1	64.76

Sampling Date: 04/18/17 | Sampling Method: Low Flow | Time Sampled: 12:40

Container	Volume	Preservative	Cooled	Filtered	Analyte	Lab
Poly	250mL	HNO3	Yes	Yes	DM, cations	Pace
Poly	500mL	None	Yes	No	Alkalinity	SVL
Poly	500mL	None	Yes	No	Anions	SVL

Chain-of-Custody:	Duplicate Sample Number:
Chain-of-Custody Number:	QC Sample Number: Time:

Notes:

☐ Check if Lower Level Mercury analysis is required. ☐ Check if sulfide interference procedure is required.

Deviations/Observations:

Picture Log: On tablet

Expendable Supplies Used: 1 hi-cap

TerraGraphics Environmental Engineering, Inc.

Groundwater Sampling Record

Project: EMFR	Well Number: ~~10~~ 08-EMF-MW-E
Project Number: 17001-03	Sample Number: ~~10~~ 08-EMF-MW-E-20170418-GW
Location:	Weather: Raining, 45F
Date: 04/18/17	Sampler(s): GM, SH
[De-Ionized Water Date: Pace: 032717-01 **]**	
Depth to Bottom (ft):	Purge Time: 45 minutes
Depth to Water (ft): 5.00	Purge Method: Low Flow
DTB-DTW (ft): ~~5~~ 6.10	Volume Measurement Method: calculated
1 Well Volume (gal):	Purge Volume (Volume x 3) (gal): 5.64

Conversion Factors (height x factor= 1 well volume)	¾" diameter 0.023	1" diameter 0.041	1 ½" diameter 0.092	2" diameter 0.163	4" diameter 0.652	6" diameter 1.469	8" diameter 2.611

GROUNDWATER DATA [1 L = 0.2642 gal • 1 gal = 3.7854 L]

Purged Volume (gal)	Time	pH	Spec. Cond. (μS/cm)	Temp (°C)	D.O. mg/L	ORP (mV)	Turbidity (NTU)
	0:00	6.52	2,093.3	10.03	7.78	346.7	34.21
	38:59	6.52	2,074.4	9.01	0.37	124.9	24.64
	41:58	6.52	2,075.2	9.03	0.35	122.0	24.87
	44:58	6.52	2,076.4	9.02	0.34	119.8	23.13

Sampling Date: 04/18/17	Sampling Method: Low Flow	Time Sampled: 13:55

Container	Volume	Preservative	Cooled	Filtered	Analyte	Lab
Poly	250mL	HNO3	Yes	Yes	DM, cations	Pace
Poly	500mL	None	Yes	No	Alkalinity	SVL
Poly	500mL	None	Yes	No	Anions	SVL

Chain-of-Custody:	Duplicate Sample Number:
Chain-of-Custody Number:	QC Sample Number: ~~10~~ 08-EMF-MW-E-20170418-FB Time: 13:15

Notes:

☐ Check if Lower Level Mercury analysis is required. ☐ Check if sulfide interference procedure is required.

Deviations/Observations:

Picture Log: On tablet

Expendable Supplies Used: 1 Nalgene, 1 standard

TerraGraphics
Environmental Engineering, Inc.

Groundwater Sampling Record

Project: EMFR	Well Number: ~~10~~ 02-EMF-MW-F
Project Number: 17001-03	Sample Number: ~~10~~ 00-EMF-MW-F-20170418-GW
Location:	Weather: Raining, 50F
Date: 04/18/17	Sampler(s): GM, SH
[De-Ionized Water Date: Pace:032717-01 **]**	
Depth to Bottom (ft):	Purge Time: 24 minutes
Depth to Water (ft): 6.95	Purge Method: Low Flow
DTB-DTW (ft): ~~6.95~~ (3ft)	Volume Measurement Method: calculated
1 Well Volume (gal):	Purge Volume (Volume x 3) (gal): 3.01

Conversion Factors (height x factor= 1 well volume)	¾" diameter 0.023	1" diameter 0.041	1 ½" diameter 0.092	2" diameter 0.163	4" diameter 0.652	6" diameter 1.469	8" diameter 2.611

GROUNDWATER DATA [1 L = 0.2642 gal • 1 gal = 3.7854 L]

Purged Volume (gal)	Time	pH	Spec. Cond. (μS/cm)	Temp (°C)	D.O. mg/L	ORP (mV)	Turbidity (NTU)
	0:00	6.08	292.54	8.86	7.18	207.1	2.60
	18:00	5.57	~~294.46~~ (295.35)	8.74	1.04	299.5	11.75
	21:00	5.56	294.46	8.74	1.02	304.3	13.01
	23:59	5.56	294.64	8.68	1.01	308.2	12.62

Sampling Date: 04/18/17 | Sampling Method: Low Flow | Time Sampled: 14:40

Container	Volume	Preservative	Cooled	Filtered	Analyte	Lab
Poly	250mL	HNO3	Yes	Yes	DM, cations	Pace
Poly	500mL	None	Yes	No	Alkalinity	SVL
Poly	500mL	None	Yes	No	Anions	SVL

Chain-of-Custody:	Duplicate Sample Number:
Chain-of-Custody Number:	QC Sample Number: ~~10~~ 00-EMF-MW-F-20170418-EB Time: 14:30

Notes:

☐ Check if Lower Level Mercury analysis is required. ☐ Check if sulfide interference procedure is required.

Equipment blank collected on e-tape.

Deviations/Observations:

Picture Log: On tablet

Expendable Supplies Used: 1 standard, 1 Nalgene

4/17/17 EMFR GM/SH
BI-ANNUAL 17001-03

8:50 - CALIBRATE TROLL 9000
pH: 4.00/7.00/10.00
ORP: ZOBELS
COND: 1413 uS/cM
DO: 100%

[SITE: 07-EMF-MW-A]
-RAIN 45°F SAMPLERS: GM/SH
DTW: 9.23 FT.
SAMPLE #: 07-EMF-MW-A-20170417-GW
@ 11:50 (1) Hi-Cap
- PURGED 20 MIN BEFORE STARTING
LOW FLOW TEST 1 Project Name

[SITE: 07-EMF-MW-B]
- Rain 45°F Samplers: GM / SH
DTW: 6.91 FT.
Sample #: 07-EMF-MW-B-20170417-GW
@ 13:20
Duplicate: 07-EMF-MW-B-20170417-GW-B
Vu-situ project: 07-EMF-MW-B
MW-B solinst SN#1034502 @ 13:34
1 standard filter
final turbidity 4.26 NTU
GTM

4/17/17 EMFR GM/SH

BI-ANNUAL

17001-03

[Site: 09-EMF-MW-C-DEEP]

Rain, 43°F samplers: GM/SH

DTW: 4.37 FT

Sample# 09-EMF-MW-C-DEEP-20170417-GW

@ 15:22 MS/D

Vu-situ project: 09-EMF-MW-C-DEEP

C-DEEP solinst S/N- 1034516 @ 15:34

1 standard filter

[Site: 07-EMF-MW-C]

Rain, 43°F samplers GM/SH

DTW 4.30 FT

Sample # 07-EMF-MW-C-20170417-GW

@ 16:12

QC: equipment blank / LOT# 032717-01

07-EMF-MW-C-20170417-EB @ 16:30*

Vu-situ project: 07-~~EMF~~-MW-C

MW-C solinst S/N-1044866 @ 16:17

1 standard filter

*EB ON E-TAPE

METER CHECK @ 17:15 TEMP: 19.22°C

pH: 4.09 DO: 100.3%

COND: 1.417 ms/cm

ORP: 238.4 mV

— GTM —

4/18/17 EMFR GM/SH

BI-ANNUAL

17001-03

CALIBRATIONS: PLACED METER (TROLL 600) ON SOLUTIONS; TEMP: 18.79°C

pH: 4.02

ORP: 236.6 MV

COND: 1.414 ms/cm

DO: 100.5%

-NO CALIBRATIONS NEEDED

-DROP OFF SUL BOTTLES @ 10:40

[SITE: 07-EMF-MW-D]

PARTLY CLOUDY: 49°F

DTW: 5.13 FT

SAMPLE#: 07-EMF-MW-D-20170418-GW

@ 45 MIN; CLEANED OUT FLOW CELL (SPIKES IN RESULTS)

SAMPLE @: 12:40

Vu-situ project: 07-EMF-MW-D

MW-D solinst S/N-1034485

1 Hi-cap

— GTM —

4/18/17 EMFR GM/SH

bi-annual

17001-03

[Site: 08-EMF-MW-E]

Rain, 45°F samplers GM, SH

DTW 5.00 feet

Sample: 08-EMF-MW-E-20170418-GW @ 13:55

QC filter blank: 08-EMF-MW-E-20170418-FB

Pace DI Lot#032717-01 @ 13:15

Vu-situ project: 10-EMF-MW-E

MW-E solinst S/N-1042614

1 standard filter + 1 Nalgene

Site: 08-EMF-MW-F]

Rain, 50°F samplers GM/SH

DTW: 6.95 FT.

sample: 08-EMF-MW-F-20170418-GW @ 14:40

* QC: 08-EMF-MW-F-20170418-EB @ 14:30

Pace DI Lot# 032717-01

Vu-situ project: 10-EMF-MW-F

MW-F solinst S/N-1034560/ Lot# 032717-01

*equipment blank on e-tape

1 Nalgene + 1 standard

Barologger S/N-1042290

— GTM —

4/18/17 EMFR GM/SH

bi-annual

17001-03

PZ-B DTW: no water

S/N-1058761

PZ-A DTW: 18.06 FT.

METER CHECK @ 16:09

TEMP: 16.23°C

pH: 3.96/6.98/9.89

COND: 1418 µs/cm

ORP: 240.1

DO: 101.4%

GTM

MAUL FOSTER ALONGI

Well Development Form

Project No.	Date 7/12/17
Site Location: EAST MISSION FLATS REPOSITORY	Well: 07-EMF-MW-A
Name: GREG MALONE	Initial DTB: 29.59 Final DTB 30.25
Development Method: SURGE + PURGE	Initial DTW: 13.90 Final DTW 13.96
Total Water Removed 141 GAL	Pore Volume:
Water Contained YES	Casing Diameter: 4"
Estimated Specific Capacity	Meter No.

Time	Cum. Vol Removed (GAL)	Turbidity NTU	pH	Conductivity (uS/cm)	Temp °C	DO (mg/L)	Eh	Comments
10:02	0.5	SLUDGE	NA	NA	NA	NA	NA	DROPPED TO BOTTOM
10:04	5.5	HIGH						ORANGE SLUDGE
10:15	6.0	964						DTW = 14.76
10:40	16.0	620						MUCK STILL ON BOTTOM
11:02	26.0	925						DTW = 14.76 (GREY SILT)
11:12	30.0	914						SURGE FOR 10 MIN
11:37	40.0	HIGH						LIGHT BROWN SILT
11:56	50.0	447						DTW = 18.85 (w/o PUMP)
12:07	55.0	268						DTW = 18.99
12:19	60.0	156						DTW = 18.99
12:28	65.0	88[illegible]						DTW = 18.99
12:47	70.0	HIGH						SURGE 10 MIN (LIGHT BROWN)
13:01	80.0	884						DTW = 15.97
13:21	90.0	395						DTW = 15.91
13:39	100.0	146						DTW = 15.90
13:57	110.0	93						DTW: 15.89
14:06	115.0	72						PLACED CLEAN PUMP IN WELL
14:14	120.0	40						DTW = 15.80
14:23	125.0	24						
14:31	130.0	17						
14:45	135	13.7						HOOK UP QED DEDICATED PUMP + PURGE ON 10-5 CYCLE (10 FILL AIR + 5 SEC. DISCHARGE)
14:52	138	11.8						
15:00	140	11.4						
15:12	141	9.3						

Page of

MAUL FOSTER ALONGI

Well Development Form

Project No.	Date 7-17-17
Site Location: EAST MISSION FLATS REPOSITORY	Well: 07-EMF-MW-D
Name: GREG MALONE	Initial DTB: 30.27 Final DTB 30.34
Development Method: SURGE + PURGE	Initial DTW: 9.42 Final DTW 9.76
Total Water Removed 148 GAL	Pore Volume:
Water Contained YES	Casing Diameter: 4"
Estimated Specific Capacity	Meter No.

Time	Cum. Vol Removed (GAL)	Turbidity NTU	pH	Conductivity (uS/cm)	Temp °C	DO (mg/L)	Eh	Comments
9:53	5	HIGH						ORANGE SLUDGE
10:09	10	236						ORANGE FLOC
10:35	20	922						SURGE WELL
11:10	40	198						DTW: 14.19 FT
11:27	50	91						DTW: 14.11 FT,
11:53	60	HIGH						BROWN SILT/SURGE WELL
12:12	70	533						DTW: 14.95
12:29	80	242						DTW: 14.88
12:46	90	140						DTW: 14.81
13:04	100	85						DTW: 14.77
13:22	110	52						DTW: 14.70
13:31	~~1~~115	45						
13:41	120	43						
13:52	125	40						
14:00	130	33						DTW: 14.64
14:10	135	32						
14:12	140	21						
14:23	145	16						DTW: 11.75
14:49	148	8.8						

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(10 SEC FILL + 5 SEC DISCHARGE)

USED DEDICATED QED EQUIPMENT

alta-se.com

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TECHNICAL MEMORANDUM

To: Christina Johnson, MFA, Kellogg

CC: Alan Hughes, MFA, Vancouver

From: Greg Malone, Alta, Kellogg
Robin Nimmer, Alta, Moscow

Date: November 27, 2017

Job Code: 17001-03

Subject: Field Summary for the East Mission Flats Repository (EMFR) Second 2017 Sampling Event

The purpose of this technical memorandum is to summarize the field activities for ongoing bi-annual monitoring at the East Mission Flats Repository (EMFR). This technical memorandum contains a description of the second 2017 bi-annual sampling event, as well as any deviations from the sampling plans. The field crew followed the Site-Specific Water Sampling and Analysis Plan (SSAP) for East Mission Flats Repository (MFA 2017), and the Programmatic Quality Assurance Project Plan (QAPP) for Upper and Lower Basins of the Coeur d'Alene River, Idaho (MFA 2016).

Section 1 Field Trip Summary

Alta's field crew conducted water sampling on October 24 and 25, 2017 at EMFR. The field crew visited a total of seven groundwater monitoring locations as listed below.

- 07-EMF-MW-A
- 07-EMF-MW-B
- 07-EMF-MW-C
- 07-EMF-MW-D
- 08-EMF-MW-E
- 08-EMF-MW-F
- 09-EMF-MW-C-DEEP

Groundwater sample collection, handling, and labeling followed the SSAP and QAPP, with any deviations listed in Section **Error! Reference source not found.**. The field crew also visited the two piezometers located in the waste mass, 10-EMF-PZ-A and 10-EMF-PZ-B, to download water level data. All electronic data were submitted to MFA.

Section 2 Sample Collection and Field Data

The field crew collected a total of 12 samples: 7 groundwater site samples and 5 quality assurance/quality control (QA/QC) samples. A "sample" represents all of the bottles collected at a particular site. All samples were collected in accordance with the SSAP and QAPP.

Groundwater samples were shipped to Pace Laboratory for analysis of dissolved metals and cations, and total cations and hardness. Short hold time samples were submitted to Silver Valley Laboratory (SVL) for analysis of alkalinity and anions.

Low-flow sampling techniques were implemented using dedicated QED micropurge pumps to collect water quality samples at all groundwater sites. Field parameters were measured at all monitoring locations and include pH, temperature (in degrees Celsius [°C]), specific conductance (in microSiemens per centimeter [µS/cm]), dissolved oxygen (DO, in milligrams per liter [mg/L]), oxidation-reduction potential (ORP, in millivolts [mV]), and turbidity (in NTU). Depth to water and depth to bottom was also measured. Field parameter data are presented in Table 1 and depth to water and calculated water column heights for all groundwater wells are presented in **Error! Reference source not found.**.

Table 1. EMFR Groundwater Quality Parameters

Site	Date	Parameter					
		pH	Specific Conductance (µS/cm)	Temperature (°C)	DO (mg/L)	ORP (mV)	Turbidity (NTU)
07-EMF-MW-A	24-Oct-17	5.44	141.24	9.51	0.06	155.8	20.43
07-EMF-MW-B	24-Oct-17	5.32	139.24	10.22	0.27	218.4	0.46
07-EMF-MW-C	24-Oct-17	5.63	149.71	10.18	0.26	116.2	2.45
09-EMF-MW-C-Deep	24-Oct-17	6.12	116.73	10.07	0.03	-26.1	0.68
07-EMF-MW-D	24-Oct-17	5.95	124.22	9.61	0.02	75.3	3.57
08-EMF-MW-E	25-Oct-17	6.33	2271.90	11.69	0.02	-19.7	4.75
08-EMF-MW-F	25-Oct-17	5.47	347.55	10.14	0.10	215.6	4.74

Table 2. EMFR Groundwater Depth to Water and Water Column Heights

Site	Date	Depth to Water (feet)	Depth to Bottom (feet)	Height of Water Column (feet)
07-EMF-MW-A	24-Oct-17	14.04	30.20	16.16
07-EMF-MW-B	24-Oct-17	11.74	30.29	18.55
07-EMF-MW-C	24-Oct-17	9.18	30.35	21.17
09-EMF-MW-C-Deep	24-Oct-17	9.22	98.19	88.97
07-EMF-MW-D	24-Oct-17	10.17	30.29	20.12
08-EMF-MW-E	25-Oct-17	9.29	27.45	18.16
08-EMF-MW-F	25-Oct-17	11.97	31.68	19.71

Section 3 Electronic Data

All seven electronic pressure transducers at groundwater sites, plus two piezometer sites in the repository were downloaded and corrected with the barometric pressure transducer installed in 08-EMF-MW-F. All data were of acceptable quality and submitted to MFA. Alta's field crew will move the location of the barometric pressure transducer to a higher on-site elevation because of possible flooding issues in the upcoming months.

Section 4 References

Maul Foster and Alongi (MFA), 2016. Programmatic Quality Assurance Project Plan (QAPP) for Upper and Lower Basins of the Coeur d'Alene River, Idaho. December 5.

MFA, 2017. Site-Specific Water Sampling and Analysis Plan (SSAP). Project Area: East Mission Flats Repository. SSAP Number 2017-02. March 17.

Alta Science & Engineering, Inc.

Groundwater Sampling Record

Project: **East Mission Flats Repository**	Well Number: 07-EMF-MW-A
Project Number:	Sample Number: EMFR-07-EMF-MW-A-20171024-GW
Location:	Weather: Clear 40°F
Date: 10-24-2017	Sampler(s): GM/JG
[De-Ionized Water Date:]	
Depth to Bottom (ft): 30.20	Purge Time: 30 min
Depth to Water (ft): 14.04	Purge Method: Low Flow
DTB-DTW (ft):	Volume Measurement Method:
1 Well Volume (gal):	Purge Volume (Volume x 3) (gal):

Conversion Factors (height x factor= 1 well volume)	¾" diameter 0.023	1" diameter 0.041	1 ½" diameter 0.092	2" diameter 0.163	4" diameter 0.652	6" diameter 1.469	8" diameter 2.611

GROUNDWATER DATA [1 L = 0.2642 gal • 1 gal = 3.7854 L]

Purged Volume (gal)	Time	pH	Spec. Cond. (µS/cm)	Temp (°C)	Dissolved Oxygen mg/L	Dissolved Oxygen %	ORP (mV)	Turb (NTU)
Ø	00:00	5.74	156.81	10.64	2.00	17.79	117.5	35.07
	00:15	5.54	145.49	9.50	0.05	0.48	119.3	31.90
	00:18	5.45	143.78	9.50	0.05	0.47	134.0	25.84
	00:21	5.44	197.46	9.50	0.06	0.55	137.1	22.90
	00:24	5.45	141.85	9.49	0.06	0.59	156.9	20.65
	00:27	5.45	141.20	9.51	0.06	0.65	150.3	20.36
	00:30	5.44	141.24	9.51	0.06	0.68	155.8	20.43

Sampling Date: 10-24-2017 | Sampling Method: Low Flow | Time Sampled: 11:10

Container	Volume	Preservative	Cooled	Filtered	Analyte	Lab
Poly	250mL	HNO3	Y	Y	DM, Cations	Pace
Poly	250mL	HNO3	Y	N	Cations, Hard	Pace
Poly	500mL	None	Y	N	Anions	SVL
Poly	500mL	None	Y	N	Alkalinity	SVL

Chain-of-Custody: Yes/No	Duplicate Sample Number:
Chain-of-Custody Number:	QC Sample Number: Time:

Notes: 4.1 mg/L Ferrous iron results

Deviations/Observations:

Picture Log:

Expendable Supplies Used: 1 reg inline filter

Alta
Science & Engineering, Inc.

Groundwater Sampling Record

Project: **East Mission Flats Repository**	Well Number: 07-EMF-MW-B
Project Number:	Sample Number: ~~EMFB-~~ 07-EMF-MW-B-20171024-GW
Location:	Weather: Sunny 44°F
Date: 10-24-2017	Sampler(s): GM/JG
[De-Ionized Water Date:]	
Depth to Bottom (ft): 30.29	Purge Time: ~~12:00~~ SL 24min
Depth to Water (ft): 11.74	Purge Method: Low Flow
DTB-DTW (ft):	Volume Measurement Method:
1 Well Volume (gal):	Purge Volume (Volume x 3) (gal):

Conversion Factors (height x factor= 1 well volume)	¾" diameter 0.023	1" diameter 0.041	1 ½" diameter 0.092	2" diameter 0.163	4" diameter 0.652	6" diameter 1.469	8" diameter 2.611

GROUNDWATER DATA [1 L = 0.2642 gal • 1 gal = 3.7854 L]

Purged Volume (gal)	Time 11:33	pH	Spec. Cond. (μS/cm)	Temp (°C)	Dissolved Oxygen mg/L	Dissolved Oxygen %	ORP (mV)	Turb (NTU)
	00:00	5.54	169.61	10.00	6.37	58.74	162.9	1.15
	00:15	5.30	138.94	10.20	0.29	2.77	202.7	0.47
	00:18	5.30	139.03	10.27	0.28	2.68	213.5	0.48
	00:21	5.30	138.36	10.23	0.27	2.59	216.6	0.51
	00:24	5.32	139.24	10.22	0.27	2.57	218.4	0.46

Sampling Date: 10/24/2017 | Sampling Method: Low Flow | Time Sampled: 12:00

Container	Volume	Preservative	Cooled	Filtered	Analyte	Lab
Poly	250mL	HNO3	Y	Y	DM, Cations	Pace
Poly	250mL	HNO3	Y	N	Cations, Hard	Pace
Poly	500mL	None	Y	N	Anions	SVL
Poly	500mL	None	Y	N	Alkalinity	SVL

Chain-of-Custody: Yes/No	Duplicate Sample Number: 07-EMF-MW-B-20171024-GW-B
Chain-of-Custody Number:	QC Sample Number: Time: 12:00

Notes: 0.0 mg/L Ferrous iron results

Deviations/Observations:

Picture Log:

Expendable Supplies Used: 1 reg inline filter

Alta
Science & Engineering, Inc.

MS/D

Groundwater Sampling Record

Project: **East Mission Flats Repository**	Well Number: EMF- ~~09~~-EMF-MW-C
Project Number:	Sample Number: EMF- ~~09~~-EMF-MW-C-20171024-GW
Location:	Weather: Sunny 50°F
Date: 10/24/2017	Sampler(s): GM/JG
[De-Ionized Water Date:]	
Depth to Bottom (ft): 30.35	Purge Time:
Depth to Water (ft): 9.18	Purge Method: Low Flow
DTB-DTW (ft):	Volume Measurement Method:
1 Well Volume (gal):	Purge Volume (Volume x 3) (gal):

Conversion Factors (height x factor= 1 well volume)	¾" diameter 0.023	1" diameter 0.041	1 ½" diameter 0.092	2" diameter 0.163	4" diameter 0.652	6" diameter 1.469	8" diameter 2.611

GROUNDWATER DATA [1 L = 0.2642 gal • 1 gal = 3.7854 L]

Purged Volume (gal)	Time 12:57	pH	Spec. Cond. (µS/cm)	Temp (°C)	Dissolved Oxygen mg/L	Dissolved Oxygen %	ORP (mV)	Turb (NTU)
	00:00	5.42	82.52	10.47	2.70	23.18	66.2	1.99
	00:15	5.59	150.16	10.21	0.15	1.48	115.4	2.27
	00:18	5.61	149.85	10.19	0.22	2.13	122.8	2.20
	00:21	5.64	149.49	10.19	0.26	2.48	120.6	1.46
	00:24	5.63	149.71	10.18	0.26	2.48	116.2	2.45

Sampling Date: 10-24-2017 | Sampling Method: Low Flow | Time Sampled: 13:21

Container	Volume	Preservative	Cooled	Filtered	Analyte	Lab
Poly	250mL	HNO3	Y	Y	DM, Cations	Pace
Poly	250mL	HNO3	Y	N	Cations, Hard	Pace
Poly	500mL	None	Y	N	Anions	SVL
Poly	500mL	None	Y	N	Alkalinity	SVL

Chain-of-Custody: Yes/No	Duplicate Sample Number:
Chain-of-Custody Number:	QC Sample Number: Time:

Notes: 0.00 mg/L Ferrous Iron Result

Deviations/Observations:

Picture Log:

Expendable Supplies Used: 1 reg inline filter

Alta Science & Engineering, Inc.

Groundwater Sampling Record

Project: **East Mission Flats Repository**	Well Number: 09-EMF-MW-C-DEEP
Project Number:	Sample Number: EMFR-09-EMF-MW-C-DEEP-20171024-GW
Location:	Weather: Sunny 49°F
Date: 10-24-2017	Sampler(s): GM/JG
[De-Ionized Water Date:]	
Depth to Bottom (ft):	Purge Time: 21 min
Depth to Water (ft): 9.22	Purge Method: Low Flow
DTB-DTW (ft): 98.19	Volume Measurement Method:
1 Well Volume (gal):	Purge Volume (Volume x 3) (gal):

Conversion Factors (height x factor= 1 well volume)	¾" diameter 0.023	1" diameter 0.041	1 ½" diameter 0.092	2" diameter 0.163	4" diameter 0.652	6" diameter 1.469	8" diameter 2.611

GROUNDWATER DATA [1 L = 0.2642 gal • 1 gal = 3.7854 L]

Purged Volume (gal)	Time 12:20	pH	Spec. Cond. (µS/cm)	Temp (°C)	Dissolved Oxygen mg/L	Dissolved Oxygen %	ORP (mV)	Turb (NTU)
	00:00	6.28	89.07	10.34	1.89	17.88	146.9	3.22
	00:15	6.13	116.95	10.06	0.05	0.47	-22.9	0.80
	00:18	6.12	116.90	10.05	0.03	0.31	-26.5	0.64
	00:21	6.12	116.73	10.07	0.03	0.24	-26.1	0.68

Sampling Date: 10/24/2017 | Sampling Method: Low Flow | Time Sampled: 12:42

Container	Volume	Preservative	Cooled	Filtered	Analyte	Lab
Poly	250mL	HNO3	Y	Y	DM, Cations	Pace
Poly	250mL	HNO3	Y	N	Cations, Hard	Pace
Poly	500mL	None	Y	N	Anions	SVL
Poly	500mL	None	Y	N	Alkalinity	SVL

Chain-of-Custody: Yes/No	Duplicate Sample Number:
Chain-of-Custody Number:	QC Sample Number: Time:

Notes: 1.25 mg/L Ferrous Iron Results

Deviations/Observations:

Picture Log:

Expendable Supplies Used: 1 reg inline filter

Alta Science & Engineering, Inc.

Groundwater Sampling Record

Project: **East Mission Flats Repository**	Well Number: 07-EMF-MW-D
Project Number:	Sample Number: EMFR 07-EMF-MW-D-20171024-GW
Location:	Weather: Sunny 57°F
Date: 10-24-2017	Sampler(s): GM / JG
[De-Ionized Water Date: 090817-29/31 **]**	
Depth to Bottom (ft): 30.29	Purge Time:
Depth to Water (ft): 10.17	Purge Method: Low Flow
DTB-DTW (ft):	Volume Measurement Method:
1 Well Volume (gal):	Purge Volume (Volume x 3) (gal):

Conversion Factors (height x factor= 1 well volume)	¾" diameter	1" diameter	1 ½" diameter	2" diameter	4" diameter	6" diameter	8" diameter
	0.023	0.041	0.092	0.163	0.652	1.469	2.611

GROUNDWATER DATA [1 L = 0.2642 gal • 1 gal = 3.7854 L]

Purged Volume (gal)	**Time** 13:48	**pH**	**Spec. Cond. (µS/cm)**	**Temp (°C)**	**Dissolved Oxygen**		**ORP (mV)**	**Turb (NTU)**
					mg/L	**%**		
	00:00	5.88	116.94	10.02	2.41	21.70	77.9	33.88
	00:15	5.72	124.61	9.64	0.02	0.23	66.6	14.97
	00:20	5.92	124.88	9.61	0.02	0.20	76.2	9.81
	00:23	5.93	124.94	9.62	0.02	0.19	73.3	5.24
	00:26	5.95	124.22	9.61	0.02	0.19	75.3	3.57

Sampling Date:	Sampling Method: Low Flow	Time Sampled: 14:14

Container	**Volume**	**Preservative**	**Cooled**	**Filtered**	**Analyte**	**Lab**
Poly	250mL	HNO3	Y	Y	DM, Cations	Pace
Poly	250mL	HNO3	Y	N	Cations, Hard	Pace
Poly	500mL	None	Y	N	Anions	SVL
Poly	500mL	None	Y	N	Alkalinity	SVL

Chain-of-Custody: Yes/No	Duplicate Sample Number:
Chain-of-Custody Number:	QC Sample Number: 07-EMF-MW-D-20171024-~~GW~~ JG EB Time: ~~14:14~~ 30 15:00

Notes: 3.35 mg/L Ferrous Iron Results

Deviations/Observations:

Picture Log:

Expendable Supplies Used: 1 reg inline filter

Alta Science & Engineering, Inc.

Groundwater Sampling Record

Project: **East Mission Flats Repository**	Well Number: 08-EMF-MW-E
Project Number:	Sample Number: EMFR-08-EMF-MW-E-20171025-GW
Location:	Weather: Foggy 42°F
Date: 10-25-17	Sampler(s): GM/JG
[De-Ionized Water Date: 090817-33 **]**	
Depth to Bottom (ft): 27.45	Purge Time: 31 min
Depth to Water (ft): 9.29	Purge Method: Low Flow
DTB-DTW (ft):	Volume Measurement Method:
1 Well Volume (gal):	Purge Volume (Volume x 3) (gal):

Conversion Factors (height x factor= 1 well volume)	¾" diameter	1" diameter	1 ½" diameter	2" diameter	4" diameter	6" diameter	8" diameter
	0.023	0.041	0.092	0.163	0.652	1.469	2.611

GROUNDWATER DATA [1 L = 0.2642 gal • 1 gal = 3.7854 L]

Purged Volume (gal)	Time 10:45	pH	Spec. Cond. (µS/cm)	Temp (°C)	Dissolved Oxygen mg/L	Dissolved Oxygen %	ORP (mV)	Turb (NTU)
	00:00	6.43	2182.2	11.86	2.95	26.50	-5.9	64.58
	00:25	6.34	2271.9	11.62	0.02	0.24	-16.3	9.10
	00:28	6.34	2272.2	11.69	0.02	0.23	-18.1	6.02
	00:31	6.33	2271.9	11.69	0.02	0.21	-19.7	4.75

Sampling Date: 10-25-17 | Sampling Method: Low Flow | Time Sampled: 11:16

Container	Volume	Preservative	Cooled	Filtered	Analyte	Lab
Poly	250mL	HNO3	Y	Y	DM, Cations	Pace
Poly	250mL	HNO3	Y	N	Cations, Hard	Pace
Poly	500mL	None	Y	N	Anions	SVL
Poly	500mL	None	Y	N	Alkalinity	SVL

Chain-of-Custody: Yes/No	Duplicate Sample Number:
Chain-of-Custody Number:	QC Sample Number: EMFR-08-EMF-MW-E-20171026-FB Time: 11:03

Notes: 6.3 mg/L Ferrous Iron Results

Deviations/Observations:

Picture Log:

Expendable Supplies Used: 1 high cap filter, 1 nalgene filter

Alta
Science & Engineering, Inc.

Groundwater Sampling Record

Project: **East Mission Flats Repository**	Well Number: 08-EMF-MW-F
Project Number:	Sample Number: EMFR-08-EMF-MW-F-20171025-GW
Location:	Weather: Sunny, 52°F
Date: 10-25-17	Sampler(s): GW/JG
[De-Ionized Water Date: 090817-30]	
Depth to Bottom (ft): 31.68	Purge Time: 26min
Depth to Water (ft): 11.97	Purge Method: Low Flow
DTB-DTW (ft):	Volume Measurement Method:
1 Well Volume (gal):	Purge Volume (Volume x 3) (gal):

Conversion Factors (height x factor= 1 well volume)	¾" diameter 0.023	1" diameter 0.041	1 ½" diameter 0.092	2" diameter 0.163	4" diameter 0.652	6" diameter 1.469	8" diameter 2.611

GROUNDWATER DATA [1 L = 0.2642 gal • 1 gal = 3.7854 L]

Purged Volume (gal)	Time 11:44	pH	Spec. Cond. (µS/cm)	Temp (°C)	Dissolved Oxygen mg/L	Dissolved Oxygen %	ORP (mV)	Turb (NTU)
	00:00	6.12	329.28	11.33	6.24	60.26	91.2	13.87
	00:20	5.49	347.58	10.18	0.11	1.06	209.3	9.25
	00:23	5.47	347.60	10.16	0.11	1.06	212.9	6.55
	00:26	5.47	347.55	10.14	0.10	1.00	215.6	4.74

Sampling Date: 10-25-17 | Sampling Method: Low Flow | Time Sampled: 12:10

Container	Volume	Preservative	Cooled	Filtered	Analyte	Lab
Poly	250mL	HNO3	Y	Y	DM, Cations	Pace
Poly	250mL	HNO3	Y	N	Cations, Hard	Pace
Poly	500mL	None	Y	N	Anions	SVL
Poly	500mL	None	Y	N	Alkalinity	SVL

Chain-of-Custody: Yes/No	Duplicate Sample Number:
Chain-of-Custody Number:	QC Sample Number: EMFR-08-EMF-MW-F-20171025-FB Time: 11:59

Notes: Ø mg/L Ferrous Iron Results

Deviations/Observations:

Picture Log:

Expendable Supplies Used: 1 reg inline filter, 1 nalgene filter

10/24/17 EMFR GM/JG
BI-ANNUAL

MORNING METER CHECK: TEMP 18.85°C
pH: 4.05 / 7.02 / 10.03 → NO CALIBRATION
COND: 1409.8 μS/CM → NO CALIBRATION
ORP: 233.59 mV
DO: 100.49 % → NO CALIBRATION

[Site: 07-EMF-MW-A]
Sunny 40°F Samplers: GM/JG
DTW: 14.04 FT
Sample # 07-EMF-MW-A-20171024-GW
@ 11:10 1 standard filter

[Site: 07-EMF-MW-B
Sunny 44°F Samplers: GM/JG
DTW: 11.74 FT
Sample #: 07-EMF-MW-B-20171024-GW
Dup: 07-EMF-MW-B-20171024-GW-B
@ 12:00 1 standard Filter

[Site: 09-EMF-MW-C-DEEP
Sunny 49°F Samplers: GM/JG
DTW: 9.22 FT
Sample #: 09-EMF-MW-C-DEEP-20171024-GW
@ 12:42 1 standard filter

10/24/17 EMFR GM/JG

BI-ANNUAL

[Site: 07-EMF-MW-C]

Sunny 50°F Samplers: GM / JG

DTW: 9.18 FT

Sample #: 07-EMF-MW-C-20171024-GW

@ 13:21 MS/D collected 1 standard filter

[Site: 07-EMF-MW-D

Sunny 57°F Samplers: GM / JG

DTW: 10.17

Sample #: 07-EMF-MW-D-20171024-GW

@ 14:14 1 standard Filter

Sample #: 07-EMF-MW-D-20171024-[illegible]-EB

@ 15:00

METER CHECK: TEMP: 19.29°C

pH: 4.08/7.11/10.07

COND: 1431.4 μs/cm ORP: 235.7 mV

DO: 101.2%

GTM

10/25/17 EMFR GM/JG

BI-ANNUAL

MORNING METER CHECK: TEMP: 20.44°C

pH: 4.04 / 7.06 / 10.01 → NO CAL

COND: 1422.0 μs/cm → NO CAL

ORP: 234.9 mV → NO CAL

DO: 101.0 % → NO CAL

[Site: 08-EMF-MW-E]

Foggy, 42°F Samplers: GM / JG

DTW: 9.29 FT

Sample #: EMFR-08-EMF-MW-E-20171025-GW

@ 11:16 1 high cap filter

Field Blank: EMFR-08-EMF-MW-E-20171025-FB

@ 11:03 1 nalgene filter

[Site: 08-EMF-MW-F

Sunny, 52°F Sampler: GM / JG

DTW: 11.97 FT

Sample #: EMFR-08-EMF-MW-F-20171025-GW

@ 12:10 1 reg inline filter

Equipment Blank: EMFR-08-EMF-MW-F-20171025-EB

@ 11:59 1 nalgene Filter

METER CHECK: TEMP: 18.43°C pH: 4.10/7.12/10.08

COND: 1431.7 μs/cm ORP: 229.9 mV

DO: 100.3%

GTM

APPENDIX E
ANALYTICAL LABORATORY REPORTS

MAUL FOSTER and ALONGI

PROJECT NAME: **East Mission Flats 2017**

SVL/SDG: **X7D0329**

CASE NARRATIVE / QUALIFIERS SUMMARY

2

Laboratory: **SVL Analytical, Inc.** SDG: **X7D0329**
Client: **Maul Foster and Alongi (MFA)** Project: **East Mission Flats (EMF) 2017 - Level**

Qualifier	Meaning
M1	Matrix spike recovery was high, but the LCS recovery was acceptable.

ANALYSES DATA PACKAGE COVER PAGE

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Laboratory: **SVL Analytical, Inc.**
Client: **Maul Foster and Alongi (MFA)**
SDG: **X7D0329**
Project: **East Mission Flats (EMF) 2017 - Level**

Client Sample ID	Lab Sample ID	EPA 300.0	SM 2320B
07-EMF-MW-A-20170417-GW	X7D0329-01	X	X
07-EMF-MW-B-20170417-GW	X7D0329-02	X	X
07-EMF-MW-B-20170417-GW-B	X7D0329-03	X	X
07-EMF-MW-C-20170417-EB	X7D0329-06	X	X
07-EMF-MW-C-20170417-GW	X7D0329-05	X	X
09-EMF-MW-C-DEEP-20170417-GW	X7D0329-04	X	X

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in computer-readable data submitted on diskette has been autorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Signature: Kirby Gray
Name: **Kirby Gray**

Date: **5/2/2017**
Title: **Technical Director**

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INORGANIC ANALYSIS DATA SHEET

07-EMF-MW-A-20170417-GW

Laboratory: **SVL Analytical, Inc.**
Client: **Maul Foster and Alongi (MFA)**
Matrix: **Ground Water**
Solids: **As Received**

SDG: **X7D0329**
Project: **East Mission Flats (EMF) 2017 - Level 3**
Laboratory ID: **X7D0329-01**
Sampled: **04/17/17 11:50** Recv'd: **04/18/17 10:35**

CAS NO.	Analyte	Conc	Units	MDL	MRL	Dil'n Factor	C	Q	Method
16887-00-6	Chloride	12.4	mg/L	0.5	2	10	D		EPA 300.(
14808-79-8	Sulfate as SO4	55.6	mg/L	1.2	3	10	D		EPA 300.(
471-34-1 (ALK)	Total Alkalinity as CaCO3	9.3	mg/L		1	1			SM 2320E
471-34-1 (HCO3)	Bicarbonate as CaCO3	9.3	mg/L		1	1			SM 2320E
471-34-1 (CO3)	Carbonate as CaCO3	*1.0*	mg/L		1	1	U		SM 2320E
471-34-1 (OH)	Hydroxide as CaCO3	*1.0*	mg/L		1	1	U		SM 2320E

Non-Detects are reported at the MRL and qualified with a "U" per EPA SOW ILM05 and later. Detects less than the MRL are qualified with a "J".

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INORGANIC ANALYSIS DATA SHEET

07-EMF-MW-B-20170417-GW

Laboratory: **SVL Analytical, Inc.**
Client: **Maul Foster and Alongi (MFA)**
Matrix: **Ground Water**
Solids: **As Received**

SDG: **X7D0329**
Project: **East Mission Flats (EMF) 2017 - Level 3**
Laboratory ID: **X7D0329-02**
Sampled: **04/17/17 13:20** Recv'd: **04/18/17 10:35**

CAS NO.	Analyte	Conc	Units	MDL	MRL	Dil'n Factor	C	Q	Method
16887-00-6	Chloride	17.6	mg/L	0.5	2	10	D		EPA 300.(
14808-79-8	Sulfate as SO4	34.1	mg/L	0.12	0.3	1			EPA 300.(
471-34-1 (ALK)	Total Alkalinity as CaCO3	14.5	mg/L		1	1			SM 2320E
471-34-1 (HCO3)	Bicarbonate as CaCO3	14.5	mg/L		1	1			SM 2320E
471-34-1 (CO3)	Carbonate as CaCO3	*1.0*	mg/L		1	1	U		SM 2320E
471-34-1 (OH)	Hydroxide as CaCO3	*1.0*	mg/L		1	1	U		SM 2320E

Non-Detects are reported at the MRL and qualified with a "U" per EPA SOW ILM05 and later. Detects less than the MRL are qualified with a "J".

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INORGANIC ANALYSIS DATA SHEET

07-EMF-MW-B-20170417-GW-B

Laboratory: **SVL Analytical, Inc.**
Client: **Maul Foster and Alongi (MFA)**
Matrix: **Ground Water**
Solids: **As Received**

SDG: **X7D0329**
Project: **East Mission Flats (EMF) 2017 - Level 3**
Laboratory ID: **X7D0329-03**
Sampled: **04/17/17 13:20** Recv'd: **04/18/17 10:35**

CAS NO.	Analyte	Conc	Units	MDL	MRL	Dil'n Factor	C	Q	Method
16887-00-6	Chloride	16.8	mg/L	0.5	2	10	D		EPA 300.(
14808-79-8	Sulfate as SO4	34.0	mg/L	0.12	0.3	1			EPA 300.(
471-34-1 (ALK)	Total Alkalinity as CaCO3	14.9	mg/L		1	1			SM 2320E
471-34-1 (HCO3)	Bicarbonate as CaCO3	14.9	mg/L		1	1			SM 2320E
471-34-1 (CO3)	Carbonate as CaCO3	*1.0*	mg/L		1	1	U		SM 2320E
471-34-1 (OH)	Hydroxide as CaCO3	*1.0*	mg/L		1	1	U		SM 2320E

Non-Detects are reported at the MRL and qualified with a "U" per EPA SOW ILM05 and later. Detects less than the MRL are qualified with a "J".

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INORGANIC ANALYSIS DATA SHEET

09-EMF-MW-C-DEEP-20170417-GW

Laboratory: **SVL Analytical, Inc.**
Client: **Maul Foster and Alongi (MFA)**
Matrix: **Ground Water**
Solids: **As Received**

SDG: **X7D0329**
Project: **East Mission Flats (EMF) 2017 - Level 3**
Laboratory ID: **X7D0329-04**
Sampled: **04/17/17 15:22** Recv'd: **04/18/17 10:35**

CAS NO.	Analyte	Conc	Units	MDL	MRL	Dil'n Factor	C	Q	Methoc
16887-00-6	Chloride	2.16	mg/L	0.05	0.2	1			EPA 300.(
14808-79-8	Sulfate as SO4	12.9	mg/L	0.12	0.3	1			EPA 300.(
471-34-1 (ALK)	Total Alkalinity as CaCO3	27.1	mg/L		1	1			SM 2320E
471-34-1 (HCO3)	Bicarbonate as CaCO3	27.1	mg/L		1	1			SM 2320E
471-34-1 (CO3)	Carbonate as CaCO3	*1.0*	mg/L		1	1	U		SM 2320E
471-34-1 (OH)	Hydroxide as CaCO3	*1.0*	mg/L		1	1	U		SM 2320E

Non-Detects are reported at the MRL and qualified with a "U" per EPA SOW ILM05 and later. Detects less than the MRL are qualified with a "J".

8

INORGANIC ANALYSIS DATA SHEET

07-EMF-MW-C-20170417-GW

Laboratory: **SVL Analytical, Inc.**
Client: **Maul Foster and Alongi (MFA)**
Matrix: **Ground Water**
Solids: **As Received**

SDG: **X7D0329**
Project: **East Mission Flats (EMF) 2017 - Level 3**
Laboratory ID: **X7D0329-05**
Sampled: **04/17/17 16:12** Recv'd: **04/18/17 10:35**

CAS NO.	Analyte	Conc	Units	MDL	MRL	Dil'n Factor	C	Q	Method
16887-00-6	Chloride	3.94	mg/L	0.05	0.2	1			EPA 300.0
14808-79-8	Sulfate as SO4	8.91	mg/L	0.12	0.3	1			EPA 300.0
471-34-1 (ALK)	Total Alkalinity as CaCO3	14.3	mg/L		1	1			SM 2320B
471-34-1 (HCO3)	Bicarbonate as CaCO3	14.3	mg/L		1	1			SM 2320B
471-34-1 (CO3)	Carbonate as CaCO3	*1.0*	mg/L		1	1	U		SM 2320B
471-34-1 (OH)	Hydroxide as CaCO3	*1.0*	mg/L		1	1	U		SM 2320B

Non-Detects are reported at the MRL and qualified with a "U" per EPA SOW ILM05 and later. Detects less than the MRL are qualified with a "J".

9

INORGANIC ANALYSIS DATA SHEET

07-EMF-MW-C-20170417-EB

Laboratory: **SVL Analytical, Inc.**
Client: **Maul Foster and Alongi (MFA)**
Matrix: **Ground Water**
Solids: **As Received**

SDG: **X7D0329**
Project: **East Mission Flats (EMF) 2017 - Level 3**
Laboratory ID: **X7D0329-06**
Sampled: **04/17/17 16:30** Recv'd: **04/18/17 10:35**

CAS NO.	Analyte	Conc	Units	MDL	MRL	Dil'n Factor	C	Q	Method
16887-00-6	Chloride	*0.20*	mg/L	0.05	0.2	1	U		EPA 300.0
14808-79-8	Sulfate as SO4	*0.30*	mg/L	0.12	0.3	1	U		EPA 300.0
471-34-1 (ALK)	Total Alkalinity as CaCO3	*1.0*	mg/L		1	1	U		SM 2320B
471-34-1 (HCO3)	Bicarbonate as CaCO3	*1.0*	mg/L		1	1	U		SM 2320B
471-34-1 (CO3)	Carbonate as CaCO3	*1.0*	mg/L		1	1	U		SM 2320B
471-34-1 (OH)	Hydroxide as CaCO3	*1.0*	mg/L		1	1	U		SM 2320B

Non-Detects are reported at the MRL and qualified with a "U" per EPA SOW ILM05 and later. Detects less than the MRL are qualified with a "J".

INITIAL AND CONTINUING CALIBRATION CHECK

EPA 300.0

10

Laboratory: **SVL Analytical, Inc.**

SDG: **X7D0329**

Client: **Maul Foster and Alongi (MFA)**

Project: **East Mission Flats (EMF) 2017 - Level 3**

Instrument ID: **IC 90**

Control Limt: **ICV: 90 - 110% CCV: 90 - 110%**

* Values outside of QC lin

Lab Sample ID	Analyte	True	Found	%R	Units	Method
S17D024-ICV1	Chloride	3.0	3.04	101	mg/L	EPA 300.0
	Sulfate as SO4	10	10.7	107	mg/L	EPA 300.0
S17D024-CCV1	Chloride	3.0	3.09	103	mg/L	EPA 300.0
	Sulfate as SO4	10	10.7	107	mg/L	EPA 300.0
S17D024-CCV2	Chloride	3.0	3.10	103	mg/L	EPA 300.0
	Sulfate as SO4	10	10.7	107	mg/L	EPA 300.0

CRDL STANDARD

EPA 300.0

11

Laboratory: **SVL Analytical, Inc.**
Client: **Maul Foster and Alongi (MFA)**
Instrument ID: **IC 90**
Sequence: **S17D024**

SDG: **X7D0329**
Project: **East Mission Flats (EMF) 2017 - Level :**
Calibration: **1609005**

Lab Sample ID	Analyte	True	Found	%R	Units	QC Lim
S17D024-CRL1	Chloride	0.200	0.16	80.5	mg/L	50 - 15
	Sulfate as SO4	0.300	0.29	97.3	mg/L	50 - 15

* Values outside of QC limits

BLANKS

Laboratory: **SVL Analytical, Inc.**
Client: **Maul Foster and Alongi (MFA)**

SDG: **X7D0329** 12
Project: **East Mission Flats (EMF) 2017 - Level 3**

EPA 300.0

Q column shows * if blank >= MRL

Instrument ID: **IC 90** Calibration: **1609005**

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Q	Method
S17D024-ICB1	Chloride	0.120000	0.05	0.2	mg/L	J		EPA 300.0
	Sulfate as SO4	*0.000000*	0.12	0.3	mg/L	U		EPA 300.0
X716179-BLK1	Chloride	*0.040000*	0.05	0.2	mg/L	U		EPA 300.0
	Sulfate as SO4	*0.000000*	0.12	0.3	mg/L	U		EPA 300.0
S17D024-CCB1	Chloride	0.120000	0.05	0.2	mg/L	J		EPA 300.0
	Sulfate as SO4	*0.000000*	0.12	0.3	mg/L	U		EPA 300.0
S17D024-CCB2	Chloride	0.110000	0.05	0.2	mg/L	J		EPA 300.0
	Sulfate as SO4	*0.000000*	0.12	0.3	mg/L	U		EPA 300.0

SM 2320B

Q column shows * if blank >= MRL

Instrument ID: **Auto-Titrator-4** Calibration:

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Q	Method
X716159-BLK1	Total Alkalinity	*0.170000*		1	mg/L as CaCO3	U		SM 2320B
	Bicarbonate	*0.170000*		1	mg/L as CaCO3	U		SM 2320B
	Carbonate	*0.000000*		1	mg/L as CaCO3	U		SM 2320B
	Hydroxide	*0.000000*		1	mg/L as CaCO3	U		SM 2320B

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

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EPA 30

09-EMF-MW-C-DEEP-20170417-GW

Laboratory: **SVL Analytical, Inc.**
Client: **Maul Foster and Alongi (MFA)**
Matrix: **Water**
Batch: **X716179**

SDG: **X7D0329**
Project: **East Mission Flats (EMF) 2017 - Level 3**

COMPOUND	SPIKE ADDED (mg/L)	SAMPLE CONCENTRATION (mg/L)	C	MS CONCENTRATION (mg/L)	MS %R	Q	MS LIMITS %R
Chloride	3.00	2.16		5.44	109		90 - 110
Sulfate as SO4	10.0	12.9		24.2	113	M1	90 - 110

Batch: **X716179**

COMPOUND	SPIKE ADDED (mg/L)	MSD CONCENTRATION (mg/L)	RPD (%)	MSD RPD LIMITS (%)	MSD %R	Q	MSD LIMITS %R
Chloride	3.00	5.34	1.8	20	106		90 - 110
Sulfate as SO4	10.0	24.0	0.9	20	110		90 - 110

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DUPLICATES

09-EMF-MW-C-DEEP-20170417-GW

Laboratory: **SVL Analytical, Inc.**

Client: **Maul Foster and Alongi (MFA)**

Matrix: **Water**

SDG: **X7D0329**

Project: **East Mission Flats (EMF) 2017 - L**

Lab Source ID: **X7D0329-04**

% Solids:

ANALYTE	CONTROL LIMIT	SAMPLE CONCENTRATION (mg/L as CaCO3)	C	DUPLICATE CONCENTRATION (mg/L as CaCO3)	C	RPD %	Q	METHOD
Total Alkalinity	20%	27.1		27.3		0.8		SM 2320B
Bicarbonate	20%	27.1		27.3		0.8		SM 2320B
Carbonate	1.0	1.0	U	1.0	U			SM 2320B
Hydroxide	1.0	1.0	U	1.0	U			SM 2320B

Q Column to flag failed RPD values
* Values outside of QC limits

LCS / LCS DUPLICATE RECOVERY

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Laboratory:	SVL Analytical, Inc.	SDG:	X7D0329
Client:	Maul Foster and Alongi (MFA)	Project:	East Mission Flats (EMF) 2017 - Level :

EPA 300.0

Batch:	X716179	Water	Laboratory ID:	X716179-BS1
Preparation:	IC Anion Prep		Initial/Final:	5 mL / 5 mL

ANALYTE	SPIKE ADDED (mg/L)	LCS CONCENTRATION (mg/L)	LCS %R	Q	QC LIMITS %R
Chloride	3.00	3.09	103		90 - 110
Sulfate as SO4	10.0	10.7	107		90 - 110

LCS / LCS DUPLICATE RECOVERY

Laboratory:	SVL Analytical, Inc.	SDG:	X7D0329
Client:	Maul Foster and Alongi (MFA)	Project:	East Mission Flats (EMF) 2017 - Level :

SM 2320B

Batch:	X716159	Water	Laboratory ID:	X716159-BS1
Preparation:	Alkalinity Prep		Initial/Final:	50 mL / 50 mL

ANALYTE	SPIKE ADDED (mg/L as	LCS CONCENTRATION (mg/L as CaCO3)	LCS %R	Q	QC LIMITS %R
Total Alkalinity	99.3	104	104		85 - 115
Bicarbonate	99.3	104	104		85 - 115

METHOD DETECTION AND REPORTING LIMITS

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Laboratory: **SVL Analytical, Inc.**
Client: **Maul Foster and Alongi (MFA)**
Matrix: **Water**

SDG: **X7D0329**
Project: **East Mission Flats (EMF) 2017**

Method	Analyte	MDL	MRL	Units	MDL Date	Instrument
EPA 300.0	Chloride	0.05	0.20	mg/L	3/15/17	IC 90
EPA 300.0	Sulfate as SO4	0.12	0.30	mg/L	3/15/17	IC 90
SM 2320B	Bicarbonate	N/A	1.0	mg/L		Auto-Titrator-4
SM 2320B	Carbonate	N/A	1.0	mg/L		Auto-Titrator-4
SM 2320B	Hydroxide	N/A	1.0	mg/L		Auto-Titrator-4
SM 2320B	Total Alkalinity	N/A	1.0	mg/L		Auto-Titrator-4

PREPARATION BATCH SUMMARY Alkalinity by SM 2320B / Acidity by SM 2310B / pH by SM 4

Laboratory: **SVL Analytical, Inc.** SDG: **X7D0329**

Client: **Maul Foster and Alongi (MFA)** Project: **East Mission Flats (EMF) 2017 - Level**

Batch: **X716159** Batch Matrix: **Water** Preparation: **Alkalinity Prep**

SAMPLE NAME	LAB SAMPLE ID	SAMPLE MATRIX	PREP DATE	INITIAL:FINAL
Blank	X716159-BLK1	Water	04/20/17 0549	50.0 : 50.0
LCS	X716159-BS1	Water	04/20/17 0549	50.0 : 50.0
09-EMF-MW-C-DEEP-20170417-GWD	X716159-DUP1	Water	04/20/17 0549	50.0 : 50.0
07-EMF-MW-A-20170417-GW	X7D0329-01	Water	04/20/17 0549	50.0 : 50.0
07-EMF-MW-B-20170417-GW	X7D0329-02	Water	04/20/17 0549	50.0 : 50.0
07-EMF-MW-B-20170417-GW-B	X7D0329-03	Water	04/20/17 0549	50.0 : 50.0
09-EMF-MW-C-DEEP-20170417-GW	X7D0329-04	Water	04/20/17 0549	50.0 : 50.0
07-EMF-MW-C-20170417-GW	X7D0329-05	Water	04/20/17 0549	50.0 : 50.0
07-EMF-MW-C-20170417-EB	X7D0329-06	Water	04/20/17 0549	50.0 : 50.0

PREPARATION BATCH SUMMARY

EPA

Laboratory: **SVL Analytical, Inc.**

SDG: **X7D0329** 18

Client: **Maul Foster and Alongi (MFA)**

Project: **East Mission Flats (EMF) 2017 - Level**

Batch: **X716179** Batch Matrix: **Water**

Preparation: **IC Anion Prep**

SAMPLE NAME	LAB SAMPLE ID	SAMPLE MATRIX	PREP DATE	INITIAL:FINAL
Blank	X716179-BLK1	Water	04/24/17 0754	5.00 : 5.00
LCS	X716179-BS1	Water	04/24/17 0754	5.00 : 5.00
09-EMF-MW-C-DEEP-20170417-GWS	X716179-MS1	Water	04/24/17 0754	5.00 : 5.10
09-EMF-MW-C-DEEP-20170417-GWMSD	X716179-MSD1	Water	04/24/17 0754	5.00 : 5.10
07-EMF-MW-A-20170417-GW	X7D0329-01	Water	04/24/17 0754	5.00 : 5.05
07-EMF-MW-B-20170417-GW	X7D0329-02	Water	04/24/17 0754	5.00 : 5.05
07-EMF-MW-B-20170417-GW-B	X7D0329-03	Water	04/24/17 0754	5.00 : 5.05
09-EMF-MW-C-DEEP-20170417-GW	X7D0329-04	Water	04/24/17 0754	5.00 : 5.05
07-EMF-MW-C-20170417-GW	X7D0329-05	Water	04/24/17 0754	5.00 : 5.05
07-EMF-MW-C-20170417-EB	X7D0329-06	Water	04/24/17 0754	5.00 : 5.05

SVL Analytical, Inc. 02-May-17 11:19

ANALYSIS RUN LOG

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EPA 300.0

Laboratory: **SVL Analytical, Inc.**

Client: **Maul Foster and Alongi (MFA)**

SDG: **X7D0329**

Project: **East Mission Flats (EMF) 2017 - Level**

Sequence: **S17D024** Start: **04/24/17 08:47**

Matrix: **Water** End: **08/18/16 14:37**

Instrument: **IC 90**

Calibration: **1609005**

				Cl	SO4
CAL1		08/18/16	13:24	X	X
CAL2		08/18/16	13:36	X	X
CAL3		08/18/16	13:48	X	X
CAL4		08/18/16	14:00	X	X
CAL5		08/18/16	14:13	X	X
CAL6		08/18/16	14:25	X	X
CAL7		08/18/16	14:37	X	X
CCV		04/24/17	08:47	X	X
CCB		04/24/17	08:58	X	X
CRI		04/24/17	10:22	X	X
PBW		04/24/17	10:33	X	X
LCSW		04/24/17	10:44	X	X
07-EMF-MW-A-20170417-GW	10	04/24/17	11:06	X	X
07-EMF-MW-B-20170417-GW		04/24/17	11:17		X
07-EMF-MW-B-20170417-GW	10	04/24/17	11:28	X	
07-EMF-MW-B-20170417-GW-B		04/24/17	11:39		X
07-EMF-MW-B-20170417-GW-B	10	04/24/17	11:50	X	
CCV		04/24/17	12:01	X	X
CCB		04/24/17	12:12	X	X
09-EMF-MW-C-DEEP-20170417-GW		04/24/17	12:22	X	X
09-EMF-MW-C-DEEP-20170417-GWS		04/24/17	12:44	X	X
09-EMF-MW-C-DEEP-20170417-GWMSD		04/24/17	13:06	X	X
07-EMF-MW-C-20170417-GW		04/24/17	13:28	X	X
07-EMF-MW-C-20170417-EB		04/24/17	13:50	X	X
CCV		04/24/17	14:12	X	X
CCB		04/24/17	14:23	X	X

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ANALYSIS RUN LOG

SM 2320B / SM 2310B / SM 4500 H B

Laboratory: **SVL Analytical, Inc.**

Client: **Maul Foster and Alongi (MFA)**

SDG: **X7D0329**

Project: **East Mission Flats (EMF) 2017 - Level**

Sequence:

Start: **04/20/17 08:38**

Matrix: **Water**

End: **04/20/17 09:35**

Instrument: **Auto-Titrator-4**

Calibration:

				HCO3	CO3	OH	ALK
PBW		04/20/17	08:38	X	X	X	X
LCSW		04/20/17	08:44	X			X
09-EMF-MW-C-DEEP-20170417-GWD		04/20/17	08:49	X	X	X	X
07-EMF-MW-A-20170417-GW		04/20/17	08:59	X	X	X	X
07-EMF-MW-B-20170417-GW		04/20/17	09:03	X	X	X	X
07-EMF-MW-B-20170417-GW-B		04/20/17	09:10	X	X	X	X
09-EMF-MW-C-DEEP-20170417-GW		04/20/17	09:16	X	X	X	X
07-EMF-MW-C-20170417-GW		04/20/17	09:24	X	X	X	X
07-EMF-MW-C-20170417-EB		04/20/17	09:35	X	X	X	X

HOLDING TIME SUMMARY

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EPA 300.

Laboratory: **SVL Analytical, Inc.** SDG: **X7D0329**
Client: **Maul Foster and Alongi (MFA)** Project: **East Mission Flats (EMF) 2017 - Level**

Sample Name	Date Collected	Date Recvd	Date Prepped	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
07-EMF-MW-A-20170417-GW	04/17/17	04/18/17	04/24/17	7	28	04/24/17	7	28	
07-EMF-MW-B-20170417-GW	04/17/17	04/18/17	04/24/17	7	28	04/24/17	7	28	
07-EMF-MW-B-20170417-GW	04/17/17	04/18/17	04/24/17	7	28	04/24/17	7	28	
07-EMF-MW-B-20170417-GW-B	04/17/17	04/18/17	04/24/17	7	28	04/24/17	7	28	
07-EMF-MW-B-20170417-GW-B	04/17/17	04/18/17	04/24/17	7	28	04/24/17	7	28	
09-EMF-MW-C-DEEP-20170417-GW	04/17/17	04/18/17	04/24/17	7	28	04/24/17	7	28	
07-EMF-MW-C-20170417-GW	04/17/17	04/18/17	04/24/17	7	28	04/24/17	7	28	
07-EMF-MW-C-20170417-EB	04/17/17	04/18/17	04/24/17	7	28	04/24/17	7	28	

HOLDING TIME SUMMARY

SM 2320I

Laboratory: **SVL Analytical, Inc.** SDG: **X7D0329**
Client: **Maul Foster and Alongi (MFA)** Project: **East Mission Flats (EMF) 2017 - Level**

Sample Name	Date Collected	Date Recvd	Date Prepped	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
07-EMF-MW-A-20170417-GW	04/17/17	04/18/17	04/20/17	3	14	04/20/17	3	14	
07-EMF-MW-B-20170417-GW	04/17/17	04/18/17	04/20/17	3	14	04/20/17	3	14	
07-EMF-MW-B-20170417-GW-B	04/17/17	04/18/17	04/20/17	3	14	04/20/17	3	14	
09-EMF-MW-C-DEEP-20170417-GW	04/17/17	04/18/17	04/20/17	3	14	04/20/17	3	14	
07-EMF-MW-C-20170417-GW	04/17/17	04/18/17	04/20/17	3	14	04/20/17	3	14	
07-EMF-MW-C-20170417-EB	04/17/17	04/18/17	04/20/17	3	14	04/20/17	3	14	

X716179

SVL ANALYTICAL

Log/Preparation Bench Sheet

See Extraction Comments

X716179

Level 3 Reporting (Elemen

Earliest Due: 05/02/17 Earliest Expire: 05/15/17

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Prepared using: IC Anion Prep, Water

					Origin	Hold Time Expires	Home Location	Client	Due Date
X716179-BLK1	Blank			[5mL - 5mL]					
X716179-BS1	LCS			[5mL - 5mL]	Spike 1: 17D0160				
X716179-MS1	09-EMF-MW-C-DEEP-20170417-GWS [X7D0329-04]			[5mL - 5.1mL]	Spike 1: 17D0089				
X716179-MSD1	09-EMF-MW-C-DEEP-20170417-GWMSD [X7D0329-04]			[5mL - 5.1mL]	Spike 1: 17D0089				
X7D0329-01 Client ID: 10X	B	by 300.0	Cl SO4	[5mL - 5.05mL]	Idaho	15-May-17 11:50	CC 64 C	Maul Foster and Alongi (MFA)	02-May-1
X7D0329-02 Client ID: 10X	B	by 300.0	Cl SO4	[5mL - 5.05mL]	Idaho	15-May-17 13:20	CC 64 C	Maul Foster and Alongi (MFA)	02-May-1
X7D0329-03 Client ID: 10X	B	by 300.0	Cl SO4	[5mL - 5.05mL]	Idaho	15-May-17 13:20	CC 64 C	Maul Foster and Alongi (MFA)	02-May-1
X7D0329-04 Client ID: 10X	D	by 300.0	Cl SO4	[5mL - 5.05mL]	Idaho	15-May-17 15:22	CC 64 C	Maul Foster and Alongi (MFA)	02-May-1
X7D0329-05 Client ID: 10X	B	by 300.0	Cl SO4	[5mL - 5.05mL]	Idaho	15-May-17 16:12	CC 64 C	Maul Foster and Alongi (MFA)	02-May-1
X7D0329-06 Client ID: 10X	B	by 300.0	Cl SO4	[5mL - 5.05mL]	Idaho	15-May-17 16:30	CC 64 C	Maul Foster and Alongi (MFA)	02-May-1

Seq: S17D024

05/02/2017

Spike Standards

Standard	Description	Amount (µL)
17D0089	IC Working Matrix Spike CNO	50

Standard	Description	Amount (µL)
17D0160	IC LCS/CCV/ICV (SB)	5000

Prepared By: AB Date/Time: 4/24/17

Analyzed By: Date/Time:

Reviewed By: DJ Date: 05/02/2017

Instrument ID: ☒IC 90 ☐IC 900 ☐IC 900-C ☐IC-1100

Data File(s): 17114B

Sequence: IC 90 2017 114B
Operator: icoperator

Printed: 4/25/2017 12:15:21 PM

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Title: ICS90 Sample Sequence
Datasource: 109-ICLAB-7
Location: ICS90\SEQUENCE DATA\SEQUENCE 2017\04-APRIL 2017
Timebase: 109-ICLAB-7_1
#Samples: 58

Created: 4/24/2017 7:49:40 AM by icoperator
Last Update: 4/24/2017 12:30:41 PM by icoperator

No.	Name	Type	Program	Method	Status	Inj. Date/Time	Comment
1	AUTOCAL1	Standard	90_Anions	Method 300	Finished	4/4/2017 8:56:12 AM	17A0155
2	AUTOCAL2	Standard	90_Anions	Method 300	Finished	4/4/2017 9:09:08 AM	17A0156
3	AUTOCAL3	Standard	90_Anions	Method 300	Finished	4/4/2017 9:22:03 AM	17A0157
4	AUTOCAL4	Standard	90_Anions	Method 300	Finished	4/4/2017 9:34:58 AM	17A0158
5	AUTOCAL5	Standard	90_Anions	Method 300	Finished	4/4/2017 9:47:54 AM	17A0159
6	AUTOCAL6	Standard	90_Anions	Method 300	Finished	4/4/2017 10:00:49 AM	17A0160
7	AUTOCAL7	Standard	90_Anions	Method 300	Finished	4/4/2017 10:13:44 AM	17A0161
8	COLUMN RINSE	Unknown	90_Anions	Method 300	Finished	4/24/2017 8:25:14 AM	
9	RT TEST 1	Unknown	90_Anions	Method 300	Finished	4/24/2017 8:36:09 AM	
10	SEQ-ICV1 @ CCV	Unknown	90_Anions	Method 300	Finished	4/24/2017 8:47:04 AM	
11	SEQ-ICB1 @ CCB	Unknown	90_Anions	Method 300	Finished	4/24/2017 8:58:00 AM	
12	SEQ-CRL1 @ RLCS	Unknown	90_Anions	Method 300	Finished	4/24/2017 10:22:47 AM	
13	X716179-BLK1	Unknown	90_Anions	Method 300	Finished	4/24/2017 10:33:42 AM	ANALYST SB
14	X716179-BS1	Unknown	90_Anions	Method 300	Finished	4/24/2017 10:44:37 AM	ANALYST SB
15	X7D0329-01	Unknown	90_Anions	Method 300	Finished	4/24/2017 10:55:33 AM	ANALYST SB
16	X7D0329-01@10X	Unknown	90_Anions	Method 300	Finished	4/24/2017 11:06:29 AM	ANALYST SB
17	X7D0329-02	Unknown	90_Anions	Method 300	Finished	4/24/2017 11:17:24 AM	ANALYST SB
18	X7D0329-02@10X	Unknown	90_Anions	Method 300	Finished	4/24/2017 11:28:19 AM	ANALYST SB
19	X7D0329-03	Unknown	90_Anions	Method 300	Finished	4/24/2017 11:39:14 AM	ANALYST SB
20	X7D0329-03@10X	Unknown	90_Anions	Method 300	Finished	4/24/2017 11:50:10 AM	ANALYST SB
21	CCV1	Unknown	90_Anions	Method 300	Finished	4/24/2017 12:01:05 PM	ANALYST SB
22	CCB1	Unknown	90_Anions	Method 300	Finished	4/24/2017 12:12:00 PM	ANALYST SB
23	X7D039-04	Unknown	90_Anions	Method 300	Finished	4/24/2017 12:22:55 PM	ANALYST SB
24	X7D0329-04@10X	Unknown	90_Anions	Method 300	Finished	4/24/2017 12:33:51 PM	ANALYST SB
25	X716179-MS1	Unknown	90_Anions	Method 300	Finished	4/24/2017 12:44:46 PM	ANALYST SB
26	X716179-MS1@10X	Unknown	90_Anions	Method 300	Finished	4/24/2017 12:55:41 PM	ANALYST SB
27	X716179-MSD1	Unknown	90_Anions	Method 300	Finished	4/24/2017 1:06:36 PM	ANALYST SB
28	X716179-MSD1@10X	Unknown	90_Anions	Method 300	Finished	4/24/2017 1:17:32 PM	ANALYST SB
29	X7D0329-05	Unknown	90_Anions	Method 300	Finished	4/24/2017 1:28:27 PM	ANALYST SB
30	X7D0329-05@10X	Unknown	90_Anions	Method 300	Finished	4/24/2017 1:39:22 PM	ANALYST SB
31	X7D0329-06	Unknown	90_Anions	Method 300	Finished	4/24/2017 1:50:17 PM	ANALYST SB
32	X7D0329-06@10X	Unknown	90_Anions	Method 300	Finished	4/24/2017 2:01:13 PM	ANALYST SB
33	CCV2	Unknown	90_Anions	Method 300	Finished	4/24/2017 2:12:08 PM	ANALYST SB
34	CCB2	Unknown	90_Anions	Method 300	Finished	4/24/2017 2:23:03 PM	ANALYST SB
35	X716180-BLK1	Unknown	90_Anions	Method 300	Finished	4/24/2017 2:33:59 PM	ANALYST SB
36	X716180-BS1	Unknown	90_Anions	Method 300	Finished	4/24/2017 2:44:54 PM	ANALYST SB
37	X7D0330-01	Unknown	90_Anions	Method 300	Finished	4/24/2017 2:55:50 PM	ANALYST SB
38	X7D0330-01@10X	Unknown	90_Anions	Method 300	Finished	4/24/2017 3:06:46 PM	ANALYST SB

Title: ICS90 Sample Sequence
Datasource: 109-ICLAB-7
Location: ICS90\SEQUENCE DATA\SEQUENCE 2017\04-APRIL 2017
Timebase: 109-ICLAB-7_1
#Samples: 58

24

Created: 4/24/2017 7:49:40 AM by icoperator
Last Update: 4/24/2017 12:30:41 PM by icoperator

No.	Name	Type	Program	Method	Status	Inj. Date/Time	Comment
39	X716180-MS1	Unknown	90_Anions	Method 300	Finished	4/24/2017 3:17:42 PM	ANALYST SB
40	X716180-MS1@10X	Unknown	90_Anions	Method 300	Finished	4/24/2017 3:28:38 PM	ANALYST SB
41	X716180-MSD1	Unknown	90_Anions	Method 300	Finished	4/24/2017 3:39:34 PM	ANALYST SB
42	X716180-MSD1@10X	Unknown	90_Anions	Method 300	Finished	4/24/2017 3:50:30 PM	ANALYST SB
43	CCV3	Unknown	90_Anions	Method 300	Finished	4/24/2017 4:01:25 PM	ANALYST SB
44	CCB3	Unknown	90_Anions	Method 300	Finished	4/24/2017 4:12:21 PM	ANALYST SB
45	X7D0330-02	Unknown	90_Anions	Method 300	Finished	4/24/2017 4:23:17 PM	ANALYST SB
46	X7D0330-02@10X	Unknown	90_Anions	Method 300	Finished	4/24/2017 4:34:13 PM	ANALYST SB
47	X7D0330-03	Unknown	90_Anions	Method 300	Finished	4/24/2017 4:45:09 PM	ANALYST SB
48	X7D0330-03@10X	Unknown	90_Anions	Method 300	Finished	4/24/2017 4:56:05 PM	ANALYST SB
49	X7D0330-04	Unknown	90_Anions	Method 300	Finished	4/24/2017 5:07:01 PM	ANALYST SB
50	X7D0330-04@10X	Unknown	90_Anions	Method 300	Finished	4/24/2017 5:17:56 PM	ANALYST SB
51	CCV4	Unknown	90_Anions	Method 300	Finished	4/24/2017 5:28:52 PM	ANALYST SB
52	CCB4	Unknown	90_Anions	Method 300	Finished	4/24/2017 5:39:48 PM	ANALYST SB
53	P	Unknown	90_Anions	Method 300	Finished	4/24/2017 5:50:44 PM	ANALYST SB
54	C	Unknown	90_Anions	Method 300	Finished	4/24/2017 6:01:40 PM	ANALYST SB
55	SRM1	Unknown	90_Anions	Method 300	Finished	4/24/2017 6:12:36 PM	ANALYST SB
56	CCV5	Unknown	90_Anions	Method 300	Finished	4/24/2017 6:23:32 PM	ANALYST SB
57	CCB5	Unknown	90_Anions	Method 300	Finished	4/24/2017 6:34:27 PM	ANALYST SB
58	SHUTDOWN	Unknown	90_Shutdown	Method 300	Finished	4/24/2017 6:45:23 PM	ANALYST SB

IC CONTROL SHEET

DATA FILE: 17114B OPERATOR: SB
DATE: 4/24/2017 TIME: 825

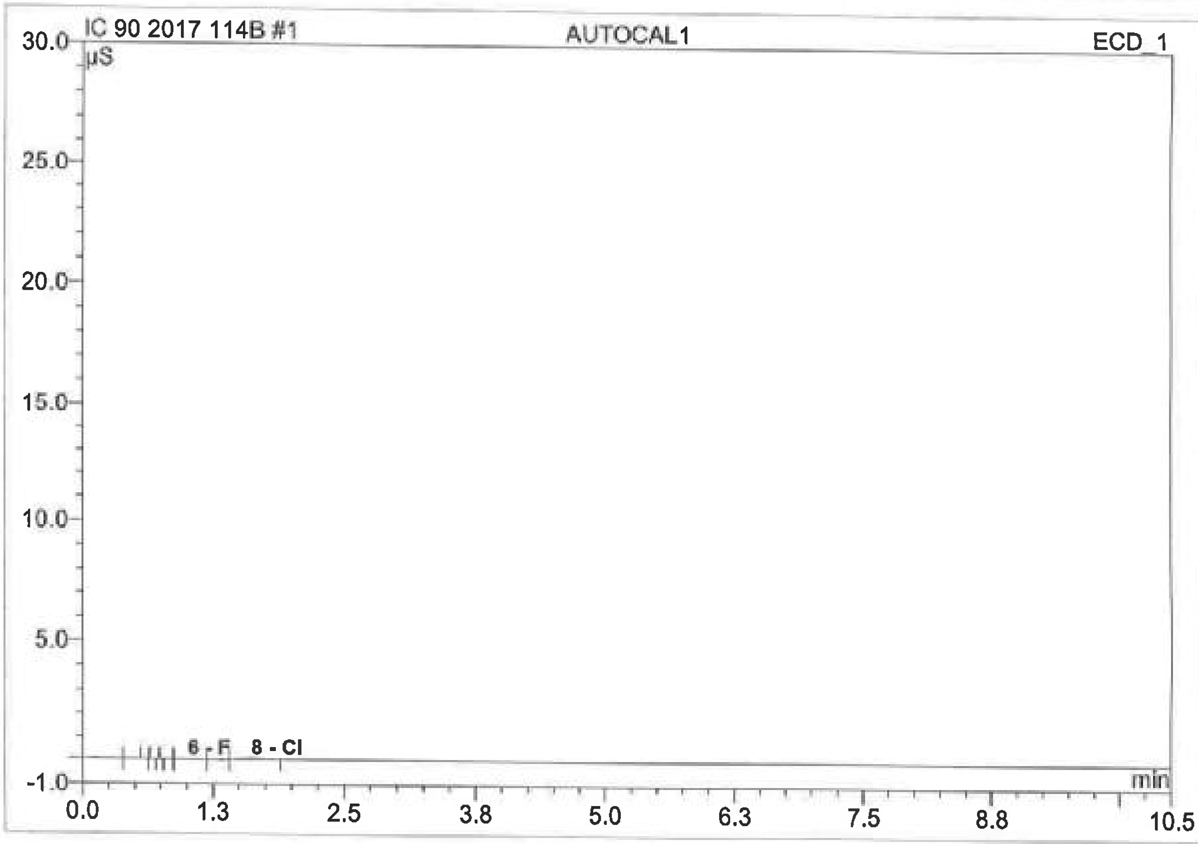
SAMPLE	TIME	ELEMENTS OUT OF CONTROL						COMMENTS
ICV	847	F	Cl	CNO	Br	NO3	SO4	SB
ICB		F	Cl	CNO	Br	NO3	SO5	SB
RLCS		F	Cl	CNO	Br	NO3	SO6	SB
CCV1	1201	F	Cl	CNO	Br	NO3	SO7	SB
CCB1		F	Cl	CNO	Br	NO3	SO8	SB
CCV2	1412	F	Cl	CNO	Br	NO3	SO4	SB
CCB2		F	Cl	CNO	Br	NO3	SO4	SB
CCV3	1601	F	Cl	CNO	Br	NO3	SO4	SB
CCB3		F	Cl	CNO	Br	NO3	SO4	SB
CCV4	1728	F	Cl	CNO	Br	NO3	SO4	
CCB4		F	Cl	CNO	Br	NO3	SO4	
CCV5	1823	F	Cl	CNO	Br	NO3	SO4	
CCB5		F	Cl	CNO	Br	NO3	SO4	
CCV6		F	Cl	CNO	Br	NO3	SO4	
CCB6		F	Cl	CNO	Br	NO3	SO4	
CCV7		F	Cl	CNO	Br	NO3	SO4	
CCB7		F	Cl	CNO	Br	NO3	SO4	
CCV8		F	Cl	CNO	Br	NO3	SO4	
CCB8		F	Cl	CNO	Br	NO3	SO4	
CCV9		F	Cl	CNO	Br	NO3	SO4	
CCB9		F	Cl	CNO	Br	NO3	SO4	
CCV10		F	Cl	CNO	Br	NO3	SO4	
CCB10		F	Cl	CNO	Br	NO3	SO4	

26

1 AUTOCAL1

17A0155

Sample Name:	**AUTOCAL1**	*Injection Volume:*	**25.0**
Vial Number:	**3**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/4/2017 8:56**	*Sample Weight:*	**1.0000**
Run Time (min):	**10.50**	*Sample Amount:*	**1.0000**



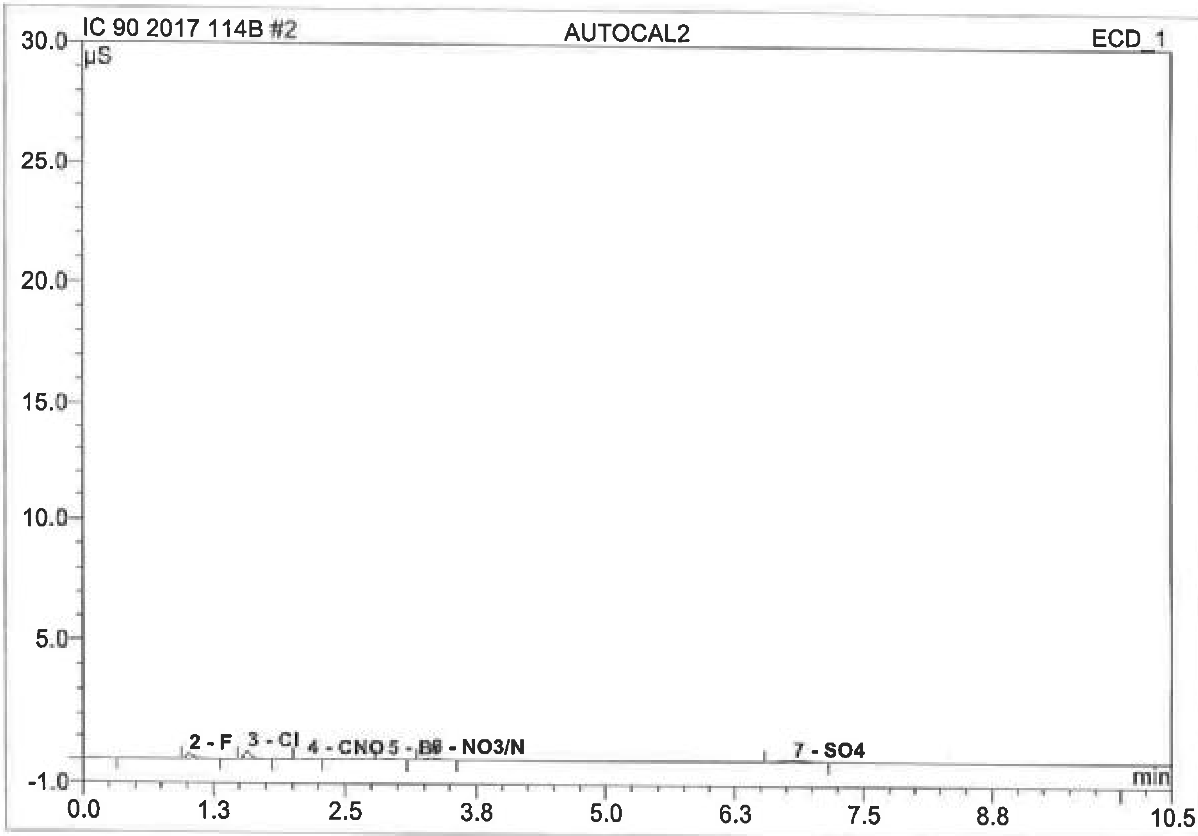
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
6	1.01	F	0.011	0.0021	8.33	0.022	Mb
8	1.62	Cl	0.050	0.0120	46.67	0.089	bMB
n.a.	n.a.	CNO	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	n.a.	Br	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	n.a.	NO3/N	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	n.a.	SO4	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			0.060	0.014	55.00	0.11	

27

2 AUTOCAL2

17A0156

Sample Name:	**AUTOCAL2**	*Injection Volume:*	**25.0**
Vial Number:	**4**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/4/2017 9:09**	*Sample Weight:*	**1.0000**
Run Time (min):	**10.50**	*Sample Amount:*	**1.0000**



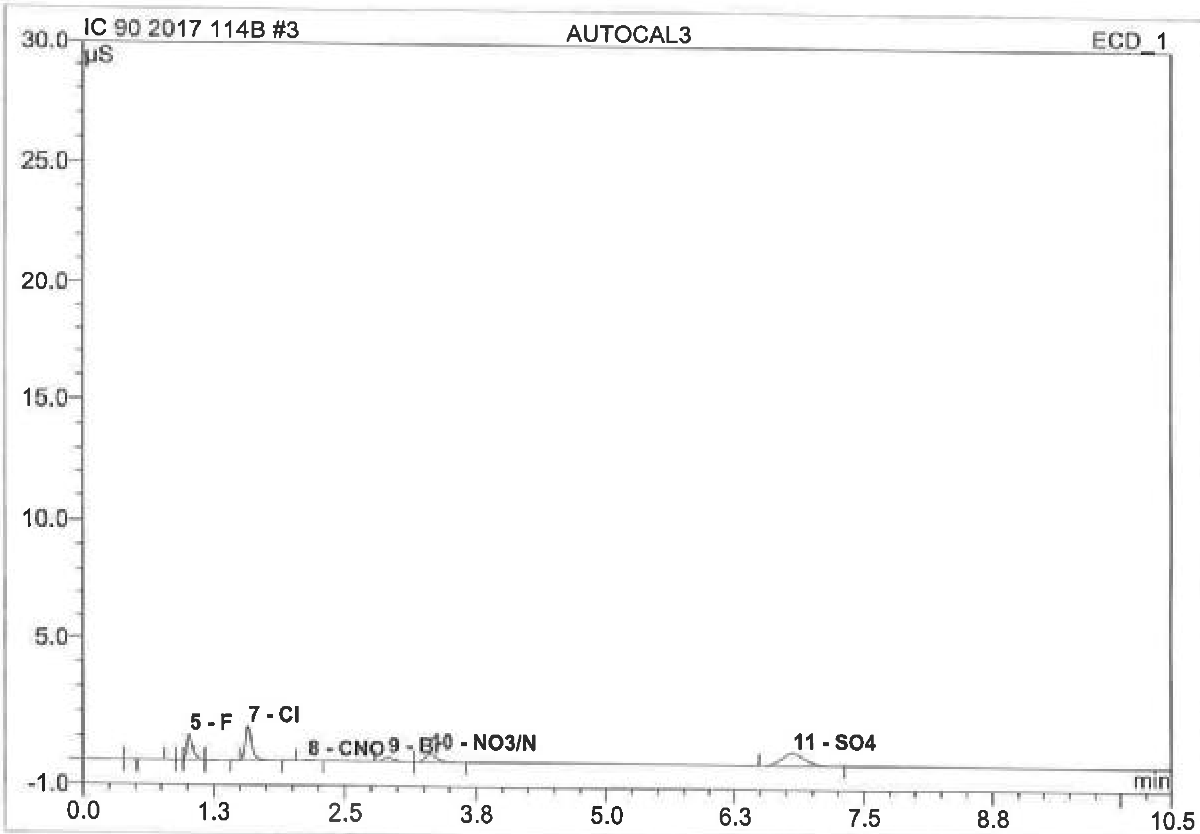
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
2	1.02	F	0.213	0.0181	22.64	0.127	BMB
3	1.57	Cl	0.324	0.0236	29.50	0.210	BMB
4	2.14	CNO	0.015	0.0016	1.99	0.303	BMB
5	2.91	Br	0.032	0.0035	4.34	0.091	BMB
6	3.32	NO3/N	0.099	0.0125	15.65	0.055	BMB
7	6.82	SO4	0.075	0.0187	23.36	0.271	BMB
Total:			0.758	0.078	97.48	1.06	

3 AUTOCAL3

28

17A0157

Sample Name:	**AUTOCAL3**	*Injection Volume:*	**25.0**
Vial Number:	**5**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/4/2017 9:22**	*Sample Weight:*	**1.0000**
Run Time (min):	**10.50**	*Sample Amount:*	**1.0000**



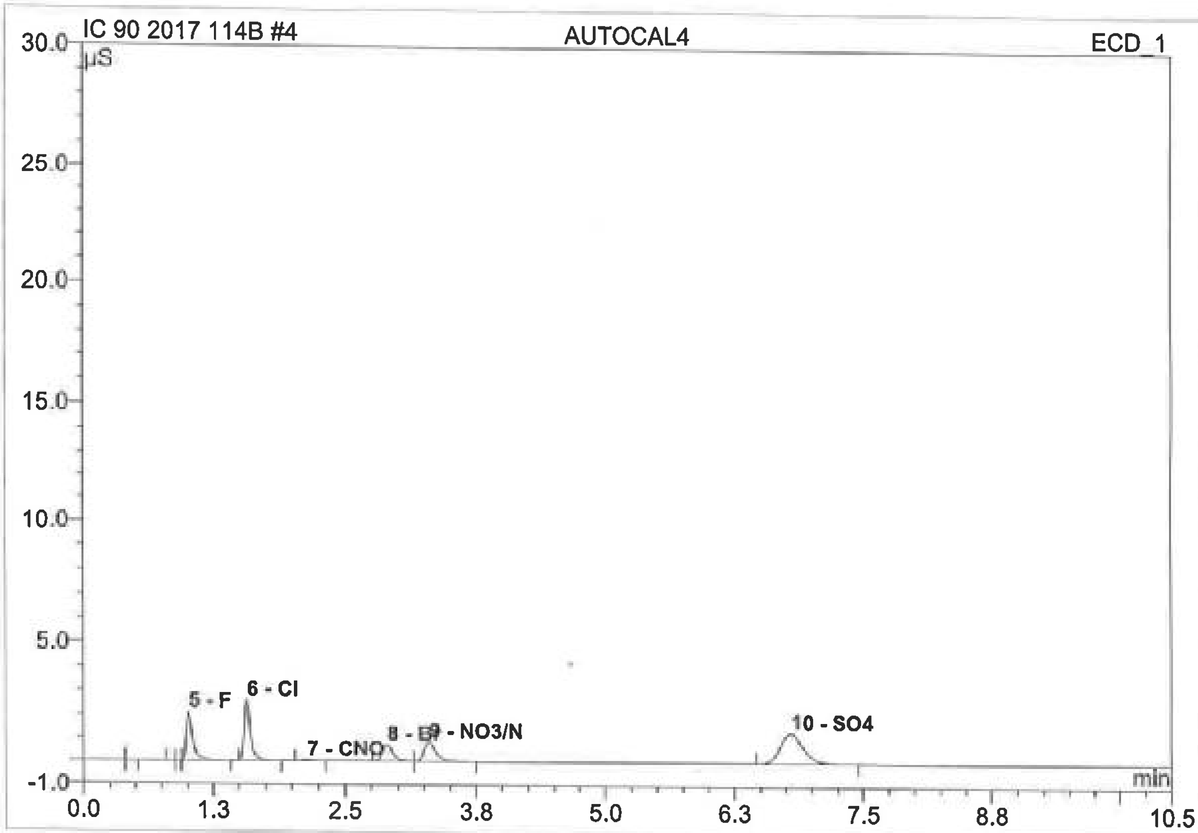
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
5	1.02	F	1.039	0.0683	18.30	0.454	bMb
7	1.58	Cl	1.396	0.1012	27.10	1.010	BMB
8	2.15	CNO	0.028	0.0027	0.73	0.505	BMB
9	2.91	Br	0.181	0.0202	5.41	0.505	BM
10	3.31	NO3/N	0.343	0.0439	11.76	0.194	MB
11	6.81	SO4	0.517	0.1322	35.40	1.964	BMB
Total:			3.505	0.369	98.69	4.63	

4 AUTOCAL4

17A0158

29

Sample Name:	**AUTOCAL4**	*Injection Volume:*	**25.0**
Vial Number:	**5**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/4/2017 9:34**	*Sample Weight:*	**1.0000**
Run Time (min):	**10.50**	*Sample Amount:*	**1.0000**



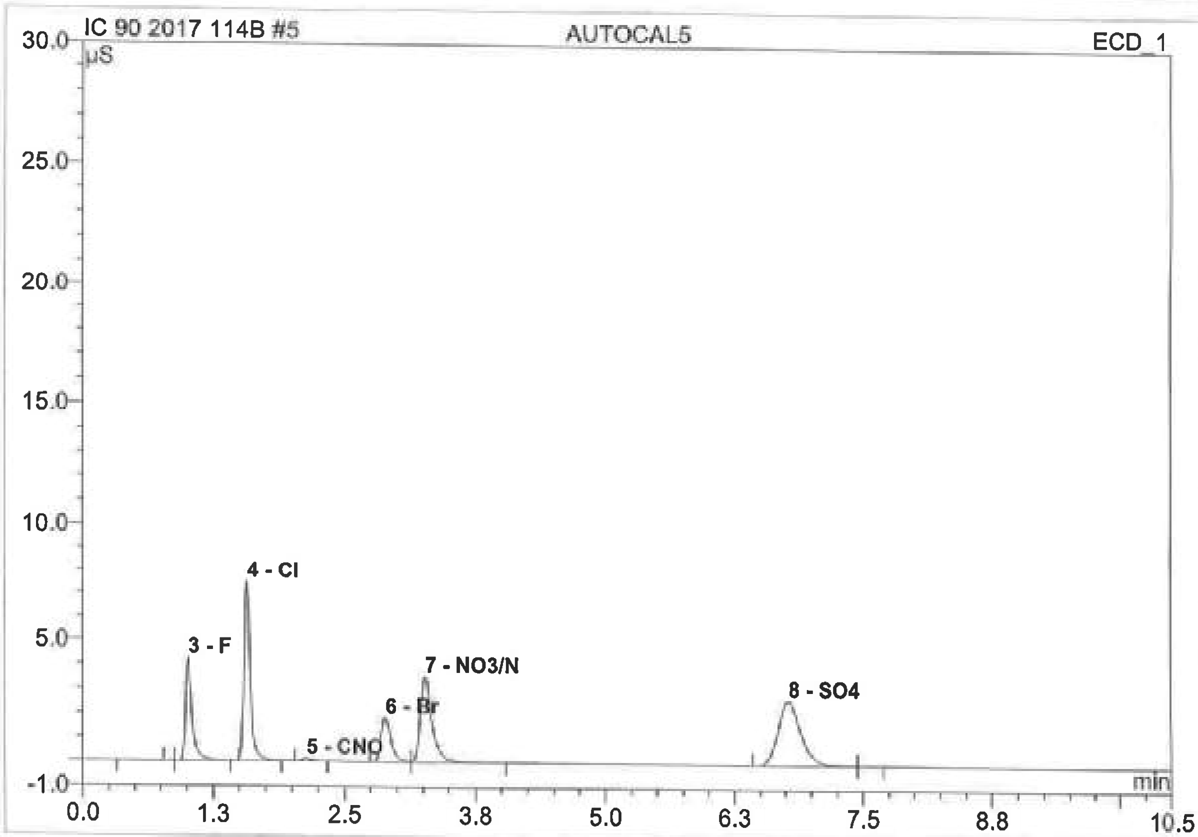
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
5	1.01	F	2.083	0.1495	17.01	0.976	BMB
6	1.57	Cl	2.570	0.1834	20.87	1.840	BMB
7	2.14	CNO	0.055	0.0054	0.62	0.978	BMB
8	2.90	Br	0.727	0.0810	9.21	1.997	BM
9	3.30	NO3/N	0.882	0.1137	12.93	0.502	MB
10	6.79	SO4	1.340	0.3433	39.06	5.047	BMB
Total:			7.656	0.876	99.70	11.34	

