REPORT

Remedy Selection Report

R.D. Morrow Sr. Generating Station - CCR Landfill Unit

Submitted to:

Cooperative Energy

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Submitted by:

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GL21453914

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Certification

This Remedy Selection Report (RSR), for Cooperative Energy, at RD Morrow Generating Station – CCR Landfill Unit, has been prepared in compliance with applicable requirements of the CCR Final Rule. References to the appropriate 40 CFR § 257.97 (Selection of Remedy) rules are incorporated throughout this document.

PJ Nolan, PhD
Technical Principal, Geochemist

Dawn L. Prell, CPG
Vice President, Technical Principal - Hydrogeologist

I verify the information in this RSR is accurate and meets the applicable requirements of the CCR Final Rule. In consideration of the above, I certify to the best of my knowledge, information, and belief, that the RSR for the regulated CCR management unit referred to as the CCR Unit meets the applicable requirements of 40 CFR § 257.97.

WSP USA Inc.

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1.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (US EPA) Coal Combustion Residuals (CCR) Rule 40 Code of Federal Regulations (CFR) 257 Subpart D, WSP USA Inc. (WSP) has prepared this Remedy Selection Report (RSR) for Cooperative Energy's R.D. Morrow Sr. Generating Station's (RD Morrow or Site) CCR Landfill Unit.

As required by § 257.97 (Selection of Remedy) and based on the results of the Assessment of Corrective Measures (ACM) conducted under § 257.96, this RSR:

- Makes a final evaluation of the response action alternatives developed in the ACM report (Golder, 2019)
- Addresses statistically significant levels (SSLs) of lithium and molybdenum at monitoring well MW-05 associated with the CCR Landfill Unit, and
- Recommends a final remedy and describes how it meets the standards outlined in § 257.97(b) of the CCR Rule.

The RSR is based on the results of the 2019 ACM report which was the first step in evaluating potential groundwater treatment technologies. Since the ACM, we have completed an evaluation of corrective measure alternatives as presented in the ACM. Technologies were eliminated if they were unlikely to perform satisfactorily or reliably, they were deemed difficult or impossible to implement, or they could not achieve corrective action objectives within a reasonable timeframe. The technologies retained for development as potential corrective measures included:

- Monitored Natural Attenuation (MNA) and Enhanced MNA
- Hydraulic Containment and Treatment (HCT)
- In Situ Chemical Treatment (ISCT)
- Subsurface Barrier Wall (SBW)
- Permeable Reaction Barrier (PRB)
- In Situ Soil Stabilization (ISSS)

Based on the results of the ACM, further evaluations were performed, including a Monitored Natural Attenuation (MNA) Evaluation, numerical groundwater modeling of potential remedies, and further assessment of nature and extent. In addition to the remedies retained in the ACM, "Closure by Removal (CBR) with MNA" was added to the list of technologies that were examined as a part of the RSR.

2.0 SITE BACKGROUND

2.1 Site Location and Description

RD Morrow is located in the community of Okahola, a rural area of Lamar County, approximately 4.5 miles north of the City of Purvis and 8 miles southwest of Hattiesburg, as shown on Figure 1, Site Location Map. Old Okahola School Road bisects the property into a northern and southern parcel.

The generating plant and former CCR Surface Impoundment Unit (closed by removal) are located on the north parcel. In June of 2018, Cooperative Energy announced plans to convert the RD Morrow plant from a coal to a natural gas-fired combined cycle plant. In August 2020, demolition work of the coal-fired power plant was completed, and full conversion to a combined cycle gas turbine system is expected to be completed in 2023. The CCR Landfill Unit is in Assessment Monitoring and is the focus of this RSR. Figure 2, Well Location and Potentiometric Surface Elevation Contour Map – September 14, 2021, presents the CCR monitoring well network for the CCR Landfill Unit.

The CCR Landfill Unit is a multi-unit CCR groundwater network that is made up of 8 different landfill cells that were built contiguous to one another since the Morrow Plant was brought into service in November of 1978. Overall, the CCR Landfill Unit as a whole (all 8 cells) is approximately 46 acres in size. The original landfill cell, which was issued solid waste landfill permit SW0370020308 by the Mississippi Bureau of Pollution Control in March 1983, is located on the northeastern corner of the CCR Landfill Unit as identified in Figure 3, CCR Landfill Unit Details. The secondary landfill cell, located to the west of the original landfill cell was built in the 1980s. These two cells are reported to be built on top of low permeability clays (Stratum II clays as discussed in section 2.3.2), producing a natural liner system. Field and laboratory testing completed in 2003 (EMS, 2003) determined that the Stratum II clays at the site had an average hydraulic conductivity of 1.2 $x10^{-6}$ centimeter per second (cm/sec) (EMS, 2003), ranging from $3.4x10^{-6}$ to $2.4x10^{-8}$.

In the 2000s, 6 new cells were constructed along the southern side of the CCR Landfill Unit as identified in Figure 3. These cells were constructed with a geomembrane base liner over the lower conductivity clay materials (composite liner system). Additionally, a leachate collection system was installed above the composite liner system. The leachate collection system extracts the leachate from Cells 1-6 and is managed through a National Pollution Discharge Elimination System (NPDES) discharge permit.

2.2 CCR Rule Compliance Summary

2.2.1 Groundwater Monitoring Well Network Design and Certification

In April 2015, the USEPA enacted 40 CFR Part 257 “Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule” (the CCR Rule [USEPA, 2015a]). Cooperative Energy has determined that the CCR Landfill Unit at the RD Morrow Plant is subject to the requirements of the CCR Rule, and the following sections provide a summary of the compliance work complete to date.

To meet the performance standards specified in § 257.91 that will be protective of human health and the environment, a groundwater monitoring network was designed so that adequate monitoring coverage is provided to represent the quality of groundwater upgradient and downgradient of the CCR Landfill Unit.

As displayed in Figure 2 and summarized below, five monitoring wells were installed for detection monitoring purposes and sampled in accordance with the CCR Rule for detection monitoring. More information on the installation of these wells is provided in the *First Annual CCR Groundwater Monitoring and Corrective Action Report* (EMS, 2018).

CCR Landfill Unit Groundwater Sampling Locations	
Detection Monitoring Wells	MW-02 (upgradient), MW-03, MW-04, MW-05, MW-06
Assessment Monitoring Wells	MW-10
Additional Nature and Extent Monitoring Wells and Supplemental Monitor Points	MW-11 and MW-12 and supplemental monitor points, P-A and P-B

2.2.2 Detection and Assessment Monitoring Programs

Cooperative Energy collected background groundwater samples and performed detection monitoring for the CCR Units pursuant to the requirements of § 257.94. On April 15, 2018, Cooperative Energy identified several Statistically Significant Increases (SSIs) of Appendix III parameters with no alternative source(s) identified. On May 16, 2018, Cooperative Energy posted to its website a Notice of Establishment of Assessment Monitoring Program and initiated an assessment monitoring program for the CCR Landfill Unit (Cooperative Energy, 2018). Cooperative Energy performs assessment monitoring pursuant to the requirements of § 257.95 and has developed the site-specific Groundwater Protection Standards (GWPS) by selecting the larger value of the Maximum Contaminant Level (MCL), or the Site-specific background concentration for each analyte based on a tolerance/prediction limit statistical procedure. On July 30, 2018, the U.S. EPA amended the CCR Final Rule (i.e., Phase 1 Part 1 amendment) and created health-based standards or Regional Screening Levels (RSLs) for cobalt, lead, lithium, and molybdenum, four constituents that did not have MCLs. Pursuant to § 257.95(h)(2), the RSLs can be used in place of background levels to calculate the GWPS.

A summary of background concentrations and GWPS used to evaluate the assessment monitoring results at the CCR Landfill Unit are tabulated below.

Summary of Background Concentrations and GWPS				
Analyte[1]	**Units**	**MCL/RSL[2,4]**	**Site Specific Background September 2021[3]**	**Groundwater Protection Standard (GWPS)[4]**
Barium	mg/L	2	0.026	2
Beryllium	mg/L	0.004	0.00984	0.00984
Cobalt	mg/L	0.006	0.1671	0.1671
Fluoride	mg/L	4	1.166	4
Lead	mg/L	0.015	0.0101	0.015
Lithium	mg/L	0.04	1.42[5]	1.42
Molybdenum	mg/L	0.1	0.0025	0.1
Radium (226 + 228)	pCi/L	5	2.836	5
Thallium	mg/L	0.002	0.001	0.002

Notes:

Mg/L = milligrams per liter; pCi/L = picocuries per liter; NA = Not Available

[1] Appendix IV analytes not detected during the annual sampling event do not require statistical evaluation and are not included in this Summary.

[2] MCL = Maximum Contaminant Limit established by EPA. RSL = Regional Screening Limit established by EPA.

[3] The background limits are used when determining the groundwater protection standard (GWPS) under 40 CFR § 257.95(h). The established limits were based on available upgradient data through September 2021.

[4] Under 40 CFR § 257.95(h)(1-3) the GWPS is: (i) the MCL/RSL, or (ii) background levels for constituents where the background level is higher than the MCL or rule-specified GWPS.

[5] The site-specific background limit for lithium is based upon elevated background concentrations documented in the Alternative Source Demonstration report (Golder, 2020a). Lithium concentrations from monitoring wells MW-02, MW-03, and MW-04 have been used to calculate the site-specific GWPS since lithium concentrations at MW-03 and MW-04 are naturally occurring.

A statistical analysis of the Appendix IV results from groundwater sampling/analysis of downgradient CCR monitoring wells (MW-03 through MW-06) was performed to evaluate if constituent concentrations detected in the samples are at SSLs relative to the GWPS established for the Site. The statistical analysis was conducted in accordance with the Site's Statistical Analysis Plan (SAP). Based on that analysis, on May 15, 2019, Cooperative Energy initiated an ACM for the CCR Landfill Unit based on the identification of constituents of concern (COCs) at concentrations statistically above the GWPS.

The COCs identified above the GWPS are presented below.

CCR Landfill Unit Confidence Interval Statistically Significant Level (SSL) Exceedances	
Appendix IV Parameter	CCR Landfill Unit **Monitoring Well**
Lithium[1]	MW-05
Molybdenum	MW-05

Notes:

[1] Lithium was initially an SSL at MW-03 and MW-04 in addition to MW-05. However, as provided in the 2020 Annual Report (Golder 2021a), an Alternate Source Demonstration determined that the Lithium SSLs at MW-03 and MW-04 were not the result of a release from the CCR Landfill Unit but are due to naturally occurring lithium in subsurface materials.

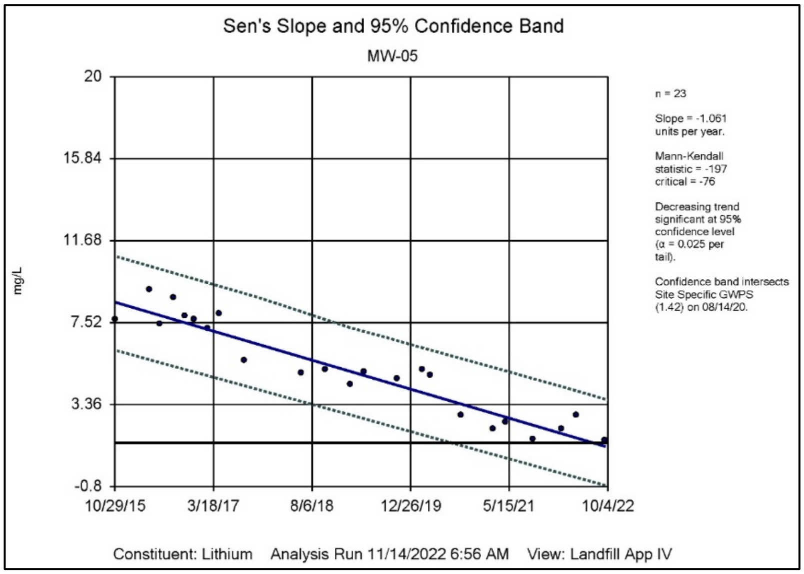
2.2.3 Nature and Extent Evaluation

Cooperative Energy characterized the nature and extent of the release and any relevant site conditions that may affect the remedy selected, as required by § 257.95(g)(1)(i – iv), including the installation and development of downgradient monitoring wells (MW-10, MW-11 and MW-12); installation and sampling of supplementary monitoring points at the downgradient property boundary (P-A and P-B); collection of soil samples for a mineralogical assessment and chemical analysis; water-level data collection; and groundwater sampling and analysis. Figure 2 presents locations of soil borings, monitoring wells, and temporary piezometers installed and sampled as part of the site characterization.

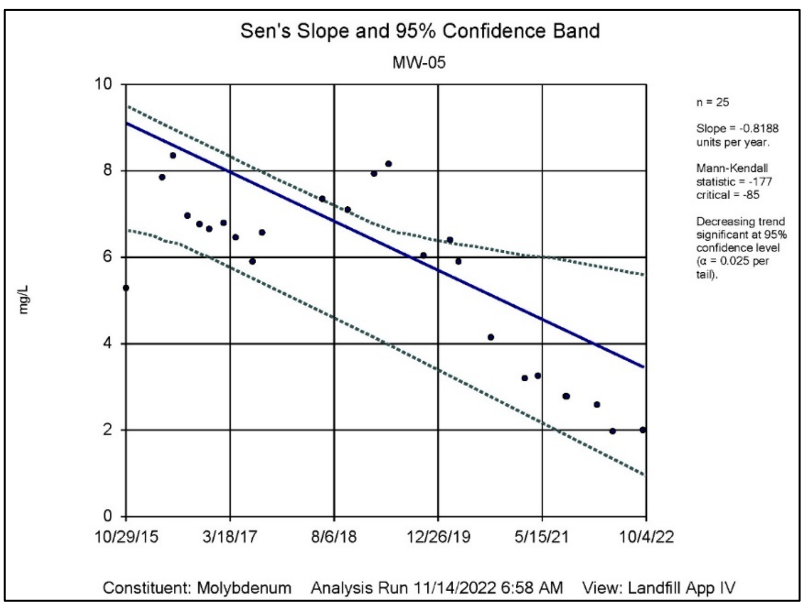
The results from these actions determined that elevated Appendix IV parameters statistically above the GWPS are only present at MW-05. Maps displaying the spatial distribution of molybdenum and lithium are provided in Figure 4, Spatial Distribution of Lithium Concentrations and Figure 5, Spatial Distribution of Molybdenum Concentrations.

Time series plots of molybdenum and lithium concentrations at MW-05 were also evaluated as part of the MNA (discussed in section 2.2.5.1) and nature and extent investigations. These time series plots (inset a, lithium and inset b, molybdenum) are provided below**.** As displayed in these figures, there have already been significant downward trends in lithium and molybdenum concentrations since 2015, when Appendix IV data was first monitored at the site. These downward concentrations began prior to closure of the CCR Unit in 2021. In 2018, Cooperative Energy updated the leachate collection system with the installation of permanent automated sump pumps and associated connecting piping along the southern border of the CCR Landfill Unit. The downward trend in groundwater concentrations at MW-05 prior to closure likely resulted from these improvements, near MW-05.