5 AUTOCAL5

17A0159

30

Sample Name:	**AUTOCAL5**	*Injection Volume:*	**25.0**
Vial Number:	**6**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/4/2017 9:47**	*Sample Weight:*	**1.0000**
Run Time (min):	**10.50**	*Sample Amount:*	**1.0000**



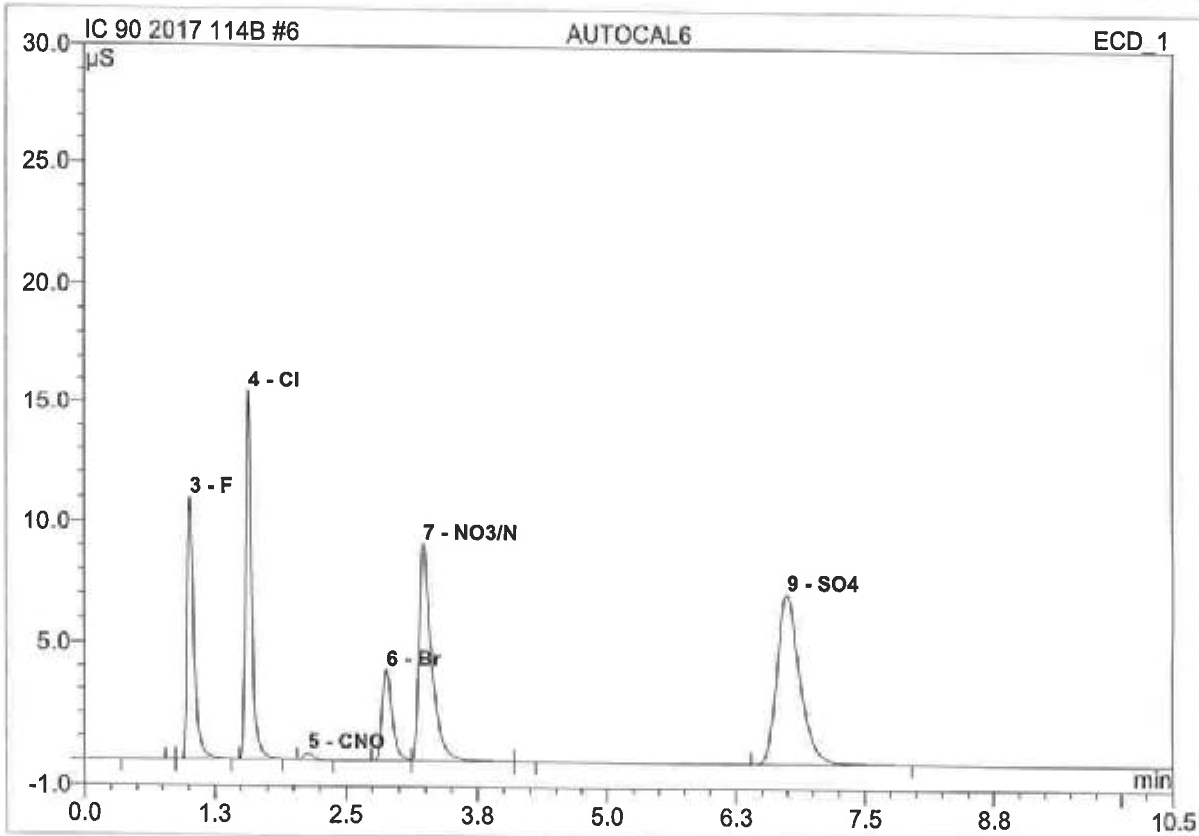
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
3	1.01	F	4.233	0.3125	14.03	1.998	MB
4	1.57	Cl	7.507	0.5254	23.60	5.126	BMB
5	2.14	CNO	0.112	0.0110	0.49	1.968	BMB
6	2.89	Br	1.868	0.2060	9.25	5.004	BM
7	3.27	NO3/N	3.549	0.4692	21.07	2.002	MB
8	6.78	SO4	2.718	0.6993	31.40	10.068	BM
Total:			19.987	2.224	99.85	26.17	

6 AUTOCAL6

17A0160

31

Sample Name:	**AUTOCAL6**	*Injection Volume:*	**25.0**
Vial Number:	**7**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/4/2017 10:00**	*Sample Weight:*	**1.0000**
Run Time (min):	**10.50**	*Sample Amount:*	**1.0000**



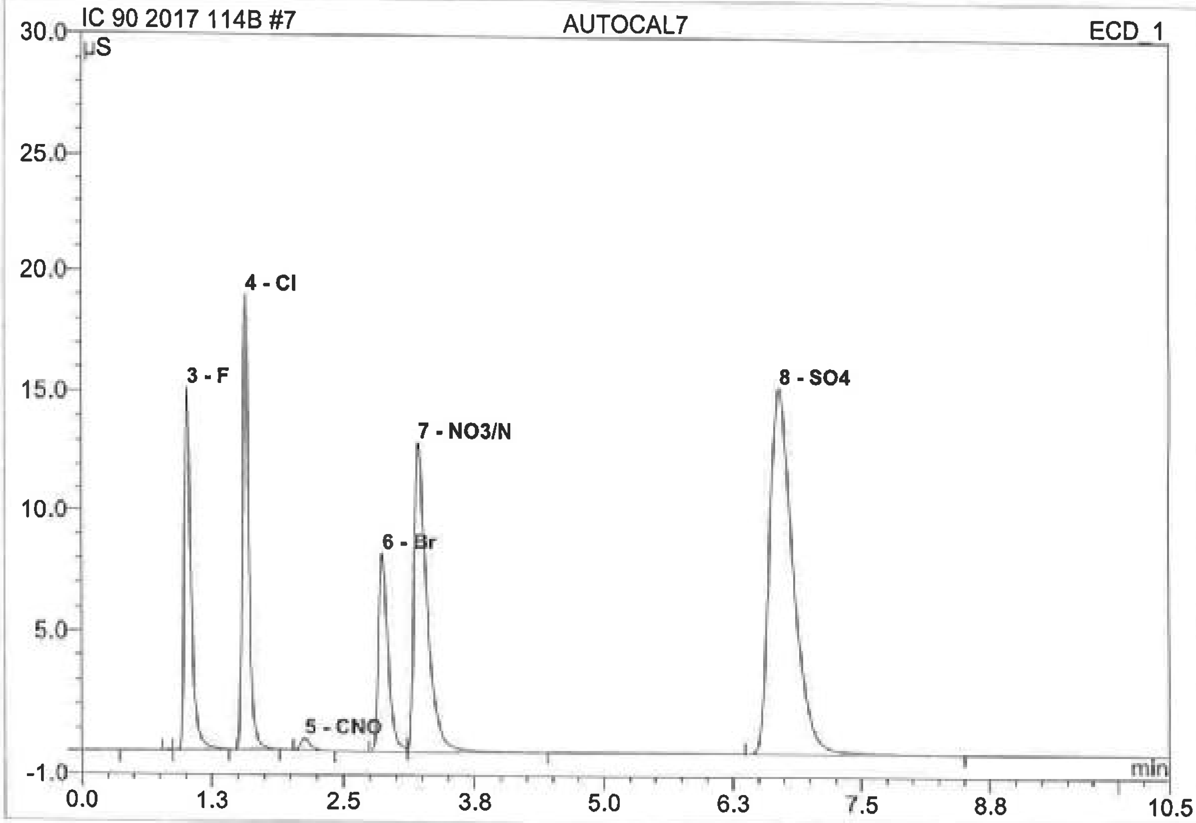
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
3	1.02	F	10.957	0.8268	15.16	5.026	MB
4	1.58	Cl	15.488	1.0730	19.68	9.930	BMB
5	2.14	CNO	0.279	0.0281	0.52	5.027	BMB
6	2.89	Br	3.884	0.4211	7.72	9.998	BM
7	3.24	NO3/N	9.143	1.2561	23.04	4.999	M
9	6.75	SO4	7.120	1.8439	33.81	24.952	BMB
Total:			46.873	5.449	99.93	59.93	

32

7 AUTOCAL7

17A0161

Sample Name:	**AUTOCAL7**	*Injection Volume:*	**25.0**
Vial Number:	**7**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/4/2017 10:13**	*Sample Weight:*	**1.0000**
Run Time (min):	**10.50**	*Sample Amount:*	**1.0000**



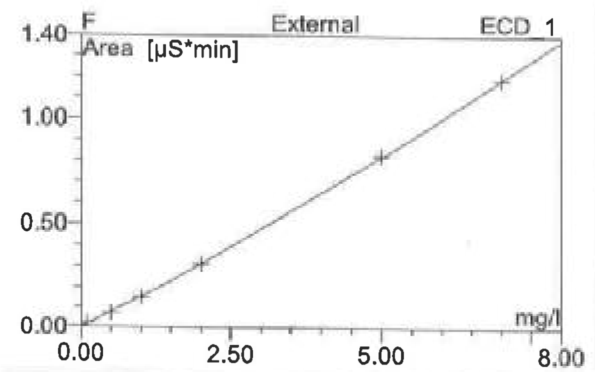
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
3	1.02	F	15.115	1.1846	12.65	6.988	MB
4	1.58	Cl	18.964	1.3302	14.20	12.031	BMB
5	2.14	CNO	0.540	0.0554	0.59	9.995	BMB
6	2.88	Br	8.227	0.8802	9.40	20.000	BM
7	3.22	NO3/N	12.969	1.8384	19.63	7.001	MB
8	6.70	SO4	15.319	4.0718	43.48	50.008	BMB
Total:			71.132	9.361	99.96	106.02	

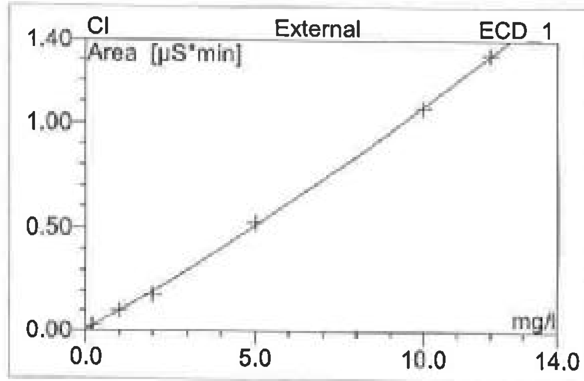
7 AUTOCAL7

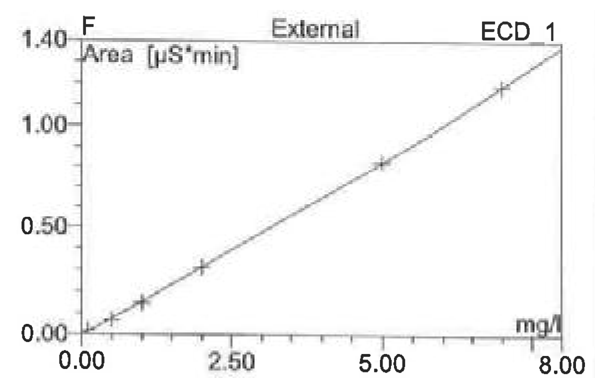
33

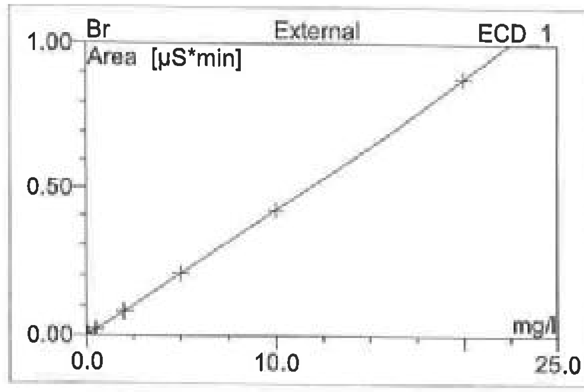
17A0161

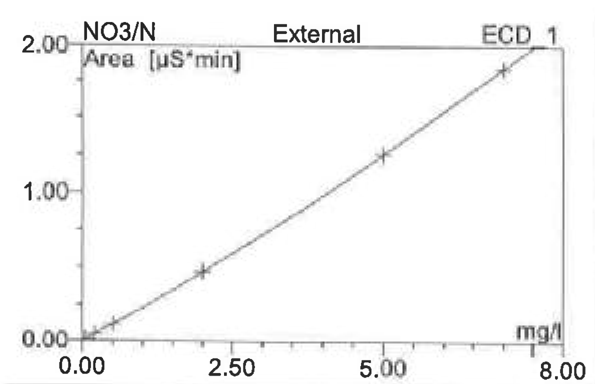
Sample Name:	**AUTOCAL7**	*Injection Volume:*	**25.0**
Vial Number:	**7**	*Channel:*	**ECD_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/4/2017 10:13**	*Sample Weight:*	**1.0000**
Run Time (min):	**10.50**	*Sample Amount:*	**1.0000**

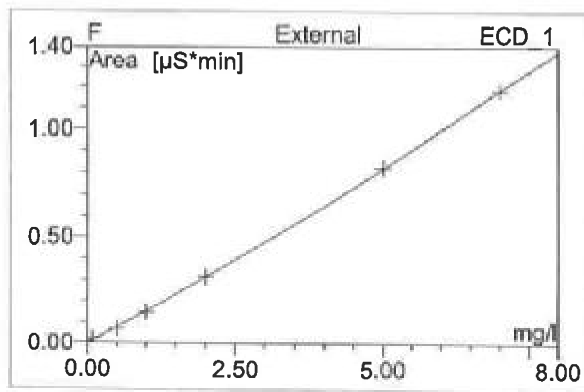




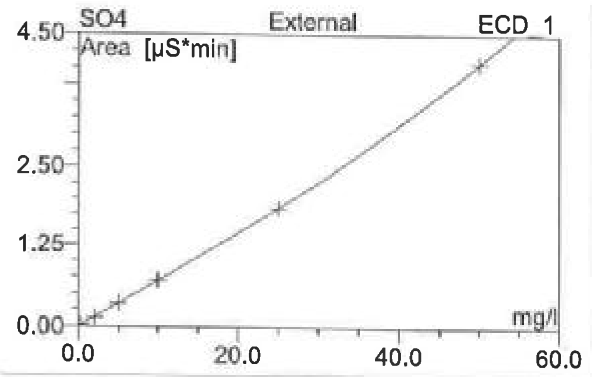








34

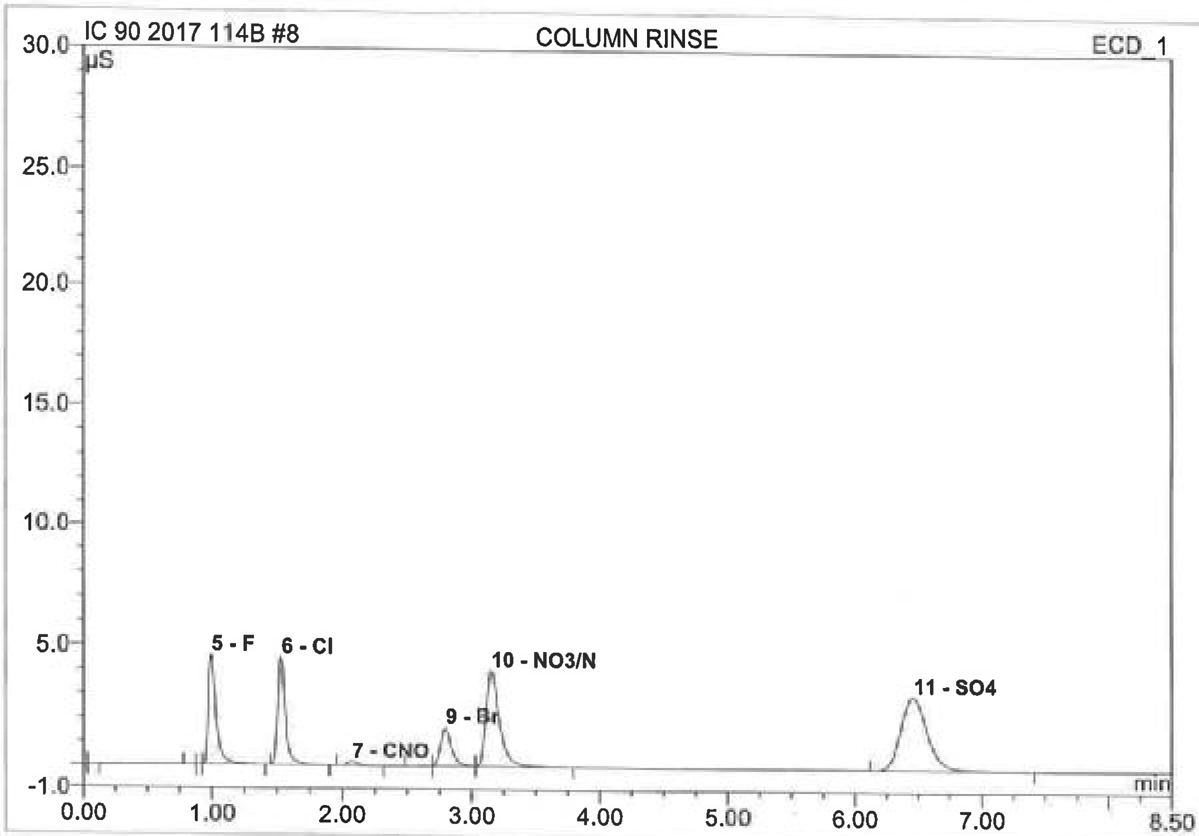


No.	Ret.Time min	Peak Name	Cal.Type	Points	Corr.Coeff. %	Offset	Slope	Curve
3	1.02	F	0QOff	7	99.9664	-0.0013	0.1520	0.0025
4	1.58	Cl	0QOff	7	99.9403	0.0035	0.0956	0.0012
5	2.14	CNO	0QOff	6	99.9961	-0.0001	0.0057	0.0000
6	2.88	Br	0QOff	6	99.9729	-0.0002	0.0403	0.0002
7	3.22	NO3/N	0QOff	6	99.9420	0.0003	0.2229	0.0057
8	6.70	SO4	0QOff	6	99.8842	0.0007	0.0664	0.0003
Average:					99.9503	0.0005	0.0971	0.0016

35

8 COLUMN RINSE

Sample Name:	**COLUMN RINSE**	*Injection Volume:*	**25.0**
Vial Number:	**152**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 8:25**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**

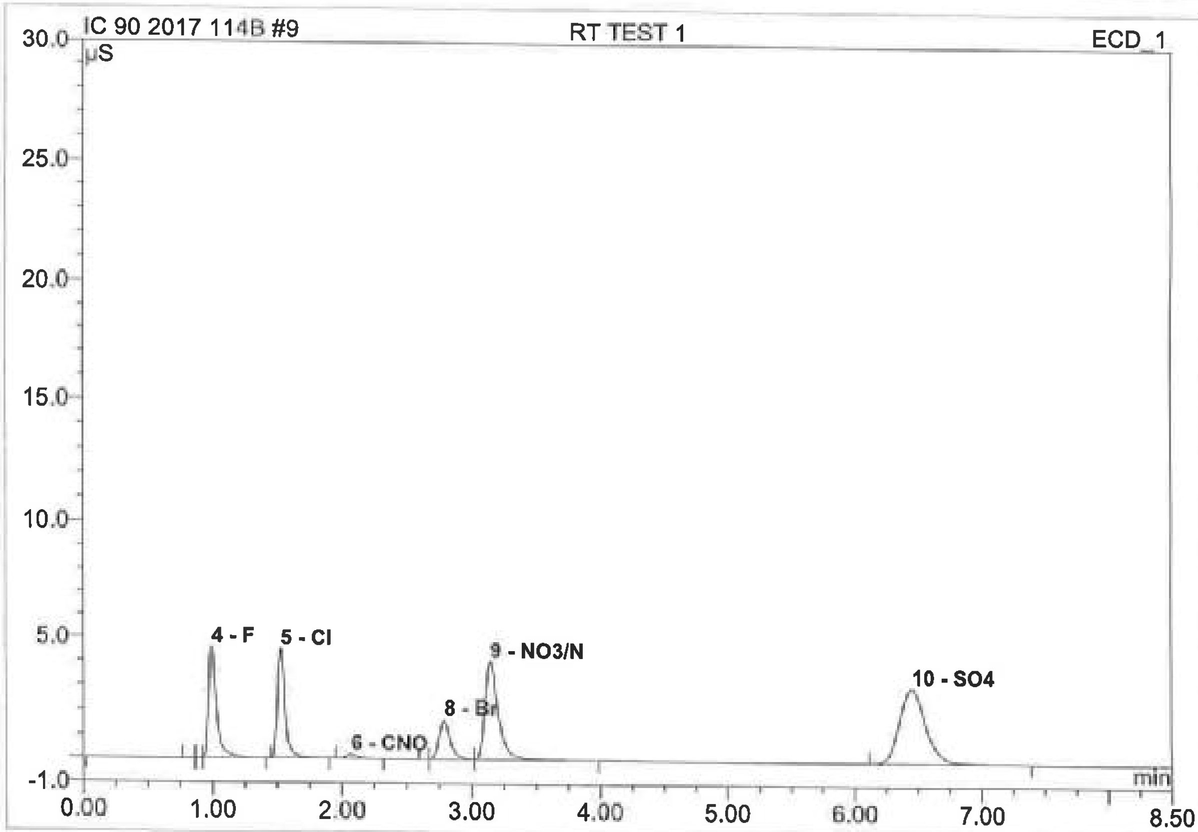


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
5	1.00	F	4.597	0.3274	15.92	2.089	MB
6	1.53	Cl	4.504	0.3061	14.88	3.048	BMB
7	2.07	CNO	0.174	0.0167	0.81	2.972	BMB
9	2.80	Br	1.631	0.1650	8.02	4.026	bM
10	3.15	NO3/N	4.019	0.4907	23.85	2.089	MB
11	6.46	SO4	3.088	0.7490	36.41	10.752	BMB
Total:			18.013	2.055	99.88	24.98	

36

9 RT TEST 1

Sample Name:	**RT TEST 1**	*Injection Volume:*	**25.0**
Vial Number:	**153**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 8:36**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**

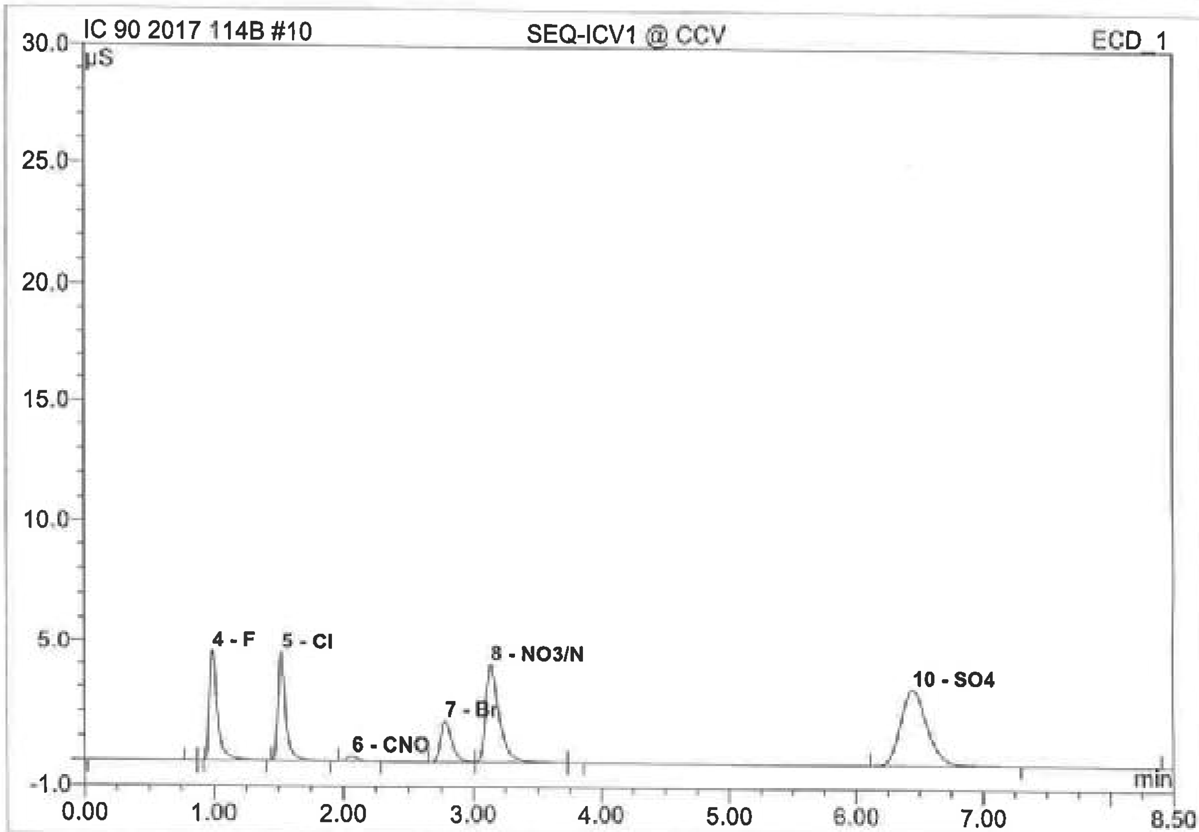


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
4	0.99	F	4.586	0.3260	15.81	2.081	MB
5	1.53	Cl	4.495	0.3045	14.77	3.033	BMB
6	2.07	CNO	0.176	0.0169	0.82	3.021	BMB
8	2.79	Br	1.647	0.1694	8.22	4.133	bM
9	3.14	NO3/N	4.032	0.4972	24.11	2.115	MB
10	6.45	SO4	3.086	0.7472	36.24	10.727	BMB
Total:			18.022	2.061	99.97	25.11	

10 SEQ-ICV1 @ CCV

37

Sample Name:	**SEQ-ICV1 @ CCV**	*Injection Volume:*	**25.0**
Vial Number:	**154**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 8:47**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**

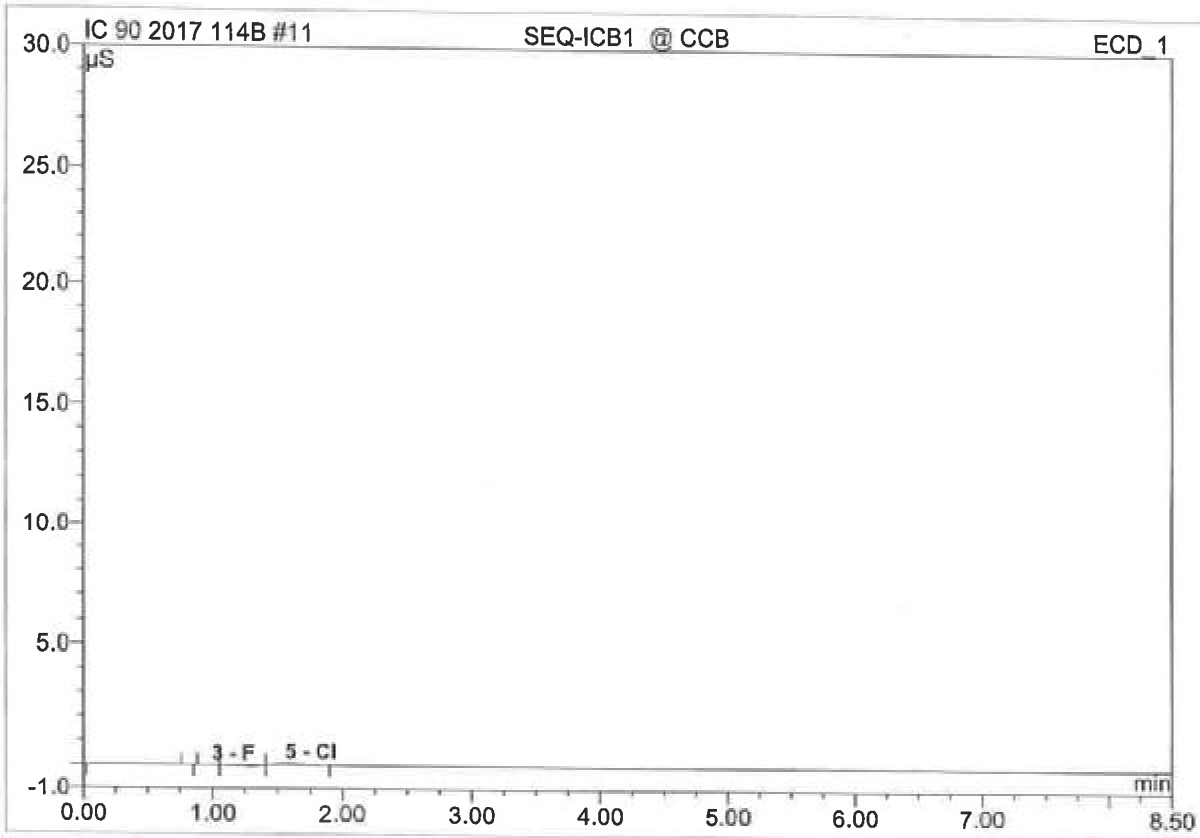


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
4	1.00	F	4.578	0.3250	15.82	2.074	BMB
5	1.53	Cl	4.505	0.3049	14.84	3.036	BMB
6	2.07	CNO	0.177	0.0169	0.82	3.009	BMB
7	2.78	Br	1.647	0.1692	8.24	4.127	BM
8	3.14	NO3/N	4.033	0.4944	24.07	2.104	M
10	6.45	SO4	3.083	0.7431	36.17	10.671	BMB
Total:			18.023	2.053	99.95	25.02	

11 SEQ-ICB1 @ CCB

38

Sample Name:	**SEQ-ICB1 @ CCB**	*Injection Volume:*	**25.0**
Vial Number:	**155**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 8:58**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**

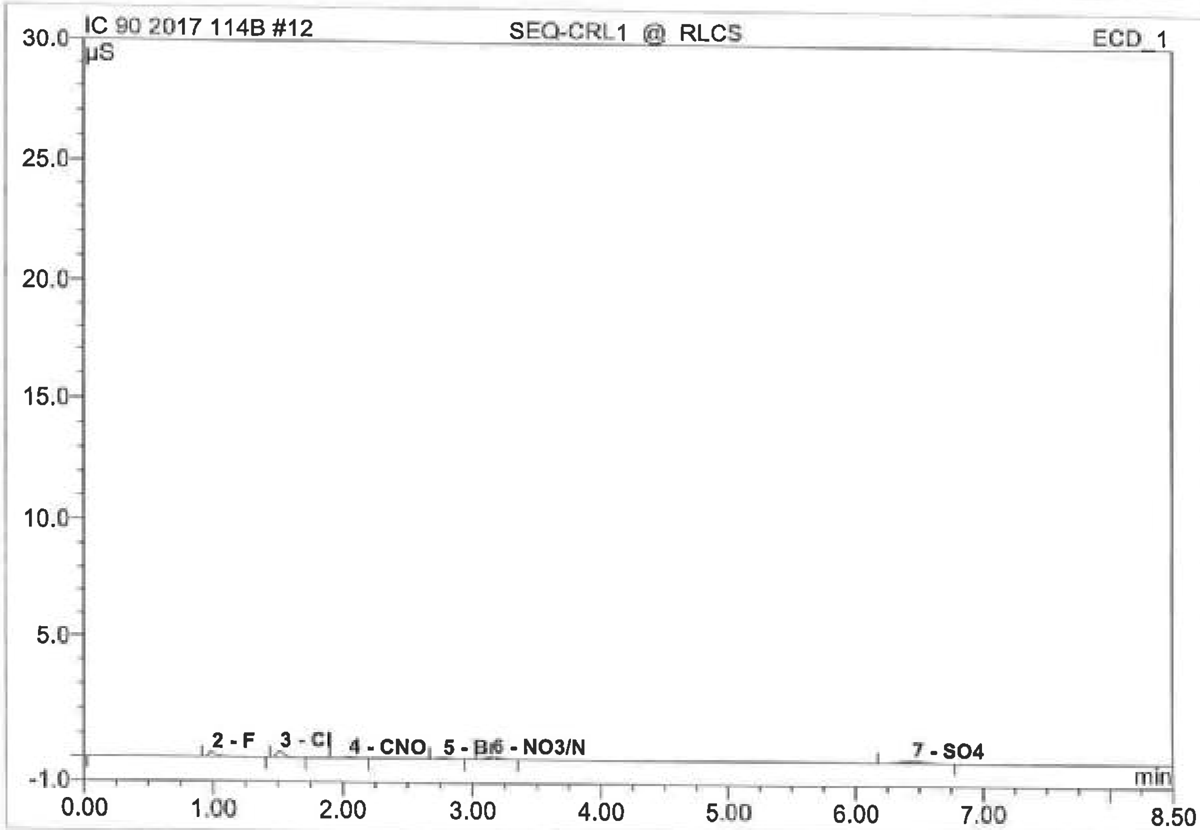


No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
3	0.99	F	0.004	0.0002	0.97	0.010	BM
5	1.56	Cl	0.072	0.0150	66.21	0.120	bMB
n.a.	n.a.	CNO	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	n.a.	Br	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	n.a.	NO3/N	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	n.a.	SO4	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			0.076	0.015	67.18	0.13	

12 SEQ-CRL1 @ RLCS

39

Sample Name:	**SEQ-CRL1 @ RLCS**	*Injection Volume:*	**25.0**
Vial Number:	**156**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 10:22**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



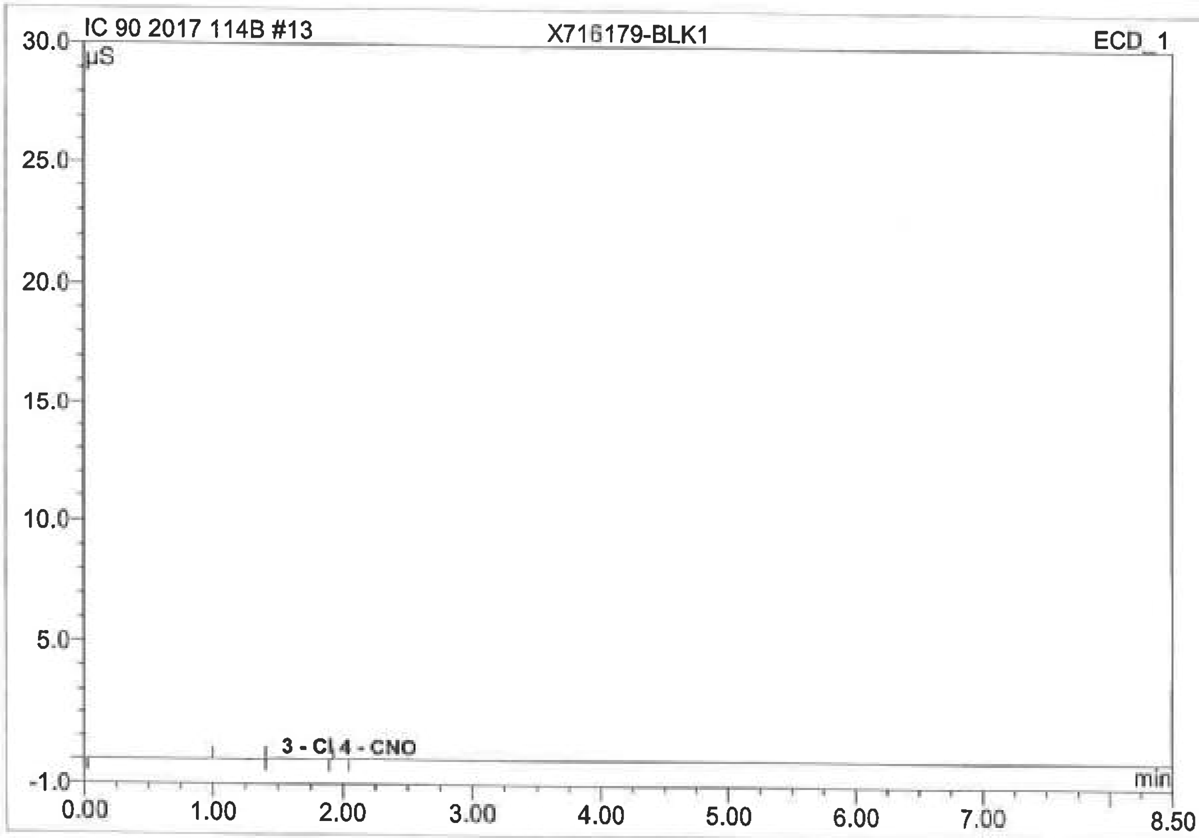
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
2	0.99	F	0.223	0.0178	24.17	0.125	BMB
3	1.52	Cl	0.282	0.0189	25.59	0.161	BMB
4	2.05	CNO	0.024	0.0026	3.48	0.474	BMB
5	2.77	Br	0.038	0.0038	5.18	0.100	BMB
6	3.15	NO3/N	0.093	0.0105	14.28	0.046	BMB
7	6.45	SO4	0.086	0.0201	27.29	0.292	BMB
Total:			0.747	0.074	99.98	1.20	

13 X716179-BLK1

40

ANALYST SB

Sample Name:	**X716179-BLK1**	*Injection Volume:*	**25.0**
Vial Number:	**157**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 10:33**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



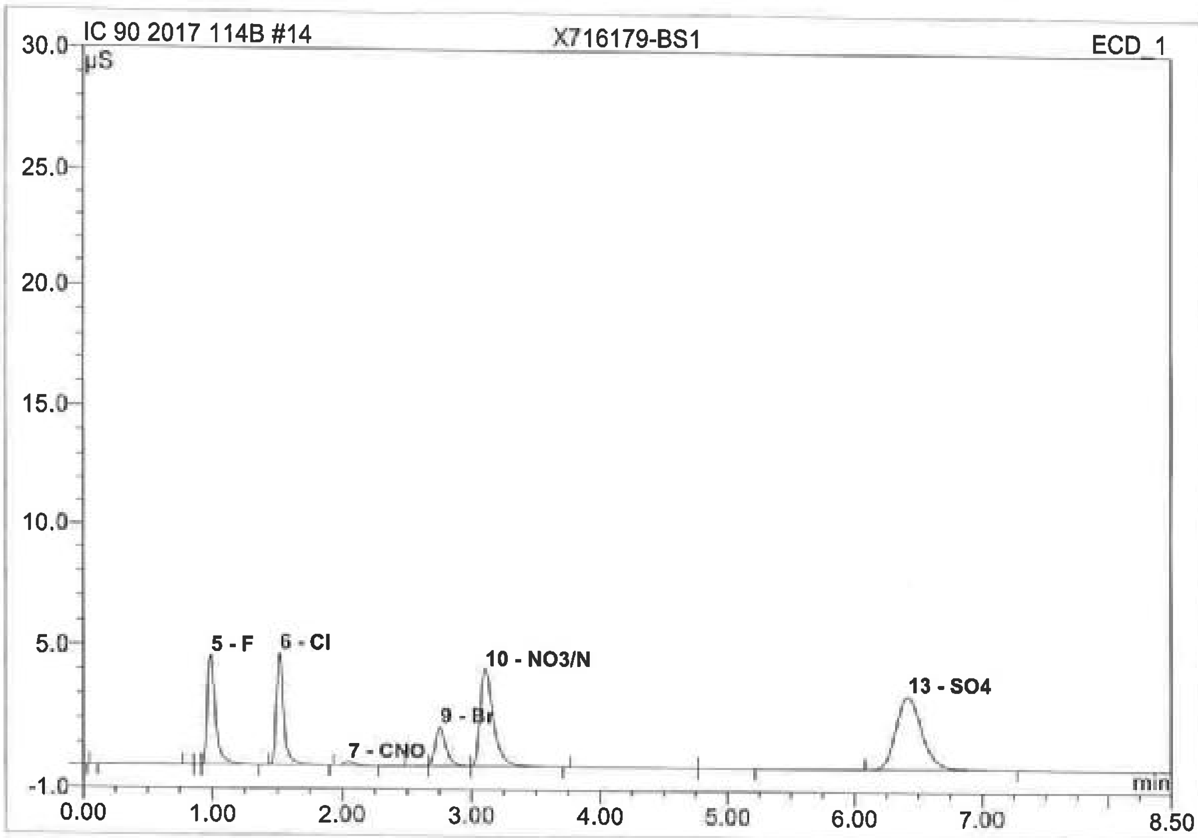
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
n.a.	n.a.	F	n.a.	n.a.	n.a.	n.a.	n.a.
3	1.53	Cl	0.041	0.0073	61.84	0.040	bMB
4	1.97	CNO	0.004	0.0002	2.01	0.065	BMB
n.a.	n.a.	Br	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	n.a.	NO3/N	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	n.a.	SO4	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			0.045	0.008	63.85	0.11	

41

14 X716179-BS1

ANALYST SB

Sample Name:	**X716179-BS1**	*Injection Volume:*	**25.0**
Vial Number:	**158**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 10:44**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



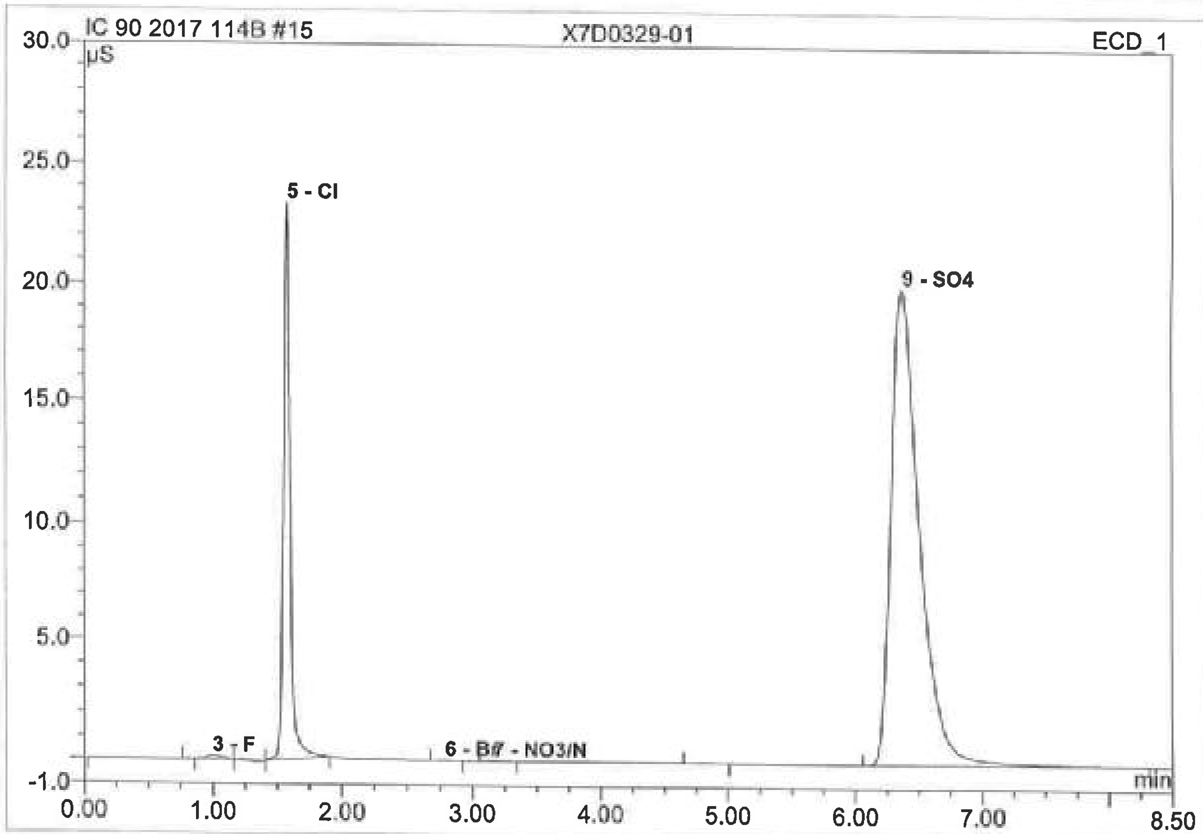
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
5	0.99	F	4.564	0.3227	15.74	2.060	MB
6	1.52	Cl	4.645	0.3108	15.16	3.094	BMB
7	2.05	CNO	0.179	0.0168	0.82	2.999	BMB
9	2.76	Br	1.643	0.1630	7.95	3.980	bM
10	3.11	NO3/N	4.055	0.4862	23.71	2.070	MB
13	6.42	SO4	3.095	0.7440	36.29	10.683	BMB
Total:			18.181	2.044	99.68	24.89	

15 X7D0329-01

42

ANALYST SB

Sample Name:	**X7D0329-01**	*Injection Volume:*	**25.0**
Vial Number:	**159**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 10:55**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



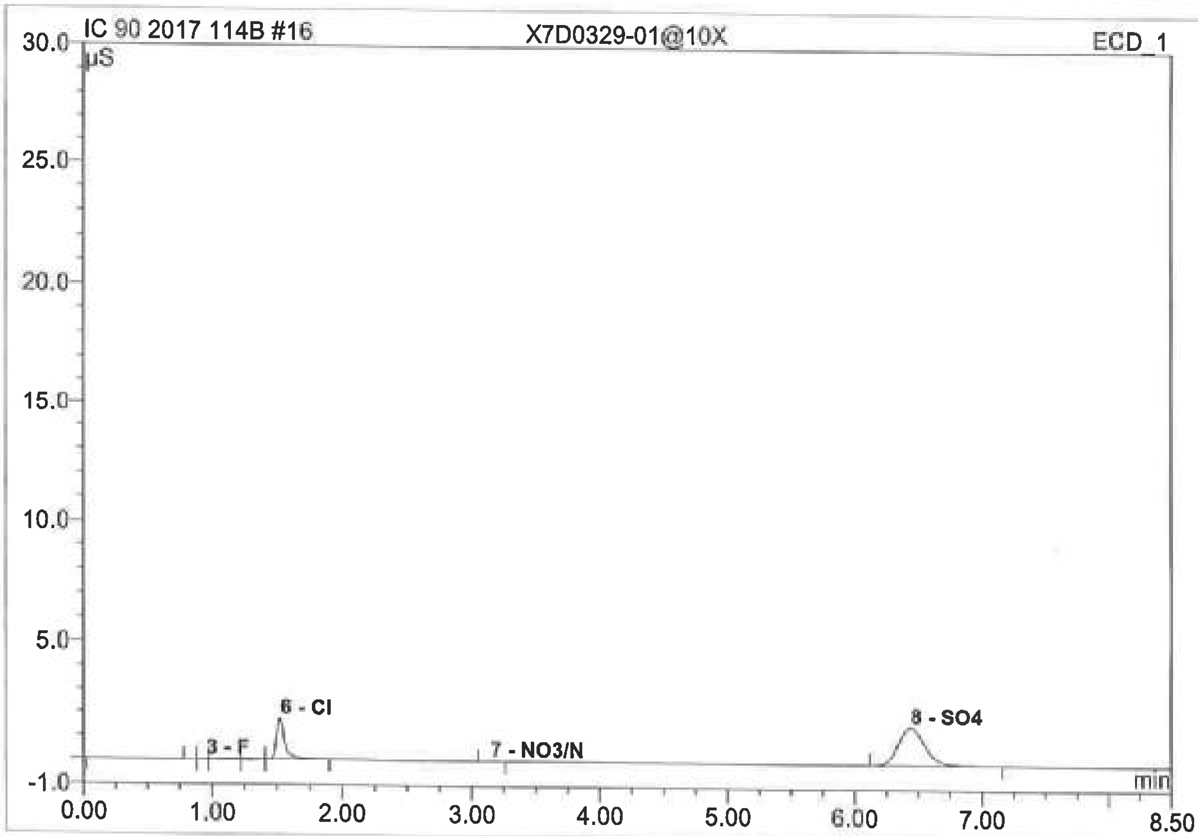
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
3	1.00	F	0.159	0.0229	0.35	0.158	BMb
5	1.58	Cl	23.330	1.4213	21.49	12.755	bMB
n.a.	n.a.	CNO	n.a.	n.a.	n.a.	n.a.	n.a.
6	2.79	Br	0.033	0.0031	0.05	0.081	BMB
7	3.16	NO3/N	0.035	0.0039	0.06	0.016	BMB
9	6.37	SO4	19.994	5.1520	77.88	60.841	BMB
Total:			43.552	6.603	99.82	73.85	

43

16 X7D0329-01@10X

ANALYST SB

Sample Name:	**X7D0329-01@10X**	*Injection Volume:*	**25.0**
Vial Number:	**160**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 11:06**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



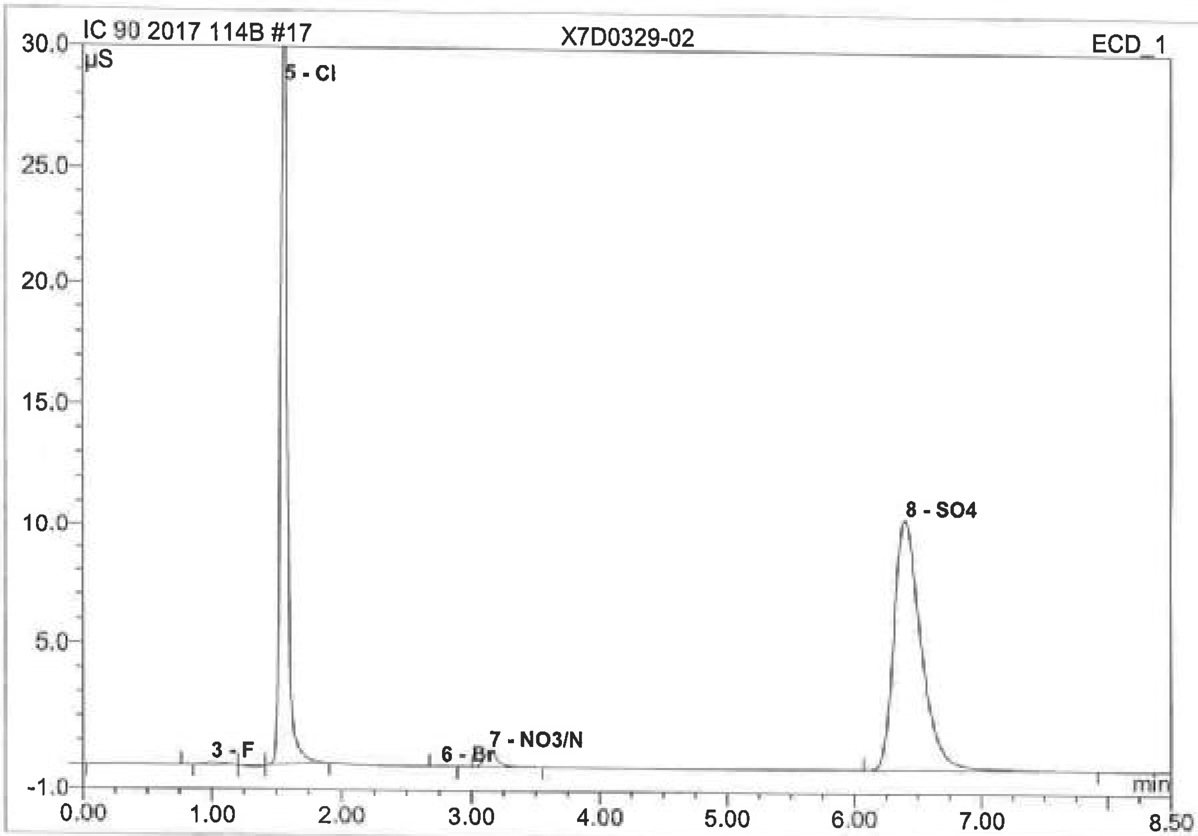
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
3	0.95	F	0.011	0.0008	0.16	0.014	M
6	1.53	Cl	1.712	0.1230	23.98	1.231	bMB
n.a.	n.a.	CNO	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	n.a.	Br	n.a.	n.a.	n.a.	n.a.	n.a.
7	3.14	NO3/N	0.006	0.0006	0.12	0.001	BMB
8	6.44	SO4	1.561	0.3751	73.13	5.505	BMB
Total:			3.290	0.500	97.38	6.75	

44

17 X7D0329-02

ANALYST SB

Sample Name:	**X7D0329-02**	*Injection Volume:*	**25.0**
Vial Number:	**161**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 11:17**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



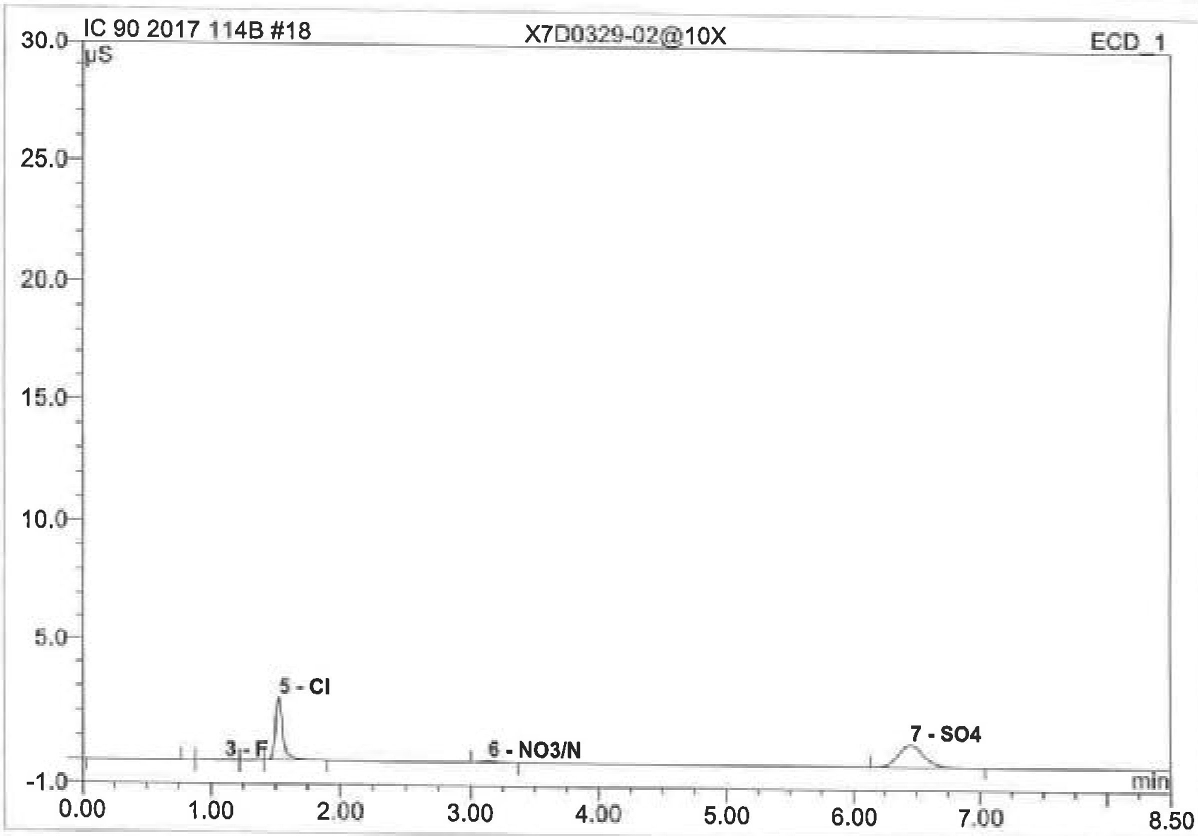
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
3	0.99	F	0.117	0.0194	0.41	0.135	BM
5	1.56	Cl	32.778	1.9939	42.54	17.091	bMB
n.a.	n.a.	CNO	n.a.	n.a.	n.a.	n.a.	n.a.
6	2.76	Br	0.019	0.0017	0.04	0.048	BMB
7	3.14	NO3/N	0.657	0.0757	1.62	0.335	BMB
8	6.40	SO4	10.495	2.5864	55.18	33.787	BMB
Total:			44.066	4.677	99.78	51.40	

18 X7D0329-02@10X

45

ANALYST SB

Sample Name:	**X7D0329-02@10X**	*Injection Volume:*	**25.0**
Vial Number:	**162**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 11:28**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



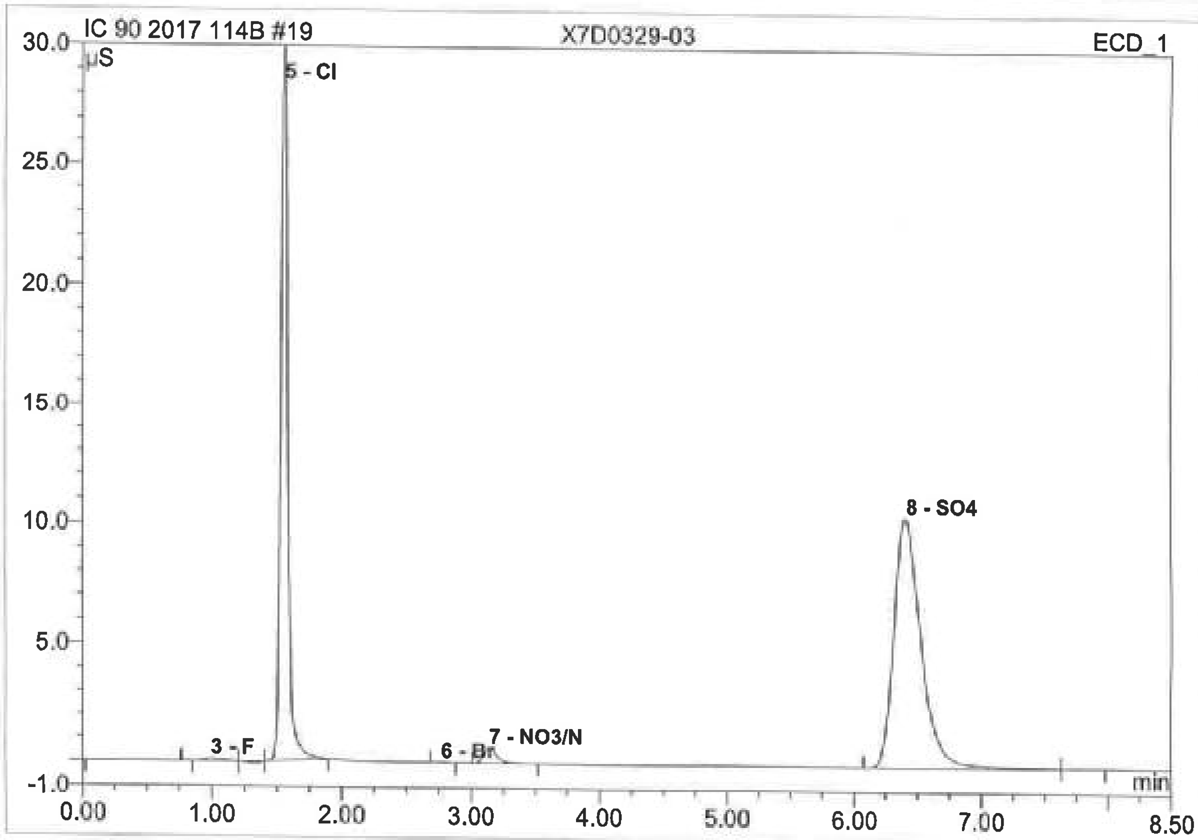
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
3	1.11	F	0.036	0.0085	2.06	0.064	M
5	1.53	Cl	2.520	0.1737	41.97	1.743	bMB
n.a.	n.a.	CNO	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	n.a.	Br	n.a.	n.a.	n.a.	n.a.	n.a.
6	3.14	NO3/N	0.065	0.0076	1.83	0.032	BMB
7	6.45	SO4	0.911	0.2184	52.76	3.233	BMB
Total:			3.533	0.408	98.62	5.07	

46

19 X7D0329-03

ANALYST SB

Sample Name:	**X7D0329-03**	*Injection Volume:*	**25.0**
Vial Number:	**163**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 11:39**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



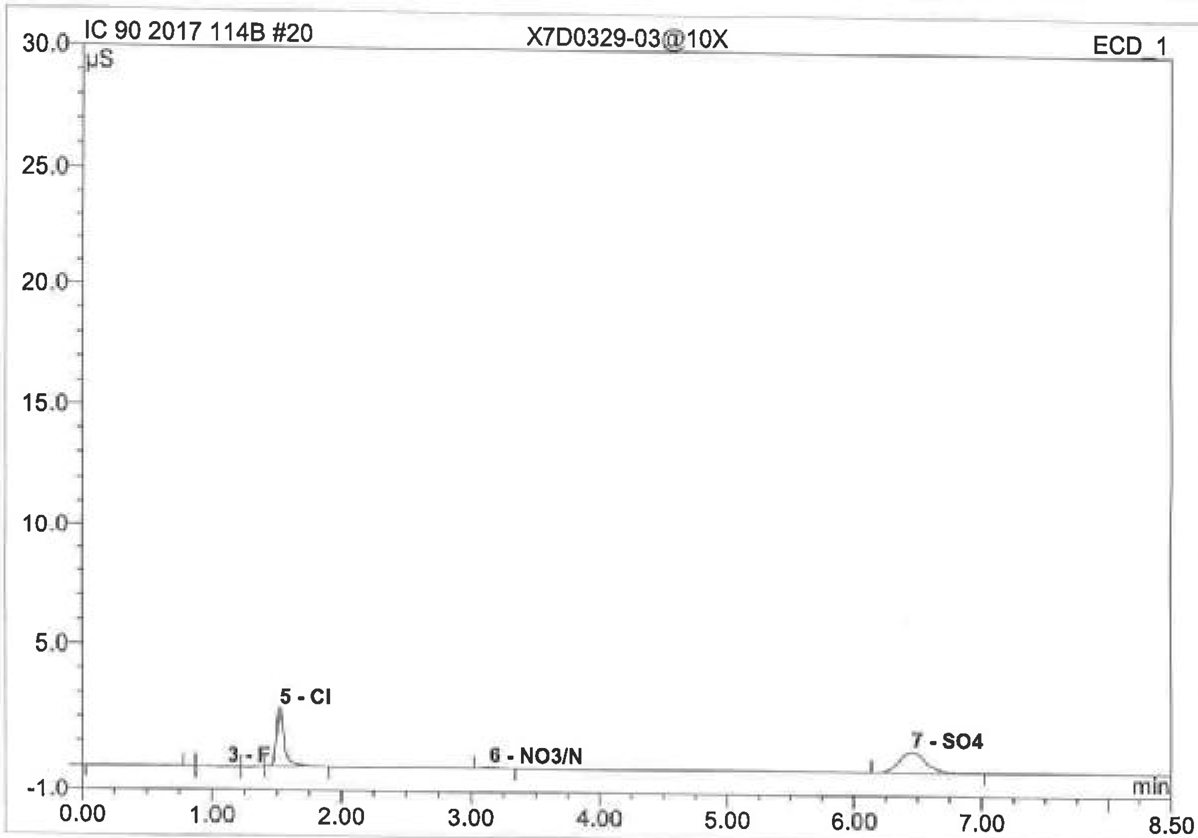
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
3	1.00	F	0.118	0.0212	0.45	0.147	BMb
5	1.56	Cl	32.772	1.9954	42.61	17.102	bMB
n.a.	n.a.	CNO	n.a.	n.a.	n.a.	n.a.	n.a.
6	2.77	Br	0.018	0.0016	0.03	0.044	BMB
7	3.14	NO3/N	0.653	0.0750	1.60	0.332	BMB
8	6.41	SO4	10.473	2.5782	55.05	33.693	BM
Total:			44.034	4.671	99.75	51.32	

47

20 X7D0329-03@10X

ANALYST SB

Sample Name:	**X7D0329-03@10X**	*Injection Volume:*	**25.0**
Vial Number:	**164**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 11:50**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



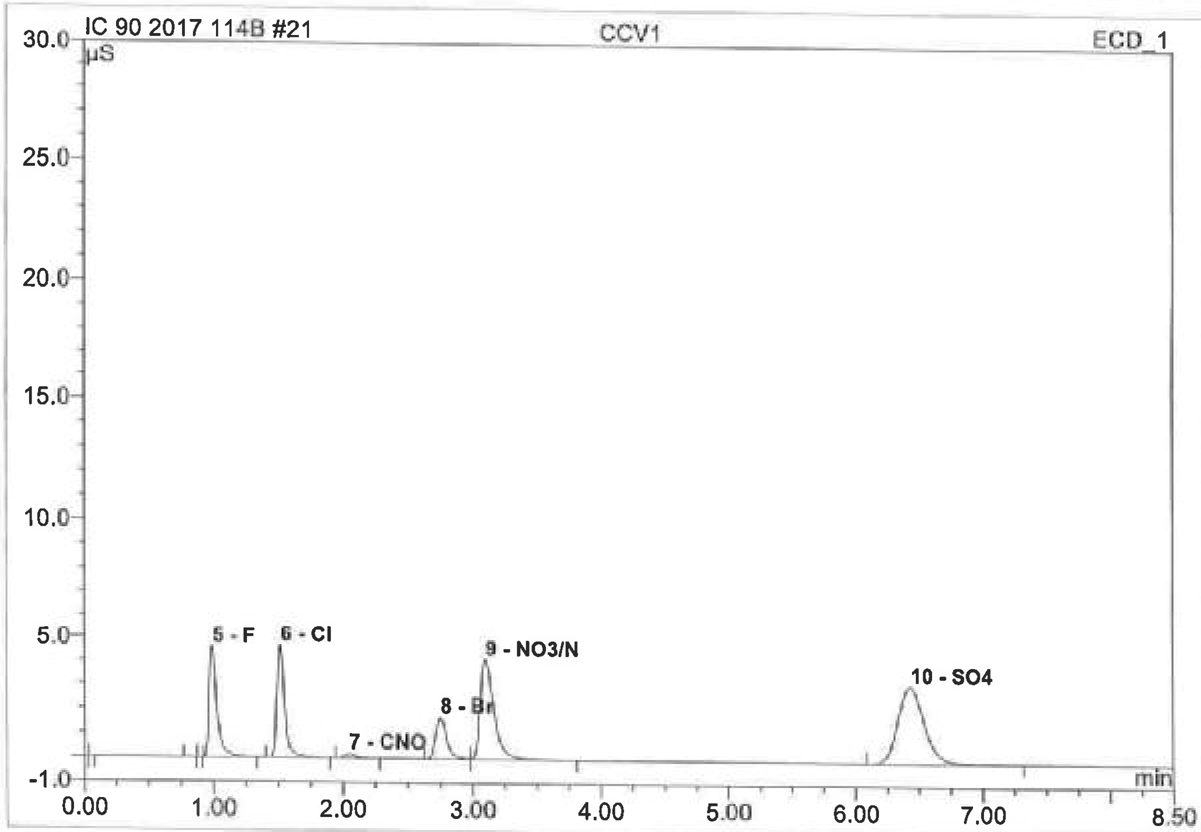
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
3	1.12	F	0.036	0.0083	2.12	0.063	M
5	1.52	Cl	2.398	0.1654	42.16	1.659	bMB
n.a.	n.a.	CNO	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	n.a.	Br	n.a.	n.a.	n.a.	n.a.	n.a.
6	3.14	NO3/N	0.062	0.0069	1.77	0.030	BMB
7	6.45	SO4	0.861	0.2060	52.49	3.051	BMB
Total:			3.357	0.387	98.54	4.80	

48

21 CCV1

ANALYST SB

Sample Name:	**CCV1**	*Injection Volume:*	**25.0**
Vial Number:	**165**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 12:01**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
5	0.99	F	4.583	0.3236	15.67	2.066	BMB
6	1.52	Cl	4.642	0.3101	15.02	3.087	BMB
7	2.04	CNO	0.177	0.0166	0.80	2.958	BMB
8	2.75	Br	1.673	0.1697	8.22	4.139	BM
9	3.10	NO3/N	4.093	0.4957	24.01	2.109	MB
10	6.43	SO4	3.108	0.7485	36.25	10.744	BMB
Total:			18.277	2.064	99.98	25.10	

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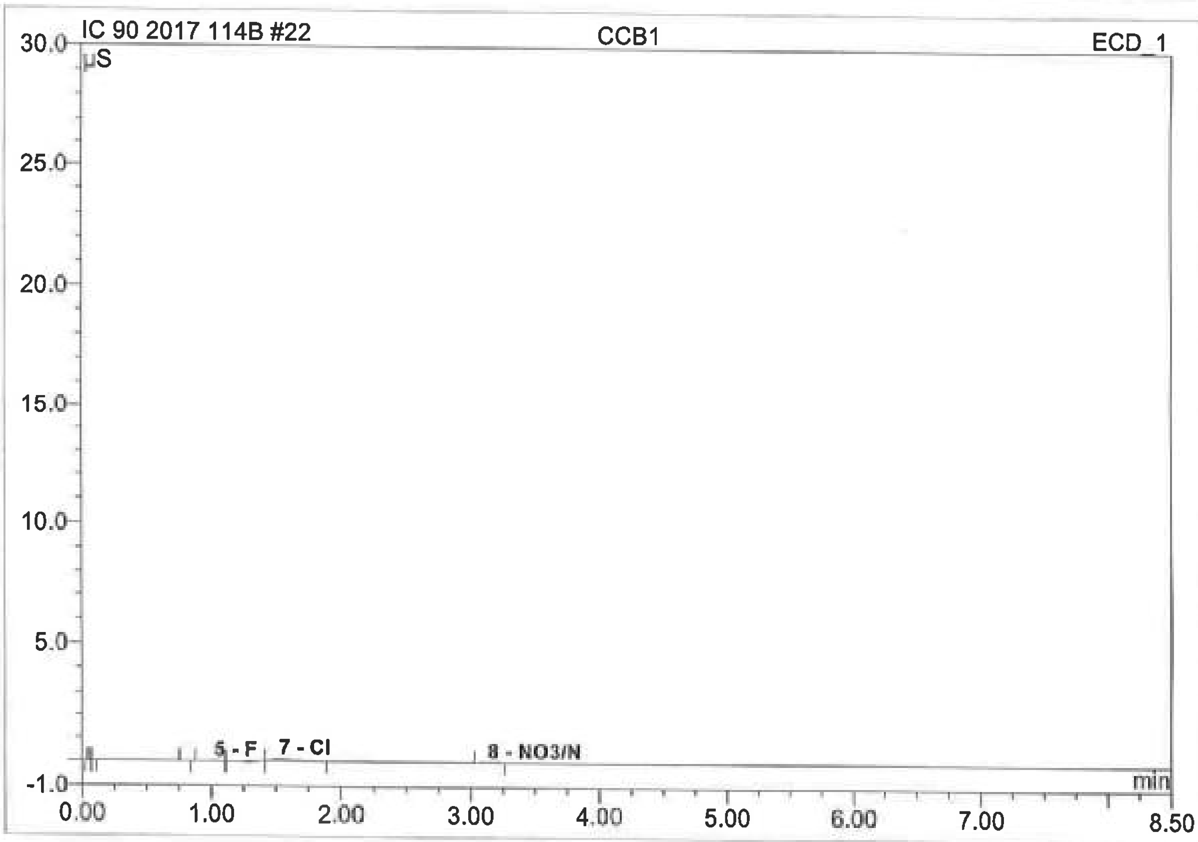
22 CCB1

ANALYST SB

Sample Name:	**CCB1**	*Injection Volume:*	**25.0**
Vial Number:	**166**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 12:12**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
5	1.02	F	0.010	0.0011	5.09	0.015	BMb
7	1.52	Cl	0.106	0.0147	69.79	0.117	bMB
n.a.	n.a.	CNO	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	n.a.	Br	n.a.	n.a.	n.a.	n.a.	n.a.
8	3.13	NO3/N	0.007	0.0008	3.77	0.002	BMB
n.a.	n.a.	SO4	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			0.123	0.017	78.66	0.13	

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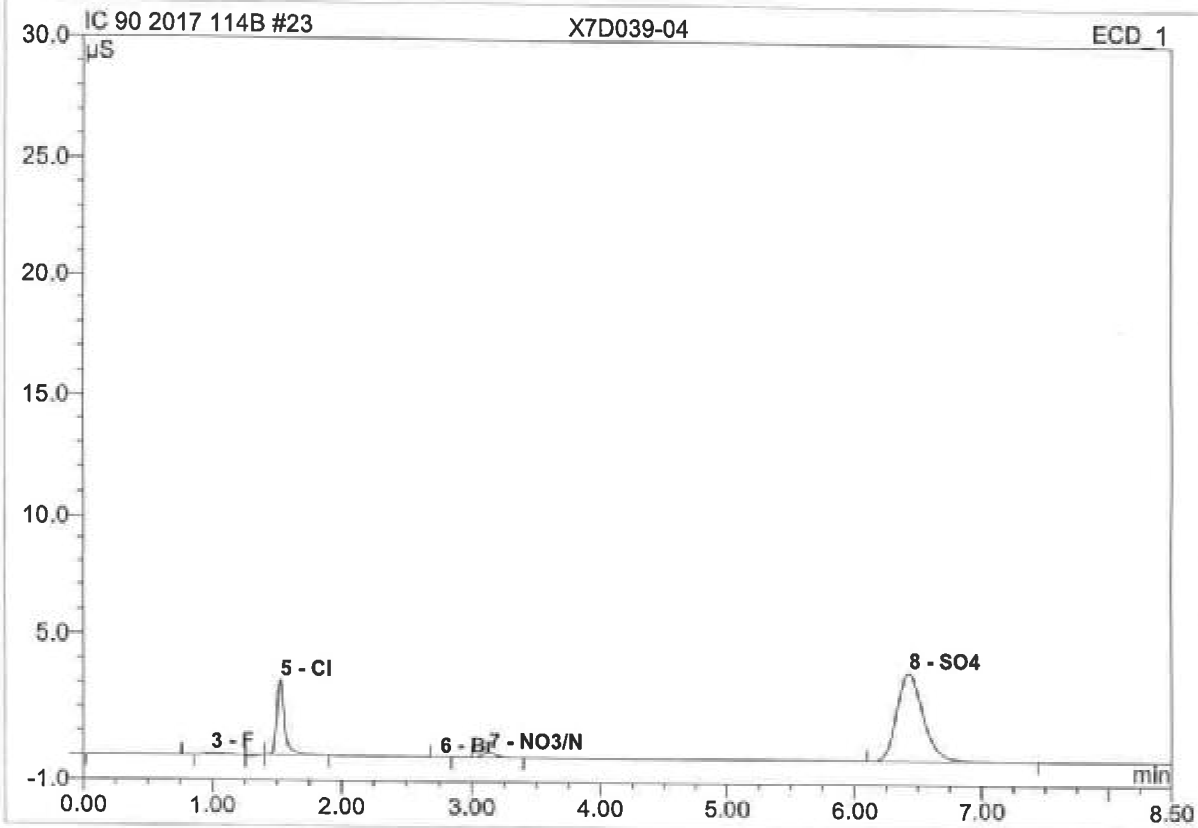
23 X7D039-04

ANALYST SB

Sample Name:	**X7D039-04**	*Injection Volume:*	**25.0**
Vial Number:	**167**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 12:22**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



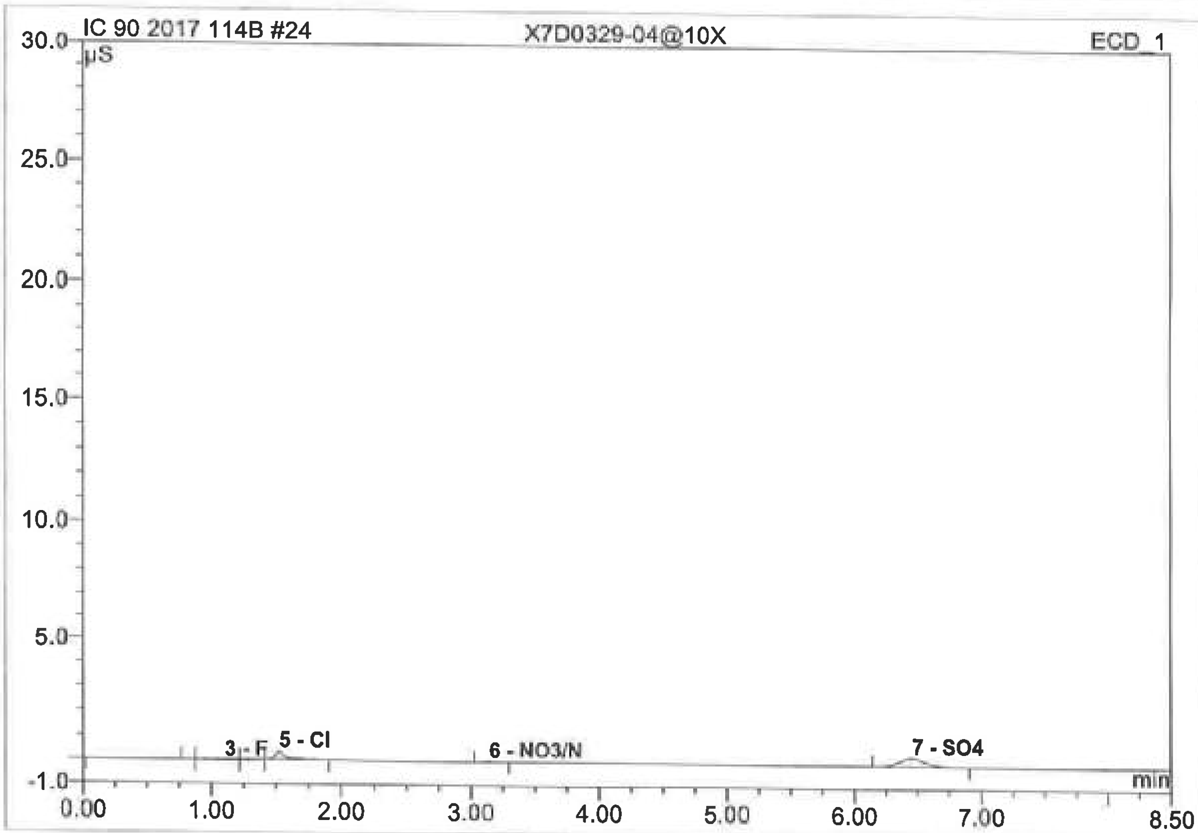
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
3	0.99	F	0.098	0.0126	1.09	0.091	BM
5	1.53	Cl	3.121	0.2131	18.47	2.135	bMB
n.a.	n.a.	CNO	n.a.	n.a.	n.a.	n.a.	n.a.
6	2.76	Br	0.005	0.0004	0.04	0.015	BMB
7	3.13	NO3/N	0.213	0.0244	2.12	0.108	BMB
8	6.42	SO4	3.713	0.8978	77.82	12.777	BMB
Total:			7.151	1.148	99.53	15.13	

24 X7D0329-04@10X

51

ANALYST SB

Sample Name:	**X7D0329-04@10X**	*Injection Volume:*	**25.0**
Vial Number:	**168**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 12:33**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



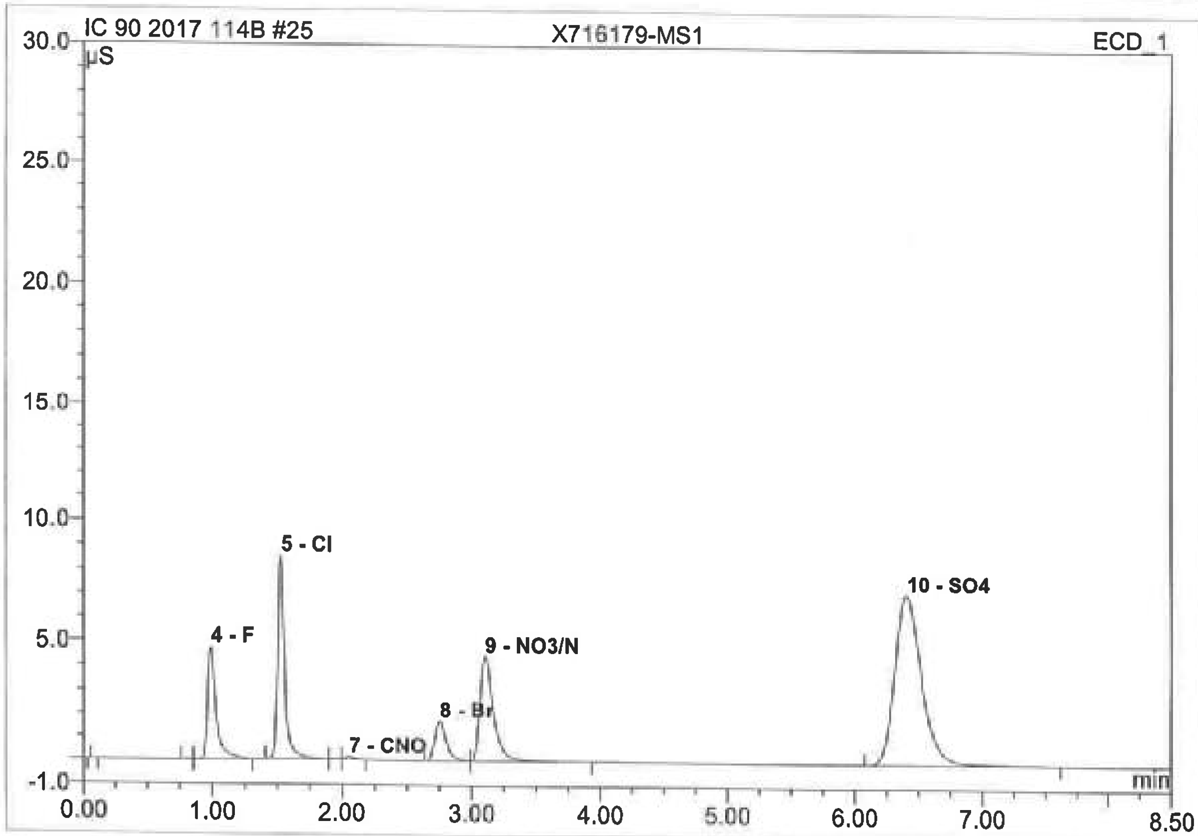
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
3	1.10	F	0.038	0.0088	6.57	0.066	M
5	1.52	Cl	0.343	0.0316	23.75	0.293	bMB
n.a.	n.a.	CNO	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	n.a.	Br	n.a.	n.a.	n.a.	n.a.	n.a.
6	3.14	NO3/N	0.024	0.0026	1.97	0.010	BMB
7	6.46	SO4	0.355	0.0847	63.56	1.258	BMB
Total:			0.761	0.128	95.84	1.63	

52

25 X716179-MS1

ANALYST SB

Sample Name:	**X716179-MS1**	*Injection Volume:*	**25.0**
Vial Number:	**169**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 12:44**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



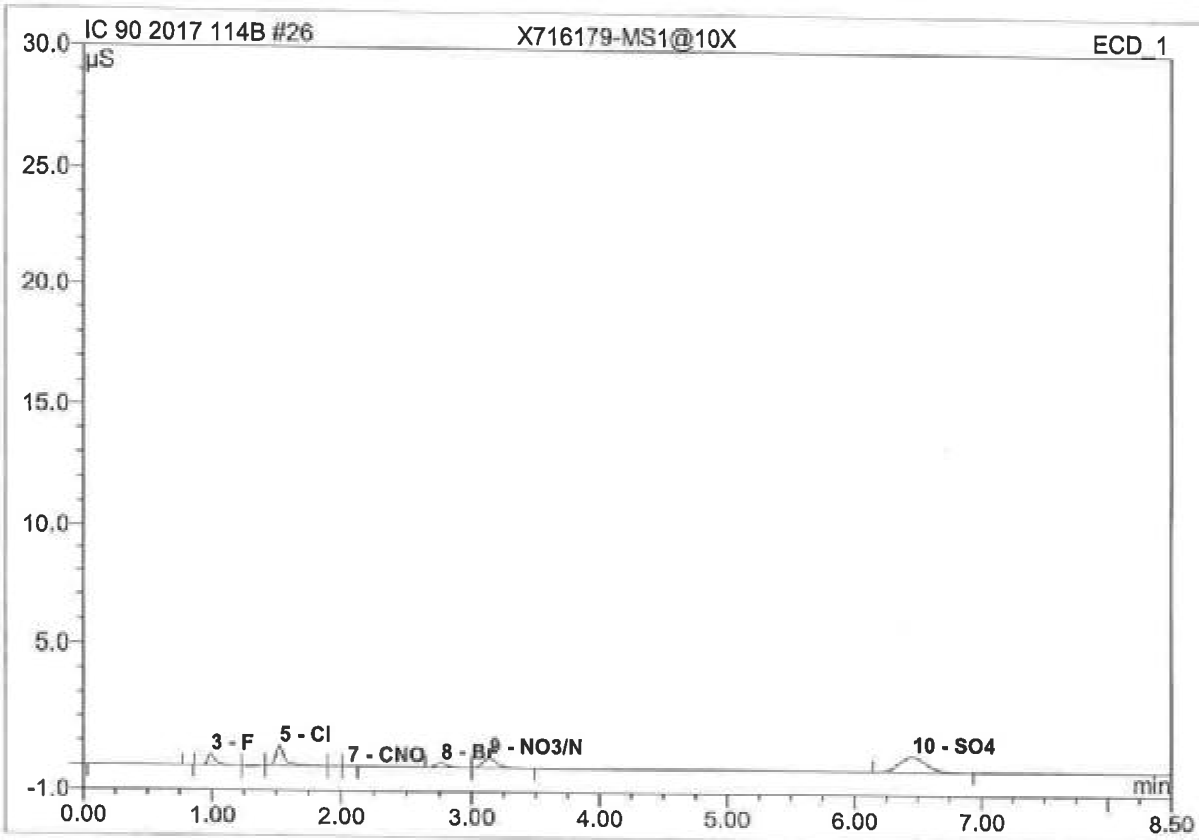
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
4	0.99	F	4.726	0.3590	10.65	2.283	MB
5	1.53	Cl	8.522	0.5474	16.24	5.329	BMb
7	2.05	CNO	0.101	0.0078	0.23	1.401	bMB
8	2.76	Br	1.725	0.1743	5.17	4.250	BM
9	3.11	NO3/N	4.424	0.5376	15.95	2.278	MB
10	6.41	SO4	7.180	1.7430	51.70	23.707	BMB
Total:			26.678	3.369	99.93	39.25	

53

26 X716179-MS1@10X

ANALYST SB

Sample Name:	**X716179-MS1@10X**	*Injection Volume:*	**25.0**
Vial Number:	**170**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 12:55**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



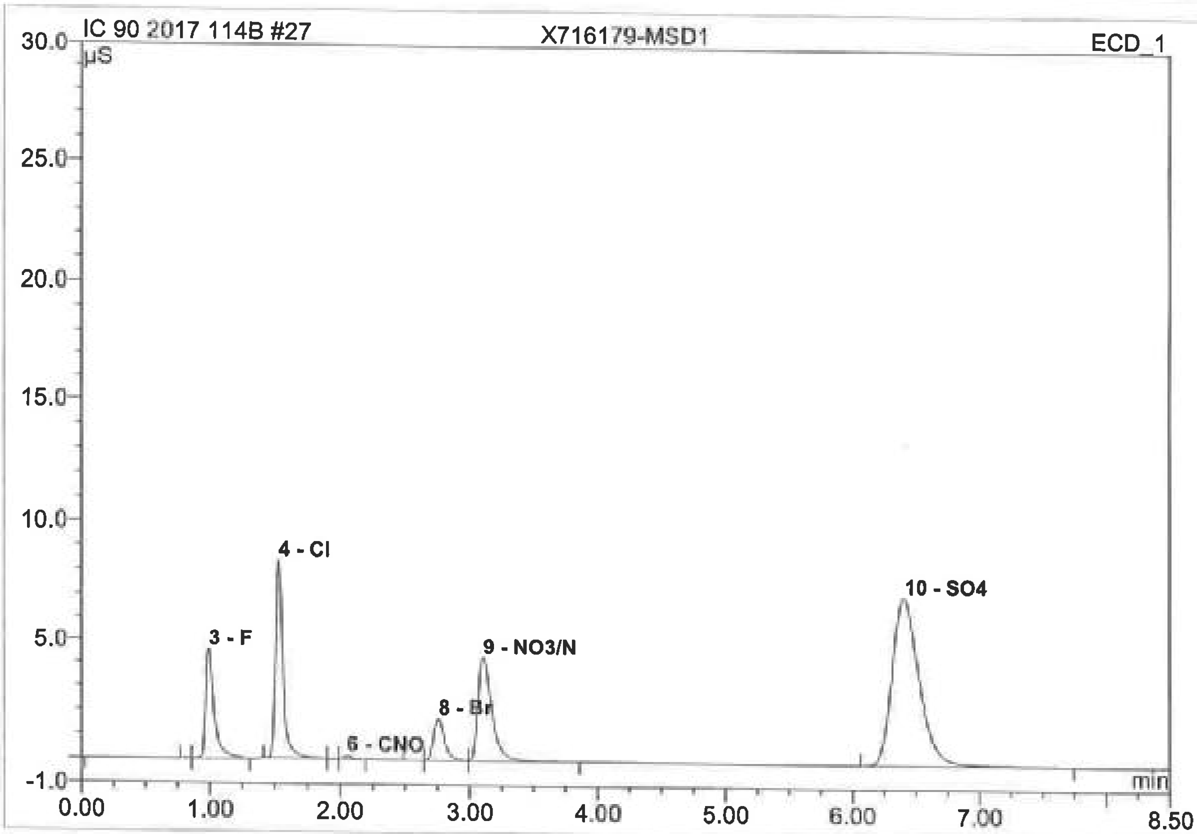
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
3	0.99	F	0.458	0.0333	10.35	0.226	BMb
5	1.52	Cl	0.814	0.0630	19.62	0.618	bMb
7	2.05	CNO	0.007	0.0005	0.14	0.104	bMB
8	2.76	Br	0.164	0.0166	5.18	0.417	BM
9	3.14	NO3/N	0.422	0.0495	15.42	0.219	MB
10	6.45	SO4	0.651	0.1554	48.37	2.307	BMB
Total:			2.516	0.318	99.08	3.89	

54

27 X716179-MSD1

ANALYST SB

Sample Name:	**X716179-MSD1**	*Injection Volume:*	**25.0**
Vial Number:	**171**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 13:06**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



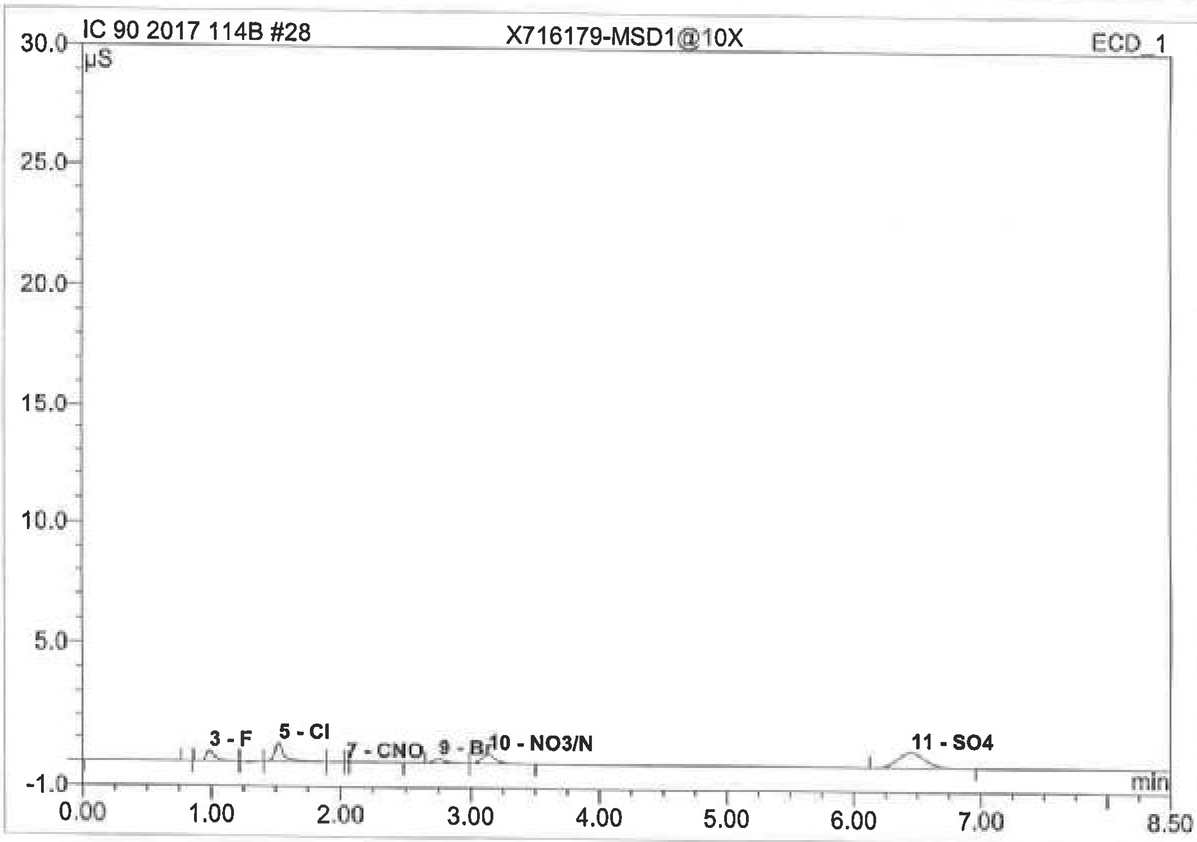
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
3	0.99	F	4.592	0.3473	10.49	2.211	MB
4	1.53	Cl	8.343	0.5371	16.23	5.233	BMB
6	2.05	CNO	0.102	0.0082	0.25	1.475	bMB
8	2.76	Br	1.676	0.1684	5.09	4.109	bM
9	3.10	NO3/N	4.305	0.5206	15.73	2.210	MB
10	6.41	SO4	7.097	1.7251	52.14	23.485	BMB
Total:			26.116	3.307	99.93	38.72	

55

28 X716179-MSD1@10X

ANALYST SB

Sample Name:	**X716179-MSD1@10X**	*Injection Volume:*	**25.0**
Vial Number:	**172**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 13:17**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