Inset a. Timeseries Plot of Lithium Concentrations at MW-05



Inset b. Timeseries Plot of Molybdenum Concentrations at MW-05



2.2.4 Assessment of Corrective Measures

During the ACM evaluation, remedial technologies were screened out (or not retained for further evaluation) if they were unlikely to perform satisfactorily or reliably, they were deemed difficult or impossible to implement, or they could not achieve corrective action objectives within a reasonable timeframe. The technologies retained as potential corrective measures included:

- Monitored Natural Attenuation (MNA) and Enhanced MNA
- Hydraulic Containment and Treatment (HCT)

- In Situ Chemical Treatment (ISCT)
- Subsurface Barrier Wall (SBW)
- Permeable Reaction Barrier (PRB)
- In Situ Soil Stabilization (ISSS)

Cooperative Energy completed the ACM on September 12, 2019. More information on the ACM is provided below in Section 3.1. As noted in Section 1.0, in addition to the remedies retained in the ACM, “CBR with MNA” was added to the list of technologies that were examined as a part of the RSR.

2.2.5 Remedy Selection Evaluations

To inform the evaluation of potentially applicable remediation technologies, an MNA evaluation was performed to provide greater detail on the naturally occurring rates of attenuation that may be present at the Site and a numerical groundwater model was constructed and used to provide greater detail on the direction(s) and rate(s) of groundwater movement at the Site.

2.2.5.1 MNA Feasibility Evaluation

The *MNA Evaluation Report* (Appendix A), closely follows the USEPA guidance on using MNA as a remedial alternative and was completed using the tiered approach (USEPA, 2007a; 2007b) listed below. Additionally, the evaluation considers best practices from the Interstate Technology Regulatory Council (ITRC) document: “A Decision Framework for Applying Monitored Natural Attenuation Processes to Metals and Radionuclides in Groundwater” (ITRC, 2010). The following Tiers were assessed and evaluated in the MNA Evaluation:

1) Demonstrate active constituent removal from groundwater and dissolved plume stability (Tier I)
2) Determine the mechanism(s) and rate(s) of the operative attenuation processes (Tier II)
3) Determine the long-term capacity for attenuation and the stability of immobilized constituents (Tier III)

To evaluate the attenuation of lithium and molybdenum in groundwater at the Site, and to assess the rate of attenuation, WSP applied the point decay method (Newell, 2002). The point decay method is used to determine the rate at which a constituent’s concentrations are increasing or decreasing in groundwater at a single well between sampling events, and this method can thus be used to predict when the constituent’s concentrations will fall back below regulatory limits.

Groundwater water quality data from the background and downgradient wells collected between October 2015 and April 2021 were used to determine the mean first-order decay rate for each COC. A first-order decay rate was also calculated using data collected from May 2019 to April 2021 to evaluate the effect of changing conditions at the Unit due to civil engineering efforts related to closure. For both sets of data, due to variable detection limits, results that were reported as below detection limits were not used in the point decay analysis. Using the mean first-order decay rate, WSP calculated the number of years that it would take for COCs (lithium and molybdenum) concentrations higher than each respective GWPS to decline below these values.

Geochemical modeling was conducted to evaluate general groundwater and pore water quality, determine the potential for precipitation of sorbent media, evaluate the potential for mineral precipitation or adsorption in the aquifer, and determine the speciation of metals of interest. The geochemical computer code developed by the United States Geological Survey (USGS), PHREEQC, was used for these simulations (Parkhurst and Appelo, 2013). PHREEQC version 3.6 is a general-purpose geochemical modeling code used to simulate reactions in water and between water and solid mineral phases (e.g., rocks and sediments). Reactions include aqueous equilibria, mineral dissolution and precipitation, ion exchange, surface complexation, solid solutions, gas-water equilibrium, and kinetic biogeochemical reactions.

Geochemical modeling was also used for evaluation of surface complexation of molybdenum, the role of Cation Exchange Capacity (CEC) of lithium attenuation, the determination of attenuation rates for post-closure scenarios, mineral precipitation, and co-precipitation, and to assess the long-term stability of the attenuated COCs.

Attenuation modeling was conducted for two closure scenarios, and results of attenuation modeling demonstrate that concentrations of Appendix IV parameters continue to decrease due to source control and leachate water management. After closure, the proportion of background groundwater increases at MW-05 and both molybdenum and lithium concentrations will decrease to below the respective GWPS for each constituent. For lithium, the concentration in groundwater at MW-05 is estimated to decrease to below the GWPS in approximately 5 to 7 years after completion of closure. For molybdenum, it is estimated concentrations at MW-05 will decrease to below the GWPS in approximately 27 to 29 years after the completion of closure. Based on these findings, lithium and molybdenum at MW-05 were considered candidates for MNA based on having met the criteria for Tiers I, II, and III in accordance with USEPA guidance (USEPA, 2007a; 2007b).

2.2.5.2 Groundwater Modeling

As a supplement to the *MNA Evaluation Report*, a *Groundwater Modeling Report* (Appendix D of the MNA Evaluation Report in Appendix A) was prepared. The objectives of the groundwater model were to:

- Synthesize the most recent hydrogeologic data into an integrated conceptual and numerical framework for evaluation of remedial strategies at the site, and
- Use the underground model to predict future metal concentrations after capping and closing of the CCR Landfill Unit.

The numerical computer code MODFLOW – developed by the USGS – was selected for much of this analysis because it is well suited to represent a wide range of hydrologic and hydrogeologic conditions, has been widely tested and accepted in the professional hydrology community and by regulatory agencies, and has been scrutinized closely in a number of legal proceedings over the past 20 years. In total, five software packages were used for the groundwater investigation:

- Groundwater flow: USGS software package MODFLOW (McDonald and Harbaugh, 1988; Harbaugh and McDonald, 1996; Harbaugh et al., 2000; Harbaugh, 2005). MODFLOW-2005 was used in the analyses presented here.
- Groundwater transport: USGS software package MT3DMS (Zheng and Wang, 1999).
- Particle tracking: USGS software package MODPATH (Pollock, 2012)
- Parameter estimation: PEST (Doherty, 2010 and 2016)
- Graphical user interface: Groundwater Vistas (ESI, 2020; Rumbaugh and Rumbaugh, 2011).

A steady state flow model calibration was carried out. Manual and automated parameter estimation approaches were used to derive reasonable estimates of hydraulic conductivities and natural recharge rates that produce groundwater elevations close to the observed data. The resulting estimated parameter values fell within expected ranges. The calibrated model was found to be acceptable for current purposes. The calibrated steady state model was then used to generate a transient model to provide the basis for flow and transport predictions.

Boron was selected as the primary constituent for transport analysis because it is a key indicator of CCR impacts, is not affected by the changes in pH displayed onsite, is mobile in most hydrogeological settings, and has few alternative sources. The primary boron transport mechanisms are advection and mixing due to natural and Landfill recharge, advection and mixing under varying natural hydraulic gradients controlled by groundwater flow onsite and buffering and/or precipitation due to interaction between boron in porewater and aquifer solids.

The modeling results were then included in the MNA evaluation for predicting boron concentrations at downgradient monitoring well MW-05, where molybdenum and lithium are present at an SSL for further geochemical evaluation.

Results show modeled attenuation rates, from the point of closure completion, taking into account dilution, sorption, and a decrease in downgradient pH (enhancing chemical attenuation of molybdenum), are estimated to range from 5 to 7 years and 27 to 29 years for lithium and molybdenum, respectively, after capping and closure of the CCR Landfill Unit.

2.2.5.3 Semi-Annual Remedy Selection Reports

Prior to preparing this final RSR, semi-annual progress reports have been prepared and posted to Cooperative Energy's publicly available website as required by the CCR Rule (§ 257.97(a)). These reports describe the progress made in evaluating the potential remedies since the completion of the ACM (Golder, 2020b; 2020c; 2021b; 2021c; 2022b)

2.2.6 CCR Landfill Unit Closure

Cooperative Energy commenced closure of the CCR Landfill Unit as soon as feasible (within 30 days; Cooperative Energy, 2021a) of the final receipt of waste in accordance with 40 CFR § 257.102(e)(1) of the CCR Rule.

(1) The owner or operator must commence closure of the CCR unit no later than 30 days after the date on which the CCR unit either:

> *(i) Receives the known final receipt of waste, either CCR or any non-CCR waste stream; or*
>
> *(ii) Removes the known final volume of CCR from the CCR unit for the purpose of beneficial use of CCR.*

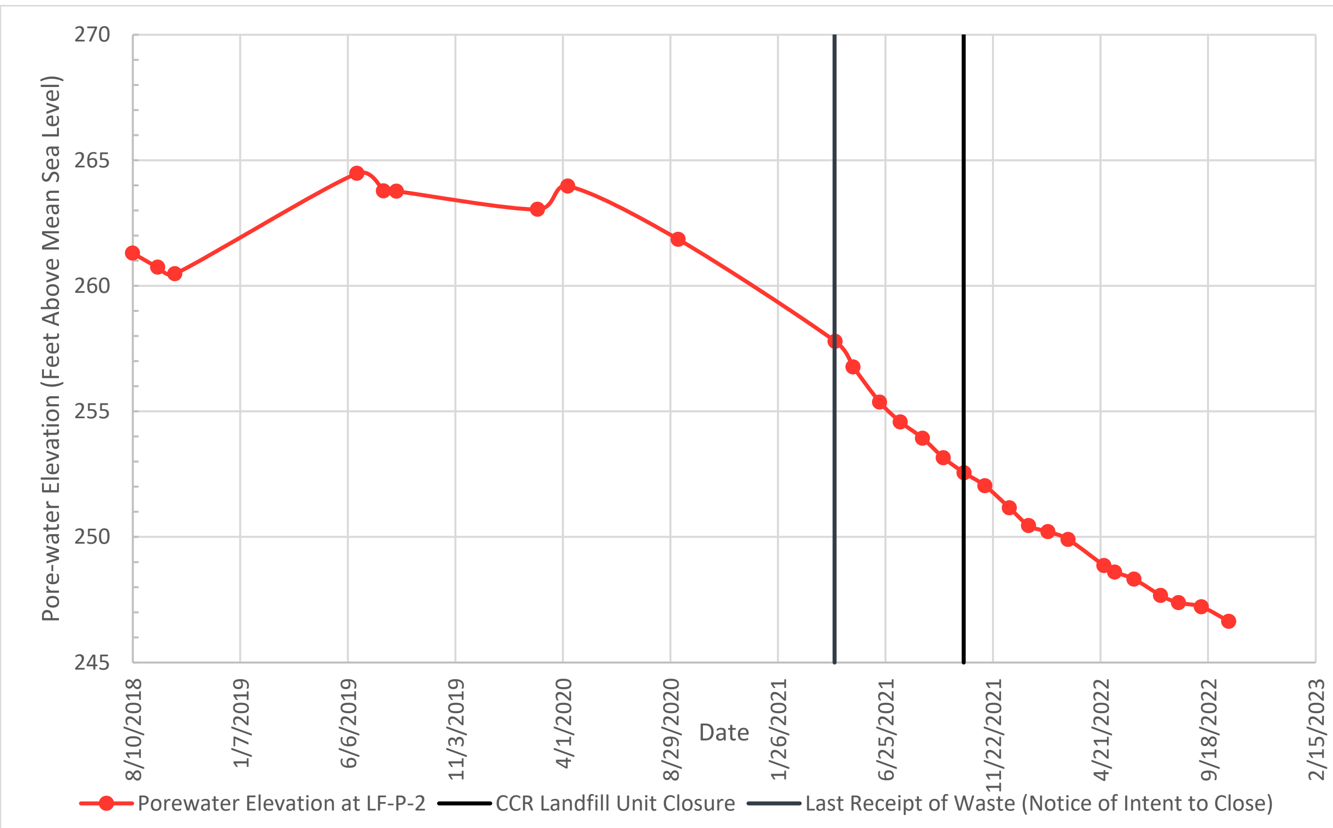
The CCR Landfill Unit closure was completed in compliance with the CCR Rule and with Mississippi Department of Environmental Quality (MDEQ) standards. Closure of the CCR Landfill Unit was certified, and closure was approved by the MDEQ on June 16, 2022, as provided in Appendix B.

Closure was initiated with the site being dewatered sufficiently to remove free liquids so that the CCR could be re-graded to promote drainage and reduce infiltration. Dewatering was initiated by installing perimeter trench drains and leachate extraction wells within the CCR Unit. Once the ground was stabilized for construction, the CCR Landfill Unit was regraded to achieve final cover grades. After the initial approximately 10 acres of the site was re-graded, the geosynthetic ClosureTurf® cover system installation was initiated. Closure was completed as of October 2021 with the placement of the Notification of Closure Completion on the publicly available website (Cooperative Energy, 2021b). Closure with the geosynthetic cover system has effectively eliminated infiltration of precipitation into the CCR Landfill Unit.

Closure of the CCR Landfill Unit was evaluated as an essential pairing with all remedy technologies. Closure with the geosynthetic ClosureTurf® cover system was designed to create source control, as an initial step toward achieving of a remedy at the RD Morrow site. Cooperative Energy deployed extensive source control efforts during the pendency of this analysis once it was determined as an initial component, regardless of the remedy selected. For these reasons, Cooperative Energy proactively began source control efforts during this remedy evaluation period to cause immediate results (downward COC trends) discussed herein.

Since closure, dewatering efforts within the CCR Landfill Unit have been effective based on evaluation of porewater elevations and volumetric removal. Sumps, and dewatering wells were installed to assist in dewatering the CCR as outlined in the Closure Plan (Golder 2020e). As of November 2022, these dewatering sumps and pumping wells have removed approximately 2.5 million gallons of porewater from the CCR Landfill Unit. Piezometer LF-P-2 was installed in this area in 2018. Water levels from this piezometer show significant reductions in porewater elevations, decreasing on average 5.9 feet per year since closure of the CCR Landfill Unit, as displayed in Figure 2.2.6, below.

Figure 2.2.6 – Porewater Elevations in the CCR Landfill Unit



2.3 Site Conceptual Model

To adequately evaluate remedial options, a Conceptual Site Model (CSM) was developed. The CSM is based on review of available site-specific data as well as regional geological and hydrogeological reports. The CSM continues to be refined as more data becomes available. The following sections discuss the CSM in further detail.

2.3.1 Physical Setting

As described in the 2003 Geological and Geotechnical Investigation (EMS, 2003), southeastern Mississippi is located within the Mississippi embayment which is a synclinal feature that plunges gently to the south and is aligned along the trend of the Mississippi River. The gulf coast geosyncline was developed during the Mesozoic Era as a result of sedimentation occurring concurrently with subsidence and resulting in sedimentary rock units that thicken both down dip (towards the axis of the syncline) and to the south (the direction of the syncline, Cushing et al., 1964). This thick sequence of sediments underlies the Site and is known to produce oil and gas in the deeper units at depths greater than 200 feet.

2.3.2 Site Geology

At the Site, Black Creek has cut a valley into the terrace deposits and the Miocene Hattiesburg (clay) formations (EMS, 2003 and 2018). The area within the Black Creek Valley is filled with reworked Citronelle and Hattiesburg Formations, called Terrace Deposits. Black Creek and the associated Black Creek Valley has geologically divided the area immediately surrounding the facility into two different geological terrains; (1) The upland areas to the north and south of the Black Creek Valley made up of a Miocene sequence of clays with interbedded layers of silt and silty clay and (2) lowland unconsolidated fluvial deposits from Black Creek.

The geology in the lowland areas immediately around the CCR Landfill Unit can be further divided into two (2) distinctly different geological terrains; (1) the man-made features such as the CCR Landfill Unit and the perimeter berm materials and (2) the native unconsolidated materials present below the CCR Landfill. Six (6) piezometers were installed in the CCR Landfill Unit and, along with associated landfill design drawings, have provided the basis for the geologic interpretation of the man-made CCR Landfill Unit.