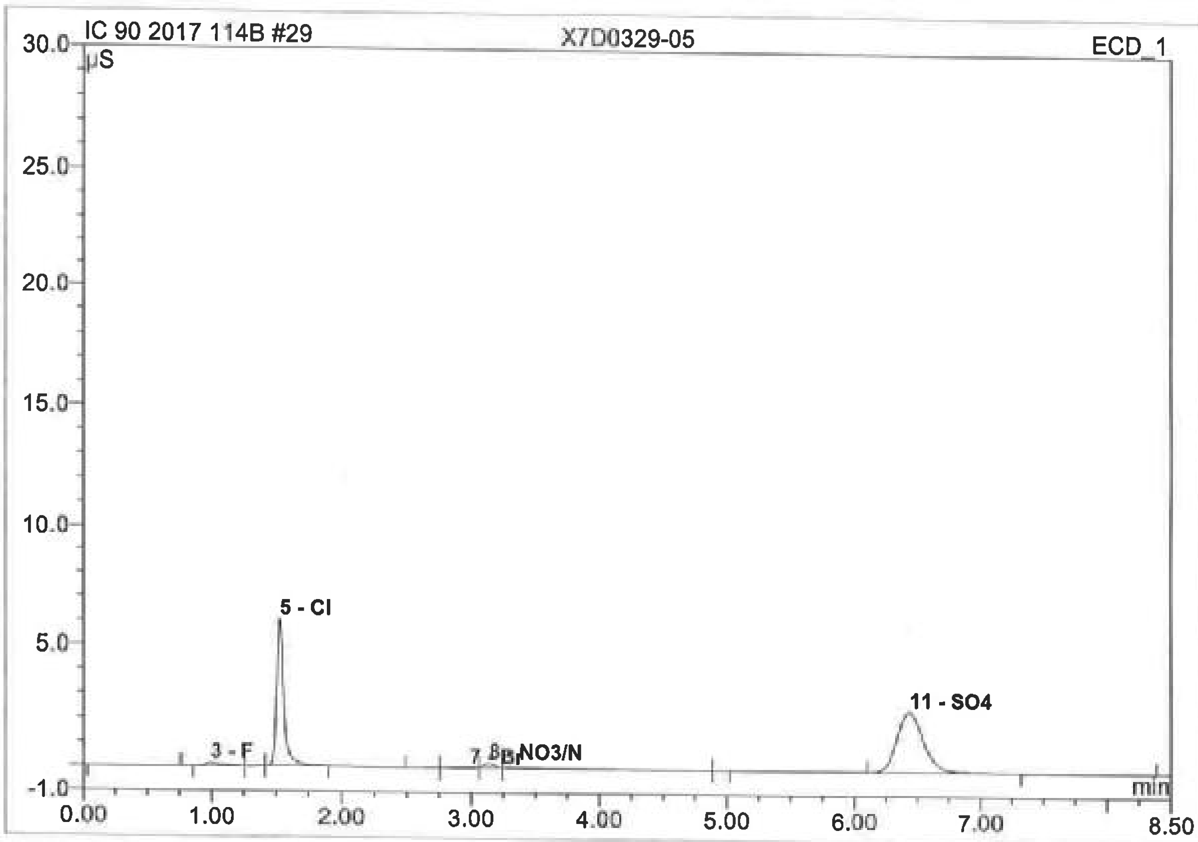
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
3	0.99	F	0.445	0.0318	10.09	0.216	BMb
5	1.52	Cl	0.774	0.0603	19.16	0.590	bMb
7	2.04	CNO	0.002	0.0000	0.01	0.032	bM
9	2.76	Br	0.158	0.0161	5.12	0.404	BM
10	3.13	NO3/N	0.408	0.0481	15.28	0.213	MB
11	6.45	SO4	0.641	0.1532	48.67	2.275	BMB
Total:			2.428	0.310	98.33	3.73	

56

29 X7D0329-05

ANALYST SB

Sample Name:	**X7D0329-05**	*Injection Volume:*	**25.0**
Vial Number:	**173**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 13:28**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



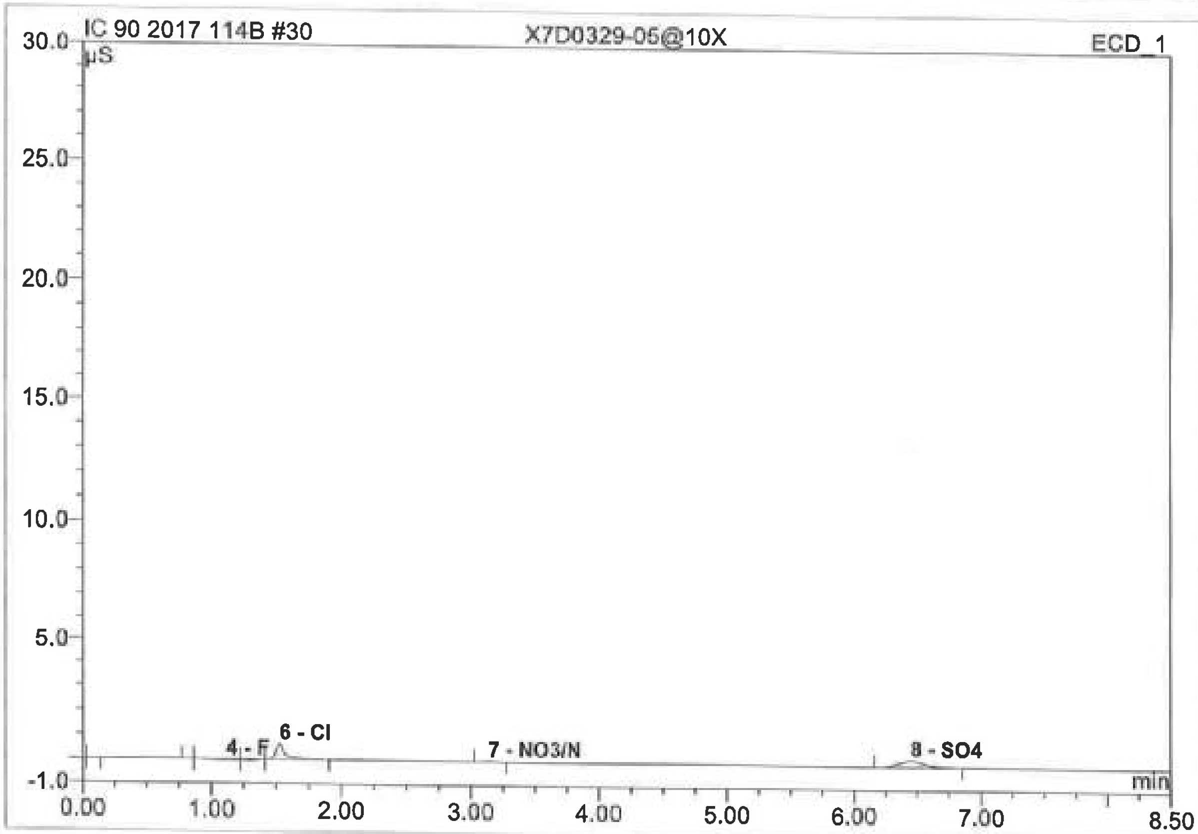
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
3	0.99	F	0.116	0.0206	1.91	0.144	BMb
5	1.53	Cl	6.046	0.3948	36.47	3.900	bMB
n.a.	n.a.	CNO	n.a.	n.a.	n.a.	n.a.	n.a.
7	2.99	Br	0.032	0.0072	0.67	0.184	Mb
8	3.14	NO3/N	0.168	0.0155	1.44	0.068	bMb
11	6.43	SO4	2.527	0.6098	56.33	8.825	BMB
Total:			8.889	1.048	96.81	13.12	

57

30 X7D0329-05@10X

ANALYST SB

Sample Name:	**X7D0329-05@10X**	*Injection Volume:*	**25.0**
Vial Number:	**174**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 13:39**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



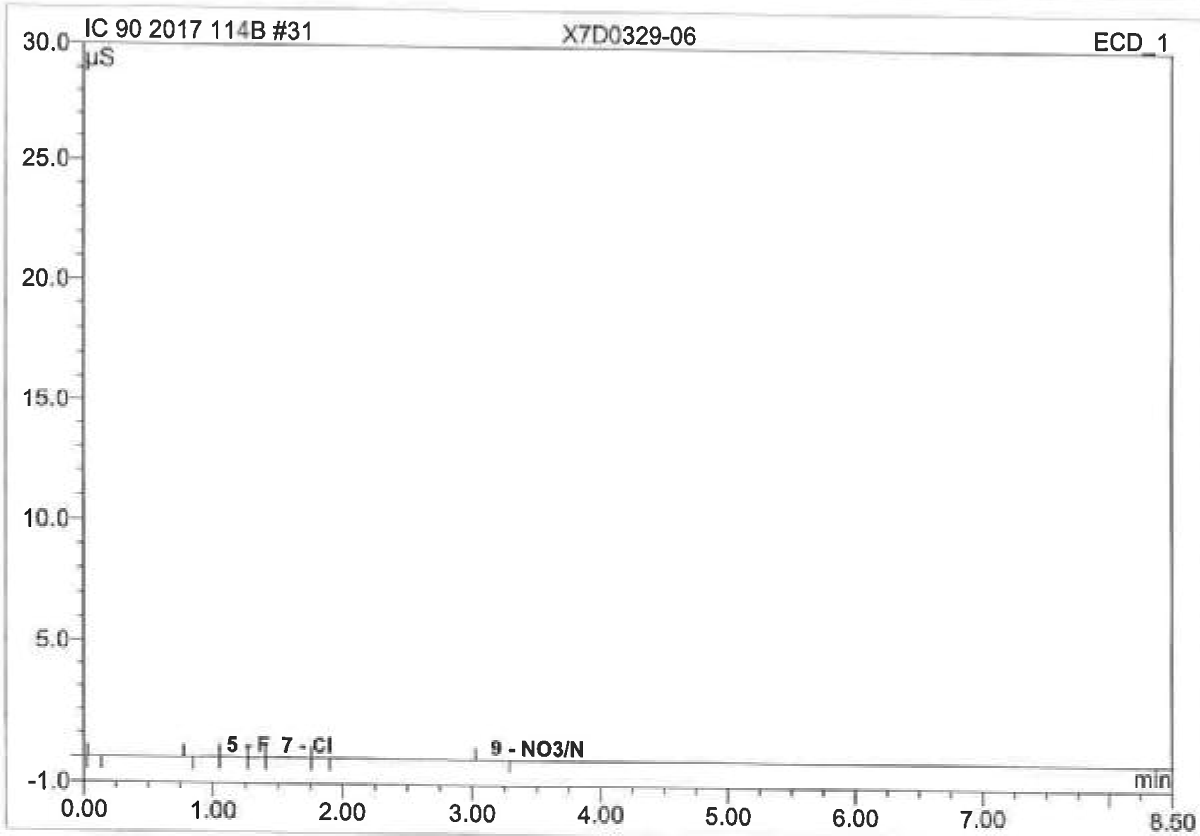
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
4	1.11	F	0.040	0.0095	7.48	0.071	M
6	1.52	Cl	0.612	0.0506	39.90	0.490	bMB
n.a.	n.a.	CNO	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	n.a.	Br	n.a.	n.a.	n.a.	n.a.	n.a.
7	3.13	NO3/N	0.022	0.0024	1.87	0.009	BMB
8	6.45	SO4	0.246	0.0584	46.07	0.866	BMB
Total:			0.920	0.121	95.31	1.44	

58

31 X7D0329-06

ANALYST SB

Sample Name:	**X7D0329-06**	*Injection Volume:*	**25.0**
Vial Number:	**175**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 13:50**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



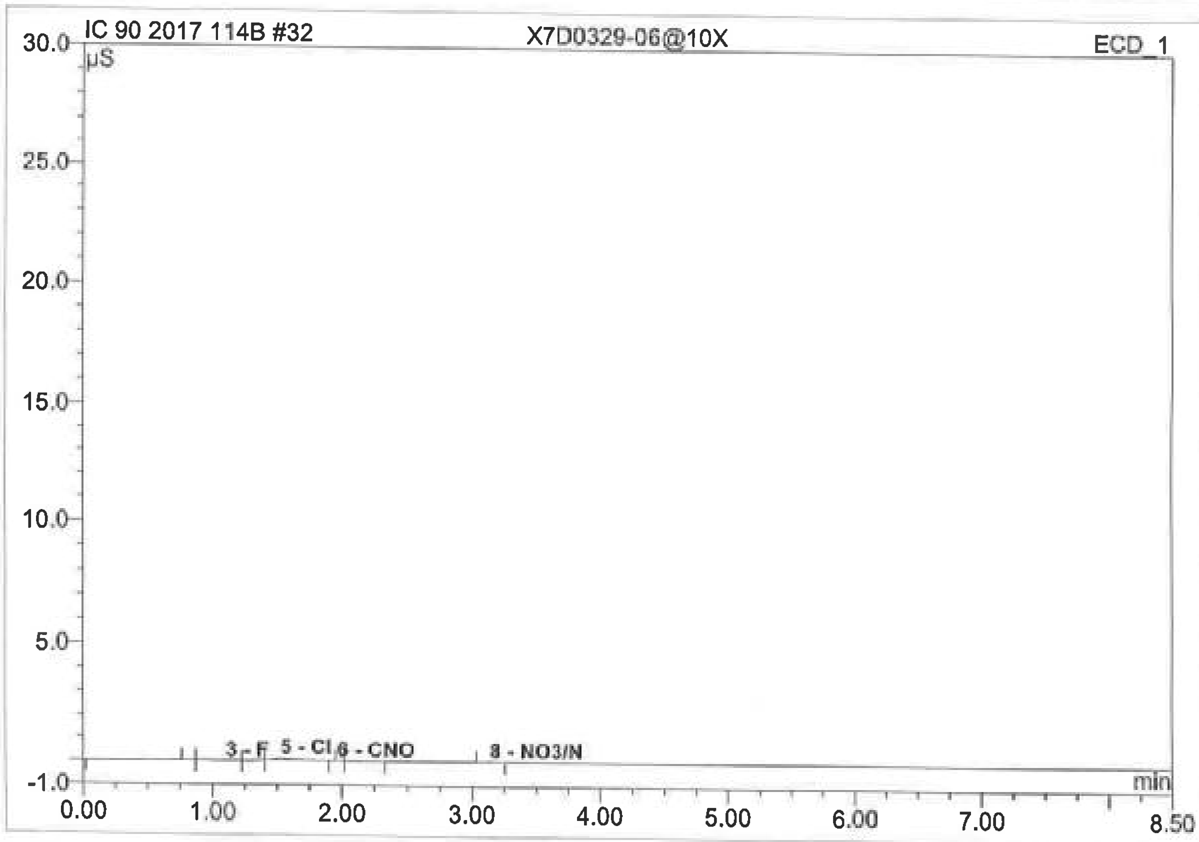
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
5	1.10	F	0.036	0.0035	21.24	0.032	M
7	1.53	Cl	0.035	0.0052	31.23	0.018	bM
n.a.	n.a.	CNO	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	n.a.	Br	n.a.	n.a.	n.a.	n.a.	n.a.
9	3.14	NO3/N	0.009	0.0010	6.28	0.003	BMB
n.a.	n.a.	SO4	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			0.080	0.010	58.75	0.05	

59

32 X7D0329-06@10X

ANALYST SB

Sample Name:	**X7D0329-06@10X**	*Injection Volume:*	**25.0**
Vial Number:	**176**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 14:01**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



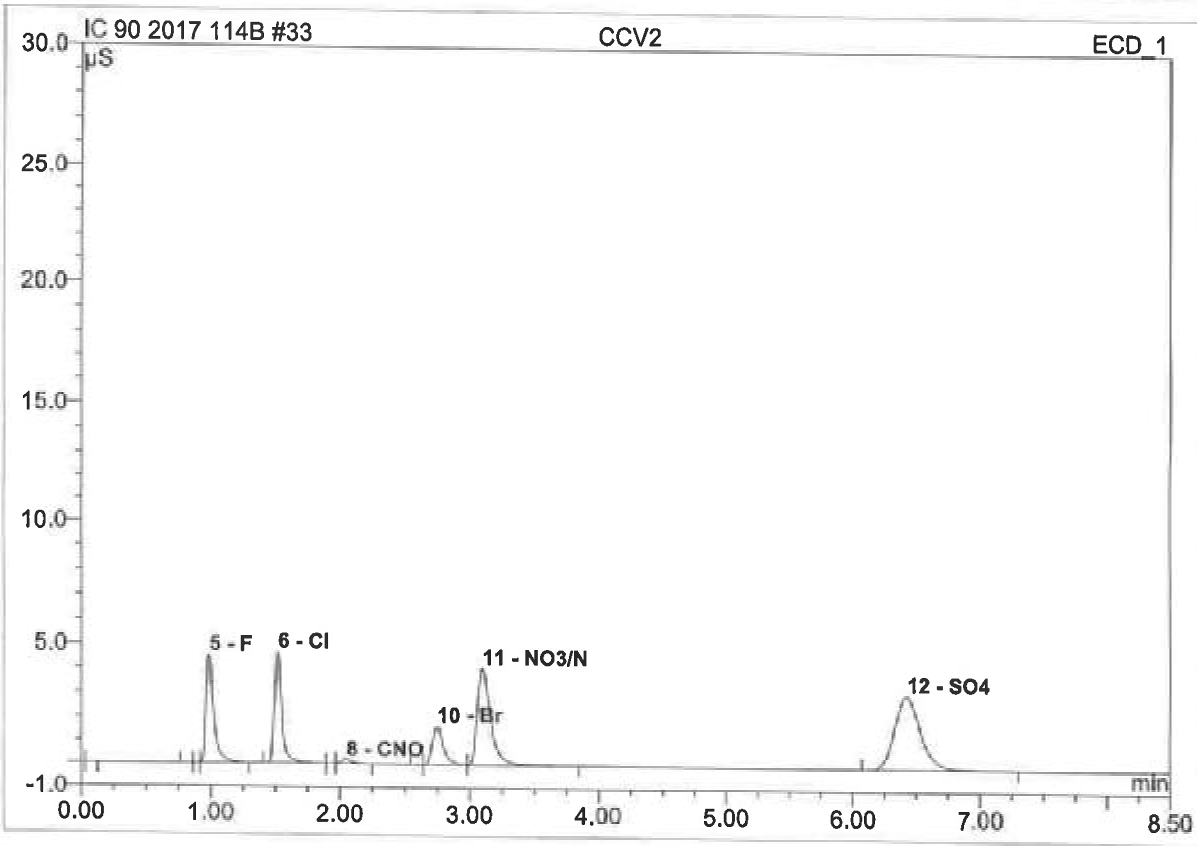
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
3	1.10	F	0.043	0.0108	31.95	0.079	M
5	1.53	Cl	0.108	0.0163	48.50	0.134	bMB
6	1.96	CNO	0.000	0.0000	0.04	0.026	BM
n.a.	n.a.	Br	n.a.	n.a.	n.a.	n.a.	n.a.
8	3.14	NO3/N	0.006	0.0006	1.81	0.001	BMB
n.a.	n.a.	SO4	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			0.157	0.028	82.30	0.24	

60

33 CCV2

ANALYST SB

Sample Name:	**CCV2**	*Injection Volume:*	**25.0**
Vial Number:	**177**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 14:12**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



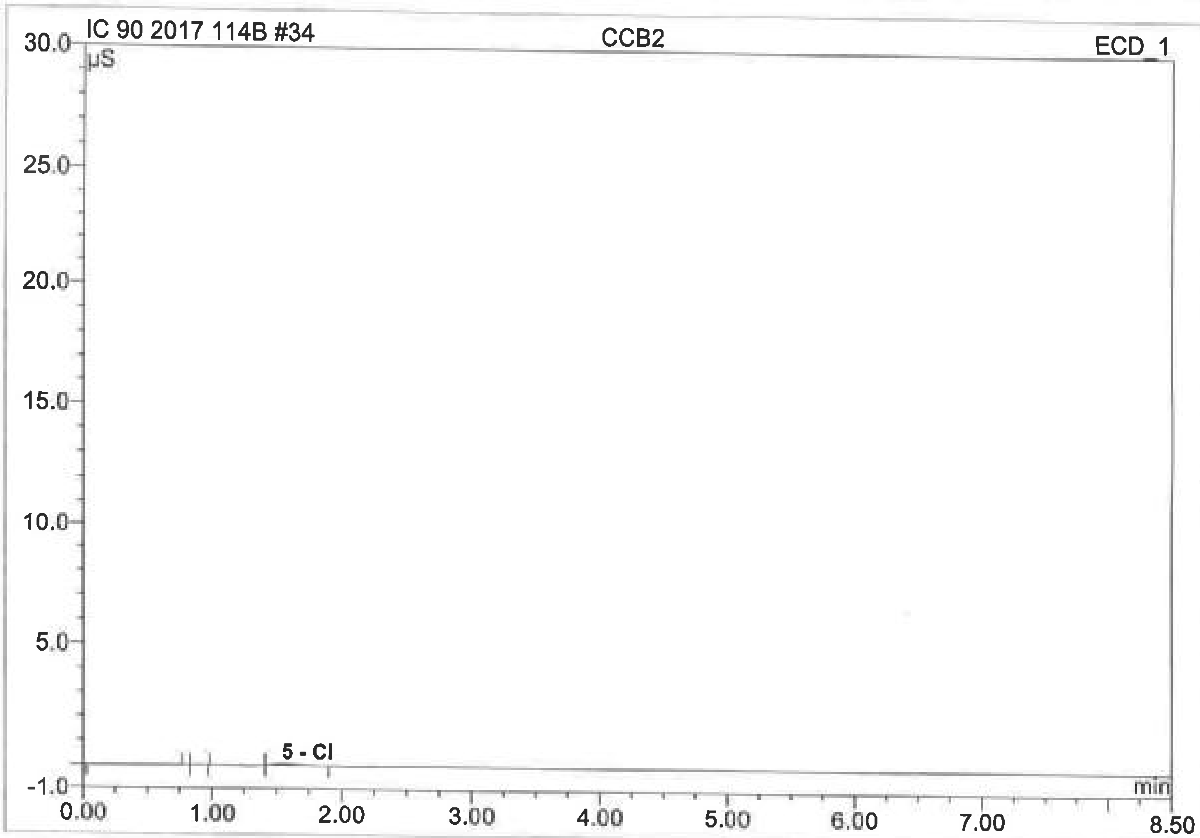
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
5	0.99	F	4.532	0.3227	15.66	2.060	MB
6	1.52	Cl	4.658	0.3115	15.12	3.101	BMB
8	2.05	CNO	0.172	0.0155	0.75	2.755	bMB
10	2.75	Br	1.668	0.1688	8.19	4.117	bM
11	3.10	NO3/N	4.087	0.4946	24.01	2.105	MB
12	6.42	SO4	3.104	0.7458	36.21	10.708	BMB
Total:			18.221	2.059	99.95	24.85	

61

34 CCB2

ANALYST SB

Sample Name:	**CCB2**	*Injection Volume:*	**25.0**
Vial Number:	**177**	*Channel:*	**ECD_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**90_Anions**	*Bandwidth:*	**n.a.**
Quantif. Method:	**Method 300**	*Dilution Factor:*	**1.0000**
Recording Time:	**4/24/2017 14:23**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.50**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/l	Type
n.a.	n.a.	F	n.a.	n.a.	n.a.	n.a.	n.a.
5	1.54	Cl	0.070	0.0136	62.89	0.106	bMB
n.a.	n.a.	CNO	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	n.a.	Br	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	n.a.	NO3/N	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	n.a.	SO4	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			0.070	0.014	62.89	0.11	

Color: straw ☐ Auto-Titrator-5 **Matrix: Wate**

Export Lin

Preparation reagents used in this batch: 17C0246

05/01/17 05/02/17 <---Earliest Dates

SVL ID		Client ID	Analyses (1) (2) (3)	Run Acidity for pH < 4.5			Expire Date	Due Date	Spike Information Home Location	QC Check	Comments
X716159-BLK1		Blank									
X716159-BS1		LCS							Spike1: 17C0067 - Static		
X716159-DUP1		Duplicate [X7D0329-04]			calvalues	1.29					
X7D0329-01	B	07-EMF-MW-A-20170417-GW Maul Foster and Alongi (MFA)	X				01-May-17	02-May-17	CC 64 C	Level 3	LEVEL 3 / SEQUENCE
X7D0329-02	B	07-EMF-MW-B-20170417-GW Maul Foster and Alongi (MFA)	X				01-May-17	02-May-17	CC 64 C	Level 3	LEVEL 3 / SEQUENCE
X7D0329-03	B	07-EMF-MW-B-20170417-GW-B Maul Foster and Alongi (MFA)	X				01-May-17	02-May-17	CC 64 C	Level 3	LEVEL 3 / SEQUENCE
X7D0329-04	B	09-EMF-MW-C-DEEP-20170417-GW Maul Foster and Alongi (MFA)	X		cal values	1.28	01-May-17	02-May-17	CC 64 C	Level 3 QC	LEVEL 3 / SEQUENCE QC SAMPLE
X7D0329-05	B	07-EMF-MW-C-20170417-GW Maul Foster and Alongi (MFA)	X				01-May-17	02-May-17	CC 64 C	Level 3	LEVEL 3 / SEQUENCE
X7D0329-06	B	07-EMF-MW-C-20170417-EB Maul Foster and Alongi (MFA)	X				01-May-17	02-May-17	CC 64 C	Level 3	LEVEL 3 / SEQUENCE
X7D0330-01	A	07-EMF-MW-D-20170418-GW Maul Foster and Alongi (MFA)	X		cal values)	1.14	02-May-17	02-May-17	CC 65 C	Level 3 ? QC ?	
X7D0330-02	A	08-EMF-MW-E-20170418-GW Maul Foster and Alongi (MFA)	X				02-May-17	02-May-17	CC 65 C	Level 3 ? QC ?	
X7D0330-03	A	08-EMF-MW-F-20170418-GW Maul Foster and Alongi (MFA)	X				02-May-17	02-May-17	CC 65 C	Level 3 ? QC ?	
X7D0330-04	A	08-EMF-MW-F-20170418-EB Maul Foster and Alongi (MFA)	X				02-May-17	02-May-17	CC 65 C	Level 3 ? QC ?	

LA

0.0212

DKS Apr 20-2017

Prepared By Date

DG 04/27/17

Reviewed By Date

Bench sheet prin
4/20/2017 7:41:1

Instrument operating conditions and parameters for this analytical batch are as stated in the Standard Operating Procedure for the analysis listed above unless otherwise noted.

Batch : X716159
Method: SM 2320B

SVL ANALYTICAL

Total Alkalinity Calculation

Analyst: dks
Analysis Date: 04/20/17

63

SVL Sample ID	mL Used in Titration	mL of Sample	Total Alkalinity (mg/L)
X716159-DUP1	1.29	50	27.348
X7D0329-04	1.28	50	27.136
X7D0330-01	1.14	50	24.168
		50	
		50	
		50	
		50	
		50	
		50	
		50	
		50	
		50	
		50	
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		50	
		50	

Total Alkalinity = (0.0212 * mL Used * 50,000)/mL Sample

H:\Alkalinity\X716159 Total Alk.xls - Version 1.1
Printed 4/20/2017 12:07 PM

. . . . . .			TITRATOR 4
Method	Cal with 2 Buffers		
Sample size	50	mL	
Slope	99.6		
E (0)	7.1		
TIME	2017-04-20 06:30:27 UTC-7		

NORM	J# 17D0114		TITRATOR 4
Method	NORM		
Sample size	37.5	mL	
NORM	0.0212	N	
TIME	2017-04-20 07:02:09 UTC-7		

pH LCS TV=5.70	J# 17D0005		TITRATOR 4
Method	MEASURE pH SM 4500 H B		
Sample size	50	mL	
pH	5.74		
Temp	17.09		
TIME	2017-04-20 07:11:23 UTC-7		

BUFFER 9	J# 16H0099		TITRATOR 4
Method	MEASURE pH SM 4500 H B		
Sample size	50	mL	
pH	9.06		
Temp	16.48		
TIME	2017-04-20 07:13:52 UTC-7		

BUFFER 4	J# 17A0022		TITRATOR 4
Method	MEASURE pH SM 4500 H B		
Sample size	50	mL	
pH	4.00		
Temp	19.09		
TIME	2017-04-20 07:15:43 UTC-7		

BUFFER 7	J# 17A0026		TITRATOR 4
Method	MEASURE pH SM 4500 H B		
Sample size	50	mL	
pH	7.01		
Temp	18.95		
TIME	2017-04-20 07:17:36 UTC-7		

X716159-BLK1	J# -		TITRATOR 4

Method	LOALK SM 2320 B	
Sample size	50	mL
LOALK	0.17	
pH	5.46	
Temp	19	
Res04	0.09	mL
TIME	2017-04-20 08:38:50 UTC-7	

X716159-BS1 J# - **TITRATOR 4**

Method	P T ALK SM 2320 B	
Sample size	50	mL
P ALK	0.00	mg/L
T ALK	103.75	mg/L
CARB	0.00	mg/L
BICARB	103.75	mg/L
pH	8.00	
Temp	19	
EP1	0.00	mL
EP2	4.89	mL
2017-04-20 08:44:16 UTC-7		

dks 04/20/17
cal values

X716159-DUP1 J# X7D0329-04 **TITRATOR 4**

Method	LOALK SM 2320 B	
Sample size	50	mL
LOALK	~~25.23~~	
pH	6.56	
Temp	22	
Res04	1.29	mL
TIME	2017-04-20 08:49:44 UTC-7	

X7D0329-01 **TITRATOR 4**

Method	LOALK SM 2320 B	
Sample size	50	mL
LOALK	9.33	
pH	5.42	
Temp	22	
Res04	0.55	mL
TIME	2017-04-20 08:59:01 UTC-7	

X7D0329-02 **TITRATOR 4**

Method	LOALK SM 2320 B	
Sample size	50	mL
LOALK	14.46	

pH	5.80	
Temp	21	
Res04	0.79	mL
TIME	2017-04-20 09:03:41 UTC-7	

X7D0329-03		**TITRATOR 4**
Method	LOALK SM 2320 B	
Sample size	50	mL
LOALK	14.92	
pH	5.80	
Temp	20	
Res04	0.80	mL
TIME	2017-04-20 09:10:26 UTC-7	

dks 04/20/17
cal values

X7D0329-04		**TITRATOR 4**
Method	LOALK SM 2320 B	
Sample size	50	mL
LOALK	~~24.93~~	
pH	6.56	
Temp	20	
Res04	1.28	mL
TIME	2017-04-20 09:16:26 UTC-7	

X7D0329-05		**TITRATOR 4**
Method	LOALK SM 2320 B	
Sample size	50	mL
LOALK	14.33	
pH	6.31	
Temp	20	
Res04	0.78	mL
TIME	2017-04-20 09:24:54 UTC-7	

4 BUFFER		**TITRATOR 4**
Method	MEASURE pH SM 4500 H B	
Sample size	50	mL
pH	3.99	
Temp	19.06	
TIME	2017-04-20 09:31:32 UTC-7	

7 BUFFER		**TITRATOR 4**
Method	MEASURE pH SM 4500 H B	
Sample size	50	mL

pH 7.00
Temp 18.95
TIME 2017-04-20 09:33:23 UTC-7

X7D0329-06 .... **TITRATOR 4**
Method .... LOALK SM 2320 B
Sample size .... 50 mL
LOALK 0.21
pH 5.54
Temp 19
Res04 .... 0.10 mL
TIME 2017-04-20 09:35:14 UTC-7

dks 04/20/17
cal values

X7D0330-01 .... **TITRATOR 4**
Method .... LOALK SM 2320 B
Sample size .... 50 mL
LOALK .... ~~21.96~~
pH 6.27
Temp 17
Res04 .... 1.14 mL
TIME 2017-04-20 09:37:57 UTC-7

dks 04/20/17
RR on 40 mLs
for total alk.
see page 5

X7D0330zzz-02 .... **TITRATOR 4**
Method .... LOALK SM 2320 B
Sample size .... 50 mL
LOALK .... invalid
pH 6.57
Temp 17
Res04 .... invalid mL
TIME 2017-04-20 09:46:28 UTC-7

X7D0330-03 .... **TITRATOR 4**
Method .... LOALK SM 2320 B
Sample size .... 50 mL
LOALK 11.87
pH 5.82
Temp 19
Res04 .... 0.66 mL
TIME 2017-04-20 11:19:44 UTC-7

X7D0330-04 .... **TITRATOR 4**
Method .... LOALK SM 2320 B

Sample size . . . . 50 mL
LOALK . . . . -0.13
pH 5.29
Temp 19
Res04 . . . . 0.09 mL
TIME 2017-04-20 11:25:51 UTC-7

X7D0330-02 . . . . **TITRATOR 4**
Method . . . . P T ALK SM 2320 B
Sample size . . . . 40 mL
P ALK . . . . 0.00 mg/L
T ALK . . . . 433.86 mg/L
CARB . . . . 0.00 mg/L
BICARB . . . . 433.86 mg/L
pH 6.72
Temp 16
EP1 0.00 mL
EP2 16.37 mL
2017-04-20 11:28:40 UTC-7

4 BUFFER . . . . **TITRATOR 4**
Method . . . . MEASURE pH SM 4500 H B
Sample size . . . . 50 mL
pH 3.99
Temp 18.58
TIME 2017-04-20 11:37:42 UTC-7

7 BUFFER . . . . **TITRATOR 4**
Method . . . . MEASURE pH SM 4500 H B
Sample size . . . . 50 mL
pH 7.00
Temp 18.41
TIME 2017-04-20 11:39:32 UTC-7

Crystal Sevy

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From: Chris Meyer [chris@svl.net]
Sent: Wednesday, April 19, 2017 12:06 PM
To: 'Crystal Sevy'; 'Kirby Gray'
Subject: FW: Label Mistake

Importance: High

Per MFA, we need to do CLP-like data for X7D0329. See email below. -- Chris

-----Original Message-----
From: Rachael Woods [mailto:rwoods@maulfoster.com]
Sent: Wednesday, April 19, 2017 11:43 AM
To: chris@svl.net
Cc: Christina Johnson; Greg Malone
Subject: Re: Label Mistake

Tier IV on XD0329 please. Thanks. Rachael

Sent from my iPhone

On Apr 19, 2017, at 11:38 AM, Chris Meyer <chris@svl.net<mailto:chris@svl.net>> wrote:

Rachael -- we're confused and need some clarification. I've attached the COCs we received yesterday. I need MFA to tell me exactly what samples need to have the full data packages. We have set up the analyses and work orders per the COCs we received yesterday so we need to undo what we've already done and start over. We're just not clear how to start over yet. Thanks for your help! -- Chris

From: Rachael Woods [mailto:rwoods@maulfoster.com]
Sent: Wednesday, April 19, 2017 9:39 AM
To: chris@svl.net<mailto:chris@svl.net>; Christina Johnson
Cc: 'Greg Malone'
Subject: RE: Label Mistake

Please provide Tier IV for just the COC with samples 07-MW-A through 09-MW-C, collected on 4/18.

RACHAEL WOODS| MAUL FOSTER & ALONGI, INC.

d. 503 501 5223 | c. 503 314 4787 | f. 971 544 2140 |
2001 NW 19th Avenue, Suite 200, Portland, OR 97209

From: Chris Meyer [mailto:chris@svl.net]
Sent: Wednesday, April 19, 2017 9:04 AM
To: Christina Johnson <cjohnson@maulfoster.com<mailto:cjohnson@maulfoster.com>>
Cc: 'Greg Malone' <Greg.Malone@terragraphics.com<mailto:Greg.Malone@terragraphics.com>>; Rachael Woods <rwoods@maulfoster.com<mailto:rwoods@maulfoster.com>>
Subject: RE: Label Mistake

Christina - - we received samples yesterday morning and yesterday afternoon. Do you want Tier IV on all samples received yesterday? Also, we will change the IDs on the labels and on the COC per your email. Thank you! - - Chris

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From: Christina Johnson [mailto:cjohnson@maulfoster.com]
Sent: Tuesday, April 18, 2017 6:26 PM
To: chris@svl.net<mailto:chris@svl.net>
Cc: 'Greg Malone'; Rachael Woods
Subject: RE: Label Mistake

Hi Chris- the sample ID on the labels and the COC will need to match, and it is fine to note it on the COC and the label. Also, if it isn't too late, we could use a Tier IV on this SDG. If it is too late, we would like to have the next samples have a Tier IV level reporting done. You should get those tomorrow.

Thanks!

From: Chris Meyer [mailto:chris@svl.net]
Sent: Tuesday, April 18, 2017 4:25 PM
To: Christina Johnson <cjohnson@maulfoster.com<mailto:cjohnson@maulfoster.com>>
Cc: 'Greg Malone' <Greg.Malone@terragraphics.com<mailto:Greg.Malone@terragraphics.com>>; Rachael Woods <rwoods@maulfoster.com<mailto:rwoods@maulfoster.com>>
Subject: RE: Label Mistake

Christina - - you don't necessarily have to submit a new COC. We can write the revised sample ID on the initial COC, if that works for you.

Also, please make sure we know when you need the Tier IV data packages. Once we start the analyses as routine samples, it's very difficult to go back and re-construct a full data package. Thanks! - - Chris

Christine Meyer
Client Services/Projects Manager
SVL Analytical, Inc.
One Government Gulch
PO Box 929
Kellogg, ID 83837
208/784-1258

Please take a moment to fill out this survey and let us know how we are doing - www.svl.net/survey<http://www.svl.net/survey/index.php/358312/lang-en>

From: Christina Johnson [mailto:cjohnson@maulfoster.com]
Sent: Tuesday, April 18, 2017 4:10 PM
To: 'Chris Meyer' (chris@svl.net<mailto:chris@svl.net>)
Cc: Greg Malone (Greg.Malone@terragraphics.com<mailto:Greg.Malone@terragraphics.com>); Rachael Woods
Subject: FW: Label Mistake

Hi Chris-

The site as 10-EMF-MW-E and 10-EMF-MW-F should have been labelled with 08-EMF-MW-E and 08-EMF-MW-F, respectively. How should we proceed with SVL? Resubmit a COC? 71

Thanks for the help!

CHRISTINA M. JOHNSON LG, RG | MAUL FOSTER & ALONGI, INC.
p. 208 784 1082 | c. 360 977 8561 | f. 360 906 1958
1220 Big Creek Road, Suite C, Kellogg, ID 83837

www.maulfoster.com<http://www.maulfoster.com/>

<X7D0329_COC_01.PDF>
<X7D0330_COC_01.PDF>

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SVL ANALYTICAL

CHAIN OF CUSTODY RECORD

Page 1 of _

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID 83837 • (208) 784-1258 • FAX: (208) 783-0891

TEMP on Receipt: 1.8°C

Table 1. – Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil, 4 = Sediment, 5 = Rock, 6 = Rinsate, 7 = C
8 = Waste, 9 = Other: ______

Report to Company: MFA
Contact: CHRISTINA JOHNSON
Address: 1220 BIG CR. RD.
KELLOGG, ID 83837
Phone Number: 208-784-1082
FAX Number:
E-mail: cjohnson@maulfoster.com

Invoice Sent To: MFA
Contact: CHRISTINA JOHNSON
Address: SAME
Phone Number:
FAX Number:
PO#:

Project Name: EMFR
Sampler's Signature: [signature]

Indicate State of sample origination: ID

Please take care to distinguish between: 1 and I, 2 and Z, 5 and S, Ø and O. Thanks!

	Sample ID	Date	Time	Collected by: (Init.)	Matrix Type (From Table 1)	No. of Containers	Unpreserved (2)	HNO₃ Filtered	HNO₃ Unfiltered	HCl	H_2SO_4	NaOH	Other (Specify)	ALKALINITY	ANIONS	Rush Instructions (Days)	Comments
1	07-EMF-MW-A-20170417-GW	4/17/17	11:50	GM	2	2	X							X	X		ANIONS: CHLORIDE + SULFATE
2	07-EMF-MW-B-20170417-GW	4/17/17	13:20	GM	2	2	X							X	X		ALK: BICARBONATE, CARBONATE, + HYDROXIDE
3	07-EMF-MW-B-20170417-GW-B	4/17/17	13:20	GM	2	2	X							X	X		
4	09-EMF-MW-C-DEEP-20170417-GW	4/17/17	15:22	GM	2	4	X							X	X		
5	07-EMF-MW-C-20170417-GW	4/17/17	16:12	GM	2	2	X							X	X		
6	07-EMF-MW-C-20170417-EB	4/17/17	16:30	GM	6	2	X							X	X		
7																	
8																	
9																	
10																	

Relinquished by: [signature] Date: 4/18/17 Time: 10:35 Received by: [signature] Date: 4/18/17 Time: 10:35
Relinquished by: Date: Time: Received by: Date: Time:

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-C

Lab Name SVL ANALYTICAL	SAMPLE LOG-IN SHEET	Page 1 of
Received By (Print Name) C FLORES		Log-in Da 4/18/201
Received By (Signature) C Flores	73	
Case Number N/A	Sample Delivery Group No.	NRAS Numb N/A

Remarks:

1. Custody Seal(s) Present/Absent Intact/Broken
2. Custody Seal Nos. N/A
3. Traffic Reports/Chain of Custody Records or Packing Lists Present/Absent
4. Airbill Airbill/Sticker Present/Absent
5. Airbill No.
6. Sample Tags Present/Absent
   Sample Tag Numbers Listed/Not Listed on Chain of Custody Record
7. Sample Condition Intact/Broken / Leaking
8. Cooler Temperature Indicator Bottle Present/Absent
9. Cooler Temperature 1.8°C
10. Does information on Chain of Custody Records and sample tags agree? Yes/No
11. Date Received at Lab 4/18/2017
12. Time Received 10:35

EPA Sample #	Aqueous Sample pH	Corresponding Sample Tag #	Corresponding Assigned Lab #	Remarks: Condition Sample Shipment, etc.
07-EMF-MW-A-20170417-GW	N/A	N/A	07-EMF-MW-A-20170417-GW	INTACT
07-EMF-MW-B-20170417-GW	N/A	N/A	07-EMF-MW-B-20170417-GW	INTACT
07-EMF-MW-B-20170417-GW-B	N/A	N/A	07-EMF-MW-B-20170417-GW-B	INTACT
09-EMF-MW-C-DEEP-20170417-GW	N/A	N/A	09-EMF-MW-C-DEEP-20170417-GW	INTACT
07-EMF-MW-C-20170417-GW	N/A	N/A	07-EMF-MW-C-20170417-GW	INTACT
07-EMF-MW-C-20170417-EB	N/A	N/A	07-EMF-MW-C-20170417-EB	INTACT
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A

Sample Transfer

Fraction	N/A	Fraction	N/A
Area #	N/A	Area #	N/A
By	N/A	By	N/A
On	N/A	On	N/A

Reviewed By Kirby Gray	N/A	Logbook No.	N/A
Date 04/20/2017	N/A	Logbook Page No.	N/A

Sample Delivery Group (SDG) Cover Sheet

SDG Number: 07-EMF-MW-A-20170417-GW

☐ ICP-AES Analysis ☐ ICP-MS Analysis

Laboratory Name: SVL Analytical, Inc. Laboratory Code: SVL

Analysis Price: $25.88 / $31.50 SDG Turnaround: ______

Modified Analysis (if applicable):

Modification Reference No.: ______

Sample Numbers in SDG (Listed in Numerical Order)

1) 07-EMF-MW-A-20170417-G			
2) 07-EMF-MW-B-20170417-G			
3) 07-EMF-MW-B-20170417-G			
4) 07-EMF-MW-C-20170417-EB			
5) 07-EMF-MW-C-20170417-G			
6) 09-EMF-MW-C-DEEP-20170			

First Sample in SDG: 07-EMF-MW-A-20170417-GW

Last Sample in SDG: 09-EMF-MW-C-DEEP-20170417-GW

First Sample Receipt Date: 04/18/2017

Last Sample Receipt Date: 04/18/2017

Note: *There are a maximum of 20* ***field*** *samples (excluding PE samples) in an SDG. Attach the TR/COC Reports to this form in alphanumeric order (the order listed above on this form).*

Signature: [signature]

Date: 4/20/17

SAMPLE RECEIPT/CHAIN-OF -CUSTODY CHECKLIST

The following items were checked for completeness, correctness, and compliance to project specifications using the Chain-of-Custody (COC) and other supporting information.

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Date of acceptance: 4/18/17 By: C Flores

SVL Work No: X7D0 329

Item	Description	V	VC	NV	NA	Comments
1	Client or project name	✓				Maul Foster + Alongi (MFA)-Ke
2	Date and time of receipt at lab	✓				4/18/17
3	Received by	✓				C. Flores
4	Temperature blank or cooler temperature	✓				Temp. 1.8 °C.
5	Were the sample(s) received on ice	✓				yes
6	Custody tape/bottle seals				✓	no
7	Condition of samples upon receipt (leaking; bubbles in VOA vials	✓				good
8	Sample numbers/IDs agree with COC	✓				
9	Sample date & time agree with COC	✓				
10	Number of containers for each sample	✓				
11	The correct preservative for the analysis requested	✓				
12	Did an SVL employee preserve sample(s) upon receipt				✓	
13	Type of container for each sample / volume received	✓				
14	Analysis requested for each sample	✓				
15	Sample matrix description	✓				
16	COC properly completed & legible	✓				
17	Corrections properly made (initials & date)	✓				
18	Additional comments or records of sample condition or treatment (unlisted or missing samples at laboratory, aliquot taken, sample hold, samples subcontracted, communications between client and laboratory)				✓	n/a
19	Shipper's air bill				✓	walk-in

V- Verified VC- Verified Corrections Made NV-Not Verified NA- Not Applicable

Additional Comments:

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

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Sample Receipt Confirmation

Work Order
X7D0329

Date Due: 2-May-17 (10 day TAT
Received: 18-Apr-17 10:35

Client: **Maul Foster and Alongi (MFA)**
Project: **East Mission Flats (EMF) 2016**
Project Manager: **Christine Meyer**

Report To:
Maul Foster and Alongi (MFA)
Christina Johnson
1220 Big Creek Road, Suite C
Kellogg, ID 83837
Phone: (971) 544-2139
Fax: (971) 544-2140

Invoice To:
Maul Foster and Alongi (MFA)
Christina Johnson
1220 Big Creek Road, Suite C
Kellogg, ID 83837
Phone: (971) 544-2139
Fax: (971) 544-2140

Cooler information for **Default Cooler** Temp: 1.8°C Q6: Cooler temp outside 0-6°C **No**
Custody Seals **No** Containers Intact **Yes** COC/Labels Agree **Yes** Preservation Confirmed **Yes** Received On Ice **Yes**

Sample information and analyses assigned		Comments	Removed Analy
X7D0329-01 **07-EMF-MW-A-20170417-GW [Ground Water] 17-Apr-17 11:50 Pacific**			
MFA - East Mission Flats Alk Level 3 (2017)	MFA - East Misson Flats Cl/SO4 Level 3 2017		
X7D0329-02 **07-EMF-MW-B-20170417-GW [Ground Water] 17-Apr-17 13:20 Pacific**			
MFA - East Mission Flats Alk Level 3 (2017)	MFA - East Misson Flats Cl/SO4 Level 3 2017		
X7D0329-03 **07-EMF-MW-B-20170417-GW-B [Ground Water] 17-Apr-17 13:20 Pacific**			
MFA - East Mission Flats Alk Level 3 (2017)	MFA - East Misson Flats Cl/SO4 Level 3 2017		
X7D0329-04 **09-EMF-MW-C-DEEP-20170417-GW [Ground Water] 17-Apr-17 15:22 Pacific**		QC Sample	
MFA - East Mission Flats Alk Level 3 (2017)	MFA - East Misson Flats Cl/SO4 Level 3 2017		
X7D0329-05 **07-EMF-MW-C-20170417-GW [Ground Water] 17-Apr-17 16:12 Pacific**			
MFA - East Mission Flats Alk Level 3 (2017)	MFA - East Misson Flats Cl/SO4 Level 3 2017		
X7D0329-06 **07-EMF-MW-C-20170417-EB [Ground Water] 17-Apr-17 16:30 Pacific**			
MFA - East Mission Flats Alk Level 3 (2017)	MFA - East Misson Flats Cl/SO4 Level 3 2017		

Analysis groups included in this work order

MFA - East Mission Flats Alk Level 3 (2017)

Alk Tot CaCO3 (+OH)

MFA - East Misson Flats Cl/SO4 Level 3 2017

300.0 Cl 300.0 SO4

Solid samples will be analyzed on an as-received, wet-weight basis unless otherwise instructed.

Work Order Comments:

KA HJG
Reviewed By

04/19/2017
Date

Samples will be disposed 30 days from report date (45 for soils). Longer archiving must be requested.

One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

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Sample Receipt Confirmation

Work Order

X7D0329

Date Due: 2-May-17 (10 day TAT

Received: 18-Apr-17 10:35

Client: **Maul Foster and Alongi (MFA)**

Project: **East Mission Flats (EMF) 2016**

Project Manager: **Christine Meyer**

	X7D0329-01 07-EMF-MW-A-20170417-GW Water	X7D0329-02 07-EMF-MW-B-20170417-GW Water	X7D0329-03 07-EMF-MW-B-20170417-GW-B Water	X7D0329-04 09-EMF-MW-C-DEEP-20170417-GW Water	X7D0329-05 07-EMF-MW-C-20170417-GW Water	X7D0329-06 07-EMF-MW-C-20170417-EB Water
300.0 Cl	X	X	X	X	X	X
300.0 SO4	X	X	X	X	X	X
Alk Tot CaCO3 (+OH)	X	X	X	X	X	X

Samples will be disposed 30 days from report date (45 for soils). Longer archiving must be requested.

Maul Foster and Alongi (MFA)	**Project Name: East Mission Flats (EMF) 2017 - Level 2**
1220 Big Creek Road, Suite C	Work Order: **X7D0330**
Kellogg, ID 83837	Reported: 09-May-17 10:57

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
07-EMF-MW-D-20170418-GW / 07-EMF-MW-D-GW	X7D0330-01	Ground Water	18-Apr-17 12:40	GM	18-Apr-2017	Q6
08-EMF-MW-E-20170418-GW / 08-EMF-MW-E-GW	X7D0330-02	Ground Water	18-Apr-17 13:55	GM	18-Apr-2017	Q6
08-EMF-MW-F-20170418-GW / 08-EMF-MW-F-GW	X7D0330-03	Ground Water	18-Apr-17 14:40	GM	18-Apr-2017	Q6
08-EMF-MW-F-20170418-EB / 08-EMF-MW-F-EB	X7D0330-04	Rinsate	18-Apr-17 14:30	GM	18-Apr-2017	Q6

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.
Sample preparation is defined by the client as per their Data Quality Objectives.
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

(Q6) SVL received the following containers outside of published EPA guidelines for preservation temperatures (0-6°C).
The guidelines do not pertain to nitric-preserved metals.

Default Cooler (Received Temperature: 6.6°C)

Labnumber	Container	Client ID	Labnumber	Container	Client ID
X7D0330-01 A	Raw HDPE	07-EMF-MW-D-20170418-GW	X7D0330-01 B	Raw HDPE	07-EMF-MW-D-20170418-GW
X7D0330-02 A	Raw HDPE	08-EMF-MW-E-20170418-GW	X7D0330-02 B	Raw HDPE	08-EMF-MW-E-20170418-GW
X7D0330-03 A	Raw HDPE	08-EMF-MW-F-20170418-GW	X7D0330-03 B	Raw HDPE	08-EMF-MW-F-20170418-GW
X7D0330-04 A	Raw HDPE	08-EMF-MW-F-20170418-EB	X7D0330-04 B	Raw HDPE	08-EMF-MW-F-20170418-EB

Case Narrative: X7D0330

05/09/2017mab: Report reissued. There was a system error reporting the SO4 for sample 0-04 data; result has been corrected.

www.svl.net One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Maul Foster and Alongi (MFA)	**Project Name: East Mission Flats (EMF) 2017 - Level 2**
1220 Big Creek Road, Suite C	Work Order: **X7D0330**
Kellogg, ID 83837	Reported: 09-May-17 10:57

Client Sample ID: **07-EMF-MW-D-20170418-GW : 07-EMF-MW-D-GW**
SVL Sample ID: **X7D0330-01 (Ground Water)**

Sample Report Page 1 of 1

Sampled: 18-Apr-17 12:40
Received: 18-Apr-17
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
SM 2320B	**Total Alkalinity**	24.2	mg/L as CaCO3	1.0			X716159	DKS	04/20/17 09:37	
SM 2320B	**Bicarbonate**	24.2	mg/L as CaCO3	1.0			X716159	DKS	04/20/17 09:37	
SM 2320B	Carbonate	< 1.0	mg/L as CaCO3	1.0			X716159	DKS	04/20/17 09:37	
SM 2320B	Hydroxide	< 1.0	mg/L as CaCO3	1.0			X716159	DKS	04/20/17 09:37	
Anions by Ion Chromatography										
EPA 300.0	**Chloride**	5.93	mg/L	0.20	0.05		X716180	SMB	05/01/17 11:43	M1
EPA 300.0	**Sulfate as SO4**	8.44	mg/L	0.30	0.12		X716180	SMB	05/01/17 11:43	M1

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

www.svl.net One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Maul Foster and Alongi (MFA)
1220 Big Creek Road, Suite C
Kellogg, ID 83837

Project Name: East Mission Flats (EMF) 2017 - Level 2
Work Order: **X7D0330**
Reported: 09-May-17 10:57

Client Sample ID: **08-EMF-MW-E-20170418-GW : 08-EMF-MW-E-GW**
SVL Sample ID: **X7D0330-02 (Ground Water)**

Sample Report Page 1 of 1

Sampled: 18-Apr-17 13:55
Received: 18-Apr-17
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
SM 2320B	**Total Alkalinity**	434	mg/L as CaCO3	1.0			X716159	DKS	04/20/17 11:28	
SM 2320B	**Bicarbonate**	434	mg/L as CaCO3	1.0			X716159	DKS	04/20/17 11:28	
SM 2320B	Carbonate	< 1.0	mg/L as CaCO3	1.0			X716159	DKS	04/20/17 11:28	
SM 2320B	Hydroxide	< 1.0	mg/L as CaCO3	1.0			X716159	DKS	04/20/17 11:28	
Anions by Ion Chromatography										
EPA 300.0	**Chloride**	393	mg/L	10.0	2.50	50	X716180	SMB	05/02/17 12:47	D2
EPA 300.0	**Sulfate as SO4**	125	mg/L	3.00	1.20	10	X716180	SMB	05/01/17 13:21	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

SVL holds the following certifications:
AZ:0538, **CA**:2080, **ID**:ID00019 & ID00965 (Microbiology), **NV**:ID000192007A, **UT**(**TNI**):ID000192015-1, **WA**:C573

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Maul Foster and Alongi (MFA)
1220 Big Creek Road, Suite C
Kellogg, ID 83837

Project Name: East Mission Flats (EMF) 2017 - Level 2
Work Order: **X7D0330**
Reported: 09-May-17 10:57

Client Sample ID: **08-EMF-MW-F-20170418-GW : 08-EMF-MW-F-GW**
SVL Sample ID: **X7D0330-03 (Ground Water)**

Sample Report Page 1 of 1

Sampled: 18-Apr-17 14:40
Received: 18-Apr-17
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
SM 2320B	**Total Alkalinity**	11.9	mg/L as CaCO3	1.0			X716159	DKS	04/20/17 11:19	
SM 2320B	**Bicarbonate**	11.9	mg/L as CaCO3	1.0			X716159	DKS	04/20/17 11:19	
SM 2320B	Carbonate	< 1.0	mg/L as CaCO3	1.0			X716159	DKS	04/20/17 11:19	
SM 2320B	Hydroxide	< 1.0	mg/L as CaCO3	1.0			X716159	DKS	04/20/17 11:19	
Anions by Ion Chromatography										
EPA 300.0	**Chloride**	40.8	mg/L	2.00	0.50	10	X716180	SMB	05/01/17 13:43	D2
EPA 300.0	**Sulfate as SO4**	57.2	mg/L	3.00	1.20	10	X716180	SMB	05/01/17 13:43	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

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Maul Foster and Alongi (MFA)
1220 Big Creek Road, Suite C
Kellogg, ID 83837

Project Name: East Mission Flats (EMF) 2017 - Level 2
Work Order: **X7D0330**
Reported: 09-May-17 10:57

Client Sample ID: **08-EMF-MW-F-20170418-EB : 08-EMF-MW-F-EB**
SVL Sample ID: **X7D0330-04 (Rinsate)**

Sample Report Page 1 of 1

Sampled: 18-Apr-17 14:30
Received: 18-Apr-17
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
SM 2320B	Total Alkalinity	< 1.0	mg/L as CaCO3	1.0			X716159	DKS	04/20/17 11:25	
SM 2320B	Bicarbonate	< 1.0	mg/L as CaCO3	1.0			X716159	DKS	04/20/17 11:25	
SM 2320B	Carbonate	< 1.0	mg/L as CaCO3	1.0			X716159	DKS	04/20/17 11:25	
SM 2320B	Hydroxide	< 1.0	mg/L as CaCO3	1.0			X716159	DKS	04/20/17 11:25	
Anions by Ion Chromatography										
EPA 300.0	Chloride	< 0.20	mg/L	0.20	0.05		X716180	SMB	05/01/17 13:54	
EPA 300.0	Sulfate as SO4	< 0.30	mg/L	0.30	0.12		X716180	SMB	05/01/17 13:54	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

Maul Foster and Alongi (MFA)
1220 Big Creek Road, Suite C
Kellogg, ID 83837

Project Name: East Mission Flats (EMF) 2017 - Level 2
Work Order: **X7D0330**
Reported: 09-May-17 10:57

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
Classical Chemistry Parameters								
SM 2320B	Total Alkalinity	mg/L as CaCO3	<1.0		1.0	X716159	20-Apr-17	
SM 2320B	Bicarbonate	mg/L as CaCO3	<1.0		1.0	X716159	20-Apr-17	
SM 2320B	Carbonate	mg/L as CaCO3	<1.0		1.0	X716159	20-Apr-17	
SM 2320B	Hydroxide	mg/L as CaCO3	<1.0		1.0	X716159	20-Apr-17	
Anions by Ion Chromatography								
EPA 300.0	Chloride	mg/L	<0.20	0.05	0.20	X716180	01-May-17	
EPA 300.0	Sulfate as SO4	mg/L	<0.30	0.12	0.30	X716180	01-May-17	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Classical Chemistry Parameters									
SM 2320B	Total Alkalinity	mg/L as CaCO3	104	99.3	104	85 - 115	X716159	20-Apr-17	
SM 2320B	Bicarbonate	mg/L as CaCO3	104	99.3	104	85 - 115	X716159	20-Apr-17	
Anions by Ion Chromatography									
EPA 300.0	Chloride	mg/L	3.26	3.00	109	90 - 110	X716180	01-May-17	
EPA 300.0	Sulfate as SO4	mg/L	10.6	10.0	106	90 - 110	X716180	01-May-17	

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
Classical Chemistry Parameters									
SM 2320B	Total Alkalinity	mg/L as CaCO3	27.3	27.1	0.8	20	X716159	20-Apr-17	
SM 2320B	Bicarbonate	mg/L as CaCO3	27.3	27.1	0.8	20	X716159	20-Apr-17	
SM 2320B	Carbonate	mg/L as CaCO3	<1.0	<1.0	UDL	20	X716159	20-Apr-17	
SM 2320B	Hydroxide	mg/L as CaCO3	<1.0	<1.0	UDL	20	X716159	20-Apr-17	

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Anions by Ion Chromatography										
EPA 300.0	Chloride	mg/L	9.26	5.93	3.00	111	90 - 110	X716180	01-May-17	M1
EPA 300.0	Sulfate as SO4	mg/L	19.6	8.44	10.0	111	90 - 110	X716180	01-May-17	M1

Maul Foster and Alongi (MFA)
1220 Big Creek Road, Suite C
Kellogg, ID 83837

Project Name: East Mission Flats (EMF) 2017 - Level 2
Work Order: **X7D0330**
Reported: 09-May-17 10:57

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	%R	RPD	RPD Limit	Batch ID	Analyzed	Notes
Anions by Ion Chromatography											
EPA 300.0	Chloride	mg/L	9.13	9.26	3.00	107	1.4	20	X716180	01-May-17	
EPA 300.0	Sulfate as SO4	mg/L	19.3	19.6	10.0	109	1.2	20	X716180	01-May-17	

Notes and Definitions

D2	Sample required dilution due to high concentration of target analyte.
M1	Matrix spike recovery was high, but the LCS recovery was acceptable.
Q6	Sample was received outside of recommended temperature range.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable

Work Order: X7D0330
Maul Foster and Alongi (MFA) - Kellogg

CHAIN OF CUSTODY RECORD

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID 83837 • (208)

FOR SVL USE ONLY
SVL JOB #
TEMP on Receipt: 0.6°

Table 1. -- Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil, 4 = Sediment, 5 = Rock, 6 = Rinsate, 7 = Oil
8 = Waste, 9 = Other:

Report to Company: MFA
Contact: CHRISTINA JOHNSON
Address: 1220 BIG CR. RD.
KELLOGG, ID 83837
Phone Number: 208-784-1082
FAX Number:
E-mail: cjohnson@maulfoster.com

Invoice Sent To: MFA
Contact:
Address: SAME
Phone Number:
FAX Number:
PO#:

Project Name: EMFR
Sampler's Signature: [signature]

Indicate State of sample origination: ID

Please take care to distinguish between: 1 and I, 2 and Z, 5 and S, Ø and O. Thanks!

#	Sample ID	Date	Time	Collected by: (Init.)	Matrix Type (From Table 1)	No. of Containers	Unpreserved	HNO3 Filtered	HNO3 Unfiltered	HCl	H2SO4	NaOH	Other (Specify)	ANIONS	ALKALINITY	Rush Instructions (Days)	Comments
1	07-EMF-MW-D-20170418-GW	4/18/17	12:40	GM	2	2	2							X	X		
2	10-EMF-MW-E-20170418-GW	4/18/17	13:55	GM	2	2	2							X	X		
3	10-EMF-MW-F-20170418-GW	4/18/17	14:40	GM	2	2	2							X	X		
4	10-EMF-MW-F-20170418-EB	4/18/17	14:30	GM	6	2	2							X	X		
5																	
6																	
7																	
8																	
9																	
10																	

Comments: ANIONS: CHLORIDE + SULFATE
ALK: BICARBONATE, CARBONATE, + HYDROXIDE

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
[signature]	4/18/17	15:20	Heidi Bams	04/18/17	1525

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC 01/14

SAMPLE RECEIPT/CHAIN-OF -CUSTODY CHECKLIST

The following items were checked for completeness, correctness, and compliance to project specifications using the Chain-of-Custody (COC) and other supporting information.

Date of acceptance: 4/18/17 By: [illegible]

SVL Work No: X7D0330

Item	Description	V	VC	NV	NA	Comments
1	Client or project name	✓				Maul Foster + Alongi - Kellogg
2	Date and time of receipt at lab	✓				4/18/17 15:25
3	Received by	✓				Heidi Barns.
4	Temperature blank or cooler temperature	Q6				Temp. 6.6°C.
5	Were the sample(s) received on ice	✓				yes
6	Custody tape/bottle seals				✓	no
7	Condition of samples upon receipt (leaking; bubbles in VOA vials	✓				good
8	Sample numbers/IDs agree with COC	✓				
9	Sample date & time agree with COC	✓				
10	Number of containers for each sample	✓				
11	The correct preservative for the analysis requested	✓				
12	Did an SVL employee preserve sample(s) upon receipt				✓	
13	Type of container for each sample / volume received	✓				
14	Analysis requested for each sample	✓				
15	Sample matrix description	✓				
16	COC properly completed & legible	✓				
17	Corrections properly made (initials & date)	✓				
18	Additional comments or records of sample condition or treatment (unlisted or missing samples at laboratory, aliquot taken, sample hold, samples subcontracted, communications between client and laboratory)				✓	n/a
19	Shipper's air bill				✓	Walk-in.

V- Verified VC- Verified Corrections Made NV-Not Verified NA- Not Applicable

Additional Comments: ____________________

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

May 02, 2017

Christina Johnson
Maul Foster and Algoni
602 Bunker Ave # 5
Kellogg, ID 83837

RE: Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

Dear Christina Johnson:

Enclosed are the analytical results for sample(s) received by the laboratory on April 20, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Sarah Platzer
sarah.platzer@pacelabs.com
(612)607-1700
Project Manager

Enclosures

cc: Alan Hughes, Maul Foster & Alongi, Inc.
Rachael Woods, Maul Foster and Alongi

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CERTIFICATIONS

Project:	2017-02 East Mission Flats Rep
Pace Project No.:	10385796

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: UST-078
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: MN00064
CNMI Saipan Certification #:MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia WW Certification #: 382
Wisconsin Certification #: 999407970
Wyoming via EPA Region 8 Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10385796001	**07-EMF-MW-A-20170417-GW**	Water	04/17/17 11:50	04/20/17 09:40
10385796002	**07-EMF-MW-B-20170417-GW**	Water	04/17/17 13:20	04/20/17 09:40
10385796003	**07-EMF-MW-B-20170417-GW-B**	Water	04/17/17 13:20	04/20/17 09:40
10385796004	**09-EMF-MW-C-DEEP-20170417-GW**	Water	04/17/17 15:22	04/20/17 09:40
10385796005	**07-EMF-MW-C-20170417-GW**	Water	04/17/17 16:12	04/20/17 09:40
10385796006	**07-EMF-MW-C-20170417-EB**	Water	04/17/17 16:30	04/20/17 09:40

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SAMPLE ANALYTE COUNT

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10385796001	**07-EMF-MW-A-20170417-GW**	EPA 200.8	TT3	8	PASI-M
10385796002	**07-EMF-MW-B-20170417-GW**	EPA 200.8	TT3	8	PASI-M
10385796003	**07-EMF-MW-B-20170417-GW-B**	EPA 200.8	TT3	8	PASI-M
10385796004	**09-EMF-MW-C-DEEP-20170417-GW**	EPA 200.8	TT3	8	PASI-M
10385796005	**07-EMF-MW-C-20170417-GW**	EPA 200.8	TT3	8	PASI-M
10385796006	**07-EMF-MW-C-20170417-EB**	EPA 200.8	TT3	8	PASI-M

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PROJECT NARRATIVE

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

Method: **EPA 200.8**
Description: 200.8 MET ICPMS, Dissolved
Client: Maul Foster & Alongi, Inc.
Date: May 02, 2017

General Information:
6 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

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

Sample Preparation:
The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

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

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

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

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

QC Batch: 469970

B: Analyte was detected in the associated method blank.
- BLANK for HBN 469970 [MPRP/715 (Lab ID: 2566563)
  - Sodium, Dissolved

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

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

QC Batch: 469970

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10385796004,10385828001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
- MS (Lab ID: 2566567)
  - Calcium, Dissolved

Additional Comments:

Pace Analytical Services, LLC
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PROJECT NARRATIVE

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

Method: **EPA 200.8**
Description: 200.8 MET ICPMS, Dissolved
Client: Maul Foster & Alongi, Inc.
Date: May 02, 2017

Analyte Comments:

QC Batch: 469970

E: Analyte concentration exceeded the calibration range. The reported result is estimated.
- MS (Lab ID: 2566567)
  - Calcium, Dissolved

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

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ANALYTICAL RESULTS

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

Sample: 07-EMF-MW-A-20170417-GW **Lab ID: 10385796001** Collected: 04/17/17 11:50 Received: 04/20/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**0.43J**	ug/L	0.50	0.091	1	04/27/17 12:01	05/01/17 09:22	7440-38-2	
Cadmium, Dissolved	**0.50**	ug/L	0.080	0.013	1	04/27/17 12:01	05/01/17 09:22	7440-43-9	
Calcium, Dissolved	**13500**	ug/L	40.0	9.8	1	04/27/17 12:01	05/01/17 09:22	7440-70-2	
Lead, Dissolved	**0.038J**	ug/L	0.10	0.012	1	04/27/17 12:01	05/01/17 09:22	7439-92-1	
Magnesium, Dissolved	**7280**	ug/L	10.0	2.0	1	04/27/17 12:01	05/01/17 09:22	7439-95-4	
Potassium, Dissolved	**1340**	ug/L	50.0	8.5	1	04/27/17 12:01	05/01/17 09:22	7440-09-7	
Sodium, Dissolved	**6340**	ug/L	50.0	10.4	1	04/27/17 12:01	05/01/17 09:22	7440-23-5	
Zinc, Dissolved	**1770**	ug/L	50.0	7.8	10	04/27/17 12:01	05/01/17 10:29	7440-66-6	

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ANALYTICAL RESULTS

Project: 2017-02 East Mission Flats Rep

Pace Project No.: 10385796

Sample: 07-EMF-MW-B-20170417-GW **Lab ID: 10385796002** Collected: 04/17/17 13:20 Received: 04/20/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**0.10J**	ug/L	0.50	0.091	1	04/27/17 12:01	05/01/17 09:24	7440-38-2	
Cadmium, Dissolved	**0.036J**	ug/L	0.080	0.013	1	04/27/17 12:01	05/01/17 09:24	7440-43-9	
Calcium, Dissolved	**13000**	ug/L	40.0	9.8	1	04/27/17 12:01	05/01/17 09:24	7440-70-2	
Lead, Dissolved	**0.090J**	ug/L	0.10	0.012	1	04/27/17 12:01	05/01/17 09:24	7439-92-1	
Magnesium, Dissolved	**4810**	ug/L	10.0	2.0	1	04/27/17 12:01	05/01/17 09:24	7439-95-4	
Potassium, Dissolved	**576**	ug/L	50.0	8.5	1	04/27/17 12:01	05/01/17 09:24	7440-09-7	
Sodium, Dissolved	**7450**	ug/L	50.0	10.4	1	04/27/17 12:01	05/01/17 09:24	7440-23-5	
Zinc, Dissolved	**39.9**	ug/L	5.0	0.78	1	04/27/17 12:01	05/01/17 09:24	7440-66-6	

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ANALYTICAL RESULTS

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

Sample: 07-EMF-MW-B-20170417-GW-B **Lab ID: 10385796003** Collected: 04/17/17 13:20 Received: 04/20/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**0.11J**	ug/L	0.50	0.091	1	04/27/17 12:01	05/01/17 09:27	7440-38-2	
Cadmium, Dissolved	**0.038J**	ug/L	0.080	0.013	1	04/27/17 12:01	05/01/17 09:27	7440-43-9	
Calcium, Dissolved	**13300**	ug/L	40.0	9.8	1	04/27/17 12:01	05/01/17 09:27	7440-70-2	
Lead, Dissolved	**0.073J**	ug/L	0.10	0.012	1	04/27/17 12:01	05/01/17 09:27	7439-92-1	
Magnesium, Dissolved	**4960**	ug/L	10.0	2.0	1	04/27/17 12:01	05/01/17 09:27	7439-95-4	
Potassium, Dissolved	**594**	ug/L	50.0	8.5	1	04/27/17 12:01	05/01/17 09:27	7440-09-7	
Sodium, Dissolved	**7730**	ug/L	50.0	10.4	1	04/27/17 12:01	05/01/17 09:27	7440-23-5	
Zinc, Dissolved	**40.6**	ug/L	5.0	0.78	1	04/27/17 12:01	05/01/17 09:27	7440-66-6	

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ANALYTICAL RESULTS

Project: 2017-02 East Mission Flats Rep

Pace Project No.: 10385796

Sample: 09-EMF-MW-C-DEEP-20170417-GW **Lab ID: 10385796004** Collected: 04/17/17 15:22 Received: 04/20/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**2.8**	ug/L	0.50	0.091	1	04/27/17 12:01	05/01/17 09:32	7440-38-2	
Cadmium, Dissolved	**0.52**	ug/L	0.080	0.013	1	04/27/17 12:01	05/01/17 09:32	7440-43-9	
Calcium, Dissolved	**7650**	ug/L	40.0	9.8	1	04/27/17 12:01	05/01/17 09:32	7440-70-2	
Lead, Dissolved	**4.0**	ug/L	0.10	0.012	1	04/27/17 12:01	05/01/17 09:32	7439-92-1	
Magnesium, Dissolved	**2850**	ug/L	10.0	2.0	1	04/27/17 12:01	05/01/17 09:32	7439-95-4	
Potassium, Dissolved	**810**	ug/L	50.0	8.5	1	04/27/17 12:01	05/01/17 09:32	7440-09-7	
Sodium, Dissolved	**3270**	ug/L	50.0	10.4	1	04/27/17 12:01	05/01/17 09:32	7440-23-5	
Zinc, Dissolved	**53.7**	ug/L	5.0	0.78	1	04/27/17 12:01	05/01/17 09:32	7440-66-6	

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ANALYTICAL RESULTS

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

Sample: 07-EMF-MW-C-20170417-GW **Lab ID: 10385796005** Collected: 04/17/17 16:12 Received: 04/20/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**0.71**	ug/L	0.50	0.091	1	04/27/17 12:01	05/01/17 09:29	7440-38-2	
Cadmium, Dissolved	**0.54**	ug/L	0.080	0.013	1	04/27/17 12:01	05/01/17 09:29	7440-43-9	
Calcium, Dissolved	**4930**	ug/L	40.0	9.8	1	04/27/17 12:01	05/01/17 09:29	7440-70-2	
Lead, Dissolved	**1.3**	ug/L	0.10	0.012	1	04/27/17 12:01	05/01/17 09:29	7439-92-1	
Magnesium, Dissolved	**2390**	ug/L	10.0	2.0	1	04/27/17 12:01	05/01/17 09:29	7439-95-4	
Potassium, Dissolved	**1390**	ug/L	50.0	8.5	1	04/27/17 12:01	05/01/17 09:29	7440-09-7	
Sodium, Dissolved	**2940**	ug/L	50.0	10.4	1	04/27/17 12:01	05/01/17 09:29	7440-23-5	
Zinc, Dissolved	**158**	ug/L	5.0	0.78	1	04/27/17 12:01	05/01/17 09:29	7440-66-6	

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ANALYTICAL RESULTS

Project: 2017-02 East Mission Flats Rep

Pace Project No.: 10385796

Sample: 07-EMF-MW-C-20170417-EB **Lab ID: 10385796006** Collected: 04/17/17 16:30 Received: 04/20/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**<0.50**	ug/L	0.50	0.091	1	04/27/17 12:01	05/01/17 09:52	7440-38-2	
Cadmium, Dissolved	**<0.080**	ug/L	0.080	0.013	1	04/27/17 12:01	05/01/17 09:52	7440-43-9	
Calcium, Dissolved	**40.3**	ug/L	40.0	9.8	1	04/27/17 12:01	05/01/17 09:52	7440-70-2	
Lead, Dissolved	**0.10**	ug/L	0.10	0.012	1	04/27/17 12:01	05/01/17 09:52	7439-92-1	
Magnesium, Dissolved	**2.4J**	ug/L	10.0	2.0	1	04/27/17 12:01	05/01/17 09:52	7439-95-4	
Potassium, Dissolved	**16.0J**	ug/L	50.0	8.5	1	04/27/17 12:01	05/01/17 09:52	7440-09-7	
Sodium, Dissolved	**46.8J**	ug/L	50.0	10.4	1	04/27/17 12:01	05/01/17 09:52	7440-23-5	B
Zinc, Dissolved	**2.1J**	ug/L	5.0	0.78	1	04/27/17 12:01	05/01/17 09:52	7440-66-6	

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QUALITY CONTROL DATA

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

QC Batch: 469970 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 10385796001, 10385796002, 10385796003, 10385796004, 10385796005, 10385796006

METHOD BLANK: 2566563 Matrix: Water
Associated Lab Samples: 10385796001, 10385796002, 10385796003, 10385796004, 10385796005, 10385796006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	<0.50	0.50	0.091	05/01/17 09:19	
Cadmium, Dissolved	ug/L	<0.080	0.080	0.013	05/01/17 09:19	
Calcium, Dissolved	ug/L	<40.0	40.0	9.8	05/01/17 09:19	
Lead, Dissolved	ug/L	<0.10	0.10	0.012	05/01/17 09:19	
Magnesium, Dissolved	ug/L	<10.0	10.0	2.0	05/01/17 09:19	
Potassium, Dissolved	ug/L	<50.0	50.0	8.5	05/01/17 09:19	
Sodium, Dissolved	ug/L	22.4J	50.0	10.4	05/01/17 09:19	
Zinc, Dissolved	ug/L	<5.0	5.0	0.78	05/01/17 09:19	

LABORATORY CONTROL SAMPLE: 2566564

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	100	104	104	85-115	
Cadmium, Dissolved	ug/L	100	110	110	85-115	
Calcium, Dissolved	ug/L	2000	2010	101	85-115	
Lead, Dissolved	ug/L	100	110	110	85-115	
Magnesium, Dissolved	ug/L	2000	2070	103	85-115	
Potassium, Dissolved	ug/L	2000	2070	103	85-115	
Sodium, Dissolved	ug/L	2000	2090	104	85-115	
Zinc, Dissolved	ug/L	100	110	110	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2566565 2566566

Parameter	Units	10385796004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	2.8	100	100	105	108	103	105	70-130	2	20	
Cadmium, Dissolved	ug/L	0.52	100	100	107	110	107	110	70-130	2	20	
Calcium, Dissolved	ug/L	7650	2000	2000	9290	9780	82	106	70-130	5	20	
Lead, Dissolved	ug/L	4.0	100	100	112	114	108	110	70-130	1	20	
Magnesium, Dissolved	ug/L	2850	2000	2000	4810	4910	98	103	70-130	2	20	
Potassium, Dissolved	ug/L	810	2000	2000	2840	2940	102	106	70-130	3	20	
Sodium, Dissolved	ug/L	3270	2000	2000	5170	5350	95	104	70-130	4	20	
Zinc, Dissolved	ug/L	53.7	100	100	159	164	105	110	70-130	3	20	

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

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QUALITY CONTROL DATA

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

MATRIX SPIKE SAMPLE: 2566567

Parameter	Units	10385828001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	0.26J	100	107	107	70-130	
Cadmium, Dissolved	ug/L	0.00030 mg/L	100	110	109	70-130	
Calcium, Dissolved	ug/L	41700	2000	45000	162	70-130	E,M1
Lead, Dissolved	ug/L	0.058J	100	110	110	70-130	
Magnesium, Dissolved	ug/L	10700	2000	13000	114	70-130	
Potassium, Dissolved	ug/L	724	2000	2850	106	70-130	
Sodium, Dissolved	ug/L	4250	2000	6430	109	70-130	
Zinc, Dissolved	ug/L	0.033 mg/L	100	143	111	70-130	

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:	2017-02 East Mission Flats Rep
Pace Project No.:	10385796

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10385796001	**07-EMF-MW-A-20170417-GW**	EPA 200.8	469970	EPA 200.8	471374
10385796002	**07-EMF-MW-B-20170417-GW**	EPA 200.8	469970	EPA 200.8	471374
10385796003	**07-EMF-MW-B-20170417-GW-B**	EPA 200.8	469970	EPA 200.8	471374
10385796004	**09-EMF-MW-C-DEEP-20170417-GW**	EPA 200.8	469970	EPA 200.8	471374
10385796005	**07-EMF-MW-C-20170417-GW**	EPA 200.8	469970	EPA 200.8	471374
10385796006	**07-EMF-MW-C-20170417-EB**	EPA 200.8	469970	EPA 200.8	471374

CHAIN-OF-CUSTODY / Analytical Request Document

10385796

Page: 1 of 2
Cooler # 1 of 1

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

Task:	2017-02 East Mission Flats Repository
Total # of Samples: 6	Event Complete? No
TAT: Regular	Rush: No

Sampler Information:

Client:	TerraGraphics Enviro.
Address:	1220 Big Creek Road, Kellogg, ID 83837
Contact:	Greg Malone
Phone/Fax:	208/786-1206
Email	greg.malone@terragraphics.com
Lab Quote #:	

Project Information:

Site Code:	CDA Trust Water Monitoring
Project #	
Site Address	Silver Valley, ID
City	NA
State, Zip	NA
PM Name	Christina Johnson/Rachael Woods
Phone/Fax:	360.977.8561/503.501.5223
PM Email:	cjohnson@maulfoster.com; rwoods@maulfoster.com

Other Information:

Send Invoice to:	Rachael Woods, Maul Foster and Alongi
Address:	400 East Mill Plain Blvd, #400
City/State.	Vancouver, WA 98660 Phone #: 360.694.2691
PO #	
Send EDD to	PacePort
CC Hardcopy to	Rachael Woods
CC Hardcopy to	

Lab Notes: Notes: FF= Field Filtered , H= Hold
Metals: USEPA 200.8

Preservative: HNO3\FF

ITEM #	Field Sample No. /Identification		MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	# OF CONTAINERS	Comment	Analysis: DM, Cations	
1	07-EMF-MW-A-20170417-GW		WT	G	4/17/17 11:50	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	001
2	07-EMF-MW-B-20170417-GW		WT	G	4/17/17 13:20	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	002
3	07-EMF-MW-B-20170417-GW-B		WT	G	4/17/17 13:20	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	003
4	09-EMF-MW-C-DEEP-20170417-GW	MS/D	WT	G	4/17/17 15:22	2	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	004
5	07-EMF-MW-C-20170417-GW		WT	G	4/17/17 16:12	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	005
6	07-EMF-MW-C-20170417-EB		WT	G	4/17/17 16:30	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	006
7									
8									
9									
10									
11									

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Samples on Ice?	Sample intact?	Trip Blank?
Bradford, TerraGraphics	4/19/17	09:45	[illegible signature]	4/20/17	9:40	1.0	Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N

Sample Receipt Conditions

Company: DATE/TIME:

Tracking #:

CHAIN-OF-CUSTODY / Analytical Request Document

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

10385796

Page: 2 of 2
Cooler # 1 of 1

Task:	2017-02 East Mission Flats Repository
Total # of Samples: 5	Event Complete? Yes
TAT: Regular	Rush: No

Notes: FF= Field Filtered , H= Hold

Lab Notes: Metals: USEPA 200.8

Sampler Information:

Client:	TerraGraphics Enviro.
Address:	1220 Big Creek Road Kellogg, ID 83837
Contact:	Greg Malone
Phone/Fax:	208/786-1206
Email	greg.malone@terragraphics.com
Lab Quote #:	

Project Information:

Site Code:	CDA Trust Water Monitoring
Project #	
Site Address	Silver Valley, ID
City	NA
State, Zip	NA
PM Name	Christina Johnson/Rachael Woods
Phone/Fax:	360.977.8561/503.501.5223
PM Email:	cjohnson@maulfoster.com; rwoods@maulfoster.com

Other Information:

Send Invoice to:	Rachael Woods, Maul Foster and Alongi
Address:	400 East Mill Plain Blvd, #400
City/State.	Vancouver, WA 98660
Phone #:	360.694.2691
PO #	
Send EDD to	PacePort
CC Hardcopy to	Rachael Woods
CC Hardcopy to	

Preservative: HNO3\FF

ITEM #	Field Sample No. /Identification	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	# OF CONTAINERS	Comment	Analysis: DM, Cations	
1	07-EMF-MW-D-20170418-GW	WT	G	4/18/17 12:40	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	007
2	08-EMF-MW-E-20170418-GW	WT	G	4/18/17 13:55	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	008
3	08-EMF-MW-F-20170418-GW	WT	G	4/18/17 14:40	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	009
4	08-EMF-MW-F-20170418-EB	WT	G	4/18/17 14:30	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	010
5	08-EMF-MW-E-20170418-FB	WT	G	4/18/17 13:15	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	011
6								
7								
8								
9								
10								
11								

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Samples on Ice?	Sample Intact?	Trip Blank?
Bradford, TerraGraphics	4/19/17	09:45	[signature]	4/20/17	9:40	1.0	Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N

Company: | DATE/TIME:

Tracking #:

Sample Condition Upon Receipt

Client Name: TerraGraphics Enviro.

Project #: WO# : 10385796

10385796

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

Tracking Number: 7789 3752 1397

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☒ Other: PB **Temp Blank?** ☐ Yes ☐ No

Thermometer Used: ☒ 151401163 ☐ 151401164 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 1.0 **Cooler Temp Corrected (°C):** 1.2 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** MAD 4/20/17

USDA Regulated Soil (☒ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☒ Yes	☐ No		1.
Chain of Custody Filled Out?	☒ Yes	☐ No		2.
Chain of Custody Relinquished?	☒ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☐ Yes	☒ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		6.
Rush Turn Around Time Requested?	☐ Yes	☒ No		7.
Sufficient Volume?	☒ Yes	☐ No		8.
Correct Containers Used?	☒ Yes	☐ No		9.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		10.
Filtered Volume Received for Dissolved Tests?	☒ Yes	☐ No	☐ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT	☒ Yes	☐ No		12.
All containers needing acid/base preservation have been checked?	☒ Yes	☐ No	☐ N/A	13. ☒ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☒ Yes	☐ No	☐ N/A	Sample # 1-3 Y/1; 4 2/2; 5-11 1/1
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes	☐ No	☒ N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Sarah Hartzer **Date:** 4/21/2017

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

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

May 02, 2017

Christina Johnson
Maul Foster and Algoni
602 Bunker Ave # 5
Kellogg, ID 83837

RE: Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

Dear Christina Johnson:

Enclosed are the analytical results for sample(s) received by the laboratory on April 20, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Sarah Platzer
sarah.platzer@pacelabs.com
(612)607-1700
Project Manager

Enclosures

cc: Alan Hughes, Maul Foster & Alongi, Inc.
Rachael Woods, Maul Foster and Alongi

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

CERTIFICATIONS

Project:	2017-02 East Mission Flats Rep
Pace Project No.:	10385796

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: UST-078
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: MN00064
CNMI Saipan Certification #:MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia WW Certification #: 382
Wisconsin Certification #: 999407970
Wyoming via EPA Region 8 Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10385796001	**07-EMF-MW-A-20170417-GW**	Water	04/17/17 11:50	04/20/17 09:40
10385796002	**07-EMF-MW-B-20170417-GW**	Water	04/17/17 13:20	04/20/17 09:40
10385796003	**07-EMF-MW-B-20170417-GW-B**	Water	04/17/17 13:20	04/20/17 09:40
10385796004	**09-EMF-MW-C-DEEP-20170417-GW**	Water	04/17/17 15:22	04/20/17 09:40
10385796005	**07-EMF-MW-C-20170417-GW**	Water	04/17/17 16:12	04/20/17 09:40
10385796006	**07-EMF-MW-C-20170417-EB**	Water	04/17/17 16:30	04/20/17 09:40

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SAMPLE ANALYTE COUNT

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10385796001	**07-EMF-MW-A-20170417-GW**	EPA 200.8	TT3	8	PASI-M
10385796002	**07-EMF-MW-B-20170417-GW**	EPA 200.8	TT3	8	PASI-M
10385796003	**07-EMF-MW-B-20170417-GW-B**	EPA 200.8	TT3	8	PASI-M
10385796004	**09-EMF-MW-C-DEEP-20170417-GW**	EPA 200.8	TT3	8	PASI-M
10385796005	**07-EMF-MW-C-20170417-GW**	EPA 200.8	TT3	8	PASI-M
10385796006	**07-EMF-MW-C-20170417-EB**	EPA 200.8	TT3	8	PASI-M

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PROJECT NARRATIVE

Project:	2017-02 East Mission Flats Rep
Pace Project No.:	10385796

Method: **EPA 200.8**
Description: 200.8 MET ICPMS, Dissolved
Client: Maul Foster & Alongi, Inc.
Date: May 02, 2017

General Information:
6 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

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

Sample Preparation:
The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

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

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

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

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

QC Batch: 469970

B: Analyte was detected in the associated method blank.
- BLANK for HBN 469970 [MPRP/715 (Lab ID: 2566563)
  - Sodium, Dissolved

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

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

QC Batch: 469970

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10385796004,10385828001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
- MS (Lab ID: 2566567)
  - Calcium, Dissolved

Additional Comments:

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PROJECT NARRATIVE

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

Method: **EPA 200.8**
Description: 200.8 MET ICPMS, Dissolved
Client: Maul Foster & Alongi, Inc.
Date: May 02, 2017

Analyte Comments:

QC Batch: 469970

E: Analyte concentration exceeded the calibration range. The reported result is estimated.
- MS (Lab ID: 2566567)
  - Calcium, Dissolved

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

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ANALYTICAL RESULTS

Project: 2017-02 East Mission Flats Rep

Pace Project No.: 10385796

Sample: 07-EMF-MW-A-20170417-GW **Lab ID: 10385796001** Collected: 04/17/17 11:50 Received: 04/20/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**0.43J**	ug/L	0.50	0.091	1	04/27/17 12:01	05/01/17 09:22	7440-38-2	
Cadmium, Dissolved	**0.50**	ug/L	0.080	0.013	1	04/27/17 12:01	05/01/17 09:22	7440-43-9	
Calcium, Dissolved	**13500**	ug/L	40.0	9.8	1	04/27/17 12:01	05/01/17 09:22	7440-70-2	
Lead, Dissolved	**0.038J**	ug/L	0.10	0.012	1	04/27/17 12:01	05/01/17 09:22	7439-92-1	
Magnesium, Dissolved	**7280**	ug/L	10.0	2.0	1	04/27/17 12:01	05/01/17 09:22	7439-95-4	
Potassium, Dissolved	**1340**	ug/L	50.0	8.5	1	04/27/17 12:01	05/01/17 09:22	7440-09-7	
Sodium, Dissolved	**6340**	ug/L	50.0	10.4	1	04/27/17 12:01	05/01/17 09:22	7440-23-5	
Zinc, Dissolved	**1770**	ug/L	50.0	7.8	10	04/27/17 12:01	05/01/17 10:29	7440-66-6	

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ANALYTICAL RESULTS

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

Sample: 07-EMF-MW-B-20170417-GW **Lab ID: 10385796002** Collected: 04/17/17 13:20 Received: 04/20/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**0.10J**	ug/L	0.50	0.091	1	04/27/17 12:01	05/01/17 09:24	7440-38-2	
Cadmium, Dissolved	**0.036J**	ug/L	0.080	0.013	1	04/27/17 12:01	05/01/17 09:24	7440-43-9	
Calcium, Dissolved	**13000**	ug/L	40.0	9.8	1	04/27/17 12:01	05/01/17 09:24	7440-70-2	
Lead, Dissolved	**0.090J**	ug/L	0.10	0.012	1	04/27/17 12:01	05/01/17 09:24	7439-92-1	
Magnesium, Dissolved	**4810**	ug/L	10.0	2.0	1	04/27/17 12:01	05/01/17 09:24	7439-95-4	
Potassium, Dissolved	**576**	ug/L	50.0	8.5	1	04/27/17 12:01	05/01/17 09:24	7440-09-7	
Sodium, Dissolved	**7450**	ug/L	50.0	10.4	1	04/27/17 12:01	05/01/17 09:24	7440-23-5	
Zinc, Dissolved	**39.9**	ug/L	5.0	0.78	1	04/27/17 12:01	05/01/17 09:24	7440-66-6	

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ANALYTICAL RESULTS

Project: 2017-02 East Mission Flats Rep

Pace Project No.: 10385796

Sample: 07-EMF-MW-B-20170417-GW-B **Lab ID: 10385796003** Collected: 04/17/17 13:20 Received: 04/20/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**0.11J**	ug/L	0.50	0.091	1	04/27/17 12:01	05/01/17 09:27	7440-38-2	
Cadmium, Dissolved	**0.038J**	ug/L	0.080	0.013	1	04/27/17 12:01	05/01/17 09:27	7440-43-9	
Calcium, Dissolved	**13300**	ug/L	40.0	9.8	1	04/27/17 12:01	05/01/17 09:27	7440-70-2	
Lead, Dissolved	**0.073J**	ug/L	0.10	0.012	1	04/27/17 12:01	05/01/17 09:27	7439-92-1	
Magnesium, Dissolved	**4960**	ug/L	10.0	2.0	1	04/27/17 12:01	05/01/17 09:27	7439-95-4	
Potassium, Dissolved	**594**	ug/L	50.0	8.5	1	04/27/17 12:01	05/01/17 09:27	7440-09-7	
Sodium, Dissolved	**7730**	ug/L	50.0	10.4	1	04/27/17 12:01	05/01/17 09:27	7440-23-5	
Zinc, Dissolved	**40.6**	ug/L	5.0	0.78	1	04/27/17 12:01	05/01/17 09:27	7440-66-6	

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ANALYTICAL RESULTS

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

Sample: 09-EMF-MW-C-DEEP-20170417-GW **Lab ID: 10385796004** Collected: 04/17/17 15:22 Received: 04/20/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**2.8**	ug/L	0.50	0.091	1	04/27/17 12:01	05/01/17 09:32	7440-38-2	
Cadmium, Dissolved	**0.52**	ug/L	0.080	0.013	1	04/27/17 12:01	05/01/17 09:32	7440-43-9	
Calcium, Dissolved	**7650**	ug/L	40.0	9.8	1	04/27/17 12:01	05/01/17 09:32	7440-70-2	
Lead, Dissolved	**4.0**	ug/L	0.10	0.012	1	04/27/17 12:01	05/01/17 09:32	7439-92-1	
Magnesium, Dissolved	**2850**	ug/L	10.0	2.0	1	04/27/17 12:01	05/01/17 09:32	7439-95-4	
Potassium, Dissolved	**810**	ug/L	50.0	8.5	1	04/27/17 12:01	05/01/17 09:32	7440-09-7	
Sodium, Dissolved	**3270**	ug/L	50.0	10.4	1	04/27/17 12:01	05/01/17 09:32	7440-23-5	
Zinc, Dissolved	**53.7**	ug/L	5.0	0.78	1	04/27/17 12:01	05/01/17 09:32	7440-66-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

Sample: 07-EMF-MW-C-20170417-GW **Lab ID: 10385796005** Collected: 04/17/17 16:12 Received: 04/20/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**0.71**	ug/L	0.50	0.091	1	04/27/17 12:01	05/01/17 09:29	7440-38-2	
Cadmium, Dissolved	**0.54**	ug/L	0.080	0.013	1	04/27/17 12:01	05/01/17 09:29	7440-43-9	
Calcium, Dissolved	**4930**	ug/L	40.0	9.8	1	04/27/17 12:01	05/01/17 09:29	7440-70-2	
Lead, Dissolved	**1.3**	ug/L	0.10	0.012	1	04/27/17 12:01	05/01/17 09:29	7439-92-1	
Magnesium, Dissolved	**2390**	ug/L	10.0	2.0	1	04/27/17 12:01	05/01/17 09:29	7439-95-4	
Potassium, Dissolved	**1390**	ug/L	50.0	8.5	1	04/27/17 12:01	05/01/17 09:29	7440-09-7	
Sodium, Dissolved	**2940**	ug/L	50.0	10.4	1	04/27/17 12:01	05/01/17 09:29	7440-23-5	
Zinc, Dissolved	**158**	ug/L	5.0	0.78	1	04/27/17 12:01	05/01/17 09:29	7440-66-6	

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ANALYTICAL RESULTS

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

Sample: 07-EMF-MW-C-20170417-EB **Lab ID: 10385796006** Collected: 04/17/17 16:30 Received: 04/20/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**<0.50**	ug/L	0.50	0.091	1	04/27/17 12:01	05/01/17 09:52	7440-38-2	
Cadmium, Dissolved	**<0.080**	ug/L	0.080	0.013	1	04/27/17 12:01	05/01/17 09:52	7440-43-9	
Calcium, Dissolved	**40.3**	ug/L	40.0	9.8	1	04/27/17 12:01	05/01/17 09:52	7440-70-2	
Lead, Dissolved	**0.10**	ug/L	0.10	0.012	1	04/27/17 12:01	05/01/17 09:52	7439-92-1	
Magnesium, Dissolved	**2.4J**	ug/L	10.0	2.0	1	04/27/17 12:01	05/01/17 09:52	7439-95-4	
Potassium, Dissolved	**16.0J**	ug/L	50.0	8.5	1	04/27/17 12:01	05/01/17 09:52	7440-09-7	
Sodium, Dissolved	**46.8J**	ug/L	50.0	10.4	1	04/27/17 12:01	05/01/17 09:52	7440-23-5	B
Zinc, Dissolved	**2.1J**	ug/L	5.0	0.78	1	04/27/17 12:01	05/01/17 09:52	7440-66-6	

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QUALITY CONTROL DATA

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

QC Batch: 469970 — Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 — Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 10385796001, 10385796002, 10385796003, 10385796004, 10385796005, 10385796006

METHOD BLANK: 2566563 — Matrix: Water
Associated Lab Samples: 10385796001, 10385796002, 10385796003, 10385796004, 10385796005, 10385796006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	<0.50	0.50	0.091	05/01/17 09:19	
Cadmium, Dissolved	ug/L	<0.080	0.080	0.013	05/01/17 09:19	
Calcium, Dissolved	ug/L	<40.0	40.0	9.8	05/01/17 09:19	
Lead, Dissolved	ug/L	<0.10	0.10	0.012	05/01/17 09:19	
Magnesium, Dissolved	ug/L	<10.0	10.0	2.0	05/01/17 09:19	
Potassium, Dissolved	ug/L	<50.0	50.0	8.5	05/01/17 09:19	
Sodium, Dissolved	ug/L	22.4J	50.0	10.4	05/01/17 09:19	
Zinc, Dissolved	ug/L	<5.0	5.0	0.78	05/01/17 09:19	

LABORATORY CONTROL SAMPLE: 2566564

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	100	104	104	85-115	
Cadmium, Dissolved	ug/L	100	110	110	85-115	
Calcium, Dissolved	ug/L	2000	2010	101	85-115	
Lead, Dissolved	ug/L	100	110	110	85-115	
Magnesium, Dissolved	ug/L	2000	2070	103	85-115	
Potassium, Dissolved	ug/L	2000	2070	103	85-115	
Sodium, Dissolved	ug/L	2000	2090	104	85-115	
Zinc, Dissolved	ug/L	100	110	110	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2566565 — 2566566

Parameter	Units	10385796004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	2.8	100	100	105	108	103	105	70-130	2	20	
Cadmium, Dissolved	ug/L	0.52	100	100	107	110	107	110	70-130	2	20	
Calcium, Dissolved	ug/L	7650	2000	2000	9290	9780	82	106	70-130	5	20	
Lead, Dissolved	ug/L	4.0	100	100	112	114	108	110	70-130	1	20	
Magnesium, Dissolved	ug/L	2850	2000	2000	4810	4910	98	103	70-130	2	20	
Potassium, Dissolved	ug/L	810	2000	2000	2840	2940	102	106	70-130	3	20	
Sodium, Dissolved	ug/L	3270	2000	2000	5170	5350	95	104	70-130	4	20	
Zinc, Dissolved	ug/L	53.7	100	100	159	164	105	110	70-130	3	20	

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

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QUALITY CONTROL DATA

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

MATRIX SPIKE SAMPLE: 2566567

Parameter	Units	10385828001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	0.26J	100	107	107	70-130	
Cadmium, Dissolved	ug/L	0.00030 mg/L	100	110	109	70-130	
Calcium, Dissolved	ug/L	41700	2000	45000	162	70-130	E,M1
Lead, Dissolved	ug/L	0.058J	100	110	110	70-130	
Magnesium, Dissolved	ug/L	10700	2000	13000	114	70-130	
Potassium, Dissolved	ug/L	724	2000	2850	106	70-130	
Sodium, Dissolved	ug/L	4250	2000	6430	109	70-130	
Zinc, Dissolved	ug/L	0.033 mg/L	100	143	111	70-130	

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:	2017-02 East Mission Flats Rep
Pace Project No.:	10385796

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10385796

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10385796001	**07-EMF-MW-A-20170417-GW**	EPA 200.8	469970	EPA 200.8	471374
10385796002	**07-EMF-MW-B-20170417-GW**	EPA 200.8	469970	EPA 200.8	471374
10385796003	**07-EMF-MW-B-20170417-GW-B**	EPA 200.8	469970	EPA 200.8	471374
10385796004	**09-EMF-MW-C-DEEP-20170417-GW**	EPA 200.8	469970	EPA 200.8	471374
10385796005	**07-EMF-MW-C-20170417-GW**	EPA 200.8	469970	EPA 200.8	471374
10385796006	**07-EMF-MW-C-20170417-EB**	EPA 200.8	469970	EPA 200.8	471374

10385796

CHAIN-OF-CUSTODY / Analytical Request Document

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

Task: 2017-02 East Mission Flats Repository
Total # of Samples: 6
Event Complete? No
TAT: Regular | Rush: No

Sampler Information:
Client: TerraGraphics Enviro.
Address: 1220 Big Creek Road, Kellogg, ID 83837
Contact: Greg Malone
Phone/Fax: 208/786-1206
Email: greg.malone@terragraphics.com
Lab Quote #:

Project Information:
Site Code: CDA Trust Water Monitoring
Project #:
Site Address: Silver Valley, ID
City: NA | State, Zip: NA
PM Name: Christina Johnson/Rachael Woods
Phone/Fax: 360.977.8561/503.501.5223
PM Email: cjohnson@maulfoster.com; rwoods@maulfoster.com

Other Information:
Send Invoice to: Rachael Woods, Maul Foster and Alongi
Address: 400 East Mill Plain Blvd, #400
City/State: Vancouver, WA 98660 | Phone #: 360.694.2691
PO #:
Send EDD to: PacePort
CC Hardcopy to: Rachael Woods
CC Hardcopy to:

Notes: FF= Field Filtered , H= Hold
Lab Notes: Metals: USEPA 200.8
Preservative: HNO3\FF
Analysis: DM, Cations

ITEM #	Field Sample No. /Identification		MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	# OF CONTAINERS	Comment	DM, Cations	
1	07-EMF-MW-A-20170417-GW		WT	G	4/17/17 11:50	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	001
2	07-EMF-MW-B-20170417-GW		WT	G	4/17/17 13:20	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	002
3	07-EMF-MW-B-20170417-GW-B		WT	G	4/17/17 13:20	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	003
4	09-EMF-MW-C-DEEP-20170417-GW	MS/D	WT	G	4/17/17 15:22	2	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	004
5	07-EMF-MW-C-20170417-GW		WT	G	4/17/17 16:12	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	005
6	07-EMF-MW-C-20170417-EB		WT	G	4/17/17 16:30	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	006
7									
8									
9									
10									
11									

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Samples on Ice?	Sample intact?	Trip Blank?
BRadford, TerraGraphics	4/19/17	09:45	[signature]	4/20/17	9:40	1.0	Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N

Company: DATE/TIME:
Tracking #:

CHAIN-OF-CUSTODY / Analytical Request Document

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

10385796

Page: 2 of 2
Cooler # 1 of 1

Task:	2017-02 East Mission Flats Repository
Total # of Samples: 5	Event Complete? Yes
TAT	Regular
Rush	No

Notes: FF= Field Filtered , H= Hold

Lab Notes: Metals: USEPA 200.8

Sampler Information:		Project Information:		Other Information:	
Client:	TerraGraphics Enviro.	Site Code:	CDA Trust Water Monitoring	Send Invoice to:	Rachael Woods, Maul Foster and Alongi
Address:	1220 Big Creek Road Kellogg, ID 83837	Project #		Address:	400 East Mill Plain Blvd, #400
		Site Address	Silver Valley, ID	City/State.	Vancouver, WA 98660 Phone #: 360.694.2691
Contact:	Greg Malone	City	NA State, Zip NA	PO #	
Phone/Fax:	208/786-1206	PM Name	Christina Johnson/Rachael Woods	Send EDD to	PacePort
Email	greg.malone@terragraphics.com	Phone/Fax:	360.977.8561/503.501.5223	CC Hardcopy to	Rachael Woods
Lab Quote #:		PM Email:	cjohnson@maulfoster.com; rwoods@maulfoster.com	CC Hardcopy to	

ITEM #	Field Sample No. /Identification	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	# OF CONTAINERS	Comment	Preservative: HNO3\FF / Analysis: DM, Cations							
1	07-EMF-MW-D-20170418-GW	WT	G	4/18/17 12:40	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	007						
2	08-EMF-MW-E-20170418-GW	WT	G	4/18/17 13:55	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	008						
3	08-EMF-MW-F-20170418-GW	WT	G	4/18/17 14:40	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	009						
4	08-EMF-MW-F-20170418-EB	WT	G	4/18/17 14:30	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	010						
5	08-EMF-MW-E-20170418-FB	WT	G	4/18/17 13:15	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	011						
6														
7														
8														
9														
10														
11														

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Samples on Ice?	Sample Intact?	Trip Blank?
Bradford, TerraGraphics	4/19/17	09:45	[signature]	4/20/17	9:40	1.0	Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N

Company: DATE/TIME:

Tracking #:

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 19Dec2016 Page 1 of 2
	Document No.: **F-MN-L-213-rev.20**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: TerraGraphics Enviro.

Project #: WO# : 10385796

10385796

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

Tracking Number: 7789 3752 1397

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☒ Other: PB **Temp Blank?** ☐ Yes ☐ No

Thermometer Used: ☒ 151401163 ☐ 151401164 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 1.0 **Cooler Temp Corrected (°C):** 1.2 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** MAD 4/20/17

USDA Regulated Soil (☒ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☒ Yes	☐ No		1.
Chain of Custody Filled Out?	☒ Yes	☐ No		2.
Chain of Custody Relinquished?	☒ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☐ Yes	☒ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		6.
Rush Turn Around Time Requested?	☐ Yes	☒ No		7.
Sufficient Volume?	☒ Yes	☐ No		8.
Correct Containers Used?	☒ Yes	☐ No		9.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		10.
Filtered Volume Received for Dissolved Tests?	☒ Yes	☐ No	☐ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT	☒ Yes	☐ No		12.
All containers needing acid/base preservation have been checked?	☒ Yes	☐ No	☐ N/A	13. ☒ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☒ Yes	☐ No	☐ N/A	Sample # 1-3 1/1; 4 2/2; 5-11 1/1
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes	☐ No	☒ N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: [signature] **Date:** 4/21/2017

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

Analytical Data Package

Prepared by:

Pace Analytical Services

Pace Project No.: 10385796

Table Of Contents

InOrganic

ICPMS

SAMPLE NO.

FORM I INORGANIC-1

INORGANIC ANALYSIS DATA SHEET

07-EMF-MW-A-20170417-GW

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract: 2017-02 East Mission Flats

Lab Sample ID: 10385796001 Percent Moisture:

CAS No.	Analyte	Concentration	Q	Units	DF	Analysis Date/Time
7440-38-2	Arsenic, Dissolved	0.43	J	ug/L	1	05/01/2017 09:22
7440-43-9	Cadmium, Dissolved	0.50		ug/L	1	05/01/2017 09:22
7440-70-2	Calcium, Dissolved	13500		ug/L	1	05/01/2017 09:22
7439-92-1	Lead, Dissolved	0.038	J	ug/L	1	05/01/2017 09:22
7439-95-4	Magnesium, Dissolved	7280		ug/L	1	05/01/2017 09:22
7440-09-7	Potassium, Dissolved	1340		ug/L	1	05/01/2017 09:22
7440-23-5	Sodium, Dissolved	6340		ug/L	1	05/01/2017 09:22
7440-66-6	Zinc, Dissolved	1770		ug/L	10	05/01/2017 10:29

SAMPLE NO.

FORM I INORGANIC-1

INORGANIC ANALYSIS DATA SHEET

07-EMF-MW-B-20170417-GW

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract: 2017-02 East Mission Flats

Lab Sample ID: 10385796002 Percent Moisture:

CAS No.	Analyte	Concentration	Q	Units	DF	Analysis Date/Time
7440-38-2	Arsenic, Dissolved	0.10	J	ug/L	1	05/01/2017 09:24
7440-43-9	Cadmium, Dissolved	0.036	J	ug/L	1	05/01/2017 09:24
7440-70-2	Calcium, Dissolved	13000		ug/L	1	05/01/2017 09:24
7439-92-1	Lead, Dissolved	0.090	J	ug/L	1	05/01/2017 09:24
7439-95-4	Magnesium, Dissolved	4810		ug/L	1	05/01/2017 09:24
7440-09-7	Potassium, Dissolved	576		ug/L	1	05/01/2017 09:24
7440-23-5	Sodium, Dissolved	7450		ug/L	1	05/01/2017 09:24
7440-66-6	Zinc, Dissolved	39.9		ug/L	1	05/01/2017 09:24

SAMPLE NO.

FORM I INORGANIC-1

INORGANIC ANALYSIS DATA SHEET

07-EMF-MW-B-20170417-GW-B

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract: 2017-02 East Mission Flats

Lab Sample ID: 10385796003 Percent Moisture:

CAS No.	Analyte	Concentration	Q	Units	DF	Analysis Date/Time
7440-38-2	Arsenic, Dissolved	0.11	J	ug/L	1	05/01/2017 09:27
7440-43-9	Cadmium, Dissolved	0.038	J	ug/L	1	05/01/2017 09:27
7440-70-2	Calcium, Dissolved	13300		ug/L	1	05/01/2017 09:27
7439-92-1	Lead, Dissolved	0.073	J	ug/L	1	05/01/2017 09:27
7439-95-4	Magnesium, Dissolved	4960		ug/L	1	05/01/2017 09:27
7440-09-7	Potassium, Dissolved	594		ug/L	1	05/01/2017 09:27
7440-23-5	Sodium, Dissolved	7730		ug/L	1	05/01/2017 09:27
7440-66-6	Zinc, Dissolved	40.6		ug/L	1	05/01/2017 09:27

SAMPLE NO.

FORM I INORGANIC-1

INORGANIC ANALYSIS DATA SHEET

09-EMF-MW-C-DEEP-20170417-GW

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract: 2017-02 East Mission Flats

Lab Sample ID: 10385796004 Percent Moisture:

CAS No.	Analyte	Concentration	Q	Units	DF	Analysis Date/Time
7440-38-2	Arsenic, Dissolved	2.8		ug/L	1	05/01/2017 09:32
7440-43-9	Cadmium, Dissolved	0.52		ug/L	1	05/01/2017 09:32
7440-70-2	Calcium, Dissolved	7650		ug/L	1	05/01/2017 09:32
7439-92-1	Lead, Dissolved	4.0		ug/L	1	05/01/2017 09:32
7439-95-4	Magnesium, Dissolved	2850		ug/L	1	05/01/2017 09:32
7440-09-7	Potassium, Dissolved	810		ug/L	1	05/01/2017 09:32
7440-23-5	Sodium, Dissolved	3270		ug/L	1	05/01/2017 09:32
7440-66-6	Zinc, Dissolved	53.7		ug/L	1	05/01/2017 09:32

FORM I INORGANIC-1
INORGANIC ANALYSIS DATA SHEET

07-EMF-MW-C-20170417-GW

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract: 2017-02 East Mission Flats
Lab Sample ID: 10385796005 Percent Moisture:

CAS No.	Analyte	Concentration	Q	Units	DF	Analysis Date/Time
7440-38-2	Arsenic, Dissolved	0.71		ug/L	1	05/01/2017 09:29
7440-43-9	Cadmium, Dissolved	0.54		ug/L	1	05/01/2017 09:29
7440-70-2	Calcium, Dissolved	4930		ug/L	1	05/01/2017 09:29
7439-92-1	Lead, Dissolved	1.3		ug/L	1	05/01/2017 09:29
7439-95-4	Magnesium, Dissolved	2390		ug/L	1	05/01/2017 09:29
7440-09-7	Potassium, Dissolved	1390		ug/L	1	05/01/2017 09:29
7440-23-5	Sodium, Dissolved	2940		ug/L	1	05/01/2017 09:29
7440-66-6	Zinc, Dissolved	158		ug/L	1	05/01/2017 09:29

SAMPLE NO.

FORM I INORGANIC-1

INORGANIC ANALYSIS DATA SHEET

07-EMF-MW-C-20170417-EB

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract: 2017-02 East Mission Flats

Lab Sample ID: 10385796006 Percent Moisture:

CAS No.	Analyte	Concentration	Q	Units	DF	Analysis Date/Time
7440-38-2	Arsenic, Dissolved	<0.50	U	ug/L	1	05/01/2017 09:52
7440-43-9	Cadmium, Dissolved	<0.080	U	ug/L	1	05/01/2017 09:52
7440-70-2	Calcium, Dissolved	40.3		ug/L	1	05/01/2017 09:52
7439-92-1	Lead, Dissolved	0.10		ug/L	1	05/01/2017 09:52
7439-95-4	Magnesium, Dissolved	2.4	J	ug/L	1	05/01/2017 09:52
7440-09-7	Potassium, Dissolved	16.0	J	ug/L	1	05/01/2017 09:52
7440-23-5	Sodium, Dissolved	46.8	J	ug/L	1	05/01/2017 09:52
7440-66-6	Zinc, Dissolved	2.1	J	ug/L	1	05/01/2017 09:52

FORM II INORGANIC-1
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract: 2017-02 East Mission Flats Rep

Initial Calibration Verification Source: 118252

Continuing Calibration Verification Source: 118252

Concentration Units: ug/L Instrument ID: 10ICM9

	Initial Calibration Verification				Continuing Calibration Verification						
	05/01/2017 07:07				05/01/2017 07:22			05/01/2017 09:09			Control Limit
Analyte	True	Found	%R	Control Limit	True	Found	%R	True	Found	%R	
Arsenic	80	81.0	101.3	90-110	80	80.8	100.9	80	80.2	100.3	90-110
Cadmium	80	85.1	106.4	90-110	80	84.4	105.5	80	85.4	106.8	90-110
Calcium	1000	1020	102.3	90-110	1000	1020	102.4	1000	952	95.2	90-110
Lead	80	85.0	106.2	90-110	80	84.8	106.0	80	87.0	108.8	90-110
Magnesium	1000	1010	100.8	90-110	1000	1000	100.5	1000	1010	100.5	90-110
Potassium	1000	1010	100.5	90-110	1000	1000	100.1	1000	1020	102.1	90-110
Sodium	1000	1010	101.2	90-110	1000	1000	100.0	1000	1060	106.5	90-110
Zinc	80	86.9	108.6	90-110	80	86.4	108.0	80	85.5	106.8	90-110

FORM II INORGANIC-2
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract: 2017-02 East Mission Flats Rep

Initial Calibration Verification Source:

Continuing Calibration Verification Source: 118252

Concentration Units: ug/L Instrument ID: 10ICM9

	Continuing Calibration Verification									
	05/01/2017 09:44			05/01/2017 10:17			05/01/2017 10:37			Control Limit
Analyte	True	Found	%R	True	Found	%R	True	Found	%R	
Arsenic	80	79.8	99.7	80	80.4	100.5	80	80.0	100.0	90-110
Cadmium	80	84.7	105.8	80	86.8	108.5	80	86.1	107.7	90-110
Calcium	1000	953	95.3	1000	951	95.1	1000	953	95.3	90-110
Lead	80	84.6	105.7	80	86.2	107.7	80	85.8	107.3	90-110
Magnesium	1000	985	98.5	1000	1000	100.3	1000	986	98.6	90-110
Potassium	1000	997	99.7	1000	1010	101.2	1000	992	99.2	90-110
Sodium	1000	1020	101.9	1000	1050	104.6	1000	1040	103.8	90-110
Zinc	80	85.7	107.1	80	86.9	108.7	80	86.1	107.6	90-110

FORM II INORGANIC-1

CRDL CHECK STANDARD

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract: 2017-02 East Mission Flats Rep

CRDL Check Standard Source: 118251 Analysis Date/Time: 05/01/2017 07:14

Concentration Units: ug/L

Analyte	CRDL Check Standard			
	True	Found	%R	Control Limit %R
Arsenic	0.5	0.50	99.8	60-140
Cadmium	0.08	0.080	100.0	60-140
Calcium	40	38.3	95.8	60-140
Lead	0.1	0.14	135.0	60-140
Magnesium	10.0	10.2	102.1	60-140
Potassium	50	49.4	98.8	60-140
Sodium	50	50.4	100.8	60-140
Zinc	5.0	5.3	105.1	60-140

FORM III INORGANIC-1
BLANKS

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract : 2017-02 East Mission Flats Rep

Method Blank Matrix: Water Instrument ID: 10ICM9

Method Blank Concentration Units: ug/L

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Method Blank	
	05/01/2017 07:12	C	05/01/2017 07:24	C	05/01/2017 09:17	C	05/01/2017 09:49	C	2566563	C
Arsenic	0.091	U	0.091	U	0.091	U	0.091	U	<0.50	U
Cadmium	0.013	U	0.013	U	0.013	U	0.013	U	<0.080	U
Calcium	9.8	U	9.8	U	9.8	U	9.8	U	<40.0	U
Lead	0.036	J	0.030	J	0.012	U	0.012	U	<0.10	U
Magnesium	2.0	U	2.0	U	2.0	U	2.0	U	<10.0	U
Potassium	8.5	U	8.5	U	8.9	J	8.5	U	<50.0	U
Sodium	10.4	U	10.4	U	28.0	J	15.9	J	22.4	J
Zinc	0.78	U	0.78	U	0.78	U	0.78	U	<5.0	U

FORM III INORGANIC-2
BLANKS

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract : 2017-02 East Mission Flats Rep

Method Blank Matrix: ______ Instrument ID: 10ICM9

Method Blank Concentration Units: ______

Analyte	Initial Calibration Blank		Continuing Calibration Blank (ug/L)					
		C	05/01/2017 10:22	C	05/01/2017 10:42	C		C
Arsenic			0.091	U	0.091	U		
Cadmium			0.013	U	0.013	U		
Calcium			9.8	U	9.8	U		
Lead			0.012	U	0.012	U		
Magnesium			2.0	U	2.0	U		
Potassium			8.5	U	8.5	U		
Sodium			15.5	J	13.7	J		
Zinc			0.78	U	0.78	U		

FORM IV INORGANIC-1

INTERFERENCE CHECK SAMPLE

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract: 2017-02 East Mission Flats Rep

Instrument ID: 10ICM9 Solution A Run Date: 05/01/2017 07:17

ICS Source: 118250,118249 Solution AB Run Date: 05/01/2017 07:19

Concentration Units: ug/L

Analyte	True		Found				
	Sol. A	Sol. AB	Sol. A	%R	Sol. AB	%R	Limits
Aluminum	25000	25100	25521.765	102.1	25643.151	102.2	80-120
Arsenic		100	0.03		105.135	105.1	80-120
Cadmium		100	-0.005		103.52	103.5	80-120
Calcium	25000	26250	25715.178	102.9	26995.637	102.8	80-120
Iron	25000	26250	25163.544	100.7	26606.265	101.4	80-120
Lead		100	0.091		100.22	100.2	80-120
Magnesium	25000	26250	25964.032	103.9	27257.265	103.8	80-120
Molybdenum	500	600	524.509	104.9	626.388	104.4	80-120
Potassium	25000	26250	25643.608	102.6	27006.452	102.9	80-120
Sodium	25000	26250	25797.716	103.2	27118.794	103.3	80-120
Titanium	500	600	515.111	103	622.546	103.8	80-120
Zinc		100	0.249		103.764	103.8	80-120

SAMPLE NO.

2566565MS

FORM V INORGANIC-1

MATRIX SPIKE SAMPLE RECOVERY

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract: 2017-02 East Mission Flats

Matrix: Water Basis: Wet Parent Sample ID: 09-EMF-MW-C-DEEP-

Percent Moisture:

Analyte	Units	Control Limit %R	Spiked Sample Result (SSR)	Sample Result (SR)	Spike Added (SA)	%R
Arsenic, Dissolved	ug/L	70-130	105	2.8	100	103
Cadmium, Dissolved	ug/L	70-130	107	0.52	100	107
Calcium, Dissolved	ug/L	70-130	9290	7650	2000	82
Lead, Dissolved	ug/L	70-130	112	4.0	100	108
Magnesium, Dissolved	ug/L	70-130	4810	2850	2000	98
Potassium, Dissolved	ug/L	70-130	2840	810	2000	102
Sodium, Dissolved	ug/L	70-130	5170	3270	2000	95
Zinc, Dissolved	ug/L	70-130	159	53.7	100	105

FORM V INORGANIC-2
MATRIX SPIKE SAMPLE RECOVERY

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract: 2017-02 East Mission Flats

Matrix: Water Basis: Wet Parent Sample ID: 09-EMF-MW-C-DEEP-

Percent Moisture:

Analyte	Units	Control Limit %R	Spiked Sample Result (SSR)	Sample Result (SR)	Spike Added (SA)	%R
Arsenic, Dissolved	ug/L	70-130	108	2.8	100	105
Cadmium, Dissolved	ug/L	70-130	110	0.52	100	110
Calcium, Dissolved	ug/L	70-130	9780	7650	2000	106
Lead, Dissolved	ug/L	70-130	114	4.0	100	110
Magnesium, Dissolved	ug/L	70-130	4910	2850	2000	103
Potassium, Dissolved	ug/L	70-130	2940	810	2000	106
Sodium, Dissolved	ug/L	70-130	5350	3270	2000	104
Zinc, Dissolved	ug/L	70-130	164	53.7	100	110

SAMPLE NO.

2566567MS

FORM V INORGANIC-3
MATRIX SPIKE SAMPLE RECOVERY

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract: 2017-02 East Mission Flats

Matrix: Water Basis: Wet Parent Sample ID: 10385828001

Percent Moisture:

Analyte	Units	Control Limit %R	Spiked Sample Result (SSR)	Sample Result (SR)	Spike Added (SA)	%R
Arsenic, Dissolved	ug/L	70-130	107	0.26J	100	107
Cadmium, Dissolved	ug/L	70-130	110	0.00030	100	109
Calcium, Dissolved	ug/L	70-130	45000	41700	2000	162*
Lead, Dissolved	ug/L	70-130	110	0.058J	100	110
Magnesium, Dissolved	ug/L	70-130	13000	10700	2000	114
Potassium, Dissolved	ug/L	70-130	2850	724	2000	106
Sodium, Dissolved	ug/L	70-130	6430	4250	2000	109
Zinc, Dissolved	ug/L	70-130	143	0.033	100	111

* Spike Recovery outside QC Limits

SAMPLE NO.

2566566MSD

FORM VI INORGANIC-1
DUPLICATES

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract: 2017-02 East Mission Flats

Matrix: Water Concentration Units: ug/L

Percent Moisture: Basis: Wet

Analyte	Control Limit	Sample	Duplicate	RPD
Arsenic, Dissolved	20	105	108	2
Cadmium, Dissolved	20	107	110	2
Calcium, Dissolved	20	9290	9780	5
Lead, Dissolved	20	112	114	1
Magnesium, Dissolved	20	4810	4910	2
Potassium, Dissolved	20	2840	2940	3
Sodium, Dissolved	20	5170	5350	4
Zinc, Dissolved	20	159	164	3

SAMPLE NO.

2566564LCS

FORM VII INORGANIC-1

LABORATORY CONTROL SAMPLE

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract: 2017-02 East Mission Flats

Matrix: Water

Analyte	Units	True	Found	%R	Limits	
Arsenic, Dissolved	ug/L	100	104	104	85	115
Cadmium, Dissolved	ug/L	100	110	110	85	115
Calcium, Dissolved	ug/L	2000	2010	101	85	115
Lead, Dissolved	ug/L	100	110	110	85	115
Magnesium, Dissolved	ug/L	2000	2070	103	85	115
Potassium, Dissolved	ug/L	2000	2070	103	85	115
Sodium, Dissolved	ug/L	2000	2090	104	85	115
Zinc, Dissolved	ug/L	100	110	110	85	115

SAMPLE NO.

FORM VIII INORGANIC-1
SERIAL DILUTIONS

2573224SD

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract: 2017-02 East Mission Flats Rep

Matrix: Water Parent Sample ID: 09-EMF-MW-C-DEEP-20170417-

Analyte	Units	Initial Sample Result	Serial Dilution Result	% Difference	Control Limit %D
Arsenic, Dissolved	ug/L	2.8	2.9	3.6	10
Cadmium, Dissolved	ug/L	0.52	0.56	8.9	10
Calcium, Dissolved	ug/L	7650	7570	1.1	10
Lead, Dissolved	ug/L	4.0	4.1	2.7	10
Magnesium, Dissolved	ug/L	2850	2810	1.4	10
Potassium, Dissolved	ug/L	810	808	0.2	10
Sodium, Dissolved	ug/L	3270	3260	0.3	10
Zinc, Dissolved	ug/L	53.7	55.2	2.6	10

* Indicates that the % Difference exceeds the control limit.
No difference is calculated if either result is a non-detect.

05/02/2017 11:57

FORM IX INORGANIC-1

INSTRUMENT DETECTION LIMITS

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract: 2017-02 East Mission Flats Rep

Preparation Method: None Instrument ID: 10ICM9

Concentration Units: ug/L

Analyte	PQL	IDL	IDL Date
Arsenic	0.50	0.091	04/01/2016
Cadmium	0.080	0.013	04/01/2016
Calcium	40.0	9.8	04/01/2016
Lead	0.10	0.012	04/01/2016
Magnesium	10.0	2.0	04/01/2016
Potassium	50.0	8.5	04/01/2016
Sodium	50.0	10.4	04/01/2016
Zinc	5.0	0.78	04/01/2016

FORM IX INORGANIC-2
METHOD DETECTION LIMITS

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract: 2017-02 East Mission Flats Rep

Preparation Method: EPA 200.8 Instrument ID: 10ICM9

Concentration Units: ug/L

Analyte	PQL	MDL	MDL Date
Arsenic	0.50	0.091	04/01/2016
Cadmium	0.080	0.013	04/01/2016
Calcium	40.0	9.8	04/01/2016
Lead	0.10	0.012	04/01/2016
Magnesium	10.0	2.0	04/01/2016
Potassium	50.0	8.5	04/01/2016
Sodium	50.0	10.4	04/01/2016
Zinc	5.0	0.78	04/01/2016

FORM XI - INORGANIC-1
LINEAR DYNAMIC RANGES

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract : 2017-02 East Mission Flats

Instrument ID: 10ICM9 Effective Date:04/01/2014

Analyte	Concentration (ug/L)
Arsenic	450
Cadmium	450
Calcium	22500
Lead	450
Magnesium	22500
Potassium	22500
Sodium	22500
Zinc	450

FORM XII INORGANIC-1
PREPARATION LOG

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract: 2017-02 East Mission Flats Rep

Preparation Method: EPA 200.8 Batch: MPRP 71544

Lab Sample ID	Sample Name	Preparation Date	Initial Volume (mL)	Final Volume (mL)
2566563	2566563	04/27/2017	50	50
2566564	2566564	04/27/2017	50	50
2566565	2566565	04/27/2017	50	50
2566566	2566566	04/27/2017	50	50
2566567	2566567	04/27/2017	50	50
10385796001	07-EMF-MW-A-	04/27/2017	50	50
10385796002	07-EMF-MW-B-	04/27/2017	50	50
10385796003	07-EMF-MW-B-	04/27/2017	50	50
10385796004	09-EMF-MW-C-DEEP-	04/27/2017	50	50
10385796005	07-EMF-MW-C-	04/27/2017	50	50
10385796006	07-EMF-MW-C-	04/27/2017	50	50

FORM XIII INORGANIC-1
ANALYSIS RUN LOG

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract: 2017-02 East Mission Flats Rep

Instrument ID: 10ICM9 Analysis Method: EPA 200.8

Start Date: 05/01/2017 06:49 End Date: 05/01/2017 10:42

Sample Name	Lab Sample ID	D/F	Date	Time	As	Ca	Cd	K	Mg	Na	Pb	Zn
17099625CAL0	17099625CAL0	1	05/01/2017	06:49	X	X	X	X	X	X	X	X
17099626CAL1	17099626CAL1	1	05/01/2017	06:52	X	X	X	X	X	X	X	X
17099627CAL2	17099627CAL2	1	05/01/2017	06:54	X	X	X	X	X	X	X	X
17099628CAL3	17099628CAL3	1	05/01/2017	06:57	X	X	X	X	X	X	X	X
17099629CAL4	17099629CAL4	1	05/01/2017	07:00	X	X	X	X	X	X	X	X
17099630CAL5	17099630CAL5	1	05/01/2017	07:03	X	X	X	X	X	X	X	X
17099631ICV	17099631ICV	1	05/01/2017	07:07	X	X	X	X	X	X	X	X
17099632ICB	17099632ICB	1	05/01/2017	07:12	X	X	X	X	X	X	X	X
17099633CRDL	17099633CRDL	1	05/01/2017	07:14	X	X	X	X	X	X	X	X
17099634ICSA	17099634ICSA	1	05/01/2017	07:17	X	X	X	X	X	X	X	X
17099635ICSAB	17099635ICSAB	1	05/01/2017	07:19	X	X	X	X	X	X	X	X
17099636CCV	17099636CCV	1	05/01/2017	07:22	X	X	X	X	X	X	X	X
17099637CCB	17099637CCB	1	05/01/2017	07:24	X	X	X	X	X	X	X	X
17099643CCV	17099643CCV	1	05/01/2017	09:09	X	X	X	X	X	X	X	X
17099644CCB	17099644CCB	1	05/01/2017	09:17	X	X	X	X	X	X	X	X
2566563BLANK	2566563	1	05/01/2017	09:19	X	X	X	X	X	X	X	X
07-EMF-MW-A-20170417-	10385796001	1	05/01/2017	09:22	X	X	X	X	X	X	X	
07-EMF-MW-B-20170417-	10385796002	1	05/01/2017	09:24	X	X	X	X	X	X	X	X
07-EMF-MW-B-20170417-	10385796003	1	05/01/2017	09:27	X	X	X	X	X	X	X	X
07-EMF-MW-C-20170417-	10385796005	1	05/01/2017	09:29	X	X	X	X	X	X	X	X
09-EMF-MW-C-DEEP-	10385796004	1	05/01/2017	09:32	X	X	X	X	X	X	X	X
2566565MS	2566565	1	05/01/2017	09:34	X	X	X	X	X	X	X	X
2566566MSD	2566566	1	05/01/2017	09:37	X	X	X	X	X	X	X	X
2573224SD	2573224	5	05/01/2017	09:39	X	X	X	X	X	X	X	X
2566564LCS	2566564	1	05/01/2017	09:42	X	X	X	X	X	X	X	X
17099645CCV	17099645CCV	1	05/01/2017	09:44	X	X	X	X	X	X	X	X
17099646CCB	17099646CCB	1	05/01/2017	09:49	X	X	X	X	X	X	X	X
07-EMF-MW-C-20170417-	10385796006	1	05/01/2017	09:52	X	X	X	X	X	X	X	X
10385828001	10385828001	1	05/01/2017	10:07			X					X
2566567MS	2566567	1	05/01/2017	10:09	X	X	X	X	X	X	X	X
17099647CCV	17099647CCV	1	05/01/2017	10:17	X	X	X	X	X	X	X	X
17099648CCB	17099648CCB	1	05/01/2017	10:22	X	X	X	X	X	X	X	X
07-EMF-MW-A-20170417-	10385796001	10	05/01/2017	10:29								X
17099715CCV	17099715CCV	1	05/01/2017	10:37	X	X	X	X	X	X	X	X
17099716CCB	17099716CCB	1	05/01/2017	10:42	X	X	X	X	X	X	X	X

US EPA Tune Check Sample Report

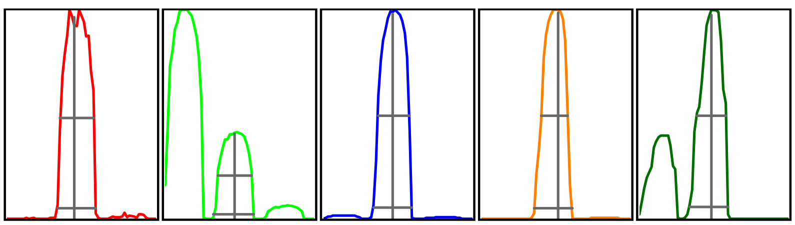
Batch Folder	D:\Data\050117.b
Report Comment	10ICM9 TT3
Instrument Name	G3281A JP12412084

[He]

Mass	Count (Mean)	RSD% (Actual)	RSD% (Required)	RSD% (Flag)
9	1312	1.58		
24	16151	1.04		
59	359101	0.34		
115	394555	0.33		
208	526017	0.34		

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
9	1322	1301	1293	1303	1344
24	16357	16287	16125	16015	15969
59	359673	357733	358672	360931	358497
115	396036	394462	395680	393350	393249
208	528443	526718	525994	525325	523603

Integration Time [sec] = 0.1



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	Width-X% (Actual)	Width-X% (Required)	Width-X% (Flag)
9	216	8.9000	8.9 - 9.1		0.762	0.900	
24	2632	23.9500	23.9 - 24.1		0.776	0.900	
59	61937	58.9500	58.9 - 59.1		0.755	0.900	
115	77159	115.0500	114.9 - 115.1		0.728	0.900	
208	102228	208.0000	207.9 - 208.1		0.755	0.900	

X% = 5 **Integration Time [sec] =** 0.1 **Acquisition Time [sec] =** 168.5 **Y Axis =** Linear

Tune Parameters

Plasma Paramters

ParameterName	Value	Unit	ParameterName	Value	Unit	ParameterName	Value	Unit
RF Power	1550	W	Carrier Gas	0.70	L/min	S/C Temp	2	℃
RF Matching	1.50	V	Option Gas	0.0	%	Gas Switch	Dilution Gas	
Smpl Depth	8.0	mm	Nebulizer Pump	0.10	rps	Makeup/Dilution Gas	0.35	L/min

Lenses Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit	ParameterName	Value	Unit
Extract 1	0.0	V	Omega Lens	12.6	V	Deflect	2.4	V
Extract 2	-200.0	V	Cell Entrance	-40	V	Plate Bias	-60	V
Omega Bias	-95	V	Cell Exit	-60	V			

Cell Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit	ParameterName	Value	Unit
Use Gas	true		3rd Gas Flow	0	%	Energy Discrimination	3.0	V
He Flow	4.5	mL/min	OctP Bias	-18.0	V			
H2 Flow	0.0	mL/min	OctP RF	190	V			

US EPA Tune Check Sample Report

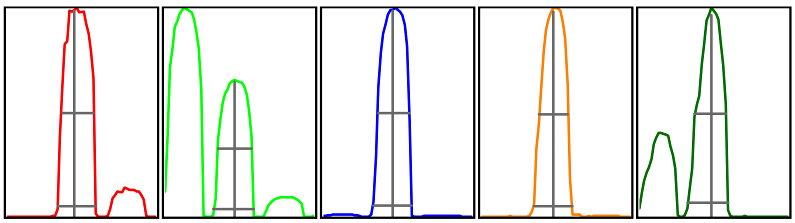
Batch Folder	D:\Data\050117.b
Report Comment	10ICM9 TT3
Instrument Name	G3281A JP12412084

[H2]

Mass	Count (Mean)	RSD% (Actual)	RSD% (Required)	RSD% (Flag)
9	11906	1.09		
24	192449	0.44		
59	651493	0.83		
115	1299845	0.46		
208	490418	0.50		

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
9	11948	11832	11724	11973	12053
24	193280	191292	193136	191882	192656
59	656003	645822	648155	658350	649135
115	1304198	1301160	1301819	1302681	1289369
208	488102	488553	490233	494345	490857

Integration Time [sec] = 0.1



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	Width-X% (Actual)	Width-X% (Required)	Width-X% (Flag)
9	1974	8.9000	8.9 - 9.1		0.745	0.900	
24	31048	23.9500	23.9 - 24.1		0.778	0.900	
59	110310	58.9500	58.9 - 59.1		0.758	0.900	
115	238212	115.0000	114.9 - 115.1		0.753	0.900	
208	90421	208.0000	207.9 - 208.1		0.782	0.900	

X% = 5 **Integration Time [sec] =** 0.1 **Acquisition Time [sec] =** 168.5 **Y Axis =** Linear

Tune Parameters

Plasma Paramters

ParameterName	Value	Unit	ParameterName	Value	Unit	ParameterName	Value	Unit
RF Power	1550	W	Carrier Gas	0.70	L/min	S/C Temp	2	℃
RF Matching	1.50	V	Option Gas	0.0	%	Gas Switch	Dilution Gas	
Smpl Depth	8.0	mm	Nebulizer Pump	0.10	rps	Makeup/Dilution Gas	0.35	L/min

Lenses Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit	ParameterName	Value	Unit
Extract 1	0.0	V	Omega Lens	12.6	V	Deflect	-3.0	V
Extract 2	-200.0	V	Cell Entrance	-40	V	Plate Bias	-60	V
Omega Bias	-95	V	Cell Exit	-60	V			

Cell Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit	ParameterName	Value	Unit
Use Gas	true		3rd Gas Flow	0	%	Energy Discrimination	2.0	V
He Flow	0.0	mL/min	OctP Bias	-18.0	V			
H2 Flow	3.5	mL/min	OctP RF	190	V			

FORM XV INORGANIC-1

INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: Pace Analytical - Minnesota SDG No. : 10385796 Contract: 2017-02 East Mission Flats Rep

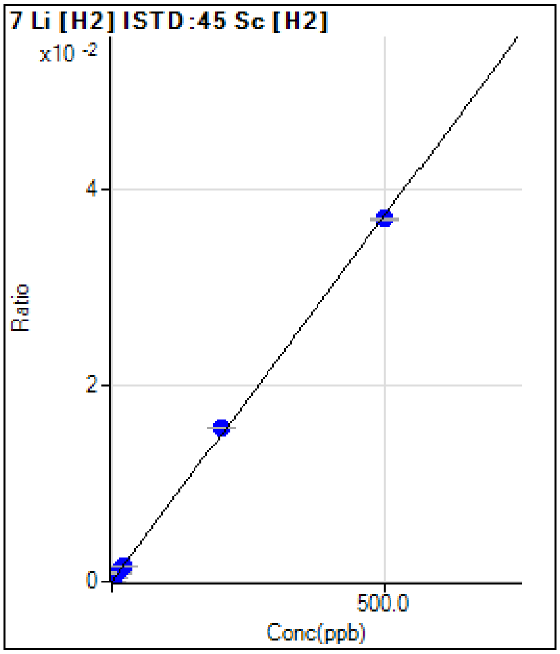
Instrument ID: 10ICM9 Start Date: 05/01/2017 06:49 End Date: 05/01/2017 10:42

Sample Name	Time	GE-72	Ge-72-IS1	In-115	Sc-45-IS	Sc-45-IS1	Tb-159	Th-232
17099625CAL0	06:49	100.0	100.0	100.0	100.0	100.0	100.0	100.0
17099626CAL1	06:52	99.7	100.6	100.5	100.7	101.2	100.5	99.9
17099627CAL2	06:54	100.9	94.4	100.5	100.3	93.2	100.6	101.7
17099628CAL3	06:57	100.6	100.1	101.6	101.4	101.0	100.9	101.4
17099629CAL4	07:00	98.5	100.0	99.7	99.9	100.4	101.0	101.1
17099630CAL5	07:03	99.1	98.5	96.4	102.2	99.9	100.4	100.8
17099631ICV	07:07	99.2	102.9	100.5	100.0	103.1	100.6	101.9
17099632ICB	07:12	96.9	101.5	97.7	96.2	99.8	98.0	98.1
17099633CRDL	07:14	99.8	102.1	99.7	99.5	101.8	99.8	99.2
17099634ICSA	07:17	98.2	100.9	97.3	99.7	101.2	99.9	99.0
17099635ICSAB	07:19	99.2	102.3	97.6	99.9	103.2	100.0	100.7
17099636CCV	07:22	100.6	104.1	102.1	100.9	103.3	101.9	102.7
17099637CCB	07:24	101.0	104.3	101.2	100.4	103.0	102.0	101.4
17099643CCV	09:09	97.4	111.0	96.0	91.1	103.4	99.1	99.8
17099644CCB	09:17	94.7	106.1	93.3	88.5	97.8	95.5	95.6
2566563	09:19	99.1	107.5	98.2	93.5	100.2	99.6	100.7
07-EMF-MW-A-	09:22	98.7	108.5	97.0	93.7	101.8	100.5	100.7
07-EMF-MW-B-	09:24	100.5	111.0	98.6	95.1	104.1	101.6	103.3
07-EMF-MW-B-	09:27	100.1	109.8	98.8	94.6	102.8	101.9	103.3
07-EMF-MW-C-	09:29	97.2	107.2	97.2	92.0	100.8	99.2	100.9
09-EMF-MW-C-DEEP-	09:32	98.6	106.9	97.2	92.8	100.7	99.1	100.5
2566565	09:34	99.3	107.2	96.8	93.9	100.1	99.8	101.6
2566566	09:37	99.2	108.0	96.5	93.7	101.9	100.0	101.9
2573224	09:39	100.2	108.6	99.6	94.3	101.0	100.5	102.2
2566564	09:42	100.5	109.7	99.0	95.9	102.9	101.6	102.8
17099645CCV	09:44	99.2	107.2	98.4	94.1	101.0	101.5	102.2
17099646CCB	09:49	96.4	99.9	94.5	90.7	92.9	96.4	98.0
07-EMF-MW-C-	09:52	97.6	106.5	97.5	93.2	99.7	98.6	99.4
10385828001	10:07	97.2	106.4	94.8	92.0	98.9	98.4	99.5
2566567	10:09	95.6	88.4	93.3	90.0	81.3	98.4	99.9
17099647CCV	10:17	95.0	106.2	94.1	88.6	97.9	98.3	101.1
17099648CCB	10:22	93.6	102.5	92.9	87.4	92.5	95.9	99.0
07-EMF-MW-A-	10:29	96.2	108.9	95.0	88.9	100.5	97.9	101.4
17099715CCV	10:37	94.6	105.9	93.9	88.7	97.0	97.9	101.0
17099716CCB	10:42	93.9	106.5	92.5	87.3	96.5	96.3	98.3

Calibration for 215_CCB.d

Batch Folder:	D:\Data\050117.b\
Analysis File:	050117.batch.bin
DA Date-Time:	5/2/2017 06:03:33
Calibration Title:	
Calibration Method:	External Calibration
VIS Interpolation Fit:	

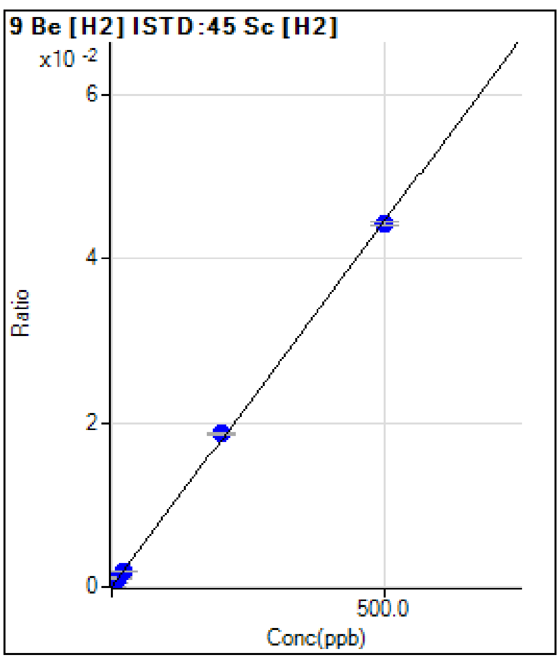
Level	Standard Data File	Sample Name	Acq. Date-Time
1	005CALB.d	CAL 0	5/1/2017 06:49:26
2	006CALS.d	CAL 1	5/1/2017 06:52:12
3	007CALS.d	CAL 2	5/1/2017 06:54:53
4	008CALS.d	CAL 3	5/1/2017 06:57:40
5	009CALS.d	CAL 4	5/1/2017 07:00:21
6	010CALS.d	CAL 5	5/1/2017 07:03:09
7			
8			
9			
10			
11			
12			
13			
14			
15			



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	209.00	0.0000	P	9.7
2	☐	5.000	5.429	4899.58	0.0004	P	1.1
3	☐	10.000	11.969	9570.21	0.0009	P	15.8
4	☐	20.000	21.494	18724.61	0.0016	P	1.6
5	☐	200.000	210.323	180307.19	0.0157	P	0.8
6	☐	500.000	495.767	422725.58	0.0370	P	0.4
7	☐						
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						

y = 7.4670E-005 * x + 1.8292E-005
R = 0.9997
DL = 0.07101
BEC = 0.245

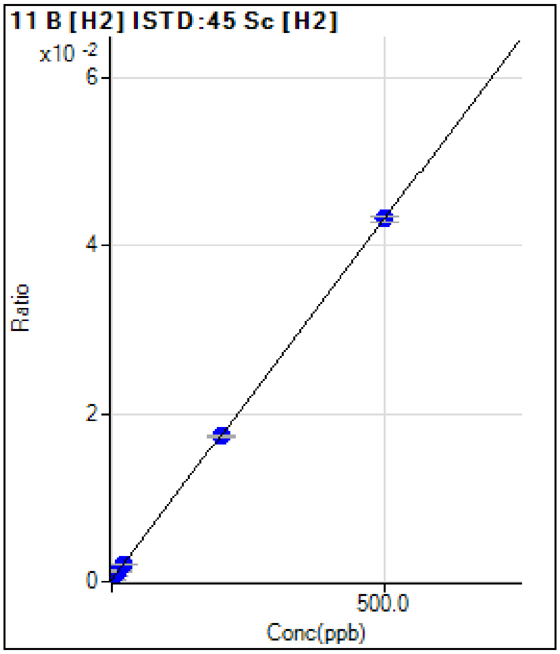
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	9.33	0.0000	P	16.2
2	☐	5.000	5.339	5509.07	0.0005	P	0.8
3	☐	10.000	11.657	10895.87	0.0010	P	16.6
4	☐	20.000	21.282	21877.54	0.0019	P	1.7
5	☐	200.000	209.569	214087.44	0.0187	P	0.9
6	☐	500.000	496.085	504377.33	0.0442	P	0.9
7	☐						
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						

y = 8.9079E-005 * x + 8.1673E-007
R = 0.9998
DL = 0.004456
BEC = 0.009169

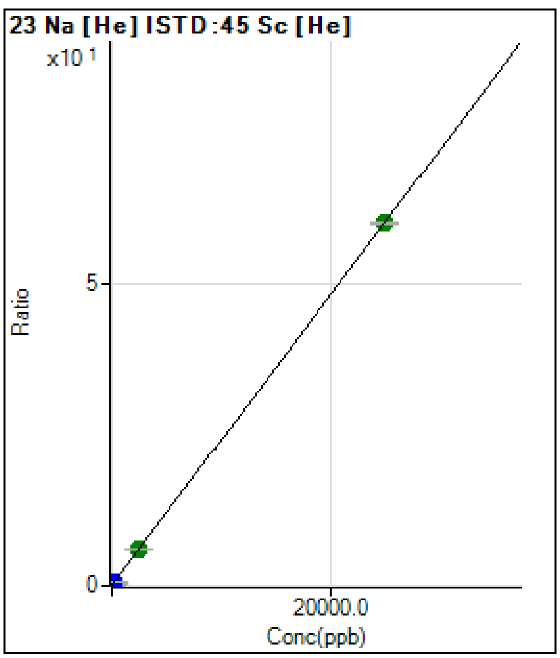
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		0.000	0.000	2763.58	0.0002	P	3.4
2		5.000	5.264	8028.38	0.0007	P	3.2
3		10.000	11.317	12767.60	0.0012	P	13.6
4		20.000	20.716	23326.93	0.0020	P	1.9
5		200.000	199.253	199121.69	0.0174	P	1.0
6		500.000	500.241	493377.23	0.0432	P	1.7
7							
8							
9							
10							
11							
12							
13							
14							
15							

y = 8.5932E-005 * x + 2.4189E-004
R = 1.0000
DL = 0.2903
BEC = 2.815

Weight: <None>
Min Conc: <None>

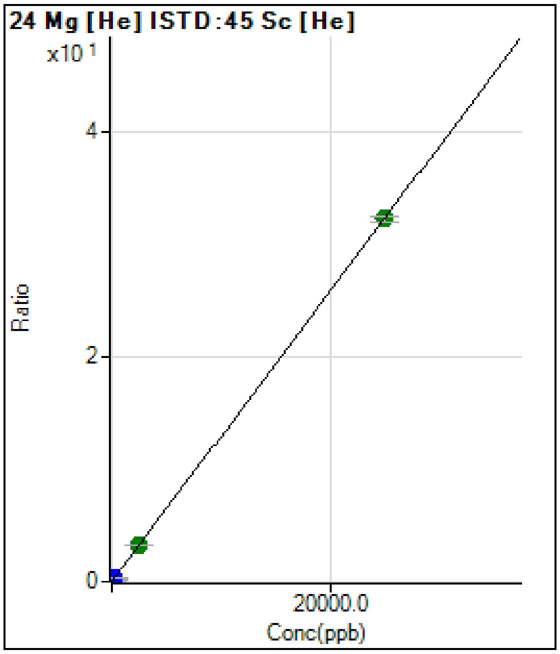


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		0.000	0.000	54412.61	0.0569	P	1.3
2		62.500	63.543	201887.08	0.2096	P	0.3
3		125.000	125.001	342815.96	0.3573	P	2.8
4		250.000	250.698	639465.55	0.6593	P	0.9
5		2500.000	2456.216	5696254.50	5.9596	A	1.8
6		25000.000	25004.36	58847630.79	60.1473	A	0.7
7		100000.00					
8							
9							
10							
11							
12							
13							
14							
15							

y = 0.0024 * x + 0.0569
R = 1.0000
DL = 0.9445
BEC = 23.66

Weight: <None>
Min Conc: <None>

Calibration for 215_CCB.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	878.36	0.0009	P	3.0
2	☐	62.500	64.836	81516.33	0.0846	P	1.9
3	☐	125.000	127.080	158310.99	0.1650	P	2.4
4	☐	250.000	255.510	320835.70	0.3308	P	0.3
5	☐	2500.000	2477.131	3057680.79	3.1990	A	1.8
6	☐	25000.000	25002.21	31581010.36	32.2803	A	1.6
7	☐	100000.00					
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						

$y = 0.0013 * x + 9.1805E-004$

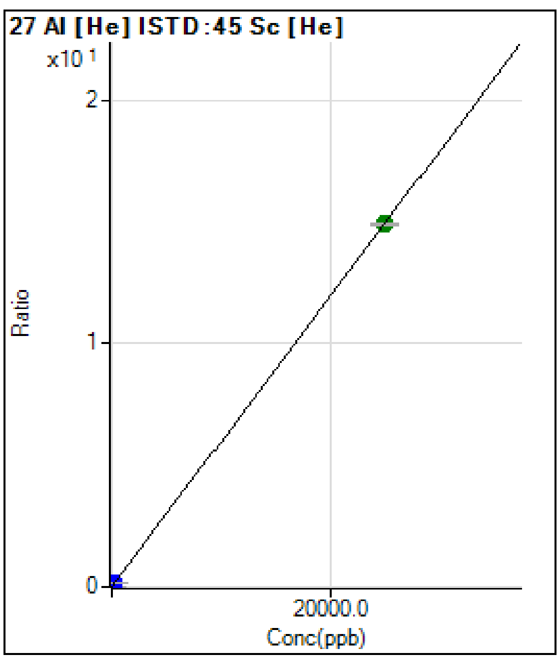
R = 1.0000

DL = 0.063

BEC = 0.7111

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☑	0.000		4513.51	0.0047	P	2.0
2	☐	5.000	12.724	7297.66	0.0076	P	2.2
3	☐	10.000	18.238	10419.02	0.0109	P	3.5
4	☐	20.000	29.245	16888.35	0.0174	P	1.3
5	☐	200.000	207.647	118182.81	0.1236	P	0.9
6	☐	25000.000	24999.92	14564473.33	14.8858	A	0.3
7	☐						
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						

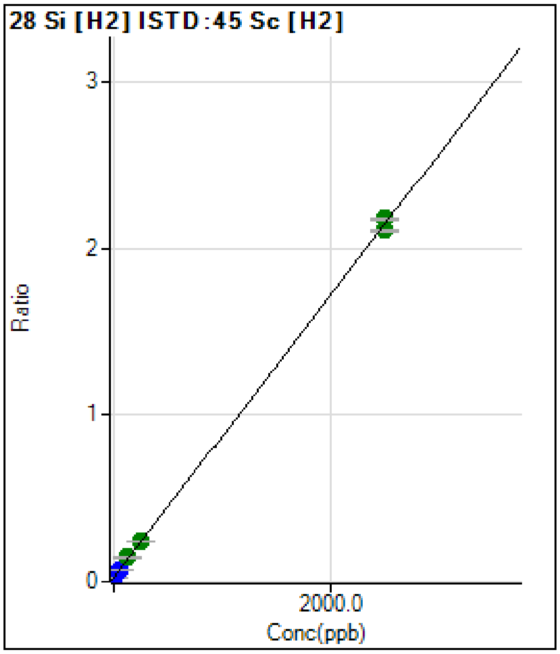
$y = 5.954349E-004 * x + 0.000000E+000$

R = 1.0000

BEC = 0

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	202325.85	0.0177	P	1.7
2	☐	62.500	66.836	861896.33	0.0745	P	0.9
3	☐	125.000	148.960	1516055.96	0.1443	A	14.8
4	☐	250.000	267.159	2824685.92	0.2448	A	0.9
5	☐	2500.000	2539.258	24959816.00	2.1765	A	0.6
6	☐	2500.000	2457.719	24050494.67	2.1072	A	0.3
7	☐						
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						

y = 8.5016E-004 * x + 0.0177

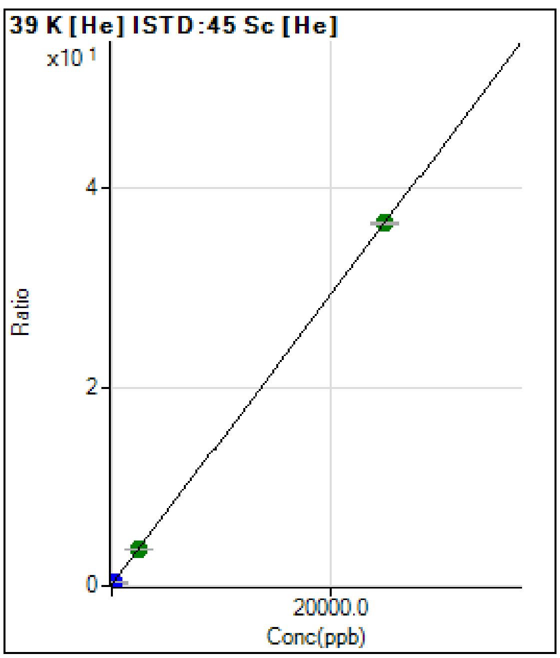
R = 0.9998

DL = 1.054

BEC = 20.83

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	104252.93	0.1090	P	2.5
2	☐	62.500	63.752	194369.94	0.2018	P	1.1
3	☐	125.000	124.429	278398.05	0.2901	P	1.7
4	☐	250.000	250.222	458979.16	0.4733	P	1.3
5	☐	2500.000	2450.587	3514413.91	3.6767	A	1.1
6	☐	25000.000	25004.93	35725594.47	36.5134	A	0.5
7	☐	100000.00					
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						

y = 0.0015 * x + 0.1090

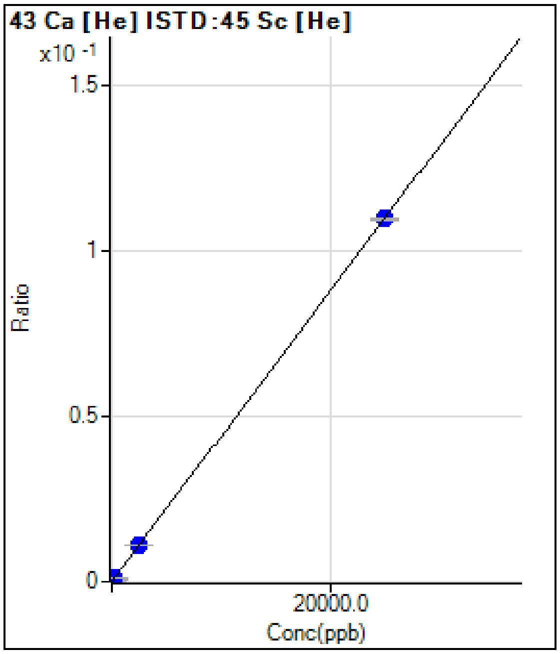
R = 1.0000

DL = 5.603

BEC = 74.84

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		0.000	0.000	26.35	0.0000	P	22.8
2		62.500	61.730	287.26	0.0003	P	6.9
3		125.000	129.624	571.73	0.0006	P	7.8
4		250.000	254.477	1109.17	0.0011	P	3.1
5		2500.000	2469.099	10376.35	0.0109	P	0.8
6		25000.000	25003.02	107305.90	0.1097	P	0.3
7		100000.00					
8							
9							
10							
11							
12							
13							
14							
15							

y = 4.3853E-006 * x + 2.7499E-005

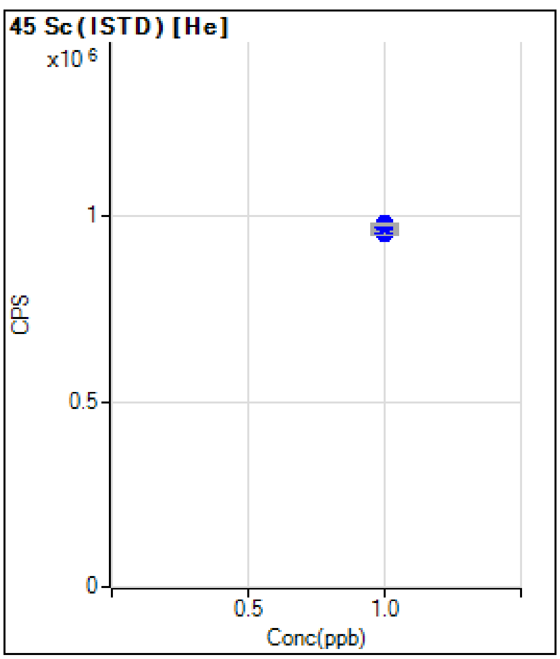
R = 1.0000

DL = 4.298

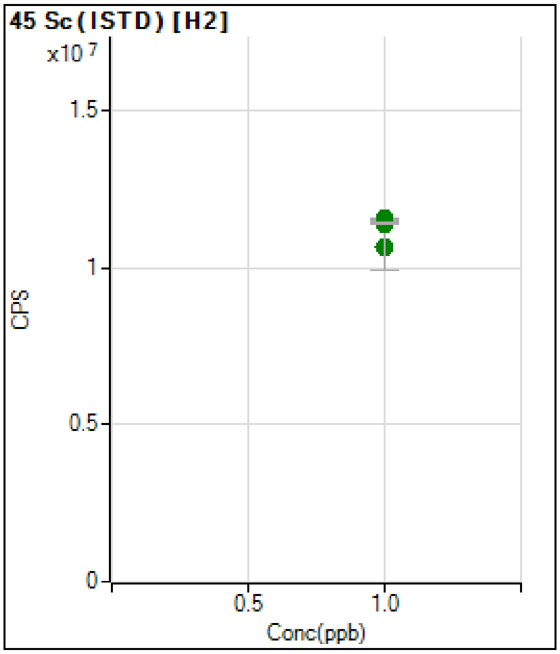
BEC = 6.271

Weight: <None>

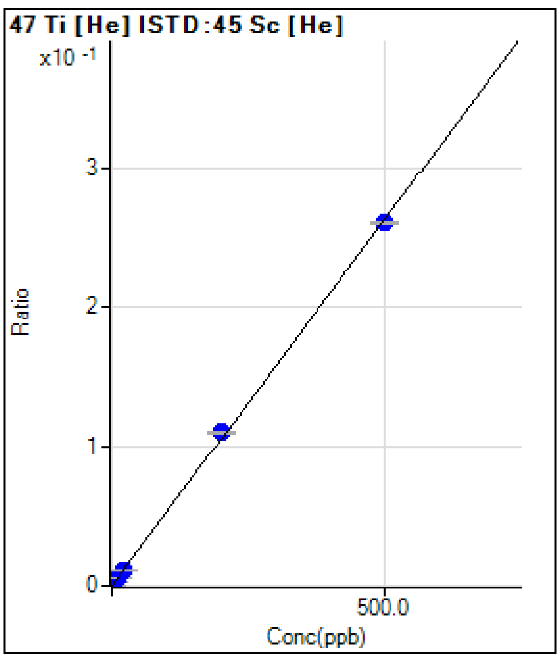
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		1.000		956956.02		P	1.0
2		1.000		963372.69		P	1.0
3		1.000		959750.44		P	1.4
4		1.000		969900.83		P	0.9
5		1.000		955915.54		P	1.0
6		1.000		978421.02		P	0.8
7		1.000					
8		1.000					
9		1.000					
10		1.000					
11		1.000					
12		1.000					
13		1.000					
14		1.000					
15		1.000					



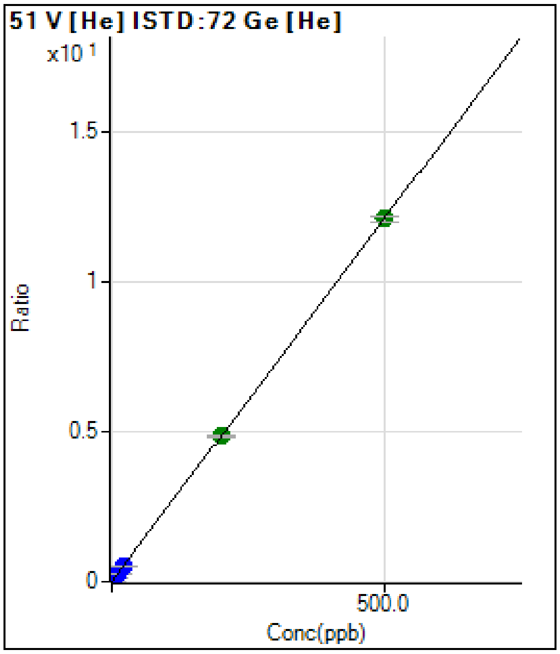
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		11425398.00		A	0.4
2	☐	1.000		11564323.33		A	0.3
3	☐	1.000		10645868.00		A	13.6
4	☐	1.000		11536508.67		A	1.1
5	☐	1.000		11467961.00		A	0.6
6	☐	1.000		11413684.67		A	0.4
7	☐	1.000					
8	☐	1.000					
9	☐	1.000					
10	☐	1.000					
11	☐	1.000					
12	☐	1.000					
13	☐	1.000					
14	☐	1.000					
15	☐	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	4.00	0.0000	P	100.
2	☐	5.000	5.429	2753.54	0.0029	P	1.3
3	☐	10.000	10.857	5480.11	0.0057	P	3.6
4	☐	20.000	21.163	10793.62	0.0111	P	2.2
5	☐	200.000	209.353	105200.90	0.1101	P	1.2
6	☐	500.000	496.191	255219.21	0.2609	P	0.4
7	☐						
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						

y = 5.2570E-004 * x + 4.1746E-006
R = 0.9998
DL = 0.02394
BEC = 0.007941

Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		0.000	0.000	4138.45	0.0063	P	5.4
2		5.000	5.151	85790.51	0.1309	P	0.5
3		10.000	9.986	164503.94	0.2478	P	0.1
4		20.000	19.971	323790.03	0.4894	P	1.6
5		200.000	200.371	3142272.17	4.8530	A	0.8
6		500.000	499.851	7881599.33	12.0971	A	1.7
7							
8							
9							
10							
11							
12							
13							
14							
15							

y = 0.0242 * x + 0.0063

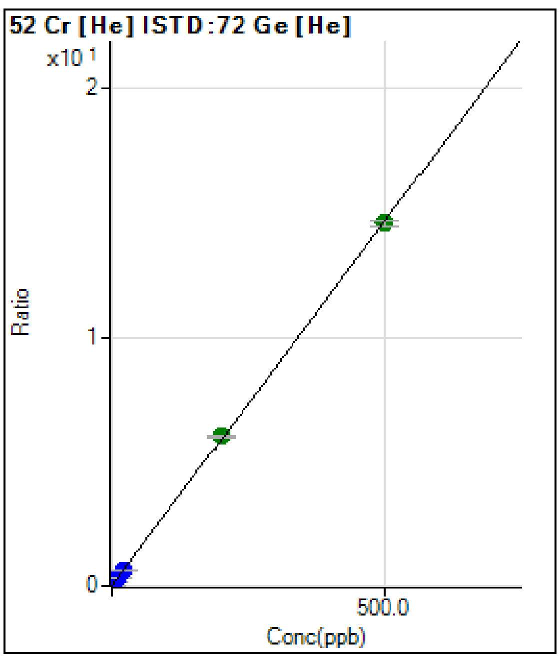
R = 1.0000

DL = 0.04252

BEC = 0.2602

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		0.000	0.000	1507.40	0.0023	P	3.6
2		5.000	5.223	101674.41	0.1551	P	1.4
3		10.000	10.250	200598.47	0.3022	P	0.4
4		20.000	20.565	399679.12	0.6041	P	1.6
5		200.000	204.848	3882589.33	5.9965	A	1.0
6		500.000	498.031	9496765.67	14.5755	A	1.6
7							
8							
9							
10							
11							
12							
13							
14							
15							

y = 0.0293 * x + 0.0023

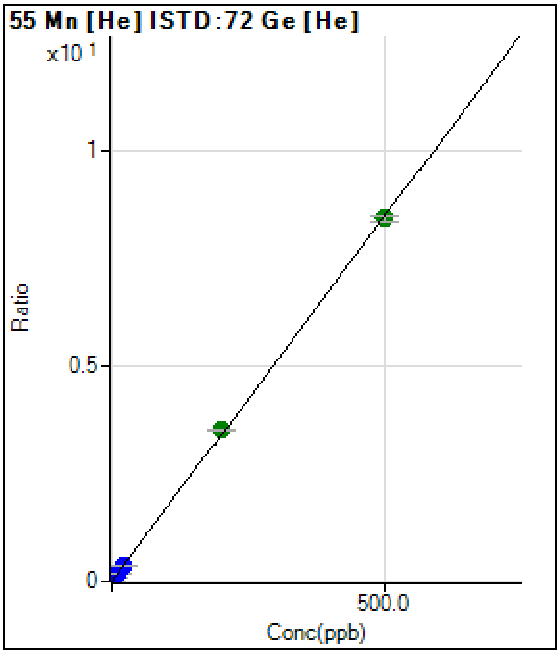
R = 0.9999

DL = 0.008472

BEC = 0.07833

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	154.67	0.0002	P	14.2
2	☐	5.000	5.305	59118.78	0.0902	P	0.5
3	☐	10.000	10.369	116857.12	0.1761	P	0.4
4	☐	20.000	20.932	234991.73	0.3552	P	2.2
5	☐	200.000	207.034	2273105.33	3.5108	A	1.6
6	☐	500.000	497.139	5492337.17	8.4298	A	1.6
7	☐						
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						

y = 0.0170 * x + 2.3520E-004

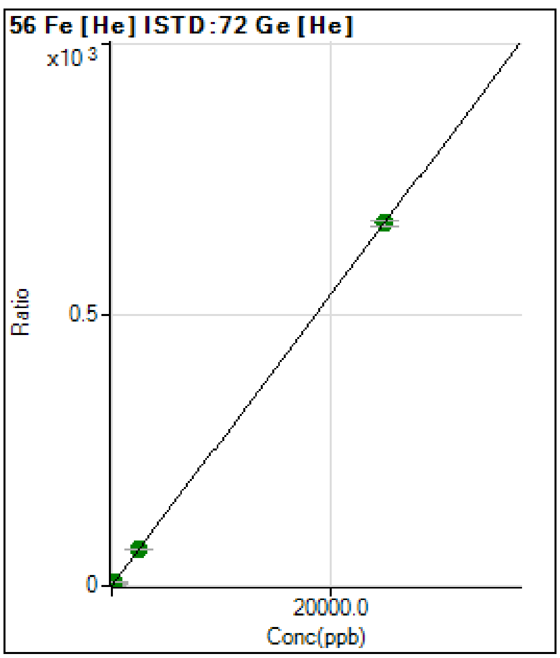
R = 0.9999

DL = 0.005899

BEC = 0.01387

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	15243.29	0.0232	P	1.3
2	☐	62.500	62.236	1106499.54	1.6882	P	1.3
3	☐	125.000	122.435	2189586.17	3.2988	A	0.3
4	☐	250.000	245.690	4364497.00	6.5963	A	1.7
5	☐	2500.000	2472.934	42852757.33	66.1836	A	0.9
6	☐	25000.000	25002.76	435841674.6	668.942	A	1.5
7	☐	100000.00					
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						

y = 0.0268 * x + 0.0232

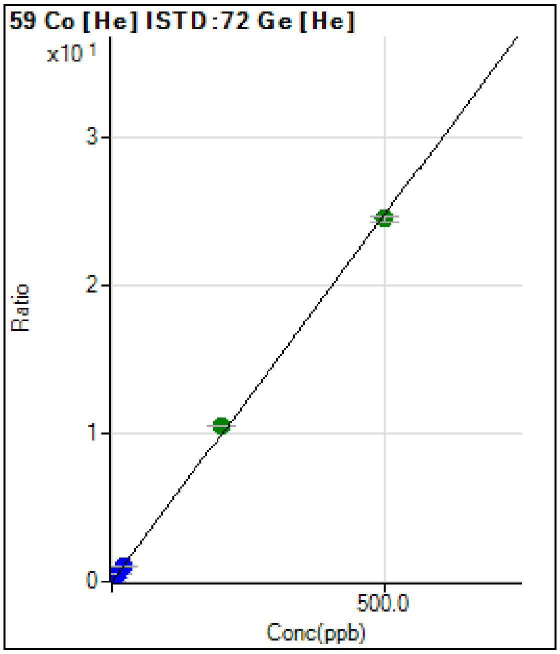
R = 1.0000

DL = 0.03418

BEC = 0.8665

Weight: <None>

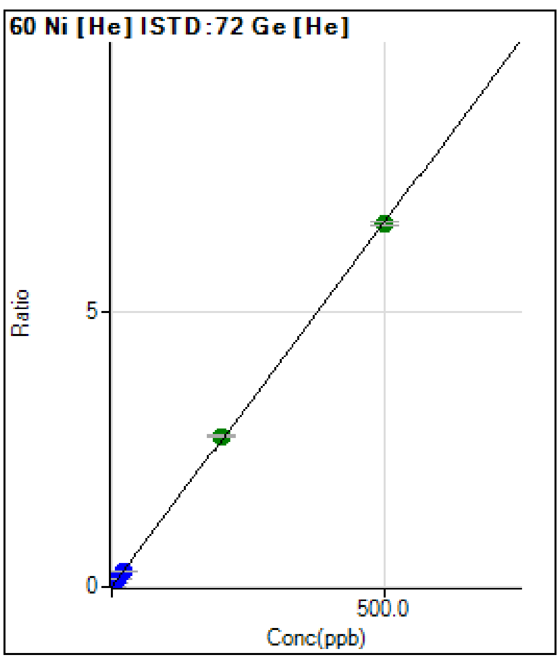
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	60.67	0.0001	P	24.7
2	☐	5.000	5.400	175014.72	0.2670	P	1.4
3	☐	10.000	10.493	344352.30	0.5188	P	0.6
4	☐	20.000	21.251	695140.00	1.0506	P	1.5
5	☐	200.000	212.555	6803488.50	10.5075	A	0.7
6	☐	500.000	494.914	15940655.67	24.4656	A	1.5
7	☐						
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						

y = 0.0494 * x + 9.2224E-005
R = 0.9996
DL = 0.001382
BEC = 0.001866

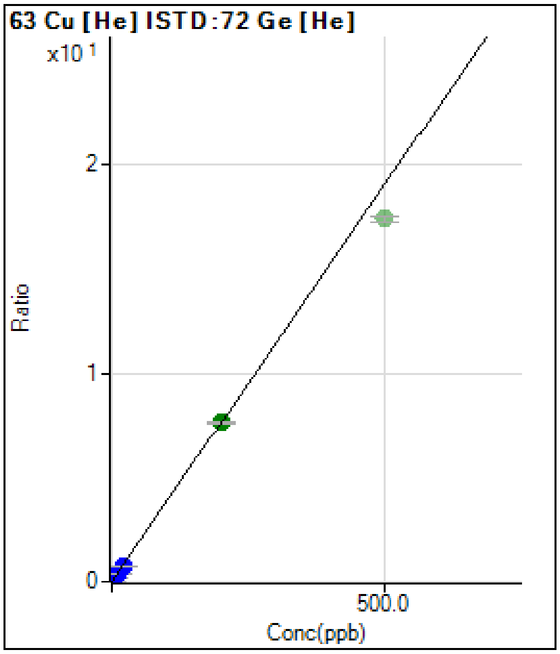
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	266.67	0.0004	P	9.8
2	☐	5.000	5.286	46334.43	0.0707	P	1.6
3	☐	10.000	10.325	91401.14	0.1377	P	1.0
4	☐	20.000	20.873	183925.76	0.2780	P	0.6
5	☐	200.000	206.047	1774254.92	2.7402	A	1.0
6	☐	500.000	497.537	4310841.17	6.6162	A	1.0
7	☐						
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						

y = 0.0133 * x + 4.0562E-004
R = 0.9999
DL = 0.008978
BEC = 0.0305

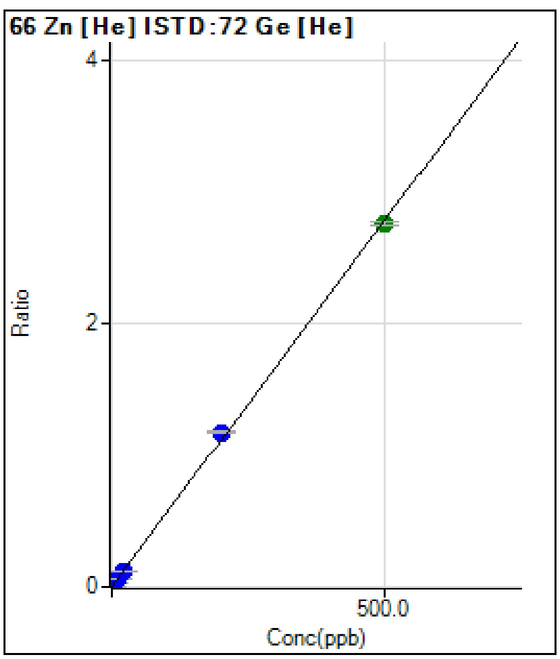
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		0.000	0.000	2536.84	0.0039	P	5.9
2		5.000	5.155	130978.56	0.1998	P	0.8
3		10.000	9.992	254683.66	0.3837	P	0.5
4		20.000	20.166	509785.62	0.7705	P	1.6
5		200.000	199.980	4924941.67	7.6062	A	0.6
6	✓	500.000		11332393.67	17.3939	A	1.9
7							
8							
9							
10							
11							
12							
13							
14							
15							

y = 0.0380 * x + 0.0039
R = 1.0000
DL = 0.01793
BEC = 0.1015

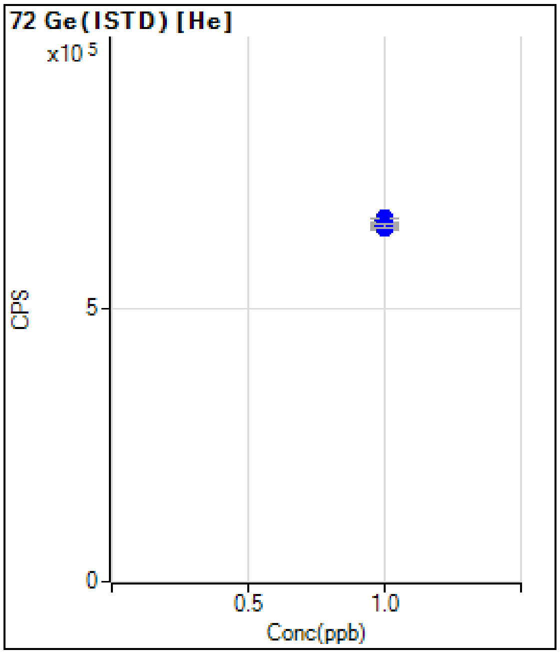
Weight: <None>
Min Conc: <None>



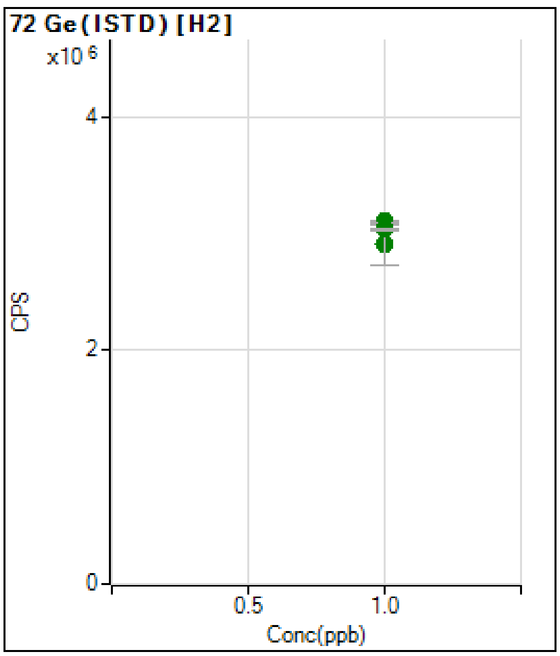
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		0.000	0.000	586.68	0.0009	P	9.4
2		5.000	5.411	20296.55	0.0310	P	0.9
3		10.000	10.535	39454.34	0.0594	P	0.5
4		20.000	21.241	78708.76	0.1189	P	0.7
5		200.000	210.953	759721.12	1.1733	P	0.8
6		500.000	495.555	1795091.71	2.7551	A	1.1
7							
8							
9							
10							
11							
12							
13							
14							
15							

y = 0.0056 * x + 8.9218E-004
R = 0.9997
DL = 0.04515
BEC = 0.1605

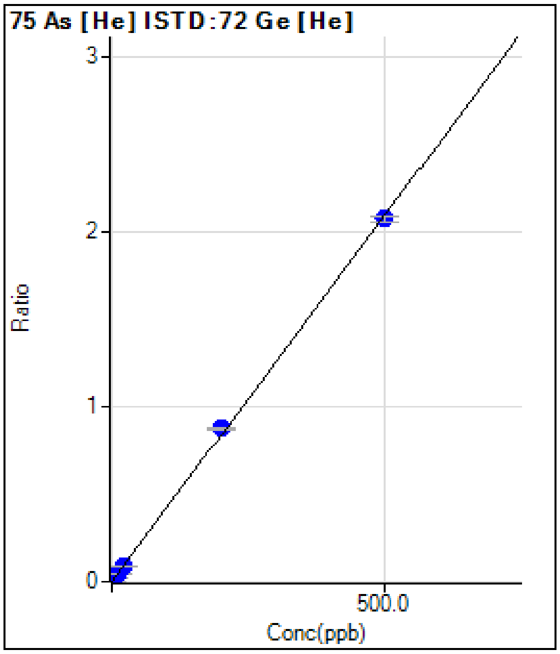
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		1.000		657567.02		P	0.4
2		1.000		655476.65		P	1.2
3		1.000		663755.87		P	0.2
4		1.000		661753.61		P	1.3
5		1.000		647511.23		P	0.7
6		1.000		651603.08		P	1.1
7		1.000					
8		1.000					
9		1.000					
10		1.000					
11		1.000					
12		1.000					
13		1.000					
14		1.000					
15		1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		1.000		3083250.58		A	0.3
2		1.000		3100355.08		A	0.2
3		1.000		2912038.00		A	12.8
4		1.000		3086823.33		A	0.7
5		1.000		3084441.17		A	0.6
6		1.000		3035973.33		A	0.3
7		1.000					
8		1.000					
9		1.000					
10		1.000					
11		1.000					
12		1.000					
13		1.000					
14		1.000					
15		1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		0.000	0.000	136.33	0.0002	P	4.8
2		5.000	5.415	14953.58	0.0228	P	2.1
3		10.000	10.484	29192.84	0.0440	P	0.4
4		20.000	21.208	58727.57	0.0888	P	1.4
5		200.000	209.554	566634.52	0.8751	P	1.3
6		500.000	496.116	1349734.41	2.0716	P	1.5
7							
8							
9							
10							
11							
12							
13							
14							
15							

y = 0.0042 * x + 2.0734E-004

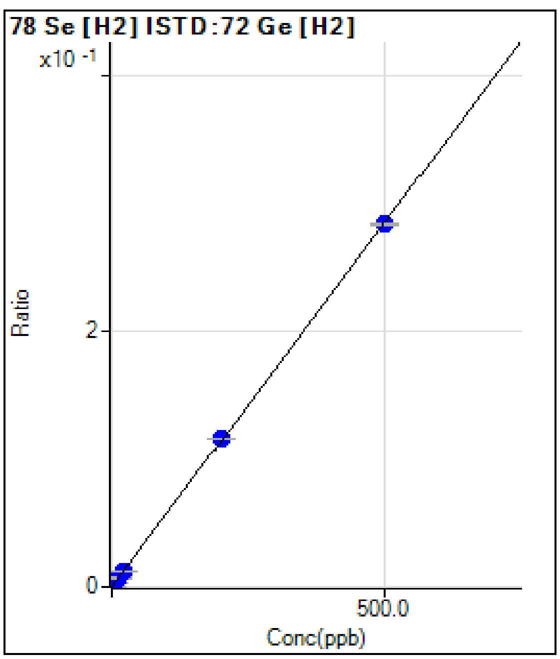
R = 0.9998

DL = 0.007164

BEC = 0.04966

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		0.000	0.000	52.33	0.0000	P	32.7
2		5.000	5.103	9043.12	0.0029	P	0.9
3		10.000	11.154	18303.99	0.0064	P	13.0
4		20.000	20.691	36348.64	0.0118	P	0.3
5		200.000	203.532	356806.52	0.1157	P	0.7
6		500.000	498.536	860182.02	0.2833	P	0.4
7							
8							
9							
10							
11							
12							
13							
14							
15							

y = 5.6829E-004 * x + 1.6986E-005

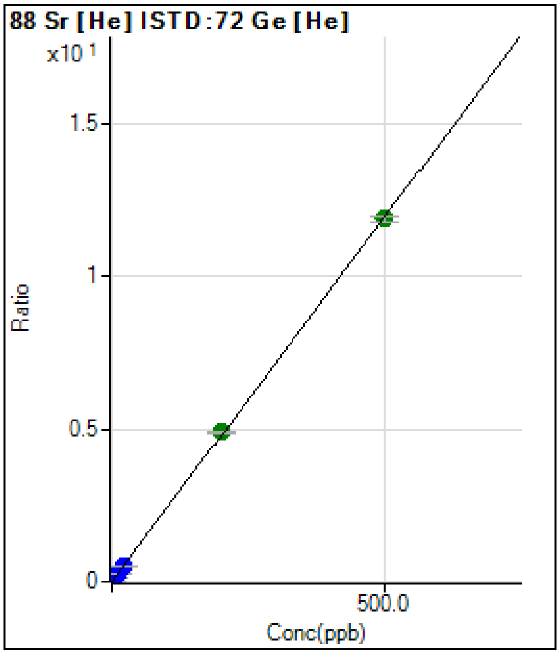
R = 1.0000

DL = 0.02932

BEC = 0.02989

Weight: <None>

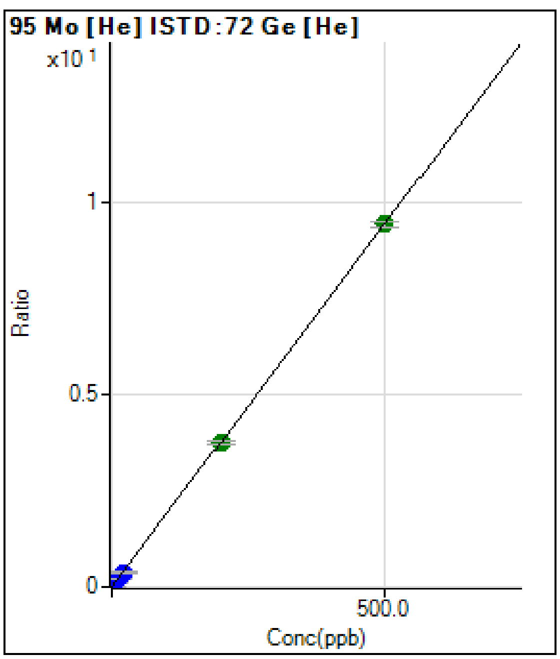
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	153.33	0.0002	P	17.8
2	☐	5.000	5.257	82334.52	0.1256	P	1.0
3	☐	10.000	10.145	160754.66	0.2422	P	1.0
4	☐	20.000	20.705	326891.29	0.4941	P	2.0
5	☐	200.000	204.921	3164630.58	4.8877	A	1.2
6	☐	500.000	497.998	7738533.84	11.8776	A	1.8
7	☐						
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						

y = 0.0239 * x + 2.3316E-004
R = 0.9999
DL = 0.005233
BEC = 0.009776

Weight: <None>
Min Conc: <None>

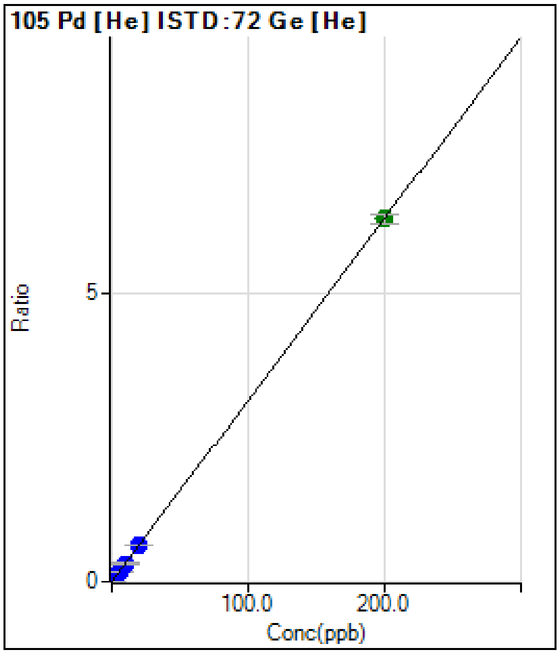


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	120.00	0.0002	P	27.1
2	☐	5.000	5.071	62821.77	0.0959	P	2.0
3	☐	10.000	9.866	123657.47	0.1863	P	1.4
4	☐	20.000	19.840	247744.82	0.3745	P	3.0
5	☐	200.000	199.003	2430813.25	3.7544	A	1.9
6	☐	500.000	500.407	6150697.41	9.4404	A	1.7
7	☐						
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						

y = 0.0189 * x + 1.8242E-004
R = 1.0000
DL = 0.007872
BEC = 0.00967

Weight: <None>
Min Conc: <None>

Calibration for 215_CCB.d



y = 0.0315 * x + 6.5812E-005

R = 1.0000

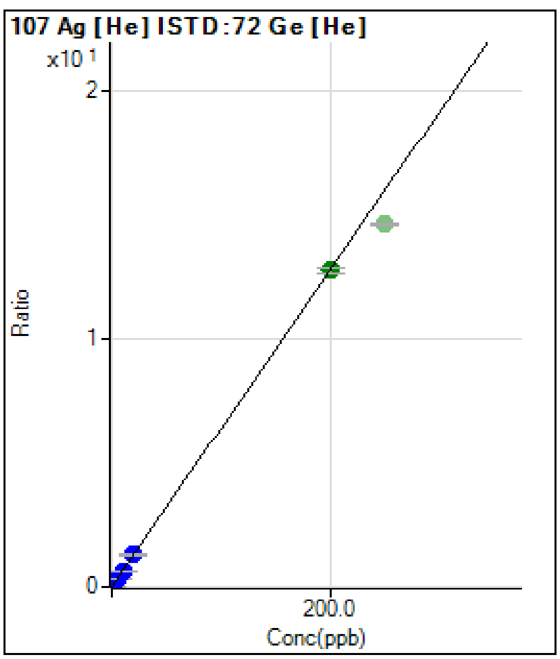
DL = 0.004568

BEC = 0.002086

Weight: <None>

Min Conc: <None>

	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	43.33	0.0001	P	73.0
2	☐	5.000	5.134	106192.33	0.1620	P	1.6
3	☐	10.000	10.058	210648.46	0.3174	P	1.6
4	☐	20.000	20.185	421368.12	0.6368	P	1.5
5	☐	200.000	199.975	4084316.29	6.3084	A	2.5
6	☐			735.02	0.0011	P	6.4
7	☐						
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						



y = 0.0637 * x + 4.6870E-004

R = 1.0000

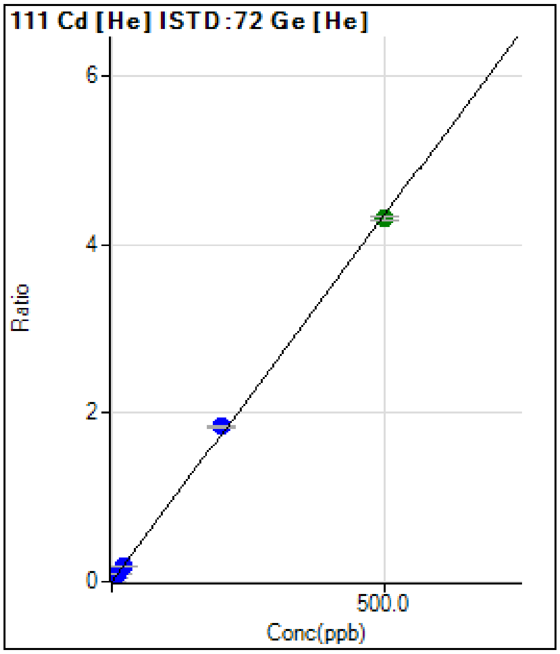
DL = 0.004039

BEC = 0.007356

Weight: <None>

Min Conc: <None>

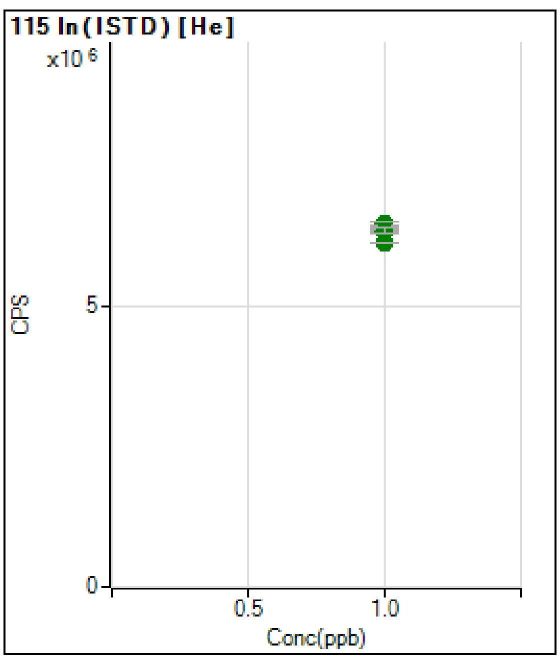
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	308.34	0.0005	P	18.3
2	☐	5.000	5.043	210931.01	0.3218	P	0.2
3	☐	10.000	9.802	414877.83	0.6251	P	1.8
4	☐	20.000	20.091	847368.58	1.2807	P	1.7
5	☐	200.000	200.000	8251570.50	12.7446	A	1.9
6	☑	250.000		9519579.02	14.6099	A	0.7
7	☐						
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						