Several investigations were completed during permitting of the CCR Landfill Unit (Cells 1-6) which provide descriptions and test results from within the unconsolidated materials (EMS, 2003; 2005; 2018; 2019; Golder, 2019; 2020a). From the investigations within the unconsolidated materials beneath the CCR Landfill Unit, four (4) distinct geologic units have been identified as follows:

- Stratum I – A poorly sorted silty sand that is generally brown or gray in color.
- Stratum II – Stiff clay and silty clay that is gray in color (ranging from 0-11 feet in thickness).
- Stratum III – Sand and silty sand with occasional gravel (ranging from 1-20 feet in thickness).
- Stratum IV – Massive bluish green clay with occasional gravel lenses (approximately 150 – 450 feet in thickness (Foster 1941, Matson 1916)).

In the area beneath the CCR Landfill Unit, Stratum I is not present, and the original and secondary portions of the CCR Landfill Unit have been reported to have been constructed directly on top of Stratum II clays, which serve as a natural clay liner.

Cross-sections A-A’ and B-B’ have been developed to support the CSM and are presented in Figure 6, Subsurface Geologic Cross Section A-A’ and B-B’ and Figure 7, Wetland Delineation Survey Locations. These cross-sections display the interpreted geological sequence based on the numerous borings completed to date.

2.3.3 Site Hydrogeology

Geological and hydrogeological units exposed at the surface down to a depth of a few hundred feet in this region of Mississippi are discussed in detail in the 2014 Site Landfill Application (EMS, 2014). As it relates to the groundwater flow conditions, aquifers at the site are continuously replenished from rainfall directly to the outcrop areas, which are located generally farther to the north. The rainfall also replenishes stream beds, lakes and ponds, which act as reservoirs that provide longer term sources of recharge. Leakage from these reservoirs percolates downward through the overlying formations to recharge shallow aquifers which in turn recharge adjacent and deeper aquifers.

As presented by EMS (2003), the groundwater aquifer underlying the CCR landfill Unit is located within the reworked Citronelle formation. As shown on Figure 2, Groundwater flows generally south, which is consistent with historical observations. Hydraulic flow characteristics of the shallow aquifer were determined based on aquifer testing (i.e., rising- and falling-head slug tests) conducted by EMS (2018). Horizontal groundwater flow velocity is approximately 0.1 feet/day (approximately 35 to 50 feet/year).

2.3.4 Wetland Delineations

As a part of the landfill permitting process for Cells 1-6, wetland delineation surveys were completed in 2001, 2002 and 2006, 2007 on behalf of Cooperative Energy (EMS, 2003 & 2007). The surveys, conducted in accordance with the U.S. Army Corps of Engineers protocols, were completed to determine the presence of wetland species and hydric soils at the site. The wetland delineation surveys revealed the presence of wetlands on the property as depicted in Figure 7, Wetland Delineation Survey Locations.

3.0 GROUNDWATER REMEDY SELECTION PROCESS

The remedy selection process has occurred in a series of two steps: Step 1 was to complete the ACM to identify potentially applicable corrective measures that could remedy the impacts caused by the CCR Landfill Unit in a short time frame (90 days plus 60-day extension) of identifying an SSL above the GWPS; and Step 2 was to evaluate these potential remedies using the criteria outlined in § 257.97(a) – (d) to prepare a site-specific remedy plan. Once the remedy is selected, step 3 of the remedy selection process begins with the implementation of the remedy in accordance with § 257.98. The following sections discuss Cooperative Energy's evaluations and plans for each of these three steps.

3.1 Assessment of Corrective Measures (ACM)

The ACM was the first step in developing a groundwater remedy. This assessment included an analysis of the effectiveness of potential corrective measures in meeting the objectives of the remedy as described under 40 CFR § 257.97 and must include an evaluation of the following:

1) *The performance, reliability, ease of implementation, and potential impacts of appropriate potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination*
2) *The time required to begin and complete the remedy*
3) *Institutional requirements, such as state or local permit requirements or other environmental or public health requirements that may substantially affect implementation of the remedy(s).*

Corrective measure objectives specified in § 257.97(b), include:

1) *Be protective of human health and the environment.*
2) *Attain the groundwater protection standard as specified pursuant to § 257.95(h).*
3) *Control the source(s) of releases to reduce or eliminate, to the maximum extent feasible, further releases of constituents in appendix IV to this part into the environment.*
4) *Remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible, considering factors such as avoiding inappropriate disturbance of sensitive ecosystems.*
5) *Comply with standards for management of wastes as specified in § 257.98(d).*

Potential response technologies were identified for Source Control (to reduce the potential for releases of constituents to groundwater) and Groundwater Response Actions (to reduce constituent concentrations below GWPS). The potential response technologies were then screened to identify options that are appropriate for further consideration in developing potential corrective measure alternatives for the Site.

3.2 Remedies Evaluated for the CCR Landfill Unit

This section provides a brief description of each of the potentially applicable corrective measures for groundwater as identified in the ACM plus CBR with MNA.

Each remedy option except CBR with MNA (Alternative G) assumes closure in place for source control, followed by the selected remedy. As discussed in Section 2.2.6, source control has already been completed at the site with the installation of a geomembrane cover system. Closure of the CCR Landfill Unit was certified, and closure was approved by the MDEQ on June 16, 2022, as provided in Appendix B.

3.2.1 Alternative A - Monitored Natural Attenuation (MNA)

The US EPA defines MNA as the reliance on natural attenuation processes (within the context of a carefully controlled and monitored site clean-up approach) to achieve site-specific remediation objectives within a time frame that is reasonable compared to that offered by other more active methods (USEPA, 1999). Implementation of MNA as a potential remedy requires detailed evaluations as prescribed in USEPA guidance on using MNA as a remedial evaluation (USEPA, 2007a) and the best practices from the ITRC (2010) document: "A Decision Framework for Applying Monitored Natural Attenuation Processes to Metals and Radionuclides in Groundwater".

As discussed in Section 2.2.5.1, an extensive MNA Evaluation study was completed for the CCR Landfill Unit (see Appendix A) and demonstrated that MNA is a viable corrective action for groundwater impacts observed at the site. Evidence that MNA is a viable remedy includes: 1) the area of impact is stable or shrinking; 2) chemical and physical attenuation is occurring onsite; 3) the attenuation mechanisms are stable and there is sufficient capacity within the aquifer to attenuate the amount of appendix IV constituents present; and, 4) the timeframe for MNA can be considered reasonable following guidance provided in Section 2.6 of the guidance *"Use of Monitored Natural Attenuation for Inorganic Contaminants in Groundwater at Superfund Sites"* (USEPA, 2015b). Therefore, based on the results of the *MNA Evaluation Study*, MNA was retained as a potential remedy option.

3.2.2 Alternative B - In-Situ Chemical Treatment (ISCT)

Chemical injection can be utilized to alter groundwater conditions to lower metal solubility. Reactive chemicals are introduced into groundwater and soil for the primary purpose of rapid and complete metal precipitation. This may involve adjustment of pH while maintaining adequate buffering capacity to prevent large pH fluctuations in groundwater long-term.

Molybdenum can be difficult to remove from groundwater; however, a combination of low (<5.5) or moderately alkaline pH (8.0) and reductive/oxidation couples have been observed to remove this metal. Activated carbon and coal dust have been successful at low pH; as well as ionic strengths with humic and fulvic acids in the presence of elemental carbon at pH 4 to 5.6. Iron coprecipitation can be effective below pH 5.5 in molybdenum removal. The use of a proprietary specialty media in the Thames Estuary United Kingdom also showed titanium oxides to be effective at adsorbing molybdenum. WSP has also removed molybdenum in-situ using reductive techniques associated with sulfide minerals. Iron coprecipitation can achieve some removal at pH higher than the optimum of pH 5, with lesser removal occurring up to around pH 7. At moderately alkaline conditions (pH > 8) some molybdenum precipitation has been demonstrated to be associated with calcium (Essington and Huntington 1990). As always, the removal achievability is also dependent on the water matrix.

The mobility of the lithium ion is controlled by cation exchange. The cation exchange reaction between lithium and the clay minerals at the recharge site follows a linear relationship over the concentration range observed (Crawley, 1977) and laboratory treatability studies have demonstrated that there is potential for lithium and molybdenum treatment applications in some sandy aquifers (Ge et al., 2018). Wet iron-sulfur minerals have been shown to be ideal environments to allow for simple chemical reactions to occur in nature, for instance, in the framework of prebiotic chemistry. Yet not much is known about such water/mineral interfaces beyond those involving pyrite, FeS_2, which is, generally chemically inert. In contrast, mackinawite is chemically reactive and consists of a layered crystal structure comprising FeS sheets that can be easily cleaved. Here, the properties of water confined between such sheets in lamella-like setups is investigated in the spirit of surface science model systems. The properties of this intercalated water are found to depend significantly on the interlayer distance and change from "arrested water" (in the limit of small interlayer distances) to liquid-like behavior (Wittekind et al., 2012).

Some additional routine data collection (e.g., alkalinity) would be desirable post-treatment to ensure conditions remain favorable for low COC solubility. Adjustment of pH would be anticipated to occur relatively quickly, with long term monitoring (i.e., similar considerations as MNA).

Based on the preliminary evaluation in the ACM, ISCT was retained as a potential remedy option.

3.2.3 Alternative C - Hydraulic Containment and Treatment (HCT) / Pump and Treat

Hydraulic containment may control potential hazards by eliminating risk pathways or reducing the rate of exposure to acceptable risk levels through containment of impacted groundwater. Hydraulic containment can be achieved by extraction wells and/or subsurface drains. After impacted groundwater is extracted, the water may be treated, discharged, or beneficially reused.

The effluent may require treatment for compliance with regulatory requirements. Permits may be required for the withdrawal and re-injection (if elected) of water, and the chemistry of the effluent after treatment would need to be compatible with the site NPDES or injection permit. Options for treatment of effluent may include pH adjustment, precipitation technologies, adsorption on reactive media, ion exchange, membrane filtration, or biological treatment.

Regulatory requirements and institutional controls may be greater for hydraulic containment than some of the other corrective measures. Hydraulic containment would be anticipated to become effective within a short period following construction (2-4 years). Based on the preliminary assessment of HCT, this remedy was retained for evaluation compared to the Threshold and Balancing Criteria as a potential remedial option.

3.2.4 Alternative D - Subsurface Barrier Wall (SBW)

Containment actions include physical barriers that contain the source material such as slurry walls and sheet pile walls. They are designed to isolate the source material and prevent migration of the source water beyond the area of control. The benefits to containment actions are they are relatively simple to design, can be implemented quickly, and can address large areas and volumes of waste. However, there can be uncertainty with verifying their connection with natural subsurface barriers (e.g., low permeability layers, bedrock, etc.) and their long-term effectiveness.

Barrier walls could be used to improve the subsurface hydraulic (flow) conditions for other technologies (i.e., PRB walls and pump-and-treat). Impermeable barrier walls can be used to direct groundwater to the treatment gates containing reactive media or to direct groundwater toward pumping wells in a pump-and-treat system. Since this is a physical corrective action it could become more effective within a short period following construction. However, since it would likely need to be used in conjunction with another remedy, time to completion would be based on the other corrective measure. Based on the preliminary evaluation, SBW was retained as a potential remedial option.

3.2.5 Alternative E - Permeable Reactive Barrier (PRB)

A PRB "is an in situ, permeable treatment zone designed to intercept and remediate a contaminant plume" (ITRC, 2011). "The primary use of a PRB is to eliminate or substantially reduce the mass discharge of contaminant(s) downgradient of the barrier. The PRB is not typically used as a source remediation technology; however, it may be used as a source control technology depending on the placement of the PRB relative to the location of the contaminant source"(ITRC, 2011). Inorganics have shown to be amendable to remediation using PRB technology with the appropriate reactive media. Potential reactive media include zero valent iron, zeolites, and granular activated carbon, and COCs are removed by precipitation and/or adsorption. A PRB can be installed through trenching or soil excavation.

A PRB is a passive treatment system that acts as a barrier to groundwater contamination but not to groundwater flow. PRBs can be used to remediate groundwater impacted with inorganic contaminants. A PRB must intercept the flow of impacted groundwater and to be effective it must be designed and constructed such that impacted groundwater cannot bypass the reactive media by flowing over, under or around the PRB. A PRB must include the appropriate reactive media and the residence time with the PRB needs to be sufficient to allow for effective treatment. PRBs are often used in step with SBWs to direct groundwater flow to treatment gates, to limit the volume of reactive media that needs to be used. Reactive media options are being explored for molybdenum and lithium. Based on the preliminary evaluation in the ACM, PRB was retained as a potential remedy option.

3.2.6 Alternative F - In-Situ Stabilization/Solidification (ISSS)

In Situ Stabilization/Solidification (ISSS), also referred to as single auger mixing or deep soil mixing, uses a crane-mounted auger system to drill into affected soils and uniformly mix the soils with cement or other additives to create a monolith (solidification) or other appropriate chemical additives to chemically bind constituents within the solid matrix (stabilization). This remedy can also be achieved by a cutter head on an excavator if treatment depths do not exceed the reach of the excavator. Additional equipment utilized for treatment primarily consists of a grout mixing plant, a grout pump and a mixing rig designed to capsulate constituents in a monolithic solid of high structural integrity, thereby minimizing constituent migration. This corrective measure would be anticipated to become effective within a short period following construction (2 – 4 years). However, ISSS is not directly effective if the source of the COCs is naturally occurring in aquifer materials. Some indirect benefit may still occur if pH is increased in the vadose zone soils. Due to the high percentage of fine-grained soil in the aquifer material, as documented in previous site investigations (EMS, 2003), the ability to distribute media used to solidify/stabilize in heterogeneous porous media may be limited. Based on the preliminary evaluation in the ACM, ISSS was retained as a potential remedy option.

3.2.7 Alternative G – Closure by Removal with Monitored Natural Attenuation

This alternative consists of removing the in-place cover system, removing all CCR materials from the CCR Landfill Unit, and moving the material to a different landfill unit, whether that be a newly permitted landfill unit onsite or a nearby waste landfill. This alternative was added after publication of the ACM for consideration. This alternative would eliminate, through removal, the source. However, Closure by Removal has adverse risks to human health and the environment. Removal of the cap that is protecting the aquifer from infiltration due to precipitation into the CCR Unit may result in impacts to the groundwater during the entire time frame of excavation. In addition, removal of CCR requires significant construction resources, deployment of workers, a large increase in haul-truck traffic, and potential community impacts which increases risks as further discussed in subsequent sections.

Estimated removal times on similar sized CCR Units (landfills or surface impoundments) are estimated to take approximately 7- 12 years to completed as follows:

- Gallagher Generating Station (Ash Pond A) – Duke Energy. 1,551,400 cubic yards (CY) and estimated to take 8 years for CBR (ATC, 2016).
- WS Lee Steam Station – Duke Energy. 1,860,000 CY and estimated to take 10 years for CBR (AECOM, 2021).
- Weatherspoon Steam Electric Plant – Duke Energy. 2,040,000 CY and estimated to take 7.5 years for CBR (S&ME, 2016).
- Asheville Steam Electric Generating Plant – Duke Energy. 2,416,667 CY and estimated to take 12.5 years for CBR (Amec Foster Wheeler, 2017).
- HB Robinson Steam Electric Plant -- Duke Energy. 2,632,000 CY and estimated to take 8.5 years for CBR (HDR, 2016).