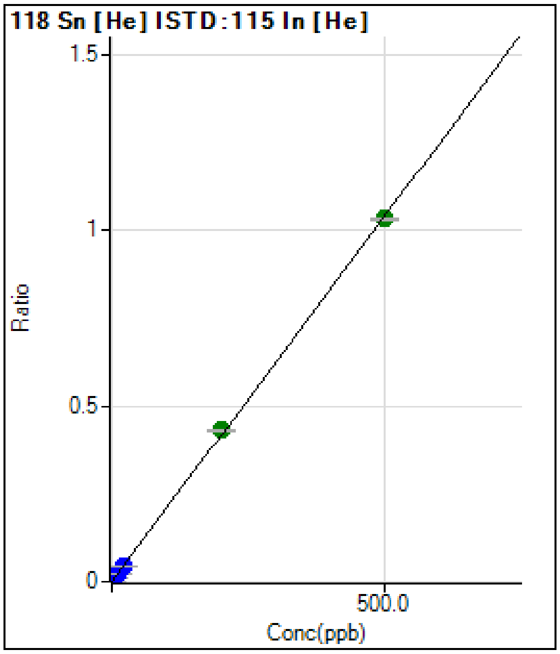
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	23.32	0.0000	P	86.5
2	☐	5.000	5.415	30911.12	0.0472	P	1.5
3	☐	10.000	10.494	60638.89	0.0914	P	0.7
4	☐	20.000	21.227	122247.77	0.1848	P	1.8
5	☐	200.000	212.168	1195463.02	1.8463	P	1.1
6	☐	500.000	495.070	2807052.80	4.3081	A	1.0
7	☐						
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						

y = 0.0087 * x + 3.5475E-005
R = 0.9996
DL = 0.01058
BEC = 0.004077

Weight: <None>
Min Conc: <None>



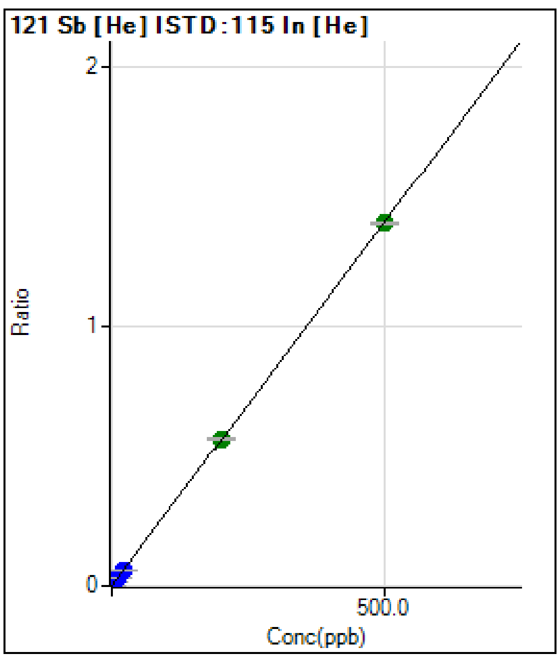
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	1.000		6360862.72		A	0.8
2	☐	1.000		6391063.01		A	0.8
3	☐	1.000		6394815.94		A	0.4
4	☐	1.000		6460955.76		A	1.0
5	☐	1.000		6344053.50		A	1.6
6	☐	1.000		6134019.24		A	0.3
7	☐	1.000					
8	☐	1.000					
9	☐	1.000					
10	☐	1.000					
11	☐	1.000					
12	☐	1.000					
13	☐	1.000					
14	☐	1.000					
15	☐	1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	3703.75	0.0006	P	6.6
2	☐	5.000	5.255	73477.70	0.0115	P	1.3
3	☐	10.000	10.590	144388.11	0.0226	P	1.4
4	☐	20.000	20.837	283384.08	0.0439	P	1.6
5	☐	200.000	207.352	2735751.62	0.4313	A	1.6
6	☐	500.000	497.012	6336291.57	1.0330	A	0.5
7	☐						
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						

y = 0.0021 * x + 5.8249E-004
R = 0.9999
DL = 0.05556
BEC = 0.2804

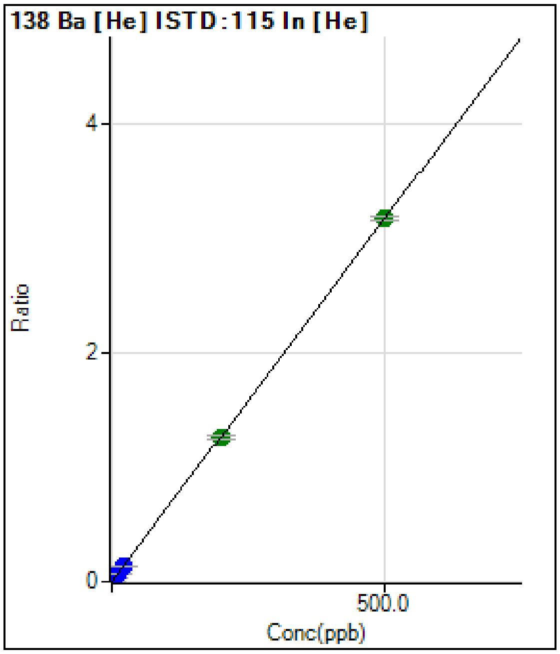
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	501.68	0.0001	P	6.4
2	☐	5.000	5.205	93595.93	0.0146	P	1.7
3	☐	10.000	10.297	184780.47	0.0289	P	1.9
4	☐	20.000	20.469	370618.17	0.0574	P	1.0
5	☐	200.000	202.092	3587793.59	0.5657	A	2.1
6	☐	500.000	499.137	8569076.96	1.3970	A	0.6
7	☐						
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						

y = 0.0028 * x + 7.8896E-005
R = 1.0000
DL = 0.005416
BEC = 0.02819

Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		0.000	0.000	120.00	0.0000	P	22.4
2		5.000	5.034	203765.00	0.0319	P	0.6
3		10.000	10.048	406823.90	0.0636	P	0.2
4		20.000	20.068	820763.35	0.1270	P	0.8
5		200.000	199.127	7994293.21	1.2604	A	1.9
6		500.000	500.345	19425668.88	3.1669	A	1.0
7							
8							
9							
10							
11							
12							
13							
14							
15							

y = 0.0063 * x + 1.8845E-005

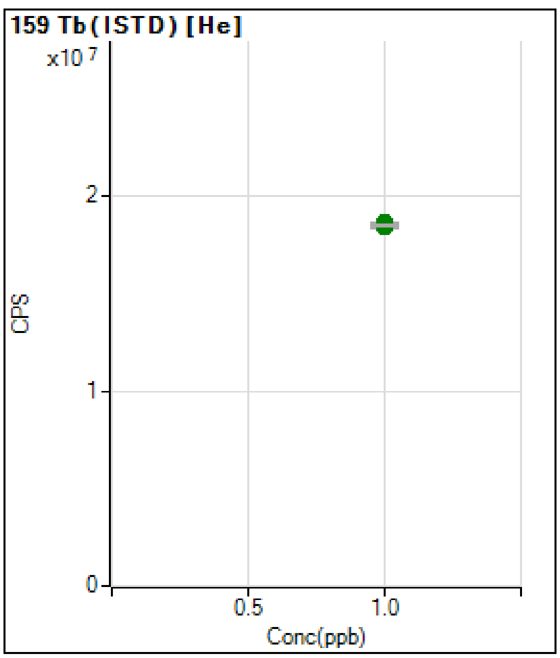
R = 1.0000

DL = 0.002003

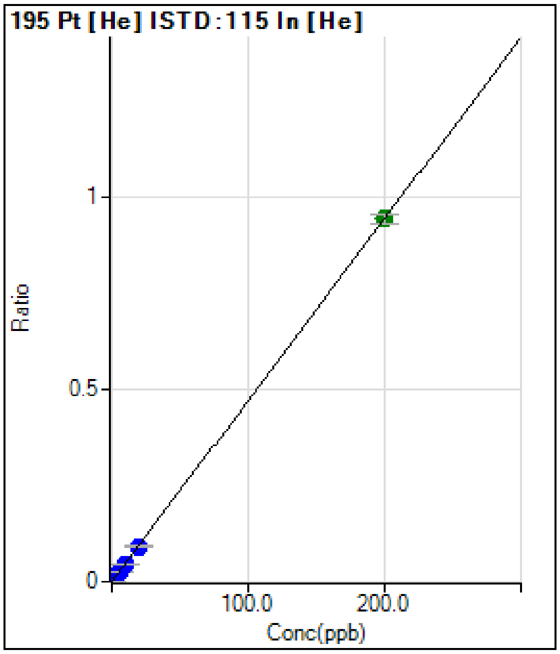
BEC = 0.002977

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		1.000		18425117.23		A	0.5
2		1.000		18519021.39		A	0.6
3		1.000		18529833.06		A	0.4
4		1.000		18584078.05		A	0.9
5		1.000		18600810.14		A	0.8
6		1.000		18498229.31		A	0.5
7		1.000					
8		1.000					
9		1.000					
10		1.000					
11		1.000					
12		1.000					
13		1.000					
14		1.000					
15		1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	25.00	0.0000	P	69.9
2	☐	5.000	4.911	147730.22	0.0231	P	1.3
3	☐	10.000	9.824	295680.24	0.0462	P	1.6
4	☐	20.000	19.611	596291.24	0.0923	P	1.6
5	☐	200.000	200.050	5971697.83	0.9415	A	2.4
6	☐			511.68	0.0001	P	4.7
7	☐						
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						

y = 0.0047 * x + 3.9406E-006

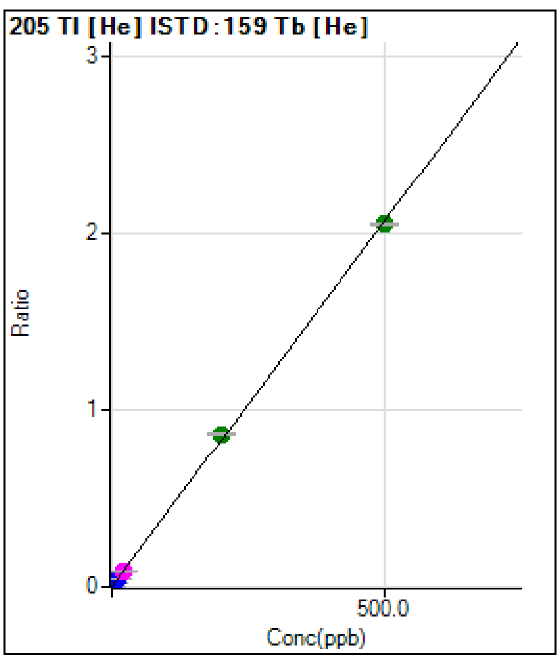
R = 1.0000

DL = 0.001755

BEC = 0.0008373

Weight: <None>

Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	286.67	0.0000	P	13.7
2	☐	5.000	5.292	405675.09	0.0219	P	0.8
3	☐	10.000	10.521	806680.69	0.0435	P	2.3
4	☐	20.000	21.277	1635830.76	0.0880	M	0.7
5	☐	200.000	208.926	16074296.84	0.8642	A	1.5
6	☐	500.000	496.365	37980824.43	2.0532	A	0.2
7	☐						
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						

y = 0.0041 * x + 1.5564E-005

R = 0.9998

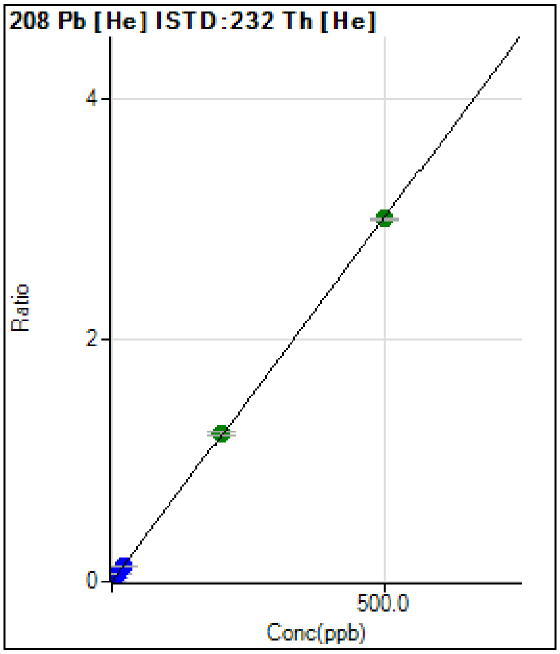
DL = 0.001544

BEC = 0.003763

Weight: <None>

Min Conc: <None>

Calibration for 215_CCB.d



y = 0.0060 * x + 6.9406E-005

R = 1.0000

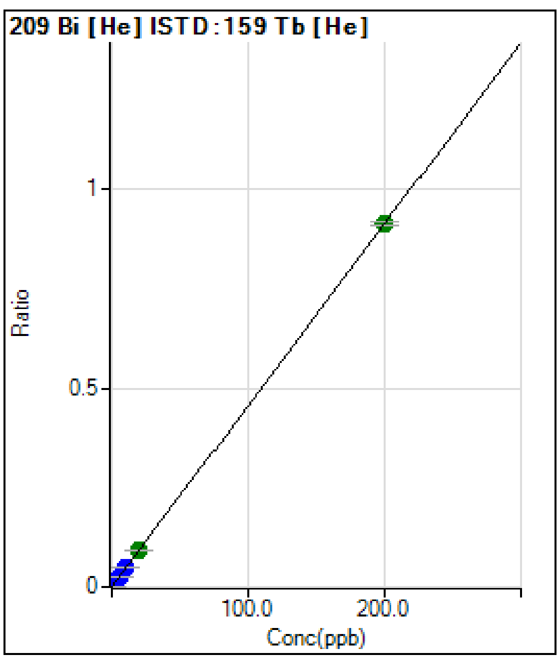
DL = 0.003797

BEC = 0.01152

Weight: <None>

Min Conc: <None>

	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	1163.37	0.0001	P	11.0
2	☐	5.000	5.290	535804.11	0.0319	P	0.4
3	☐	10.000	10.326	1063063.72	0.0623	P	0.6
4	☐	20.000	20.792	2133946.82	0.1253	P	0.3
5	☐	200.000	203.894	20840220.41	1.2285	A	1.8
6	☐	500.000	498.401	50806537.16	3.0029	A	0.5
7	☐						
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						



y = 0.0046 * x + 1.2306E-005

R = 1.0000

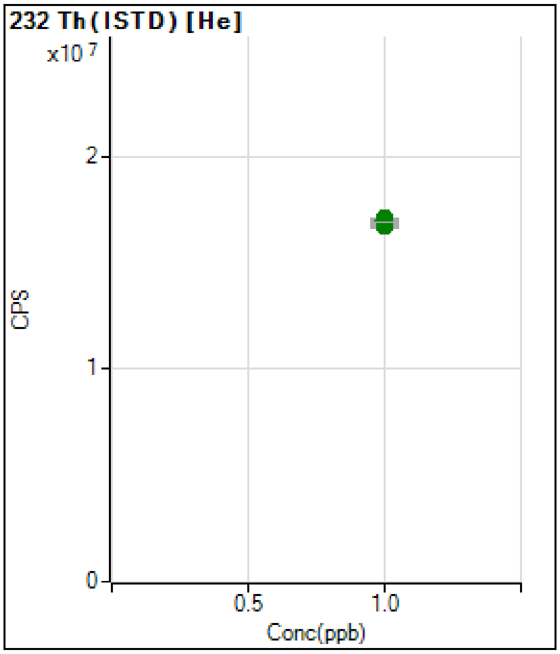
DL = 0.0017

BEC = 0.002694

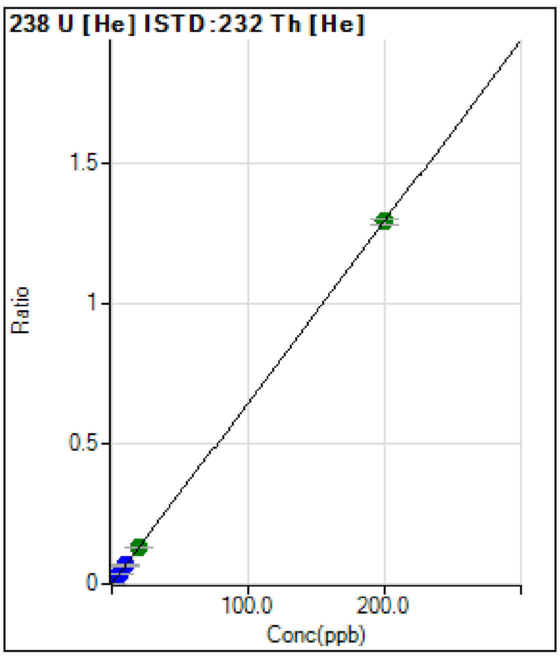
Weight: <None>

Min Conc: <None>

	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1	☐	0.000	0.000	226.67	0.0000	P	21.0
2	☐	5.000	5.148	435798.35	0.0235	P	0.4
3	☐	10.000	10.206	864158.48	0.0466	P	0.7
4	☐	20.000	20.252	1719555.65	0.0925	A	1.2
5	☐	200.000	199.961	16991414.33	0.9135	A	1.0
6	☐			2833.65	0.0002	P	13.0
7	☐						
8	☐						
9	☐						
10	☐						
11	☐						
12	☐						
13	☐						
14	☐						
15	☐						



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		1.000		16785035.59		A	2.0
2		1.000		16774229.75		A	0.4
3		1.000		17068821.83		A	0.6
4		1.000		17025390.58		A	0.3
5		1.000		16967204.33		A	1.6
6		1.000		16919617.67		A	0.4
7		1.000					
8		1.000					
9		1.000					
10		1.000					
11		1.000					
12		1.000					
13		1.000					
14		1.000					
15		1.000					



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD
1		0.000	0.000	995.04	0.0001	P	7.7
2		5.000	5.115	554784.89	0.0331	P	0.8
3		10.000	10.073	1110725.27	0.0651	P	0.8
4		20.000	20.260	2227307.78	0.1308	A	1.6
5		200.000	199.967	21896043.84	1.2907	A	1.9
6				2370.19	0.0001	P	4.6
7							
8							
9							
10							
11							
12							
13							
14							
15							

y = 0.0065 * x + 5.9232E-005

R = 1.0000

DL = 0.002116

BEC = 0.009177

Weight: <None>

Min Conc: <None>

Sample ame CAL
Sample Type CalBl
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5CALB.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	/A
Be			H	.	/A
B			H	.	/A
a			He	.	/A
M			He	.	/A
Al			He	. 5	.
Si			H	.	/A
			He	.	/A
Ca			He	.	/A
Ti			He	.	/A
V	5		He	.	/A
Cr	5		He	.	/A
Mn	55		He	.	/A
Fe	5		He	.	/A
Co	5		He	.	/A
i			He	.	/A
Cu			He	.	/A
n			He	.	/A
As	5		He	.	/A
Se			H	.	/A
Sr			He	.	/A
Mo	5		He	.	/A
Pd	5		He	.	/A
A			He	.	/A
Cd			He	.	/A
Sn			He	.	/A
Sb			He	.	/A
Ba			He	.	/A
Pt	5		He	.	/A
Tl	5		He	.	/A
Pb			He	.	/A
Bi			He	.	/A
U			He	.	/A

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	
Sc	5		H	
e			He	
e			H	
In	5		He	
Tb	5		He	
Th			He	

Sample ame CAL
Sample Type CalStd
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CALS.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5.	.
Be			H	5.	.
B			H	5.	.
a			He	.5	.5
M			He	.	.
Al			He	.	.
Si			H	. 5	.
			He	. 5	.
Ca			He	. 5	.5
Ti			He	5.	.
V	5		He	5. 5	.5
Cr	5		He	5.	.5
Mn	55		He	5. 5	.5
Fe	5		He	.	.
Co	5		He	5.	.
i			He	5.	.
Cu			He	5. 55	.
n			He	5.	.
As	5		He	5. 5	.
Se			H	5.	.
Sr			He	5. 5 5	.
Mo	5		He	5.	.
Pd	5		He	5.	.
A			He	5. 5	.
Cd			He	5. 5	.5
Sn			He	5. 5	.
Sb			He	5. 5	.
Ba			He	5.	.
Pt	5		He	.	.
Tl	5		He	5.	.
Pb			He	5.	.
Bi			He	5. 5	.
U			He	5.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5
Sc	5		H	. 5
e			He	.
e			H	.55 55
In	5		He	.
Tb	5		He	.5 5
Th			He	. 5

Sample ame CAL
Sample Type CalStd
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CALS.d
Data Path ame D Data
Acq. Date Time 5/ / 5 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 5	.
B			H	.	.
a			He	5. 5	.
M			He	.	.
Al			He	. 5	.5
Si			H	. 5	.
			He	. 5	.
Ca			He	. 5	.
Ti			He	. 5	.
V	5		He	. 5 5	.
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	. 5	.
Co	5		He	.	.
i			He	. 5	.
Cu			He	.	.5
n			He	.5 55	.5
As	5		He	.	.
Se			H	. 5 5	.
Sr			He	.	.
Mo	5		He	. 5555	.
Pd	5		He	. 5	.
A			He	.	.
Cd			He	.	.
Sn			He	.5	.
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.5	.
Pb			He	.	.
Bi			He	. 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	.
e			H	.
In	5		He	.5
Tb	5		He	.5
Th			He	.

Sample ame CAL Pa e of
Sample Type CalStd
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CALS.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 5	.
B			H	.	.
a			He	5 .	.
M			He	55.5	.
Al			He	. 5	.
Si			H	. 5	.
			He	5 .	.
Ca			He	5 .	.
Ti			He	. 5	.
V	5		He	. 5	.
Cr	5		He	.5	.
Mn	55		He	.	.
Fe	5		He	5.	.
Co	5		He	. 5 5	.5
i			He	.	.
Cu			He	. 5	.
n			He	.	.
As	5		He	.	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	. 5	.5
A			He	.	.
Cd			He	.	.
Sn			He	. 5	.
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	. 5 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	.
e			H	. 5
In	5		He	.5 5
Tb	5		He	.
Th			He	.

Sample ame CAL
Sample Type CalStd
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CALS.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.5	.
B			H	. 5	.
a			He	5 . 5	.
M			He	.	.
Al			He	.	.
Si			H	5 . 5	.
			He	5 .5	.
Ca			He	.	.
Ti			He	. 5	.
V	5		He	.	.
Cr	5		He	. 5	.
Mn	55		He	.	.
Fe	5		He	. 5	.
Co	5		He	.55	.
i			He	.	.
Cu			He	.	.
n			He	. 5 5	.
As	5		He	.55 5	.
Se			H	.5	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	. 5	.5
A			He	.	.
Cd			He	.	.
Sn			He	. 5 5	.
Sb			He	. 5 5	.
Ba			He	.	.
Pt	5		He	. 5	.
Tl	5		He	.	.5
Pb			He	.	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5
e			He	. 5
e			H	. 5
In	5		He	. 5
Tb	5		He	. 5 55
Th			He	. 5

Sample ame CAL 5
Sample Type CalStd
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CALS.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5.	.
Be			H	.	.
B			H	5 .	.
a			He	5 .	.
M			He	5 . 555	.
Al			He	. 5	.
Si			H	5 .	.
			He	5 .	.5
Ca			He	5 .	.
Ti			He	.	.
V	5		He	. 5	.
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	5 .	.5
Co	5		He	.	.5
i			He	.5	.
Cu			He	5 .	.
n			He	5.55 5	.
As	5		He	.	.5
Se			H	.5 55	.
Sr			He	.	.
Mo	5		He	5 .	.
Pd	5		He	. 5	.
A			He	. 5	.
Cd			He	5. 55	.
Sn			He	. 5	.5
Sb			He	.	.
Ba			He	5 . 5	.
Pt	5		He	.	.
Tl	5		He	. 5	.
Pb			He	. 5	.5
Bi			He	. 5	.
U			He	. 5 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	.
e			H	.
In	5		He	.
Tb	5		He	. 5
Th			He	.

Sample ame	ICV	Pa e of
Sample Type	ICV	
Operator	T Traynor	
Instrument	ICM . A	
Batch ame	5 .b	
Data File ame	ICV.d	
Data Path ame	D Data	
Acq. Date Time	5/ /	
Comment		

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	.	.
a			He	. 55	5.
M			He	.	5.
Al			He	.5	.
Si			H	. 5 5	.
			He	5. 5	5.
Ca			He	.	.
Ti			He	.	5.
V	5		He	.	5.5
Cr	5		He	.	5.
Mn	55		He	. 5	5.
Fe	5		He	.	.
Co	5		He	5. 5	5.
i			He	5.	.
Cu			He	.	.
n			He	. 55	.
As	5		He	.	.
Se			H	. 5 5	.
Sr			He	.	5.
Mo	5		He	. 5	5.
Pd	5		He	. 5	5.
A			He	.5	.
Cd			He	5.	5.
Sn			He	.5	5.
Sb			He	.	.
Ba			He	.	5.
Pt	5		He	.	5.5
Tl	5		He	.	.
Pb			He	. 5	.
Bi			He	. 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	. 5
e			H	. 5
In	5		He	.5
Tb	5		He	.5
Th			He	.

Sample ame ICB
Sample Type ICB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame ICB.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	. 5	.
B			H	.5	.
a			He	. 5 5	.
M			He	.	.
Al			He	. 5 55	.5
Si			H	. 5	.
			He	.	
Ca			He	.	
Ti			He	.	5.
V	5		He	.	
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	.	.
Co	5		He	.	.5
i			He	.	.
Cu			He	. 5	
n			He	.	.
As	5		He	. 5	.
Se			H	.	.
Sr			He	.	5.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.	.
Cd			He	. 5 5	.
Sn			He	.	.
Sb			He	. 5	5 .
Ba			He	. 5	.
Pt	5		He	. 5	.
Tl	5		He	.	.
Pb			He	. 55	.
Bi			He	.	5.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	.
e			H	. 5
In	5		He	.
Tb	5		He	. 5 5
Th			He	. 555

Sample ame ICB Pa e of
Sample Type ICB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame ICB.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	5.
Be			H	.	.5
B			H	.	.
a			He	.	.
M			He	. 5	
Al			He	.	.5
Si			H	.	.
			He	.	5 .
Ca			He	. 5	
Ti			He	. 5	.
V	5		He	. 5	
Cr	5		He	.	.
Mn	55		He	. 5	.5
Fe	5		He	. 5	
Co	5		He	.	.
i			He	.	
Cu			He	. 5	
n			He	. 5	.
As	5		He	. 55	.
Se			H	. 5	.
Sr			He	.	
Mo	5		He	. 5	.
Pd	5		He	.	.
A			He	.	.5
Cd			He	. 5	
Sn			He	.	
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	. 5	.
Tl	5		He	.	.
Pb			He	. 55	.
Bi			He	.	.
U			He	.	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	.
e			H	. 5
In	5		He	. 5
Tb	5		He	. 5 5
Th			He	. 55

Sample ame CRDL
Sample Type CRDL
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CRD.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.5	.
Be			H	.	.
B			H	5. 5	.5
a			He	5 . 5	.
M			He	.	.
Al			He	.	.5
Si			H	.	.
			He	.	.
Ca			He	.	.
Ti			He	.	.
V	5		He	.	.
Cr	5		He	.5	.5
Mn	55		He	.5	.
Fe	5		He	.5 5 5	.
Co	5		He	.5 5	.
i			He	.5 5	.
Cu			He	. 5	5.
n			He	5. 5 5	5.
As	5		He	.	.
Se			H	.5	.
Sr			He	.5	.
Mo	5		He	.5	.
Pd	5		He	.	.
A			He	.	.
Cd			He	. 5	.
Sn			He	.	.
Sb			He	.	.
Ba			He	. 5	.
Pt	5		He	. 5	.5
Tl	5		He	.	.
Pb			He	.	.
Bi			He	. 5	5.5
U			He	.5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 55
e			He	.
e			H	.
In	5		He	. 5
Tb	5		He	. 5
Th			He	.

Sample ame ICSA
Sample Type ICSA
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5ICSA.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	.	.
B			H	.	5.
a			He	5 . 5	.
M			He	5 . 5	.
Al			He	55 . 5	.
Si			H	.5	5 .
			He	5 .	.
Ca			He	5 5.	.
Ti			He	5 5. 5	.
V	5		He	. 5	
Cr	5		He	. 5 5	5.
Mn	55		He	. 55 5	.
Fe	5		He	5 .5	.
Co	5		He	. 5	.
i			He	. 5	.
Cu			He	.	.
n			He	.	.5
As	5		He	.	.
Se			H	. 5	.
Sr			He	.	.
Mo	5		He	5 .5 5	.
Pd	5		He	.	.
A			He	.	.
Cd			He	. 5	
Sn			He	. 5	.
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	. 5	.
Pb			He	.	.
Bi			He	. 5	.5
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	. 5 5 5
e			H	.
In	5		He	. 5
Tb	5		He	.
Th			He	.

Sample ame ICSAB
Sample Type ICSB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame ICSB.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.5
Be			H	.	.
B			H	5.	.
a			He	.	.
M			He	5 . 5	.
Al			He	5 . 5 5	.
Si			H	. 55	.
			He	. 5 5	.
Ca			He	5.	.
Ti			He	.5	.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	. 5	.
Fe	5		He	. 5	.
Co	5		He	.	.
i			He	. 5	.
Cu			He	.5 5	.
n			He	.	.
As	5		He	5. 5	.
Se			H	. 5	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	5.	.
Cd			He	.5	5.
Sn			He	5.	.5
Sb			He	.	.
Ba			He	.	.
Pt	5		He	. 5	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	.5 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	.
e			H	.
In	5		He	.55
Tb	5		He	. 5 5
Th			He	. 5

Sample ame CCV Pa e of
Sample Type CCV
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCV.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.5
Be			H	.	.
B			H	.	.
a			He	.	.
M			He	.5	.
Al			He	. 5	.5
Si			H	. 5	.
			He	.	.
Ca			He	.	.
Ti			He	.	.
V	5		He	. 5	.
Cr	5		He	. 5	.
Mn	55		He	. 5	.
Fe	5		He	5.	.5
Co	5		He	5.	.5
i			He	.	.
Cu			He	. 5	.
n			He	. 5	.5
As	5		He	. 5	.
Se			H	. 5	.
Sr			He	.55	.
Mo	5		He	. 5	.
Pd	5		He	. 5	.
A			He	.	.
Cd			He	.	.
Sn			He	.	.
Sb			He	.	.
Ba			He	. 55	.
Pt	5		He	.	.
Tl	5		He	. 5	.
Pb			He	. 5	.
Bi			He	. 5	.
U			He	.5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	.5
e			H	.
In	5		He	. 5 5
Tb	5		He	. 5
Th			He	. 5 5

Sample ame CCB
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCB.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	. 5	.
a			He	.	5 .
M			He	.	.5
Al			He	. 5	.
Si			H	.5 5	
			He	.	
Ca			He	. 5	
Ti			He	. 5	.
V	5		He	.	
Cr	5		He	.	.
Mn	55		He	.	5 .
Fe	5		He	.	.
Co	5		He	.	5 .
i			He	. 5	.
Cu			He	.	
n			He	. 5	5 5.
As	5		He	.	.
Se			H	.	.
Sr			He	. 5	.5
Mo	5		He	.	.
Pd	5		He	.	.
A			He	. 5	.5
Cd			He	.	5 .
Sn			He	.	
Sb			He	. 5	.5
Ba			He	.	.5
Pt	5		He	. 55	55.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	.	.
U			He	.	5 .5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	.
e			H	.
In	5		He	.
Tb	5		He	.
Th			He	.

Sample ame 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.5
B			H	. 5	
a			He	.	.
M			He	.5 5	.
Al			He	.	5.
Si			H	. 5 5	
			He	. 5 5	
Ca			He	.	.
Ti			He	.	.
V	5		He	.	
Cr	5		He	.	.
Mn	55		He	. 5	.
Fe	5		He	. 5 5	5.
Co	5		He	. 5	5 .
i			He	.	.5
Cu			He	.	.
n			He	.5 5	.
As	5		He	.	.
Se			H	. 5	.
Sr			He	.	.5
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.	.
Cd			He	.	.5
Sn			He	.	
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	. 5	5.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	.	.
U			He	. 5	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5
Sc	5		H	. 55
e			He	.
e			H	. 5 5 5
In	5		He	. 5
Tb	5		He	.
Th			He	.

Sample ame B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5 .	.
Be			H	.	.
B			H	. 5	.
a			He	5.	.
M			He	. 5	.
Al			He	. 5	.5
Si			H	.	.
			He	5 .	.
Ca			He	.	.
Ti			He	. 5 5	.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	. 5	.
Fe	5		He	5 .	.
Co	5		He	. 5	5.
i			He	.	.
Cu			He	. 5	.
n			He	. 555	.
As	5		He	. 5	.
Se			H	5.	.
Sr			He	5. 5	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.	.
Cd			He	.	5 .
Sn			He	.	.
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	. 5	.
Tl	5		He	. 5	.
Pb			He	. 5	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5
Sc	5		H	.
e			He	.
e			H	. 5
In	5		He	. 5
Tb	5		He	. 5
Th			He	5. 5

Sample ame B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5.	.
Be			H	.	.
B			H	5.	.
a			He	5 .55	.
M			He	. 5 5	.
Al			He	.	.
Si			H	.	.
			He	.	.
Ca			He	.	.
Ti			He	.5	.
V	5		He	.	.
Cr	5		He	.	5.
Mn	55		He	. 5	.
Fe	5		He	.5	.
Co	5		He	.	.
i			He	. 5	.
Cu			He	.	.
n			He	.	.
As	5		He	.	.
Se			H	.	.
Sr			He	. 5	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.	.
Cd			He	.	5 .
Sn			He	. 55	.
Sb			He	. 5 5	.
Ba			He	55. 55	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	.	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.5
e			He	. 5
e			H	.5
In	5		He	.
Tb	5		He	.
Th			He	. 5 5

Sample ame B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	.	.
a			He	5 .	.
M			He	.	.
Al			He	.5	.
Si			H	.	.
			He	5.	.5
Ca			He	.	.
Ti			He	.	.
V	5		He	. 5	.
Cr	5		He	. 5	.
Mn	55		He	. 5	.
Fe	5		He	.	.
Co	5		He	.	.
i			He	.	.
Cu			He	. 5	.
n			He	.	.
As	5		He	. 5	.
Se			H	5. 5	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	. 5	5.5
A			He	. 5	.
Cd			He	. 5	.5
Sn			He	.	5.
Sb			He	.	5.
Ba			He	.	.
Pt	5		He	. 5	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	.	.5
U			He	.	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 55 55
e			He	. 5
e			H	. 5
In	5		He	5. 5
Tb	5		He	.
Th			He	. 5 5

Sample ame 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5 .5	.5
Be			H	. 5	.5
B			H	.	.5
a			He	5.5	.
M			He	5 .	.
Al			He	. 5	.
Si			H	.	.
			He	. 5	.
Ca			He	.	.
Ti			He	.	.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	5.	.5
Fe	5		He	5 . 5	.
Co	5		He	.	.
i			He	.	.
Cu			He	. 5	.
n			He	.	.
As	5		He	5 . 5	.
Se			H	. 55	.
Sr			He	.	.
Mo	5		He	.5	.
Pd	5		He	. 5 5	.
A			He	.	5.
Cd			He	.	
Sn			He	. 5	
Sb			He	. 5	5.
Ba			He	.	.
Pt	5		He	.	5 .
Tl	5		He	.	
Pb			He	.	.
Bi			He	. 5	5 .
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5
e			He	.
e			H	. 5
In	5		He	.
Tb	5		He	. 5
Th			He	.

Sample ame B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5 .	.5
Be			H	. 5 5	.5
B			H	.	.
a			He	. 5	.
M			He	. 5	.
Al			He	. 5	5.
Si			H	. 5	.
			He	.	5.
Ca			He	5 .	5.
Ti			He	5. 55	.
V	5		He	.5 5	.
Cr	5		He	.5	5.
Mn	55		He	.5 5	.
Fe	5		He	5.	.
Co	5		He	.	.
i			He	5. 5 5	.
Cu			He	.	.
n			He	. 5	.
As	5		He	.	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	5 .	.
Pd	5		He	.	.
A			He	. 5	.
Cd			He	.	.
Sn			He	. 5	5.
Sb			He	.	.
Ba			He	.5	.
Pt	5		He	.	.
Tl	5		He	. 5	.
Pb			He	.	.
Bi			He	.	.
U			He	.5 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 5
e			H	.
In	5		He	.
Tb	5		He	. 5
Th			He	. 5 5

Sample ame 5 B 5 D 5 Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5.	.
Be			H	.	.
B			H	5.	.
a			He	. 5 5	.
M			He	55 .5	.
Al			He	5.	.
Si			H	.	.
			He	5 . 5	.5
Ca			He	.5 5	.
Ti			He	. 5	.5
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	. 5	.
Fe	5		He	.	.
Co	5		He	.	.
i			He	. 5	.
Cu			He	.	.
n			He	.	5.
As	5		He	.	.
Se			H	. 5	.5
Sr			He	. 5	5.
Mo	5		He	. 5 5	5.
Pd	5		He	.	5.
A			He	. 5	.
Cd			He	.	.
Sn			He	.	
Sb			He	. 5	.
Ba			He	.	5.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	. 5 5	.
Bi			He	. 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	5. 5
Sc	5		H	.
e			He	. 5
e			H	. 5
In	5		He	5. 5
Tb	5		He	.
Th			He	. 5

Sample ame 5 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5.	.
Be			H	.	.5
B			H	. 5	.
a			He	5.5	5.
M			He	.5	.
Al			He	. 5	.
Si			H	.	.
			He	.	5.
Ca			He	. 5	.
Ti			He	.55	.
V	5		He	. 5	.
Cr	5		He	.	.
Mn	55		He	5.	.
Fe	5		He	.	.5
Co	5		He	.	.
i			He	.	.
Cu			He	. 5	5.
n			He	. 5	.
As	5		He	. 5	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	. 5 5	.
A			He	5. 5	.
Cd			He	. 55 5	5.
Sn			He	. 5	.
Sb			He	.	.
Ba			He	.	5.
Pt	5		He	.	.
Tl	5		He	.	.5
Pb			He	.	.
Bi			He	. 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.5 5
Sc	5		H	. 5
e			He	.
e			H	. 5 5
In	5		He	.5
Tb	5		He	.
Th			He	.

Sample ame 5 B 5 D

Pa e of

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.5	.
B			H	.	.
a			He	.5	5.
M			He	. 55	5.
Al			He	.5	.
Si			H	.	.
			He	. 5 5	.
Ca			He	.	5.
Ti			He	. 5 5	5.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	. 5	.
Fe	5		He	.	.
Co	5		He	. 55	.
i			He	. 5	.
Cu			He	.	5.
n			He	.	5.
As	5		He	.5	5.
Se			H	.	.
Sr			He	5.	.
Mo	5		He	.	5.
Pd	5		He	. 5	.
A			He	5. 55	.
Cd			He	. 5	.
Sn			He	.	5.
Sb			He	. 5	.
Ba			He	. 5 5	.
Pt	5		He	.	.
Tl	5		He	. 5	.
Pb			He	. 5	5.
Bi			He	. 5	.
U			He	.	5.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 5
e			H	.
In	5		He	.5 5
Tb	5		He	.
Th			He	.5 5

Sample ame 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 5	.
B			H	5. 5	5.
a			He	.	5.
M			He	.	5.
Al			He	.	5.
Si			H	. 5	5.
			He	5 .	5.
Ca			He	.	.
Ti			He	.	5.
V	5		He	.	.
Cr	5		He	. 5	.
Mn	55		He	. 5	.
Fe	5		He	5.5	.
Co	5		He	.	5.
i			He	.	5.
Cu			He	. 5	5.
n			He	. 5 5	.5
As	5		He	. 55 5	.
Se			H	.	.
Sr			He	. 5	.
Mo	5		He	.	.
Pd	5		He	.	5.
A			He	5 . 5	.
Cd			He	.	5.
Sn			He	. 5	5.
Sb			He	.5	.
Ba			He	.	.
Pt	5		He	. 5	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	.	.
U			He	.	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5
Sc	5		H	.
e			He	.
e			H	.
In	5		He	. 5
Tb	5		He	.5
Th			He	. 55

Sample ame CCV
Sample Type CCV
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCV.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5 5	.
Be			H	5.	.
B			H	. 55	.
a			He	5. 5 5	5.
M			He	.	5.
Al			He	. 55	.
Si			H	5 .	.
			He	.	.
Ca			He	. 5 55	.
Ti			He	.	.
V	5		He	.	.
Cr	5		He	.	5.
Mn	55		He	. 5 5	.
Fe	5		He	5. 5	.
Co	5		He	. 5	.
i			He	.	.
Cu			He	. 55	.5
n			He	.	.
As	5		He	.	5.
Se			H	.	.
Sr			He	.5	5.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.	5.
Cd			He	5.	5.
Sn			He	.	5.
Sb			He	.	5.
Ba			He	. 5 5	5.
Pt	5		He	5.	.
Tl	5		He	.	.
Pb			He	5. 5 5	.
Bi			He	. 55	5.
U			He	. 5	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.5 5
Sc	5		H	. 5 5
e			He	. 5
e			H	. 5 5
In	5		He	.
Tb	5		He	.
Th			He	.5

Sample ame CCB
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCB.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	. 5	.
a			He	.	.
M			He	.	.
Al			He	. 5	.
Si			H	.	
			He	. 5	
Ca			He	. 5	
Ti			He	.	.
V	5		He	.	.5
Cr	5		He	.	.
Mn	55		He	.	.5
Fe	5		He	.	
Co	5		He	.	.
i			He	.	55.
Cu			He	. 5	.
n			He	.	
As	5		He	.	5.
Se			H	.	5 .
Sr			He	.	.
Mo	5		He	.	.5
Pd	5		He	.	.
A			He	.	.
Cd			He	.	.
Sn			He	.	
Sb			He	. 5 5	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	.5
Pb			He	.	.
Bi			He	. 5	.
U			He	. 5 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5
Sc	5		H	. 5 555
e			He	. 55
e			H	.5 5
In	5		He	. 5
Tb	5		He	. 5
Th			He	.5

Sample ame B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	5. 55	.
a			He	.5	.5
M			He	.	.5
Al			He	.	.
Si			H	.	.5
			He	5 5 .	.
Ca			He	. 5 5 5	.5
Ti			He	. 5	5.
V	5		He	.	.
Cr	5		He	.	.5
Mn	55		He	.	.
Fe	5		He	.	.
Co	5		He	.	.
i			He	.5	.
Cu			He	.	.
n			He	.	.
As	5		He	.	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	.5
Pd	5		He	.	.5
A			He	. 5	.
Cd			He	.	.5
Sn			He	.	.
Sb			He	.	5.
Ba			He	. 5	.
Pt	5		He	. 5	.
Tl	5		He	. 5	.
Pb			He	.	.
Bi			He	.	.5
U			He	.	.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5
Sc	5		H	5 .
e			He	5 .
e			H	.
In	5		He	. 5
Tb	5		He	.
Th			He	.

Sample ame B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 5	.5
B			H	.	.5
a			He	5 .	.
M			He	.	.
Al			He	.	.
Si			H	. 5	.
			He	5 .	.
Ca			He	.	.
Ti			He	5.	.
V	5		He	.	.
Cr	5		He	. 5	.
Mn	55		He	. 5	.
Fe	5		He	5 .	.
Co	5		He	.	.
i			He	.	.5
Cu			He	. 55	.
n			He	55.	.
As	5		He	.	.
Se			H	. 5	.
Sr			He	. 5	.
Mo	5		He	. 5 5	.
Pd	5		He	. 5	.
A			He	. 5	.
Cd			He	. 55	.5
Sn			He	.	.5
Sb			He	.	.
Ba			He	. 55	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.5 5	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	55.
e			He	. 5
e			H	. 5
In	5		He	.
Tb	5		He	.
Th			He	. 5 5

Sample ame Rinse
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5 5	5.
Be			H	.	.
B			H	.	.
a			He	5 .	5 .
M			He	. 5	.
Al			He	.	.
Si			H	.	
			He	. 5	.
Ca			He	.	.
Ti			He	.	.
V	5		He	. 55	.5
Cr	5		He	.	.
Mn	55		He	. 5	.
Fe	5		He	.5	.5
Co	5		He	.	.
i			He	. 5	
Cu			He	. 5	.
n			He	.5	.
As	5		He	. 5	.
Se			H	. 5	.5
Sr			He	. 5	.5
Mo	5		He	. 5	
Pd	5		He	. 5	5.
A			He	. 5	.
Cd			He	. 5	
Sn			He	.	.
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	5.
Tl	5		He	.	
Pb			He	.	
Bi			He	.	.
U			He	.	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	.
e			H	. 5
In	5		He	.
Tb	5		He	.
Th			He	. 5

Sample ame Rinse
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	
B			H	.	.
a			He	5 . 5	.
M			He	. 5	.
Al			He	. 5	.5
Si			H	. 5	
			He	. 5	5.
Ca			He	. 5	
Ti			He	.	.
V	5		He	. 5	.
Cr	5		He	. 5	.
Mn	55		He	. 5	.
Fe	5		He	. 5	.
Co	5		He	.	.
i			He	.	
Cu			He	.	.
n			He	.	.
As	5		He	.	.5
Se			H	. 5	.
Sr			He	.	.
Mo	5		He	.	
Pd	5		He	.	
A			He	.	
Cd			He	.	
Sn			He	.	
Sb			He	. 5	.
Ba			He	. 5	.
Pt	5		He	. 5	.
Tl	5		He	. 5	
Pb			He	.	
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5
e			He	. 5
e			H	.
In	5		He	. 5
Tb	5		He	.
Th			He	. 5

Sample ame Rinse
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	5.
Be			H	.	.
B			H	.	.
a			He	. 5	.
M			He	.	.
Al			He	. 5	.
Si			H	. 5	
			He	. 55	.
Ca			He	.	5 .
Ti			He	. 5	5.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	.	.5
Fe	5		He	. 5	.
Co	5		He	.	.
i			He	.	.
Cu			He	.	.
n			He	.	.
As	5		He	.	.
Se			H	. 5	.
Sr			He	.	5.
Mo	5		He	.	
Pd	5		He	.	
A			He	.	
Cd			He	.	.
Sn			He	.	
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	
Pb			He	. 5	
Bi			He	. 5	.
U			He	.	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 5
e			H	. 5
In	5		He	.
Tb	5		He	. 5
Th			He	.

Sample ame		B 5 D	Pa e of
Sample Type	Sample		
Operator	T Traynor		
Instrument	ICM . A		
Batch ame	5 .b		
Data File ame	SMPL.d		
Data Path ame	D Data		
Acq. Date Time	5/ /		
Comment			

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 5	.
B			H	.5 55	.
a			He	.	.
M			He	. 5	.
Al			He	. 5	.
Si			H	.5 5	.
			He	5 .	.
Ca			He	. 5	.
Ti			He	.	5.
V	5		He	. 5	.
Cr	5		He	.	.5
Mn	55		He	. 5	.5
Fe	5		He	. 5	.
Co	5		He	.	.
i			He	.	.5
Cu			He	.	.
n			He	. 5	.
As	5		He	. 5	.
Se			H	. 5	.
Sr			He	.	5.
Mo	5		He	. 5	5.
Pd	5		He	. 5	
A			He	.	
Cd			He	.	
Sn			He	.	
Sb			He	.	.
Ba			He	.5	5.
Pt	5		He	.	.
Tl	5		He	.	
Pb			He	.	.
Bi			He	. 5	.5
U			He	. 5	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5
Sc	5		H	. 5
e			He	.
e			H	.
In	5		He	5. 5 5
Tb	5		He	.
Th			He	. 555

Sample ame B 5 D | Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	.5	.
a			He	.	.
M			He	. 5	5.
Al			He	.	.5
Si			H	. 5	.
			He	.	.
Ca			He	.	.
Ti			He	. 5	5.
V	5		He	.	.
Cr	5		He	. 5	5.
Mn	55		He	.	.
Fe	5		He	5.	5.
Co	5		He	. 5	.
i			He	.	.
Cu			He	.	.
n			He	5. 55	.
As	5		He	.5	5.
Se			H	. 5	.
Sr			He	.	5.
Mo	5		He	.	.
Pd	5		He	.	
A			He	. 55	
Cd			He	. 5	.
Sn			He	. 5	
Sb			He	.	5.
Ba			He	. 5 5	.
Pt	5		He	.	.
Tl	5		He	.	
Pb			He	. 5	5.
Bi			He	.	.
U			He	.	5 .

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 555
e			H	. 5
In	5		He	.
Tb	5		He	5. 5
Th			He	.

Sample ame 5 B 5 D

Pa e of

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 55	.
B			H	. 5	.
a			He	.5	.
M			He	.	.
Al			He	.	.5
Si			H	.	.
			He	5 . 5	.
Ca			He	5. 5	.
Ti			He	.	.
V	5		He	.	.5
Cr	5		He	. 5	.
Mn	55		He	. 5	.
Fe	5		He	5 . 55	.
Co	5		He	.	.
i			He	.	.
Cu			He	.	.
n			He	.	.
As	5		He	.	.
Se			H	.	.
Sr			He	. 5 5	.
Mo	5		He	. 5	.
Pd	5		He	.	.
A			He	5. 5	.
Cd			He	.	.
Sn			He	. 5	.
Sb			He	.	.
Ba			He	. 55	.5
Pt	5		He	. 5	.5
Tl	5		He	.	.
Pb			He	. 5	.
Bi			He	.	.
U			He	. 5 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	. 5
e			H	.
In	5		He	.
Tb	5		He	. 5
Th			He	.

Sample ame 5 B 5 D 5
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	. 5 5	.
B			H	.	.
a			He	.	.5
M			He	5. 5	.
Al			He	5.	.
Si			H	.	.
			He	.	.
Ca			He	. 5 5	.
Ti			He	. 55	.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	.	5.
Fe	5		He	. 5	5.
Co	5		He	.	.
i			He	. 5 5	.
Cu			He	.	.
n			He	.	.
As	5		He	. 5	.
Se			H	. 5	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	.	
A			He	. 5	.
Cd			He	.	.
Sn			He	.	
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	
Tl	5		He	. 5	.
Pb			He	.	.
Bi			He	. 5	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	. 5
e			H	.5
In	5		He	. 5
Tb	5		He	. 5
Th			He	.

Sample ame Rinse
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	.	.5
B			H	. 5	.
a			He	.	.
M			He	.	5.
Al			He	. 5	5.
Si			H	.	
			He	. 5 5	.
Ca			He	. 5	.
Ti			He	. 5	5 .
V	5		He	. 5	.
Cr	5		He	.	.5
Mn	55		He	.	.
Fe	5		He	.	.
Co	5		He	.	.
i			He	.	.
Cu			He	.	.
n			He	.	.
As	5		He	.	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	5 .
Pd	5		He	.	5 .
A			He	. 5	.
Cd			He	.	
Sn			He	.	
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	. 55	.
Pb			He	.	
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	.
e			H	.
In	5		He	.
Tb	5		He	. 55
Th			He	. 5

Sample ame: CCV
Sample Type: CCV
Operator: T Traynor
Instrument: ICM . A
Batch ame: 5 .b
Data File ame: CCV.d
Data Path ame: D Data
Acq. Date Time: 5/ / 5 5
Comment:

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5 . 55	.5
Be			H	5.	.
B			H	.	.
a			He	.	5.
M			He	.	.
Al			He	5. 5	.5
Si			H	. 5	.5
			He	.	5.5
Ca			He	. 5	.
Ti			He	.5	5.
V	5		He	. 5	5.
Cr	5		He	.	.
Mn	55		He	. 5	.
Fe	5		He	. 55	5.5
Co	5		He	5.	.
i			He	. 5	5.
Cu			He	. 5	.
n			He	5.	5.
As	5		He	.	.5
Se			H	. 5	.
Sr			He	. 5	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.	5.
Cd			He	5.	5.5
Sn			He	. 5	5.
Sb			He	. 5	5.
Ba			He	.	5.
Pt	5		He	.	5.
Tl	5		He	. 5	.
Pb			He	.	5.
Bi			He	. 5	5.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 5
e			H	.5 5
In	5		He	.
Tb	5		He	.5 5
Th			He	. 5

Sample ame	CCB	Pa e of
Sample Type	CCB	
Operator	T Traynor	
Instrument	ICM . A	
Batch ame	5 .b	
Data File ame	CCB.d	
Data Path ame	D Data	
Acq. Date Time	5/ /	
Comment		

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	
Be			H	.	.
B			H	.	.
a			He	5.	.
M			He	.	
Al			He	.	.
Si			H	.5	
			He	. 5	.
Ca			He	.	.
Ti			He	.	.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	.	5 .5
Fe	5		He	.	.5
Co	5		He	.	.
i			He	. 55	5 .
Cu			He	.	.
n			He	.	.
As	5		He	.	5.
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	. 5	.
Cd			He	. 5	.
Sn			He	.	
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	. 5	.5
Tl	5		He	.	.
Pb			He	. 5	.
Bi			He	. 5 5	.5
U			He	. 5	5.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 55 5
e			He	.
e			H	.5 5
In	5		He	.5 555
Tb	5		He	.
Th			He	.5

Sample ame CCB
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCB.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	
Be			H	.	
B			H	.	.
a			He	.	.
M			He	.	
Al			He	.	.5
Si			H	. 5	
			He	.5	.
Ca			He	. 5	
Ti			He	. 5	.
V	5		He	. 5	.
Cr	5		He	.	.
Mn	55		He	.	5 .
Fe	5		He	. 5	
Co	5		He	.	.
i			He	.	.
Cu			He	. 5	.
n			He	. 5	
As	5		He	.	5 .
Se			H	. 5	.
Sr			He	.	
Mo	5		He	.	
Pd	5		He	. 5	.
A			He	.	5 .
Cd			He	. 5	
Sn			He	.	
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	
Tl	5		He	. 5 5	.
Pb			He	. 5	
Bi			He	.	.
U			He	.	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	.
e			H	. 5 5
In	5		He	5. 5 5
Tb	5		He	. 5
Th			He	. 55

Sample ame CCV Pa e of
Sample Type CCV
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCV.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5 .	.
Be			H	5. 5	.
B			H	.	.
a			He	.	5.
M			He	5. 5 5	5.5
Al			He	. 5	.
Si			H	.	.
			He	.	5.
Ca			He	. 5	.5
Ti			He	. 5	5.
V	5		He	.	.5
Cr	5		He	.5	5.
Mn	55		He	.	.
Fe	5		He	5. 5	.
Co	5		He	. 5	5.
i			He	. 5	5.
Cu			He	. 55	.
n			He	5.	5.5
As	5		He	.	5.
Se			H	. 55	.
Sr			He	.	.
Mo	5		He	. 5	.
Pd	5		He	.	5.
A			He	.	.
Cd			He	.	.5
Sn			He	. 5	.
Sb			He	.	5.
Ba			He	.	5.
Pt	5		He	. 5	5.
Tl	5		He	. 5 5	.
Pb			He	5. 5	.
Bi			He	.5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	.
e			H	5.5
In	5		He	5.
Tb	5		He	.55 5
Th			He	. 5

Sample ame	CCB	Pa e of
Sample Type	CCB	
Operator	T Traynor	
Instrument	ICM . A	
Batch ame	5 .b	
Data File ame	5 CCB.d	
Data Path ame	D Data	
Acq. Date Time	5/ / 5	
Comment		

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	
Be			H	.	5 .
B			H	. 5	.
a			He	.	.
M			He	.	
Al			He	.	.
Si			H	5. 55 5	
			He	.	.
Ca			He	.	5.5
Ti			He	. 5	.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	.5	.
Co	5		He	.	.
i			He	. 5	.
Cu			He	.	.
n			He	. 5	.
As	5		He	. 5	.
Se			H	.	.
Sr			He	. 55	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	. 5	.
Cd			He	.	
Sn			He	. 5	
Sb			He	.	.
Ba			He	.	.
Pt	5		He	. 5	.
Tl	5		He	. 5 5	.
Pb			He	.	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	5. 5
e			H	5. 5
In	5		He	.
Tb	5		He	.5 5
Th			He	.

Sample ame	CCB	Pa e of
Sample Type	CCB	
Operator	T Traynor	
Instrument	ICM . A	
Batch ame	5 .b	
Data File ame	CCB.d	
Data Path ame	D Data	
Acq. Date Time	5/ /	
Comment		

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	.	.
B			H	.	.
a			He	. 5	.
M			He	.	
Al			He	.	.
Si			H	5.5 5	
			He	. 5	5 .
Ca			He	.	5 .
Ti			He	.	
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	. 5	.
Fe	5		He	. 5	
Co	5		He	.	5 .
i			He	.	5 .
Cu			He	. 5	.
n			He	.	
As	5		He	.	.
Se			H	.	5.5
Sr			He	. 5 5	
Mo	5		He	.	
Pd	5		He	.	5 .
A			He	. 5	.5
Cd			He	.	
Sn			He	. 5	
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	. 5	.
Tl	5		He	.	.5
Pb			He	.	
Bi			He	. 5	.
U			He	.	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	5. 5 5
e			He	. 5 5
e			H	. 5
In	5		He	.
Tb	5		He	.5
Th			He	.

Sample ame 5 5 B 5 D 5 Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.55 5	.5
Be			H	.	.
B			H	5 .	.5
a			He	5 5.	.
M			He	.	.
Al			He	.	.
Si			H	.	5.
			He	. 5 5	.
Ca			He	5 .	.
Ti			He	.	.
V	5		He	. 5	.
Cr	5		He	.	5.
Mn	55		He	. 5 5	5.
Fe	5		He	.	.
Co	5		He	. 55	5.
i			He	. 5	.
Cu			He	. 5	.
n			He	.5	5.
As	5		He	. 5	5.
Se			H	. 5	.
Sr			He	. 5	.
Mo	5		He	.	5.5
Pd	5		He	.	.
A			He	.	.
Cd			He	.	.
Sn			He	.	.
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	.5
Pb			He	.	.
Bi			He	.	.5
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5
Sc	5		H	. 55
e			He	.
e			H	. 5 5
In	5		He	.5 5
Tb	5		He	. 5
Th			He	. 5 5

Sample ame 5 B 5 D 5 | Pa e of

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.5	5.
Be			H	.	.
B			H	.	.5
a			He	.	5.
M			He	.55 5	.
Al			He	.	.
Si			H	. 5	.
			He	.	.5
Ca			He	.	.
Ti			He	. 5	.
V	5		He	. 5 5	.
Cr	5		He	.	5.
Mn	55		He	. 5	.5
Fe	5		He	.	5.
Co	5		He	.	.
i			He	. 5	.
Cu			He	.	5.5
n			He	.5	.
As	5		He	.	.
Se			H	. 5	.
Sr			He	. 5	.
Mo	5		He	. 5	.
Pd	5		He	.	.
A			He	.	.
Cd			He	. 5 5	.
Sn			He	. 5	.
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	.5
Tl	5		He	. 5	5.
Pb			He	.	5.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.5
Sc	5		H	. 5
e			He	. 5
e			H	. 5 5
In	5		He	. 5
Tb	5		He	. 55
Th			He	. 5 55

Sample ame FB Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	.	.
a			He	.	.
M			He	.	.
Al			He	.	5.
Si			H	. 5	.
			He	. 5	.
Ca			He	.	.
Ti			He	. 5	.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	.	5.
Fe	5		He	. 5	.5
Co	5		He	. 5	.
i			He	. 5	.
Cu			He	. 5	.
n			He	. 55	.
As	5		He	.	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	. 5	.
Pd	5		He	.	.
A			He	. 5	.
Cd			He	.	.
Sn			He	.	5.
Sb			He	. 5	.
Ba			He	. 5	.
Pt	5		He	.	.5
Tl	5		He	.	.
Pb			He	.	.
Bi			He	. 5	5 .
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 55
e			H	. 5 5
In	5		He	.
Tb	5		He	. 5
Th			He	. 5

Sample ame 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5 SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	
B			H	5. 5	.
a			He	.	.
M			He	.	.
Al			He	. 5	.
Si			H	5 . 5	.
			He	.	.
Ca			He	.	.5
Ti			He	. 5	.
V	5		He	.5 5	5.
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	.	.
Co	5		He	. 5	5.
i			He	. 5	.5
Cu			He	.	.
n			He	.	.
As	5		He	.	.
Se			H	.	5.
Sr			He	. 5	5.
Mo	5		He	.5 5	.
Pd	5		He	.	.
A			He	.	
Cd			He	.	.
Sn			He	.	5.
Sb			He	. 5 5	.
Ba			He	.5	5.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	.5
Bi			He	.	.
U			He	.	5.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.5
e			He	. 5
e			H	. 5 5
In	5		He	.
Tb	5		He	.
Th			He	.

Sample ame 5 B 5 D 5 Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5 SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	.	
B			H	. 5	.
a			He	5.	.
M			He	.	.
Al			He	.5	.
Si			H	.	.
			He	.	.
Ca			He	.	.
Ti			He	.	.5
V	5		He	.5 5	.5
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	. 5	.
Co	5		He	.	.
i			He	.	5.
Cu			He	.	.
n			He	.	.
As	5		He	.	.
Se			H	. 5 5	.
Sr			He	.5	5.
Mo	5		He	5.555	.
Pd	5		He	. 5	
A			He	.	
Cd			He	.	5.
Sn			He	. 5	.
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	
Pb			He	.	.5
Bi			He	.	.5
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	5. 5 5
e			H	. 5
In	5		He	.
Tb	5		He	. 5
Th			He	. 5

Sample ame 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5 SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5. 5	.
Be			H	.	
B			H	5. 5	.
a			He	.	.
M			He	. 5	.
Al			He	.	.
Si			H	5 5.	.
			He	.	.5
Ca			He	. 5 5	.
Ti			He	.	5 .
V	5		He	.5 5	5.
Cr	5		He	.	5.
Mn	55		He	.	5.
Fe	5		He	.	.
Co	5		He	.	.
i			He	. 5	5.
Cu			He	. 5	5.
n			He	. 5 5	.
As	5		He	.	.5
Se			H	.5	.
Sr			He	. 55	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.	
Cd			He	. 5	.
Sn			He	.	.
Sb			He	.	.
Ba			He	.	.5
Pt	5		He	. 5	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	.	.
U			He	.5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	5. 5
e			He	. 5 5
e			H	. 5
In	5		He	.
Tb	5		He	. 5
Th			He	5. 5

Sample ame B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5 SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 5	5.
B			H	5.	.
a			He	5 .55	.5
M			He	5 .	.
Al			He	.	5.5
Si			H	.	.
			He	.	5.
Ca			He	5. 55	5.
Ti			He	. 5	.
V	5		He	. 5 5	5.
Cr	5		He	.	.
Mn	55		He	5 . 5	.5
Fe	5		He	.	.
Co	5		He	.	5.
i			He	.	5.
Cu			He	.5 5	5.
n			He	5 .	.
As	5		He	. 5	.
Se			H	. 5	.
Sr			He	5. 5	.
Mo	5		He	.	.5
Pd	5		He	.	.
A			He	.	
Cd			He	.	.
Sn			He	.	.
Sb			He	.55	.
Ba			He	.5 5	5.
Pt	5		He	.	5 .
Tl	5		He	. 55	.
Pb			He	5. 5	.
Bi			He	.	5.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	. 5
e			H	5. 5 5
In	5		He	.
Tb	5		He	.
Th			He	. 5

Sample ame	Leachate Blan
Sample Type	Sample
Operator	T Traynor
Instrument	ICM . A
Batch ame	5 .b
Data File ame	5 SMPL.d
Data Path ame	D Data
Acq. Date Time	5/ /
Comment	

Pa e of

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	
B			H	5.	.
a			He	.5	.
M			He	.	.
Al			He	. 5	.
Si			H	.	.5
			He	.	.
Ca			He	. 5	.
Ti			He	. 5	5.
V	5		He	.	.
Cr	5		He	. 5	5.
Mn	55		He	.	.
Fe	5		He	.	5.
Co	5		He	.	.
i			He	. 5	.
Cu			He	.	.5
n			He	. 5	.
As	5		He	. 5 5	.
Se			H	. 5	5.5
Sr			He	. 5	.
Mo	5		He	. 5	.
Pd	5		He	.	
A			He	. 5	5 .5
Cd			He	.	5 .
Sn			He	.	.
Sb			He	.	.
Ba			He	.5 5	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	. 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	.
e			H	. 5
In	5		He	.5 5
Tb	5		He	5. 5
Th			He	5. 5

Sample ame 5 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 55SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	.	5 .
B			H	.	.
a			He	. 555	.
M			He	.5	.
Al			He	. 5	.
Si			H	.	
			He	. 5	.
Ca			He	.	.
Ti			He	. 5 5	5 .
V	5		He	. 5	.
Cr	5		He	.	.5
Mn	55		He	.	.
Fe	5		He	.5 5	.
Co	5		He	.	.5
i			He	.	.
Cu			He	.	.
n			He	. 5	.
As	5		He	.	.
Se			H	.	.
Sr			He	. 5	.
Mo	5		He	.	
Pd	5		He	. 5	
A			He	. 5	
Cd			He	.	
Sn			He	. 55	.5
Sb			He	.	5.
Ba			He	.	.
Pt	5		He	.	
Tl	5		He	.	
Pb			He	.	.
Bi			He	.	.
U			He	.	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 5
e			H	. 5
In	5		He	. 555
Tb	5		He	.5 5
Th			He	. 5

Sample ame 5 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5 SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.5	.
B			H	.	.
a			He	.	.
M			He	. 5 5	.
Al			He	.	.
Si			H	.	.
			He	.	.
Ca			He	.	.
Ti			He	5. 5	.
V	5		He	. 5	.
Cr	5		He	. 5	5.5
Mn	55		He	. 5 5	.
Fe	5		He	. 5	.
Co	5		He	.	.
i			He	. 55	5.
Cu			He	. 5	.
n			He	. 5 5	.
As	5		He	.	5.
Se			H	. 5	.
Sr			He	. 5	.
Mo	5		He	.	5.
Pd	5		He	. 5 5	5.
A			He	5 .	5.
Cd			He	. 5	.5
Sn			He	.	5.
Sb			He	. 55	5.5
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	5.
Pb			He	. 5	5.
Bi			He	.	.
U			He	.	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5
e			He	.5 5
e			H	.
In	5		He	.
Tb	5		He	.5
Th			He	.

Sample ame	CCV
Sample Type	CCV
Operator	T Traynor
Instrument	ICM . A
Batch ame	5 .b
Data File ame	5 CCV.d
Data Path ame	D Data
Acq. Date Time	5/ /
Comment	

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	. 5	.
B			H	.	.
a			He	.	.
M			He	5.	.
Al			He	5.	.
Si			H	. 5	.
			He	. 5	.
Ca			He	5 .	.
Ti			He	.5	.
V	5		He	.	.
Cr	5		He	. 5	.
Mn	55		He	.	.
Fe	5		He	5.	.
Co	5		He	.	.
i			He	. 5	.5
Cu			He	. 5	.
n			He	5. 5 5	.
As	5		He	.	.5
Se			H	.	.5
Sr			He	.5 5	.
Mo	5		He	. 55	.
Pd	5		He	.5	.
A			He	. 5	.
Cd			He	5.	.5
Sn			He	.	.
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.5 5	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	. 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	.
e			H	.
In	5		He	. 5
Tb	5		He	. 5
Th			He	.

Sample ame CCB
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5 CCB.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	.	.
B			H	.	.
a			He	. 5	.
M			He	. 5	.
Al			He	. 55	.
Si			H	5. 5	
			He	5.5 5	.
Ca			He	.55	.
Ti			He	.	.
V	5		He	. 5	.
Cr	5		He	.	.5
Mn	55		He	.	.
Fe	5		He	. 5 5	
Co	5		He	. 55	.
i			He	.	5 .
Cu			He	. 5	.5
n			He	.	
As	5		He	. 5	.
Se			H	.5	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	. 5	.
A			He	. 5	.
Cd			He	.	5.
Sn			He	.	.
Sb			He	.	.
Ba			He	. 55	.
Pt	5		He	. 5	.
Tl	5		He	.	5.
Pb			He	.	.
Bi			He	. 5	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5
e			He	. 5
e			H	.
In	5		He	. 5
Tb	5		He	. 5
Th			He	.5

Sample ame	CCB
Sample Type	CCB
Operator	T Traynor
Instrument	ICM . A
Batch ame	5 .b
Data File ame	5 CCB.d
Data Path ame	D Data
Acq. Date Time	5/ /
Comment	

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	.	.
B			H	. 5	.
a			He	.	.
M			He	.	
Al			He	.	.5
Si			H	5.	
			He	.	5.
Ca			He	.5	.
Ti			He	. 5	.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	. 5	.
Fe	5		He	.	
Co	5		He	.	5.
i			He	.	.
Cu			He	.	.5
n			He	. 5	
As	5		He	.	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	. 5	
Pd	5		He	. 5	
A			He	.	.
Cd			He	.	
Sn			He	. 5	5 .
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	.5
Pb			He	.	
Bi			He	.	.5
U			He	.	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.5
Sc	5		H	.
e			He	. 5
e			H	. 5
In	5		He	. 5
Tb	5		He	5. 5
Th			He	5. 5

Sample ame 5 5 B 5 5D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	
Be			H	.	.
B			H	. 5	.
a			He	.	.
M			He	.	.
Al			He	.	.
Si			H	5. 5	
			He	5.	5 .
Ca			He	. 5	.5
Ti			He	.	.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	. 5	.
Fe	5		He	.	.5
Co	5		He	.	.
i			He	.	.
Cu			He	. 5	.
n			He	.5 5 5	.
As	5		He	.	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	
Pd	5		He	.	
A			He	.	.
Cd			He	.	
Sn			He	. 5	.5
Sb			He	.	.
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	.	
Pb			He	.	
Bi			He	. 5	.
U			He	. 5	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.5 5 5
Sc	5		H	. 55
e			He	.
e			H	. 5
In	5		He	.
Tb	5		He	.555 5 5
Th			He	. 5

Sample ame 5 B 5 5D

Sample Type Sample

Operator T Traynor

Instrument ICM . A

Batch ame 5 .b

Data File ame SMPL.d

Data Path ame D Data

Acq. Date Time 5/ /

Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.5 5	.
Be			H	.	.5
B			H	.	.
a			He	. 5	.
M			He	.	.
Al			He	5.5	.
Si			H	55 .	.
			He	.	.
Ca			He	5 .	5.
Ti			He	.	.
V	5		He	.	.5
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	.	.
Co	5		He	5.	5.
i			He	.5 5	.
Cu			He	.	.
n			He	.5 5	.
As	5		He	.	.
Se			H	.5 5	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.	
Cd			He	. 5	.
Sn			He	. 5 5	.5
Sb			He	. 55	.
Ba			He	. 5	5.
Pt	5		He	. 5	5 .5
Tl	5		He	. 5	55.
Pb			He	. 5	.
Bi			He	.	.5
U			He	.	.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	.
e			H	.
In	5		He	. 55 5
Tb	5		He	. 5
Th			He	.

Sample ame 5 B 5 5D

Pa e of

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.5	.
Be			H	.	.
B			H	.5	.
a			He	5. 5	.
M			He	.	5.
Al			He	.	.
Si			H	5 .	.5
			He	5 .	.
Ca			He	5 .	5.
Ti			He	.	.5
V	5		He	.	.
Cr	5		He	. 5	.
Mn	55		He	5.	5.
Fe	5		He	.5	.
Co	5		He	.	.
i			He	.	5.
Cu			He	.	.
n			He	.	5.
As	5		He	.	.
Se			H	.5 5	.5
Sr			He	.5	5.
Mo	5		He	. 5	5 .
Pd	5		He	.	5.5
A			He	.	.
Cd			He	.	.
Sn			He	. 5	.
Sb			He	. 5 5	.
Ba			He	5.	.
Pt	5		He	.	5 .
Tl	5		He	. 5	.
Pb			He	. 5	.
Bi			He	. 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	5.
Sc	5		H	. 5
e			He	.
e			H	. 5
In	5		He	. 5
Tb	5		He	.55 5
Th			He	. 5

Sample ame 5 B 5 5D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.5	5.
Be			H	. 5	.
B			H	. 5	.
a			He	.	.5
M			He	. 5	.
Al			He	.	.
Si			H	. 55	.
			He	5 .	.
Ca			He	.5	.
Ti			He	. 5	.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	5.	.
Fe	5		He	.	.
Co	5		He	. 5	5.
i			He	.	.
Cu			He	. 5	.
n			He	.5	.
As	5		He	.	.
Se			H	.	.5
Sr			He	5.	.5
Mo	5		He	.	.
Pd	5		He	.	5 .
A			He	.	
Cd			He	.	.
Sn			He	. 5	
Sb			He	. 5	5.5
Ba			He	. 5 5	.
Pt	5		He	.	5 .
Tl	5		He	.	.
Pb			He	. 5	.5
Bi			He	.	.
U			He	. 55	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.55
Sc	5		H	.
e			He	.
e			H	. 5 5 5
In	5		He	.
Tb	5		He	. 5
Th			He	. 5 55

Sample ame 5 5 B 5 5D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.5
B			H	.	.
a			He	.	.
M			He	. 5	.
Al			He	5. 5	.5
Si			H	. 55	.
			He	. 5	.
Ca			He	.5	.
Ti			He	.	.
V	5		He	.	5.
Cr	5		He	.	.
Mn	55		He	5 .	.
Fe	5		He	.	5.
Co	5		He	. 5	5.
i			He	.	.
Cu			He	.5	.
n			He	5 . 5	5.5
As	5		He	.	5.
Se			H	. 55	.
Sr			He	5.	.
Mo	5		He	.	.5
Pd	5		He	.	
A			He	.	.
Cd			He	.5	.
Sn			He	.	
Sb			He	. 5	.
Ba			He	. 5	5.
Pt	5		He	.	.
Tl	5		He	.	55.
Pb			He	.	.
Bi			He	. 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 55
e			He	.
e			H	. 5
In	5		He	. 5
Tb	5		He	.
Th			He	. 5 55

Sample ame 5 B 5 5D

Pa e of

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.55	.
Be			H	. 5	.
B			H	. 5	.
a			He	. 5	.5
M			He	5 . 5	.
Al			He	.	.
Si			H	5 .	.
			He	.	.5
Ca			He	5 .	.
Ti			He	.	.
V	5		He	. 5	.
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	.	.
Co	5		He	.	.
i			He	.	.
Cu			He	.5	.5
n			He	5 .	.
As	5		He	. 5	.5
Se			H	. 5 55	.
Sr			He	.	5.
Mo	5		He	.	5.
Pd	5		He	.	
A			He	.	.
Cd			He	.5	.
Sn			He	.	
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	.5
Pb			He	. 5	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	.5
e			H	.
In	5		He	.
Tb	5		He	.
Th			He	.5

Sample ame 5 5 5 B 5 5D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	5 .	.
a			He	5 .	.
M			He	.5	.
Al			He	.	.
Si			H	.	.
			He	. 5	.
Ca			He	.	.
Ti			He	. 5	.
V	5		He	. 5	.
Cr	5		He	.5	.
Mn	55		He	5 . 5	.5
Fe	5		He	.	.
Co	5		He	.	.
i			He	.	.
Cu			He	.	.
n			He	5 .5	.5
As	5		He	5.	.
Se			H	5. 5	.
Sr			He	.	.
Mo	5		He	.5	.
Pd	5		He	.	.
A			He	5 .	.5
Cd			He	. 5	.
Sn			He	.	.
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	. 5	.
Pb			He	. 5	.
Bi			He	. 555	.
U			He	5.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 55
Sc	5		H	. 5
e			He	.
e			H	.
In	5		He	.
Tb	5		He	.
Th			He	.5

Sample ame 5 5 B 5 5D
Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 5	.
B			H	. 5	.
a			He	5 5 .	.
M			He	.5	.
Al			He	.5	.
Si			H	. 5 5	.
			He	.5	5.
Ca			He	.	.
Ti			He	5.5	.
V	5		He	5.	5.
Cr	5		He	. 5	5.
Mn	55		He	.	.
Fe	5		He	5 .	.
Co	5		He	. 5	5.
i			He	. 5	5.
Cu			He	5.	5.
n			He	.	.
As	5		He	.5	.
Se			H	5. 5	.
Sr			He	. 5	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	5 .	.
Cd			He	.	.
Sn			He	.	.
Sb			He	5.	.
Ba			He	.	5.
Pt	5		He	. 5 5	5.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	. 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5
e			He	. 55
e			H	. 555
In	5		He	.5 5
Tb	5		He	. 5
Th			He	. 5

Sample ame 5 B 5 5D 5
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	.	.
B			H	.	.
a			He	5 .	5.
M			He	5 .	5.
Al			He	.	.
Si			H	.	.
			He	.	.
Ca			He	5 .	.
Ti			He	. 5	.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	5 .	5.
Co	5		He	.	5.
i			He	.	.
Cu			He	.	.
n			He	.	.
As	5		He	.5 5 5	.5
Se			H	. 5 5	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	.	5 .
A			He	. 5	5.
Cd			He	.	.
Sn			He	.	
Sb			He	. 5	.5
Ba			He	.	5.
Pt	5		He	. 5	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	. 5	.
U			He	. 5	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5555
e			He	. 5
e			H	.5 5
In	5		He	.5 5
Tb	5		He	.
Th			He	.

Sample ame 5 5 B 5 5D

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	5 .	.
a			He	.5 5	5.
M			He	. 5	.
Al			He	.	5.
Si			H	.	.
			He	.	5.
Ca			He	.	5.
Ti			He	. 5	.
V	5		He	.	.
Cr	5		He	.	5.
Mn	55		He	5. 55	5.
Fe	5		He	.	5.
Co	5		He	.	5.
i			He	. 5	5.
Cu			He	.5	5.
n			He	.	5.
As	5		He	. 5 5	5.
Se			H	5. 5	.
Sr			He	. 5 5	.
Mo	5		He	. 5	.
Pd	5		He	.	5.5
A			He	5 . 5	5.
Cd			He	.	.
Sn			He	5.	5.5
Sb			He	.	5.
Ba			He	.	5.
Pt	5		He	. 5	.
Tl	5		He	.	5.
Pb			He	.	5.5
Bi			He	.	5.
U			He	.	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	5. 5
Sc	5		H	.
e			He	.5
e			H	.
In	5		He	. 5
Tb	5		He	.5 5
Th			He	. 5

Sample ame	CCV	Pa e of
Sample Type	CCV	
Operator	T Traynor	
Instrument	ICM . A	
Batch ame	5 .b	
Data File ame	CCV.d	
Data Path ame	D Data	
Acq. Date Time	5/ /	
Comment		

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5.	.
Be			H	. 5	.
B			H	5.	.
a			He	. 5	.
M			He	.	.
Al			He	.	5.5
Si			H	. 5	.5
			He	. 5	5.
Ca			He	5 .	.
Ti			He	.	5.5
V	5		He	. 5	.
Cr	5		He	.	.
Mn	55		He	. 5	.
Fe	5		He	. 5	.
Co	5		He	5.	.5
i			He	. 5	.
Cu			He	.	.
n			He	5.	.
As	5		He	.	5.
Se			H	.	.
Sr			He	. 5	.
Mo	5		He	.5 5	.
Pd	5		He	.	5.
A			He	.5	.
Cd			He	.	5.5
Sn			He	.5	5.
Sb			He	.	5.
Ba			He	.5 5	.
Pt	5		He	.	.
Tl	5		He	.	5.
Pb			He	.5	.
Bi			He	. 5	5.
U			He	. 55	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5
e			He	. 55
e			H	.
In	5		He	. 5
Tb	5		He	.5
Th			He	.

Sample ame CCB
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCB.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	.	.
B			H	5 . 5	.
a			He	.	5.
M			He	. 5	.
Al			He	. 5	.
Si			H	5. 5	
			He	5.	.
Ca			He	.	.
Ti			He	.	.
V	5		He	. 55	.
Cr	5		He	. 5	.
Mn	55		He	.	.
Fe	5		He	.	5.
Co	5		He	. 5 5	.
i			He	.	55.
Cu			He	.	.
n			He	. 5	5.
As	5		He	. 5	.
Se			H	. 55	.
Sr			He	. 5	.
Mo	5		He	.	.
Pd	5		He	. 5	.
A			He	.	5.
Cd			He	. 5	.
Sn			He	.	
Sb			He	. 5	.
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	. 5	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 5
e			H	.
In	5		He	5. 5 5
Tb	5		He	.
Th			He	.

Sample ame CCB Pa e of
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCB.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	
Be			H	.	.
B			H	5 .	.
a			He	5.	.
M			He	. 5	
Al			He	.	.
Si			H	.	
			He	5.	.
Ca			He	.	.
Ti			He	. 5	
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	.	5 .
Fe	5		He	.	
Co	5		He	.	5 .
i			He	. 5	.
Cu			He	.	.
n			He	.	
As	5		He	. 5	.
Se			H	. 5	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	. 5	.
Cd			He	. 5	
Sn			He	.	
Sb			He	. 5	.
Ba			He	. 5	.
Pt	5		He	.	5 .5
Tl	5		He	. 5	.
Pb			He	. 5	5.
Bi			He	. 5	.
U			He	. 5	5 .

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5 5
Sc	5		H	.
e			He	.
e			H	. 5
In	5		He	.5 5 5
Tb	5		He	.
Th			He	.

Sample ame 5 B 5 5D

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 55	
Be			H	.	.
B			H	5 . 5	.
a			He	.	.
M			He	.	.
Al			He	.	.
Si			H	. 5	
			He	. 5 5	.
Ca			He	. 5	.
Ti			He	.	.
V	5		He	. 5	.5
Cr	5		He	. 5 55	.
Mn	55		He	. 55	.
Fe	5		He	. 5 5	.
Co	5		He	.	.
i			He	.	.
Cu			He	.	.
n			He	. 5	.
As	5		He	.	.
Se			H	.	.
Sr			He	. 5	.
Mo	5		He	.	5 .
Pd	5		He	.	
A			He	.	.
Cd			He	.	.
Sn			He	.	
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	.	5.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5
Sc	5		H	. 5
e			He	.5 5
e			H	. 5
In	5		He	.
Tb	5		He	.5
Th			He	.

Sample ame 5 B 5 5D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.5
Be			H	. 5	.
B			H	5 .55	.
a			He	5. 5 5	5.
M			He	.	5.
Al			He	.	.
Si			H	. 5	.
			He	5 . 55	5.
Ca			He	.	.
Ti			He	.	.
V	5		He	. 5	.
Cr	5		He	.	.
Mn	55		He	.	5.
Fe	5		He	.	5.
Co	5		He	.	.5
i			He	.	5.5
Cu			He	.	.
n			He	5. 5	.
As	5		He	.	.5
Se			H	. 5	.5
Sr			He	.	5.
Mo	5		He	.	.
Pd	5		He	.	.5
A			He	.	.5
Cd			He	.	.
Sn			He	.	
Sb			He	.	.
Ba			He	.	5.
Pt	5		He	.	.
Tl	5		He	. 55	.
Pb			He	. 5	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 5 55
e			H	.
In	5		He	. 5
Tb	5		He	.
Th			He	. 5

Sample ame 5 B 5 5D

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	55.	.
a			He	5 . 5	.
M			He	.5	.
Al			He	.	5.
Si			H	. 5	.
			He	. 5	.
Ca			He	55. 5	.
Ti			He	.	.
V	5		He	.	.
Cr	5		He	.	5.
Mn	55		He	.	.
Fe	5		He	. 5	.
Co	5		He	. 5	.
i			He	. 5	.
Cu			He	.	.
n			He	.	.
As	5		He	. 5	.5
Se			H	.	.
Sr			He	.	.
Mo	5		He	.5 5	5.
Pd	5		He	.	5.
A			He	. 5	.
Cd			He	.	.
Sn			He	.	
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	. 5	5 .5
Tl	5		He	.	5.
Pb			He	.	.
Bi			He	.	.
U			He	.	.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5
Sc	5		H	. 5
e			He	.
e			H	. 5
In	5		He	.5 5
Tb	5		He	. 55 5
Th			He	. 5

Sample ame 5 B 5 5D

Pa e of

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5 55
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	.	.
B			H	5 .	.
a			He	.	.
M			He	.	.5
Al			He	.	.
Si			H	. 5	.
			He	.	.
Ca			He	5 .	.
Ti			He	.	.
V	5		He	.	
Cr	5		He	. 5	.
Mn	55		He	. 5	.5
Fe	5		He	5.	.
Co	5		He	. 5	5.
i			He	.	.
Cu			He	.5	.
n			He	. 5	5.5
As	5		He	. 5	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	. 5 5	.
Pd	5		He	.	.
A			He	. 5	.5
Cd			He	.5 55	.
Sn			He	.	
Sb			He	.	.
Ba			He	5 .	5.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	. 5	.
U			He	.	.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	. 5 5
e			H	. 5
In	5		He	. 5
Tb	5		He	.
Th			He	. 5

Sample ame 5 B 5 5D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	.	.
B			H	. 5	.
a			He	.	.
M			He	. 5	5.
Al			He	. 5	.
Si			H	. 55	.
			He	.	5.
Ca			He	. 5	.
Ti			He	. 5 5	.5
V	5		He	.	
Cr	5		He	. 5	.
Mn	55		He	.5	.
Fe	5		He	. 5	.
Co	5		He	.	.
i			He	.	.
Cu			He	.	.5
n			He	.5 5	.
As	5		He	.	
Se			H	. 5	.
Sr			He	. 5	.
Mo	5		He	. 5	.5
Pd	5		He	. 5	.
A			He	. 5	5 .
Cd			He	.	
Sn			He	. 5	
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	.5
Tl	5		He	.	
Pb			He	. 5	.
Bi			He	. 5	.
U			He	.	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	5. 5
Sc	5		H	.
e			He	. 5
e			H	. 5
In	5		He	.
Tb	5		He	.5
Th			He	.

Sample ame 5 B 5 5D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	.	
B			H	.	.
a			He	.5	.
M			He	.5 5	.
Al			He	.	.
Si			H	. 5 55	
			He	. 5	5.5
Ca			He	. 5	.
Ti			He	.	5 .
V	5		He	. 5	
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	.	.
Co	5		He	.	.
i			He	.	.
Cu			He	. 5	5.
n			He	.	.
As	5		He	. 5	
Se			H	.	.5
Sr			He	. 5	.
Mo	5		He	.	
Pd	5		He	.	
A			He	.	.
Cd			He	. 5	
Sn			He	. 5	
Sb			He	.	.
Ba			He	.	.5
Pt	5		He	. 5	.
Tl	5		He	.	
Pb			He	. 5	.
Bi			He	. 5	.5
U			He	.	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.5
e			He	.5
e			H	.5 5
In	5		He	.
Tb	5		He	.
Th			He	. 5

Sample ame 5 B 5 5D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5. 5	.
Be			H	.	5.5
B			H	5 .	.
a			He	5 . 5	5.
M			He	. 5	5.
Al			He	.5	.
Si			H	5 . 5	.
			He	.	5.
Ca			He	. 5	5.
Ti			He	. 5	.
V	5		He	. 5	.
Cr	5		He	. 55	5.
Mn	55		He	5. 5	5.
Fe	5		He	5 . 5	5.
Co	5		He	.	5.
i			He	.	5.
Cu			He	. 5	.
n			He	.5 5	.
As	5		He	. 5	.
Se			H	. 5	.
Sr			He	5.5	.
Mo	5		He	. 5	.
Pd	5		He	.	5 .
A			He	. 5	.
Cd			He	.	.
Sn			He	. 5	
Sb			He	. 5	5.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	5 .
Pb			He	. 5 5	5.5
Bi			He	.	.
U			He	. 5	.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 55
Sc	5		H	. 5
e			He	.
e			H	.
In	5		He	.
Tb	5		He	.
Th			He	.5

Sample ame 5 5 B 5 5D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.5
Be			H	.	5.5
B			H	. 5	.
a			He	.	.
M			He	.	.5
Al			He	. 5	.
Si			H	5 .	5.
			He	5 .5	.
Ca			He	.5 5	.
Ti			He	.5 5	.
V	5		He	. 55	.
Cr	5		He	. 5 5	.
Mn	55		He	. 5	.
Fe	5		He	. 5	.
Co	5		He	.	.
i			He	.	.
Cu			He	.	.
n			He	.	.
As	5		He	.	.
Se			H	. 55	.
Sr			He	.	.
Mo	5		He	.	.5
Pd	5		He	.	.
A			He	5 .	.
Cd			He	. 5	.
Sn			He	.	.5
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	.5	.
Tl	5		He	. 5	.
Pb			He	.	.
Bi			He	.	.
U			He	. 5	.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5
Sc	5		H	.
e			He	5.5
e			H	.
In	5		He	. 5
Tb	5		He	. 5
Th			He	.

Sample ame 5 B 5 5D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.5	.
Be			H	. 5	.
B			H	.	.
a			He	5 .	.
M			He	. 5	.
Al			He	.	.5
Si			H	.	.
			He	.	5.
Ca			He	5 .	5.
Ti			He	.	.5
V	5		He	. 5	.
Cr	5		He	.55 5	.
Mn	55		He	.	5.
Fe	5		He	. 5	5.
Co	5		He	.	.
i			He	.	.
Cu			He	. 5 5	.
n			He	.	.
As	5		He	.	.
Se			H	. 5 5	.
Sr			He	. 5 5	.
Mo	5		He	. 5	.
Pd	5		He	.	.
A			He	. 5	.
Cd			He	. 5	.
Sn			He	.	
Sb			He	.	.
Ba			He	.	5.5
Pt	5		He	. 5	.
Tl	5		He	.	5 .
Pb			He	.	.
Bi			He	. 5	.
U			He	.	.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	5. 5
e			H	.
In	5		He	. 5 5
Tb	5		He	.
Th			He	.

Sample ame 5 B 5 5D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.5	.
Be			H	.	.
B			H	5 . 5	.
a			He	.	.
M			He	. 5	.
Al			He	.	.
Si			H	5 . 5	.
			He	5 .	.
Ca			He	. 55	.
Ti			He	. 5	.
V	5		He	. 5	.
Cr	5		He	.5	.
Mn	55		He	.5 5	.5
Fe	5		He	5 .	5.
Co	5		He	.	5.
i			He	.	.
Cu			He	. 5	.
n			He	.	5.5
As	5		He	.	.
Se			H	.	.
Sr			He	. 5	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.	.
Cd			He	.	.
Sn			He	. 5	
Sb			He	.	.
Ba			He	.	5.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	. 5	5.
Bi			He	. 5	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5
Sc	5		H	.5 5
e			He	. 5
e			H	.5
In	5		He	5.
Tb	5		He	. 5
Th			He	. 5

Sample ame	CCV	Pa e of
Sample Type	CCV	
Operator	T Traynor	
Instrument	ICM . A	
Batch ame	5 .b	
Data File ame	CCV.d	
Data Path ame	D Data	
Acq. Date Time	5/ /	
Comment		

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	. 5	.
a			He	5.5	.
M			He	. 5	.
Al			He	. 5	.
Si			H	. 5	.
			He	. 5 5	.
Ca			He	5 .	.
Ti			He	.	.
V	5		He	.5	.
Cr	5		He	.	.
Mn	55		He	. 5	.
Fe	5		He	.	.
Co	5		He	.	.5
i			He	5.	.
Cu			He	.	.
n			He	. 5	5.
As	5		He	.	.
Se			H	.55	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	. 5	.
Cd			He	. 5	.
Sn			He	. 5 5	.
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	. 5	.
Pb			He	.	.
Bi			He	.5 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5
Sc	5		H	. 5
e			He	5.
e			H	.
In	5		He	.
Tb	5		He	.
Th			He	. 5

Sample ame	CCB	Pa e of
Sample Type	CCB	
Operator	T Traynor	
Instrument	ICM . A	
Batch ame	5 .b	
Data File ame	CCB.d	
Data Path ame	D Data	
Acq. Date Time	5/ /	
Comment		

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	. 5	.
B			H	.	.5
a			He	.	.
M			He	.	.5
Al			He	. 55	.
Si			H	.	
			He	.	.
Ca			He	. 5 5	.
Ti			He	. 55	.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	.	5 .
Co	5		He	. 5	.5
i			He	.	5 .
Cu			He	. 5	.
n			He	.	5.5
As	5		He	.	.
Se			H	. 5	.
Sr			He	. 5	5 .
Mo	5		He	.	.5
Pd	5		He	.	.
A			He	. 5	.
Cd			He	. 5	.
Sn			He	.	
Sb			He	. 5 5	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	. 5	.
Pb			He	.	5 .5
Bi			He	.	.5
U			He	. 5	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 55
e			He	5. 5
e			H	.
In	5		He	5. 5
Tb	5		He	. 5
Th			He	.

Sample ame CCB
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5 CCB.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	
Be			H	. 5	.
B			H	.	.
a			He	5. 5	.
M			He	. 5	5.
Al			He	.	.
Si			H	.	
			He	.	.
Ca			He	.55	.
Ti			He	. 5	
V	5		He	.	.
Cr	5		He	. 55 5	.5
Mn	55		He	.	.5
Fe	5		He	. 5	
Co	5		He	. 5	.
i			He	. 5 5	.
Cu			He	. 555	.
n			He	.	
As	5		He	.	.
Se			H	.	5.
Sr			He	.	5 .
Mo	5		He	.	
Pd	5		He	. 5	.
A			He	.	.
Cd			He	.	.
Sn			He	.	
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	. 5	.
Pb			He	.	.
Bi			He	.	.
U			He	. 5	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.5 5
e			He	.55
e			H	.5
In	5		He	. 5
Tb	5		He	5. 5
Th			He	. 5

Sample ame 5 B 5 5D

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 55	5.
Be			H	.	.
B			H	.5	.
a			He	.	.
M			He	.	.
Al			He	. 5	.
Si			H	. 55 5	.
			He	. 5	.
Ca			He	5 .	.
Ti			He	.	.
V	5		He	. 5	.
Cr	5		He	. 5	.
Mn	55		He	.	.
Fe	5		He	.	5.
Co	5		He	. 5	.
i			He	.	.
Cu			He	.	.
n			He	.	.
As	5		He	. 5 5	.
Se			H	.	.5
Sr			He	.	5.
Mo	5		He	.	5.
Pd	5		He	.	.
A			He	. 5	5 .
Cd			He	.	.5
Sn			He	. 5 5	
Sb			He	.	.
Ba			He	.	.
Pt	5		He	. 5	.
Tl	5		He	.	.
Pb			He	. 5	.
Bi			He	. 5	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.5 5
e			He	5.
e			H	.
In	5		He	.5 5
Tb	5		He	.
Th			He	.

Sample ame 5 5 B 5 5D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.5 5	.
Be			H	. 5 5	.
B			H	. 5	5.
a			He	.	5.
M			He	.	.
Al			He	5 . 5 5	.
Si			H	.5 5	.
			He	5 .	.
Ca			He	. 5	5.
Ti			He	.	.
V	5		He	.	5.
Cr	5		He	. 5	.
Mn	55		He	5. 5	.
Fe	5		He	.	.
Co	5		He	.	.
i			He	.	.
Cu			He	.	.5
n			He	. 5	5.
As	5		He	. 5	.
Se			H	.	.
Sr			He	.	5.
Mo	5		He	. 5	.5
Pd	5		He	.	.
A			He	. 5	5.
Cd			He	. 5	.5
Sn			He	.	
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	5.
Tl	5		He	.	.
Pb			He	.	5.
Bi			He	.	.
U			He	. 5	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5
Sc	5		H	.
e			He	5. 5 5
e			H	.
In	5		He	. 5
Tb	5		He	.
Th			He	.

Sample ame 5 B 5 5D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	.	5.5
a			He	5.5 5	5.
M			He	5.	.
Al			He	.	.
Si			H	5 5.	.
			He	.5	.
Ca			He	.5 5	5.5
Ti			He	.	.
V	5		He	.	5.
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	5. 5	5.
Co	5		He	. 5	.5
i			He	.	.
Cu			He	. 5	.
n			He	. 5	.5
As	5		He	.	.
Se			H	. 5	.
Sr			He	.	.
Mo	5		He	. 5	.
Pd	5		He	.	
A			He	.	.
Cd			He	. 5 5	.
Sn			He	. 5	
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	
Pb			He	. 5	5.
Bi			He	. 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.5
e			He	.
e			H	. 5
In	5		He	5. 5
Tb	5		He	.
Th			He	. 5

Sample ame 5 B 5 5D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	
B			H	. 5	.
a			He	5. 5	.
M			He	5.	.
Al			He	. 5	5.
Si			H	. 5	.
			He	5.	.
Ca			He	.	.
Ti			He	.	.
V	5		He	.	
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	. 5	.
Co	5		He	. 5	.
i			He	. 5	.
Cu			He	.	.
n			He	.	.
As	5		He	.	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	. 5	.
A			He	.	
Cd			He	.	.
Sn			He	.	
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	
Tl	5		He	. 5	
Pb			He	. 5	
Bi			He	. 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 55
Sc	5		H	. 5 5
e			He	5. 5
e			H	. 5
In	5		He	.
Tb	5		He	. 5
Th			He	.5

Sample ame 5 B 5 5D

Pa e of

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 5	.
B			H	.	.
a			He	.	.
M			He	.5	.
Al			He	.	5.
Si			H	. 5	.
			He	.	.
Ca			He	5 .	.5
Ti			He	.	5 .5
V	5		He	.	
Cr	5		He	. 5	.
Mn	55		He	.	5.
Fe	5		He	.	.
Co	5		He	.	.
i			He	. 55 5	5.
Cu			He	.	.
n			He	.	.
As	5		He	.	
Se			H	.	.
Sr			He	. 5	5.5
Mo	5		He	. 5	
Pd	5		He	. 5	
A			He	.	.
Cd			He	.	.
Sn			He	.	
Sb			He	.	.
Ba			He	5.	.
Pt	5		He	.	.
Tl	5		He	.	
Pb			He	.	.5
Bi			He	.	.
U			He	.	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 5
e			H	.
In	5		He	5. 5
Tb	5		He	.
Th			He	.

Sample ame CCV
Sample Type CCV
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCV.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.5 5	.5
Be			H	.	.
B			H	. 5	.
a			He	. 5	.
M			He	. 5	.
Al			He	5. 5 55	.
Si			H	.	.
			He	. 5	.
Ca			He	5 . 5 5	.
Ti			He	.	.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	. 5	5.5
Fe	5		He	.	.
Co	5		He	.	.5
i			He	.	.
Cu			He	. 5	5.
n			He	.	5.
As	5		He	.	5.
Se			H	. 5	.
Sr			He	.	.
Mo	5		He	. 5	5.
Pd	5		He	. 5	5.
A			He	. 5	5.
Cd			He	.	.
Sn			He	.55 5	.5
Sb			He	.5 5	.
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	5.	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	.
e			H	5. 55
In	5		He	. 5
Tb	5		He	.
Th			He	.

Sample ame CCB
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCB.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	.	.
B			H	.	5.
a			He	.	5.
M			He	. 5	55.
Al			He	. 5	.
Si			H	.	
			He	.	5 .
Ca			He	. 5	.
Ti			He	.	.
V	5		He	.	
Cr	5		He	.	.
Mn	55		He	. 5	.
Fe	5		He	.	.
Co	5		He	.	.
i			He	.	.
Cu			He	. 5	.
n			He	.	.
As	5		He	.	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	. 5	.5
A			He	.	5.
Cd			He	.	.
Sn			He	. 5	
Sb			He	. 5	5 .
Ba			He	. 5	5.
Pt	5		He	.	.
Tl	5		He	. 5	5.
Pb			He	. 5	5 .
Bi			He	.	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5
e			He	.
e			H	.
In	5		He	. 5
Tb	5		He	.
Th			He	.5

Sample ame	CCB
Sample Type	CCB
Operator	T Traynor
Instrument	ICM . A
Batch ame	5 .b
Data File ame	CCB.d
Data Path ame	D Data
Acq. Date Time	5/ /
Comment	

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	. 5	5 .5
B			H	. 5	5.
a			He	.	.
M			He	.	
Al			He	. 5	.
Si			H	. 5	
			He	. 5	.
Ca			He	. 5	
Ti			He	.	
V	5		He	. 5 5	
Cr	5		He	. 5	.5
Mn	55		He	.	.
Fe	5		He	. 5	
Co	5		He	.	5 .
i			He	.	
Cu			He	.	.
n			He	.	
As	5		He	.	
Se			H	.	5.
Sr			He	.	.
Mo	5		He	.	
Pd	5		He	.	.
A			He	.	.
Cd			He	.	.
Sn			He	.	
Sb			He	.	5 .
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	5 .
Bi			He	.	5.
U			He	.	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.5
e			He	.
e			H	.
In	5		He	.
Tb	5		He	.
Th			He	. 55

Sample ame 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	.	.5
B			H	. 5	.
a			He	. 5	5.
M			He	.	.
Al			He	.	.
Si			H	.	
			He	. 55	.
Ca			He	5.	.5
Ti			He	. 5	5 .
V	5		He	. 5	
Cr	5		He	.	.5
Mn	55		He	. 5 5	.
Fe	5		He	. 5	.
Co	5		He	. 5	55.
i			He	.	.
Cu			He	. 5	.5
n			He	.5	.
As	5		He	.	
Se			H	.	5.
Sr			He	.	.
Mo	5		He	.	
Pd	5		He	.	5.
A			He	.	5 .
Cd			He	.	
Sn			He	. 5	
Sb			He	.	.
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	. 5	
Pb			He	.	.
Bi			He	.	.
U			He	. 5	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.5 55
e			He	5.5
e			H	. 5
In	5		He	5.
Tb	5		He	.
Th			He	. 5

Sample ame 5 B 5 D

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	.	
B			H	.	.
a			He	5.	.
M			He	.	.
Al			He	5.	.
Si			H	.	.
			He	. 5	.5
Ca			He	. 5	.
Ti			He	. 5	.
V	5		He	.	
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	.	5.
Co	5		He	. 55	.
i			He	.	.
Cu			He	.	.
n			He	.5	5.
As	5		He	. 5	
Se			H	. 5 5	.
Sr			He	. 5	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.	.
Cd			He	.	
Sn			He	.	
Sb			He	.	.
Ba			He	.	5.
Pt	5		He	.	.
Tl	5		He	.	
Pb			He	. 5	5.
Bi			He	. 5	.
U			He	.	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	5.
e			H	.
In	5		He	.
Tb	5		He	. 5
Th			He	.

Sample ame 5 B 5 D | Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	. 5	.
B			H	5 .	.
a			He	5. 5	.
M			He	.	.
Al			He	5 . 5	.
Si			H	.	.
			He	. 5	.
Ca			He	.	.
Ti			He	. 5	.
V	5		He	. 5	.
Cr	5		He	. 5	.5
Mn	55		He	.	.
Fe	5		He	5 5 .	.
Co	5		He	.	.
i			He	5. 5	.
Cu			He	.	.
n			He	. 5	.
As	5		He	.	.
Se			H	.	.
Sr			He	5 .	.
Mo	5		He	5.5	.
Pd	5		He	.	.
A			He	. 5	.
Cd			He	.	.
Sn			He	. 5	.
Sb			He	. 55	.
Ba			He	. 5	.
Pt	5		He	. 5	5.
Tl	5		He	.	5.
Pb			He	.	.
Bi			He	.	.
U			He	. 5 55	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	5.
e			H	. 55
In	5		He	. 5
Tb	5		He	.
Th			He	.

Sample ame 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	. 5	.
a			He	5 .	.
M			He	.	5.
Al			He	5 . 5	5.
Si			H	.5 55	.
			He	. 5	5.
Ca			He	. 5	5.
Ti			He	.	5.5
V	5		He	. 5	5.
Cr	5		He	.	.
Mn	55		He	. 5 5	5.
Fe	5		He	.5	5.
Co	5		He	. 5	.
i			He	. 5	.
Cu			He	55.	.
n			He	.5	.
As	5		He	.	.
Se			H	. 5	5.
Sr			He	. 5	5.5
Mo	5		He	5. 5	.
Pd	5		He	.	.
A			He	.	.
Cd			He	.	.
Sn			He	. 5	.5
Sb			He	. 55	.
Ba			He	.	.5
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	. 5 5	.
Bi			He	. 5	.
U			He	. 5	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 555
e			He	. 55 5
e			H	. 5
In	5		He	. 5
Tb	5		He	.
Th			He	. 5

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.5	.5
Be			H	. 5	.
B			H	5 . 5	.5
a			He	.5	.
M			He	. 5	.
Al			He	.	.
Si			H	.	.
			He	5 .	.
Ca			He	.	.
Ti			He	. 5	.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	5 .	.
Co	5		He	.	.
i			He	.	.
Cu			He	. 5	.
n			He	5 . 5	.
As	5		He	5.	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	. 5	.5
Pd	5		He	.	.
A			He	. 5	.
Cd			He	.	.
Sn			He	. 5	.
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	. 555	.
Bi			He	. 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	. 5
e			H	.
In	5		He	.
Tb	5		He	. 5
Th			He	. 55

Sample ame 5 5 B 5 D

Pa e of

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.5
B			H	.5 5	.
a			He	.	.
M			He	.	.
Al			He	.5	.
Si			H	.	.
			He	. 5	.
Ca			He	.	5.
Ti			He	.	.
V	5		He	. 5	.
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	5 5.55	.5
Co	5		He	. 5 5	5.
i			He	.	5.
Cu			He	5 . 5 5	.
n			He	.	.
As	5		He	. 5	.
Se			H	5.	.
Sr			He	5. 5	.
Mo	5		He	.	.
Pd	5		He	. 5	.
A			He	.	5.
Cd			He	.	.
Sn			He	.5	.
Sb			He	.55 5	.
Ba			He	.55	.
Pt	5		He	.	.
Tl	5		He	. 5	5.
Pb			He	5. 55	.
Bi			He	.	.5
U			He	.5	.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	.
e			H	. 5
In	5		He	.
Tb	5		He	. 5
Th			He	.

Sample ame 5 5 B 5 D 5
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	. 5	.5
a			He	5 .	.
M			He	5 .	.
Al			He	. 5	.
Si			H	5 5 .	.
			He	5.	.
Ca			He	5 5.	.
Ti			He	.	.
V	5		He	5.	.
Cr	5		He	. 5	.
Mn	55		He	.	.
Fe	5		He	5 .	.
Co	5		He	.	.
i			He	.	.
Cu			He	5.	.
n			He	5.	.5
As	5		He	5. 5	.
Se			H	.	.
Sr			He	. 5	.
Mo	5		He	.	5.
Pd	5		He	. 5	.
A			He	. 5	.
Cd			He	.	.
Sn			He	.	5.
Sb			He	.	.
Ba			He	. 55	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	. 5	.
Bi			He	.	.
U			He	. 5	.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.5 5
Sc	5		H	. 5
e			He	5. 5
e			H	.
In	5		He	. 5
Tb	5		He	.5
Th			He	.

Sample ame 5 B 5 D 5
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	. 5	.
B			H	5.	.
a			He	.	.
M			He	.	.5
Al			He	5.	.
Si			H	5 . 5	.
			He	55 . 5	.
Ca			He	.	5.
Ti			He	5 .5	.5
V	5		He	5.	.
Cr	5		He	.5	.
Mn	55		He	5 .	.
Fe	5		He	5.	.
Co	5		He	. 5	.
i			He	.	.
Cu			He	5 .	.
n			He	5. 5 5	.
As	5		He	.	.
Se			H	. 5	.5
Sr			He	5 .	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.55	.
Cd			He	.	.
Sn			He	.	.
Sb			He	.	.
Ba			He	. 5 5	.
Pt	5		He	.	.
Tl	5		He	. 5	.
Pb			He	.	5.
Bi			He	.	.
U			He	. 5	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.5
e			He	.5 5
e			H	.
In	5		He	.
Tb	5		He	.
Th			He	. 5

Sample ame 5 5 B 5 D 5 Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	.	.
B			H	5. 5	.
a			He	. 5	.
M			He	. 5	.
Al			He	.	.
Si			H	5 .5	.5
			He	5 . 5	.
Ca			He	.	.
Ti			He	5 .	5.5
V	5		He	5. 5	.
Cr	5		He	.	5.
Mn	55		He	5 .	5.
Fe	5		He	.	5.
Co	5		He	.	5.
i			He	.55	5.
Cu			He	55.	5.
n			He	5. 5	5.
As	5		He	5. 5	.
Se			H	.	.
Sr			He	5 . 5	.
Mo	5		He	. 5	5.
Pd	5		He	. 5	.
A			He	. 5	5.
Cd			He	.	5.
Sn			He	.	5.
Sb			He	.	.
Ba			He	.	.
Pt	5		He	. 5	.
Tl	5		He	.	.
Pb			He	. 55	5.
Bi			He	.	.5
U			He	. 5 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.55
e			He	5. 5
e			H	.5 5
In	5		He	. 5
Tb	5		He	.
Th			He	. 5

Sample ame 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	. 5	.
B			H	.	.5
a			He	5 . 5	.
M			He	.	.
Al			He	.5	.5
Si			H	.	.
			He	.	.
Ca			He	. 5	.
Ti			He	5. 5	.5
V	5		He	5.	.
Cr	5		He	.	.
Mn	55		He	.5 5	.
Fe	5		He	.5	.
Co	5		He	.	5.
i			He	.	5.
Cu			He	.	.
n			He	.	.5
As	5		He	5.	.
Se			H	. 5	.5
Sr			He	.	.
Mo	5		He	. 5	.5
Pd	5		He	.	.
A			He	5 .	.
Cd			He	.	.
Sn			He	.	.
Sb			He	.5 5	.5
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	.	.
U			He	. 5 5	5.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	5.
e			H	. 5
In	5		He	.
Tb	5		He	.
Th			He	. 5

Sample ame CCV
Sample Type CCV
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCV.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.5 5	.
Be			H	. 5	.
B			H	. 5	.
a			He	.	.
M			He	.	.
Al			He	.	.
Si			H	.5	.
			He	. 5	.
Ca			He	. 5	5.
Ti			He	.5 5	5.
V	5		He	. 55	.
Cr	5		He	.	5.
Mn	55		He	.	5.
Fe	5		He	. 55	5.
Co	5		He	.	.
i			He	.5	.
Cu			He	.	5.
n			He	5.	.
As	5		He	. 5	.
Se			H	.	.
Sr			He	. 5 5	.
Mo	5		He	.	.
Pd	5		He	. 5	5.
A			He	.	5.
Cd			He	.	5.
Sn			He	.	.
Sb			He	. 5	5.
Ba			He	.	5.
Pt	5		He	. 5	.
Tl	5		He	. 5	5.
Pb			He	5.	.
Bi			He	. 5	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	5. 5
e			H	.
In	5		He	5. 5
Tb	5		He	.
Th			He	.

Sample ame CCB
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5 CCB.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	. 5	.
B			H	. 5	5.
a			He	. 5	.
M			He	.	.
Al			He	. 5	.5
Si			H	.	
			He	. 55	.
Ca			He	. 5	
Ti			He	.	.
V	5		He	.	.
Cr	5		He	. 5	.
Mn	55		He	. 5	.
Fe	5		He	.5 5	.
Co	5		He	. 5	5.
i			He	. 5	.
Cu			He	.	.
n			He	.	.5
As	5		He	.	5 .
Se			H	.	5.
Sr			He	.	.
Mo	5		He	. 5	.
Pd	5		He	.	.
A			He	. 5	.
Cd			He	. 5	.
Sn			He	. 5 5	
Sb			He	.	.
Ba			He	.	.
Pt	5		He	. 5	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	. 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	. 5 5
e			H	.
In	5		He	.5
Tb	5		He	.
Th			He	. 5

Sample ame CCB
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCB.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	.	.
B			H	.	.
a			He	.	.
M			He	. 5	5 .
Al			He	. 5	.
Si			H	. 5	
			He	.	.
Ca			He	. 5	.
Ti			He	. 5	.
V	5		He	. 5 5	.
Cr	5		He	.	.
Mn	55		He	. 5 5	.
Fe	5		He	.	
Co	5		He	. 5	.
i			He	.	5 .
Cu			He	. 5 5	.
n			He	. 5	
As	5		He	.	5.
Se			H	.	.
Sr			He	.	.
Mo	5		He	. 5	.5
Pd	5		He	.	.
A			He	.	.
Cd			He	.	.
Sn			He	. 55	
Sb			He	.	5.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	. 5	.
Bi			He	. 55	.
U			He	.	55.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	.
e			H	5.
In	5		He	.5
Tb	5		He	. 5
Th			He	.5

Sample ame 5 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 5	.
B			H	. 5	5.
a			He	. 5	.
M			He	.	.
Al			He	.	.5
Si			H	. 5	.5
			He	5 .	.
Ca			He	.	.
Ti			He	5 . 5	.
V	5		He	.	.
Cr	5		He	.55 5	.
Mn	55		He	5. 5	.
Fe	5		He	. 5 5	.
Co	5		He	. 5	.
i			He	.	.
Cu			He	. 5 5	.5
n			He	. 5	.
As	5		He	.	.5
Se			H	. 5	.
Sr			He	.	.5
Mo	5		He	5.	.
Pd	5		He	.	5.
A			He	.	.
Cd			He	. 5 5	.
Sn			He	.	.
Sb			He	.	5.
Ba			He	. 5	.
Pt	5		He	. 5	.
Tl	5		He	. 5	.
Pb			He	5 .5	.
Bi			He	. 5	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 55
e			He	. 5
e			H	.
In	5		He	. 5
Tb	5		He	. 5 5
Th			He	.

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.55	.5
Be			H	. 5	.
B			H	.	.
a			He	.	.
M			He	.5 5	.
Al			He	5 . 5	.
Si			H	5 . 5	.5
			He	. 5	.
Ca			He	.	.
Ti			He	. 5	.
V	5		He	5 .	.
Cr	5		He	. 5 5	.
Mn	55		He	.	.
Fe	5		He	5 .	.
Co	5		He	.	.
i			He	.5	.
Cu			He	5 .5 5	.
n			He	5. 5	.
As	5		He	5 .	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	5.
Pd	5		He	.	.5
A			He	.	.
Cd			He	. 5	.5
Sn			He	5.	.
Sb			He	. 5 5	.
Ba			He	.	.
Pt	5		He	. 5	.
Tl	5		He	.5 5	.
Pb			He	. 5	.
Bi			He	. 5	.5
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	.
e			H	.5 5
In	5		He	.
Tb	5		He	. 5
Th			He	5. 5

Sample ame 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	. 5	.
B			H	.	.
a			He	5 .	.
M			He	.5	.
Al			He	.	.
Si			H	. 5	.
			He	.	5.
Ca			He	. 5	.
Ti			He	. 5	5.
V	5		He	. 5	5.
Cr	5		He	.	.
Mn	55		He	5.	.
Fe	5		He	.	5.
Co	5		He	. 55	.
i			He	.	.5
Cu			He	.	5.
n			He	.	.
As	5		He	.	5.
Se			H	.	5.
Sr			He	5 . 5	.
Mo	5		He	5. 5 55	.
Pd	5		He	.	.
A			He	.	.5
Cd			He	. 5	.
Sn			He	.	.
Sb			He	.	.
Ba			He	. 5	.5
Pt	5		He	. 5	.
Tl	5		He	. 5	5.
Pb			He	.5	5.
Bi			He	. 55	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	.
e			H	.
In	5		He	. 555
Tb	5		He	.55
Th			He	.

Sample ame 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 55	.
B			H	. 5	.
a			He	.	.
M			He	.	5.
Al			He	. 5	5.
Si			H	5 . 5	.
			He	.	5.
Ca			He	55 .	5.
Ti			He	55.5	.5
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	.	5.
Fe	5		He	. 5	.
Co	5		He	. 5	.
i			He	.	.
Cu			He	.	.
n			He	.	.
As	5		He	. 5	.
Se			H	. 5	.
Sr			He	5 .	.
Mo	5		He	5.	.
Pd	5		He	. 5	.
A			He	. 55	.
Cd			He	.	.5
Sn			He	.5	.5
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	.5
Tl	5		He	.	.
Pb			He	.	5.
Bi			He	.	.
U			He	.	5.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.5
e			He	. 5
e			H	.
In	5		He	. 5 5
Tb	5		He	. 5
Th			He	.55 5

Sample ame 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	.	.5
a			He	.5	.
M			He	.	.
Al			He	5 . 5	.
Si			H	5.	.5
			He	. 5	.
Ca			He	.	.
Ti			He	. 5	.5
V	5		He	. 55 5	.
Cr	5		He	.55	.
Mn	55		He	. 5	.
Fe	5		He	55 .	.
Co	5		He	.	.
i			He	. 5 5	.
Cu			He	5.	.
n			He	.	.
As	5		He	. 5 5	.
Se			H	.	5.
Sr			He	.5 5 5	.
Mo	5		He	5.5	.
Pd	5		He	.	.
A			He	.	.
Cd			He	.	.
Sn			He	.5 5	.
Sb			He	.	.
Ba			He	. 5	.
Pt	5		He	. 5	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	. 5	.
U			He	. 5 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.5
e			He	.
e			H	.5 5
In	5		He	.5
Tb	5		He	.
Th			He	. 5

Sample ame 5 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.5
Be			H	.	.
B			H	.	.
a			He	. 5	.
M			He	. 5	.
Al			He	. 55 5	5.
Si			H	.	.
			He	. 5	5.
Ca			He	. 5	5.
Ti			He	.5	.
V	5		He	.	.
Cr	5		He	. 5	5.
Mn	55		He	. 5	.
Fe	5		He	.5 5	5.
Co	5		He	. 5	.5
i			He	. 5 5	5.
Cu			He	5 . 55	5.
n			He	.	5.
As	5		He	.5	5.
Se			H	. 5	.
Sr			He	.5	.
Mo	5		He	5. 5 5	.
Pd	5		He	.	.
A			He	. 5	.
Cd			He	.	.
Sn			He	. 5	.
Sb			He	.	.
Ba			He	.55	.
Pt	5		He	. 5	.
Tl	5		He	.	5.
Pb			He	5.	5.
Bi			He	.	.
U			He	. 5	.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.555
e			He	. 5
e			H	.
In	5		He	5. 5
Tb	5		He	. 5
Th			He	.

Sample ame 5 B 5 D

Pa e of

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.55	.
Be			H	. 5	.
B			H	. 5	.
a			He	.	.
M			He	5 .	.5
Al			He	.5 5	.
Si			H	5 . 5	.
			He	. 5 5	.
Ca			He	. 5 5	.
Ti			He	.	.
V	5		He	. 5	.
Cr	5		He	5.	.
Mn	55		He	5 .	.
Fe	5		He	. 5	.
Co	5		He	.	.
i			He	. 5	.
Cu			He	5 .	.
n			He	. 5	.
As	5		He	.	.5
Se			H	.	.
Sr			He	. 5	.
Mo	5		He	.	.
Pd	5		He	. 5	.
A			He	.	.
Cd			He	.5	.
Sn			He	.	.
Sb			He	.	.5
Ba			He	.	.
Pt	5		He	. 5	.
Tl	5		He	. 5	.5
Pb			He	5 .	.
Bi			He	. 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	.
e			H	.
In	5		He	.
Tb	5		He	. 5
Th			He	. 5

Sample ame 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 5 5	.
B			H	. 5	.
a			He	5 .	5.
M			He	.	.
Al			He	.	.
Si			H	.	.
			He	. 55	5.
Ca			He	.	.
Ti			He	.	.
V	5		He	.	.
Cr	5		He	5. 5 5	5.
Mn	55		He	.	5.5
Fe	5		He	. 5	5.
Co	5		He	.	.
i			He	.	.
Cu			He	55.	5.
n			He	.	5.
As	5		He	.	5.
Se			H	.	.
Sr			He	.	5.
Mo	5		He	. 5	.
Pd	5		He	. 55	.5
A			He	.	.
Cd			He	.5	.
Sn			He	. 5	.
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	5.
Tl	5		He	. 5	.
Pb			He	5 .	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 5
e			H	. 5
In	5		He	5.
Tb	5		He	. 5 5
Th			He	.

Sample ame 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	5.
Be			H	.	.
B			H	.	.
a			He	5 . 5	.5
M			He	.5 5	5.
Al			He	. 55	.
Si			H	. 5	.5
			He	. 5	.
Ca			He	5 .	.
Ti			He	.	.5
V	5		He	. 5	.
Cr	5		He	.	.
Mn	55		He	. 5	.
Fe	5		He	.	.
Co	5		He	.	.
i			He	.	.
Cu			He	. 5	.
n			He	.	.
As	5		He	.	.
Se			H	. 5	.
Sr			He	. 5	.
Mo	5		He	. 5	5.
Pd	5		He	. 5	.
A			He	.	.
Cd			He	.	.
Sn			He	.	.
Sb			He	. 5	.
Ba			He	5.	.
Pt	5		He	. 5	.
Tl	5		He	. 5	.
Pb			He	.	5.
Bi			He	. 5	.
U			He	.5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 55
Sc	5		H	. 5
e			He	. 5
e			H	.
In	5		He	5.
Tb	5		He	. 5
Th			He	.55

Sample ame 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.5
Be			H	.	.
B			H	.	.
a			He	5 . 5	.5
M			He	5 .	.
Al			He	.	.
Si			H	5 5 .	.
			He	. 5	.
Ca			He	5.	.
Ti			He	5 . 5	.
V	5		He	.	.
Cr	5		He	.	5.
Mn	55		He	5 . 5	5.
Fe	5		He	5.	5.
Co	5		He	. 5	.
i			He	.	.
Cu			He	.	5.
n			He	.	.
As	5		He	.	5.
Se			H	.	.
Sr			He	. 5 5	5.
Mo	5		He	.	5.
Pd	5		He	.	.
A			He	.5	.
Cd			He	.	5.5
Sn			He	.	5.
Sb			He	.	.
Ba			He	. 5	.
Pt	5		He	. 5	.
Tl	5		He	. 5	.5
Pb			He	.	.
Bi			He	.	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 55
Sc	5		H	.
e			He	.
e			H	. 55
In	5		He	5. 5
Tb	5		He	. 5
Th			He	.5 5 5

Sample ame CCV
Sample Type CCV
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCV.d
Data Path ame D Data
Acq. Date Time 5/ / 55
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5. 5	.
Be			H	. 5	.
B			H	.5	.
a			He	. 55	.
M			He	. 55	.
Al			He	5. 5	.
Si			H	.	.
			He	.	5.
Ca			He	. 5	.
Ti			He	. 55	5.
V	5		He	.	.
Cr	5		He	.5	.
Mn	55		He	. 5	.
Fe	5		He	. 5	5.
Co	5		He	. 5	.
i			He	.	5.
Cu			He	.5	5.
n			He	5. 5	5.
As	5		He	. 5	5.
Se			H	. 5 5	.
Sr			He	.	5.
Mo	5		He	. 55	.
Pd	5		He	.5	.
A			He	.	.
Cd			He	5. 5	.
Sn			He	.	5.
Sb			He	. 5 5	5.
Ba			He	. 5	5.
Pt	5		He	. 5	.
Tl	5		He	.	.5
Pb			He	5. 55	5.
Bi			He	. 5	5.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5
e			He	.
e			H	.
In	5		He	5.5
Tb	5		He	.5
Th			He	. 5

Sample ame CCB
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCB.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	
Be			H	.	.5
B			H	5. 5	.
a			He	.	.
M			He	.	.
Al			He	.	.
Si			H	.	
			He	.	5 .
Ca			He	. 5	5.
Ti			He	. 5	5.
V	5		He	.	.
Cr	5		He	. 5	.
Mn	55		He	.	5.
Fe	5		He	.	.
Co	5		He	.	5 .
i			He	.	5.
Cu			He	. 5	.
n			He	.5 5	.
As	5		He	.	5 .5
Se			H	. 5	.
Sr			He	.	.
Mo	5		He	. 5	.
Pd	5		He	.	5.
A			He	.	.
Cd			He	. 5	.
Sn			He	. 55	
Sb			He	. 5	.
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	.	.5
U			He	. 5	5.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	5. 5 5
Sc	5		H	. 55 5
e			He	.
e			H	. 5
In	5		He	. 5
Tb	5		He	5.
Th			He	. 5 5

Sample ame CCB
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCB.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	. 55	.
B			H	.	.
a			He	. 5	.
M			He	.	.
Al			He	.	.
Si			H	.	
			He	.5 5	
Ca			He	. 5	5.
Ti			He	. 5	.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	.	.5
Fe	5		He	. 5	
Co	5		He	.	5 .
i			He	.	.
Cu			He	.	.
n			He	.	.
As	5		He	.	.
Se			H	.	.
Sr			He	. 5	5 .
Mo	5		He	.	
Pd	5		He	.	.
A			He	. 5	.
Cd			He	.	
Sn			He	. 5	
Sb			He	.	.
Ba			He	.	.5
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	. 5	.
Bi			He	. 5	.
U			He	. 5	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	5.
e			He	5. 5
e			H	.
In	5		He	5. 5
Tb	5		He	. 5
Th			He	.

Sample ame 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	
Be			H	.	5 .
B			H	. 5	.5
a			He	.	.
M			He	.	.
Al			He	.	.5
Si			H	.	
			He	. 5	
Ca			He	.	.
Ti			He	.	5.
V	5		He	. 5	.
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	.	.5
Co	5		He	. 5	.
i			He	. 5	.
Cu			He	. 5	.
n			He	.5	.
As	5		He	. 5	.
Se			H	. 5	.
Sr			He	. 5	5.
Mo	5		He	. 5	
Pd	5		He	.	
A			He	. 5	.
Cd			He	.	.
Sn			He	. 5	
Sb			He	. 5	.
Ba			He	. 5	.
Pt	5		He	. 5	.5
Tl	5		He	.	
Pb			He	. 5	.
Bi			He	. 5	55.
U			He	.	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5
Sc	5		H	. 5
e			He	.
e			H	. 5 55
In	5		He	.
Tb	5		He	.5
Th			He	.

Sample ame B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 55	.
B			H	. 5	.
a			He	. 5	.
M			He	5. 5	5.5
Al			He	.	.
Si			H	.	.
			He	.	.
Ca			He	. 5 5	5.
Ti			He	.5	.
V	5		He	. 5	.
Cr	5		He	. 5 5	.
Mn	55		He	. 5	.5
Fe	5		He	. 5	.5
Co	5		He	.	5.
i			He	.	5.
Cu			He	. 5	.
n			He	5.	5.
As	5		He	. 5	5.
Se			H	.	.
Sr			He	.	5.5
Mo	5		He	. 5 5	.
Pd	5		He	.	.
A			He	.	.
Cd			He	. 5	.
Sn			He	.	.
Sb			He	.5	.
Ba			He	.	5.
Pt	5		He	.	.
Tl	5		He	. 55	.
Pb			He	.	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	5.
e			H	. 55
In	5		He	.5
Tb	5		He	.
Th			He	.5

Sample ame B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 55
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	. 5	.
B			H	5 . 5	.
a			He	5.	.
M			He	5 . 5	5.
Al			He	. 5	.
Si			H	55.	.
			He	55 . 5	5.
Ca			He	5 5. 5	.
Ti			He	.	.
V	5		He	. 5 55	5.
Cr	5		He	.	.
Mn	55		He	.5 5	.
Fe	5		He	.5	5.
Co	5		He	.	.
i			He	. 5	.5
Cu			He	.	.
n			He	. 5	.
As	5		He	.	.
Se			H	.	.
Sr			He	. 5	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.	5 .
Cd			He	.	
Sn			He	. 5	
Sb			He	.	.
Ba			He	. 5	.
Pt	5		He	.	
Tl	5		He	.	.
Pb			He	.	.
Bi			He	. 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	.
e			H	.
In	5		He	.
Tb	5		He	.
Th			He	. 5

Sample ame B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	. 5	.
a			He	.5	5.
M			He	.	5.
Al			He	.5	.
Si			H	. 5	.
			He	5 .	5.
Ca			He	. 5	5.
Ti			He	. 5	5.
V	5		He	.	.5
Cr	5		He	.	5.
Mn	55		He	5. 5	5.5
Fe	5		He	.	5.
Co	5		He	.	.
i			He	. 5	.
Cu			He	.	.
n			He	.	.
As	5		He	.	.
Se			H	. 5	.
Sr			He	.	5.
Mo	5		He	.	.
Pd	5		He	. 5	.
A			He	. 5	.
Cd			He	.	.
Sn			He	. 5	
Sb			He	. 5	5.
Ba			He	.	5.
Pt	5		He	. 5	.
Tl	5		He	. 5	.
Pb			He	.	.
Bi			He	. 5	5.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.5 5
Sc	5		H	.
e			He	.
e			H	. 55 5
In	5		He	.
Tb	5		He	.
Th			He	5. 5

Sample ame 5 B 5 D 5 Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	. 5	
B			H	5 .	.
a			He	55 .5	.
M			He	.	5.
Al			He	. 5	.
Si			H	.5	.
			He	5.	.
Ca			He	5.	5.
Ti			He	.	5 .
V	5		He	. 5	.
Cr	5		He	.	5.5
Mn	55		He	.	5.
Fe	5		He	. 5	5.
Co	5		He	.	.
i			He	. 5	5.
Cu			He	5. 5	.
n			He	. 5	.
As	5		He	. 5	.5
Se			H	. 5	.
Sr			He	. 5	.
Mo	5		He	. 5	.
Pd	5		He	.	5 .5
A			He	. 5	
Cd			He	. 5	5 .
Sn			He	.	
Sb			He	. 5	.
Ba			He	.5 5	.
Pt	5		He	. 55	5 .
Tl	5		He	.	.
Pb			He	. 55	5.5
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	.
e			H	.5 5 5
In	5		He	. 5
Tb	5		He	.
Th			He	.

Sample ame	5 B 5 D 5		Pa e of
Sample Type	Sample		
Operator	T Traynor		
Instrument	ICM . A		
Batch ame	5 .b		
Data File ame	5SMPL.d		
Data Path ame	D Data		
Acq. Date Time	5/ /		
Comment			

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	5.5	.
a			He	.	.
M			He	5 . 55	.
Al			He	. 5	5.
Si			H	5.	.
			He	.	.
Ca			He	.	.
Ti			He	. 5	.
V	5		He	. 5	.
Cr	5		He	.55 5	.
Mn	55		He	5.	.
Fe	5		He	5 .	.
Co	5		He	. 5	.5
i			He	. 5	5.
Cu			He	5.	.
n			He	5.5 5	.
As	5		He	. 5	.
Se			H	.	.
Sr			He	. 5	.
Mo	5		He	.	.5
Pd	5		He	. 5	.
A			He	. 5	.
Cd			He	.	.
Sn			He	.	.
Sb			He	.5	.5
Ba			He	.	.
Pt	5		He	. 5	5.5
Tl	5		He	. 5	.
Pb			He	. 5	.
Bi			He	.	.5
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	.
e			H	.
In	5		He	.
Tb	5		He	. 5
Th			He	. 5

Sample ame 5 5 B 5 D 5
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	5.
Be			H	. 5	.
B			H	. 5	.
a			He	5.	5.
M			He	.5	5.
Al			He	. 5	.
Si			H	. 5	.
			He	.	.
Ca			He	.	5.
Ti			He	. 5	.5
V	5		He	. 55	.
Cr	5		He	.	.
Mn	55		He	5.	.
Fe	5		He	5 5.	.
Co	5		He	. 5	.
i			He	. 55	.
Cu			He	5. 5	5.
n			He	. 5	.
As	5		He	.	.
Se			H	.	.
Sr			He	.	5.5
Mo	5		He	.	.
Pd	5		He	. 5	.
A			He	.5	.
Cd			He	.	5.
Sn			He	.	.
Sb			He	. 5	5.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	.	5.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	. 55
e			H	.
In	5		He	.
Tb	5		He	. 5 5
Th			He	.

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	.	.
B			H	.	.
a			He	.	5.
M			He	5 .	5.
Al			He	. 5	.
Si			H	.	.
			He	5 5.5	.5
Ca			He	. 5	.
Ti			He	. 5	5 .
V	5		He	. 5	.
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	. 5	5.5
Co	5		He	. 5	.
i			He	.	5.
Cu			He	.	5.5
n			He	.5 5	.
As	5		He	. 5	.
Se			H	.	.
Sr			He	.5	5.
Mo	5		He	. 5	.5
Pd	5		He	. 5	.
A			He	. 5	.
Cd			He	. 55	.5
Sn			He	. 5	
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	. 5	.
Pb			He	. 5 5	.5
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	5. 5 5
Sc	5		H	.
e			He	. 5
e			H	.
In	5		He	. 5
Tb	5		He	5.
Th			He	. 5 5

Sample ame 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 5	
B			H	.	5.
a			He	5 .	.
M			He	.	.
Al			He	.	.5
Si			H	5 .	.5
			He	. 5	.
Ca			He	.	.5
Ti			He	.	.
V	5		He	.	.
Cr	5		He	. 555	5.
Mn	55		He	. 5	.
Fe	5		He	.	.
Co	5		He	. 5	.
i			He	. 55	.5
Cu			He	.	.
n			He	.	.
As	5		He	. 5	.
Se			H	. 5 5	.
Sr			He	. 5	.5
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.	.
Cd			He	.	
Sn			He	.	
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	. 5	.
Pb			He	. 5	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	5.5 5
Sc	5		H	. 5
e			He	.
e			H	.
In	5		He	.
Tb	5		He	.
Th			He	.5

Sample ame 5 B 5 D

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 5 5	.
B			H	. 5	.
a			He	.	5.
M			He	. 5	5.
Al			He	. 5	5.
Si			H	5 . 5	.5
			He	.	5.
Ca			He	.5 5	.
Ti			He	.	.
V	5		He	. 5	.
Cr	5		He	. 5 5	.
Mn	55		He	.5	.
Fe	5		He	. 5 5	.
Co	5		He	.5 5	.5
i			He	.	.
Cu			He	.	5.
n			He	. 5	5.
As	5		He	. 5	.
Se			H	5.	.
Sr			He	.	5.
Mo	5		He	.	.
Pd	5		He	.	5.
A			He	5 . 5	5.
Cd			He	.5 55	5.
Sn			He	.	5.
Sb			He	5. 55	5.
Ba			He	5.	5.
Pt	5		He	.	5.
Tl	5		He	. 5	.
Pb			He	.5	.
Bi			He	5.	.
U			He	.	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 55
Sc	5		H	. 5 5
e			He	.5 5
e			H	.
In	5		He	.
Tb	5		He	.
Th			He	.5

Sample ame CCV
Sample Type CCV
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCV.d
Data Path ame D Data
Acq. Date Time 5/ / 5 55
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.55	.
Be			H	. 5	.
B			H	. 5 5	.
a			He	.	.
M			He	. 5	.
Al			He	. 55 5	.
Si			H	5.5	.
			He	. 5	.
Ca			He	.	.
Ti			He	. 5	.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	.55	.
Fe	5		He	. 5	.
Co	5		He	.	5.
i			He	. 5	.
Cu			He	. 5	.
n			He	5.	.
As	5		He	.	.5
Se			H	.	.
Sr			He	.	.5
Mo	5		He	.	.
Pd	5		He	.5	5.
A			He	.	.
Cd			He	. 5	.
Sn			He	. 5	5.
Sb			He	.	.
Ba			He	.	5.
Pt	5		He	.	5.5
Tl	5		He	.	.
Pb			He	5. 5 5	.
Bi			He	. 5 5	.
U			He	.5 5	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.5
Sc	5		H	.5
e			He	. 5 5
e			H	. 5
In	5		He	.
Tb	5		He	5.
Th			He	. 5 55

Sample ame CCB
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCB.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	. 5 5	.
a			He	. 5	.
M			He	.	.
Al			He	.	.
Si			H	. 5 5	
			He	.	.
Ca			He	. 5	5 .
Ti			He	.	.
V	5		He	. 5	.
Cr	5		He	. 5	5 .
Mn	55		He	.	.
Fe	5		He	.5 5	5.
Co	5		He	.	.
i			He	. 5	.
Cu			He	.	.5
n			He	.	.
As	5		He	.	.
Se			H	.	.
Sr			He	.	5 .5
Mo	5		He	. 5	.
Pd	5		He	. 5	.
A			He	. 5 5	.
Cd			He	.	5 .
Sn			He	. 5	
Sb			He	. 5	.
Ba			He	.	5 .
Pt	5		He	.	.5
Tl	5		He	. 5	.
Pb			He	.	.
Bi			He	.	.
U			He	.	5 .

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	. 5
e			H	. 5
In	5		He	.
Tb	5		He	. 5
Th			He	5.

Sample ame	CCV	Pa e of
Sample Type	CCV	
Operator	T Traynor	
Instrument	ICM . A	
Batch ame	5 .b	
Data File ame	CCV.d	
Data Path ame	D Data	
Acq. Date Time	5/ / 5	
Comment		

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 5	.
B			H	.	.
a			He	5 .	.
M			He	.	.
Al			He	. 55	.
Si			H	5 .	.
			He	. 55	.
Ca			He	.5	.
Ti			He	.55 5	.
V	5		He	.5	5.
Cr	5		He	.	5.
Mn	55		He	. 5	.
Fe	5		He	. 55	.
Co	5		He	.5 5	.
i			He	.	.5
Cu			He	.	.
n			He	5.	.
As	5		He	.	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.5	5.
Cd			He	5.	.
Sn			He	. 5	5.
Sb			He	. 5	5.
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	5.	.
Bi			He	.	5.
U			He	.	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5
e			He	.
e			H	.
In	5		He	. 5
Tb	5		He	. 5
Th			He	. 5

Sample ame CCB
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCB.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	.	.
B			H	.	.
a			He	. 5	.
M			He	.	.
Al			He	. 5	5.
Si			H	.	
			He	. 5	
Ca			He	.	.
Ti			He	. 5	.5
V	5		He	.	.
Cr	5		He	. 55	.
Mn	55		He	.	.
Fe	5		He	. 55	.
Co	5		He	. 55	.
i			He	.	.
Cu			He	.	.
n			He	.	5.
As	5		He	. 5 5	.
Se			H	. 5	.
Sr			He	.	.
Mo	5		He	.	.5
Pd	5		He	.	.5
A			He	.	.
Cd			He	.	55.
Sn			He	. 5	
Sb			He	.	5 .
Ba			He	. 5	.
Pt	5		He	. 5	.
Tl	5		He	. 5	.5
Pb			He	. 5	55.
Bi			He	. 5	.
U			He	.	.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	. 5
e			H	. 5
In	5		He	.
Tb	5		He	. 5
Th			He	. 5 5

Sample ame CCB
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCB.d
Data Path ame D Data
Acq. Date Time 5/ / 5 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5 5	
Be			H	. 5	.
B			H	.5	.
a			He	.	.
M			He	.	.
Al			He	. 5	.
Si			H	. 5 5	
			He	.	5.
Ca			He	. 5	.
Ti			He	.	.
V	5		He	. 5	.
Cr	5		He	.	.
Mn	55		He	. 5 55	.
Fe	5		He	.	
Co	5		He	.	5 .
i			He	.	.
Cu			He	.	.5
n			He	.	
As	5		He	.	5.
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	
Pd	5		He	.	.
A			He	.	.
Cd			He	.	
Sn			He	.	
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	. 5	.
Tl	5		He	. 5	.
Pb			He	.	.5
Bi			He	.	.5
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	5. 5
e			He	. 5
e			H	5.
In	5		He	.
Tb	5		He	5.5
Th			He	.

Sample ame 5 5 B 5 D

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5. 5	.
Be			H	.	5.
B			H	.	.
a			He	5 .5 5 5	.
M			He	. 5	.
Al			He	.	.
Si			H	.	5.
			He	5 5 . 5	.
Ca			He	55.	5.
Ti			He	. 5 5	5.
V	5		He	.	5.
Cr	5		He	.	5.
Mn	55		He	.	5.
Fe	5		He	. 5	.
Co	5		He	.5 5	5.
i			He	.	.
Cu			He	5 .	5.
n			He	5.	5.
As	5		He	.	.
Se			H	.5	.
Sr			He	. 5	5.
Mo	5		He	. 5	5.
Pd	5		He	.	.
A			He	.5 5	5.
Cd			He	.5	5.
Sn			He	.	.
Sb			He	.	5.5
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	5.
Bi			He	. 5	.5
U			He	.5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5
e			He	. 5 5
e			H	.
In	5		He	.
Tb	5		He	. 5
Th			He	. 5 5

Sample ame 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	55. 5	.
Be			H	.5	.
B			H	5 . 5	.5
a			He	.	5.
M			He	.	.
Al			He	.	5.
Si			H	. 5	.
			He	.	5.
Ca			He	5 .	5.
Ti			He	.	5.
V	5		He	5.5	.
Cr	5		He	5.	.
Mn	55		He	. 5	5.5
Fe	5		He	.	5.
Co	5		He	. 5	.
i			He	.	.
Cu			He	5 .	.5
n			He	. 5	.
As	5		He	.	.5
Se			H	.	.
Sr			He	. 5	.
Mo	5		He	. 5	5.5
Pd	5		He	. 5	5.
A			He	5.	5.
Cd			He	.	.5
Sn			He	.	.
Sb			He	.	.
Ba			He	.	5.
Pt	5		He	.	.
Tl	5		He	. 5	5.
Pb			He	5 .5	.
Bi			He	.	5.
U			He	.5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	.
e			H	5.5
In	5		He	.
Tb	5		He	5.
Th			He	.

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5 .5	.
Be			H	. 5	.
B			H	5 . 5	.
a			He	.55	.5
M			He	5 5.	.
Al			He	5 . 5 5	.5
Si			H	.	.5
			He	.	.5
Ca			He	.	.
Ti			He	. 5	.
V	5		He	.5 5	.
Cr	5		He	5.	.
Mn	55		He	. 5	.
Fe	5		He	5. 5	.
Co	5		He	.	.
i			He	.	.
Cu			He	.	.
n			He	5.	.5
As	5		He	.	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.5	.
Cd			He	.	.
Sn			He	.	5.
Sb			He	.	.5
Ba			He	.5	.
Pt	5		He	.	.
Tl	5		He	.5	.
Pb			He	.	.5
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 5
e			H	.
In	5		He	. 55 5
Tb	5		He	.
Th			He	5. 5

Sample ame 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5 .	.
Be			H	.	.
B			H	5 .	.
a			He	. 5	.
M			He	.	.
Al			He	.	.
Si			H	5 .	.
			He	5 . 5	.
Ca			He	.	.
Ti			He	.	.
V	5		He	. 5	.
Cr	5		He	. 5 5	.
Mn	55		He	5.	.
Fe	5		He	5 .	.5
Co	5		He	.	5.
i			He	.	5.
Cu			He	5 .	.
n			He	. 5	.
As	5		He	5 . 5 5	.
Se			H	.	.
Sr			He	. 5	.
Mo	5		He	. 5	5.
Pd	5		He	.	.
A			He	. 5	.
Cd			He	.	5.5
Sn			He	5. 5	.
Sb			He	. 55	.
Ba			He	5 . 5 5	.5
Pt	5		He	.	.
Tl	5		He	. 55	5.
Pb			He	.	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.5
e			He	. 5 5
e			H	. 5
In	5		He	. 5
Tb	5		He	. 5 5
Th			He	. 5 55

Sample ame 5 B 5 D

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	.	
B			H	. 5	.
a			He	.	.
M			He	5. 5	.
Al			He	. 5	.
Si			H	.	
			He	. 5	.5
Ca			He	. 5	5.5
Ti			He	.	5.5
V	5		He	. 5	.
Cr	5		He	. 5	5.
Mn	55		He	. 5	.
Fe	5		He	. 55	.
Co	5		He	. 5	.
i			He	. 5	5.
Cu			He	.	.
n			He	. 5	.
As	5		He	.	.5
Se			H	. 5	.
Sr			He	.	5 .
Mo	5		He	. 5	.
Pd	5		He	.	
A			He	.	.5
Cd			He	. 5	
Sn			He	.	
Sb			He	.	.5
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	.	
Pb			He	. 5	.
Bi			He	. 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	5. 5
Sc	5		H	.5
e			He	. 5
e			H	. 5
In	5		He	. 5 5
Tb	5		He	.5 5
Th			He	. 5

Sample ame 5 B 5 D | Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.5 5	.
Be			H	. 5	.5
B			H	.	.
a			He	.	.
M			He	.	5.
Al			He	.	.
Si			H	.	.
			He	5.	5.
Ca			He	.5	5.
Ti			He	. 5	5.
V	5		He	. 5	5.
Cr	5		He	.5 5	.
Mn	55		He	.	.
Fe	5		He	.	5.
Co	5		He	.	5.
i			He	.	5.
Cu			He	5.	5.
n			He	. 5	.
As	5		He	. 5	5.
Se			H	. 5 5	.
Sr			He	.	5.
Mo	5		He	.	.
Pd	5		He	. 55	5.
A			He	5 .	5.
Cd			He	.	5.
Sn			He	5.	.
Sb			He	.	5.
Ba			He	. 5	.
Pt	5		He	.	5.
Tl	5		He	. 5	.
Pb			He	.	5.
Bi			He	.	.
U			He	5. 5	5.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	. 5
e			H	. 5
In	5		He	.
Tb	5		He	. 5
Th			He	. 5

Sample ame 5 B 5 D 5
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.5	.
Be			H	.	.
B			H	.	.
a			He	.	.5
M			He	.	.
Al			He	.	.
Si			H	55 .	.
			He	.	5.
Ca			He	5 .	5.
Ti			He	.	.
V	5		He	5.	.
Cr	5		He	. 5	.5
Mn	55		He	.	.
Fe	5		He	5 .	.
Co	5		He	. 5	.5
i			He	.	.
Cu			He	5.	.
n			He	5. 5	.5
As	5		He	5. 5 5	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.	.5
Cd			He	. 5 5	.
Sn			He	.	.5
Sb			He	. 5	.
Ba			He	.	5.
Pt	5		He	. 5	.
Tl	5		He	. 5	.
Pb			He	.	.5
Bi			He	.	.
U			He	.	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	.
e			H	. 5
In	5		He	.
Tb	5		He	.
Th			He	.

Sample ame 5 5 B 5 D 5 Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 5	.
B			H	.	.
a			He	55 .	.
M			He	.	.
Al			He	. 5	.
Si			H	. 55	.
			He	. 5	.
Ca			He	.5	.
Ti			He	.55 5	.
V	5		He	. 5 5	.
Cr	5		He	.	.
Mn	55		He	.55	.
Fe	5		He	55 .	.
Co	5		He	.	5.
i			He	.	.
Cu			He	. 5	.
n			He	. 5	.5
As	5		He	. 5 5	.
Se			H	5.5	.
Sr			He	. 5	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	. 5 5	.
Cd			He	. 5	5.
Sn			He	. 5	.
Sb			He	.	.
Ba			He	.5 5	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	.	.
U			He	. 55	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5
e			He	. 5
e			H	5. 5
In	5		He	. 5
Tb	5		He	.5
Th			He	.

Sample ame 5 5 B 5 D 5 Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.5	.
Be			H	.	.
B			H	.5	.
a			He	.	.
M			He	5 .	5.
Al			He	.	.
Si			H	5 .	.
			He	.	5.
Ca			He	.	.
Ti			He	.	5.5
V	5		He	.	.5
Cr	5		He	. 5	.
Mn	55		He	. 5	.
Fe	5		He	5 5.	.
Co	5		He	.	.
i			He	.5 55	5.
Cu			He	. 5	.
n			He	. 5 5	.5
As	5		He	. 5	.
Se			H	.	5.
Sr			He	.55	.
Mo	5		He	. 5	.
Pd	5		He	. 55	.
A			He	. 5	.
Cd			He	. 5	.
Sn			He	. 5	
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	55.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	. 55	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	. 5
e			H	. 5 55
In	5		He	5.
Tb	5		He	. 5
Th			He	.

Sample ame 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 55	.
B			H	. 5	5.
a			He	5 .	.
M			He	. 55	.
Al			He	.	.
Si			H	.	.5
			He	. 5	5.
Ca			He	.	.
Ti			He	. 55	.
V	5		He	. 5	.
Cr	5		He	.	.5
Mn	55		He	.	.
Fe	5		He	5 . 5	5.
Co	5		He	. 5 5	.
i			He	. 5	.
Cu			He	. 5	5.
n			He	5 .	.5
As	5		He	.	.
Se			H	.	.
Sr			He	5 .5 5 5	.
Mo	5		He	.5	.5
Pd	5		He	. 5	.
A			He	.	.
Cd			He	.	5.
Sn			He	. 5	.
Sb			He	. 55	.
Ba			He	.5	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	. 5	.
Bi			He	. 5	.
U			He	.	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5
e			He	.
e			H	.5
In	5		He	. 5
Tb	5		He	.
Th			He	.

Sample ame CCV
Sample Type CCV
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5 CCV.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	. 5	.
a			He	.	5.5
M			He	. 5 5	5.
Al			He	. 5	.
Si			H	.	.
			He	. 5	.
Ca			He	.	.
Ti			He	. 5	.
V	5		He	.	.5
Cr	5		He	. 5	.
Mn	55		He	.	.
Fe	5		He	.	.
Co	5		He	.	.
i			He	. 5	.
Cu			He	. 5	.
n			He	5. 5	.
As	5		He	.	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	. 5 5	.
Pd	5		He	. 5	.
A			He	.	.
Cd			He	.5	.
Sn			He	. 5 5	.5
Sb			He	. 5	.
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	. 5	.5
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	5. 5 5
e			H	. 5
In	5		He	.5 5 5
Tb	5		He	. 5 5
Th			He	.

Sample ame CCB
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCB.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	
Be			H	.	.
B			H	. 55	.
a			He	.	.
M			He	.	.
Al			He	. 5	.
Si			H	.5 5	
			He	.	
Ca			He	.	.
Ti			He	.	.
V	5		He	. 5	.
Cr	5		He	.	.
Mn	55		He	. 5 5	.
Fe	5		He	. 5	.5
Co	5		He	. 5 5	.
i			He	.	.
Cu			He	.	.
n			He	.	.
As	5		He	. 55	.
Se			H	. 5	.
Sr			He	. 5	.
Mo	5		He	. 5	5.
Pd	5		He	.	.
A			He	.	5.
Cd			He	.	5 .
Sn			He	.	
Sb			He	. 5	.
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	.5
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 5
e			H	.
In	5		He	.
Tb	5		He	. 5
Th			He	. 5

Sample ame CRDL
Sample Type CRDL
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CRD.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.5
B			H	. 5	.
a			He	5 .	.
M			He	.	.
Al			He	.	.
Si			H	.	.
			He	.	.
Ca			He	. 5	.
Ti			He	.	.5
V	5		He	. 5	.
Cr	5		He	.5 5	.
Mn	55		He	.55	.5
Fe	5		He	.5	.
Co	5		He	.5	.
i			He	.55 5	.
Cu			He	.	.
n			He	5.	.
As	5		He	.5	.
Se			H	.5 5	.5
Sr			He	. 5 5	.
Mo	5		He	.5 5	.
Pd	5		He	. 5	.
A			He	. 5	.
Cd			He	.	.
Sn			He	.	.
Sb			He	.5	.
Ba			He	.	.
Pt	5		He	.5	.
Tl	5		He	.	.
Pb			He	.	.5
Bi			He	.5	.
U			He	.5 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.5
Sc	5		H	. 5
e			He	. 5 5
e			H	.
In	5		He	. 5 55
Tb	5		He	.5 5 5
Th			He	.

Sample ame B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	. 5	.
a			He	5 . 5	5.
M			He	5 5 .5	5.
Al			He	5 .5 5	.
Si			H	5 . 5	.
			He	5 .5	5.
Ca			He	5 . 5	.
Ti			He	.	5.
V	5		He	.	.
Cr	5		He	. 5	.
Mn	55		He	. 5	5.
Fe	5		He	. 5	5.
Co	5		He	.	5.
i			He	. 5	.
Cu			He	. 5	.
n			He	. 5	.
As	5		He	. 5	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	. 5	.
A			He	. 5	5.
Cd			He	.	.
Sn			He	. 5	
Sb			He	. 5	.
Ba			He	.	.5
Pt	5		He	. 5	.5
Tl	5		He	. 5	.
Pb			He	.	.
Bi			He	.	.
U			He	.	.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 5 5
e			H	.5 5
In	5		He	.
Tb	5		He	.
Th			He	. 5

Sample ame B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.5	.5
Be			H	.	.5
B			H	55. 5	.
a			He	5 . 5	.5
M			He	5 . 5	5.
Al			He	5. 5	5.
Si			H	.5	.
			He	5 5. 5	5.
Ca			He	.	.
Ti			He	.	.5
V	5		He	.5	.
Cr	5		He	.	.
Mn	55		He	. 5	5.
Fe	5		He	. 55	.
Co	5		He	. 5	.
i			He	. 5	.
Cu			He	.	.
n			He	. 5	.
As	5		He	. 5	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	. 5	.5
Pd	5		He	.	.
A			He	. 5	.
Cd			He	.	.
Sn			He	.	
Sb			He	. 5	.
Ba			He	.5	5.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	. 5	5.
U			He	. 5	5.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 5
e			H	5.5
In	5		He	. 5
Tb	5		He	5.
Th			He	.

Sample ame 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5 SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	5.
Be			H	.	.
B			H	. 5 5 5	.
a			He	.	5.
M			He	.5	5.
Al			He	.	.
Si			H	5.5	.5
			He	5 .	5.
Ca			He	55.	5.
Ti			He	.	.
V	5		He	.	5.5
Cr	5		He	. 5 5	.
Mn	55		He	. 5	.
Fe	5		He	. 5	.
Co	5		He	.	.
i			He	.	.
Cu			He	.	.
n			He	. 5	5.
As	5		He	. 55	.
Se			H	. 5 5	.5
Sr			He	. 5	5.
Mo	5		He	. 5	.
Pd	5		He	.	.
A			He	.	.
Cd			He	.	.
Sn			He	.	
Sb			He	.	5.
Ba			He	.	.
Pt	5		He	.	
Tl	5		He	. 5	.
Pb			He	.	.
Bi			He	.	.
U			He	. 5 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	.
e			H	. 5
In	5		He	. 5
Tb	5		He	.5
Th			He	. 5 5

Sample ame B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5 SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.5	.
Be			H	.	.
B			H	.5 5	.
a			He	. 55	.
M			He	. 5	.5
Al			He	.5 5	.
Si			H	.	.
			He	55 .	.
Ca			He	5.	.
Ti			He	.5	.
V	5		He	. 5	.
Cr	5		He	.	.
Mn	55		He	. 5 5	.
Fe	5		He	.	.5
Co	5		He	.	.
i			He	. 5	.
Cu			He	.	.
n			He	.5	5.
As	5		He	. 5	.
Se			H	.	5.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.	55 .
Cd			He	.	.
Sn			He	.	
Sb			He	.	.
Ba			He	5 . 5 5	.
Pt	5		He	. 5	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	5. 5
e			He	. 5
e			H	. 5
In	5		He	5. 5
Tb	5		He	.
Th			He	.

Sample ame 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5 SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	. 5	.
B			H	.	.
a			He	5. 5	.
M			He	.	.
Al			He	.	5.
Si			H	. 5	.
			He	5 .	.
Ca			He	.5	5.
Ti			He	5.	.
V	5		He	. 5	.
Cr	5		He	. 5	.
Mn	55		He	.5	.
Fe	5		He	.	.
Co	5		He	.	5.
i			He	.	.
Cu			He	.	.5
n			He	. 5 5	5.
As	5		He	5.	.
Se			H	.	.
Sr			He	5.	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.	.
Cd			He	.	.
Sn			He	. 5	
Sb			He	. 5	.
Ba			He	. 5	.
Pt	5		He	. 55	.
Tl	5		He	.	.
Pb			He	. 5	.
Bi			He	. 5	5.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5
e			He	. 5
e			H	.
In	5		He	.
Tb	5		He	. 5
Th			He	. 5

Sample ame 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5 SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	. 5 5	.
B			H	. 5	.
a			He	.	.
M			He	5 .	.
Al			He	. 5	.5
Si			H	.	.
			He	.	.
Ca			He	.	.5
Ti			He	5. 55	.
V	5		He	. 5	.
Cr	5		He	. 5 5	.
Mn	55		He	. 5	.
Fe	5		He	.	.
Co	5		He	.	.
i			He	.	5.
Cu			He	.5 5	.
n			He	.	.
As	5		He	.	.
Se			H	.	.
Sr			He	. 5	.
Mo	5		He	. 5	.
Pd	5		He	.	.
A			He	. 5 5	.
Cd			He	. 5	.
Sn			He	. 5	
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	. 5	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	.	.
U			He	.5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	5.
e			He	. 5
e			H	. 5
In	5		He	. 5
Tb	5		He	. 5
Th			He	. 5

Sample ame 5 B 5 D

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5 SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 5	.
B			H	.	5.
a			He	.	5.
M			He	. 5	5.
Al			He	. 5	5.
Si			H	5 .	.
			He	. 5	.
Ca			He	.5	.
Ti			He	.	.
V	5		He	. 5	.
Cr	5		He	.5	.
Mn	55		He	. 5	.
Fe	5		He	.	5.
Co	5		He	.	5.
i			He	.	.
Cu			He	.	5.5
n			He	.	5.
As	5		He	.	.
Se			H	.	.5
Sr			He	. 5	.
Mo	5		He	.	.5
Pd	5		He	. 5 5	.
A			He	. 5	.
Cd			He	. 5	.
Sn			He	.	
Sb			He	.	.
Ba			He	.	.5
Pt	5		He	.	5.
Tl	5		He	.	.5
Pb			He	.	5.
Bi			He	. 5	.
U			He	.5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5
e			He	.
e			H	.
In	5		He	.5
Tb	5		He	.
Th			He	. 5

Sample ame	5 5 B 5 D	Pa e of
Sample Type	Sample	
Operator	T Traynor	
Instrument	ICM . A	
Batch ame	5 .b	
Data File ame	55SMPL.d	
Data Path ame	D Data	
Acq. Date Time	5/ /	
Comment		

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	5 .
B			H	5.	.
a			He	.	.
M			He	.	.
Al			He	.	.
Si			H	.	.
			He	5.	.
Ca			He	.5	.
Ti			He	5. 5	5.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	. 5	.
Co	5		He	. 5	.
i			He	. 5	.
Cu			He	.	.
n			He	.5 5	.
As	5		He	. 5	.
Se			H	. 5	.5
Sr			He	5.5	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	. 5	.
Cd			He	. 5	.
Sn			He	.	
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	.5
Pb			He	.	.
Bi			He	.	.
U			He	.	.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5
e			He	. 5
e			H	. 5
In	5		He	. 5
Tb	5		He	.
Th			He	5. 5

Sample ame 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5 SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.5	.
Be			H	.	.
B			H	. 5 5	.5
a			He	5 5.	.
M			He	5 .5	.
Al			He	. 5	.
Si			H	.	.
			He	.	.
Ca			He	. 5	.
Ti			He	. 5	.
V	5		He	.55 5	.5
Cr	5		He	.5	.
Mn	55		He	.	.
Fe	5		He	.5	.
Co	5		He	.5	.
i			He	.	.
Cu			He	5.5	.
n			He	. 5	.5
As	5		He	. 5	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	5.5
Pd	5		He	.	5.
A			He	.	.
Cd			He	. 5	.
Sn			He	.	
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	5.
Pb			He	. 5	.5
Bi			He	.	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	.
e			H	.
In	5		He	.
Tb	5		He	.
Th			He	.

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5 SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	. 5	.
a			He	. 5	.
M			He	. 5	.
Al			He	5.	.
Si			H	.	.5
			He	.5	.
Ca			He	.	.
Ti			He	.	.
V	5		He	.5	.
Cr	5		He	.	.
Mn	55		He	5 .	.
Fe	5		He	.5	.
Co	5		He	. 5 5	.
i			He	.	.5
Cu			He	.	.
n			He	. 5	.5
As	5		He	.	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	. 5 5	.
Pd	5		He	.	5.
A			He	.	.
Cd			He	. 5	.
Sn			He	. 5	
Sb			He	.	5.
Ba			He	.	.
Pt	5		He	.	.5
Tl	5		He	. 5	5.
Pb			He	.	.
Bi			He	. 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5
Sc	5		H	. 5
e			He	. 5 5
e			H	.
In	5		He	.5 5
Tb	5		He	. 55
Th			He	.

Sample ame CCV Pa e of
Sample Type CCV
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5 CCV.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	.	.
a			He	. 5	5.
M			He	.5	5.
Al			He	. 5	5.
Si			H	.	.
			He	.	.5
Ca			He	. 5	.
Ti			He	.	.
V	5		He	. 5	5.
Cr	5		He	.5 5	.
Mn	55		He	.	5.
Fe	5		He	.	5.
Co	5		He	. 5	.
i			He	.	5.
Cu			He	. 5	5.
n			He	.55	5.
As	5		He	. 5	5.
Se			H	.	.
Sr			He	. 5 5	.
Mo	5		He	.	.
Pd	5		He	. 5	5.
A			He	. 5 5	.
Cd			He	.	.
Sn			He	.	5.
Sb			He	5.	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	. 5	.
Pb			He	.	5.5
Bi			He	.	.
U			He	. 5	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5
Sc	5		H	.
e			He	. 5
e			H	.
In	5		He	. 5 5
Tb	5		He	.
Th			He	. 5

Sample ame CCB
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5 CCB.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	
Be			H	. 5	.
B			H	.	.
a			He	.	.5
M			He	. 5	.
Al			He	.	.
Si			H	.	
			He	. 5 5	
Ca			He	. 5 5	5.
Ti			He	.	.
V	5		He	. 5	.
Cr	5		He	. 5	.
Mn	55		He	. 5	.
Fe	5		He	. 5	.5
Co	5		He	.	5.
i			He	.	.
Cu			He	.	.
n			He	.	.
As	5		He	. 5	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	.5
Pd	5		He	. 5	5 .
A			He	. 5	5.
Cd			He	.	.
Sn			He	.	
Sb			He	.	5.
Ba			He	. 5	5 .
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	. 5	.
Bi			He	. 5	.5
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	. 5
e			H	.
In	5		He	. 55
Tb	5		He	. 55
Th			He	. 5

Sample ame 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 55	
Be			H	.	.
B			H	. 555	.
a			He	.	.
M			He	. 5 5	.
Al			He	.	5.
Si			H	.5	
			He	5.	
Ca			He	.	.
Ti			He	. 5	.5
V	5		He	. 55	.
Cr	5		He	.	.
Mn	55		He	. 5	.
Fe	5		He	.	.
Co	5		He	.	.
i			He	.	
Cu			He	. 5	.
n			He	.	.5
As	5		He	.	.
Se			H	. 5	.
Sr			He	.	.
Mo	5		He	. 5	
Pd	5		He	.	.
A			He	. 5	.
Cd			He	. 5	
Sn			He	.	
Sb			He	.	.
Ba			He	. 5	.5
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	. 5	.
U			He	. 5 5	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5
e			He	.
e			H	.
In	5		He	. 5
Tb	5		He	.
Th			He	.

Sample ame 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	
B			H	.	.
a			He	.	.
M			He	5 .55	.5
Al			He	. 5	.5
Si			H	5.5	.
			He	.5	.
Ca			He	. 5	.
Ti			He	.	.
V	5		He	. 5 5	.
Cr	5		He	.	5.
Mn	55		He	.	.
Fe	5		He	5.	.
Co	5		He	. 5 5	5.
i			He	.	.
Cu			He	.	.
n			He	. 5 5	.
As	5		He	.5	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	. 5	.
A			He	. 55	
Cd			He	.	
Sn			He	. 5	
Sb			He	.	.
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	. 5	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5
Sc	5		H	.
e			He	.
e			H	.
In	5		He	. 5
Tb	5		He	.
Th			He	.

Sample ame 5 B 5 D

Pa e of

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	.	
B			H	.	.5
a			He	5 . 5	.
M			He	. 5	.
Al			He	.	.
Si			H	.	.
			He	. 5	.5
Ca			He	.	.
Ti			He	. 5	.
V	5		He	. 5	.
Cr	5		He	.	5.5
Mn	55		He	.	.
Fe	5		He	. 5	.
Co	5		He	. 5	.
i			He	.	.
Cu			He	. 55	.
n			He	. 5	.
As	5		He	. 5	.
Se			H	. 5	.
Sr			He	.5	.
Mo	5		He	.	.
Pd	5		He	. 5	
A			He	.	
Cd			He	.	55.
Sn			He	.	
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	5 .
Pb			He	. 5	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	.
e			H	.
In	5		He	. 55
Tb	5		He	5. 5
Th			He	. 5

Sample ame 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5 5	
Be			H	.	
B			H	.	.
a			He	.5 5	.
M			He	. 5 5	.5
Al			He	.	.
Si			H	.	.
			He	5 .	.
Ca			He	5 . 5 5	.
Ti			He	.	.
V	5		He	. 5	.
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	. 5 5	.
Co	5		He	. 5	.
i			He	.	.
Cu			He	.	.
n			He	.5	.
As	5		He	.	5.
Se			H	. 5	.
Sr			He	. 5 5	.
Mo	5		He	.	.
Pd	5		He	.	
A			He	.	
Cd			He	.	.
Sn			He	.	
Sb			He	.	.
Ba			He	. 5	.
Pt	5		He	. 5	.
Tl	5		He	.	
Pb			He	.	.
Bi			He	.	.
U			He	.	.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	5.
Sc	5		H	.5
e			He	.
e			H	. 5
In	5		He	.
Tb	5		He	.
Th			He	. 5

Sample ame 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	. 5	
B			H	.	.
a			He	.5 5	.
M			He	5. 5	.
Al			He	.	.
Si			H	5 . 5	.
			He	.	.
Ca			He	5. 5	.
Ti			He	.	5.
V	5		He	. 5	.
Cr	5		He	. 5	.
Mn	55		He	.	.
Fe	5		He	5.	.
Co	5		He	.	.
i			He	. 5	.
Cu			He	. 5	.
n			He	. 5	.
As	5		He	.	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	.	
A			He	.	
Cd			He	. 5 5	.
Sn			He	. 55	
Sb			He	.	5.
Ba			He	. 55	.
Pt	5		He	.	.
Tl	5		He	.	
Pb			He	.	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	5. 5
Sc	5		H	. 5
e			He	.
e			H	. 5
In	5		He	.
Tb	5		He	.
Th			He	5.

Sample ame 5 B 5 D | Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 55	.
Be			H	.	
B			H	. 5 5	.
a			He	5. 55	.
M			He	.	.
Al			He	.	.
Si			H	.	.
			He	.	.
Ca			He	5 .	.
Ti			He	. 5	.
V	5		He	. 5	5.
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	.	.
Co	5		He	.	.
i			He	.	.5
Cu			He	. 5	.
n			He	.	.
As	5		He	.5 5	.
Se			H	. 5	.
Sr			He	.	.
Mo	5		He	.55	.5
Pd	5		He	.	
A			He	.	
Cd			He	.	.
Sn			He	.	
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	5 .
Pb			He	.	.
Bi			He	.	.
U			He	. 55	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	5.
Sc	5		H	.
e			He	.
e			H	. 5
In	5		He	. 5
Tb	5		He	.
Th			He	.

Sample ame 5 B 5 D

Pa e of

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	.	.
a			He	. 5	.
M			He	. 55	.
Al			He	5.5	.
Si			H	. 5	.
			He	55. 5	.
Ca			He	. 5 5	.
Ti			He	.	.
V	5		He	.	.
Cr	5		He	. 5	.
Mn	55		He	.	.
Fe	5		He	.	.
Co	5		He	.	.
i			He	.5 5	.
Cu			He	.	.
n			He	.	.
As	5		He	. 5 5	.
Se			H	. 5	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	. 5	.
A			He	5 .	.
Cd			He	. 5	.
Sn			He	. 55	.
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.5 5	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	.5 5	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.5
e			He	. 5
e			H	. 5
In	5		He	. 5
Tb	5		He	.
Th			He	.5 5

Sample ame 5 B 5 D

Pa e of

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	.	.
a			He	. 5	.
M			He	. 5	.
Al			He	. 55 5	.
Si			H	.5	.
			He	. 5	.
Ca			He	.	.
Ti			He	. 5	.
V	5		He	. 55 5	.5
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	. 5	.
Co	5		He	. 5	.
i			He	.	.
Cu			He	.	.
n			He	.	.5
As	5		He	.	.
Se			H	.	.5
Sr			He	. 5	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	5 .5	.
Cd			He	. 5	.
Sn			He	.	.
Sb			He	. 555	.5
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	. 55	.
Pb			He	.	.
Bi			He	.	.
U			He	.	.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.5
Sc	5		H	.
e			He	.
e			H	. 5 5
In	5		He	. 5
Tb	5		He	5. 5
Th			He	.

Sample ame 5 B 5 D 5
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 55	.
Be			H	.	.
B			H	. 5	.
a			He	.	.
M			He	.	.5
Al			He	. 5	.
Si			H	.	.
			He	. 5	.
Ca			He	.	.
Ti			He	.	5.
V	5		He	.	.
Cr	5		He	. 5	.5
Mn	55		He	. 5	5.5
Fe	5		He	.	.
Co	5		He	. 5	5 .
i			He	.	.
Cu			He	.	.
n			He	. 5	.
As	5		He	.	.
Se			H	. 5 55	.
Sr			He	.	.
Mo	5		He	. 5	.
Pd	5		He	.	5 .
A			He	. 5 5	.
Cd			He	.	.
Sn			He	.	
Sb			He	. 5	.
Ba			He	.5	.
Pt	5		He	. 5	.5
Tl	5		He	.	.
Pb			He	. 5	.
Bi			He	. 5	.5
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	.
e			H	. 5
In	5		He	.
Tb	5		He	.5 5
Th			He	.

Sample ame 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.5 5	.
B			H	.	.
a			He	. 5	.
M			He	.	.
Al			He	.	.
Si			H	.	.
			He	5 .	.
Ca			He	.	.
Ti			He	.5	.
V	5		He	.	.
Cr	5		He	. 5	.
Mn	55		He	. 5 5	.
Fe	5		He	.	.
Co	5		He	. 5	.
i			He	.5	.
Cu			He	. 5 5	.
n			He	5.	.
As	5		He	.	.
Se			H	.5	.
Sr			He	.5 5	.5
Mo	5		He	. 5	.
Pd	5		He	.	.
A			He	5 . 5	.
Cd			He	. 5 5	.
Sn			He	.	.
Sb			He	.	.
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	. 5	.
Bi			He	.	.
U			He	.5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 5
e			H	. 5
In	5		He	. 5
Tb	5		He	5.
Th			He	.

Sample ame CCV
Sample Type CCV
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCV.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.55	.
Be			H	.	.
B			H	. 5	.
a			He	. 5	.
M			He	. 5	.
Al			He	.	.
Si			H	. 5	.
			He	.55	.
Ca			He	. 5 5	.5
Ti			He	5.	.
V	5		He	5. 5	.
Cr	5		He	.	.
Mn	55		He	. 5	.
Fe	5		He	. 5	.
Co	5		He	. 5 5	.
i			He	. 5	.5
Cu			He	.	.
n			He	.	.
As	5		He	. 5	.
Se			H	.5	.5
Sr			He	5.	.
Mo	5		He	. 55	.
Pd	5		He	. 5	.
A			He	.	.5
Cd			He	. 5	.
Sn			He	. 5	.
Sb			He	.	.
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	. 5 5 5	.
Pb			He	. 5 5	.
Bi			He	.	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 5 5
e			H	.
In	5		He	.
Tb	5		He	.
Th			He	.5

Sample ame CCV
Sample Type CCV
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCV.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	5.	.
a			He	. 5	.
M			He	. 5 5	.
Al			He	. 5	.
Si			H	. 5	.
			He	.	.5
Ca			He	.	.
Ti			He	.	.5
V	5		He	.5 55	.
Cr	5		He	.5 5	.
Mn	55		He	.	.
Fe	5		He	.	.
Co	5		He	.	.5
i			He	. 5	.
Cu			He	.	.
n			He	. 5	.
As	5		He	.	.
Se			H	.5 55	.
Sr			He	.	.
Mo	5		He	.	.5
Pd	5		He	. 5	.
A			He	.	.
Cd			He	.5	.
Sn			He	. 55	.
Sb			He	5.	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	. 5	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	.
e			H	.
In	5		He	.
Tb	5		He	.
Th			He	5. 5 5

Sample ame CCB
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCB.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	
Be			H	.	.
B			H	.	.
a			He	5. 5	5.
M			He	. 5	
Al			He	.	.
Si			H	. 5 5	
			He	5. 5	
Ca			He	. 5	.
Ti			He	.	5 .
V	5		He	. 5	.
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	. 5	
Co	5		He	. 5	.
i			He	.	.
Cu			He	. 5	.
n			He	.	.
As	5		He	.	.
Se			H	.	.
Sr			He	. 5	.
Mo	5		He	.	5.
Pd	5		He	.	.
A			He	. 5	.
Cd			He	. 5	.
Sn			He	. 5	
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	. 5	.
Pb			He	.	.
Bi			He	. 5	.
U			He	. 5	.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	. 55
e			H	.
In	5		He	.
Tb	5		He	.
Th			He	5.

Sample ame 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 55
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	.	.
a			He	. 5	.5
M			He	5 .5 5	.
Al			He	.5	.5
Si			H	. 5	.
			He	. 55	.5
Ca			He	.55	.
Ti			He	.	.5
V	5		He	.	5.
Cr	5		He	.	.
Mn	55		He	5. 5	.
Fe	5		He	. 5	.
Co	5		He	.	5.
i			He	.	.
Cu			He	5. 5	.
n			He	.	.
As	5		He	.5	.
Se			H	. 5 5	.
Sr			He	. 5	.
Mo	5		He	.	.
Pd	5		He	. 5	.
A			He	. 5	.
Cd			He	. 5	.
Sn			He	.	
Sb			He	.	.
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	.	5.
Pb			He	.	.5
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	.
e			H	.
In	5		He	. 5
Tb	5		He	.
Th			He	. 55

Sample ame 5 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	. 55	.
a			He	5 . 5	.
M			He	.	.
Al			He	5.	.5
Si			H	. 5	.
			He	5 5.	.
Ca			He	. 5	.
Ti			He	.	.5
V	5		He	.	.
Cr	5		He	. 5	.5
Mn	55		He	.	.
Fe	5		He	5 . 5	.
Co	5		He	. 5	.
i			He	.5	.
Cu			He	5. 5 5	.
n			He	. 5	.
As	5		He	.	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	. 5	.
Pd	5		He	.	5.
A			He	.	.5
Cd			He	. 5	.
Sn			He	. 55	.
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	5.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	.	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5 5
Sc	5		H	.
e			He	. 5 5
e			H	. 5
In	5		He	. 5 5
Tb	5		He	.
Th			He	. 5 5

Sample ame 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	.	.5
B			H	.	.
a			He	.	.
M			He	.	.
Al			He	.55 5	.
Si			H	.	.
			He	.	.
Ca			He	.	.
Ti			He	. 5	.5
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	. 5	.
Fe	5		He	5 .	.
Co	5		He	.	.
i			He	.	.
Cu			He	5.5	.
n			He	5 .	.
As	5		He	5. 5	.
Se			H	. 5 5	.
Sr			He	.	.
Mo	5		He	. 5	.
Pd	5		He	.	.
A			He	.	5.
Cd			He	.	5.
Sn			He	. 5	.
Sb			He	. 5	.
Ba			He	5 .	.
Pt	5		He	.	5.5
Tl	5		He	.	.
Pb			He	5 .	.
Bi			He	.	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	5. 5
Sc	5		H	. 5
e			He	.
e			H	. 5
In	5		He	.
Tb	5		He	. 5
Th			He	. 5

Sample ame 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	.	.5
B			H	.	.
a			He	. 5	.
M			He	.	.
Al			He	.	.
Si			H	5 .	.
			He	.	.
Ca			He	.	.
Ti			He	. 5	.
V	5		He	. 55	.
Cr	5		He	.5	.
Mn	55		He	.	.5
Fe	5		He	.	.
Co	5		He	. 5 5	.5
i			He	. 5	.
Cu			He	5. 5	.
n			He	.	.
As	5		He	. 5	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	. 5	.
Pd	5		He	.	.
A			He	. 5	.
Cd			He	. 5	.
Sn			He	. 5	.
Sb			He	.	.5
Ba			He	5. 5	.
Pt	5		He	.	.5
Tl	5		He	. 5	.
Pb			He	. 5	.
Bi			He	.	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	5.5 55
Sc	5		H	. 5
e			He	. 5
e			H	. 5
In	5		He	. 5 5
Tb	5		He	.5
Th			He	. 5

Sample ame 5 B 5 D

Pa e of

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.5
Be			H	. 5	5.
B			H	.	.
a			He	. 5	.
M			He	. 5	.5
Al			He	. 5	.5
Si			H	5 .	.
			He	.	.
Ca			He	. 5	.
Ti			He	. 5	.
V	5		He	. 5 5	.
Cr	5		He	.	.5
Mn	55		He	. 5	.
Fe	5		He	.	.5
Co	5		He	.	.
i			He	. 5	.
Cu			He	5 .	.
n			He	.	.
As	5		He	5.	.
Se			H	.	.
Sr			He	. 55	.
Mo	5		He	. 5	.
Pd	5		He	. 5	.
A			He	.	5.
Cd			He	.	.
Sn			He	. 5 5	.
Sb			He	.	.5
Ba			He	5 .	.
Pt	5		He	. 55	.
Tl	5		He	.	.
Pb			He	. 5	.
Bi			He	. 5	5.5
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 5
e			H	.
In	5		He	.5
Tb	5		He	.
Th			He	.

Sample ame CCV
Sample Type CCV
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCV.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5 5	.
Be			H	.	.
B			H	. 5	.
a			He	5. 55	.
M			He	5.5	.
Al			He	.	.
Si			H	.	.
			He	5 . 5	.
Ca			He	. 5	.5
Ti			He	.	.
V	5		He	5.	.
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	5.55	.
Co	5		He	.	.
i			He	.	.
Cu			He	.	.
n			He	.	.
As	5		He	5.	.
Se			H	. 5	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	. 5	.
Cd			He	.	.
Sn			He	.	.
Sb			He	.5	.5
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	. 5	.
Pb			He	.	.
Bi			He	.	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	. 5 5
e			H	5. 5
In	5		He	.
Tb	5		He	.
Th			He	.5 5 5

Sample ame CCB
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCB.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	
Be			H	. 5 55	.
B			H	5. 5	.
a			He	. 5	.
M			He	. 5	.
Al			He	.	.
Si			H	. 55	
			He	.	
Ca			He	.	.
Ti			He	.	.
V	5		He	.	.
Cr	5		He	.	5 .
Mn	55		He	. 5	.
Fe	5		He	. 5	.
Co	5		He	.	.
i			He	.	.
Cu			He	. 5	.
n			He	.	.
As	5		He	.	.5
Se			H	.	.
Sr			He	. 5	.
Mo	5		He	. 5 5	5 .
Pd	5		He	. 5	.
A			He	. 5 5	.
Cd			He	.	.
Sn			He	.	
Sb			He	.	5 .
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	. 5 5	.
Pb			He	.	.
Bi			He	.	5.
U			He	. 5	.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 5
e			H	. 5
In	5		He	. 5
Tb	5		He	. 5
Th			He	.

Sample ame CCB Pa e of
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCB.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	.	.5
B			H	.	.
a			He	.5	.
M			He	.	
Al			He	.	.
Si			H	.	
			He	.	
Ca			He	.5	.
Ti			He	.	
V	5		He	. 5	.
Cr	5		He	.	.
Mn	55		He	.	.5
Fe	5		He	.	
Co	5		He	. 5	.
i			He	. 5	.
Cu			He	.	5.
n			He	. 5	
As	5		He	. 5	.
Se			H	. 5	.
Sr			He	.	
Mo	5		He	.	
Pd	5		He	.	.
A			He	.	.
Cd			He	.	
Sn			He	.	
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	. 5	.5
U			He	.	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	. 5
e			H	. 5
In	5		He	. 5
Tb	5		He	. 5
Th			He	.

Sample ame CRDL
Sample Type CRDL
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CRD.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 5	.
B			H	. 5	5.
a			He	5 .	.
M			He	.	.
Al			He	.5 5	.
Si			H	.	.
			He	.	.
Ca			He	.55	.
Ti			He	. 55 5	.
V	5		He	.	.
Cr	5		He	.5	.
Mn	55		He	.5	.
Fe	5		He	5. 5	.
Co	5		He	.5 5	.
i			He	.5 5	.
Cu			He	.	.
n			He	5.	.
As	5		He	.	.
Se			H	.5	.
Sr			He	.	.
Mo	5		He	.5 55	.
Pd	5		He	.	.
A			He	.	.
Cd			He	.	.
Sn			He	. 5	5.
Sb			He	.	.
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.5
e			He	.
e			H	.
In	5		He	.
Tb	5		He	. 5
Th			He	5. 5

Sample ame 5 5 B 5 D

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5 55	
Be			H	.	.
B			H	5. 5	.
a			He	.	.
M			He	.	.
Al			He	.	.
Si			H	.	
			He	. 5	
Ca			He	.5	5.
Ti			He	. 5	.
V	5		He	.	.
Cr	5		He	. 5	.
Mn	55		He	.	.
Fe	5		He	.	.5
Co	5		He	.	.
i			He	.	.
Cu			He	. 5	.
n			He	. 5	.5
As	5		He	.	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	
Pd	5		He	.	5 5.
A			He	. 5	.
Cd			He	.	5.5
Sn			He	.	.
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	
Tl	5		He	. 5	.
Pb			He	.	.
Bi			He	.	.
U			He	. 5	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	.
e			H	.
In	5		He	. 5
Tb	5		He	.555
Th			He	. 5

Sample ame 5 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	5.5 5	.
B			H	5 . 5	.5
a			He	.	.
M			He	.55 5 5	.
Al			He	.	.
Si			H	.5	.5
			He	. 5	.
Ca			He	.	.
Ti			He	.	.
V	5		He	. 5	.
Cr	5		He	. 5	.
Mn	55		He	. 5 5	.
Fe	5		He	.	.
Co	5		He	5 . 5	.
i			He	5 . 5	.
Cu			He	.	.
n			He	5 . 5	.
As	5		He	.	.
Se			H	5 .	.
Sr			He	. 5	.
Mo	5		He	5 . 5	.
Pd	5		He	.	.
A			He	5.	.
Cd			He	5 . 5	.
Sn			He	5 .	.
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	5 . 5	.
Pb			He	5 . 5	.
Bi			He	. 5	.5
U			He	.5 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	.
e			H	.5
In	5		He	.5 5
Tb	5		He	.
Th			He	. 5

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	.	.5
B			H	.	.
a			He	. 5	5.
M			He	.	.
Al			He	.	.
Si			H	5 .	.
			He	.	.
Ca			He	.	.
Ti			He	.	.
V	5		He	.	.5
Cr	5		He	.	.
Mn	55		He	. 5	.5
Fe	5		He	5 .	.
Co	5		He	5.	.
i			He	.	.
Cu			He	.	.
n			He	. 5	.
As	5		He	.5 55	.
Se			H	. 5	5.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	. 5	55.
A			He	. 5	.
Cd			He	.	5.
Sn			He	.	.
Sb			He	. 5	.
Ba			He	. 5 5	.
Pt	5		He	. 5	.
Tl	5		He	.	.
Pb			He	. 5	.
Bi			He	. 5	.5
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 5
e			H	.
In	5		He	.
Tb	5		He	. 5
Th			He	.

Sample ame 5 5 B 5 D

Pa e of

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 5	.
B			H	.	.
a			He	. 5	.
M			He	5 .5	.5
Al			He	. 55	.
Si			H	5.	.
			He	5 . 5	.5
Ca			He	.	.
Ti			He	.	.
V	5		He	5.	.
Cr	5		He	5. 5	.5
Mn	55		He	. 5	.
Fe	5		He	.	.
Co	5		He	.	.
i			He	.5	.
Cu			He	. 5	.
n			He	5 .	.
As	5		He	. 5	.
Se			H	5.	.5
Sr			He	5.	.
Mo	5		He	. 5	.5
Pd	5		He	. 5	.
A			He	.5	.
Cd			He	. 5 5	.
Sn			He	.	.
Sb			He	. 5	.
Ba			He	. 5 5	.
Pt	5		He	. 5	.
Tl	5		He	.	5.
Pb			He	5 .	.
Bi			He	.	.5
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	.
e			H	5.
In	5		He	. 5
Tb	5		He	. 5
Th			He	. 5

Sample ame 5 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 5	.5
B			H	. 5	.
a			He	. 5	.5
M			He	.	.
Al			He	.	.5
Si			H	. 5	.
			He	. 5	5.
Ca			He	. 5 5	.
Ti			He	.	.
V	5		He	.	.
Cr	5		He	.	5.5
Mn	55		He	.	.
Fe	5		He	. 5	.5
Co	5		He	.	.
i			He	. 5	.
Cu			He	.	.
n			He	. 5	.
As	5		He	.	.
Se			H	. 5	.
Sr			He	. 5	.
Mo	5		He	.	.5
Pd	5		He	.	.
A			He	.	.
Cd			He	. 5	.
Sn			He	. 5	.
Sb			He	.	5.
Ba			He	. 5	5.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.5	.
Bi			He	. 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5
e			He	. 5
e			H	5. 5
In	5		He	.
Tb	5		He	. 5
Th			He	.