After removal, it would be expected the MNA would occur similar to Alternative A. Based on the evaluations completed on CBR to date, CBR with MNA is a feasible remedy for the site and is therefore retained for the remedy selection evaluation.

3.3 Evaluation of Potential Remedies

After completing the preliminary assessment as described in Section 3.2, the remaining remedies were evaluated using the criteria outlined in § 257.97(b) and (c) of the CCR Rule. This evaluation is broken into two different steps. First, in order for a remedy to be viable, the remedy must satisfy the five (5) threshold criteria of § 257.97(b), which are as follows:

1) Be protective of human health and the environment
2) Attain the groundwater protection standard as specified pursuant to § 257.95(h)
3) Control the source(s) of releases so as to reduce or eliminate, to the maximum extent feasible, further releases of constituents in appendix IV to this part into the environment
4) Remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible, taking into account factors such as avoiding inappropriate disturbance of sensitive ecosystems
5) Comply with standards for management of wastes as specified in § 257.98(d).

Each of the potential remedies that satisfy these five (5) requirements is then compared to each of the balancing criteria. Evaluation of balancing criteria allows for a comparative analysis of each potential corrective measure and provides a basis for the selection of the final remedy. As outlined in § 257.97(c), the balancing criteria are as follows:

1) The long- and short-term effectiveness and protectiveness of the potential remedy(s), along with the degree of certainty that the remedy will prove successful based on consideration of the following:

(i) Magnitude of reduction of existing risks;

(ii) Magnitude of residual risks in terms of likelihood of further releases due to CCR remaining following implementation of a remedy;

(iii) The type and degree of long-term management required, including monitoring, operation, and maintenance;

(iv) Short-term risks that might be posed to the community or the environment during implementation of such a remedy, including potential threats to human health and the environment associated with excavation, transportation, and re-disposal of contaminant;

(v) Time until full protection is achieved;

(vi) Potential for exposure of humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment associated with excavation, transportation, re-disposal, or containment;

(vii) Long-term reliability of the engineering and institutional controls; and

(viii) Potential need for replacement of the remedy.

(2) The effectiveness of the remedy in controlling the source to reduce further releases based on consideration of the following factors:

(i) The extent to which containment practices will reduce further releases; and

(ii) The extent to which treatment technologies may be used.

(3) The ease or difficulty of implementing a potential remedy(s) based on consideration of the following types of factors:

(i) Degree of difficulty associated with constructing the technology;

(ii) Expected operational reliability of the technologies;

(iii) Need to coordinate with and obtain necessary approvals and permits from other agencies;

(iv) Availability of necessary equipment and specialists; and

(v) Available capacity and location of needed treatment, storage, and disposal services.

(4) The degree to which community concerns are addressed by a potential remedy(s).

3.4 Threshold Criteria Evaluation - § 257.97(b)

A summary checklist of each of the retained potential corrective measures (Alternatives A through G) listed in Section 3.2 compared to the five (5) threshold criteria is presented below. If the threshold criteria cannot be met by one of the corrective measures, that remedy method is eliminated from further consideration and will not be discussed in the balancing factors section.

Threshold Criteria	Alternative A – MNA	Alternative B – In-Situ Treatment	Alternative C – Hydraulic Containment	Alternative D – Subsurface barrier Wall	Alternative E – Permeable Reactive Barrier Wall	Alternative F – In-Situ Stabilization	Alternative G – Closure by Removal and MNA
257.97(b)(1) – Be protective of human health and the environment	✓	✓	✓	✓	✓	✓	✓
257.97(b)(2) – Attain the groundwater protection standard as specified pursuant to § 257.95(h)	✓	✓	✓	✓	✓	✓	✓
257.97(b)(3) – Control the source(s) of releases so as to reduce or eliminate, to the maximum extent feasible, further releases of constituents in appendix IV to this part into the environment	✓	✓	✓	✓	✓	✓	✓
257.97(b)(4) – Remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible, taking into account factors such as avoiding inappropriate disturbance of sensitive ecosystems	✓	✓	✓	✓	✓	✓	✓
257.97(b)(5) – Comply with standards for management of wastes as specified in § 257.98(d).	✓	✓	✓	✓	✓	✓	✓

Each of the identified corrective measures meet the threshold criteria. Therefore, each of the seven (7) remedial alternatives presented in the ACM have been evaluated using the balancing criteria.

3.5 Balancing Criteria - § 257.97(c)

Any corrective measures that meet the threshold criteria and are considered viable options as a remedy for the Site were evaluated using the Balancing Criteria. Evaluation of these consideration factors help weigh which alternative(s) is the most appropriate remedy, based on site-specific conditions.

To complete this comparison, each of the balancing criteria were evaluated for each potential remedy that met the threshold criteria as discussed in Section 3.3. For each balancing criteria evaluation, a favorability rating has been assigned in order to give a visual snapshot summary table with green representing a favorable evaluation, yellow representing a less favorable evaluation, and red representing an unfavorable evaluation.

3.5.1 Balancing Criteria (1)

The long- and short-term effectiveness and protectiveness of the potential remedy(s), along with the degree of certainty that the remedy will prove successful based on consideration of the following:

257.97(c)(1)(i) Magnitude of reduction of existing risks

As discussed in Section 2.2.3, based on the nature and extent evaluation completed onsite, there are currently minimal risks associated with the Appendix IV exceedances onsite because there are no measurable Appendix IV groundwater impacts present at the downgradient property boundary, and no public use of Stratum III groundwater onsite. Appendix IV parameters only exceed the GWPS at one (1) monitoring well, MW-05. Therefore, unacceptable risk to human health or the environment is minimal under current conditions. Additionally, since capping and closure of the CCR Landfill Unit has been completed, additional risk is minimal because source control has been completed.

The following bullets briefly describe the magnitude for reduction of existing risks for each remedial alternative:

- **Alternative A (MNA)** – For MNA, as demonstrated in the MNA Feasibility Report (Appendix A) concentrations are anticipated to decline further and are predicted to reach GWPS goals within 30 years through the combined effects of sorption, precipitation, dilution, dispersion (chemical and physical attenuation mechanisms). Continued monitoring and institutional controls will control risks for human exposure or risks to the environment. There are no other construction risks associated with this remedy except for those encountered while operating equipment necessary for well abandonment or well installation. Based on these factors, MNA is considered a **favorable** remedy for this balancing criterion.

- **Alternative B (ISCT) –** Has a low potential for additional risk because it requires minimal construction (although more than MNA) and will not produce a secondary waste stream. Additionally, ISCT is designed to alter groundwater conditions to lower metal solubility. Reactive chemicals are introduced into groundwater and soil for the primary purpose of rapid and complete metal precipitation. ISCT will reduce existing risk in the immediate area of injections very quickly using chemical reactions to sequester lithium and molybdenum. This may involve adjustment of pH while maintaining adequate buffering capacity to prevent large pH fluctuations in groundwater long-term. Although there will be more construction requirements than MNA including injection wells and treatment material storage, overall, the amount of construction required would be minimal. Therefore, ISCT is considered a **favorable** remedy for this balancing criterion.

- **Alternative C (HCT)** –The HCT approach uses extraction wells or trenches to capture groundwater, which will subsequently require above-ground treatment and permitted discharge. As a containment remedy, HCT captures already impacted groundwater so the reduction in risk downgradient of the capture zone is relatively instantaneous, at that point. Upgradient of the extraction well(s), the HCT remedy does 'draw on' the source area to some degree and enhances removal of source material beyond MNA. Also, this alternative would require the construction of a pump house and associated piping network. There is a significant wetland area around MW-05 (See Figure 7), and construction of this building along with extraction wells, trenches, and other ancillary components may be challenging to avoid damage to the wetland and/or capped areas. Construction of a hydraulic containment system would pose additional risks when compared to Alternatives A and B because it would introduce, a potentially high volume, secondary waste stream that may require pretreatment before being discharged through an approved NPDES outfall. Therefore, HCT is considered a **less-favorable** remedy for this balancing criterion.

- **Alternative D (SBW)** – The SBW approach requires installation of a physical barrier through the uppermost aquifer that would prevent groundwater from flowing beneath the CCR Unit towards MW-05. Unless SBW is placed around the entire circumference of the CCR Unit, impacted groundwater would still be able to flow around the subsurface wall. Therefore, while installation of SBW may eliminate any existing groundwater impacts from underneath the CCR Landfill Unit from flowing downgradient to MW-05, the impacted groundwater would likely flow around the SBW and may cause increased concentrations of COCs in areas where no current issues exist. Additionally, construction of the barrier wall would generate waste (both soil and groundwater) that would need to be disposed of in accordance with the state and federal regulations. The construction and production of secondary waste streams would pose some additional risk. Therefore, SBW is considered an **un-favorable** remedy for this balancing criterion.
- **Alternative E (PRB) –**The PRB approach often requires installation of physical barriers (funnels) directing groundwater to and through higher permeability treatment zones (gates). Application of a treatment without funnels could be placed immediately downgradient of an impacted zone. Likely a larger volume of reactive materials would need to be considered. Construction of the PRB would generate waste (both soil and groundwater) that would need to be disposed of in accordance with state and federal regulations. The construction and production of secondary waste streams would pose some additional risk. However, after installation, the remedy is a passive remedy, with no onsite buildings, equipment required on a daily basis. Therefore, PRB is considered a **less-favorable** remedy for this balancing criterion.
- **Alternative F (ISSS) –** In order to perform ISSS, the existing cap would need to be removed to allow for deep mixing of the CCR materials. Re-opening of the CCR Landfill Unit would cause infiltration back into the CCR Unit, which would increase concentrations of Appendix IV constituents into groundwater, which have shown a downward trend since 2018. Construction for ISSS would require crane-mounted auger systems that would require an increase in traffic and work activities around the CCR Landfill Unit during ISSS. Therefore, ISSS is considered an **un-favorable** remedy for this balancing criterion.
- **Alternative G (CBR)** – CBR has the highest potential risk to human health and the environment as there would be a large increase in truck traffic, construction, and work activities around the CCR Landfill Unit during removal. Additionally, removal of the cap would cause infiltration into the CCR Unit, which is likely to increase concentrations of Appendix IV constituents, that have shown a downward trend since 2018. Mixing the CCR upon removal will also likely lead to increased concentrations, as stable CCR is disturbed, opening new mixing pathways for the infiltrating water. Therefore, CBR is considered an **un-favorable** remedy for this balancing criterion.

257.97(c)(1)(ii) Magnitude of residual risks in terms of likelihood of further releases due to CCR remaining following the implementation of a remedy

There is minimal residual risk for further releases from the CCR Landfill Unit because it has already been capped and closed with a geomembrane cover system, virtually eliminating infiltration into the CCR Unit, and is actively removing CCR leachate through the leachate collection system and the leachate extraction wells in the CCR Unit. Additionally, attenuation of molybdenum and lithium is already occurring, as concentrations are declining.

The following bullets briefly describe the magnitude of residual risks associated with each remedial alternative:

- **Alternative A (MNA)** – Chemical and physical attenuation is currently occurring, and levels are stable across the site. Since 2018, lithium and molybdenum have shown statistically significant decreasing trends. The

MNA Feasibility Report has demonstrated that the aquifer has the capacity to attenuate lithium and molybdenum for MNA (or any other alternative). Since final capping of the CCR Landfill Unit has been completed, the release of CCR is not anticipated given the closure design to encapsulate the CCR. Based on these factors, MNA is considered a **favorable** remedy for this balancing criterion.

- **Alternative B (ISCT) –** As discussed for Alternative A (MNA), closure of the CCR Landfill Unit has already been completed and decreasing concentrations as well as attenuation has been demonstrated for COCs. Installation of an ISCT should not impact the CCR Landfill Unit, and therefore, there are minimal risks for future releases of CCR. Based on these factors, ISCT is considered a **favorable** remedy for this balancing criterion.
- **Alternative C (HCT)** – Closure of the CCR Landfill Unit has already been completed and decreasing concentrations as well as attenuation has been demonstrated for COCs. Installation of a HCT system should not impact the CCR Landfill Unit, and therefore, there are minimal risks for future releases of CCR. Based on these factors, HCT is considered a **favorable** remedy for this balancing criterion.
- **Alternative D (SBW)** – Closure of the CCR Landfill Unit has already been completed and decreasing concentrations as well as attenuation has been demonstrated for COCs. Installation of a SBW system should not impact the Landfill Unit, and therefore, there are minimal risks for future releases of CCR. Based on these factors, SBW considered a **favorable** remedy for this balancing criterion.
- **Alternative E (PRB) –** Closure of the CCR Landfill Unit has already been completed and decreasing concentrations as well as attenuation has been demonstrated for COCs. Installation of a PRB system should not impact the CCR Landfill Unit, and therefore, there are minimal risks for future releases of CCR. Based on these factors, PRB considered a **favorable** remedy for this balancing criterion.
- **Alternative F (ISSS)** – Once completed, ISSS should eliminate future releases from the CCR Unit because the CCR mass would be solidified and unable to leach CCR metals. However, ISSS would likely take at least 2-4 years to complete, during which time the CCR in the source would be subjected to infiltration from precipitation, causing likely increases in Appendix IV constituent concentrations in groundwater at the site. Based on these factors and the delay in preventing future releases, ISSS is considered a **less-favorable** remedy for this balancing criterion.
- **Alternative G (CBR)** – Overall, alternative G (CBR) would have the lowest long-term residual risk following the implementation of the remedy, since there will no longer be CCR present onsite. However, CBR is estimated to take a minimum of 7 years to complete, at which time the CCR in the source would be subjected to infiltration and increases in COC concentrations in the groundwater at the site. Based on these factors and the delay in preventing future releases, CBR is considered a **less-favorable** remedy for this balancing criterion.

257.97(c)(1)(iii) Type and degree of long-term management required, including monitoring, operation and maintenance

Long-term groundwater monitoring is expected for each of the potential remedies. Groundwater monitoring is required for at least 30 years after closure of the CCR Unit if the Unit is no longer in Assessment or Corrective Action Groundwater monitoring. Based on the attenuation rates estimated in the MNA Feasibility Report, concentrations at MW-05 are expected to decrease below GWPS within 30 years; therefore, each of the closure in place remedies (A, B, C, D, E, and F) will have approximately the same length and maintenance required for groundwater monitoring. If CBR (Alternative G) is selected, there is no 30-year requirement for monitoring; however, attenuation rates are expected to be similar to those provided in Alternative A for MNA after the CCR has been removed. This means that to reach the GWPS at MW-05, it will take approximately 30 years for MNA to occur plus the time required to remove the existing CCR (Approximately 7 – 12 years). Therefore, CBR will likely have the longest groundwater monitoring period due to infiltration during the removal process.

The following bullets briefly describe the potential long-term management associated with each remedial alternative:

- **Alternative A (MNA)** – MNA has the lowest long-term management requirements because groundwater monitoring requirements will be similar amongst each potential remedy, and there are minimal amounts of mechanical systems or maintenance requirements. Minimal operation and maintenance above the required groundwater monitoring may include monitoring well re-development, monitoring well abandonment, and re-installation of a monitoring well. Based on these factors, MNA is considered a **favorable** remedy for this balancing criterion.
- **Alternative B (ISCT) –** ISCT is less favorable than MNA because it has similar groundwater monitoring requirements while having an increased amount of mechanical and maintenance requirements. Injections can be performed using direct push technology (DPT) leaving minimal ground disturbance and no permanent remedial equipment. Repeat applications are likely to be required, but additional mobilizations are minimally invasive. Based on these factors, ISCT is considered a **less-favorable** remedy for this balancing criterion.
- **Alternative C (HCT)** – HCT, much like ISCT is less favorable than MNA because it has similar groundwater monitoring requirements while having an increased amount of mechanical and maintenance requirements. The main potential impacts are related to the presence and operation of an on-site above-ground water treatment facility and related infrastructure to convey and treat extracted groundwater. Pumping activity may unintentionally alter the geochemistry within the hydraulic capture zone. Additionally, an HCT will have continuous operational and maintenance requirements with significant residuals management. Based on these factors, HCT is considered an **unfavorable** remedy for this balancing criterion.
- **Alternative D (SBW) –** After installation of a SBW, there would be minimal maintenance related to the remedy. No secondary waste streams are generated after the initial installation of a SBW, and groundwater monitoring requirements are expected to take the same amount of time as MNA (30 years). Therefore, after installation of the SBW, the maintenance requirements should be equivalent to those of remedial alternative A (MNA). Based on these factors, SBW is considered a **favorable** remedy for this balancing criterion. It should be noted that SBWs are not always used as a stand-alone remedy and are often combined with other remedies such as PRB or HCT. In these cases, the remedy overall may not be favorable for this criterion and is dependent upon the other remedies operation and maintenance requirements.
- **Alternative E (PRB) –** PRB is less favorable than MNA because it has similar groundwater monitoring requirements while having an increased amount of long-term maintenance. While PRB is a passive remedy once installed, rejuvenation of the in-situ PRB materials is needed. While the exact timeframe for rejuvenation is unknown, rejuvenations would require remobilization of contractors. No secondary waste streams are generated after the initial installation of a PRB, and groundwater monitoring requirements are expected to take the same amount of time as MNA (30 years). Based on these factors, PRB is considered a **less-favorable** remedy for this balancing criterion.

- **Alternative F (ISSS) –** Once ISSS is completed for the CCR Unit, there should be minimal long-term maintenance requirements and groundwater monitoring requirements are expected to take the same amount of time as MNA (30 years). Based on these factors, ISSS is considered a **favorable** remedy for this balancing criterion.
- **Alternative G (CBR)** – CBR requires a significant amount of logistically complex solutions, from either permitting and building a new landfill or transportation of a significant amount of material to an off-site landfill. Additionally, groundwater maintenance requirements are not expected to be shorter, due to the time required to complete CBR and the attenuation rate of molybdenum and lithium in the groundwater. However, once CBR is complete in 7-12 years, there should be minimal long-term costs associated with the Unit itself. Time to reach compliance is expected to be longer for Alternative G than MNA with closure in place because closure of the Unit is delayed, and, therefore, operation and maintenance is expected to be longer than if closed in place. Based on these factors, CBR is considered a **less-favorable** remedy for this balancing criterion.

257.97(c)(1)(iv) Short-term risks that might be posed to the community or the environment during implementation of such a remedy, including potential threats to human health and the environment associated with excavation, transportation, and re-disposal of contaminant

The following bullets briefly describe the potential short-term risks that may be associated with each remedial alternative:

- **Alternative A (MNA)** – Implementation of a MNA program does not require active site construction/de-construction activities beyond the potential for routine monitoring well maintenance (re-development, decommissioning, and re-installations). Potential risks are already managed with no-offsite impacts. Limited traffic and construction would be required to implement this remedy. Based on these factors, MNA is considered a **favorable** remedy for this balancing criterion.
- **Alternative B (ISCT) –** Minimal impacts are expected if the remedy works as designed, based on a thorough pre-design investigation, geochemical modeling, and bench/pilot study results. Redox-altering processes have the potential to mobilize naturally-occurring constituents as an unintended consequence if not properly studied and implemented. There will be some contractor and increased traffic requirements during the implementation of the ISCT program; however, this is expected to be minimal. Based on these factors, ISCT is considered a **favorable** remedy for this balancing criterion.
- **Alternative C (HCT)** – HCT, being an ex-situ technology, has a much larger 'footprint' than MNA or ISCT. Pumping wells, piping, treatment facility, disposal of residuals, high energy demand and frequent human labor make HCT a technology with higher operational risk. Yet, from a remedial consideration, hydraulic containment does provide a reduction of risk at and downgradient of the capture zone; however, there are no current or anticipated users of groundwater immediately adjacent to the CCR Unit. Based on these factors, HCT is considered a **less-favorable** remedy for this balancing criterion.
- **Alternative D (SBW) –** During installation of the SBW, there will be significant construction requirements potentially including cranes and large numbers of construction personnel. Potential short-term impacts to the community include noise and emissions from the heavy equipment as well as trucks hauling waste and materials to and from the Site. There is also potential for fugitive dust emissions from the mixing of the slurry material. Based on these factors, SBW is considered an **unfavorable** remedy for this balancing criterion.

- **Alternative E (PRB) –** Installation of a PRB may be similar to a SBW or may include a sheet pile wall and "gate" system. Additionally, there will likely be less linear footage that would need to be installed. During construction, the use of heavy machinery may cause short term impacts to the community including noise and emissions as well as trucks hauling waste and materials to and from the Site. There may also be fugitive dust emissions from mixing of the slurry material, if SBW is coupled with the PRB. Based on these factors, HCT is considered a **less-favorable** remedy for this balancing criterion.
- **Alternative F (ISSS) –** Installation of an ISSS system will require large amounts of heavy construction equipment including large scale cranes for approximately 2-4 years. Potential environmental impacts from this include noise and emissions from heavy equipment, infiltration of water into the CCR Unit which may result in groundwater impacts, and potential fugitive dust emissions. Additionally, there is potential risk to the community with more large-scale truck traffic required on the roads for hauling the materials need for ISSS. Based on these factors, ISSS is considered an **unfavorable** remedy for this balancing criterion.
- **Alternative G (CBR)** – The remedy with the highest potential short-term risks to the community or the environment would be CBR. Potential environmental impacts include noise and emissions from heavy equipment, potential fugitive dust emissions, and potential releases during excavation and dewatering of the CCR Landfill Unit, which may allow precipitation water to infiltrate into the CCR Unit. Additional leachate generated will require additional liquids management and the risk of groundwater impacts is increased. Potential community impacts include increased truck traffic on public roads during excavation, truck emissions, potential for spilling of CCR during transport, and increased potential for injury or fatality from traffic accidents. Based on these factors, CBR is considered an **unfavorable** remedy for this balancing criterion.

257.97(c)(1)(v) Time until full protection is achieved

The following bullets briefly describe the time frames that may be anticipated with each remedial alternative:

- **Alternative A (MNA)** – As discussed in Section 2.2.5.1, time to achieve GWPS are estimated to range from 5 to 7 years for lithium and 27 to 29 years for molybdenum, after capping and closure of the CCR Landfill Unit. Since there are limited risks associated with the groundwater including no impacts at the property boundary and no groundwater usage within the uppermost aquifer onsite, less than 30 years to achieve the GWPS is comparable with the other remedial options, discussed herein. Based on these factors, MNA is considered a **favorable** remedy for this balancing criterion.
- **Alternative B (ISCT) –** Attenuation and concentration reductions are already occurring at MW-05. ISCT could reduce the timeframes for compliance with the GWPS. To do so, detailed site evaluations would need to be completed before ISCT could be implemented. While this may be a viable remedy, there are no known sites where ISCT has been proven for lithium and molybdenum for the concentrations observed at the site. However, as stated above in Alternative A (MNA), time to compliance is estimated to be less than 30 years, so the remedy goals can be met even if it takes 5 years to develop the ISCT system. Based on these factors, ISCT is considered a **favorable** remedy for this balancing criterion
- **Alternative C (HCT)** – Attenuation and concentration reductions are already occurring at MW-05. HCT, once installed, is expected to reduce the timeframe needed for compliance with the GWPS. Treatment of lithium and molybdenum have been demonstrated to be effective (in treatment facilities, not in-situ as discussed in Alternative B); however, to do so, detailed site evaluations would be needed before HCT could be

implemented. As stated above in Alternative A (MNA), time to compliance is estimated to be less than 30 years, so the remedy goals can be met even if it takes 5 years to develop the HCT system. Based on these factors, HCT is considered a **favorable** remedy for this balancing criterion

- **Alternative D (SBW) –** Attenuation and concentration reductions are already occurring at MW-05. As discussed above, installation of an SBW, if not constructed around the entire circumference of the landfill, will likely just re-route impacted groundwater, causing potential elevated concentrations in different areas of the site. If an SBW is installed around the entire circumference of the CCR Landfill Unit, such an enclosed structure will require pumping from inside the SBW so as to maintain inward hydraulic gradients, and any extracted water would need ex-situ treatment before discharge/disposal. Time to achieve protection standards may be longer when considering construction of an SBW may alter groundwater flow requiring longer attenuation time. Based on these factors, SBW is considered an **unfavorable** remedy for this balancing criterion.

- **Alternative E (PRB) –** Although attenuation and concentration reductions are already occurring at MW-05, a PRB could potentially decrease the time to compliance with the GWPS once installed. Design and implementation of a PRB for the reduction of lithium and molybdenum to the GWPS may take several years (2-5) as bench/pilot testing would need to be completed to determine the proper geochemical reactions for the PRB would need to be evaluated. PRB application as a remedy for lithium and molybdenum is not currently well established and more research into its applicability for these constituents would be required. Assuming a reactive media can be developed, PRB would likely decrease the time to compliance. Based on these factors, PRB is considered a **favorable** remedy for this balancing criterion

- **Alternative F (ISSS) –** With the cap in place, attenuation and concentration reductions are already occurring at MW-05. ISSS would require the cap to be removed (at least in segments) and the CCR material be mixed with cement and/or other stabilization/solidification materials. During this process, the CCR would be subject to infiltration from rainfall, resulting in an increase in leachate management and the potential for groundwater impacts to the uppermost aquifer. After completion of ISSS, MNA would be considered to address the existing constituent plume, which would be expected to take at least the time discussed in Alternative A (MNA). ISSS would effectively reverse the clock, or stall the natural attenuation process until ISSS is completed based on the potential for additional impacts. Based on these factors, ISSS is considered an **unfavorable** remedy for this balancing criterion.

- **Alternative G (CBR)** – As with ISSS, once the cap is removed, the in-place CCR will be exposed to infiltration from precipitation resulting in significantly more leachate management and the potential for additional groundwater impacts. Excavation is expected to take 7-12 years depending on site specific factors, during which time increased contamination to the groundwater will likely be occurring. Once the material is removed, MNA would be completed on the remaining groundwater plume, which would be expected to re-set the clock and take at least the amount of time discussed in Alternative A (MNA), if not more, based on potential additional impacts. Based on these factors, CBR is considered an **unfavorable** remedy for this balancing criterion.

257.97(c)(1)(vi) Potential for exposure of humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment associated with excavation, transportation, re-disposal, or containment

For each of the alternatives where closure in place is used as source control, potential for exposure is low. The CCR is currently capped and closed with a geomembrane cover system, preventing exposure to Site workers. Only one (1) monitoring well (MW-05) located directly adjacent to the CCR Landfill Unit has concentrations of lithium and molybdenum at a statistically significant level. These concentrations significantly declined following implementation of source control measures. Groundwater from the Stratum III aquifer is not used for drinking or any other purpose at the site, and no groundwater impacts have been found at the downgradient property boundary.

The following bullets briefly describe the potential exposure risks that may be associated with each remedial alternative:

- **Alternative A (MNA)** – Because the CCR Landfill Unit is already closed, there is no meaningful additional risk of exposure using MNA as a remedy as it is a passive remedy. No additional construction is required for implementation other than potential routine monitoring well maintenance which will be required for all remedies. Based on these factors, MNA is considered a **favorable** remedy for this balancing criterion.
- **Alternative B (ISCT) –** For ISCT specifically, there are no meaningful additional risk posed by the remedy beyond the risk described in previous sections. An in-situ remedy using DPT with no permanent equipment, structures or residuals has minimal risk for this balancing criterion. Based on these factors, ISCT is considered a **favorable** remedy for this balancing criterion.
- **Alternative C (HCT)** – For HCT specifically, there is additional risk posed by the remedy beyond the risk described in previous sections. Active ex-situ pumping and treatment system handles water, chemicals and/or residuals management for additional off-site treatment and disposal, local traffic, and industrial movement. Based on these factors, HCT is considered a **less-favorable** remedy for this balancing criterion.
- **Alternative D (SBW) –** Secondary waste streams of soil and groundwater associated with the installation of a SBW may have additional risk as the excavated materials will need to be characterized and transported/disposed off-site. This transportation of secondary wastes has the potential for risk to human health and the environment from spills and fugitive dusts. Based on these factors, SBW is considered a **less-favorable** remedy for this balancing criterion.
- **Alternative E (PRB) –** PRB much like SBW will produce secondary waste streams of soil and groundwater associated with the installation of a PRB may have additional risk as the excavated materials will need to be characterized and transported/disposed off-site. This transportation of secondary wastes has the potential for risk to human health and the environment from spills and fugitive dusts. Based on these factors, SBW is considered a **less-favorable** remedy for this balancing criterion.
- **Alternative F (ISSS) –** During implementation of ISSS, there is a high potential for exposure risks due to the large amounts of construction required, length of heavy equipment traffic (2-4 years) and potential of spills from hauling materials, and fugitive dusts. Based on these factors, SBW is considered an **unfavorable** remedy for this balancing criterion.

- **Alternative G (CBR)** – A high potential for exposure exists for the CBR remedy during excavation and transportation of the CCR to a different landfill facility. Duration of heavy equipment traffic increases the risk for potential accidents. Additionally, onsite spills, noise and fugitive dusts make CBR a high potential for exposure risks. Based on these factors, CBR is considered an **unfavorable** remedy for this balancing criterion.

257.97(c)(1)(vii) Long-term reliability of the engineering and institutional controls

The following bullets briefly describe the long-term reliability that may be associated with each remedial alternative:

- **Alternative A (MNA)** – Stability modeling (conducted as part of the MNA Evaluation, see Section 2.2.5.1) indicates that over the ranges of pH, Eh, and TDS observed and expected in groundwater in the future at the Site, the natural adsorption of molybdenum and exchanged lithium are and will remain relatively stable once attenuated. The modeling results suggest that the adsorption of molybdenum can be reversed only if conditions become sufficiently alkaline, but there is no historical basis to expect such an occurrence. In conjunction with capping and closure of the Unit, MNA has been a common and proven technique for long-term waste management. Based on these factors, MNA is considered a **favorable** remedy for this balancing criterion.
- **Alternative B (ISCT)** – ISCT's reliability is dependent on permeability of the subsurface and the amount and distribution of secondary iron or manganese (oxy-) hydroxides (for aerobic approach), or electron donors and soluble iron or manganese and sulfur that can be consistently distributed. It is a reliable technology if injected materials can be distributed throughout the impacted aquifer (for anaerobic approach). Bench- and/or pilot-scale treatability testing programs are needed to understand the biogeochemical processes that would effectively reduce migration of molybdenum and lithium in groundwater. ISCT is not a proven technology at large scale field application for CCR Sites. While this may be a viable remedy, there are no known CCR sites where ISCT has been proven for lithium and molybdenum remediation. Based on these factors, ISCT is considered a **less-favorable** remedy for this balancing criterion.
- **Alternative C (HCT)** – HCT is very reliable for hydraulic containment, and ex-situ treatment is very reliable in meeting a permitted discharge criterion if implemented correctly. Options for ex-situ treatment of groundwater may include pH adjustment, precipitation technologies, adsorption on reactive media, ion exchange, membrane filtration, or biological treatment, all reasonably proven, reliable, and maintainable with proper operation and maintenance (O&M). While proven and reliable, implementation of ex-situ treatment of lithium and molybdenum can be challenging as significant site-specific data, laboratory evaluations, and pilot studies are needed to ensure that the treatment can be implemented successfully. While HCT can be considered reliable, it is considered less favorable because of the need for ongoing operational maintenance associated with the HCT system thus bringing into question the long-term reliability of the corrective measure. Based on these factors, HCT is considered a **less-favorable** remedy for this balancing criterion.
- **Alternative D (SBW) –** SBW is a reliable remedy for hydraulic containment and has been proven on many different sites in the past 50 years. If a SBW is installed around the entire circumference of the CCR Landfill Unit, the enclosed structure would require pumping from inside the SBW to maintain inward hydraulic gradients, and any extracted water would need to be treated ex-situ before discharge/disposal. While this method could be reliable, it is considered less favorable because ongoing operational maintenance and

leachate management associated with the HCT system would be required. Based on these factors, SBW is considered a **less-favorable** remedy for this balancing criterion.