Sample ame 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.5
B			H	.	.
a			He	.	.
M			He	.	.5
Al			He	.	.
Si			H	5 . 5	5.
			He	.	.
Ca			He	.	.
Ti			He	5 .	.
V	5		He	. 5	.
Cr	5		He	.	.
Mn	55		He	5. 5	.
Fe	5		He	55.5	.
Co	5		He	5 .	.
i			He	.	.
Cu			He	.	.
n			He	.	.
As	5		He	5 . 5 5	.5
Se			H	5 . 5	.
Sr			He	. 5	.
Mo	5		He	.	.
Pd	5		He	. 5	.
A			He	.	.
Cd			He	5 .	.
Sn			He	. 5 5	.
Sb			He	. 5	.
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	5 . 5	.
Pb			He	.	.
Bi			He	.	.
U			He	. 5	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	. 55
e			H	5. 5
In	5		He	5.
Tb	5		He	. 5
Th			He	. 5

Sample ame 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5 .	.
Be			H	5.5 5	.
B			H	5 .	.
a			He	. 55	.
M			He	. 5	.
Al			He	. 5	.
Si			H	5 . 5	5.5
			He	.	.
Ca			He	5 .	.5
Ti			He	.	.
V	5		He	. 5	.
Cr	5		He	. 5	.
Mn	55		He	. 5	.
Fe	5		He	.	.
Co	5		He	5 . 5	.
i			He	.	.
Cu			He	.5	.
n			He	. 5	.
As	5		He	5 . 5	.
Se			H	5 .	.
Sr			He	.	.
Mo	5		He	5 . 5	.
Pd	5		He	. 5	.
A			He	5. 5	.
Cd			He	5 .	.
Sn			He	5 . 5	.
Sb			He	. 5 5	.
Ba			He	.55	.
Pt	5		He	.5	.
Tl	5		He	5 .	.
Pb			He	.	.5
Bi			He	5 . 5	.
U			He	5 .55	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.5
Sc	5		H	. 5
e			He	.
e			H	5. 5
In	5		He	5. 5
Tb	5		He	. 5
Th			He	5. 5 5

Sample ame 5 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ /
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 55	.
Be			H	. 5 5	5.
B			H	. 5 5	5.
a			He	.	.
M			He	. 5	.
Al			He	5.	.5
Si			H	5 5. 5	.5
			He	.5	.
Ca			He	.	.
Ti			He	5 .	.
V	5		He	.	.5
Cr	5		He	. 5	.
Mn	55		He	. 5	.
Fe	5		He	5 .	5.
Co	5		He	.	.
i			He	.	.
Cu			He	. 5	.
n			He	.	.
As	5		He	. 55	.5
Se			H	.	.
Sr			He	. 5	.
Mo	5		He	.5	.
Pd	5		He	. 5	.
A			He	.	.
Cd			He	.	.
Sn			He	.	5.
Sb			He	. 5 5	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	. 5	.
Pb			He	.	.
Bi			He	.	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	5. 5
Sc	5		H	.
e			He	.
e			H	. 5 5
In	5		He	. 5
Tb	5		He	. 5
Th			He	. 5

Sample ame 5 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	5.
Be			H	.	.
B			H	5. 5	.
a			He	.	.5
M			He	. 5	.
Al			He	.	.
Si			H	.	.5
			He	.5 5	5.
Ca			He	5 5.	5.5
Ti			He	.	.
V	5		He	.	.
Cr	5		He	. 5 5	.
Mn	55		He	.	.
Fe	5		He	5 .	.
Co	5		He	5. 5	.
i			He	. 5	.
Cu			He	.	.
n			He	. 5	.
As	5		He	.	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	.	5 .
A			He	. 5	.
Cd			He	. 5	.
Sn			He	.	.
Sb			He	.	.5
Ba			He	5 .	.5
Pt	5		He	.	5.
Tl	5		He	. 5 55	.
Pb			He	. 5	.
Bi			He	. 5	.
U			He	.5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	. 5 5
e			H	.
In	5		He	.
Tb	5		He	.
Th			He	.

Sample ame 5 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	. 5	.
B			H	5. 5	.5
a			He	5 . 5 5	.5
M			He	5 .	.
Al			He	.	.
Si			H	.	5.
			He	.	.5
Ca			He	5 . 5	.
Ti			He	5 .	.5
V	5		He	.	.
Cr	5		He	. 55	.
Mn	55		He	. 55	.
Fe	5		He	5. 5	.
Co	5		He	.	.
i			He	.5	.
Cu			He	. 5 5	.
n			He	5 . 5	.
As	5		He	.	.5
Se			H	.	.
Sr			He	.	.
Mo	5		He	. 5	.
Pd	5		He	.	.
A			He	.	5.
Cd			He	.	.
Sn			He	. 5 5 5	.
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	. 5	.
Pb			He	.	.
Bi			He	.	.
U			He	. 5	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	5. 5 5
Sc	5		H	.
e			He	.
e			H	. 5
In	5		He	.5
Tb	5		He	. 5
Th			He	.

Sample ame CCV
Sample Type CCV
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCV.d
Data Path ame D Data
Acq. Date Time 5/ / 55 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5 5	.
Be			H	.5 5	.
B			H	. 5	.
a			He	.	.
M			He	5.	.
Al			He	.	.
Si			H	5.	.5
			He	.	.
Ca			He	. 5	.
Ti			He	5. 55	.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	.	.
Co	5		He	.5	.
i			He	.	.5
Cu			He	.	.
n			He	.	.
As	5		He	. 5	.
Se			H	.	.
Sr			He	. 5 5 5	.
Mo	5		He	.	.
Pd	5		He	.	.5
A			He	. 5 5	.5
Cd			He	. 5	.5
Sn			He	5.	.
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	. 5	.
Bi			He	.5	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	5.
Sc	5		H	.5
e			He	. 55 5
e			H	.
In	5		He	. 5
Tb	5		He	. 5 5
Th			He	. 5

Sample ame CCB Pa e of
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCB.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	.	.
B			H	.	5.
a			He	.	.5
M			He	.	
Al			He	.	.
Si			H	.	
			He	.5	
Ca			He	.	.
Ti			He	.	.
V	5		He	. 5	
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	.	.
Co	5		He	. 5	5.
i			He	.	.
Cu			He	. 5	.
n			He	.	.
As	5		He	.	.
Se			H	. 5	.
Sr			He	. 5	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.	.
Cd			He	. 5	.
Sn			He	.	
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	. 55	.
U			He	. 5	.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	.
e			H	.
In	5		He	.
Tb	5		He	. 5
Th			He	. 5

Sample ame CCB Pa e of
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCB.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	.	5.5
B			H	.	.5
a			He	. 5	.
M			He	. 5	
Al			He	.	.
Si			H	.	
			He	.	
Ca			He	. 5	
Ti			He	.	5 .
V	5		He	. 5	
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	.	
Co	5		He	.	.
i			He	.	
Cu			He	. 5	
n			He	.	.
As	5		He	.	
Se			H	. 5	5 .
Sr			He	.	5 .
Mo	5		He	.	
Pd	5		He	. 5	.
A			He	. 5	.
Cd			He	. 5	
Sn			He	.	
Sb			He	. 5	.
Ba			He	.	.5
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	5.
Bi			He	. 5	.
U			He	.	

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5
e			He	.
e			H	. 5
In	5		He	.5
Tb	5		He	. 55
Th			He	5.

Sample ame 5 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 5	.
B			H	.	.
a			He	.5	.
M			He	.5	.
Al			He	. 5	.
Si			H	. 5	.
			He	5 . 5	.
Ca			He	.	.
Ti			He	. 5	.
V	5		He	. 5 5	.
Cr	5		He	. 5	.
Mn	55		He	. 5	.
Fe	5		He	5 . 5	.
Co	5		He	. 5	.
i			He	. 5	.
Cu			He	.55	.
n			He	5.	.
As	5		He	5.	.
Se			H	. 5	.
Sr			He	.	.
Mo	5		He	. 5	.
Pd	5		He	.	.
A			He	. 5	.
Cd			He	.	.
Sn			He	.	.
Sb			He	. 5	.
Ba			He	5 .	.5
Pt	5		He	.	.
Tl	5		He	. 5 5	.
Pb			He	.	.
Bi			He	. 5	5.
U			He	.5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	.
e			H	5. 5
In	5		He	5.
Tb	5		He	. 5 5
Th			He	. 5

Sample ame 5 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5 5 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.5
Be			H	. 5	.
B			H	. 5	.
a			He	5.	.
M			He	5 .	.
Al			He	.	.
Si			H	55 .	.
			He	5.	.5
Ca			He	5 5.	.
Ti			He	. 5	.
V	5		He	.	5.
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	.5	.
Co	5		He	. 5	.
i			He	.	5.
Cu			He	.	.
n			He	.	.
As	5		He	.	.5
Se			H	.	.
Sr			He	. 5	.
Mo	5		He	. 5	.
Pd	5		He	.	.
A			He	.	.
Cd			He	. 5	.
Sn			He	.	.
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	.	5.
Tl	5		He	.	5.5
Pb			He	.	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	5. 5 5
Sc	5		H	.5
e			He	. 5 5
e			H	. 5
In	5		He	5.
Tb	5		He	. 5
Th			He	5.

Sample ame 5 5 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5. 5	.
Be			H	.	.
B			H	.	.
a			He	. 5	5.
M			He	5.5 5	.
Al			He	5 .	.
Si			H	5.	.
			He	.	.
Ca			He	5 .	.
Ti			He	. 5 5	.
V	5		He	. 5	.
Cr	5		He	5.	.
Mn	55		He	.	.
Fe	5		He	.	.
Co	5		He	.	.
i			He	. 5	.
Cu			He	5.	.
n			He	.5	.5
As	5		He	.	.
Se			H	. 5	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.	.
Cd			He	. 5	.
Sn			He	.5	.
Sb			He	.	.
Ba			He	5.	.
Pt	5		He	.	.
Tl	5		He	. 5	.
Pb			He	. 5	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	5.
Sc	5		H	.
e			He	. 5
e			H	. 55
In	5		He	.
Tb	5		He	. 5
Th			He	.5 5

Sample ame 5 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	5.5
B			H	5. 5	.
a			He	5 .	.
M			He	5 .	.
Al			He	.	.5
Si			H	. 5	.
			He	. 5	.
Ca			He	5 . 5	.
Ti			He	. 5	.5
V	5		He	. 5	.
Cr	5		He	.55 5 5	.5
Mn	55		He	. 5	.
Fe	5		He	.	.
Co	5		He	. 5	.5
i			He	.	.
Cu			He	5.	.
n			He	.	.
As	5		He	.	.
Se			H	. 5	.
Sr			He	. 55	.
Mo	5		He	. 5	.
Pd	5		He	. 5	.
A			He	. 5	.
Cd			He	.	.5
Sn			He	.	.
Sb			He	.	.
Ba			He	5 .5	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	. 5	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5
e			He	. 5
e			H	. 5
In	5		He	. 5
Tb	5		He	. 5
Th			He	.

Sample ame 5 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5.55	.
Be			H	. 5 5	.
B			H	.55	.
a			He	.	5.
M			He	5 . 5	.
Al			He	5 .	.
Si			H	5 .	5.
			He	. 5	.
Ca			He	. 5 5	.
Ti			He	.5	.
V	5		He	.	.
Cr	5		He	. 5	.
Mn	55		He	.	.
Fe	5		He	.	.
Co	5		He	. 5 5	.
i			He	.	.
Cu			He	.	.
n			He	.	.
As	5		He	. 5	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.	5.
Cd			He	. 5 5	.
Sn			He	.	.
Sb			He	. 5	.
Ba			He	5 .	5.
Pt	5		He	. 55	.
Tl	5		He	. 5	.
Pb			He	.	.
Bi			He	.	5.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.5 5
Sc	5		H	.
e			He	.
e			H	. 5
In	5		He	.
Tb	5		He	.
Th			He	.5 5 5

Sample ame 5 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 5	.
B			H	5.	.5
a			He	.	.
M			He	5 .	.
Al			He	.5	.
Si			H	.	.
			He	. 5	.
Ca			He	.5 55	.
Ti			He	.	.5
V	5		He	. 5	.
Cr	5		He	. 5	.
Mn	55		He	. 5	.
Fe	5		He	5 .	.
Co	5		He	. 55	.
i			He	. 5	.
Cu			He	5.5	.
n			He	.5 5	.5
As	5		He	.	.
Se			H	. 5	.5
Sr			He	.	.
Mo	5		He	. 5	.
Pd	5		He	.	.
A			He	. 5	.5
Cd			He	.	.
Sn			He	.	.
Sb			He	. 5 5	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	.	5.
Pb			He	. 5	.
Bi			He	. 5	.5
U			He	.	.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 5
e			H	. 5
In	5		He	.
Tb	5		He	.
Th			He	.

Sample ame 5 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	5.
Be			H	.	.
B			H	. 5	.
a			He	5 .5 5	.
M			He	. 5	.5
Al			He	.	.
Si			H	. 5	.
			He	. 5	.
Ca			He	.	.
Ti			He	. 5	.
V	5		He	. 5	.
Cr	5		He	.	.5
Mn	55		He	.5 5	.
Fe	5		He	5 .	.
Co	5		He	.5 5	.
i			He	.	.
Cu			He	. 5	.
n			He	5 .	.
As	5		He	. 5	.5
Se			H	. 5	.5
Sr			He	.5	5.
Mo	5		He	. 5 5	.
Pd	5		He	. 55	.
A			He	.	.
Cd			He	. 5 5	.
Sn			He	.	.
Sb			He	.	.5
Ba			He	.5	.
Pt	5		He	.	5.
Tl	5		He	. 5	.
Pb			He	. 555	.
Bi			He	. 5	.5
U			He	. 5	.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	.5 5
e			H	. 5
In	5		He	5.
Tb	5		He	. 5
Th			He	.

Sample ame 5 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	.	.
a			He	. 5	.
M			He	. 5 5	.
Al			He	. 5	.
Si			H	.	.
			He	.	.
Ca			He	5 . 5	.
Ti			He	. 5	.
V	5		He	.	5.
Cr	5		He	. 5	.
Mn	55		He	5.	.
Fe	5		He	.	.
Co	5		He	.	.
i			He	. 555	.
Cu			He	.	5.
n			He	5.	.
As	5		He	. 5	.
Se			H	.	.
Sr			He	5 .	.5
Mo	5		He	. 5	.
Pd	5		He	. 55	.
A			He	. 5	.
Cd			He	.	.
Sn			He	. 5	.
Sb			He	.	.
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	. 5 5	.
Pb			He	. 5 5	.
Bi			He	. 5	.
U			He	. 5	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.5 5
Sc	5		H	.
e			He	.5
e			H	.
In	5		He	5. 5
Tb	5		He	.
Th			He	5. 5

Sample ame 5 5 B 5 D

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5.	.
Be			H	.	.
B			H	5. 55	.
a			He	.	.
M			He	.	.
Al			He	.	.
Si			H	5 .	.
			He	5 . 5	.
Ca			He	.	.
Ti			He	.	.
V	5		He	5 . 5	.
Cr	5		He	.5	.
Mn	55		He	5.	.
Fe	5		He	5 .	.
Co	5		He	.5 5	.
i			He	.55 55	.
Cu			He	.	.
n			He	.	.
As	5		He	. 5	.
Se			H	. 5	.
Sr			He	. 55	.
Mo	5		He	. 5	5.
Pd	5		He	.	.
A			He	.	.
Cd			He	.	.
Sn			He	. 5	.
Sb			He	. 5	.
Ba			He	5 . 5	.
Pt	5		He	. 5	.5
Tl	5		He	. 55	.5
Pb			He	.	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	5. 5 5
Sc	5		H	.
e			He	.
e			H	.
In	5		He	. 5
Tb	5		He	. 5
Th			He	5.

Sample ame 5 5 B 5 D

Pa e of

Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.5
Be			H	.	.
B			H	5. 55	.
a			He	5. 5	.
M			He	.	.
Al			He	5 . 5	.
Si			H	5 . 5 5	.
			He	. 5	.
Ca			He	.	.
Ti			He	.	.
V	5		He	.	.
Cr	5		He	. 5	.
Mn	55		He	5 .	.
Fe	5		He	5 55.	.
Co	5		He	. 5	.5
i			He	. 5	.
Cu			He	.	.
n			He	.	.
As	5		He	. 5	.
Se			H	. 5	.
Sr			He	. 5	.
Mo	5		He	. 5	.
Pd	5		He	.	.
A			He	.	.
Cd			He	.	.
Sn			He	.	.
Sb			He	.	.
Ba			He	55. 5	.
Pt	5		He	.	5 .
Tl	5		He	. 5	.
Pb			He	.	.
Bi			He	.	.5
U			He	. 5	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	5. 5
Sc	5		H	. 5
e			He	.
e			H	.
In	5		He	.5
Tb	5		He	.
Th			He	. 5

Sample ame	CCV
Sample Type	CCV
Operator	T Traynor
Instrument	ICM . A
Batch ame	5 .b
Data File ame	5 CCV.d
Data Path ame	D Data
Acq. Date Time	5/ / 5 5
Comment	

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	.	.
B			H	. 5	.
a			He	. 5	.
M			He	.	5.
Al			He	.	.
Si			H	. 5	.
			He	.	.
Ca			He	.	5.5
Ti			He	. 55	.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	. 5	.
Co	5		He	. 5	.
i			He	.	.
Cu			He	.	.5
n			He	.	.
As	5		He	. 5	.
Se			H	. 5	.
Sr			He	5.	.
Mo	5		He	.5 5	.
Pd	5		He	. 5	.5
A			He	. 5	.
Cd			He	. 5	.
Sn			He	. 5 5	.
Sb			He	5.	.
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	. 5	.
Pb			He	.	.
Bi			He	.	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.5 5
Sc	5		H	.
e			He	.
e			H	.5
In	5		He	.
Tb	5		He	. 5
Th			He	5. 5

Sample ame	CCB	Pa e of
Sample Type	CCB	
Operator	T Traynor	
Instrument	ICM . A	
Batch ame	5 .b	
Data File ame	CCB.d	
Data Path ame	D Data	
Acq. Date Time	5/ / 5	
Comment		

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	.	.
B			H	. 5	.
a			He	.	.5
M			He	.	
Al			He	. 5 5	.
Si			H	. 5	
			He	.	
Ca			He	.5	.
Ti			He	.	5.
V	5		He	. 5 5	
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	.	.
Co	5		He	.	.
i			He	. 5	5 .
Cu			He	.	
n			He	.	.
As	5		He	.	5 .
Se			H	. 5	.
Sr			He	.	.
Mo	5		He	. 5	.
Pd	5		He	. 5	.
A			He	.	.
Cd			He	. 5	.
Sn			He	.	
Sb			He	. 5	5 .
Ba			He	.	.
Pt	5		He	. 5	5.
Tl	5		He	.	5.
Pb			He	. 5	.
Bi			He	.	.
U			He	. 555	5 .

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	.
e			H	.
In	5		He	.
Tb	5		He	. 5 5
Th			He	. 5

Sample ame CCB
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCB.d
Data Path ame D Data
Acq. Date Time 5/ / 5 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	
Be			H	.	.
B			H	. 5	5.
a			He	. 5	.
M			He	. 55	
Al			He	. 5	.
Si			H	. 5	
			He	. 555	
Ca			He	. 5	.
Ti			He	. 5	.
V	5		He	. 5	
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	. 5	
Co	5		He	.	
i			He	.	
Cu			He	. 5	
n			He	.	.
As	5		He	.	
Se			H	.	.
Sr			He	.	.
Mo	5		He	.	
Pd	5		He	.	.
A			He	.	.
Cd			He	. 5	
Sn			He	.	
Sb			He	.	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	. 5	
Pb			He	.	.
Bi			He	.	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	.
e			H	.
In	5		He	. 5
Tb	5		He	.
Th			He	5. 55 5 5

Sample ame 5 5 B 5 D Pa e of
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	5.	5.
Be			H	. 5	.
B			H	5.	.5
a			He	. 5	.
M			He	.	5.
Al			He	. 5	5.5
Si			H	.	.
			He	.	.
Ca			He	. 5	.
Ti			He	.5 5	5.
V	5		He	.5	.
Cr	5		He	.	.
Mn	55		He	. 5	.
Fe	5		He	.	5.
Co	5		He	.	5.
i			He	.	5.
Cu			He	.	.
n			He	.5	.
As	5		He	. 55	5.
Se			H	.	.5
Sr			He	.	5.
Mo	5		He	.	.
Pd	5		He	.	.
A			He	.	.
Cd			He	.	5.
Sn			He	. 5	.
Sb			He	.	.
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	.	.
U			He	. 5	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	5. 5
Sc	5		H	. 55
e			He	. 5 5
e			H	.5
In	5		He	.5 5
Tb	5		He	. 5
Th			He	5.

Sample ame 5 5 B 5 D
Sample Type Sample
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame SMPL.d
Data Path ame D Data
Acq. Date Time 5/ / 5 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	. 5	.
B			H	.	5.
a			He	5.	.
M			He	.	.
Al			He	5 .	5.5
Si			H	.	.
			He	.	5.
Ca			He	.	5.
Ti			He	5 .	.
V	5		He	.	5.
Cr	5		He	.	5.
Mn	55		He	. 5	5.
Fe	5		He	5. 5	5.
Co	5		He	.5	5.
i			He	.	5.
Cu			He	.	5.
n			He	5 .	.
As	5		He	.	.
Se			H	.	.
Sr			He	.	5.
Mo	5		He	. 5	.
Pd	5		He	.	.
A			He	.	.
Cd			He	.	.
Sn			He	.	.
Sb			He	.	.
Ba			He	.	5.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	. 5	.
Bi			He	.	.
U			He	. 5 5	.5

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5
Sc	5		H	.5
e			He	.
e			H	. 5
In	5		He	. 5
Tb	5		He	.
Th			He	. 5

Sample ame CCV
Sample Type CCV
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCV.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	.
Be			H	.	.
B			H	. 5	.
a			He	.	.
M			He	.	.
Al			He	5 . 5	.5
Si			H	5. 5	.5
			He	.	.
Ca			He	. 5	.
Ti			He	. 5	5.
V	5		He	.	5.
Cr	5		He	.	5.5
Mn	55		He	.	5.
Fe	5		He	. 5	.
Co	5		He	.	5.
i			He	.	.
Cu			He	. 5	5.5
n			He	.	5.5
As	5		He	.	5.
Se			H	. 5	.
Sr			He	.	.
Mo	5		He	.	5.
Pd	5		He	5.	.
A			He	.	5.
Cd			He	.	5.
Sn			He	. 5 5	5.
Sb			He	. 5	5.
Ba			He	.	5.
Pt	5		He	.55 5	.
Tl	5		He	.5	5.
Pb			He	.	5.
Bi			He	5.	5.
U			He	5.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	. 5
e			He	. 5
e			H	. 5
In	5		He	. 5
Tb	5		He	.
Th			He	.

Sample ame: CCB
Sample Type: CCB
Operator: T Traynor
Instrument: ICM . A
Batch ame: 5 .b
Data File ame: CCB.d
Data Path ame: D Data
Acq. Date Time: 5/ / 5 5
Comment:

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	. 5	
Be			H	.	.
B			H	.	.
a			He	.	.
M			He	.	
Al			He	. 55	.
Si			H	.	
			He	.	
Ca			He	.	.
Ti			He	. 5	.
V	5		He	.	
Cr	5		He	.	.5
Mn	55		He	. 5	.
Fe	5		He	. 5	5.
Co	5		He	.	.5
i			He	.	.
Cu			He	.	
n			He	.5 5	.
As	5		He	. 5	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	. 5	.
Pd	5		He	.	5 .
A			He	.	.
Cd			He	.	.
Sn			He	. 5	
Sb			He	.	.
Ba			He	. 5	.
Pt	5		He	.	5 .
Tl	5		He	.	.
Pb			He	.	.
Bi			He	.	.
U			He	. 5	5 .

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.
Sc	5		H	.
e			He	. 5
e			H	. 5
In	5		He	. 5
Tb	5		He	. 5
Th			He	.

Sample ame CCB Pa e of
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCB.d
Data Path ame D Data
Acq. Date Time 5/ / 5 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	.	5 .
B			H	. 5	.
a			He	. 5	.
M			He	.	
Al			He	.	.
Si			H	.	
			He	.5	
Ca			He	.	5 .
Ti			He	.	.
V	5		He	.	
Cr	5		He	.	5 .
Mn	55		He	. 5	.5
Fe	5		He	.	.
Co	5		He	. 5	.
i			He	.	
Cu			He	. 5	
n			He	.	.
As	5		He	.	
Se			H	. 5 5	.
Sr			He	. 5	.
Mo	5		He	. 5	
Pd	5		He	.	.
A			He	.	.
Cd			He	.	
Sn			He	. 5	
Sb			He	. 5	.
Ba			He	.	.
Pt	5		He	.	.
Tl	5		He	. 5	5 .
Pb			He	.	5.
Bi			He	.	5.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	. 5
e			He	.
e			H	.5
In	5		He	.55
Tb	5		He	5.
Th			He	.

Sample ame CRDL
Sample Type CRDL
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CRD.d
Data Path ame D Data
Acq. Date Time 5/ / 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	.
Be			H	. 5	.
B			H	.	.
a			He	.	5.
M			He	.	.
Al			He	.	5.
Si			H	5. 5	.
			He	.	.
Ca			He	. 5	.
Ti			He	.	.
V	5		He	.	.
Cr	5		He	.	.
Mn	55		He	.	.
Fe	5		He	. 5 5	5.
Co	5		He	.	.
i			He	.	5.
Cu			He	.	5.
n			He	.	.
As	5		He	. 5	.
Se			H	.5	.
Sr			He	. 5	5.
Mo	5		He	.	.
Pd	5		He	.	5.
A			He	.	.5
Cd			He	.	.
Sn			He	.	.
Sb			He	.	.
Ba			He	. 5	.
Pt	5		He	.	.
Tl	5		He	.	.
Pb			He	.	.
Bi			He	. 5	.
U			He	.	.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5
Sc	5		H	.
e			He	. 5
e			H	.
In	5		He	.
Tb	5		He	. 55 5
Th			He	.5 5 5

Sample ame CCV
Sample Type CCV
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame CCV.d
Data Path ame D Data
Acq. Date Time 5/ / 5 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	5.
Be			H	. 5	.
B			H	.	.
a			He	. 5	5.
M			He	.	.
Al			He	5.	.
Si			H	.	.
			He	.5	.
Ca			He	. 55	.
Ti			He	.	.
V	5		He	. 5 5	.
Cr	5		He	.	.
Mn	55		He	.	.5
Fe	5		He	. 5	.
Co	5		He	.	5.
i			He	. 5	.
Cu			He	5. 5	.
n			He	.	.
As	5		He	.	.
Se			H	.	.
Sr			He	.	.
Mo	5		He	5. 5	.5
Pd	5		He	5. 5	5.
A			He	.5 5	.
Cd			He	. 5	.
Sn			He	.	.
Sb			He	.	.
Ba			He	.	5.
Pt	5		He	.	5.
Tl	5		He	. 5	.
Pb			He	.	.
Bi			He	.	.
U			He	5. 5	5.

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	.5
Sc	5		H	. 5
e			He	. 5
e			H	. 5
In	5		He	. 5
Tb	5		He	.
Th			He	.

Sample ame CCB
Sample Type CCB
Operator T Traynor
Instrument ICM . A
Batch ame 5 .b
Data File ame 5 CCB.d
Data Path ame D Data
Acq. Date Time 5/ / 5 5 5
Comment

Analytes

ame	Mass	Tune Step	Tune Mode	Conc.	Conc RSD
Li			H	.	
Be			H	. 55	.
B			H	. 555	.
a			He	.	.
M			He	.	
Al			He	.	.
Si			H	. 5	
			He	.5	
Ca			He	. 5	.
Ti			He	.	5 .
V	5		He	. 5	
Cr	5		He	.	.
Mn	55		He	. 55	.
Fe	5		He	. 55	.
Co	5		He	. 5	.
i			He	. 5	.
Cu			He	.	
n			He	.5	.
As	5		He	. 5	.
Se			H	.	5.
Sr			He	.	5.5
Mo	5		He	.	.
Pd	5		He	.	5 .
A			He	.	.
Cd			He	. 5	.5
Sn			He	.	
Sb			He	.	5 .
Ba			He	. 5	5 .
Pt	5		He	. 5	.
Tl	5		He	. 5	.
Pb			He	.	.
Bi			He	.	.
U			He	.	5 .

ISTD

ame	Mass	Tune Step	Tune Mode	Rec
Sc	5		He	. 5 5
Sc	5		H	. 5
e			He	. 5
e			H	.
In	5		He	.
Tb	5		He	.
Th			He	.5 5

Prep Log Report

Batch Information: MPRP 469970 2008 WD_P **Template Version: F-MN-I-328-Rev.01 (31Aug2015)**

10385796

Prep Method	EPA 200.8	Analysis Method	EPA 200.8	Extracted By	TT3	Extracted Date/Time	04/27/2017 12:01:46:603
Block ID	10MET26	Thermometer ID	2113942	Block Temp (C)	93.00	Correction Factor (C)	1
Corrected Temp. (C)	94.00	Digestion Start Time	04/27/2017 06:30:50:368	Digestion End Time	04/27/2017 10:30:50:368	Block End Temp (C)	93
Corrected End Temp. (C)	94.00	Digestion Vessel	115409	Metals Pipette 1	Q435	Metals Pipette 2	
Reviewed By	RJS	Reviewed By Date	04/27/2017 12:23	Batch Notes			

Sample Information:

QC Rule	Sample Type	Lab Sample ID	Matrix	Initial Volume (mL)	Conc. HNO3 (mL)	Conc. HCL (mL)	Final Volume (mL)	Sample Notes	METALS-STK1 (mL)	METALS-STK2 (mL)
2008 WD_P	BLANK	**2566563**	Water	50	116090 (1)	116091 (0.5)	50			
2008 WD_P	LCS	**2566564**	Water	50	116090 (1)	116091 (0.5)	50		108405 (.025)	108403 (.025)
2008 WD_P	PS	**10385796001**	Water	50	116090 (1)	116091 (0.5)	50			
2008 WD_P	PS	**10385796002**	Water	50	116090 (1)	116091 (0.5)	50			
2008 WD_P	PS	**10385796003**	Water	50	116090 (1)	116091 (0.5)	50			
2008 WD_P	RQS	**10385796004**	Water	50	116090 (1)	116091 (0.5)	50			
2008 WD_P	MS	**2566565**	Water	50	116090 (1)	116091 (0.5)	50		108405 (.025)	108403 (.025)
2008 WD_P	MSD	**2566566**	Water	50	116090 (1)	116091 (0.5)	50		108405 (.025)	108403 (.025)
2008 WD_P	PS	**10385796005**	Water	50	116090 (1)	116091 (0.5)	50			
2008 WD_P	PS	**10385796006**	Water	50	116090 (1)	116091 (0.5)	50			
2008 WD_P	PS	**10385796007**	Water	50	116090 (1)	116091 (0.5)	50			
2008 WD_P	PS	**10385796008**	Water	50	116090 (1)	116091 (0.5)	50			
2008 WD_P	PS	**10385796009**	Water	50	116090 (1)	116091 (0.5)	50			
2008 WD_P	PS	**10385796010**	Water	50	116090 (1)	116091 (0.5)	50			
2008 WD_P	PS	**10385796011**	Water	50	116090 (1)	116091 (0.5)	50			
2008 WD_P	PS	**10385828001**	Water	50	116090 (1)	116091 (0.5)	50			
2008 WD_P	MS	**2566567**	Water	50	116090 (1)	116091 (0.5)	50		108405 (.025)	108403 (.025)

Tue, 2 May 2017 11:58:00 -0500

Prep Log Report

QC Rule	Sample Type	Lab Sample ID	Matrix	Initial Volume (mL)	Conc. HNO3 (mL)	Conc. HCL (mL)	Final Volume (mL)	Sample Notes	METALS-STK1 (mL)	METALS-STK2 (mL)
2008 WD_P	PS	**10385828002**	Water	50	116090 (1)	116091 (0.5)	50			
2008 WD_P	PS	**10385828003**	Water	50	116090 (1)	116091 (0.5)	50			
2008 WD_P	PS	**10385828004**	Water	50	116090 (1)	116091 (0.5)	50			
2008 WD_P	PS	**10385828005**	Water	50	116090 (1)	116091 (0.5)	50			

Standard Notes:

108403: Spike 2/2 for 6010-6020-200.7-200.8 QC

108405: Spike 1/2 for 6010-6020-200.7-200.8 QC

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

May 15, 2017

Christina Johnson
Maul Foster and Algoni
602 Bunker Ave # 5
Kellogg, ID 83837

RE: Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10386091

Dear Christina Johnson:

Enclosed are the analytical results for sample(s) received by the laboratory on April 20, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Sarah Platzer
sarah.platzer@pacelabs.com
(612)607-1700
Project Manager

Enclosures

cc: Alan Hughes, Maul Foster & Alongi, Inc.
Rachael Woods, Maul Foster and Alongi

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

CERTIFICATIONS

Project:	2017-02 East Mission Flats Rep
Pace Project No.:	10386091

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: UST-078
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: MN00064
CNMI Saipan Certification #:MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia WW Certification #: 382
Wisconsin Certification #: 999407970
Wyoming via EPA Region 8 Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

SAMPLE SUMMARY

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10386091

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10385796007	**07-EMF-MW-D-20170418-GW**	Water	04/18/17 12:40	04/20/17 09:40
10385796008	**08-EMF-MW-E-20170418-GW**	Water	04/18/17 13:55	04/20/17 09:40
10385796009	**08-EMF-MW-F-20170418-GW**	Water	04/18/17 14:40	04/20/17 09:40
10385796010	**08-EMF-MW-F-20170418-EB**	Water	04/18/17 14:30	04/20/17 09:40
10385796011	**08-EMF-MW-E-20170418-FB**	Water	04/18/17 13:15	04/20/17 09:40

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

SAMPLE ANALYTE COUNT

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10386091

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10385796007	**07-EMF-MW-D-20170418-GW**	EPA 200.8	TT3	8	PASI-M
10385796008	**08-EMF-MW-E-20170418-GW**	EPA 200.8	TT3	8	PASI-M
10385796009	**08-EMF-MW-F-20170418-GW**	EPA 200.8	TT3	8	PASI-M
10385796010	**08-EMF-MW-F-20170418-EB**	EPA 200.8	TT3	8	PASI-M
10385796011	**08-EMF-MW-E-20170418-FB**	EPA 200.8	TT3	8	PASI-M

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

PROJECT NARRATIVE

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10386091

Method: **EPA 200.8**
Description: 200.8 MET ICPMS, Dissolved
Client: Maul Foster & Alongi, Inc.
Date: May 15, 2017

General Information:
5 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

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

Sample Preparation:
The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

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

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

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

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

QC Batch: 469970

B: Analyte was detected in the associated method blank.

- BLANK for HBN 469970 [MPRP/715 (Lab ID: 2566563)
  - Sodium, Dissolved

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

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

QC Batch: 469970

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10385796004,10385828001

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

- MS (Lab ID: 2566567)
  - Calcium, Dissolved

Additional Comments:

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

PROJECT NARRATIVE

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10386091

Method: **EPA 200.8**
Description: 200.8 MET ICPMS, Dissolved
Client: Maul Foster & Alongi, Inc.
Date: May 15, 2017

Analyte Comments:

QC Batch: 469970

E: Analyte concentration exceeded the calibration range. The reported result is estimated.
- MS (Lab ID: 2566567)
  - Calcium, Dissolved

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

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

ANALYTICAL RESULTS

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10386091

Sample: 07-EMF-MW-D-20170418-GW **Lab ID: 10385796007** Collected: 04/18/17 12:40 Received: 04/20/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**0.34J**	ug/L	0.50	0.091	1	04/27/17 12:01	05/01/17 09:54	7440-38-2	
Cadmium, Dissolved	**1.2**	ug/L	0.080	0.013	1	04/27/17 12:01	05/01/17 09:54	7440-43-9	
Calcium, Dissolved	**6500**	ug/L	40.0	9.8	1	04/27/17 12:01	05/01/17 09:54	7440-70-2	
Lead, Dissolved	**0.057J**	ug/L	0.10	0.012	1	04/27/17 12:01	05/01/17 09:54	7439-92-1	
Magnesium, Dissolved	**3040**	ug/L	10.0	2.0	1	04/27/17 12:01	05/01/17 09:54	7439-95-4	
Potassium, Dissolved	**1510**	ug/L	50.0	8.5	1	04/27/17 12:01	05/01/17 09:54	7440-09-7	
Sodium, Dissolved	**3690**	ug/L	50.0	10.4	1	04/27/17 12:01	05/01/17 09:54	7440-23-5	
Zinc, Dissolved	**325**	ug/L	5.0	0.78	1	04/27/17 12:01	05/01/17 09:54	7440-66-6	

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ANALYTICAL RESULTS

Project: 2017-02 East Mission Flats Rep

Pace Project No.: 10386091

Sample: 08-EMF-MW-E-20170418-GW **Lab ID: 10385796008** Collected: 04/18/17 13:55 Received: 04/20/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**1.6**	ug/L	0.50	0.091	1	04/27/17 12:01	05/01/17 09:57	7440-38-2	
Cadmium, Dissolved	**0.14**	ug/L	0.080	0.013	1	04/27/17 12:01	05/01/17 09:57	7440-43-9	
Calcium, Dissolved	**206000**	ug/L	800	195	20	04/27/17 12:01	05/01/17 10:32	7440-70-2	
Lead, Dissolved	**0.014J**	ug/L	0.10	0.012	1	04/27/17 12:01	05/01/17 09:57	7439-92-1	
Magnesium, Dissolved	**79700**	ug/L	200	39.8	20	04/27/17 12:01	05/01/17 10:32	7439-95-4	
Potassium, Dissolved	**4010**	ug/L	50.0	8.5	1	04/27/17 12:01	05/01/17 09:57	7440-09-7	
Sodium, Dissolved	**58700**	ug/L	1000	208	20	04/27/17 12:01	05/01/17 10:32	7440-23-5	
Zinc, Dissolved	**14.7**	ug/L	5.0	0.78	1	04/27/17 12:01	05/01/17 09:57	7440-66-6	

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ANALYTICAL RESULTS

Project: 2017-02 East Mission Flats Rep

Pace Project No.: 10386091

Sample: 08-EMF-MW-F-20170418-GW **Lab ID: 10385796009** Collected: 04/18/17 14:40 Received: 04/20/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**<0.50**	ug/L	0.50	0.091	1	04/27/17 12:01	05/01/17 09:59	7440-38-2	
Cadmium, Dissolved	**1.5**	ug/L	0.080	0.013	1	04/27/17 12:01	05/01/17 09:59	7440-43-9	
Calcium, Dissolved	**15200**	ug/L	40.0	9.8	1	04/27/17 12:01	05/01/17 09:59	7440-70-2	
Lead, Dissolved	**0.28**	ug/L	0.10	0.012	1	04/27/17 12:01	05/01/17 09:59	7439-92-1	
Magnesium, Dissolved	**8060**	ug/L	10.0	2.0	1	04/27/17 12:01	05/01/17 09:59	7439-95-4	
Potassium, Dissolved	**760**	ug/L	50.0	8.5	1	04/27/17 12:01	05/01/17 09:59	7440-09-7	
Sodium, Dissolved	**20000**	ug/L	50.0	10.4	1	04/27/17 12:01	05/01/17 09:59	7440-23-5	
Zinc, Dissolved	**2900**	ug/L	50.0	7.8	10	04/27/17 12:01	05/01/17 10:34	7440-66-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10386091

Sample: 08-EMF-MW-F-20170418-EB **Lab ID: 10385796010** Collected: 04/18/17 14:30 Received: 04/20/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**<0.50**	ug/L	0.50	0.091	1	04/27/17 12:01	05/01/17 10:02	7440-38-2	
Cadmium, Dissolved	**<0.080**	ug/L	0.080	0.013	1	04/27/17 12:01	05/01/17 10:02	7440-43-9	
Calcium, Dissolved	**42.2**	ug/L	40.0	9.8	1	04/27/17 12:01	05/01/17 10:02	7440-70-2	
Lead, Dissolved	**0.024J**	ug/L	0.10	0.012	1	04/27/17 12:01	05/01/17 10:02	7439-92-1	
Magnesium, Dissolved	**3.4J**	ug/L	10.0	2.0	1	04/27/17 12:01	05/01/17 10:02	7439-95-4	
Potassium, Dissolved	**<50.0**	ug/L	50.0	8.5	1	04/27/17 12:01	05/01/17 10:02	7440-09-7	
Sodium, Dissolved	**27.3J**	ug/L	50.0	10.4	1	04/27/17 12:01	05/01/17 10:02	7440-23-5	B
Zinc, Dissolved	**2.6J**	ug/L	5.0	0.78	1	04/27/17 12:01	05/01/17 10:02	7440-66-6	

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ANALYTICAL RESULTS

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10386091

Sample: 08-EMF-MW-E-20170418-FB **Lab ID: 10385796011** Collected: 04/18/17 13:15 Received: 04/20/17 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**<0.50**	ug/L	0.50	0.091	1	04/27/17 12:01	05/01/17 10:04	7440-38-2	
Cadmium, Dissolved	**<0.080**	ug/L	0.080	0.013	1	04/27/17 12:01	05/01/17 10:04	7440-43-9	
Calcium, Dissolved	**37.4J**	ug/L	40.0	9.8	1	04/27/17 12:01	05/01/17 10:04	7440-70-2	
Lead, Dissolved	**<0.10**	ug/L	0.10	0.012	1	04/27/17 12:01	05/01/17 10:04	7439-92-1	
Magnesium, Dissolved	**2.6J**	ug/L	10.0	2.0	1	04/27/17 12:01	05/01/17 10:04	7439-95-4	
Potassium, Dissolved	**<50.0**	ug/L	50.0	8.5	1	04/27/17 12:01	05/01/17 10:04	7440-09-7	
Sodium, Dissolved	**23.6J**	ug/L	50.0	10.4	1	04/27/17 12:01	05/01/17 10:04	7440-23-5	B
Zinc, Dissolved	**1.3J**	ug/L	5.0	0.78	1	04/27/17 12:01	05/01/17 10:04	7440-66-6	

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QUALITY CONTROL DATA

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10386091

QC Batch: 469970 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 10385796007, 10385796008, 10385796009, 10385796010, 10385796011

METHOD BLANK: 2566563 Matrix: Water
Associated Lab Samples: 10385796007, 10385796008, 10385796009, 10385796010, 10385796011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	<0.50	0.50	0.091	05/01/17 09:19	
Cadmium, Dissolved	ug/L	<0.080	0.080	0.013	05/01/17 09:19	
Calcium, Dissolved	ug/L	<40.0	40.0	9.8	05/01/17 09:19	
Lead, Dissolved	ug/L	<0.10	0.10	0.012	05/01/17 09:19	
Magnesium, Dissolved	ug/L	<10.0	10.0	2.0	05/01/17 09:19	
Potassium, Dissolved	ug/L	<50.0	50.0	8.5	05/01/17 09:19	
Sodium, Dissolved	ug/L	22.4J	50.0	10.4	05/01/17 09:19	
Zinc, Dissolved	ug/L	<5.0	5.0	0.78	05/01/17 09:19	

LABORATORY CONTROL SAMPLE: 2566564

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	100	104	104	85-115	
Cadmium, Dissolved	ug/L	100	110	110	85-115	
Calcium, Dissolved	ug/L	2000	2010	101	85-115	
Lead, Dissolved	ug/L	100	110	110	85-115	
Magnesium, Dissolved	ug/L	2000	2070	103	85-115	
Potassium, Dissolved	ug/L	2000	2070	103	85-115	
Sodium, Dissolved	ug/L	2000	2090	104	85-115	
Zinc, Dissolved	ug/L	100	110	110	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2566565 2566566

Parameter	Units	10385796004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	2.8	100	100	105	108	103	105	70-130	2	20	
Cadmium, Dissolved	ug/L	0.52	100	100	107	110	107	110	70-130	2	20	
Calcium, Dissolved	ug/L	7650	2000	2000	9290	9780	82	106	70-130	5	20	
Lead, Dissolved	ug/L	4.0	100	100	112	114	108	110	70-130	1	20	
Magnesium, Dissolved	ug/L	2850	2000	2000	4810	4910	98	103	70-130	2	20	
Potassium, Dissolved	ug/L	810	2000	2000	2840	2940	102	106	70-130	3	20	
Sodium, Dissolved	ug/L	3270	2000	2000	5170	5350	95	104	70-130	4	20	
Zinc, Dissolved	ug/L	53.7	100	100	159	164	105	110	70-130	3	20	

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

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QUALITY CONTROL DATA

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10386091

MATRIX SPIKE SAMPLE: 2566567

Parameter	Units	10385828001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	0.26J	100	107	107	70-130	
Cadmium, Dissolved	ug/L	0.00030 mg/L	100	110	109	70-130	
Calcium, Dissolved	ug/L	41700	2000	45000	162	70-130	E,M1
Lead, Dissolved	ug/L	0.058J	100	110	110	70-130	
Magnesium, Dissolved	ug/L	10700	2000	13000	114	70-130	
Potassium, Dissolved	ug/L	724	2000	2850	106	70-130	
Sodium, Dissolved	ug/L	4250	2000	6430	109	70-130	
Zinc, Dissolved	ug/L	0.033 mg/L	100	143	111	70-130	

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:	2017-02 East Mission Flats Rep
Pace Project No.:	10386091

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2017-02 East Mission Flats Rep
Pace Project No.: 10386091

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10385796007	**07-EMF-MW-D-20170418-GW**	EPA 200.8	469970	EPA 200.8	471374
10385796008	**08-EMF-MW-E-20170418-GW**	EPA 200.8	469970	EPA 200.8	471374
10385796009	**08-EMF-MW-F-20170418-GW**	EPA 200.8	469970	EPA 200.8	471374
10385796010	**08-EMF-MW-F-20170418-EB**	EPA 200.8	469970	EPA 200.8	471374
10385796011	**08-EMF-MW-E-20170418-FB**	EPA 200.8	469970	EPA 200.8	471374

10386091

~~10385796~~

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 2 of 2
Cooler # 1 of 1

Task:	2017-02 East Mission Flats Repository
Total # of Samples: 5	Event Complete? Yes
TAT: Regular	Rush: No
Notes: FF= Field Filtered , H= Hold	
Lab Notes: Metals: USEPA 200.8	

Sampler Information:

Client:	TerraGraphics Enviro.
Address:	1220 Big Creek Road Kellogg, ID 83837
Contact:	Greg Malone
Phone/Fax:	208/786-1206
Email	greg.malone@terragraphics.com
Lab Quote #:	

Project Information:

Site Code:	CDA Trust Water Monitoring
Project #	
Site Address	Silver Valley, ID
City	NA
State, Zip	NA
PM Name	Christina Johnson/Rachael Woods
Phone/Fax:	360.977.8561/503.501.5223
PM Email:	cjohnson@maulfoster.com; rwoods@maulfoster.com

Other Information:

Send Invoice to:	Rachael Woods, Maul Foster and Alongi
Address:	400 East Mill Plain Blvd, #400
City/State.	Vancouver, WA 98660
Phone #:	360.694.2691
PO #	
Send EDD to	PacePort
CC Hardcopy to	Rachael Woods
CC Hardcopy to	

Preservative: HNO3\FF

ITEM #	Field Sample No. /Identification	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	# OF CONTAINERS	Comment	DM, Cations	
1	07-EMF-MW-D-20170418-GW	WT	G	4/18/17 12:40	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	007
2	08-EMF-MW-E-20170418-GW	WT	G	4/18/17 13:55	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	008
3	08-EMF-MW-F-20170418-GW	WT	G	4/18/17 14:40	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	009
4	08-EMF-MW-F-20170418-EB	WT	G	4/18/17 14:30	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	010
5	08-EMF-MW-E-20170418-FB	WT	G	4/18/17 13:15	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Mg, K, Na	x	011
6								
7								
8								
9								
10								
11								

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Samples on Ice?	Sample Intact?	Trip Blank?
Bradford, TerraGraphics	4/19/17	0945	[signature]	4/20/17	9:40	1.6	Y	Y	N
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N

Company: DATE/TIME:

Tracking #:

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 19Dec2016 Page 1 of 2
	Document No.: F-MN-L-213-rev.20	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: TerraGraphics Enviro.

Project #: WO#: 10386091

10386091

Courier: [X] Fed Ex [ ] UPS [ ] USPS [ ] Client [ ] Commercial [ ] Pace [ ] SpeeDee [ ] Other:

Tracking Number: 7789 3752 1397

Custody Seal on Cooler/Box Present? [X] Yes [ ] No **Seals Intact?** [X] Yes [ ] No

Optional: Proj. Due Date: Proj. Name:

Packing Material: [ ] Bubble Wrap [ ] Bubble Bags [ ] None [X] Other: PB **Temp Blank?** [ ] Yes [ ] No

Thermometer Used: [X] 151401163 [ ] 151401164 **Type of Ice:** [X] Wet [ ] Blue [ ] None [ ] Samples on ice, cooling process has begun

Cooler Temp Read (°C): 1.0 **Cooler Temp Corrected (°C):** 1.2 **Biological Tissue Frozen?** [ ] Yes [ ] No [X] N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.2 **Date and Initials of Person Examining Contents:** AAD 4/20/17

USDA Regulated Soil ([X] N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? [ ] Yes [ ] No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? [ ] Yes [ ] No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	[X] Yes	[ ] No		1.
Chain of Custody Filled Out?	[X] Yes	[ ] No		2.
Chain of Custody Relinquished?	[X] Yes	[ ] No		3.
Sampler Name and/or Signature on COC?	[ ] Yes	[X] No	[ ] N/A	4.
Samples Arrived within Hold Time?	[X] Yes	[ ] No		5.
Short Hold Time Analysis (<72 hr)?	[ ] Yes	[X] No		6.
Rush Turn Around Time Requested?	[ ] Yes	[X] No		7.
Sufficient Volume?	[X] Yes	[ ] No		8.
Correct Containers Used?	[X] Yes	[ ] No		9.
-Pace Containers Used?	[X] Yes	[ ] No		
Containers Intact?	[X] Yes	[ ] No		10.
Filtered Volume Received for Dissolved Tests?	[X] Yes	[ ] No	[ ] N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	[X] Yes	[ ] No		12.
-Includes Date/Time/ID/Analysis Matrix: WT				
All containers needing acid/base preservation have been checked?	[X] Yes	[ ] No	[ ] N/A	13. [X] HNO_3 [ ] H_2SO_4 [ ] NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	[X] Yes	[ ] No	[ ] N/A	Sample # 1-3 1/1; 4 2/2; 5-11 1/1
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	[ ] Yes	[ ] No	[X] N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	[ ] Yes	[ ] No	[X] N/A	14.
Trip Blank Present?	[ ] Yes	[ ] No	[X] N/A	15.
Trip Blank Custody Seals Present?	[ ] Yes	[ ] No	[X] N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** [ ] Yes [ ] No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: [signature] **Date:** 4/21/2017

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

One Government Gulch - PO Box 929
Kellogg, ID 83837-0929
(208) 784-1258
www.svl.net

Maul Foster and Alongi (MFA)	**Project Name: East Mission Flats (EMF) 2017 - Level 2**
1220 Big Creek Road, Suite C	Work Order: **X7J0499**
Kellogg, ID 83837	Reported: 07-Nov-17 14:26

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
EMFR-07-EMF-MW-A-20171024-GW	X7J0499-01	Ground Water	24-Oct-17 11:10	GM	24-Oct-2017	
EMFR-07-EMF-MW-B-20171024-GW	X7J0499-02	Ground Water	24-Oct-17 12:00	GM	24-Oct-2017	
EMFR-07-EMF-MW-B-20171024-GW-B	X7J0499-03	Ground Water	24-Oct-17 12:00	GM	24-Oct-2017	
EMFR-09-EMF-MW-C-DEEP-20171024-GW	X7J0499-04	Ground Water	24-Oct-17 12:42	GM	24-Oct-2017	
EMFR-07-EMF-MW-C-20171024-GW	X7J0499-05	Rinsate	24-Oct-17 13:21	GM	24-Oct-2017	
EMFR-07-EMF-MW-D-20171024-GW	X7J0499-06	Ground Water	24-Oct-17 14:14	GM	24-Oct-2017	
EMFR-07-EMF-MW-D-20171024-EB	X7J0499-07	BLANK	24-Oct-17 15:00	GM	24-Oct-2017	

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.
Sample preparation is defined by the client as per their Data Quality Objectives.
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

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Maul Foster and Alongi (MFA)	**Project Name: East Mission Flats (EMF) 2017 - Level 2**
1220 Big Creek Road, Suite C	Work Order: **X7J0499**
Kellogg, ID 83837	Reported: 07-Nov-17 14:26

Client Sample ID: **EMFR-07-EMF-MW-A-20171024-GW**
SVL Sample ID: **X7J0499-01 (Ground Water)**

Sample Report Page 1 of 1

Sampled: 24-Oct-17 11:10
Received: 24-Oct-17
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
SM 2320B	**Total Alkalinity**	7.2	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:01	
SM 2320B	**Bicarbonate**	7.2	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:01	
SM 2320B	Carbonate	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:01	
SM 2320B	Hydroxide	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:01	
Anions by Ion Chromatography										
EPA 300.0	**Chloride**	15.7	mg/L	2.00	1.20	10	X744097	SMB	11/06/17 10:30	D2
EPA 300.0	**Sulfate as SO4**	24.5	mg/L	0.30	0.13		X744097	SMB	11/06/17 10:18	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

One Government Gulch - PO Box 929
Kellogg, ID 83837-0929
(208) 784-1258
www.svl.net

Maul Foster and Alongi (MFA)
1220 Big Creek Road, Suite C
Kellogg, ID 83837

Project Name: East Mission Flats (EMF) 2017 - Level 2
Work Order: **X7J0499**
Reported: 07-Nov-17 14:26

Client Sample ID: **EMFR-07-EMF-MW-B-20171024-GW**
SVL Sample ID: **X7J0499-02 (Ground Water)**

Sample Report Page 1 of 1

Sampled: 24-Oct-17 12:00
Received: 24-Oct-17
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
SM 2320B	**Total Alkalinity**	18.1	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:59	
SM 2320B	**Bicarbonate**	18.1	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:59	
SM 2320B	Carbonate	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:59	
SM 2320B	Hydroxide	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:59	
Anions by Ion Chromatography										
EPA 300.0	**Chloride**	7.88	mg/L	0.20	0.12		X744097	SMB	11/06/17 10:42	
EPA 300.0	**Sulfate as SO4**	27.8	mg/L	0.30	0.13		X744097	SMB	11/06/17 10:42	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

SVL holds the following certifications:
AZ:0538, **CA**:2080, **ID**:ID00019 & ID00965 (Microbiology), **NV**:ID000192007A, **UT**(**TNI**):ID000192015-1, **WA**:C573

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Maul Foster and Alongi (MFA)	**Project Name: East Mission Flats (EMF) 2017 - Level 2**
1220 Big Creek Road, Suite C	Work Order: **X7J0499**
Kellogg, ID 83837	Reported: 07-Nov-17 14:26

Client Sample ID: **EMFR-07-EMF-MW-B-20171024-GW-B**
SVL Sample ID: **X7J0499-03 (Ground Water)**

Sample Report Page 1 of 1

Sampled: 24-Oct-17 12:00
Received: 24-Oct-17
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
SM 2320B	**Total Alkalinity**	20.3	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:09	
SM 2320B	**Bicarbonate**	20.3	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:09	
SM 2320B	Carbonate	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:09	
SM 2320B	Hydroxide	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:09	
Anions by Ion Chromatography										
EPA 300.0	**Chloride**	7.89	mg/L	0.20	0.12		X744097	SMB	11/06/17 10:54	
EPA 300.0	**Sulfate as SO4**	27.7	mg/L	0.30	0.13		X744097	SMB	11/06/17 10:54	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

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Maul Foster and Alongi (MFA)	**Project Name: East Mission Flats (EMF) 2017 - Level 2**
1220 Big Creek Road, Suite C	Work Order: **X7J0499**
Kellogg, ID 83837	Reported: 07-Nov-17 14:26

Client Sample ID: **EMFR-09-EMF-MW-C-DEEP-20171024-GW**
SVL Sample ID: **X7J0499-04 (Ground Water)**

Sample Report Page 1 of 1

Sampled: 24-Oct-17 12:42
Received: 24-Oct-17
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
SM 2320B	**Total Alkalinity**	38.9	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:18	
SM 2320B	**Bicarbonate**	38.9	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:18	
SM 2320B	Carbonate	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:18	
SM 2320B	Hydroxide	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:18	
Anions by Ion Chromatography										
EPA 300.0	**Chloride**	4.37	mg/L	0.20	0.12		X744097	SMB	11/06/17 11:06	
EPA 300.0	**Sulfate as SO4**	11.3	mg/L	0.30	0.13		X744097	SMB	11/06/17 11:06	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

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Project Name: East Mission Flats (EMF) 2017 - Level 2
Work Order: **X7J0499**
Reported: 07-Nov-17 14:26

Client Sample ID: **EMFR-07-EMF-MW-C-20171024-GW**
SVL Sample ID: **X7J0499-05 (Rinsate)**

Sample Report Page 1 of 1

Sampled: 24-Oct-17 13:21
Received: 24-Oct-17
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
SM 2320B	**Total Alkalinity**	27.4	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:22	
SM 2320B	**Bicarbonate**	27.4	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:22	
SM 2320B	Carbonate	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:22	
SM 2320B	Hydroxide	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:22	
Anions by Ion Chromatography										
EPA 300.0	**Chloride**	8.06	mg/L	0.20	0.12		X744097	SMB	11/06/17 12:05	
EPA 300.0	**Sulfate as SO4**	35.1	mg/L	0.30	0.13		X744097	SMB	11/06/17 12:05	M3

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
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Kellogg, ID 83837

Project Name: East Mission Flats (EMF) 2017 - Level 2
Work Order: **X7J0499**
Reported: 07-Nov-17 14:26

Client Sample ID: **EMFR-07-EMF-MW-D-20171024-GW**
SVL Sample ID: **X7J0499-06 (Ground Water)**

Sample Report Page 1 of 1

Sampled: 24-Oct-17 14:14
Received: 24-Oct-17
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
SM 2320B	**Total Alkalinity**	42.4	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:30	
SM 2320B	**Bicarbonate**	42.4	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:30	
SM 2320B	Carbonate	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:30	
SM 2320B	Hydroxide	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:30	
Anions by Ion Chromatography										
EPA 300.0	**Chloride**	6.21	mg/L	0.20	0.12		X744097	SMB	11/06/17 13:17	
EPA 300.0	**Sulfate as SO4**	6.63	mg/L	0.30	0.13		X744097	SMB	11/06/17 13:17	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

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Maul Foster and Alongi (MFA)	**Project Name: East Mission Flats (EMF) 2017 - Level 2**
1220 Big Creek Road, Suite C	Work Order: **X7J0499**
Kellogg, ID 83837	Reported: 07-Nov-17 14:26

Client Sample ID: **EMFR-07-EMF-MW-D-20171024-EB**
SVL Sample ID: **X7J0499-07 (BLANK)**

Sample Report Page 1 of 1

Sampled: 24-Oct-17 15:00
Received: 24-Oct-17
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
SM 2320B	Total Alkalinity	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:34	
SM 2320B	Bicarbonate	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:34	
SM 2320B	Carbonate	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:34	
SM 2320B	Hydroxide	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:34	
Anions by Ion Chromatography										
EPA 300.0	Chloride	< 0.20	mg/L	0.20	0.12		X744097	SMB	11/06/17 13:29	
EPA 300.0	Sulfate as SO4	< 0.30	mg/L	0.30	0.13		X744097	SMB	11/06/17 13:29	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

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Laboratory Director

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Maul Foster and Alongi (MFA)
1220 Big Creek Road, Suite C
Kellogg, ID 83837

Project Name: East Mission Flats (EMF) 2017 - Level 2
Work Order: **X7J0499**
Reported: 07-Nov-17 14:26

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
Classical Chemistry Parameters								
SM 2320B	Total Alkalinity	mg/L as CaCO3	<1.0		1.0	X744065	31-Oct-17	
SM 2320B	Bicarbonate	mg/L as CaCO3	<1.0		1.0	X744065	31-Oct-17	
SM 2320B	Carbonate	mg/L as CaCO3	<1.0		1.0	X744065	31-Oct-17	
SM 2320B	Hydroxide	mg/L as CaCO3	<1.0		1.0	X744065	31-Oct-17	
Anions by Ion Chromatography								
EPA 300.0	Chloride	mg/L	<0.20	0.12	0.20	X744097	06-Nov-17	
EPA 300.0	Sulfate as SO4	mg/L	<0.30	0.13	0.30	X744097	06-Nov-17	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Classical Chemistry Parameters									
SM 2320B	Total Alkalinity	mg/L as CaCO3	103	99.3	104	85 - 115	X744065	31-Oct-17	
SM 2320B	Total Alkalinity	mg/L as CaCO3	103	99.3	103	85 - 115	X744065	31-Oct-17	
SM 2320B	Bicarbonate	mg/L as CaCO3	103	99.3	104	85 - 115	X744065	31-Oct-17	
SM 2320B	Bicarbonate	mg/L as CaCO3	103	99.3	103	85 - 115	X744065	31-Oct-17	
Anions by Ion Chromatography									
EPA 300.0	Chloride	mg/L	2.97	3.00	99.0	90 - 110	X744097	06-Nov-17	
EPA 300.0	Sulfate as SO4	mg/L	10.1	10.0	101	90 - 110	X744097	06-Nov-17	

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
Classical Chemistry Parameters									
SM 2320B	Total Alkalinity	mg/L as CaCO3	27.6	27.4	0.6	20	X744065	31-Oct-17	
SM 2320B	Bicarbonate	mg/L as CaCO3	27.6	27.4	0.6	20	X744065	31-Oct-17	
SM 2320B	Carbonate	mg/L as CaCO3	<1.0	<1.0	UDL	20	X744065	31-Oct-17	
SM 2320B	Hydroxide	mg/L as CaCO3	<1.0	<1.0	UDL	20	X744065	31-Oct-17	

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Recovery	Acceptance Limits	Batch ID	Analyzed	Notes
Anions by Ion Chromatography										
EPA 300.0	Chloride	mg/L	11.3	8.06	3.00	107	90 - 110	X744097	06-Nov-17	
EPA 300.0	Sulfate as SO4	mg/L	46.4	35.1	10.0	0.30R>S	90 - 110	X744097	06-Nov-17	M3

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Maul Foster and Alongi (MFA)
1220 Big Creek Road, Suite C
Kellogg, ID 83837

Project Name: East Mission Flats (EMF) 2017 - Level 2
Work Order: **X7J0499**
Reported: 07-Nov-17 14:26

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	% Rec.	RPD	RPD Limit	Batch ID	Analyzed	Notes
Anions by Ion Chromatography											
EPA 300.0	Chloride	mg/L	11.2	11.3	3.00	105	0.5	20	X744097	06-Nov-17	
EPA 300.0	Sulfate as SO4	mg/L	46.2	46.4	10.0	0.30R>S	0.4	20	X744097	06-Nov-17	M3

Notes and Definitions

D2	Sample required dilution due to high concentration of target analyte.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The LCS was acceptable.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
0.30R>S	% recovery not applicable; spike level is less than 30% of the sample concentration
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable

Work Order: X7J0499
Maul Foster and Alongi (MFA)

CHAIN OF CUSTODY RECORD

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID 83837 • (208) 784-1258 • FAX: (20

Report to Company:	MFA	Invoice Sent To:	MFA
Contact:	Christine E Johnson	Contact:	Rachel Woods
Address:	1220 Big Creek Rd	Address:	rwoods@maulfoster.com
	Kellogg, ID 83837		
Phone Number:		Phone Number:	
FAX Number:		FAX Number:	
E-mail:	cjohnson@maulfoster.com	PO#:	

2.6°

Table 1. -- Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, 7 = Other BLANK

Project Name: East Mission Flats Repository
Sampler's Signature: Jennifer Silley

Indicate State of sample origination: ID

Sample ID — Please take care to distinguish between: 1 and I, 2 and Z, 5 and S, Ø and O. Thanks!

#	Sample ID	Date	Time	Collected by: (Init.)	Matrix Type (From Table 1)	No. of Containers	Unpreserved	HNO3, Filtered	HNO3, Unfiltered	HCl	H_2SO_4	NaOH	Other (Specify)	Anions	Alkalinity	Rush Instructions (Days)	Comments
1	EMFR-07-EMF-MW-A-20171024-GW	10/24/17	11:10	GM	2	2	2							X	X		Anions: Method 300.0 (Chloride and Sulfate) Alkalinity: SM 2320B
2	EMFR-07-EMF-MW-B-20171024-GW	10/24/17	12:00	GM	2	2	2							X	X		
3	EMFR-07-EMF-MW-B-20171024-GW-B	10/24/17	12:00	GM	2	2	2							X	X		
4	EMFR-07-EMF-MW-C-DEEP-20171024-GW	10/24/17	12:42	GM	2	2	2							X	X		
5	EMFR-07-EMF-MW-C-20171024-GW	10/24/17	13:21	GM	4	4	4							X	X		MS/D
6	EMFR-07-EMF-MW-D-20171024-GW	10/24/17	14:14	GM	2	2	2							X	X		
7	EMFR-07-EMF-MW-D-20171024-EB	10/24/17	15:00	GM	7	2	2							X	X		
8																	
9																	
10																	

Relinquished by: [signature]	Date: 10/24/17	Time: 15:20	Received by: [signature]	Date: 10/24/17	Time: 1520
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SAMPLE RECEIPT/CHAIN-OF -CUSTODY CHECKLIST

The following items were checked for completeness, correctness, and compliance to project specifications using the Chain-of-Custody (COC) and other supporting information.

Date of acceptance: 10/24/17 **By:** CR Sevy

SVL Work No: X7J0499

Item	Description	V	VC	NV	NA	Comments
1	Client or project name	✓				Mau Foster
2	Date and time of receipt at lab	✓				10/24/17 15:20
3	Received by	✓				CR Sevy
4	Temperature blank or cooler temperature	✓				Temp. 2.6 °C.
5	Were the sample(s) received on ice	✓				y
6	Custody tape/bottle seals				✓	n
7	Condition of samples upon receipt (leaking; bubbles in VOA vials	✓				g
8	Sample numbers/IDs agree with COC	✓				
9	Sample date & time agree with COC	✓				
10	Number of containers for each sample	✓				
11	The correct preservative for the analysis requested				✓	Raw
12	Did an SVL employee preserve sample(s) upon receipt				✓	
13	Type of container for each sample / volume received	✓				
14	Analysis requested for each sample	✓				
15	Sample matrix description	✓				
16	COC properly completed & legible	✓				
17	Corrections properly made (initials & date)	✓				
18	Additional comments or records of sample condition or treatment (unlisted or missing samples at laboratory, aliquot taken, sample hold, samples subcontracted, communications between client and laboratory)				✓	
19	Shipper's air bill				✓	walk-in

V- Verified **VC- Verified Corrections Made** **NV-Not Verified** **NA- Not Applicable**

Additional Comments: ______________________________

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Maul Foster and Alongi (MFA)	**Project Name: East Mission Flats (EMF) 2017 - Level 2**	
1220 Big Creek Road, Suite C	Work Order:	**X7J0519**
Kellogg, ID 83837	Reported:	10-Nov-17 13:50

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
EMFR-08-EMF-MW-E-20171025-GW	X7J0519-01	Ground Water	25-Oct-17 11:16	GM	25-Oct-2017	Q6
EMFR-08-EMF-MW-F-20171025-GW	X7J0519-02	Ground Water	25-Oct-17 12:10	GM	25-Oct-2017	Q6
EMFR-08-EMF-MW-F-20171025-EB	X7J0519-03	BLANK	25-Oct-17 11:59	GM	25-Oct-2017	Q6

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.
Sample preparation is defined by the client as per their Data Quality Objectives.
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

(Q6) SVL received the following containers outside of published EPA guidelines for preservation temperatures (0-6°C).
The guidelines do not pertain to nitric-preserved metals.

Default Cooler (Received Temperature: 6.3°C)

Labnumber	Container	Client ID	Labnumber	Container	Client ID
X7J0519-01 A	Raw HDPE	EMFR-08-EMF-MW-E-20171025-GW	X7J0519-01 B	Raw HDPE	EMFR-08-EMF-MW-E-20171025-GW
X7J0519-02 A	Raw HDPE	EMFR-08-EMF-MW-F-20171025-GW	X7J0519-02 B	Raw HDPE	EMFR-08-EMF-MW-F-20171025-GW
X7J0519-03 A	Raw HDPE	EMFR-08-EMF-MW-F-20171025-EB	X7J0519-03 B	Raw HDPE	EMFR-08-EMF-MW-F-20171025-EB

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Maul Foster and Alongi (MFA)	**Project Name: East Mission Flats (EMF) 2017 - Level 2**
1220 Big Creek Road, Suite C	Work Order: **X7J0519**
Kellogg, ID 83837	Reported: 10-Nov-17 13:50

Client Sample ID: **EMFR-08-EMF-MW-E-20171025-GW**
SVL Sample ID: **X7J0519-01 (Ground Water)**

Sample Report Page 1 of 1

Sampled: 25-Oct-17 11:16
Received: 25-Oct-17
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
SM 2320B	**Total Alkalinity**	495	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:37	
SM 2320B	**Bicarbonate**	495	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:37	
SM 2320B	Carbonate	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:37	
SM 2320B	Hydroxide	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:37	
Anions by Ion Chromatography										
EPA 300.0	**Chloride**	446	mg/L	20.0	12.0	100	X744099	SMB	11/09/17 23:45	D2
EPA 300.0	**Sulfate as SO4**	101	mg/L	3.00	1.30	10	X744099	SMB	11/09/17 23:31	D2

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

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Maul Foster and Alongi (MFA)
1220 Big Creek Road, Suite C
Kellogg, ID 83837

Project Name: East Mission Flats (EMF) 2017 - Level 2
Work Order: **X7J0519**
Reported: 10-Nov-17 13:50

Client Sample ID: **EMFR-08-EMF-MW-F-20171025-GW**
SVL Sample ID: **X7J0519-02 (Ground Water)**

Sample Report Page 1 of 1

Sampled: 25-Oct-17 12:10
Received: 25-Oct-17
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
SM 2320B	**Total Alkalinity**	18.2	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:49	
SM 2320B	**Bicarbonate**	18.2	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:49	
SM 2320B	Carbonate	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:49	
SM 2320B	Hydroxide	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:49	
Anions by Ion Chromatography										
EPA 300.0	**Chloride**	49.4	mg/L	2.00	1.20	10	X744099	SMB	11/10/17 00:00	D2
EPA 300.0	**Sulfate as SO4**	57.1	mg/L	3.00	1.30	10	X744099	SMB	11/10/17 00:00	D2

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

One Government Gulch - PO Box 929
Kellogg, ID 83837-0929
(208) 784-1258
www.svl.net

Maul Foster and Alongi (MFA)	**Project Name: East Mission Flats (EMF) 2017 - Level 2**
1220 Big Creek Road, Suite C	Work Order: **X7J0519**
Kellogg, ID 83837	Reported: 10-Nov-17 13:50

Client Sample ID: **EMFR-08-EMF-MW-F-20171025-EB**
SVL Sample ID: **X7J0519-03 (BLANK)**

Sample Report Page 1 of 1

Sampled: 25-Oct-17 11:59
Received: 25-Oct-17
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
SM 2320B	Total Alkalinity	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:56	
SM 2320B	Bicarbonate	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:56	
SM 2320B	Carbonate	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:56	
SM 2320B	Hydroxide	< 1.0	mg/L as CaCO3	1.0			X744065	DKS	10/31/17 09:56	
Anions by Ion Chromatography										
EPA 300.0	Chloride	< 0.20	mg/L	0.20	0.12		X744099	SMB	11/10/17 00:15	M1
EPA 300.0	**Sulfate as SO4**	0.40	mg/L	0.30	0.13		X744099	SMB	11/10/17 00:15	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern

John Kern
Laboratory Director

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Maul Foster and Alongi (MFA)
1220 Big Creek Road, Suite C
Kellogg, ID 83837

Project Name: East Mission Flats (EMF) 2017 - Level 2
Work Order: **X7J0519**
Reported: 10-Nov-17 13:50

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
Classical Chemistry Parameters								
SM 2320B	Total Alkalinity	mg/L as CaCO3	<1.0		1.0	X744065	31-Oct-17	
SM 2320B	Bicarbonate	mg/L as CaCO3	<1.0		1.0	X744065	31-Oct-17	
SM 2320B	Carbonate	mg/L as CaCO3	<1.0		1.0	X744065	31-Oct-17	
SM 2320B	Hydroxide	mg/L as CaCO3	<1.0		1.0	X744065	31-Oct-17	
Anions by Ion Chromatography								
EPA 300.0	Chloride	mg/L	<0.20	0.12	0.20	X744099	09-Nov-17	
EPA 300.0	Sulfate as SO4	mg/L	<0.30	0.13	0.30	X744099	09-Nov-17	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Classical Chemistry Parameters									
SM 2320B	Total Alkalinity	mg/L as CaCO3	103	99.3	104	85 - 115	X744065	31-Oct-17	
SM 2320B	Total Alkalinity	mg/L as CaCO3	103	99.3	103	85 - 115	X744065	31-Oct-17	
SM 2320B	Bicarbonate	mg/L as CaCO3	103	99.3	104	85 - 115	X744065	31-Oct-17	
SM 2320B	Bicarbonate	mg/L as CaCO3	103	99.3	103	85 - 115	X744065	31-Oct-17	
Anions by Ion Chromatography									
EPA 300.0	Chloride	mg/L	2.98	3.00	99.5	90 - 110	X744099	09-Nov-17	
EPA 300.0	Sulfate as SO4	mg/L	9.93	10.0	99.3	90 - 110	X744099	09-Nov-17	

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
Classical Chemistry Parameters									
SM 2320B	Total Alkalinity	mg/L as CaCO3	27.6	27.4	0.6	20	X744065	31-Oct-17	
SM 2320B	Bicarbonate	mg/L as CaCO3	27.6	27.4	0.6	20	X744065	31-Oct-17	
SM 2320B	Carbonate	mg/L as CaCO3	<1.0	<1.0	UDL	20	X744065	31-Oct-17	
SM 2320B	Hydroxide	mg/L as CaCO3	<1.0	<1.0	UDL	20	X744065	31-Oct-17	

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Recovery	Acceptance Limits	Batch ID	Analyzed	Notes
Anions by Ion Chromatography										
EPA 300.0	Chloride	mg/L	3.35	<0.20	3.00	112	90 - 110	X744099	10-Nov-17	M1
EPA 300.0	Sulfate as SO4	mg/L	11.2	0.40	10.0	108	90 - 110	X744099	10-Nov-17	

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Maul Foster and Alongi (MFA)	**Project Name: East Mission Flats (EMF) 2017 - Level 2**
1220 Big Creek Road, Suite C	Work Order: **X7J0519**
Kellogg, ID 83837	Reported: 10-Nov-17 13:50

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	% Rec.	RPD	RPD Limit	Batch ID	Analyzed	Notes
Anions by Ion Chromatography											
EPA 300.0	Chloride	mg/L	3.19	3.35	3.00	106	4.7	20	X744099	10-Nov-17	
EPA 300.0	Sulfate as SO4	mg/L	10.5	11.2	10.0	101	6.3	20	X744099	10-Nov-17	

Notes and Definitions

D2	Sample required dilution due to high concentration of target analyte.
M1	Matrix spike recovery was high, but the LCS recovery was acceptable.
Q6	Sample was received outside of recommended temperature range.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
0.30R>S	% recovery not applicable; spike level is less than 30% of the sample concentration
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable

Work Order: X7J0519
Maul Foster and Alongi (MFA)

CHAIN OF CUSTODY

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID

FOR SVL USE ONLY
SVL JOB #

TEMP on Receipt: 6.3°

Report to Company: MFA
Contact: CHRISTINA JOHNSON
Address: 1220 BIG CR. RD. SUITE C
KELLOGG, ID 83837
Phone Number: 1-208-784-1082
FAX Number:
E-mail: cjohnson@maulfoster.com

Invoice Sent To: MFA
Contact: RACHEL WOODS
Address: –
rwoods@maulfoster.com
Phone Number:
FAX Number:
PO#:

Table 1. -- Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, 7 = Other Blank

Project Name: EAST MISSION FLATS
Sampler's Signature:

Indicate State of sample origination: ID

Please take care to distinguish between: 1 and I, 2 and Z, 5 and S, Ø and O. Thanks!

	Sample ID	Date	Time	Collected by: (Init.)	Matrix Type (From Table 1)	No. of Containers	Unpreserved	HNO_3 Filtered	HNO_3 Unfiltered	HCl	H_2SO_4	NaOH	Other (Specify)	ANIONS	ALKALINITY	Rush Instructions (Days)	Comments
1	EMFR-08-EMF-MW-E-20171025-GW	10/25/17	11:16	GM	2	2	2							X	X		ANIONS: 300.0 (CHLORIDE + SULFATE) ALKALINITY: SM2320B
2	~~GM 7 2~~																
3	EMFR-08-EMF-MW-F-20171025-GW	10/25/17	12:10	GM	2	2	2							X	X		
4	EMFR-08-EMF-MW-F-20171025-EB	10/25/17	11:59	GM	7	2	2							X	X		
5																	
6																	
7																	
8																	
9																	
10																	

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
[signature]	10/25/17	12:37	[signature]	10/25/17	12:37

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC 9/05

SAMPLE RECEIPT/CHAIN-OF -CUSTODY CHECKLIST

The following items were checked for completeness, correctness, and compliance to project specifications using the Chain-of-Custody (COC) and other supporting information.

Date of acceptance: 10/25/17 **By:** CR Seuy

SVL Work No: X7J0519

Item	Description	V	VC	NV	NA	Comments
1	Client or project name					Maul Foster - East Mission Flats
2	Date and time of receipt at lab					10/25/17 12:37
3	Received by					CR Seuy
4	Temperature blank or cooler temperature	Q6				Temp. 6.3 °C.
5	Were the sample(s) received on ice	✓				y
6	Custody tape/bottle seals				✓	n
7	Condition of samples upon receipt (leaking; bubbles in VOA vials	✓				g
8	Sample numbers/IDs agree with COC	✓				
9	Sample date & time agree with COC	✓				
10	Number of containers for each sample	✓				
11	The correct preservative for the analysis requested				✓	Raw
12	Did an SVL employee preserve sample(s) upon receipt				✓	
13	Type of container for each sample / volume received	✓				
14	Analysis requested for each sample	✓				
15	Sample matrix description	✓				
16	COC properly completed & legible	✓				
17	Corrections properly made (initials & date)	✓				
18	Additional comments or records of sample condition or treatment (unlisted or missing samples at laboratory, aliquot taken, sample hold, samples subcontracted, communications between client and laboratory)				✓	
19	Shipper's air bill				✓	Walk-in

V- Verified VC- Verified Corrections Made NV-Not Verified NA- Not Applicable

Additional Comments: ______________________________

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

November 09, 2017

Christina Johnson
Maul Foster and Algoni
602 Bunker Ave # 5
Kellogg, ID 83837

RE: Project: CDA 2017-02 EMFR
Pace Project No.: 10408839

Dear Christina Johnson:

Enclosed are the analytical results for sample(s) received by the laboratory on October 27, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Sarah Platzer
sarah.platzer@pacelabs.com
(612)607-1700
Project Manager

Enclosures

cc: Brian Fauth, Maul Foster
Alan Hughes, Maul Foster & Alongi, Inc.
Blair Paulik, Maul Foster and Alongi

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

CERTIFICATIONS

Project:	CDA 2017-02 EMFR
Pace Project No.:	10408839

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #:MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia DEP Certification #: 382
Wisconsin Certification #: 999407970

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SAMPLE SUMMARY

Project: CDA 2017-02 EMFR
Pace Project No.: 10408839

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10408839001	**07-EMF-MW-A-20171024-GW**	Water	10/24/17 11:10	10/27/17 10:00
10408839002	**07-EMF-MW-B-20171024-GW**	Water	10/24/17 12:00	10/27/17 10:00
10408839003	**07-EMF-MW-B-20171024-GW-B**	Water	10/24/17 12:00	10/27/17 10:00
10408839004	**09-EMF-MW-C-DEEP-20171024-GW**	Water	10/24/17 12:42	10/27/17 10:00
10408839005	**07-EMF-MW-C-20171024-GW**	Water	10/24/17 13:21	10/27/17 10:00
10408839006	**07-EMF-MW-D-20171024-GW**	Water	10/24/17 14:14	10/27/17 10:00
10408839007	**07-EMF-MW-D-20171024-EB**	Water	10/24/17 15:00	10/27/17 10:00
10408839008	**08-EMF-MW-E-20171025-GW**	Water	10/25/17 11:16	10/27/17 10:00
10408839009	**08-EMF-MW-E-20171025-FB**	Water	10/25/17 11:03	10/27/17 10:00
10408839010	**08-EMF-MW-F-20171025-GW**	Water	10/25/17 12:10	10/27/17 10:00
10408839011	**08-EMF-MW-F-20171025-EB**	Water	10/25/17 11:59	10/27/17 10:00

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SAMPLE ANALYTE COUNT

Project: CDA 2017-02 EMFR
Pace Project No.: 10408839

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10408839001	**07-EMF-MW-A-20171024-GW**	EPA 200.8	TT3	11	PASI-M
10408839002	**07-EMF-MW-B-20171024-GW**	EPA 200.8	TT3	11	PASI-M
10408839003	**07-EMF-MW-B-20171024-GW-B**	EPA 200.8	TT3	11	PASI-M
10408839004	**09-EMF-MW-C-DEEP-20171024-GW**	EPA 200.8	TT3	11	PASI-M
10408839005	**07-EMF-MW-C-20171024-GW**	EPA 200.8	TT3	11	PASI-M
10408839006	**07-EMF-MW-D-20171024-GW**	EPA 200.8	TT3	11	PASI-M
10408839007	**07-EMF-MW-D-20171024-EB**	EPA 200.8	TT3	11	PASI-M
10408839008	**08-EMF-MW-E-20171025-GW**	EPA 200.8	TT3	11	PASI-M
10408839009	**08-EMF-MW-E-20171025-FB**	EPA 200.8	TT3	11	PASI-M
10408839010	**08-EMF-MW-F-20171025-GW**	EPA 200.8	TT3	11	PASI-M
10408839011	**08-EMF-MW-F-20171025-EB**	EPA 200.8	TT3	11	PASI-M

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PROJECT NARRATIVE

Project: CDA 2017-02 EMFR
Pace Project No.: 10408839

Method: **EPA 200.8**
Description: 200.8 MET ICPMS, Dissolved
Client: Maul Foster & Alongi, Inc.
Date: November 09, 2017

General Information:
11 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

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

Sample Preparation:
The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

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

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

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

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

QC Batch: 505816

B: Analyte was detected in the associated method blank.

- BLANK for HBN 505816 [MPRP/767 (Lab ID: 2749404)
  - Manganese, Dissolved

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

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

QC Batch: 505816

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10408839005,10408839010

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

- MS (Lab ID: 2749406)
  - Manganese, Dissolved
- MS (Lab ID: 2749408)
  - Sodium, Dissolved
  - Zinc, Dissolved
- MSD (Lab ID: 2749407)
  - Manganese, Dissolved
  - Zinc, Dissolved

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PROJECT NARRATIVE

Project: CDA 2017-02 EMFR
Pace Project No.: 10408839

Method: **EPA 200.8**
Description: 200.8 MET ICPMS, Dissolved
Client: Maul Foster & Alongi, Inc.
Date: November 09, 2017

Additional Comments:

Analyte Comments:

QC Batch: 505816

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 2749406)
  - Zinc, Dissolved
- MS (Lab ID: 2749408)
  - Zinc, Dissolved
- MSD (Lab ID: 2749407)
  - Zinc, Dissolved

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

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ANALYTICAL RESULTS

Project: CDA 2017-02 EMFR
Pace Project No.: 10408839

Sample: 07-EMF-MW-A-20171024-GW **Lab ID: 10408839001** Collected: 10/24/17 11:10 Received: 10/27/17 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**<0.50**	ug/L	0.50	0.21	1	11/03/17 11:51	11/06/17 15:35	7440-38-2	
Cadmium, Dissolved	**0.65**	ug/L	0.080	0.028	1	11/03/17 11:51	11/06/17 15:35	7440-43-9	
Calcium, Dissolved	**8990**	ug/L	40.0	11.4	1	11/03/17 11:51	11/07/17 14:54	7440-70-2	
Iron, Dissolved	**1300**	ug/L	50.0	6.8	1	11/03/17 11:51	11/06/17 15:35	7439-89-6	
Lead, Dissolved	**0.077J**	ug/L	0.10	0.028	1	11/03/17 11:51	11/06/17 15:35	7439-92-1	
Magnesium, Dissolved	**4940**	ug/L	10.0	3.0	1	11/03/17 11:51	11/06/17 15:35	7439-95-4	
Manganese, Dissolved	**217**	ug/L	0.50	0.098	1	11/03/17 11:51	11/06/17 15:35	7439-96-5	
Potassium, Dissolved	**1100**	ug/L	50.0	12.5	1	11/03/17 11:51	11/07/17 14:54	7440-09-7	
Sodium, Dissolved	**4770**	ug/L	50.0	14.0	1	11/03/17 11:51	11/06/17 15:35	7440-23-5	
Total Hardness by 2340B, Dissolved	**42800**	ug/L	71.0	40.8	1	11/03/17 11:51	11/07/17 14:54		
Zinc, Dissolved	**937**	ug/L	25.0	4.1	5	11/03/17 11:51	11/06/17 16:09	7440-66-6	

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ANALYTICAL RESULTS

Project: CDA 2017-02 EMFR
Pace Project No.: 10408839

Sample: 07-EMF-MW-B-20171024-GW **Lab ID: 10408839002** Collected: 10/24/17 12:00 Received: 10/27/17 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**<0.50**	ug/L	0.50	0.21	1	11/03/17 11:51	11/06/17 15:36	7440-38-2	
Cadmium, Dissolved	**0.035J**	ug/L	0.080	0.028	1	11/03/17 11:51	11/06/17 15:36	7440-43-9	
Calcium, Dissolved	**11200**	ug/L	40.0	11.4	1	11/03/17 11:51	11/07/17 14:56	7440-70-2	
Iron, Dissolved	**<50.0**	ug/L	50.0	6.8	1	11/03/17 11:51	11/06/17 15:36	7439-89-6	
Lead, Dissolved	**0.032J**	ug/L	0.10	0.028	1	11/03/17 11:51	11/06/17 15:36	7439-92-1	
Magnesium, Dissolved	**4510**	ug/L	10.0	3.0	1	11/03/17 11:51	11/06/17 15:36	7439-95-4	
Manganese, Dissolved	**7.3**	ug/L	0.50	0.098	1	11/03/17 11:51	11/06/17 15:36	7439-96-5	
Potassium, Dissolved	**571**	ug/L	50.0	12.5	1	11/03/17 11:51	11/07/17 14:56	7440-09-7	
Sodium, Dissolved	**5720**	ug/L	50.0	14.0	1	11/03/17 11:51	11/06/17 15:36	7440-23-5	
Total Hardness by 2340B, Dissolved	**46400**	ug/L	71.0	40.8	1	11/03/17 11:51	11/06/17 15:36		
Zinc, Dissolved	**34.0**	ug/L	5.0	0.82	1	11/03/17 11:51	11/06/17 15:36	7440-66-6	

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: CDA 2017-02 EMFR
Pace Project No.: 10408839

Sample: 07-EMF-MW-B-20171024-GW-B **Lab ID: 10408839003** Collected: 10/24/17 12:00 Received: 10/27/17 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**<0.50**	ug/L	0.50	0.21	1	11/03/17 11:51	11/06/17 15:38	7440-38-2	
Cadmium, Dissolved	**0.051J**	ug/L	0.080	0.028	1	11/03/17 11:51	11/06/17 15:38	7440-43-9	
Calcium, Dissolved	**11400**	ug/L	40.0	11.4	1	11/03/17 11:51	11/07/17 14:59	7440-70-2	
Iron, Dissolved	**<50.0**	ug/L	50.0	6.8	1	11/03/17 11:51	11/06/17 15:38	7439-89-6	
Lead, Dissolved	**0.031J**	ug/L	0.10	0.028	1	11/03/17 11:51	11/06/17 15:38	7439-92-1	
Magnesium, Dissolved	**4730**	ug/L	10.0	3.0	1	11/03/17 11:51	11/06/17 15:38	7439-95-4	
Manganese, Dissolved	**7.6**	ug/L	0.50	0.098	1	11/03/17 11:51	11/06/17 15:38	7439-96-5	
Potassium, Dissolved	**577**	ug/L	50.0	12.5	1	11/03/17 11:51	11/07/17 14:59	7440-09-7	
Sodium, Dissolved	**5930**	ug/L	50.0	14.0	1	11/03/17 11:51	11/06/17 15:38	7440-23-5	
Total Hardness by 2340B, Dissolved	**47900**	ug/L	71.0	40.8	1	11/03/17 11:51	11/07/17 14:59		
Zinc, Dissolved	**36.1**	ug/L	5.0	0.82	1	11/03/17 11:51	11/06/17 15:38	7440-66-6	

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ANALYTICAL RESULTS

Project: CDA 2017-02 EMFR
Pace Project No.: 10408839

Sample: 09-EMF-MW-C-DEEP-20171024-GW **Lab ID: 10408839004** Collected: 10/24/17 12:42 Received: 10/27/17 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**0.45J**	ug/L	0.50	0.21	1	11/03/17 11:51	11/06/17 15:39	7440-38-2	
Cadmium, Dissolved	**<0.080**	ug/L	0.080	0.028	1	11/03/17 11:51	11/06/17 15:39	7440-43-9	
Calcium, Dissolved	**9570**	ug/L	40.0	11.4	1	11/03/17 11:51	11/07/17 15:01	7440-70-2	
Iron, Dissolved	**2750**	ug/L	50.0	6.8	1	11/03/17 11:51	11/06/17 15:39	7439-89-6	
Lead, Dissolved	**0.24**	ug/L	0.10	0.028	1	11/03/17 11:51	11/06/17 15:39	7439-92-1	
Magnesium, Dissolved	**3440**	ug/L	10.0	3.0	1	11/03/17 11:51	11/06/17 15:39	7439-95-4	
Manganese, Dissolved	**166**	ug/L	0.50	0.098	1	11/03/17 11:51	11/06/17 15:39	7439-96-5	
Potassium, Dissolved	**852**	ug/L	50.0	12.5	1	11/03/17 11:51	11/07/17 15:01	7440-09-7	
Sodium, Dissolved	**4360**	ug/L	50.0	14.0	1	11/03/17 11:51	11/06/17 15:39	7440-23-5	
Total Hardness by 2340B, Dissolved	**38100**	ug/L	71.0	40.8	1	11/03/17 11:51	11/06/17 15:39		
Zinc, Dissolved	**1.4J**	ug/L	5.0	0.82	1	11/03/17 11:51	11/06/17 15:39	7440-66-6	

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ANALYTICAL RESULTS

Project: CDA 2017-02 EMFR
Pace Project No.: 10408839

Sample: 07-EMF-MW-C-20171024-GW **Lab ID: 10408839005** Collected: 10/24/17 13:21 Received: 10/27/17 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**0.35J**	ug/L	0.50	0.21	1	11/03/17 11:51	11/06/17 15:41	7440-38-2	
Cadmium, Dissolved	**4.2**	ug/L	0.080	0.028	1	11/03/17 11:51	11/06/17 15:41	7440-43-9	
Calcium, Dissolved	**9630**	ug/L	40.0	11.4	1	11/03/17 11:51	11/07/17 15:04	7440-70-2	
Iron, Dissolved	**429**	ug/L	50.0	6.8	1	11/03/17 11:51	11/06/17 15:41	7439-89-6	
Lead, Dissolved	**0.16**	ug/L	0.10	0.028	1	11/03/17 11:51	11/06/17 15:41	7439-92-1	
Magnesium, Dissolved	**6140**	ug/L	10.0	3.0	1	11/03/17 11:51	11/06/17 15:41	7439-95-4	
Manganese, Dissolved	**1430**	ug/L	10.0	2.0	20	11/03/17 11:51	11/06/17 16:17	7439-96-5	M1
Potassium, Dissolved	**1680**	ug/L	50.0	12.5	1	11/03/17 11:51	11/07/17 15:04	7440-09-7	
Sodium, Dissolved	**6730**	ug/L	50.0	14.0	1	11/03/17 11:51	11/06/17 15:41	7440-23-5	
Total Hardness by 2340B, Dissolved	**49400**	ug/L	71.0	40.8	1	11/03/17 11:51	11/06/17 15:41		
Zinc, Dissolved	**2690**	ug/L	100	16.4	20	11/03/17 11:51	11/06/17 16:17	7440-66-6	M1

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CDA 2017-02 EMFR

Pace Project No.: 10408839

Sample: 07-EMF-MW-D-20171024-GW **Lab ID: 10408839006** Collected: 10/24/17 14:14 Received: 10/27/17 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**0.48J**	ug/L	0.50	0.21	1	11/03/17 11:51	11/06/17 15:54	7440-38-2	
Cadmium, Dissolved	**0.13**	ug/L	0.080	0.028	1	11/03/17 11:51	11/06/17 15:54	7440-43-9	
Calcium, Dissolved	**8730**	ug/L	40.0	11.4	1	11/03/17 11:51	11/07/17 15:24	7440-70-2	
Iron, Dissolved	**2470**	ug/L	50.0	6.8	1	11/03/17 11:51	11/06/17 15:54	7439-89-6	
Lead, Dissolved	**<0.10**	ug/L	0.10	0.028	1	11/03/17 11:51	11/06/17 15:54	7439-92-1	
Magnesium, Dissolved	**4420**	ug/L	10.0	3.0	1	11/03/17 11:51	11/06/17 15:54	7439-95-4	
Manganese, Dissolved	**928**	ug/L	5.0	0.98	10	11/03/17 11:51	11/07/17 16:18	7439-96-5	
Potassium, Dissolved	**1540**	ug/L	50.0	12.5	1	11/03/17 11:51	11/07/17 15:24	7440-09-7	
Sodium, Dissolved	**5460**	ug/L	50.0	14.0	1	11/03/17 11:51	11/06/17 15:54	7440-23-5	
Total Hardness by 2340B, Dissolved	**40000**	ug/L	71.0	40.8	1	11/03/17 11:51	11/06/17 15:54		
Zinc, Dissolved	**106**	ug/L	5.0	0.82	1	11/03/17 11:51	11/06/17 15:54	7440-66-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CDA 2017-02 EMFR
Pace Project No.: 10408839

Sample: 07-EMF-MW-D-20171024-EB **Lab ID: 10408839007** Collected: 10/24/17 15:00 Received: 10/27/17 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**<0.50**	ug/L	0.50	0.21	1	11/03/17 11:51	11/06/17 15:56	7440-38-2	
Cadmium, Dissolved	**<0.080**	ug/L	0.080	0.028	1	11/03/17 11:51	11/06/17 15:56	7440-43-9	
Calcium, Dissolved	**29.6J**	ug/L	40.0	11.4	1	11/03/17 11:51	11/07/17 15:26	7440-70-2	
Iron, Dissolved	**<50.0**	ug/L	50.0	6.8	1	11/03/17 11:51	11/06/17 15:56	7439-89-6	
Lead, Dissolved	**<0.10**	ug/L	0.10	0.028	1	11/03/17 11:51	11/06/17 15:56	7439-92-1	
Magnesium, Dissolved	**3.2J**	ug/L	10.0	3.0	1	11/03/17 11:51	11/06/17 15:56	7439-95-4	
Manganese, Dissolved	**0.15J**	ug/L	0.50	0.098	1	11/03/17 11:51	11/06/17 15:56	7439-96-5	B
Potassium, Dissolved	**<50.0**	ug/L	50.0	12.5	1	11/03/17 11:51	11/07/17 15:26	7440-09-7	
Sodium, Dissolved	**<50.0**	ug/L	50.0	14.0	1	11/03/17 11:51	11/06/17 15:56	7440-23-5	
Total Hardness by 2340B, Dissolved	**87.1**	ug/L	71.0	40.8	1	11/03/17 11:51	11/07/17 15:26		
Zinc, Dissolved	**<5.0**	ug/L	5.0	0.82	1	11/03/17 11:51	11/06/17 15:56	7440-66-6	

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ANALYTICAL RESULTS

Project: CDA 2017-02 EMFR

Pace Project No.: 10408839

Sample: 08-EMF-MW-E-20171025-GW **Lab ID: 10408839008** Collected: 10/25/17 11:16 Received: 10/27/17 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**3.7**	ug/L	0.50	0.21	1	11/03/17 11:51	11/06/17 15:58	7440-38-2	
Cadmium, Dissolved	**0.089**	ug/L	0.080	0.028	1	11/03/17 11:51	11/06/17 15:58	7440-43-9	
Calcium, Dissolved	**189000**	ug/L	8000	2280	200	11/03/17 11:51	11/07/17 16:23	7440-70-2	
Iron, Dissolved	**18100**	ug/L	50.0	6.8	1	11/03/17 11:51	11/06/17 15:58	7439-89-6	
Lead, Dissolved	**0.031J**	ug/L	0.10	0.028	1	11/03/17 11:51	11/06/17 15:58	7439-92-1	
Magnesium, Dissolved	**77700**	ug/L	2000	600	200	11/03/17 11:51	11/07/17 16:23	7439-95-4	
Manganese, Dissolved	**64300**	ug/L	100	19.7	200	11/03/17 11:51	11/07/17 16:23	7439-96-5	
Potassium, Dissolved	**4880**	ug/L	50.0	12.5	1	11/03/17 11:51	11/07/17 15:29	7440-09-7	
Sodium, Dissolved	**86100**	ug/L	500	140	10	11/03/17 11:51	11/08/17 10:28	7440-23-5	
Total Hardness by 2340B, Dissolved	**791000**	ug/L	14200	8160	200	11/03/17 11:51	11/07/17 16:23		
Zinc, Dissolved	**9.2**	ug/L	5.0	0.82	1	11/03/17 11:51	11/06/17 15:58	7440-66-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CDA 2017-02 EMFR
Pace Project No.: 10408839

Sample: 08-EMF-MW-E-20171025-FB **Lab ID: 10408839009** Collected: 10/25/17 11:03 Received: 10/27/17 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**<0.50**	ug/L	0.50	0.21	1	11/03/17 11:51	11/06/17 15:59	7440-38-2	
Cadmium, Dissolved	**<0.080**	ug/L	0.080	0.028	1	11/03/17 11:51	11/06/17 15:59	7440-43-9	
Calcium, Dissolved	**38.5J**	ug/L	40.0	11.4	1	11/03/17 11:51	11/07/17 15:31	7440-70-2	
Iron, Dissolved	**<50.0**	ug/L	50.0	6.8	1	11/03/17 11:51	11/06/17 15:59	7439-89-6	
Lead, Dissolved	**<0.10**	ug/L	0.10	0.028	1	11/03/17 11:51	11/06/17 15:59	7439-92-1	
Magnesium, Dissolved	**11.6**	ug/L	10.0	3.0	1	11/03/17 11:51	11/06/17 15:59	7439-95-4	
Manganese, Dissolved	**6.9**	ug/L	0.50	0.098	1	11/03/17 11:51	11/06/17 15:59	7439-96-5	
Potassium, Dissolved	**<50.0**	ug/L	50.0	12.5	1	11/03/17 11:51	11/07/17 15:31	7440-09-7	
Sodium, Dissolved	**20.1J**	ug/L	50.0	14.0	1	11/03/17 11:51	11/06/17 15:59	7440-23-5	
Total Hardness by 2340B, Dissolved	**144**	ug/L	71.0	40.8	1	11/03/17 11:51	11/06/17 15:59		
Zinc, Dissolved	**0.94J**	ug/L	5.0	0.82	1	11/03/17 11:51	11/06/17 15:59	7440-66-6	

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ANALYTICAL RESULTS

Project: CDA 2017-02 EMFR
Pace Project No.: 10408839

Sample: 08-EMF-MW-F-20171025-GW **Lab ID: 10408839010** Collected: 10/25/17 12:10 Received: 10/27/17 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**<0.50**	ug/L	0.50	0.21	1	11/03/17 11:51	11/06/17 16:01	7440-38-2	
Cadmium, Dissolved	**1.6**	ug/L	0.080	0.028	1	11/03/17 11:51	11/06/17 16:01	7440-43-9	
Calcium, Dissolved	**17800**	ug/L	40.0	11.4	1	11/03/17 11:51	11/07/17 15:34	7440-70-2	
Iron, Dissolved	**8.8J**	ug/L	50.0	6.8	1	11/03/17 11:51	11/06/17 16:01	7439-89-6	
Lead, Dissolved	**0.20**	ug/L	0.10	0.028	1	11/03/17 11:51	11/06/17 16:01	7439-92-1	
Magnesium, Dissolved	**9470**	ug/L	10.0	3.0	1	11/03/17 11:51	11/06/17 16:01	7439-95-4	
Manganese, Dissolved	**457**	ug/L	5.0	0.98	10	11/03/17 11:51	11/06/17 16:16	7439-96-5	
Potassium, Dissolved	**915**	ug/L	50.0	12.5	1	11/03/17 11:51	11/07/17 15:34	7440-09-7	
Sodium, Dissolved	**26700**	ug/L	500	140	10	11/03/17 11:51	11/06/17 16:16	7440-23-5	M1
Total Hardness by 2340B, Dissolved	**83400**	ug/L	71.0	40.8	1	11/03/17 11:51	11/07/17 15:34		
Zinc, Dissolved	**2980**	ug/L	50.0	8.2	10	11/03/17 11:51	11/06/17 16:16	7440-66-6	M1

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: CDA 2017-02 EMFR
Pace Project No.: 10408839

Sample: 08-EMF-MW-F-20171025-EB **Lab ID: 10408839011** Collected: 10/25/17 11:59 Received: 10/27/17 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS, Dissolved	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Arsenic, Dissolved	**<0.50**	ug/L	0.50	0.21	1	11/03/17 11:51	11/06/17 16:02	7440-38-2	
Cadmium, Dissolved	**<0.080**	ug/L	0.080	0.028	1	11/03/17 11:51	11/06/17 16:02	7440-43-9	
Calcium, Dissolved	**36.3J**	ug/L	40.0	11.4	1	11/03/17 11:51	11/07/17 15:37	7440-70-2	
Iron, Dissolved	**<50.0**	ug/L	50.0	6.8	1	11/03/17 11:51	11/06/17 16:02	7439-89-6	
Lead, Dissolved	**<0.10**	ug/L	0.10	0.028	1	11/03/17 11:51	11/06/17 16:02	7439-92-1	
Magnesium, Dissolved	**5.6J**	ug/L	10.0	3.0	1	11/03/17 11:51	11/06/17 16:02	7439-95-4	
Manganese, Dissolved	**1.0**	ug/L	0.50	0.098	1	11/03/17 11:51	11/06/17 16:02	7439-96-5	B
Potassium, Dissolved	**<50.0**	ug/L	50.0	12.5	1	11/03/17 11:51	11/07/17 15:37	7440-09-7	
Sodium, Dissolved	**16.3J**	ug/L	50.0	14.0	1	11/03/17 11:51	11/06/17 16:02	7440-23-5	
Total Hardness by 2340B, Dissolved	**113**	ug/L	71.0	40.8	1	11/03/17 11:51	11/07/17 15:37		
Zinc, Dissolved	**1.5J**	ug/L	5.0	0.82	1	11/03/17 11:51	11/06/17 16:02	7440-66-6	

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QUALITY CONTROL DATA

Project: CDA 2017-02 EMFR
Pace Project No.: 10408839

QC Batch: 505816 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 10408839001, 10408839002, 10408839003, 10408839004, 10408839005, 10408839006, 10408839007, 10408839008, 10408839009, 10408839010, 10408839011

METHOD BLANK: 2749404 Matrix: Water
Associated Lab Samples: 10408839001, 10408839002, 10408839003, 10408839004, 10408839005, 10408839006, 10408839007, 10408839008, 10408839009, 10408839010, 10408839011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic, Dissolved	ug/L	<0.50	0.50	0.21	11/06/17 15:33	
Cadmium, Dissolved	ug/L	<0.080	0.080	0.028	11/06/17 15:33	
Calcium, Dissolved	ug/L	<40.0	40.0	11.4	11/07/17 14:51	
Iron, Dissolved	ug/L	<50.0	50.0	6.8	11/06/17 15:33	
Lead, Dissolved	ug/L	<0.10	0.10	0.028	11/06/17 15:33	
Magnesium, Dissolved	ug/L	<10.0	10.0	3.0	11/06/17 15:33	
Manganese, Dissolved	ug/L	0.11J	0.50	0.098	11/06/17 15:33	
Potassium, Dissolved	ug/L	<50.0	50.0	12.5	11/07/17 14:51	
Sodium, Dissolved	ug/L	<50.0	50.0	14.0	11/06/17 15:33	
Zinc, Dissolved	ug/L	<5.0	5.0	0.82	11/06/17 15:33	

LABORATORY CONTROL SAMPLE: 2749405

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	100	102	102	85-115	
Cadmium, Dissolved	ug/L	100	99.6	100	85-115	
Calcium, Dissolved	ug/L	2000	2060	103	85-115	
Iron, Dissolved	ug/L	2000	2200	110	85-115	
Lead, Dissolved	ug/L	100	104	104	85-115	
Magnesium, Dissolved	ug/L	2000	2190	109	85-115	
Manganese, Dissolved	ug/L	100	103	103	85-115	
Potassium, Dissolved	ug/L	2000	2090	104	85-115	
Sodium, Dissolved	ug/L	2000	2230	111	85-115	
Zinc, Dissolved	ug/L	100	99.5	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2749406 2749407

Parameter	Units	10408839005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic, Dissolved	ug/L	0.35J	100	100	103	103	102	103	70-130	1	20	
Cadmium, Dissolved	ug/L	4.2	100	100	105	104	101	99	70-130	2	20	
Calcium, Dissolved	ug/L	9630	2000	2000	11600	11800	101	109	70-130	1	20	
Iron, Dissolved	ug/L	429	2000	2000	2650	2660	111	112	70-130	1	20	
Lead, Dissolved	ug/L	0.16	100	100	104	104	104	104	70-130	1	20	
Magnesium, Dissolved	ug/L	6140	2000	2000	8260	8210	106	103	70-130	1	20	
Manganese, Dissolved	ug/L	1430	100	100	1490	1470	65	45	70-130	1	20	M1
Potassium, Dissolved	ug/L	1680	2000	2000	3740	3790	103	105	70-130	1	20	

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

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QUALITY CONTROL DATA

Project: CDA 2017-02 EMFR
Pace Project No.: 10408839

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2749406 2749407

Parameter	Units	10408839005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sodium, Dissolved	ug/L	6730	2000	2000	9150	9210	121	124	70-130	1	20	
Zinc, Dissolved	ug/L	2690	100	100	2790	2710	93	22	70-130	3	20	E,M1

MATRIX SPIKE SAMPLE: 2749408

Parameter	Units	10408839010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic, Dissolved	ug/L	<0.50	100	104	104	70-130	
Cadmium, Dissolved	ug/L	1.6	100	102	101	70-130	
Calcium, Dissolved	ug/L	17800	2000	20000	111	70-130	
Iron, Dissolved	ug/L	8.8J	2000	2250	112	70-130	
Lead, Dissolved	ug/L	0.20	100	103	103	70-130	
Magnesium, Dissolved	ug/L	9470	2000	12000	125	70-130	
Manganese, Dissolved	ug/L	457	100	580	123	70-130	
Potassium, Dissolved	ug/L	915	2000	3110	110	70-130	
Sodium, Dissolved	ug/L	26700	2000	29500	145	70-130	M1
Zinc, Dissolved	ug/L	2980	100	3240	259	70-130	E,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.

Pace Analytical Services, LLC
150 N Ninth Street
Billings, MT 59101
(406)254-7226

QUALIFIERS

Project: CDA 2017-02 EMFR
Pace Project No.: 10408839

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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Billings, MT 59101
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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: CDA 2017-02 EMFR
Pace Project No.: 10408839

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10408839001	**07-EMF-MW-A-20171024-GW**	EPA 200.8	505816	EPA 200.8	506745
10408839002	**07-EMF-MW-B-20171024-GW**	EPA 200.8	505816	EPA 200.8	506745
10408839003	**07-EMF-MW-B-20171024-GW-B**	EPA 200.8	505816	EPA 200.8	506745
10408839004	**09-EMF-MW-C-DEEP-20171024-GW**	EPA 200.8	505816	EPA 200.8	506745
10408839005	**07-EMF-MW-C-20171024-GW**	EPA 200.8	505816	EPA 200.8	506745
10408839006	**07-EMF-MW-D-20171024-GW**	EPA 200.8	505816	EPA 200.8	506745
10408839007	**07-EMF-MW-D-20171024-EB**	EPA 200.8	505816	EPA 200.8	506745
10408839008	**08-EMF-MW-E-20171025-GW**	EPA 200.8	505816	EPA 200.8	506745
10408839009	**08-EMF-MW-E-20171025-FB**	EPA 200.8	505816	EPA 200.8	506745
10408839010	**08-EMF-MW-F-20171025-GW**	EPA 200.8	505816	EPA 200.8	506745
10408839011	**08-EMF-MW-F-20171025-EB**	EPA 200.8	505816	EPA 200.8	506745

10408839

CHAIN-OF-CUSTODY / Analytical Request Document

Page: 1 of 2
Cooler # 1 of 1

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

Task:	2017-02 East Mission Flats Repository
Total # of Samples: 7	Event Complete? Yes
TAT	Regular / Rush: No
Notes:	FF= Field Filtered , H= Hold
Lab Notes	Metals: USEPA 200.8

Sampler Information:

Client:	Alta Science & Engineering
Address:	1220 Big Creek Road Kellogg, ID 83837
Contact:	Greg Malone
Phone/Fax:	208/786-1206
Email	greg.malone@alta-se.com
Lab Profile #:	25458 - line 4

Project Information:

Site Code:	CDA Trust Water Monitoring
Project #	
Site Address	Silver Valley, ID
City	NA
State, Zip	NA
PM Name	Christina Johnson/Brian Fauth
Phone/Fax:	360.977.8561/503.501.5223
PM Email:	cjohnson@maulfoster.com; rwoods@maulfoster.com

Other Information:

Send Invoice to:	Brian Fauth, Maul Foster and Alongi
Address:	400 East Mill Plain Blvd, #400
City/State.	Vancouver, WA 98660
Phone #:	360.694.2691
PO #	
Send EDD to	PacePort
CC Hardcopy to	Brian Fauth
CC Hardcopy to	

ITEM #	Field Sample No. /Identification		MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	# OF CONTAINERS	Comment	DM, Dissolved Cations (HNO3\FF)	Total Cations, Hardness (HNO3)						
1	07-EMF-MW-A-20171024-GW		WT	G	10/24/17 11:10	2	Dissolved Metals: As, Cd, Pb, Zn Dissolved/Total Cations: Ca, Fe, Mn, Mg, K, Na	x	x				0	0	1
2	07-EMF-MW-B-20171024-GW		WT	G	10/24/17 12:00	2	Dissolved Metals: As, Cd, Pb, Zn Dissolved/Total Cations: Ca, Fe, Mn, Mg, K, Na	x	x				0	0	2
3	07-EMF-MW-B-20171024-GW-B		WT	G	10/24/17 12:00	2	Dissolved Metals: As, Cd, Pb, Zn Dissolved/Total Cations: Ca, Fe, Mn, Mg, K, Na	x	x				0	0	3
4	09-EMF-MW-C-DEEP-20171024-GW		WT	G	10/24/17 12:42	2	Dissolved Metals: As, Cd, Pb, Zn Dissolved/Total Cations: Ca, Fe, Mn, Mg, K, Na	x	x				0	0	4
5	07-EMF-MW-C-20171024-GW	MS/D	WT	G	10/24/17 13:21	4	Dissolved Metals: As, Cd, Pb, Zn Dissolved/Total Cations: Ca, Fe, Mn, Mg, K, Na	x	x				0	0	5
6	07-EMF-MW-D-20171024-GW		WT	G	10/24/17 14:14	2	Dissolved Metals: As, Cd, Pb, Zn Dissolved/Total Cations: Ca, Fe, Mn, Mg, K, Na	x	x				0	0	6
7	07-EMF-MW-D-20171024-EB		WT	G	10/24/17 15:00	2	Dissolved Metals: As, Cd, Pb, Zn Dissolved/Total Cations: Ca, Fe, Mn, Mg, K, Na	x	x				0	0	7
8															
9															
10															
11															

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Samples on Ice?	Sample intact?	Trip Blank?
Bradford Alta Science + Engineering	10/26/17	09:00	[signature]	10/27/17	1000	2.3	Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N

Sample Receipt Conditions

Company:		DATE/TIME:	
Tracking #:			

CHAIN-OF-CUSTODY / Analytical Request Document

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

Cooler # 1 of 1

Task:	2017-02 East Mission Flats Repository		
Total # of Samples: 4		Event Complete? Yes	
TAT	Regular	Rush	No

Notes: FF= Field Filtered , H= Hold

Lab Notes: Metals: USEPA 200.8

Sampler Information:

Client:	Alta Science & Engineering
Address:	1220 Big Creek Road Kellogg, ID 83837
Contact:	Greg Malone
Phone/Fax:	208/786-1206
Email	greg.malone@alta-se.com
Lab Profile #:	25458 - line 4

Project Information:

Site Code:	CDA Trust Water Monitoring
Project #	
Site Address	Silver Valley, ID
City	NA
State, Zip	NA
PM Name	Christina Johnson/Rachael Woods
Phone/Fax:	360.977.8561/503.501.5223
PM Email:	cjohnson@maulfoster.com; bfauth@maulfoster.com

Other Information:

Send Invoice to:	Rachael Woods, Maul Foster and Alongi
Address:	400 East Mill Plain Blvd, #400
City/State.	Vancouver, WA 98660
Phone #:	360.694.2691
PO #	
Send EDD to	PacePort
CC Hardcopy to	Brian Fauth
CC Hardcopy to	

ITEM #	Field Sample No. /Identification	MATRIX CODE	G=GRAB C=COMP	SAMPLE DATE	# OF CONTAINERS	Comment	DM, Dissolved Cations (HNO3IFF)	Total Cations, Hardness (HNO3)					
1	08-EMF-MW-E-20171025-GW	WT	G	10/25/17 11:16	2	Dissolved Metals: As, Cd, Pb, Zn Dissolved/Total Cations: Ca, Fe, Mn, Mg, K, Na	X	X			0	0	8
2	08-EMF-MW-E-20171025-FB	WT	G	10/25/17 11:03	1	Dissolved Metals: As, Cd, Pb, Zn Dissolved Cations: Ca, Fe, Mn, Mg, K, Na	X				0	0	9
3	08-EMF-MW-F-20171025-GW	WT	G	10/25/17 12:10	2	Dissolved Metals: As, Cd, Pb, Zn Dissolved/Total Cations: Ca, Fe, Mn, Mg, K, Na	X	X			0	1	0
4	08-EMF-MW-F-20171025-EB	WT	G	10/25/17 11:59	2	Dissolved Metals: As, Cd, Pb, Zn Dissolved/Total Cations: Ca, Fe, Mn, Mg, K, Na	X	X			0	1	1
5													
6													
7													
8													
9													
10													
11													

Additional Comments/Special Instructions:

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Samples on Ice?	Sample intact?	Trip Blank?
Bradford Alta Science + Engineering	10/26/17	07:00	[illegible] PACE	10/27/17	1000	2.3	Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N
							Y/N	Y/N	Y/N

Sample Receipt Conditions

Company:		DATE/TIME:	
Tracking #:			

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 30Aug2017 Page 1 of 2
	Document No.: **F-MN-L-213-rev.21**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: ALTA

Project #:

WO# : 10408839

10408839

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

Tracking Number: 7475 9634 6431

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☒ Other: PB **Temp Blank?** ☒ Yes ☐ No

Thermometer Used: ☐ 151401163 ☒ G87A9155100842

Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 2.7 **Cooler Temp Corrected (°C):** 2.3 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** -0.4 **Date and Initials of Person Examining Contents:** ET 10/27/17

USDA Regulated Soil (☒ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☒ Yes	☐ No		1.
Chain of Custody Filled Out?	☒ Yes	☐ No		2.
Chain of Custody Relinquished?	☒ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☐ Yes	☒ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		6.
Rush Turn Around Time Requested?	☐ Yes	☒ No		7.
Sufficient Volume?	☒ Yes	☐ No		8.
Correct Containers Used? -Pace Containers Used?	☒ Yes ☒ Yes	☐ No ☐ No		9.
Containers Intact?	☒ Yes	☐ No		10.
Filtered Volume Received for Dissolved Tests?	☒ Yes	☐ No	☐ N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT	☒ Yes	☐ No		12.
All containers needing acid/base preservation have been checked?	☒ Yes	☐ No	☐ N/A	13. ☒ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☒ Yes	☐ No	☐ N/A	Sample # 1-4, 6-8, 10-11: ½ 5: 4/4
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐ Yes	☐ No	☒ N/A	Initial when completed: 9:1/1 Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present? Trip Blank Custody Seals Present? Pace Trip Blank Lot # (if purchased):	☐ Yes ☐ Yes	☐ No ☐ No	☒ N/A ☒ N/A	15.

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Brian Fauth Date/Time: 10/30/17 16:49

Comments/Resolution: Dissolved Metals and Anions to be analyzed: As, Cd, Pb, Zn, Ca, Mg, K, and Na. Do not analyze Fe and Mn.

Project Manager Review: Sarah Porter **Date:** 10/30/2017

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

APPENDIX F

DATA QUALITY ASSURANCE/QUALITY CONTROL REVIEW MEMORANDA

DATA QUALITY ASSURANCE/QUALITY CONTROL REVIEW

PROJECT NO. 0442.06.05 | MARCH 30, 2018 | COEUR D'ALENE TRUST

Maul Foster & Alongi, Inc. (MFA) conducted an independent review of the quality of analytical results for groundwater and quality control samples collected at the East Mission Flats Repository. The samples were collected on April 17, 2017.

A Level IV Manual Validation, as defined in the Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (USEPA, 2009), was performed on the sample results. The data were evaluated based on the following parameters, as each applies to its individual specific method:

- Chain of Custody (COC)
- Case Narrative
- Field and Sample identifications
- Holding Time, including sample receipt, preservation, sample storage, and cooler temperatures
- Instrument Stability and Performance (e.g., mass spectrometer tuning, interference check samples—metals)
- Calibration and Calibration Verification (e.g., initial calibration, initial calibration verification (ICV) and continuing calibration verification [CCV])
- Blanks (e.g., method blank, initial calibration blank [ICB], continuing calibration blank [CCB], reagent/preparation blanks, equipment rinsate, and field filter blanks if specified in method)
- Laboratory Control Samples (LCS) and Laboratory Control Sample Duplicates (LCSD)
- Matrix Spike/Matrix Spike Duplicates (MS/MSD)
- Post Digestion Spikes (metals)
- Laboratory Duplicates
- Field Duplicates
- Serial Dilution Samples (metals)
- Internal Standards (metals)
- Recalculation and reduction of results from raw data

Pace Analytical Services, LLC (Pace) and SVL Analytical, Inc. (SVL) performed the analyses. Pace report number 10385796 and SVL report number X7D0329 were reviewed. An associated field filter blank sample was also analyzed and described in Pace lab report 10386091, which was validated in a separate data validation memorandum. The analyses performed and samples analyzed are listed below.

Samples Analyzed	Report	Methods
07-EMF-MW-A-20170417-GW	SVL Report X7D0329	Alkalinity by SM 2320B
	SVL Report X7D0329	Anions by USEPA 300.0
	Pace Report 10385796	Dissolved Metals & Cations by USEPA 200.8
07-EMF-MW-B-20170417-GW	SVL Report X7D0329	Alkalinity by SM 2320B
	SVL Report X7D0329	Anions by USEPA 300.0
	Pace Report 10385796	Dissolved Metals & Cations by USEPA 200.8
07-EMF-MW-B-20170417-GW-B	SVL Report X7D0329	Alkalinity by SM 2320B
	SVL Report X7D0329	Anions by USEPA 300.0
	Pace Report 10385796	Dissolved Metals & Cations by USEPA 200.8
09-EMF-MW-C-DEEP-20170417-GW	SVL Report X7D0329	Alkalinity by SM 2320B
	SVL Report X7D0329	Anions by USEPA 300.0
	Pace Report 10385796	Dissolved Metals& Cations by USEPA 200.8
07-EMF-MW-C-20170417-GW	SVL Report X7D0329	Alkalinity by SM 2320B
	SVL Report X7D0329	Anions by USEPA 300.0
	Pace Report 10385796	Dissolved Metals and Cations by USEPA 200.8
07-EMF-MW-C-20170417-EB	SVL Report X7D0329	Alkalinity by SM 2320B
	SVL Report X7D0329	Anions by USEPA 300.0
	Pace Report 10385796	Dissolved Metals & Cations by USEPA 200.8

SM = standard methods for the examination of water and wastewater.
USEPA = U.S. Environmental Protection Agency.

DATA QUALIFICATIONS

Analytical results were evaluated according to applicable sections of USEPA procedures (USEPA, 2017), appropriate laboratory and method-specific guidelines (Pace, 2015; SVL, 2016; USEPA, 1986), and programmatic data quality requirements (MFA, 2017).

Data validation procedures were modified, as appropriate, to accommodate quality-control requirements for methods not specifically addressed by the USEPA procedures (e.g., SM 2320B).

Precision and accuracy were evaluated by the reviewer using raw instrument data, as well as the following formulas for percent recovery and relative percent difference (RPD):

$$Percent\ Recovery = \frac{x_{ss} - x_s}{T} \times 100\%$$

Where:

x_{ss} = result for spiked sample

x_s = result for sample

T = true value of added spike

$$RPD = \frac{2(x_s - x_d)}{x_s + x_d} \times 100\%$$

Where:

x_s = result for primary sample

x_d = result for duplicate sample

The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

HOLDING TIMES, PRESERVATION, AND SAMPLE STORAGE

Holding Times

Extractions and analyses were performed within the recommended holding time criteria.

Preservation and Sample Storage

The samples were preserved and stored appropriately.

INITIAL AND CONTINUING CALIBRATION VERIFICATION RESULTS

ICV and CCV results are used to demonstrate instrument accuracy after calibration and through the end of an analytical sequence. ICV results are associated to all samples in an analytical sequence. CCV results are associated to sample results by analysis time; CCVs analyzed before and after a sample are associated to individual sample results. ICV/CCVs were analyzed at the appropriate frequency for all reported analytes at concentrations within the instrument calibration range and at concentrations other than those used for calibration. CCV standards were analyzed for all reported analytes, at concentrations other than those used for the ICV, at midlevel of the instrument calibration. All ICV/CCVs were within acceptance limits for percent recovery, at 90 to 110 percent.

One or more laboratory-calculated ICV/CCV percent recovery results per sample delivery group were verified by the reviewer using raw data:

Report	Data File Name	Component	True Concentration (ug/L)	Found Concentration (ug/L)	Percent Recovery	Within Acceptance Criteria?
10385796	011_ICV.d	Calcium	1000	1022.8	102.3	Yes
X7D0329	SEQ-ICV1@CCV	Chloride	3	3.036	101.2	Yes

ug/L = micrograms per liter.

LABORATORY BLANKS

Method Blanks

Method blank results are used to demonstrate a lack of contamination from laboratory processes. Where an analyte was detected in a sample and in the associated method blank above the method reporting limit (MRL), the sample result was qualified if the concentration was less than ten times the USEPA Method 200.8 method blank concentration or five times the method blank concentration for all other methods. Where method blank results were below MRLs, associated sample results below the MRL were elevated to the MRL and qualified with “U” as non-detect. Where associated results were above the MRL and less than ten times the method blank concentration, results were qualified with “J” as estimated.

In Pace report 10385796, the USEPA Method 200.8 method blank had a detection of sodium at 22.4 ug/L. All associated sample results were non-detect at the MDL or were greater than ten times the detected concentration with the following exception, qualified by the reviewer with “U” as non-detect:

Sample	Component	Original Result (ug/L)	Qualified Result (ug/L)
07-EMF-MW-C-20170417-EB	Dissolved sodium	46.8 J	50.0 U

In SVL report X7D0329, the USEPA Method 300.0 method blank had a detection of chloride between the MDL and MRL. All associated sample results were non-detect at the MDL or were greater than ten times the detected concentration and thus did not require qualification. All remaining method blank results were non-detect at the method detection limits or had concentrations greater than ten times the detected blank concentration.

Initial and Continuing Calibration Blanks

ICB and CCB results are used to demonstrate a lack of contamination from laboratory processes at the beginning of and throughout the analytical run. Where an analyte was detected in a sample and in the associated blank above the MRL, the sample result was qualified if the concentration was less than ten times the USEPA Method 200.8 blank concentration or five times the blank concentration for all other methods. Where blank results were below MRLs, associated sample results below the MRL were elevated to the MRL and qualified with “U” as non-detect. Where associated results were above the MRL and less than ten times the blank concentration, results were qualified with “J” as estimated.

ICB/CCB results were analyzed by the laboratory for all reported analytes and at the appropriate frequency. The ICB was appropriately analyzed after the instrument was calibrated and prior to sample analysis. CCBs were appropriately associated to sample results based on sample analysis time.

In Pace report 10385796, the USEPA Method 200.8 CCBs analyzed on May 1, 2017, had detections below the MRL for multiple analytes. All associated sample results were non-detect at the MDLs or were greater than ten times the detected concentration, with the following exception, which was qualified by the reviewer with "U" as non-detect:

Sample	Component	Original Result (ug/L)	Qualified Result (ug/L)
07-EMF-MW-C-20170417-EB	Dissolved sodium	46.8 J	50.0 U

In SVL report X7D0329, the USEPA Method 300.0 ICB and CCBs had detections of chloride between the MDL and MRL. All associated sample results were non-detect at the MDL or were greater than ten times the detected concentration and thus did not require qualification.

All remaining ICB and CCB results were non-detect at the method detection limits or had concentrations greater than ten times the detected blank concentration.

FIELD BLANKS

Equipment Rinsate Blanks

Equipment rinsate blanks are collected to evaluate possible contamination from field equipment. One equipment rinsate blank was submitted for analysis (07-EMF-MW-C-20170417-EB). For purposes of data qualification, the equipment rinsate blank was associated with all samples submitted within the sample delivery group. Where an analyte was detected in a sample and in the associated rinsate blank above the MRL, the sample result was qualified if the concentration was less than ten times the USEPA Method 200.8 method blank concentration or five times the method blank concentration for all other methods. Where rinsate blank results were below MRLs, associated sample results below the MRL were elevated to the MRL and qualified with "U" as non-detect. Where associated results were above the MRL and less than ten times the method blank concentration, results were qualified with "J" as estimated.

In Pace report 10385796, equipment rinsate blank USEPA Method 200.8 dissolved magnesium, potassium, sodium, and zinc were detected between the MDL and MRL, and dissolved calcium and lead were detected above the MRL. Associated sample results were non-detect at the MDL or were greater than ten times the detected concentrations, with the following exceptions, which were qualified by the reviewer with "U" as non-detect:

Report	Sample	Component	Equipment Rinsate Blank Result (ug/L)	Original Result (ug/L)	Qualified Result (ug/L)
10385796	07-EMF-MW-A-20170417-GW	Dissolved lead	0.10	0.038 J	0.10 U
	07-EMF-MW-B-20170417-	Dissolved lead		0.090 J	0.10 U
	07-EMF-MW-B-20170417-	Dissolved lead		0.073 J	0.10 U

Field Filter Blanks

Field filter blanks are collected to evaluate contamination from field filters. Within each filter lot, filter blanks are collected at a frequency of one per 20 samples (MFA, 2017). One filter blank was submitted for analysis (08-EMF-MW-E-20170418-FB), and results were reported in Pace lab report 10386091, which is validated in a separate data validation memorandum. The field filter sample had detections of dissolved calcium, magnesium, sodium, and zinc between the MDL and MRL. All associated sample results were greater than five times the detected concentration or were previously qualified as non-detect, with the following exceptions, which were qualified by the reviewer with "U" as non-detect:

Report	Sample	Component	Field Filter Blank Result (ug/L)	Original Result (ug/L)	Qualified Result (ug/L)
10385796	07-EMF-MW-C-20170417-EB	Dissolved calcium	37.4 J	40.3	40.3 U
	07-EMF-MW-C-20170417-EB	Dissolved magnesium	2.6 J	2.4 J	10.0 U
	07-EMF-MW-C-20170417-EB	Dissolved zinc	1.3 J	2.1 J	5.0 U

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

MS/MSD results are used to evaluate laboratory precision and accuracy, as well as matrix-specific effects on analyte recovery. All MS/MSD samples were extracted and analyzed at the required frequency. When MS/MSD percent recoveries and RPDs were outside acceptance limits because of high concentrations of analyte in the sample and MS/MSD exceedances were flagged by the laboratory because of high concentrations of analyte, no qualifications were made by the reviewer.

One or more laboratory-calculated MS/MSD percent recoveries were manually recalculated by the reviewer as follows:

Report	Data File Name	Component	Sample Result (ug/L)	Spike Added (ug/L)	MS result (ug/L)	Percent Recovery	Within Laboratory Acceptance Criteria?
10385796	066SMPL.d	Zinc	53.7	100.0	158.5	105	Yes
X7D0329	X716179-MS1	Chloride	2.16	3.00	5.329	103.3	Yes

One or more laboratory-calculated MS/MSD RPD was manually recalculated by the reviewer as follows:

Report	Data File Name	Component	Concentration (ug/L)	RPD	Within Laboratory Acceptance Criteria?
10385796	066SMPL.d	Zinc	158.5	3.3	Yes
	066SMPL.d		163.8		
X7D0329	X716179-MS1	Chloride	5.329	1.8	Yes
	X716179-MSD1		5.233		

In report X7D0329, the USEPA Method 300.0 sulfate MS result exceeded the acceptance criteria of 110 percent, at 113 percent. This exceedance is minor, and the MSD result was within acceptance criteria; thus, no results were qualified.

All remaining recoveries were within acceptance limits for percent recovery and RPDs.

LABORATORY DUPLICATE RESULTS

Duplicate results are used to evaluate laboratory precision. All duplicate samples were extracted and analyzed at the required frequency. Laboratory duplicate results within five times the MRL were not evaluated for precision.

In report 10385796, the sample used to prepare the USEPA Method 200.8 laboratory duplicate was from an unrelated project.

All reported recoveries were within acceptance limits for RPD.

LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE

LCS and LCSD is spiked with target analytes to provide information on laboratory precision and accuracy. The LCS samples were extracted and analyzed at the required frequency. LCSD results were not reported; thus, precision was evaluated using MS/MSD results.

One or more laboratory-calculated LCS percent recovery was manually recalculated by the reviewer as follows:

Report	Data File Name	Component	True Concentration (ug/L)	Found Concentration (ug/L)	Percent Recovery	Within Acceptance Criteria?
10385796	069SMPL.d	Lead	100.0	110.2	110.2	Yes
X7D0329	X716159-BS1	Total Alkalinity	99.3	104	104.7	Yes

FIELD DUPLICATE RESULTS

Field duplicate samples measure both field and laboratory precision. One field duplicate was submitted for analysis (07-EMF-MW-B-20170417-GW/07-EMF-MW-B-20170417-GW-B). MFA uses 35 percent RPD (MFA, 2017) for results that are greater than five times the MRL. Results less than five times the MRL are not evaluated for RPD. All field duplicate results were within the acceptance criteria for RPD.

REPORTING LIMITS

Pace and SVL used routine MDLs for non-detect results, except for samples requiring dilutions because of high analyte concentrations and/or matrix interferences. Results between the MDL and the MRL were qualified by Pace with "J" as estimated. The reviewer confirmed that the MDLs required by the Coeur d'Alene Trust Programmatic Quality Assurance Project Plan (MFA, 2017) were met.

INTERCOUPLED PLASMA—MASS SPECTROMETRY

Instrument Calibration

A calibration blank and at least five calibration standards within the linear dynamic range of each target analyte were used for calibration, with the lowest non-blank calibration standard having a concentration lower than the project requirement (MFA, 2017). All calibration standard percent recoveries were within 30 percent of the standard's true value. All calibration curve correlation coefficients were equal to or greater than 0.995, meeting requirements.

Interference Check Sample

An interference check sample (ICS) is used to demonstrate the instrument's ability to overcome typical interferences. The reviewer confirmed that a USEPA Method 200.8 ICS was analyzed at the beginning of the analytical sequence, prior to sample analysis. All ICS results were within acceptance criteria.

One or more laboratory-calculated ICS percent recovery was manually recalculated by the reviewer as follows:

Report	Data File Name	Component	True Concentration (ug/L)	Found Concentration (ug/L)	Percent Recovery	Within Acceptance Criteria?
10385796	016ICSB.d	Arsenic	100.0	105.1	105.1	Yes

Tune

The instrument was appropriately tuned prior to calibration. The reviewer confirmed with raw data that at least five scans were used during the tune process, that the atomic mass was within 0.1 atomic mass unit (AMU) for all required analyte isotopes, and that the percent relative standard deviation for each analyte isotope was less than or equal to 5 percent.

One or more laboratory-calculated AMU percent recovery was manually recalculated by the reviewer as follows:

Report	Analysis Date/Time	Mass, Found (AMU)	Mass, True (AMU)	Acceptable Mass (AMU)	Within Acceptance Criteria?
10385796	5/1/2017 06:24	58.95	59	58.9–59.1	Yes

Internal Standards

Samples are spiked with at least five internal standards to evaluate instrument drift and matrix interferences. All samples, except for the tune, were spiked with the appropriate internal standards. All internal standard results were within acceptance criteria (percent recovery 60-125 percent of the CCB).

Serial Dilution

Serial dilution is performed to evaluate matrix interference. Serial dilution was performed on at least one sample in Pace report 10385796. Original results and associated diluted results were compared. Results less than 50 times the MDL were not evaluated for percent difference. All remaining serial diluted results were less than or equal to 10 percent.

One or more laboratory-calculated serial dilution percent recovery was manually recalculated by the reviewer as follows:

Report	Sample	Component	Sample Concentration (ug/L)	Serial Dilution Concentration (ug/L)	Percent Difference	Within Acceptance Criteria?
10385796	09-EMF-MW-C-DEEP-20170417-GW	Arsenic	2.75	2.85	3.6	Yes

DATA PACKAGE

The level IV data packages were reviewed for transcription errors, omissions, and anomalies. The level 4 data packages were complete and included COC forms, a case narrative, sample results, laboratory quality control sample results, instrument calibration, calibration verifications, sample receipt information, and all appropriately associated raw data.

The analytical data are considered 100 percent complete since all data are usable, as reported, with the qualifications assigned.

In report 10385796, the laboratory didn't report hardness results despite the reported concentrations of calcium and magnesium. MFA calculated and updated database with hardness results on December 22, 2017, based upon the calcium and magnesium lab data and subsequent equation:

$$\text{total permanent hardness} = \text{calcium hardness } (2.5 \text{ X } Ca^{2+}) + \text{magnesium hardness } (4.2 \text{ X } Mg^{2+})$$

In report 10385796, the COC includes a second page associated with samples not reported in 10385796. The sample delivery group was divided at the laboratory, and the second page of the COC is reported under a separate laboratory report number. No action was necessary.

In report 10385796, the laboratory noted that the COC did not include the sampler's signature. No action was necessary.

No other issues were found.

MFA. 2017. Programmatic quality assurance project plan. Upper and lower basins of the Coeur d'Alene River, Idaho. Maul, Foster & Alongi. Portland, Oregon. February 7.

Pace. 2015. Quality assurance manual. Revision 18.1. Pace Analytical Services, Minneapolis, Minnesota. December 9.

SVL. 2016. Quality manual. SVL Analytical, Inc., Kellogg, Idaho. February 4.

USEPA. 1986. Test methods for evaluating solid waste: physical/chemical methods. EPA-530/SW-846. Update V. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. September (revision 1, July 2014).

USEPA. 2009. Guidance for labelling externally validated laboratory analytical data for superfund use. EPA-540-R-08-005. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. January.

USEPA. 2017. USEPA contract laboratory program, national functional guidelines for inorganic Superfund methods data review. EPA 540-R-2017-001. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. January.

DATA QUALITY ASSURANCE/QUALITY CONTROL REVIEW

PROJECT NO. 0442.06.05 | MARCH 30, 2018 | COEUR D'ALENE TRUST

Maul Foster & Alongi, Inc. (MFA) conducted an independent Level II validation of the quality of analytical results for groundwater and quality control samples collected at the East Mission Flats Repository. The samples were collected on April 18, 2017.

Pace Analytical Services, LLC (Pace) and SVL Analytical, Inc. (SVL) performed the analyses. Pace report number 10386091 and SVL report number X7D0330 were reviewed. The analyses performed and samples analyzed are listed below.

Analysis	Reference
Alkalinity (bicarbonate, carbonate, hydroxide, and total)	SM 2320B
Dissolved metals	USEPA 200.8
Dissolved cations	USEPA 200.8
Anions	USEPA 300.0

SM = standard methods for the examination of water and wastewater.
USEPA = U.S. Environmental Protection Agency.

Samples Analyzed	
Report 10386091	**Report XD70330**
07-EMF-MW-D-20170418-GW	07-EMF-MW-D-20170418-GW
08-EMF-MW-E-20170418-GW	08-EMF-MW-E-20170418-GW
08-EMF-MW-F-20170418-GW	08-EMF-MW-F-20170418-GW
08-EMF-MW-F-20170418-EB	08-EMF-MW-F-20170418-EB
08-EMF-MW-E-20170418-FB	--

-- = no value.

DATA QUALIFICATIONS

Analytical results were evaluated according to applicable sections of USEPA procedures (USEPA, 2017), appropriate laboratory and method-specific guidelines (Pace, 2015; SVL, 2016; USEPA, 1986), and programmatic data quality requirements (MFA, 2017).

Data validation procedures were modified, as appropriate, to accommodate quality-control requirements for methods not specifically addressed by the USEPA procedures (e.g., SM 2320B).

The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

HOLDING TIMES, PRESERVATION, AND SAMPLE STORAGE

Holding Times

Extractions and analyses were performed within the recommended holding time criteria.

Preservation and Sample Storage

In report X7D0330, SVL noted that the sample cooler was received outside of acceptance criteria of 0-6 degrees Celsius (°C) at 6.6 °C. This exceedance is minor; thus, qualification was not necessary.

LABORATORY BLANKS

Method Blanks

Method blanks are used to demonstrate a lack of laboratory contamination. Where an analyte was detected in a sample and in the associated method blank, the sample result was qualified if the sample concentration was less than five times the method blank concentration. Method reporting limits (MRLs) were elevated to the concentration detected in the samples, and results were qualified as not detected "U" at the elevated MRL. Where sample detections were between the method detection limit (MDL) and MRL, the reported limit was raised to the MRL.

In report 10386091, the USEPA Method 200.8 method blank had a detection of dissolved sodium below the MRL at 22.4 micrograms per liter (ug/L) All associated sample results were non-detect at the MDL or greater than five times the detected concentration with the following exceptions, which were qualified by the reviewer with "U" as non-detect as follows:

Sample	Component	Original Result (ug/L)	Qualified Result (ug/L)
08-EMF-MW-F-20170418-EB	Dissolved sodium	27.3 J	50.0 U
08-EMF-MW-E-20170418-FB	Dissolved sodium	23.6 J	50.0 U

J = estimated value.

All remaining method blank results were non-detect at MDLs or had concentrations greater than five times the detected method blank concentration.

FIELD BLANKS

Equipment Rinsate Blanks

Equipment rinsate blanks are collected to evaluate contamination from field equipment. One equipment rinsate blank was submitted for analysis (08-EMF-MW-F-20170418-EB). For purposes of data qualification, the equipment rinsate blanks were associated with all samples collected during the sampling event. Where an analyte was detected in a sample and in the associated rinsate blank, the sample result was qualified if the concentration was less than five times the rinsate blank concentration. MRLs were elevated to the concentration detected in the samples, and results were qualified as not detected "U" at the elevated MRL. Where detections in associated samples were between the MDL and MRL, the reported limit was raised to the MRL.

In report 10386091, the equipment rinsate blank USEPA Method 200.8 result for dissolved calcium was above the MRL at 42.2 ug/L, and results for dissolved lead, magnesium, sodium, and zinc were between the MDL and the MRL at 0.024, 3.4, 27.3, and 2.6 ug/L, respectively. Associated dissolved sodium detections were previously qualified in the method blank section of this memorandum and thus did not require further qualification. Remaining associated sample results were non-detect at the MDL or greater than five times the detected concentrations with the following exceptions, qualified by the reviewer with "U" as non-detect:

Report	Sample	Component	Equipment Rinsate Blank Result (ug/L)	Original Result (ug/L)	Qualified Result (ug/L)
10386091	07-EMF-MW-D-20170418-GW	Dissolved lead	0.024 J	0.057 J	0.10 U
	08-EMF-MW-E-20170418-GW	Dissolved lead	0.024 J	0.014 J	0.10 U
	08-EMF-MW-E-20170418-FB	Dissolved calcium	42.2	37.4 J	40 U
		Dissolved magnesium	3.4 J	2.6 J	10.0 U
		Dissolved zinc	2.6 J	1.3 J	5.0 U

J = estimated value.

Field Filter Blanks

Field filter blanks are collected to evaluate contamination from field filters. Filter blanks are collected at a frequency of one for every 20 samples collected (MFA, 2017). One filter blank was submitted for analysis (08-EMF-MW-E-20170418-FB). The field filter sample was also associated with samples collected in Pace report 10385796 and SVL report X7D0330, addressed in a separate validation memorandum. The field filter sample had detections of dissolved calcium, magnesium, sodium, and zinc between the MDL and MRL. These detections were qualified with "U" as non-detect due to equipment rinsate blank detections in the equipment rinsate blank section of this memorandum; however, all samples (including the equipment rinsate blank) were evaluated for contamination due to filter blank detections. All associated sample results were either greater than five times the detected filter blank concentration or were previously qualified as non-detect with the following exceptions, qualified by the reviewer with "U" as non-detect:

Report	Sample	Component	Field Filter Blank Result (ug/L)	Original Result (ug/L)	Qualified Result (ug/L)
10368901	08-EMF-MW-F-20170418-EB	Dissolved calcium	37.4 J	42.2	42.2 U
		Dissolved magnesium	2.6 J	3.4 J	10.0 U
		Dissolved zinc	1.3 J	2.6 J	5.0 U

J = estimated value.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Matrix spike/matrix spike duplicate (MS/MSD) results are used to evaluate laboratory precision and accuracy. All MS/MSD samples were extracted and analyzed at the required frequency. When MS/MSD percent recoveries and relative percent differences (RPDs) were outside acceptance limits because of high concentrations of analyte in the sample, and MS/MSD exceedances were flagged by the laboratory because of high concentrations of analyte, no qualifications were made by the reviewer.

In report X7D0330, the USEPA Method 300.0 chloride and sulfate MS results exceeded the upper acceptance criteria of 110 percent at 111 percent each. These exceedances are minor, and the MSD results were within acceptance criteria; thus, no results were qualified.

All remaining MS/MSD recoveries were within acceptance limits for percent recovery and RPDs.

LABORATORY DUPLICATE RESULTS

Duplicate results are used to evaluate laboratory precision. All duplicate samples were extracted and analyzed at the required frequency. Laboratory duplicate results within five times the MRL were not evaluated for precision. All laboratory duplicate RPDs were within acceptance limits.

LABORATORY CONTROL SAMPLE

A laboratory control sample (LCS) is spiked with target analytes to provide information on laboratory precision and accuracy. The LCS samples were extracted and analyzed at the required frequency. All LCS results were within acceptance limits for percent recovery.

FIELD DUPLICATE RESULTS

Field duplicate samples measure both field and laboratory precision. A field duplicate was not submitted for analysis.

REPORTING LIMITS

Pace and SVL used routine MDLs for non-detect results, except for samples requiring dilutions because of high analyte concentrations and/or matrix interferences. Results between the MDL and the MRL were qualified by Pace with "J" as estimated.

DATA PACKAGE

The data packages were reviewed for transcription errors, omissions, and anomalies.

In report 10386091, the laboratory didn't report hardness results despite the reported concentrations of calcium and magnesium. MFA calculated and updated database with hardness results on December 22, 2017, based upon the calcium and magnesium lab data and subsequent equation:

$$\text{total permanent hardness} = \text{calcium hardness } (2.5 \text{ X } Ca^{2+}) + \text{magnesium hardness } (4.2 \text{ X } Mg^{2+})$$

In report 10386091, the laboratory noted that the COC did not include the sampler's signature. No action was necessary.

No other issues were found.

MFA. 2017. Programmatic quality assurance project plan. Upper and lower basins of the Coeur d'Alene River, Idaho. Maul, Foster & Alongi. Portland, Oregon. February 7.

Pace. 2015. Quality assurance manual. Revision 18.1. Pace Analytical Services, LLC, Minneapolis, Minnesota. December 9.

SVL. 2016. Quality manual. SVL Analytical, Inc., Kellogg, Idaho. February 4.

USEPA. 1986. Test methods for evaluating solid waste: physical/chemical methods. EPA-530/SW-846. Update V. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. September (revision 1, July 2014).

USEPA. 2017. USEPA contract laboratory program, national functional guidelines for inorganic Superfund methods data review. EPA 540-R-2017-001. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. January.

DATA QUALITY ASSURANCE/QUALITY CONTROL REVIEW

PROJECT NO. 0442.06.05 | MARCH 30, 2018 | COEUR D'ALENE TRUST

Maul Foster & Alongi, Inc. (MFA) conducted an independent Level II validation of the quality of analytical results for groundwater and quality control samples collected at the East Mission Flats Repository. The samples were collected on October 24 and 25, 2017.

Pace Analytical Services, LLC (Pace) and SVL Analytical, Inc. (SVL) performed the analyses. Pace report number 10408839 and SVL report numbers X7J0499 and X7J0519 were reviewed. The analyses performed and samples analyzed are listed below. Not all samples were analyzed by all methods.

Analysis	Reference
Dissolved metals	USEPA 200.8
Dissolved cations	USEPA 200.8
Sulfate and Chloride	USEPA 300.0
Alkalinity (Total, Bicarbonate, Carbonate, Hydroxide)	SM2320B
Total Hardness	SM2340B

SM = standard methods for the examination of water and wastewater.
USEPA = U.S. Environmental Protection Agency.

Samples Analyzed	
Report 10408839, X7J0499, X7J0519	
07-EMF-MW-A-20171024-GW	07-EMF-MW-D-20171024-GW
07-EMF-MW-B-20171024-GW	07-EMF-MW-D-20171024-EB
07-EMF-MW-B-20171024-GW-B	08-EMF-MW-E-20171025-GW
09-EMF-MW-C-DEEP-20171024-GW	08-EMF-MW-E-20171025-FB
07-EMF-MW-C-20171024-GW	08-EMF-MW-F-20171025-GW
--	08-EMF-MW-F-20171025-EB

-- = no value.

DATA QUALIFICATIONS

Analytical results were evaluated according to applicable sections of USEPA procedures (USEPA, 2017), appropriate laboratory and method-specific guidelines (Pace, 2017; SVL, 2016; USEPA, 1986), and programmatic data quality requirements (MFA, 2017).

Data validation procedures were modified, as appropriate, to accommodate quality-control requirements for methods not specifically addressed by the USEPA procedures (e.g., SM 2320B).

The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

HOLDING TIMES, PRESERVATION, AND SAMPLE STORAGE

Holding Times

Extractions and analyses were performed within the recommended holding time criteria.

Preservation and Sample Storage

In report X7J0519, SVL noted that the sample cooler was received outside of acceptance criteria of 0-6 degrees Celsius (°C) at 6.3°C. This exceedance is minor; thus, qualification was not necessary.

All other samples were preserved and stored appropriately.

LABORATORY BLANKS

Method Blanks

Method blanks are used to demonstrate a lack of laboratory contamination. Where an analyte was detected in a sample and in the associated method blank, the sample result was qualified if the sample concentration was less than five times the method blank concentration. Method reporting limits (MRLs) were elevated to the concentration detected in the samples, and results were qualified as not detected "U" at the elevated MRL. Where sample detections were between the method detection limit (MDL) and MRL, the reported limit was raised to the MRL. Detected concentrations above the MRL in samples associated with method blanks between the MRL and MDL were not qualified.

In report 10408839, the USEPA Method 200.8 method blank had a detection of dissolved manganese below the MRL at 0.11 micrograms per liter (ug/L). All associated sample results were non-detect at the MDL or greater than five times the detected concentration with the following exception, which was qualified by the reviewer with "U" as non-detect as follows:

Sample	Component	Original Result (ug/L)	Qualified Result (ug/L)
07-EMF-MW-D-20171024-EB	Dissolved manganese	0.15 J	0.50 U

J = as estimated.

All remaining method blank results were non-detect at MDLs or had concentrations greater than five times the detected method blank concentration.

FIELD BLANKS

Equipment Rinsate Blanks

Equipment rinsate blanks are collected to evaluate contamination from field equipment. Two equipment rinsate blanks were submitted for analysis (07-EMF-MW-D-20171024-EB and 08-EMF-MW-F-20171025-EB). For purposes of data qualification, the equipment rinsate blanks were associated with all samples collected during the sampling event. Where an analyte was detected in a sample and in the associated rinsate blank, the sample result was qualified if the concentration was less than five times the rinsate blank concentration. MRLs were elevated to the concentration detected in the samples, and results were qualified as not detected "U" at the elevated MRL. Where detections in associated samples were between the MDL and MRL, the reported limit was raised to the MRL.

In report 10408839, the equipment rinsate blank 07-EMF-MW-D-20171024-EB analyzed by USEPA Method 200.8 result for hardness was above the MRL at 87.1 ug/L, and results for dissolved calcium, magnesium, and manganese were between the MDL and the MRL at 29.6, 3.2, and 0.15 ug/L, respectively. In report 10408839, the equipment rinsate blank 08-EMF-MW-F-20171025-EB analyzed by USEPA Method 200.8 results for manganese and hardness were above the MRL at 1.0 and 113 ug/L, respectively, while results for dissolved calcium, magnesium, sodium, and zinc were between the MDL and the MRL at 36.3, 5.6, 16.3, and 1.5 ug/L, respectively. Associated dissolved manganese detections were previously qualified in the method blank section of this memorandum and thus did not require further qualification. Remaining associated sample results were non-detect at the MDL or greater than five times the detected concentrations with the following exception, qualified by the reviewer with "U" as non-detect:

Report	Sample	Component	Equipment Rinsate Blank Result (ug/L)	Original Result (ug/L)	Qualified Result (ug/L)
10408839	09-EMF-MW-C-DEEP-20171024-GW	Dissolved zinc	1.5	1.4 J	5.0 U

In report X750519, the equipment rinsate blank 08-EMF-MW-F-20171025-EB analyzed by USEPA Method 300.0 had a result for sulfate above the MRL at 0.40 milligrams per liter. Associated sample results were non-detect at the MRL or greater than five times the detected concentrations in the equipment rinsate blank; thus, no results were qualified.

Field Filter Blanks

Field filter blanks are collected to evaluate contamination from field filters. Filter blanks are collected at a frequency of one for every twenty samples collected (MFA, 2017). One filter blank was submitted for analysis (08-EMF-MW-E-20171025-FB). The field filter sample was also associated with samples collected in Pace report 10408839. The field filter sample had detections of dissolved calcium, sodium, and zinc between the MDL and MRL. The field filter sample had detections of dissolved magnesium, manganese, and hardness above the MRL. All environmental samples were evaluated for contamination due to filter blank detections. Associated dissolved zinc detections were previously qualified in the equipment rinsate blank section of this memorandum and thus did not require further qualification. All associated sample results were either greater than five times the detected filter blank concentration or were previously qualified as non-detect with the following exceptions, qualified by the reviewer with "U" as non-detect:

Report	Sample	Component	Field Filter Blank Result (ug/L)	Original Result (ug/L)	Qualified Result (ug/L)
10408839	07-EMF-MW-B-20171024-GW	Dissolved manganese	6.9	7.3	7.3 U
10408839	07-EMF-MW-B-20171024-GW-B	Dissolved manganese	6.9	7.6	7.6 U

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Matrix spike/matrix spike duplicate (MS/MSD) results are used to evaluate laboratory precision and accuracy. All MS/MSD samples were extracted and analyzed at the required frequency. When MS/MSD percent recoveries and relative percent differences (RPDs) were outside acceptance limits because of high concentrations of analyte in the sample, and MS/MSD exceedances were flagged by the laboratory because of high concentrations of analyte, no qualifications were made by the reviewer.

In report X7J0519, the USEPA Method 300.0 chloride MS result exceeded the upper acceptance criteria of 110 percent at 112 percent. This exceedance is minor, and the MSD results were within acceptance criteria; thus, no results were qualified.

All remaining MS/MSD recoveries were within acceptance limits for percent recovery and RPDs.

LABORATORY DUPLICATE RESULTS

Duplicate results are used to evaluate laboratory precision. All duplicate samples were extracted and analyzed at the required frequency. Laboratory duplicate results within five times the MRL were not evaluated for precision. All laboratory duplicate RPDs were within acceptance limits.

LABORATORY CONTROL SAMPLE

A laboratory control sample (LCS) is spiked with target analytes to provide information on laboratory precision and accuracy. The LCS samples were extracted and analyzed at the required frequency. All LCS results were within acceptance limits for percent recovery.

FIELD DUPLICATE RESULTS

Field duplicate samples measure both field and laboratory precision.

In reports 10408839 and X7J0499, one field duplicate was submitted for analysis (07-EMF-MW-B-20171024-GW/07-EMF-MW-B-20171024-GW-B). MFA uses acceptance criteria of 100 percent RPD for results that are less than five times the MRL, or 50 percent RPD for results that are greater than five times the MRL. Non-detect data are not used in the evaluation of field duplicate results. All analytes were within the acceptance criteria.

REPORTING LIMITS

Pace and SVL used routine MDLs for non-detect results, except for alkalinity analysis and samples requiring dilutions because of high analyte concentrations and/or matrix interferences. Results between the MDL and the reporting limit were qualified by Pace with "J" as estimated.

DATA PACKAGE

The data packages were reviewed for transcription errors, omissions, and anomalies. Sample IDs listed on the SVL COCs and in the pdf report included an additional prefix 'EMFR' that was removed and is not included in the sample IDs. Samples submitted to SVL for alkalinity and sulfate/chloride were not field filtered. Associated results were reported as 'total'; thus, results in database and data tables are similarly reflective of this fact.

No other issues were found.

MFA. 2017. Programmatic quality assurance project plan. Upper and lower basins of the Coeur d'Alene River, Idaho. Maul, Foster & Alongi. Portland, Oregon. February 7.

Pace. 2017. Quality assurance manual. Revision 19.0. Pace Analytical Services, LLC, Minneapolis, Minnesota. June 7.

SVL. 2016. Quality manual. SVL Analytical, Inc., Kellogg, Idaho. February 4.

USEPA. 1986. Test methods for evaluating solid waste: physical/chemical methods. EPA-530/SW-846. Update V. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. September (revision 1, July 2014).

USEPA. 2017. USEPA contract laboratory program, national functional guidelines for inorganic Superfund methods data review. EPA 540-R-2017-001. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. January.

APPENDIX G

PERFORMANCE EVALUATION REPORT

EAST MISSION FLATS REPOSITORY

2017 PERFORMANCE EVALUATION

Prepared for

SUCCESSOR COEUR D'ALENE CUSTODIAL AND WORK TRUST

July 20, 2018
Project No. 0422.06.06

MAUL
FOSTER
ALONGI

Prepared by
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EAST MISSION FLATS REPOSITORY

2017 PERFORMANCE EVALUATION

The material and data in this report were prepared under the supervision and direction of the undersigned.

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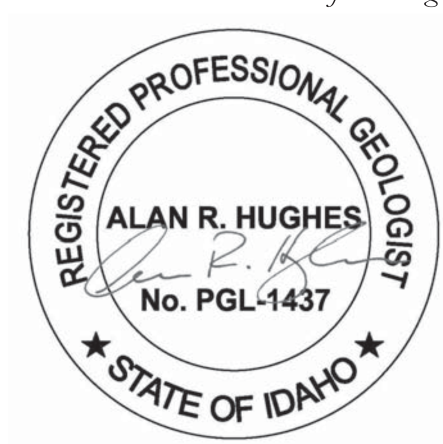

Alan R. Hughes, PG
MFA Program Manger

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TABLES AND ILLUSTRATIONS

ACRONYMS AND ABBREVIATIONS

COC	contaminants of concern
Coeur d'Alene Trust	Coeur d'Alene Custodial and Work Trust
EMFR	East Mission Flats Repository
FYR	five-year reviews
MFA	Maul Foster & Alongi, Inc.
PL	prediction limit
ug/L	micrograms per liter
USEPA	U.S. Environmental Protection Agency

1 INTRODUCTION

Maul Foster & Alongi, Inc. (MFA) has prepared this performance evaluation of the East Mission Flats Repository (EMFR) for 2017 on behalf of the Successor Coeur d'Alene Custodial and Work Trust (Coeur d'Alene Trust). EMFR is located in the Lower Basin of the Coeur d'Alene River Basin, in Operable Unit 3 of the Bunker Hill Mining an Metallurgical Complex Superfund Site (see attached Figure). The Coeur d'Alene Trust oversight of EMFR monitoring began in May 2016. Prior monitoring efforts were conducted by the Idaho Department of Environmental Quality and their contractors. This performance evaluation provides a review of 2017 EMFR groundwater data, including a comparison of the 2017 data with background prediction limits (PLs), cleanup levels, and historical maximum detected concentrations. The results of this evaluation are used as a line of evidence to assess whether there is evidence of releases associated with mine waste deposited at the repository to groundwater.

2 BACKGROUND

EMFR is located adjacent to Interstate 90 (I-90), 1,500 feet north of the Coeur d'Alene River on a 23-acre parcel that was historically impacted by fluvial deposition of mining-waste contaminated sediments. The Old Mission State Park property is located across I-90, southwest of EMFR. Low-lying areas on either side of EMFR flood in response to rising groundwater levels, potentially infiltrating into the waste repository. EMFR has been accepting contaminated soils since 2009. Groundwater monitoring at EMFR is being conducted to assess whether the repository design and maintenance are effective at preventing repository waste from adversely impacting groundwater quality in the upper alluvial aquifer.

The U.S. Environmental Protection Agency (USEPA) conducted an optimization review of repository monitoring activities in 2015 and 2016 and historical documents pertaining to the EMFR (USEPA, 2016). Recommendations were identified for EMFR. Those that are most pertinent to this performance evaluation are as follows:[1]

- Performance evaluation reports should list contaminants of concern (COCs) and contaminants of ecological concern, regulatory limits, and PLs, along with a discussion of how PLs are calculated.
- Statistical analyses, including trend analysis and summary statistics for surface and groundwater, should be included in five-year reviews (FYRs).
- Sampling plan alteration form (SPAF) #1 established PLs and re-testing strategies to confirm statistically significant increases for COCs and well pairs at EMFR in 2015, using

[1] Other recommendations from the USEPA Optimization Report are discussed in the 2017 EMFR Monitoring Report to which this performance evaluation is attached.

data from 2007 through 2013 as background (TerraGraphics, 2015). USEPA (2016) concluded that monitoring would continue following the statistical approach outlined in SPAF #1.[2]

- Sampling at EMFR should continue on a semiannual basis. Decision logic for transitioning to annual sampling may include collection of sufficient data at new wells to develop PLs, evaluation of priority COC concentration trends, and evaluation of physical stability of the repository.

This assessment provides a review of data collected at EMFR through 2017. Data collected in 2017 are compared to PLs to provide a line of evidence to evaluate whether current concentrations are indicative of an impact from repository release Additional data analyses conducted in this report include comparison of the 2017 data with cleanup levels and historical concentrations to further assess evidence for repository waste releases impacts to water. Data through 2016 were previously reviewed by MFA (2017).

Five EMFR groundwater monitoring wells (MW-A, MW-B, MW-C, MW-D, and MW-F) are evaluated. These wells are all screened in the upper alluvial aquifer. MW-A is to the east, MW-B and MW-F are to the south, MW-C is to the west, and MW-D is to the north of the repository. MW-D is located upgradient of the repository. Two additional wells are present at EMFR: MW-C-Deep and the Decontamination well. They are both screened deeper in the upper alluvial aquifer and are not included in this evaluation. Note that the Decontamination well is no longer monitored. MW-E is screened in a different hydrologic unit from the other wells, based on a comparison of water levels and groundwater chemistry and drill logs (USEPA, 2016).

See the attached figure for monitoring locations.

3 DECISION LOGIC

Decision logic was developed to clarify the evaluation steps and resulting retest and/or contingent action recommendations utilized within this performance evaluation consistent with the 2016 optimization review report recommendations (see Appendix). The decision logic also specifics evaluation steps to optimize monitoring frequency post-closure and in the interim. This decision logic has been approved by the USEPA.

[2] The prediction limit evaluation was updated in October 2016 to redefine statistically significant increases to be when all three results (the original sample and two retest results) from an event exceed PLs, instead of all six results from any calendar year as defined in 2015 (TerraGraphics, 2016).

4 PERFORMANCE EVALUATION

4.1 Overview

Groundwater data collected through 2017 are summarized in tables provided as part of the 2017 EMFR water monitoring report, to which this report is an appendix. The tables summarize analytical data for COCs, including the following, which are evaluated as part of this performance evaluation:

- Arsenic, cadmium, lead, and zinc (dissolved)

The attached Table summarizes the following assessments conducted as part of this performance evaluation:

- A comparison of 2017 data to cleanup levels
- A comparison of 2017 data to historical maximum detections
- A comparison of 2017 data to PLs

A review of the data for sufficiency to develop or update PLs and statistical analyses, including updated trend analyses, will be conducted as part of the FYR in 2020, as recommended by USEPA (2016). Trend analyses and other statistical evaluations were last provided as part of the MFA (2017) data review.[3]

4.2 Cleanup Level Exceedances

Water quality results from 2017 are compared to cleanup levels (as specified in the interim Record of Decision amendment [USEPA, 2012]) in order to evaluate potential groundwater quality impacts resulting from repository operations (see attached Table). Cadmium exceeded the cleanup level of 5 micrograms per liter (ug/L) at base flow (October monitoring event) at MW-C in 2016, and the criterion was exceeded at this location five times prior to 2016 (MFA, 2017). In 2017, COCs did not exceed the cleanup levels at any well.

4.3 Exceedances of Historical Maximum

The attached Table shows the historical maximum detected concentrations[4] for each COC and location, based on data collected from 2007 through 2013. 2017 detections that exceeded the historical maximum values were observed for cadmium at MW-D and MW-F and for zinc at all wells, except MW-F.

The 2017 MW-D maximum cadmium result (1.2 ug/L at peak flow [April monitoring event]) is elevated relative to previous results, which were primarily non-detect or estimated detections below

[3] The Mann-Kendall tests (conducted in 2017 on data collected through 2016) detected statistically significant increasing concentrations of zinc at multiple locations (MW-A, MW-E, and MW-F) and cadmium at MW-F.

[4] Note that in some cases the maximum detections are estimated concentrations that are less than the reporting limit.

the reporting limit of 0.2 ug/L through 2016. MW-D is located upgradient of the repository and, therefore, the results are unlikely to reflect any impacts from waste placed at the repository. At MW-F, the 2017 maximum cadmium result of 1.6 ug/L is consistent with concentrations observed since approximately 2014; prior to that time, concentrations were typically less than 1 ug/L.

The 2017 maximum zinc results for MW-A, MW-B, and MW-C are consistent with concentrations observed since approximately 2014; concentrations were typically lower at those wells prior to 2014. At MW-D (located upgradient), the observed 2017 maximum zinc concentration of 325 ug/L during peak flow is approximately three times higher than peak flow concentrations observed through 2013 (i.e., historically) and more recently. For example, the maximum concentration observed between 2014 and 2016 is 127 ug/L.

4.4 Prediction Limit Exceedances

As shown in the attached Table, 2017 maximum results data were compared to the PLs previously identified (TerraGraphics, 2016). Exceedances of these PLs by 2017 maximum detections were observed at each well as follows per COC:

- Arsenic did not exceed PLs at any location
- Lead exceeded at MW-C
- Cadmium exceeded at MW-D, MW-C, and MW-F
- Zinc exceeded at MW-A, MW-B, MW-C, and MW-D

The 2017 maximum lead result (1.3 ug/L) at MW-C is the first time the PL (based on a reporting limit of 1 ug/L) has been exceeded; however, the 2017 maximum concentration is only slightly above the reporting limit and is less than the historical maximum result of 1.5 ug/L.

The 2017 maximum cadmium result (1.2 ug/L) at MW-D is the first cadmium PL exceedance observed at this well. The PL is based on a reporting limit of 0.2 ug/L for this upgradient well. At MW-C and MW-F, cadmium has regularly exceeded the PL since approximately 2014.

The 2017 maximum zinc PL exceedance at MW-A is the first observed at this well. The result (1,770 ug/L) is slightly elevated relative to recent sample results (the maximum result between 2014 and 2016 was 1,680 ug/L). Maximum detection exceedances of the zinc PL at MW-B and MW-C have been consistently observed since 2015. At MW-D, the 2017 zinc maximum concentration exceeded the PL for the first time.

Overall, PL exceedances were observed in 2017 for new location-constituent pairs as well as for location-constituent pairs that have shown multiple PL exceedances since 2014 or 2015. Note that the PL exceedances at MW-D appear to signify an influence from an upgradient source.

4.5 Contingent Actions

As recommended in the 2016 optimization review report (USEPA, 2016), two additional wells are slated for installation in 2018:

Two additional groundwater monitoring locations are recommended to characterize spatial variability and flow regimes in the area of the EMFR. The wells should be screened in the upper aquifer. One additional well is recommended north of MW-C near the transition from the sand and gravel to the sand and clay zones. The second location is recommended south of I-90, west of the repository and northwest of well MW-F to assess the flow path toward the river.

5 SUMMARY OF FINDINGS

The findings of this performance evaluation are as follows:

- Groundwater cleanup levels were not exceeded at any well in 2017.
- Historical maximum detections and PLs are exceeded for multiple location-constituent pairs.
- PL exceedances were observed for the first time for four location-constituent pairs. These results are consistent with prior assessments (MFA, 2017) and suggest increasing metals concentration trends in groundwater that warrant further consideration such as contingent action (well install) and statistical analyses (in the FYR).
- Historical maximum and PL exceedances at MW-D appear to signify influence from an upgradient source.

6 CONCLUSIONS AND RECOMMENDATIONS

Based on current trends, PLs will likely continue to be exceeded. Decision logic has been developed and incorporates the significance of PL exceedances in consideration of potential upgradient sources of metals loading.

The following conclusions and recommendations are made based on this 2017 performance evaluation:

- Continue data evaluation (e.g., comparison to cleanup levels, historical maximum detections, and PLs) for all location-constituent pairs on a semiannual basis.
- As recommended in the optimization report, two additional wells are slated for installation in 2018. This contingent action will allow for further assessment of spatial variability and source impacts to groundwater.
- Conduct a reevaluation of the dataset (i.e., applicability of pooling new data to background to update existing PLs, PL development for other location-constituent pairs) on the same timeline as the next FYR in 2020.

Statistical analyses, including updated trend analyses, will be conducted as part of the FYR. Inclusion of data from the new monitoring wells in the FYR assessment will assist in clarifying if upgradient sources appear to account for the observed PL exceedances or if a release from the repository is also indicated.

LIMITATIONS

The services undertaken in completing this work plan were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. This work plan applies to conditions existing when services were performed and is intended only for the purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this document.

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TABLE

Table
Performance Evaluation Summary
East Mission Flats Repository
2017 Water Quality Monitoring
Coeur d'Alene Trust

Constituent (Dissolved)	2017 Maximum Result (ug/L)	Cleanup Levels (ug/L)	Historical Maximum Detection (2007–2013) (ug/L)	Historical Detection Frequency (2007–2013)	PLs (ug/L)	PL Type	Decision Logic Finding	Notes
MW-A								
Arsenic	0.43 J	10	7.4 J	17%	1.4	1:3 Retest	Continue monitoring program.	
Cadmium	0.65	5	1.72	83%	0.777	1:3 Retest	Continue monitoring program.	
Lead	0.077 J	15	2.6	4%	1	DQR	Continue monitoring program.	
Zinc	1770	5000	1750	100%	1710	1:3 Retest	Potentially indicative of influence from upgradient source. Continue monitoring program.	See MW-D 2017 max compared to the historical max. This is also potentially indicative of influence from highway runoff.
MW-B								
Arsenic	0.11 J	10	7.7 J	17%	1.4	1:3 Retest	Continue monitoring program.	
Cadmium	0.051 J	5	0.2 U	0%	0.2	DQR	Continue monitoring program.	
Lead	0.032 J	15	0.28 J	0%	1	DQR	Continue monitoring program.	
Zinc	40.6	5000	28.5 J	100%	26.4	1:3 Retest	Potentially indicative of influence from upgradient source. Continue monitoring program.	See MW-D 2017 max compared to the historical max. This is also potentially indicative of influence from highway runoff.
MW-C								
Arsenic	0.71	10	7.4 J	26%	2.7	1:3 Retest	Continue monitoring program.	
Cadmium	4.2	5	7.3	100%	3.64	1:3 Retest	Potentially indicative of influence from upgradient source. Continue monitoring program.	See MW-D 2017 max compared to the historical max. This is also potentially indicative of influence from highway runoff.
Lead	1.3	15	1.5	5%	1	DQR	Potentially indicative of influence from highway runoff. Continue monitoring program.	
Zinc	2690	5000	2240 J	100%	2030	1:3 Retest	Potentially indicative of influence from upgradient source. Continue monitoring program.	See MW-D 2017 max compared to the historical max. This is also potentially indicative of influence from highway runoff.
MW-D								
Arsenic	0.48 J	10	7.9 J	33%	2.91	1:3 Retest	Continue monitoring program.	
Cadmium	1.2	5	0.16 J	0%	0.2	DQR	Potentially indicative of influence from upgradient source. Continue monitoring program.	See MW-D 2017 max compared to the historical max. This is also potentially indicative of influence from highway runoff.
Lead	0.1 U	15	0.47	0%	1	DQR	Continue monitoring program	
Zinc	325	5000	184	100%	132	1:3 Retest	Potentially indicative of influence from upgradient source. Continue monitoring program.	See MW-D 2017 max compared to the historical max. This is also potentially indicative of influence from highway runoff.
MW-F								
Arsenic	0.5 U	10	5.6 J	15%	1.4	1:3 Retest	Continue monitoring program.	
Cadmium	1.6	5	1.32	90%	1	1:3 Retest	Potentially indicative of influence from upgradient source. Continue monitoring program.	See MW-D 2017 max compared to the historical max. This is also potentially indicative of influence from highway runoff.
Lead	0.28	15	0.79 J	0%	1	DQR	Continue monitoring program.	
Zinc	2980	5000	4470	100%	3820	1:3 Retest	Continue monitoring program.	

NOTES:

Shaded cell indicates 2017 maximum detection exceedance of the regulatory threshold, historical maximum, and/or PL.

Cleanup levels are the Federal Maximum Contaminant Level as specified in the Interim Record of Decision Amendment (USEPA, 2012).

-- = not available or not assessed.

1:3 Retest = 1 of 3 retesting strategy.

Coeur d'Alene Trust = Successor Coeur d'Alene Custodial and Work Trust.

DQR = double quantification rule.

J = concentration estimated by laboratory.

PL = prediction limit.

U = not detected above method reporting limit.

ug/L = micrograms per liter.

FIGURE

Figure
Monitoring Network and Site Features

Coeur d'Alene Trust
East Mission Flats Repository
Lower Coeur d'Alene Basin, Idaho

Legend

- Interstate Highway
- Road
- Floodwater Level Recorder
- Piezometer
- Decontamination Well
- Monitoring Well
- Culvert Location
- East Mission Flats Repository Boundary

0 180 360
Feet

Source: Aerial photograph obtained from ESRI, Inc. ArcGIS Online; watershed and rivers datasets obtained from Idaho Dept. of Water Resources; roads and cities datasets obtained from ESRI Online Services.

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Print Date: 3/17/2017
Approved By: H. Good
Produced By: cwise
Project: 0442.06.03-02

APPENDIX

DECISION LOGIC TABLES

COC-Location Pair (No PL Available)							
Assessment	**Frequency**	**Result 1**	**Action 1**	**Result 2**	**Action 2**	**Result 3**	**Action 3**
Cleanup Levels[a]	After each monitoring event	Below	Report results (Annual WQMR)	Continue monitoring program	--	--	--
		Above	- Evaluate sample field conditions - Evaluate results for other wells/locations - Evaluate evidence for non-repository waste sources	Sample result is considered representative	Evaluate general trends (see General Trends)	--	--
				Sample result considered anomalous or not indicative of a release from the repository	Continue monitoring program	--	--
Historical Maximum Detections[b]		Below	Report results (Annual WQMR)	Continue monitoring program	--	--	--
		Above	- Evaluate sample field conditions - Evaluate results for other wells/locations - Evaluate evidence for non-repository waste sources	Sample result is considered representative	Evaluate general trends (see General Trends)	--	--
				Sample result considered anomalous or not indicative of a release from the repository	Continue monitoring program	--	--
General Trends (Qualitative)		Stable/Decrease	Report results (Annual WQMR)	Continue monitoring program	--	--	--
		Increase	- Evaluate sample field conditions - Evaluate results for other wells/locations - Evaluate evidence for non-repository waste sources	Sample result considered anomalous or not indicative of a release from the repository	Continue monitoring program	--	--
				Sample result is considered representative	Conduct statistical trend analysis (see Statistical Trend Assessment)	--	--
Statistical Trend Assessment[c]	FYR and as needed	Insufficient data for trend assessment	Discuss significance and strategy with USEPA	Continue monitoring program	--	--	--
		Stable/Decrease	Report results (FYR)	Continue monitoring program	--	--	--
		Increase	- Evaluate sample field conditions - Evaluate results for other wells/locations - Evaluate evidence for non-repository waste sources	Sample result considered anomalous	Continue monitoring program	--	--
				Sample result is considered representative	Initiate assessment monitoring, suspend the resampling protocol, conduct applicable contingent actions (i.e. additional assessment).	Additional assessment (e.g., geochemical modeling, metals speciation) confirms a likely release from the repository.	Implement corrective actions such as engineering controls.
Assess for PL development	FYR	Detection frequency < 50%	Assess need to retain COC or reassess at next FYR	Retain COC and continue monitoring program	--	--	--
				Remove COC from monitoring program	--	--	--
		Detection frequency ≥ 50%	Conduct analyses comparing post-waste and background (pre-waste) datasets[d]	Stable/Decrease	Develop PL (pool post-waste data with background dataset) Follow decision logic for COC-location pairs with PLs	--	--
				Increase	Reassess at next FYR[e]	--	--

Table 1
Decision Logic—No Prediction Limit Scenario
East Mission Flats Repository
Coeur d'Alene Trust

COC-Location Pair (No PL Available)							
Assessment	**Frequency**	**Result 1**	**Action 1**	**Result 2**	**Action 2**	**Result 3**	**Action 3**
Evaluate data to reduce sampling frequency	FYR[e] and Annually Post-Closure	Statistical trends are not increasing, and the historical maximum has not been exceeded within the prior four monitoring events. The repository is physically stable.	Reduce sampling to once a year	Statistical trends are not increasing and the historical maximum has not been exceeded within the prior eight monitoring events. The repository is physically stable.	Consider reducing the sampling frequency.	--	--
				Continue monitoring program	--	--	--
		Statistical trends are increasing, exceedances of the historical maximum have occurred within the prior four monitoring events, or significant physical instabilities have been identified.	Continue monitoring program	--	--	--	--

NOTES:
COC = contaminant of concern.
FYR = five-year review.
PL = prediction limit.
WQMR = water quality monitoring report.
[a]Cleanup levels are the Federal Maximum Contaminant Level as specified in the Interim Record of Decision Amendment (USEPA, 2012).
[b]Historical maximum detections are from data from 2007 through 2013 (Sample Plan Alteration Form #1).
[c]Includes temporal trend analyses of post-waste dataset.
[d]Includes temporal trend analyses of complete dataset and general assessment techniques comparing pre- vs post-waste conditions (e.g., boxplots).
[e]As described in the Optimization Review Report (USEPA, 2016).

Table 2
Decision Logic—Prediction Limit Scenario
East Mission Flats Repository
Coeur d'Alene Trust

COC-Location Pair (PL Available)							
Assessment	**Frequency**	**Result 1**	**Action 1**	**Result 2**	**Action 2**	**Result 3**	**Action 3**
PL Comparison[a]	After each monitoring event	Below	Report results (Annual WQMR)	Continue monitoring program	--	--	--
		Above	- Evaluate sample field conditions - Evaluate results for other wells/locations - Evaluate evidence for non-repository waste sources	Sample result considered anomalous	Continue monitoring program	--	--
				Sample result is considered representative	Initiate retesting strategy[b] and further assess data (see Statistical Trends under Assessment)	--	--
Cleanup Levels, Historical Maximum Detections, General Trends (Qualitative)[c]		Below	Report results (Annual WQMR)	Continue monitoring program	--	--	--
		Above	Report results (Annual WQMR)	Continue monitoring program	--	--	--
Statistical Trend Assessment[d]	FYR and as needed	Stable/Decrease	Report results (FYR or as needed)	Continue monitoring program	--	--	--
		Increase	- Evaluate sample field conditions - Evaluate results for other wells/locations - Evaluate evidence for non-repository waste sources	Sample result considered anomalous	Continue monitoring program	--	--
				Sample result is considered representative	Initiate assessment monitoring, suspend the resampling protocol, conduct applicable contingent actions (i.e., additional assessment).	Additional assessment (e.g., geochemical modeling, metals speciation) confirms a likely release from the repository.	Implement corrective actions such as engineering controls.
PL Update Assessment (Statistical Trends[e])	FYR	Detection frequency < 50%	Retain PL; reassess at next FYR	--	--	--	--
		Detection frequency ≥ 50%	Conduct analyses comparing recent data and background dataset[a]	Stable/Decrease	Update PL (pool recent data with background dataset)	--	--
				Increase	Retain PL; reassess at next FYR[f]	--	--
Evaluate data to reduce sampling frequency	FYR and Annually Post-Closure	Statistical trends are not increasing and the PL has not been exceeded within the prior four monitoring events. The repository is physically stable.	Reduce sampling to once a year	Statistical trends are not increasing and the PL has not been exceeded within the prior eight monitoring events. The repository is physically stable.	Consider reducing the sampling frequency.	--	--
				Continue monitoring program	--	--	--
		Statistical trends are increasing, exceedances of the PL have occurred within the prior four monitoring events, or significant physical instabilities have been identified.	Continue monitoring program	--	--	--	--

NOTES:
COC = contaminant of concern.
FYR = five-year review.
PL = prediction limit.
WQMR = water quality monitoring report.
[a]Prediction Limits from the 2017 EMFR Performance Evaluation (MFA, 2018).
[b]Refer to EMFR Sample Plan Alteration Form #1.
[c]Cleanup levels are the Federal Maximum Contaminant Level as specified in the Interim Record of Decision Amendment (USEPA, 2012). Historical maximum detections are from data from 2007 through 2013 (Sample Plan Alteration Form #1). The Mann-Kendall trend test approach was used to create the general trends.
[d]Includes temporal trend analyses of post-waste dataset.
[e]Includes temporal trend analyses of complete dataset and general assessment techniques comparing pre- vs post-waste conditions (e.g., boxplots).
[f]As described in the Optimization Review Report (USEPA, 2016).

APPENDIX H

2018 SITE-SPECIFIC WATER SAMPLING AND ANALYSIS PLAN

SITE-SPECIFIC WATER SAMPLING AND ANALYSIS PLAN
Project Area: East Mission Flats Repository
COEUR D'ALENE TRUST
LOWER COEUR D'ALENE BASIN, IDAHO

SSAP Number: 2018-02

Project Schedule: 2nd and 4th Quarters

Site Background: The Coeur d'Alene Trust assumed water monitoring at the East Mission Flats Repository (EMFR) from the Idaho Department of Environmental Quality beginning in the spring of 2016. The repository was constructed on contaminated soil and has been receiving waste materials from a variety of sources (including the Basin Property Remediation Program, Institutional Controls Program, and development projects).

Problem Statement: Historically deposited tailings beneath the EMFR and the waste materials disposed of in the repository contain inorganic metals, which are the contaminants of concern in groundwater for protection of human health and the environment.

SSAP Objectives: Monitor groundwater elevations, floodwater elevations, and contaminants during waste placement to evaluate the performance of the EMFR.

COC: COCs below are consistent with the 2017 SSAPs, other than total hardness which will be field-filtered.

Plan Attachments: Figure 2018-02

Field Task Manager: Christina Johnson **E-mail:** cjohnson@maulfoster.com **Phone:** 360-977-8561

Field Investigation Contractor: Alta Science and Engineering, Inc**.**

Field Team Leader: Robin Nimmer **E-mail:** robin.nimmer@alta-se.com **Phone:** 208-882-7858

Site	Primary Site Type	Sample Type	Field Measurements	Analyses[a,b]		Schedule	Predetermined Location[c]	Notes
Surface Water								
LL-1	Surface Water	Performance Monitoring	None	None		Event Timing: • Event-based	Yes ☒ No ☐ Specify: X Coordinate: 2476131.8 Y Coordinate: 2145635.9	• Deploy pressure transducer prior to high flow and remove after. • Download pressure transducer data.
LL-2	Surface Water	Performance Monitoring	None	None		Event Timing: • Event-based	Yes ☒ No ☐ Specify: X Coordinate: 2477316.0 Y Coordinate: 2144684.9	• Deploy pressure transducer prior to high flow and remove after. • Download pressure transducer data.
Monitoring Wells								
07-EMF-MW-A	Groundwater Well	Performance Monitoring	• pH, specific conductance, temperature, turbidity, DO, ORP • Ferrous iron • Water level	• Dissolved metals As, Cd, Pb, and Zn • Dissolved and total cations Ca, Fe, Mn, Mg, K, and Na	• Anions chloride and sulfate • Alkalinity (includes bicarbonate, carbonate, and hydroxide) • Hardness as $CaCO_3$	Event Timing: • April and October	Yes ☒ No ☐ Specify: X Coordinate: 2477532.1 Y Coordinate: 2144700.9	• Download pressure transducer data.
07-EMF-MW-B	Groundwater Well	Performance Monitoring	• pH, specific conductance, temperature, turbidity, DO, ORP • Ferrous iron • Water level	• Dissolved metals As, Cd, Pb, and Zn • Dissolved and total cations Ca, Fe, Mn, Mg, K, and Na	• Anions chloride and sulfate • Alkalinity (includes bicarbonate, carbonate, and hydroxide) • Hardness as $CaCO_3$	Event Timing: • April and October	Yes ☒ No ☐ Specify: X Coordinate: 2476790.6 Y Coordinate: 2144991.8	• Download pressure transducer data.
07-EMF-MW-C	Groundwater Well	Performance Monitoring	• pH, specific conductance, temperature, turbidity, DO, ORP • Ferrous iron • Water level	• Dissolved metals As, Cd, Pb, and Zn • Dissolved and total cations Ca, Fe, Mn, Mg, K, and Na	• Anions chloride and sulfate • Alkalinity (includes bicarbonate, carbonate, and hydroxide) • Hardness as $CaCO_3$	Event Timing: • April and October	Yes ☒ No ☐ Specify: X Coordinate: 2476109.1 Y Coordinate: 2145582.5	• Download pressure transducer data.

Site	Primary Site Type	Sample Type	Field Measurements	Analyses[a,b]		Schedule	Predetermined Location[c]	Notes
09-EMF-MW-C Deep	Groundwater Well	Performance Monitoring	• pH, specific conductance, temperature, turbidity, DO, ORP • Ferrous iron • Water level	• Dissolved metals As, Cd, Pb, and Zn • Dissolved and total cations Ca, Fe, Mn, Mg, K, and Na	• Anions chloride and sulfate • Alkalinity (includes bicarbonate, carbonate, and hydroxide) • Hardness as $CaCO_3$	Event Timing: • April and October	Yes ☒ No ☐ Specify: X Coordinate: 2476145.4 Y Coordinate: 2145552.7	• Download pressure transducer data.
07-EMF-MW-D	Groundwater Well	Performance Monitoring	• pH, specific conductance, temperature, turbidity, DO, ORP • Ferrous iron • Water level	• Dissolved metals As, Cd, Pb, and Zn • Dissolved and total cations Ca, Fe, Mn, Mg, K, and Na	• Anions chloride and sulfate • Alkalinity (includes bicarbonate, carbonate, and hydroxide) • Hardness as $CaCO_3$	Event Timing: • April and October	Yes ☒ No ☐ Specify: X Coordinate: 2476810.3 Y Coordinate: 2146019.7	• Download pressure transducer data.
08-EMF-MW-E	Groundwater Well	Performance Monitoring	• pH, specific conductance, temperature, turbidity, DO, ORP • Ferrous iron • Water level	• Dissolved metals As, Cd, Pb, and Zn • Dissolved and total cations Ca, Fe, Mn, Mg, K, and Na	• Anions chloride and sulfate • Alkalinity (includes bicarbonate, carbonate, and hydroxide) • Hardness as $CaCO_3$	Event Timing: • April and October	Yes ☒ No ☐ Specify: X Coordinate: 2474351.5 Y Coordinate: 2146279.6	• Download pressure transducer data.
08-EMF-MW-F	Groundwater Well	Performance Monitoring	• pH, specific conductance, temperature, turbidity, DO, ORP • Ferrous iron • Water level	• Dissolved metals As, Cd, Pb, and Zn • Dissolved and total cations Ca, Fe, Mn, Mg, K, and Na	• Anions chloride and sulfate • Alkalinity (includes bicarbonate, carbonate, and hydroxide) • Hardness as $CaCO_3$	Event Timing: • April and October	Yes ☒ No ☐ Specify: X Coordinate: 2476172.7 Y Coordinate: 2144530.9	• Download pressure transducer data.
Piezometers (Repository Water)								
10-EMF-PZ-A	Piezometer	Performance Monitoring	• pH; ORP; conductivity • Water level	None		Event Timing: • April and October	Yes ☒ No ☐ Specify: X Coordinate: 2476381.8 Y Coordinate: 2145615.8	• Field parameter meter deployed prior to anticipated high water. • Download pressure transducer data.
10-EMF-PZ-B	Piezometer	Performance Monitoring	• Water level	None		Event Timing: April and October	Yes ☒ No ☐ Specify: X Coordinate: 2476382.0 Y Coordinate: 2145621.0	• Download pressure transducer data.

Type	Frequency	Analysis	Number Anticipated per Event
Equipment rinsate blanks	One per every 20 samples (or fewer) each day of sample collection	• Dissolved metals As, Cd, Pb, and Zn • Dissolved and total cations Ca, Fe, Mg, Mn, K, and Na • Anions chloride and sulfate, alkalinity (includes bicarbonate, carbonate, and hydroxide) • Hardness	2
Filter blank	One per every 20 samples (or fewer)	• Dissolved metals As, Cd, Pb, and Zn; hardness • Dissolved cations Ca, Fe, Mg, Mn, K, and Na	1
Field duplicate samples	One per every ten samples (or fewer) per sample matrix	• Dissolved metals As, Cd, Pb, and Zn • Dissolved and total cations Ca, Fe, Mg, Mn, K, and Na • Anions chloride and sulfate, alkalinity (includes bicarbonate, carbonate, and hydroxide) • Hardness	1
Laboratory matrix spike/matrix spike duplicate	Each analytical batch of samples for every 20 (or fewer) samples received	• Dissolved metals As, Cd, Pb, and Zn • Dissolved and total cations Ca, Fe, Mg, Mn, K, and Na • Anions chloride and sulfate, alkalinity (includes bicarbonate, carbonate, and hydroxide) • Hardness	1

Samples for metals, cations and hardness will be shipped to:	Samples for alkalinity and anions will be delivered to:
Pace Minneapolis Lab	SVL Analytical
1700 Elm Street SE	One Government Gulch
Minneapolis, MN 55414	Kellogg, ID 83837-0929

Notes:
This SSAP was designed to be used in conjunction with the Programmatic Quality Assurance Project Plan (2017; tables listed below) prepared by MFA on behalf of the Coeur d'Alene Trust.
Water monitoring data needs guidelines can be found in Programmatic QAPP Table 1-2.
Quality control samples to be collected per Programmatic QAPP Table C-1.
Container, preservation, and holding time requirements per Programmatic QAPP Table C-2.
Analytical methods, performance criteria, and reporting limits per Programmatic QAPP Table C-3.
Field measurement performance criteria per Programmatic QAPP Table C-4.
[a]Analyses to be field filtered: hardness, dissolved metals and dissolved cations.
[b]Alkalinity (hydroxide, carbonate and bicarbonate) to be reported to 1.0 milligrams per liter (mg/L). Chloride and sulfate with be reported to 0.20 and 0.30 mg/L, respectively.
[c]Coordinates presented in North American Datum 1983 State Plane Idaho West FIPS 1103 in feet.
As = arsenic.
EMFR = East Mission Flats Repository.
Ca = calcium.
Cd = cadmium.
Coeur d'Alene Trust = Successor Coeur d'Alene Custodial and Work Trust.
DO = dissolved oxygen.
Fe = iron.
K = potassium.
Mg = magnesium.
Mn = manganese.
Na = sodium.
ORP = oxidation reduction potential.
Pb = lead.
Zn = zinc.

Signature ______________________

Name (print) Christina Johnson

Maul Foster & Alongi, Inc., Task Manager

Date: March 30, 2018

Signature ______________________

Name (print) Brian Fauth

Maul Foster & Alongi, Inc., Quality Assurance Manager

Date: March 30, 2018

Figure
SSAP 2018-02
Monitoring Locations

Coeur d'Alene Trust
East Mission Flats Repository
Lower Coeur d'Alene Basin, Idaho

Legend

- Interstate Highway
- Road
- Surface Water Location
- Piezometer
- Monitoring Well
- Culvert Location
- East Mission Flats Repository Boundary

0 180 360
Feet

Source: Aerial photograph obtained from ESRI, Inc. ArcGIS Online; watershed and rivers datasets obtained from Idaho Dept. of Water Resources; roads and cities datasets obtained from ESRI Online Services.

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Print Date: 3/17/2017
Approved By: K. Roslund
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Project: 0442.06.03-02