- **Alternative E (PRB) –** PRB, much like ISCT, is dependent on geochemical manipulations to groundwater in order to reduce COC concentrations. Bench- and/or pilot-scale treatability testing programs are needed to understand the biogeochemical processes that would effectively reduce migration of molybdenum and lithium in groundwater. PRB is not a proven technology at large scale field application for CCR Sites with these COCs. Based on these factors, PRB is considered a **less-favorable** remedy for this balancing criterion.

- **Alternative F (ISSS) -** Once ISSS is completed in the landfill, the same techniques and process as Alternative A would be implemented, and the MNA phase of ISSS would commence. ISSS would be expected to solidify the mass, and no further impacts would be expected after the installation. This remedy does not rely on geochemical manipulations of groundwater, and therefore, is more reliable than PRB or ISCT. Based on these factors, ISSS is considered a **favorable** remedy for this balancing criterion.

- **Alternative G (CBR)** – Once CBR is completed, the same techniques and processes as Alternative A (MNA) would be completed, and the MNA phase of CBR would commence. Therefore, since MNA is a favorable solution for long-term reliability, then CBR with MNA is also a favorable solution. Based on these factors, CBR is considered a **favorable** remedy for this balancing criterion.

257.97(c)(1)(viii) Potential need for replacement of the remedy

As discussed in the previous section, closure in place is considered a permanent closure, and successful landfill closures have been proven effective throughout the waste management business for years. The following bullets briefly describe the potential need for replacement that may be associated with each remedial alternative:

- **Alternative A (MNA)** – MNA does not require replacement as it is only monitoring the environment with routine data evaluations. Minimal parts of the remedy (e.g., a monitoring well) may need replacement or movement over 30 years, but the overall remedial strategy remains. If monitoring data show changes to the existing and/or anticipated conditions, other measures can be evaluated at that time and easily amended to the MNA remedy. MNA has also been demonstrated to be a reliable remedy for groundwater impacts since the 1990s. Based on these factors, MNA is considered a **favorable** remedy for this balancing criterion.

- **Alternative B (IST)** – ISCT components require no routine maintenance. The re-application of ISCT can be achieved as needed with remobilization of DPT injection equipment. Like MNA, if monitoring data show changes to the existing and/or anticipated conditions, other measures can be evaluated at that time and easily amended to the remedy. However, ISCT has not been proven effective in field applications for lithium and molybdenum at CCR sites, and therefore, replacement may be needed if ISCT cannot perform as anticipated. Based on these factors, ISCT is considered a **less favorable** remedy for this balancing criterion.

- **Alternative C (HCT)** – HCT components required routine maintenance, and replacement of system components should be anticipated. The system would operate until all standards are met and a 'rebound' test indicates no additional pumping required. Like MNA, if monitoring data show changes to the existing and/or anticipated conditions, other measures can be evaluated at that time and easily amended to the HCT remedy. Based on these factors, HCT is considered a **favorable** remedy for this balancing criterion.

- **Alternative D (SBW) –** SBW is a hydraulic barrier remedy, and the predicted effects of the SBW will need to be evaluated prior to implementation of an SBW. As discussed in previous sections, an SBW will not treat groundwater via any geochemical manipulations; it will only serve as a hydraulic barrier to groundwater flow and can require pump and treatment to maintain inward gradients. Once installed, maintenance and evaluations of site-specific data (groundwater elevations, etc.) should be completed to ensure the SBW is functioning properly. Replacement of SBWs is not common, and the wall is not expected to need to be replaced. Based on these factors, SBW is considered a **favorable** remedy for this balancing criterion.

- **Alternative E (PRB) –** Once installed, a PRB will be a mostly passive remedy, with the potential for occasional rejuvenation of the treatment media. Like MNA, if monitoring data show changes to the existing and/or anticipated conditions, other measures can be evaluated at that time and easily amended to the remedy. Like ISCT, PRB has not been proven effective in field applications for lithium and molybdenum at CCR sites, and therefore, replacement may be needed if PRB cannot perform as anticipated. Based on these factors, PRB is considered a **less favorable** remedy for this balancing criterion.
- **Alternative F (ISSS) –** Once ISSS is completed, there is a low potential for replacement of the source control measure, as the CCR will be solidified. When ISSS is complete, the MNA phase would begin, which as discussed in Alternative A (MNA), should have little need for replacement. Based on these factors, ISSS is considered a **favorable** remedy for this balancing criterion.
- **Alternative G (CBR)** – Once CBR is completed, there is no potential for replacement of the source control measure, as all the CCR will be removed. Once removal is complete, CBR would go into the MNA phase, and therefore, as discussed in Alternative A (MNA), there should be minimal need for replacement. Based on these factors, CBR is considered a **favorable** remedy for this balancing criterion.

3.5.2 Balancing Criteria (2) - Source Control

The effectiveness of the remedy in controlling the source to reduce further releases based on the consideration of the following factors. As previously noted, Cooperative Energy has completed closure of the CCR Landfill Unit, which included installation of a geomembrane cover system for source control. The closure has been certified and approved by MDEQ (Appendix B).

257.97(c)(2)(i) The extent to which containment practices will reduce further releases

As discussed, closure in place with a geomembrane cover system is certified complete following the requirements of the CCR Rule. Groundwater data since closure has displayed downward trends of lithium and molybdenum, indicating that attenuation is occurring at the site, and no further releases have occurred.

The following bullets discuss to the extent each remedy will reduce further releases:

- **Alternative A (MNA)** – As discussed, for source control, closure of the CCR Landfill Unit with a geomembrane cover system is the primary source control mechanism at the Site. Closure has effectively eliminated infiltration into the CCR Landfill Unit and additional dewatering within the CCR Landfill Unit is removing the residual pore-water thus removing the leachate head on the liner system. Additionally, implementation of the MNA remedy will not disturb the CCR in the CCR Landfill Unit, so the remedy will not result in any further releases. Groundwater monitoring and data analysis will be completed to monitor progress. Based on these factors, MNA is considered a **favorable** remedy for this balancing criterion.
- **Alternative B (ISCT)** – In addition to the already completed source control, ISCT remediation local to the MW-05 area could abate existing plume migration from that area. Routine monitoring will likely identify the need for repeat injections. No further releases are expected from installation of an ISCT system, as the

system will be installed outside of the current CCR Landfill Unit footprint. However, detailed geochemical evaluations would need to be completed before ISCT is implemented, to ensure that the change in geochemical conditions from the ISCT does not cause an increase in a different constituent based on the new geochemical environment. Based on these factors, ISCT is considered a **less favorable** remedy for this balancing criterion.

- **Alternative C (HCT)** – In addition to the already completed source control, HCT can be achieved relatively quickly after startup of the extraction system, though the need for a capture zone to prevent plume expansion is not needed. Additionally, there are no potential further releases from implementation of an HCT system, as it will be installed outside of the CCR Landfill Unit footprint. Based on these factors, HCT is considered a **favorable** remedy for this balancing criterion.
- **Alternative D (SBW) –** In addition to the already completed source control, a SBW will greatly reduce flow from beneath the CCR Unit to the adjacent groundwater areas outside of the SBW, assuming that the SBW is installed around the circumference of the CCR Unit. No further releases are expected from the installation of a SBW, as it will be installed outside the CCR Landfill Unit footprint. Based on these factors, SBW is considered a **favorable** remedy for this balancing criterion.
- **Alternative E (PRB) -** In addition to the already completed source control, PRB remediation local to the MW-05 area could abate existing plume migration from that area. Potential further releases may occur during PRB construction, and the mechanical disturbance associated, but if completed around the outer perimeter of the CCR Landfill Unit, any potential releases from residual CCR materials would be treated. Based on these factors, PRB is considered a **favorable** remedy for this balancing criterion.
- **Alternative F (ISSS) –** During implementation of ISSS, the installed geomembrane cover system will need to be removed so that the CCR can be stabilized/solidified. Increased leachate management is expected as a result of infiltration from precipitation into the CCR Landfill Unit. In addition, mechanical mixing of the CCR materials with reactants may lead to new leaching, further increasing the potential migration of COCs. After completion of the ISSS, the MNA phase of the remedy would be implemented, and no further impacts would be expected as source control would be completed. Based on these factors, ISSS is considered an **unfavorable** remedy for this balancing criterion.
- **Alternative G (CBR)** –CBR will take approximately 7-12 years to complete. During the implementation of this remedy, there will be infiltration into the CCR Unit from precipitation, which may result in further releases of COCs into the groundwater. Lack of source control during the removal of the materials may cause further releases to the groundwater. Once CBR is completed, there is no potential for further releases. Based on these factors, CRB is considered an **unfavorable** remedy for this balancing criterion.

257.97(c)(2)(ii) The extent to which treatment technologies may be used

Beyond treatment provided by MNA mechanisms, supplemental treatment technologies could be used to enhance the rates of compliance at monitoring wells with a GWPS exceedance. However, in-situ treatment technologies for lithium and molybdenum have not been implemented and proven successful in field applications to date, as these constituents can be difficult to extract from groundwater.

The following bullets discuss the extent to which treatment technologies may be used:

- **Alternative A (MNA)** – Downgradient of the CCR Unit, physical and chemical attenuation is already occurring, and levels of molybdenum and lithium are stable across the site. Lithium and molybdenum at MW-05 (the only well exhibiting SSLs) show a statistically significant decreasing trend for both lithium and molybdenum. The aquifer has the capacity to attenuate lithium and molybdenum, as evidenced by the lack of SSLs downgradient of MW-05. The long-term decreases in loading of COC to the aquifer, due to the cap and closure as well as the leachate collection system operation, should be adequately treated by MNA. No additional technologies are anticipated to be required for MNA, unless it is determined to not be meeting the remedy goals (which is not anticipated based on the extensive MNA Feasibility Report). Simply based on the fact that there is no secondary treatment employed, MNA is considered a **less favorable** remedy for this balancing criterion.

- **Alternative B (ISCT)** – ISCT is groundwater treatment technology designed to alter groundwater conditions to lower metal solubility. Reactive chemicals are introduced into groundwater and soil for the primary purpose of rapid and complete metal precipitation. ISCT will reduce existing risk in the immediate area of injections very quickly using chemical reactions to sequester lithium and molybdenum. This may involve adjustment of pH to higher or lower levels while maintaining adequate buffering capacity to maintain long-term stability of the pH adjustment. However, as discussed, ISCT has not been proven to be viable in field applications for the COCs at this site as lithium and molybdenum inherently respond differently to pH manipulation (e.g., molybdenum adsorbs better at low pH while lithium does not). Therefore, extensive bench and pilot testing will need to be completed to determine what geochemical manipulation would best reduce the COC concentrations while not introducing new potential impacts. Based on these factors, ISCT is considered a **less favorable** remedy for this balancing criterion.

- **Alternative C (HCT)** – The HCT approach uses extraction wells or trenches to capture groundwater, which will subsequently require above-ground treatment and permitted discharge. As a containment remedy, HCT captures already impacted groundwater so the reduction in risk downgradient of the capture zone is relatively instantaneous, at that point. Large scale treatment using HCT has been proven successful at CCR sites for the COCs (https://www.ameren.com/company/environment-and-sustainability/managing-coal-combustion). Based on these factors, HCT is considered a **favorable** remedy for this balancing criterion.

- **Alternative D (SBW) –** Installation of a SBW is a passive source control, but not treatment, remedy that will require additional MNA evaluations once the SBW is installed. Therefore, the extent to which treatment technologies are used are the same as Alternative A (MNA). Based on these factors, SBW is considered a **less favorable** remedy for this balancing criterion.

- **Alternative E (PRB) –** PRB is a passive in-situ treatment technology that is designed to intercept and remediate the contaminant plume using geochemical manipulations where COCs are removed via precipitation and/or adsorption. PRBs have not been proven effective for CCR sites with lithium and molybdenum impacts and would require extensive bench/pilot tests to ensure that the system reduces COCs in the groundwater while not introducing new potential impacts. Based on these factors, PRB is considered a **less favorable** remedy for this balancing criterion.

- **Alternative F (ISSS) –** Once the CCR material has been stabilized/solidified, by design, it should not leach CCR metals to groundwater in concentrations that would cause a groundwater exceedance. Therefore, this technology basically treats the source. Based on these factors, ISSS is considered a **favorable** remedy for this balancing criterion.

- **Alternative G (CBR)** – Once CBR is completed, there will be no CCR mass (solidified or not) remaining on Site. Based on these factors, CBR is considered not applicable. However, with CBR, MNA or additional treatment technologies may be considered to address residual groundwater impacts, and is therefore, identified as **less favorable** remedy for this balancing criterion.

3.5.3 Balancing Criteria (3) - Implementability

The ease or difficulty of implementing a potential remedy(s) based on consideration of the following types of factors:

257.97(c)(3)(i) Degree of difficulty associated with constructing the technology

The following bullets discuss the degree of difficulty associated with constructing each remedial option:

- **Alternative A (MNA)** – Implementation of MNA is easy to design, construct and operate with minimal maintenance. Implementation will be largely data and reporting driven, with detailed evaluations on the effectiveness of the remedy and how comparison of the attenuation rates with those predicted. Based on these factors, MNA is considered a **favorable** remedy for this balancing criterion.

- **Alternative B (ISCT)** – Implementation of ISCT near the area of MW-05 is relatively easy with respect to infrastructure since the well network for MNA is already in place, although additional studies are necessary to implement the enhancements. Additional data are needed to show that aquifer attenuation capacity is improved with engineered enhancements and that GWPS can be met within a reasonable time frame sooner than an MNA remedy alone. Significant bench scale testing and analysis as well as pilot studies will also be required to ensure the ISCT is removing the COCs from groundwater while not introducing potential secondary impacts. Based on these factors, ISCT is considered a **less favorable** remedy for this balancing criterion.

- **Alternative C (HCT)** – Installation of extraction wells and/or trenches can be accomplished relatively quickly (1 to 2 months). However, additional aquifer testing, system design and installation, and permit approval may be required, which may take upwards of 18-24 months. The initiation of the approach would be contingent on the start-up of the wastewater treatment infrastructure. Design and construction of a treatment facility can be a lengthy process complicated by numerous vendors, supply chain issues, and uncertain performance and pricing in today's work environment. Based on these factors, HCT is considered a **less favorable** remedy for this balancing criterion.

- **Alternative D (SBW) –** Installation of a SBW would require detailed design of a slurry wall system followed by installation by a specialty contractor. Design of a system would likely require additional site borings and may take upwards of 12 months to complete. Following the design, a specialty contractor would be needed to install the barrier wall, and implementation would likely be technically challenging to compete due to the limited space along the downgradient edge of the CCR Landfill Unit, non-linear waste boundary, groundwater elevations, heterogeneous geological layering, and sensitive wetland features present onsite. Based on these factors, SBW is considered an **unfavorable** remedy for this balancing criterion.

- **Alternative E (PRB) –** Installation of a PRB system would require detailed groundwater and geochemical modeling, bench scale testing, pilot tests, detailed design, and specialty contractors for implementation. Groundwater and geochemical model would be needed to maximize the locations of the funnel and gates so that the remedy is effective at reducing COCs while not changing the site hydrogeology in such a way the

COCs are affecting areas that were not previously impacted. As discussed, the use of PRB for lithium and molybdenum has not been demonstrated to be effective in the field, so significant bench and laboratory testing will need to be completed to ensure that the COC concentrations are treated while not introducing new COC into the groundwater or impact the adjacent wetland areas. Implementation of the remedy would require specialty contractors and may prove to be technically challenging to complete. Based on these factors, PRB is considered an **unfavorable** remedy for this balancing criterion.

- **Alternative F (ISSS) –** ISSS would be a difficult remedy to implement due to technical and logistical challenges associated with the remedy. Field pilot tests would likely be required to confirm that the equipment can reach the full depths of the CCR Unit, and that solidification is occurring. This large-scale construction project is also estimated to take at least a couple of years to complete, likely with technically challenging field components and conditions. Based on these factors, ISSS is considered an **unfavorable** remedy for this balancing criterion.
- **Alternative G (CBR)** – CBR would be the most difficult remedy to implement because it would require deconstruction of the geomembrane cover system, excavation, continuous dewatering (due to precipitation), leachate management, and transportation of CCR over local roadways. Additionally, an alternative location that has capacity to accept the wastes would need to be identified (or permitted and constructed). Based on these factors, CBR is considered an **unfavorable** remedy for this balancing criterion.

257.97(c)(3)(ii) Expected operational reliability of the technologies

The following bullets discuss the expected operational reliability associated with each remedial option:

- **Alternative A (MNA)** – A high degree of operational reliability could be gained from historic and future groundwater quality databases with the ability to recognize statistically meaningful changes using routine monitoring data. Tier IV of an MNA remedy requires a performance monitoring plan with site specific contingency plans. The MNA Evaluation study estimates an attenuate rate for the COCs at MW-05 and, should MNA not be effective as projected, contingency plans would be implemented. The only O&M associated with MNA will be routine monitoring and well maintenance, which will be required for all of the potential remedies. Based on these factors, MNA is considered a **favorable** remedy for this balancing criterion.
- **Alternative B (ISCT)** – The reliability of ISCT is high if aquifer attenuation capacity is present and aquifer conditions that result in attenuation remain favorable and/or are being enhanced. ISCT is less favorable than MNA because it has similar groundwater monitoring requirements while having an increased amount of mechanical and maintenance requirements. Injections can be performed using DPT leaving minimal ground disturbance and no permanent remedial equipment. Repeat applications are likely to be required. Additionally, as discussed, bench/pilot tests will need to be completed prior to implementing ISCT as a remedy to ensure that COC concentrations decrease while not causing new impacts. Based on these factors, ISCT is considered a **less favorable** remedy for this balancing criterion.
- **Alternative C (HCT)** – Reliable for hydraulic containment, but uncertainty exists whether groundwater remediation goals can be achieved within a reasonable time frame without further understanding of extraction rates and allowable discharge rates. Prior to implementation, the effluent water may require treatment for compliance with regulatory standards in order to be discharged through the NPDES outfall. Operationally, the pump, pump-house and treatment systems will require frequent O&M with potential for equipment

malfunctions requiring repair and/or replacement. Based on these factors, HCT is considered a less favorable remedy for this balancing criterion.

- **Alternative D (SBW)** – Following proper design and installation, a SBW can be reliable. However, a pump and treatment system is required to maintain inward gradients, the same O&M factors as HCT need to be considered. Frequent O&M with potential for equipment malfunctions requiring repair and/or replacement may be necessary. Based on these factors, SBW is considered a less favorable remedy for this balancing criterion.
- **Alternative E (PRB) –** PRBs are mostly passive remedies', therefore, once the PRB is designed and installed, there should be limited operational issues with the system. However, as discussed, PRB as a remedy for lithium and molybdenum at CCR Sites has not been proven in field investigations, therefore, extensive bench scale and pilot studies are needed to ensure that the COCs will decrease while not causing new impacts. Additionally, the reactive media will need to be rejuvenated and/or replenished over time. These unknowns make PRB less operationally reliable as it has not been proven effective. Based on these factors, PRB is considered a less favorable remedy for this balancing criterion.
- **Alternative F (ISSS) –** Once completed, ISSS should be very reliable as a source control, since the CCR waste will be solidified. Implementation of ISSS may be more difficult as field pilot tests would likely be required to confirm that the equipment is capable of reaching the full depths of the CCR Unit, and that solidification is occurring. Once installed, MNA processes would occur as outlined in Alternative A. Based on these factors, ISSS is considered a **favorable** remedy for this balancing criterion.
- **Alternative G (CBR)** – CBR will be a very reliable technology once the materials are removed. Once removed, MNA monitoring will be completed, which as discussed above, would be a favorable solution. Implementation would be difficult for CBR, as the construction process involved in CBR may be technically challenging. Once installed, MNA processes would occur as outlined in Alternative A. Based on these factors, CBR is considered a **favorable** remedy for this balancing criterion.

257.97(c)(3)(iii) Need to coordinate with and obtain necessary approvals and permits from other agencies

As discussed, closure in place with a geomembrane liner system is certified complete following requirements of the CCR Rule. The site is currently permitted through MDEQ under the Nonhazardous Solid Waste Management Regulations (MSWMR): Title 11 Mississippi Administrative Code, Part 4, Rule 1.4E.

The following bullets discuss the expected permitting process for each remedial option:

- **Alternative A (MNA)** – MNA as a selected remedy requires minimal approvals beyond potentially replacement monitoring well permits. Deed restrictions may be necessary until natural attenuation processes have achieved GWPS. No other institutional requirements that may limit application of MNA are expected at this time as there is no state CCR rule for Mississippi. Based on these factors, MNA is considered a **favorable** remedy for this balancing criterion.
- **Alternative B (ISCT)** – ISCT as a selected remedy typically requires an Underground Injection Control (UIC) Permit approval, beyond permits needed for injection wells and potential replacement of monitoring wells. Deed restrictions may be necessary until natural attenuation processes have achieved GWPS. No other

institutional requirements that may limit application of ISCT are expected at this time. Based on these factors, ISCT is considered a **less favorable** remedy for this balancing criterion.

- **Alternative C (HCT)** – Depending on the effluent management strategy, modifications to the existing NPDES permit may be required. A new UIC permit may also be needed if groundwater reinjection is chosen. In addition, deed restrictions may be required as long as groundwater conditions are above regulatory standards for unrestricted use. Based on these factors, HCT is considered a **less favorable** remedy for this balancing criterion.
- **Alternative D (SBW)** - Installation of a SBW near downgradient wetland areas, and the potential for disturbance to those wetlands, may require interaction with MDEQ, Corp of Engineers, FEMA, etc. Based on these factors, SBW is considered a **less favorable** remedy for this balancing criterion.
- **Alternative E (PRB) –** Installation of a PRB may require a NPDES, UIC and Air quality permits (ITRC, 1999., ITRC, 2011). These requirements are obtainable but will require extensive site evaluation. Based on these factors, PRB is considered a **less favorable** remedy for this balancing criterion.
- **Alternative F (ISSS) -** Since the site has already been capped and closed with a MDEQ permit, modifications (or removal) of the cap would require permit modifications. MDEQ would likely need to approve the plans to remove the cap and to select a different method for source control. Based on these factors, ISSS is considered a **less favorable** remedy for this balancing criterion.
- **Alternative G (CBR)** – Since the site has already been capped and closed with a MDEQ permit, modifications (or removal) of the cap would require permit modifications. MDEQ would need to approve the plans to remove the cap and to select a different method for source control. If greenfield sites were selected for ultimate disposal, significant sighting and permitting is necessary. Based on these factors, CBR is considered a **less favorable** remedy for this balancing criterion.

257.97(c)(3)(iv) Availability of necessary equipment and specialists

The following bullets discuss the availability of necessary equipment and specialists associated with each remedial option:

- **Alternative A (MNA)** – MNA is a simple technology, established, passive remedy requiring minimal equipment or technical specialization. Monitoring methodologies are routine and routinely practiced by consulting or laboratory contractors. Based on these factors, MNA is considered a **favorable** remedy for this balancing criterion.
- **Alternative B (ISCT)** – ISCT is a relatively simple technology, established, remedy requiring minimal intrusive activity (new injection wells) and commonly available equipment and reactants. Monitoring methodologies are routine and routinely practiced by consulting or laboratory contractors. Based on these factors, ISCT is considered a **favorable** remedy for this balancing criterion.
- **Alternative C (HCT)** – An ex-situ treatment technology would need to be selected based on bench/pilot studies and could require specialty items such as compound specific reactive media. Vendors and suppliers would need to be accessible to perform this work, which is a variable of concern. Current labor shortages for installation contractors are resulting in delayed construction, thus increasing the time required to achieve GWPSs. Based on these factors, HCT is considered a **less favorable** remedy for this balancing criterion.

- **Alternative D (SBW) –** Once designed, SBW implementation must be completed by vendors and suppliers. Labor shortages are likely for any installation contractors resulting in anticipated construction delays. Methods and materials for SBW are well studied and fairly common, although current material shortages may be an issue. If required, a pump and treatment system to maintain inward gradients would require significant vendor interaction and require compound specific reactive media. Based on these factors, SBW is considered a **less favorable** remedy for this balancing criterion.

- **Alternative E (PRB) –** PRB can require specialty consulting and installation contractors; however, it has been implemented for chlorinated solvents and some metals for many years. Once designed and pilot testing is complete, there are several different contractors nationwide, which can install PRB systems; however, current labor and material shortages are likely for any installation contractors, thus resulting in construction delays. Additionally, treatment technology could require specialty items such as compound specific reactive media, that may be difficult to stockpile in quantities needed for the installation. Based on these factors, SBW is considered a **less favorable** remedy for this balancing criterion.

- **Alternative F (ISSS) -** Once designed, ISSS implementation can be completed by numerous vendors and suppliers, although equipment and labor shortages are likely (e.g., large-diameter auger rigs) resulting in construction delays. Methods and materials for ISSS are well studied and fairly common, although current material shortages may be an issue. Based on these factors, ISSS is considered a **less favorable** remedy for this balancing criterion.

- **Alternative G (CBR)** – Once designed, CBR implementation can be accomplished by numerous contractors, although labor shortages are likely for any CCR Removal contractors, which may delay the overall project time line. Sufficient heavy equipment including haul trucks can be limited, resulting in closure delays. Based on these factors, CBR is considered a **less favorable** remedy for this balancing criterion.

257.97(c)(3)(v) Available capacity and location of needed treatment, storage, and disposal services

The following bullets discuss the available capacity and location needed for each remedial option:

- **Alternative A (MNA)** – There is no need for treatment and storage facility with an MNA remedy. Disposal of IDW generated during groundwater sampling (purge water) is easily containerized and shipped for treatment and/or disposal. Should an equipment shed for storing groundwater sampling equipment be desired, there is ample room for such a facility north of Old School Road. Based on these factors, MNA is considered a **favorable** remedy for this balancing criterion.

- **Alternative B (ISCT)** – The ISCT remedy does not require treatment and/or storage facilities. Disposal of IDW generated during groundwater sampling (purge water) is easily containerized and shipped for treatment and/or disposal. Should an equipment shed for storing groundwater sampling equipment be desired, there is ample room for such a facility north of Old School Road. Based on these factors, ISCT is considered a **favorable** remedy for this balancing criterion.

- **Alternative C (HCT)** – The HCT remedy requires treatment and/or storage facilities. Disposal of treatment residuals generated must be containerized and shipped for additional treatment and/or disposal. A dedicated treatment system building is likely required, with all the commensurate electrical supply, water, and HVAC. Installation of a pumphouse and treatment facility onsite in the vicinity of MW-05 or the likely discharge outfall would be difficult due to the limited buildable land outside the waste boundary and considering the access roads and sensitive receptors (i.e., designated wetland/floodplain areas). Based on these factors, HCT is considered an **unfavorable** remedy for this balancing criterion.

- **Alternative D (SBW) –** Implementation of a SBW would likely generate secondary waste streams of both soil and water that would need to be disposed. In limited quantities, waste can be easily containerized and shipped for treatment and/or disposal; however, if a significant amount of secondary waste streams are generated (which is likely for this remedy), then disposal may require haul trucks and identification of nearby permitted landfills that could accept the waste. Based on these factors, SBW is considered an **unfavorable** remedy for this balancing criterion.
- **Alternative E (PRB) –** Implementation of a PRB would likely be very similar to installation of a SBW with generation of secondary waste streams of both soil and water. Although the quantities may be somewhat less than those discussed in Alternative D (SBW), there is still a high likelihood that this remedy would require disposal of secondary wastes at nearby landfills. Based on these factors, PRB is considered an **unfavorable** remedy for this balancing criterion.
- **Alternative F (ISSS) –** After implementation of ISSS, there would be no need for a treatment and storage facility. During implementation of ISSS, a temporary structure may be needed to store materials and heavy equipment for completion of ISSS. Should such a structure be needed, there is ample room for such a facility north of Old Okahola School Road. Based on these factors, ISSS is considered a **favorable** remedy for this balancing criterion.
- **Alternative G (CBR)** – Prior to implementation of CBR, a full-scale Extraction & Transportation Evaluation would need to be completed to determine if nearby landfills have the capacity for the material in the CCR Landfill Unit. The nearest landfill is located approximately 10-miles from the site, and haul trucks would need to take local roadways to get to the landfill, which would be disadvantageous for the community. Prior to off-site disposal at a permitted facility, a waste stream study may be required to characterize the CCR to be alternately disposed. Based on these factors, CBR is considered an **unfavorable** remedy for this balancing criterion.

3.5.4 Balancing Criteria (4) - Community Concerns

The degree to which community concerns are addressed by a potential remedy(s).

257.97(c)(4) Degree to which community concerns are addressed by a potential remedy(s)

A public meeting was held on Tuesday, September 27, 2022, pursuant to 40 CFR § 257.96(e). Cooperative Energy notified the community of the meeting by local newspaper, its website, and physical public announcements in Lamar County (courthouse and libraries). There were two attendees at the meeting. There were no comments received during the meeting. Cooperative Energy provided an opportunity for written comments for up to 30 days after the meeting to a dedicated email address provided during the meeting and on its website. No written comments were received.

3.5.5 Summary of Balancing Criteria Evaluation

A summary of the balancing criteria with the favorability ratings are tabulated below. This table provides a visual representation of the favorable, less favorable and unfavorable rankings for each of the corrective measure alternatives based on the balancing criteria identified in § 257.97.

Summary of Balancing Criteria							
Balancing Criteria - 40 CFR 257.97 Section	**Alternative A – MNA**	**Alternative B – ISCT**	**Alternative C – HCT**	**Alternative D – SBW**	**Alternative E – PRB**	**Alternative F - ISSS**	**Alternative G - CBR**
257.97(c)(1)(i)	favorable	favorable	less favorable	unfavorable	less favorable	unfavorable	unfavorable
257.97(c)(1)(ii)	favorable	favorable	favorable	favorable	favorable	less favorable	less favorable
257.97(c)(1)(iii)	favorable	less favorable	unfavorable	favorable	less favorable	favorable	less favorable
257.97(c)(1)(iv)	favorable	favorable	less favorable	unfavorable	less favorable	unfavorable	unfavorable
257.97(c)(1)(v)	favorable	favorable	favorable	unfavorable	favorable	unfavorable	unfavorable
257.97(c)(1)(vi)	favorable	favorable	less favorable	less favorable	less favorable	unfavorable	unfavorable
257.97(c)(1)(vii)	favorable	less favorable	less favorable	less favorable	less favorable	favorable	favorable
257.97(c)(1)(viii)	favorable	less favorable	favorable	favorable	less favorable	favorable	favorable
257.97(c)(2)(i)	favorable	less favorable	favorable	favorable	favorable	unfavorable	unfavorable
257.97(c)(2)(ii)	less favorable	less favorable	favorable	less favorable	less favorable	favorable	less favorable
257.97(c)(3)(i)	favorable	less favorable	less favorable	unfavorable	unfavorable	unfavorable	unfavorable
257.97(c)(3)(ii)	favorable	less favorable	less favorable	less favorable	less favorable	favorable	favorable
257.97(c)(3)(iii)	favorable	less favorable	less favorable	less favorable	less favorable	less favorable	less favorable
257.97(c)(3)(iv)	favorable	favorable	less favorable	less favorable	less favorable	less favorable	less favorable
257.97(c)(3)(v)	favorable	favorable	unfavorable	unfavorable	unfavorable	favorable	unfavorable
257.97(c)(4)	No comments received. Therefore, no favorability ratings were applied						

The following sections provide summaries for each of the four (4) balancing Criteria.

3.5.5.1 § 257.97(c)(1) - Effectiveness & Protectiveness

The long- and short-term effectiveness and protectiveness of the potential remedy(s), along with the degree of certainty that the remedy will prove successful based on consideration of the following:

In the short term, Alternative G (CBR) and Alternative F (ISSS) are very unfavorable as they would require removal of the current cap consisting of a geomembrane liner system and would allow for infiltration into the CCR Landfill Unit. These alternatives reverse Cooperative Energy's proactive efforts to attain source control. This would likely increase CCR impacts to the groundwater at the site and delay compliance with the GWPS.

Alternatives A (MNA), B (ISCT), C (HCT), D (SBW), and E (PRB) all assume the current closure in place strategy for source control, which has already been completed in compliance with the CCR Rule and closure certification approved by MDEQ. COC results from monitoring well MW-05 (only well with SSLs) has concentrations that are already significantly decreasing, with a 77% reduction in lithium concentration and a 69% decrease in molybdenum concentration since 2016. Long-term effectiveness and protectiveness are similar across all remedial alternatives, with Alternatives A (MNA), B (ISCT), C (HCT), D (SBW), and E (PRB) expected to reach compliance standards in less than 30 years based on estimated time to compliance of Alternative A.

Alternatives F (ISSS) and G (CBR) may take longer to reach compliance standards, since removal of current source control measures would delay compliance. As displayed in the MNA Evaluation study, attenuation of the COCs is expected to be naturally sustainable at the site, so each remedy that doesn't disturb currently decreasing concentration trends is expected to reach compliance standards in a similar timeframe.

3.5.5.2 § 257.97(c)(2) – The effectiveness of the remedy in controlling the source to reduce further releases based on consideration of the following factors

Alternatives A-E all assume the current closure in place strategy for source control, which has already been completed in compliance with the CCR Rule and closure certification approved by MDEQ. Downgradient of the CCR Landfill Unit, physical and chemical attenuation is already occurring, and levels of molybdenum and lithium are decreasing. Lithium and molybdenum at MW-05 (the only location with constituent concentrations exhibiting SSLs) show a statistically significant decreasing trend, and the aquifer has the capacity to attenuate lithium and molybdenum (no SSLs exist downgradient of MW-05). The long-term decrease in loading to the aquifer, due to the cap and closure, is predicted to be treated by MNA alone. Supplemental remedies performed in conjunction with MNA (Alternatives B, C, D, E) may help reach compliance goals faster; however, they will not reduce risk to human health or the environment and will need to be fully evaluated with bench/pilot studies before being implemented. In addition, these technologies are speculative as to their effectiveness as a CCR remedy. In contrast, MNA modeling shows the effectiveness of the remedy in controlling the source, while there are no on-site risks such as exposure to workers on-site. CCR is encapsulated in the capped CCR Landfill Unit, providing safety. Since there are no exceedances of a GWPS at the property boundary, and MW-05 concentrations have been significantly declining, data shows that MNA is effective in conjunction with source control measures Cooperative Energy already put in place.

Alternatives F (ISSS) and G (CBR) would require removal of the CCR Landfill Unit cap, which may result in short term releases of COC into the aquifer, thus extending the time to compliance. Therefore, these remedies are unfavorable in respect to balancing criteria 2.

3.5.5.3 § 257.97(c)(3) – The ease or difficulty of implementing a potential remedy(s) based on consideration of the following types of factors

For MNA, the technology is easy to design, construct and operate with minimal maintenance. MNA is a simple technology, and an established, passive remedy requiring minimal equipment or technical specialization. Monitoring methodologies are routine and routinely practiced by consulting or laboratory contractors. There is no need for a treatment and storage facility with an MNA remedy. MNA as a selected remedy needs very little in additional approvals beyond potentially replacement monitoring well permits. No institutional requirements that may limit application of MNA are expected at this time. A high degree of operational reliability is gained from historic and future groundwater quality databases with the ability to recognize statistically meaningful changes from routine monitoring. If monitoring data show changes to the existing and/or anticipated conditions, other measures can be evaluated at that time and amended to the MNA remedy.

Alternatives B (ISCT), C (HCT), D (SBW), and E (PRB) would require additional materials to be brought to site and either injected in-situ into the site or treated ex-situ and/or transported out a permitted waste disposal facility. Additionally, each of these remedies would require a detailed design and would likely require pilot/bench scale testing. Alternatives B (ISCT) and E (PRB) have not been demonstrated to be effective in field applications for the COCs at CCR Sites; therefore, the overall difficulty of effectively implementing these types of remedies is unknown.

Alternatives C (HCT) and B (ISCT) can be implemented at the Site, but the use of supplemental technologies (Alternative D (SBW) and E (PRB)) is redundant with Alternative A (MNA), which has already shown effective results, and their implementation at the Site would require permits, permanent and/or temporary equipment and buildings, potential requirements for residuals handling and disposal, and challenges operating more active remediation technologies/equipment. The implementation of Alternatives F (ISSS) and G (CBR) could require an extensive permitting process due to the potential impacts to adjacent wetlands areas, local infrastructure and community residents.

3.5.5.4 § 257.97(c)(4) – The degree to which community concerns are addressed by a potential remedy

A public meeting was held on Tuesday, September 27, 2022, pursuant to 40 CFR § 257.96(e). Cooperative Energy notified the community of the meeting by local newspaper, its website, and physical public announcements in Lamar County (courthouse and libraries). There were two attendees at the meeting. There were no comments received during the meeting. Cooperative Energy provided an opportunity for written comments 30 days after the meeting to a dedicated email address provided during the meeting and on its website. No written comments were received.

4.0 SELECTED GROUNDWATER REMEDY

Since the completion of the ACM in September 2019, numerous site activities, investigations and evaluations of potential remedies have been completed to assess the different corrective measures for the CCR Landfill Unit. Semi-annual status reports have been completed as required by the CCR Rule describing the progress. Based on this information and the evaluation of the balancing criteria, as summarized below, MNA has the most favorable rankings for this site.

Summary of Balancing Criteria (15 balancing criteria evaluated)			
Remedy	**Total Favorable Rankings**	**Total Less-Favorable Rankings**	**Total Un-Favorable Rankings**
Alternative A – MNA	14	1	0
Alternative B – ISCT	7	8	0
Alternative C – HCT	5	8	2
Alternative D – SBW	4	6	5
Alternative E - PRB	3	10	2
Alternative F – ISSS	6	3	6
Alternative G – CBR	3	5	7

While alternatives ISCT and HCT also rank favorably for groundwater corrective action for a number of the threshold criteria, ISCT and HCT have some significant drawbacks as applied at this site. ISCT is not a proven alternative in field applications involving lithium and molybdenum, which inherently respond differently to pH manipulation. HCT, though effective for hydraulic control, is challenged by ex-situ treatment and water and residuals management. Implementation of these technologies requires a higher degree of preliminary testing and design and may create secondary unintended groundwater impacts due to geochemical manipulation at the site. In comparison, MNA with source control presents an effective and reliable solution for the site due to the declining concentrations of lithium and molybdenum seen recently and as modeled into the future.

Based on the evaluation, the following combination of corrective measures is proposed as the selected remedy to address the GWPS exceedances at the site:

1) Closure of the CCR Landfill Unit with a geomembrane cover and removal of free liquid for source control.
2) Establishment of a MNA program that incorporates contingencies plans, should the remedy not meet the anticipated results.

MNA is the most appropriate final remedy for this site because it meets each of the five (5) threshold criteria and is the most favorable remedy based on the evaluation of the balancing criteria as summarized in Section 3.5.5. and tabulated below.

As required by the CCR Rule (§ 257.97(a)), the following sections describe how the selected remedy will meet the five (5) threshold criteria:

- **Threshold Criteria 1 (257.97(b)(1)) - Be protective of human health and the environment**

There are currently no risks to human health or the environment at the site because elevated Appendix IV constituents are only present in groundwater above the GWPS in one (1) monitoring well (MW-05), located adjacent to the CCR Unit. As displayed in Figure 4 and 5, based on the nature and extent investigation completed at the site, there have been no measurable impacts of Appendix IV parameters over background conditions at the property boundary, or in the groundwater adjacent to Black Creek. No impacts are anticipated given that COC concentrations have decreased significantly since implementation of source control and are anticipated to decline further. Additionally, there are no potable groundwater wells located onsite within the uppermost aquifer for human consumption. Therefore, there is no risk to human health or the environment from the impacts at the CCR Landfill Unit.

As outlined in the Tier III of the MNA Evaluation (Appendix A), site geochemical modeling demonstrates that there is sufficient capacity within the uppermost aquifer to attenuate the lithium and molybdenum. Stability modeling also displays that once attenuated, lithium and molybdenum should remain stable, unless the site conditions were to become sufficiently alkaline, which is not expected at this site due to the naturally occurring acidic conditions.

- **Threshold Criteria 2 (257.97(b)(2)) Attain the groundwater protection standard as specified pursuant to § 257.95(h)**

The MNA Evaluation Report (See Appendix A), as outlined in Section 2.2.5.1, closely follows the USEPA guidance on MNA as a remedial evaluation and was completed following the tiered approach (USEPA, 2007; 2007b): and considers best practices from the ITRC document: “A Decision Framework for Applying Monitored Natural Attenuation Processes to Metals and Radionuclides in Groundwater” (ITRC, 2010).

Based on the findings of the report, lithium and molybdenum at MW-05 were considered candidates for an MNA remedy application and were deemed to meet the criteria for Tiers I, II, and III in accordance with USEPA guidance (USEPA, 2007a; 2007b). Modeled attenuation rates, taking into account dilution, sorption, and a decrease in downgradient pH (enhancing chemical attenuation of molybdenum), are conservatively estimated to range from 5 to 7 years and 27 to 29 years for lithium and molybdenum, respectively, after capping and closure of the CCR Landfill Unit.

- **Threshold Criteria 3 – (257.97(b)(3)) Control the source(s) of releases so as to reduce or eliminate, to the maximum extent feasible, further releases of constituents in appendix IV to this part into the environment**

Cooperative Energy closed the CCR Unit by capping the CCR Landfill Unit in accordance with § 257.102(d) and closure certification has been approved by MDEQ (Appendix B). Additionally, as part of closure plans, Cooperative Energy has modified the leachate collection system and is dewatering the residual porewater from within the CCR Landfill Unit. To meet the requirements of § 257.97-98, Cooperative Energy's approach combines source control, corrective remedy selection and groundwater monitoring to demonstrate achievement of applicable cleanup standards. The multi-part corrective action approach will be integrated, but may be sequenced, to allow for monitoring of results and optimization of subsequent steps following completion of the initial stages.

- **Threshold Criteria 4 – (257.97(b)(4)) Remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible, taking into account factors such as avoiding inappropriate disturbance of sensitive ecosystems**

Based on the results of the MNA feasibility study, the capacity of the aquifer is deemed sufficient to attenuate the COCs (lithium and molybdenum) mass down to regulatory standards through chemical attenuation processes that were confirmed to be occurring at the site through sequential extraction testing of aquifer materials downgradient of the units. Once attenuated, stability modeling for the COCs indicates that given the range of pH, Eh, and TDS conditions observed across the site, the adsorbed molybdenum and exchanged lithium will remain stable and will not re-release into the aquifer. Therefore, the aquifer will attenuate as much of the contaminated material as feasible. Additionally, this remedy will not impact sensitive ecosystems because construction will be minimal and will not affect the wetlands and/or other ecosystems located adjacent to the CCR Unit.

- **Threshold Criteria 5 – (257.97(b)(5)) Comply with standards for management of wastes as specified in § 257.98(d).**

MNA along with source control has been a component of correction action at RCRA and Comprehensive Environmental Response, Compensation, and Liability Act (Superfund) sites since the 1990s. Additionally, as discussed above, the CCR Landfill Unit was closed, and closure certification has been approved by MDEQ. Therefore, MNA with Closure in Place is an acceptable remedy as it “shall be managed in a manner that complies with all applicable RCRA requirements.” 40 CFR § 257.98(d).

5.0 LONG-TERM CORRECTIVE ACTION GROUNDWATER MONITORING PROGRAM AND IMPLEMENTATION

As required by § 257.98(a), within 90 days of selecting a remedy under § 257.97, the owner/operator must initiate remedial activities and establish and implement a long-term corrective action groundwater monitoring program. The CCR rule states that the Corrective Action Monitoring Program must do the following (§ 257.98(1)):

1) At minimum, meets the requirements of an Assessment Monitoring Program under § 257.95.
2) Documents the effectiveness of the Corrective Action Remedy; and
3) Demonstrates Compliance with the Groundwater Protection Standards

In accordance with § 257.98, RD Morrow has developed a *Corrective Action Plan* (CAP). The following sections summarize the evaluation and analysis procedures that are followed in the CAP.

5.1 Meets the Requirements of an Assessment Monitoring Program

In order to meet the requirements of an assessment monitoring program, the following is a summary of what will be completed and are included in the CAP.

- Groundwater elevation measurements will be collected prior to each sampling event. These will be used to develop a groundwater elevation contour map and to calculate groundwater flow velocities (with gradient, direction, etc.).
- Statistical evaluations will be completed within 90 days of receiving data from the laboratory. Specific statistical methods are discussed in the CAP and follow the methods and recommendations from the USEPA Unified Guidance (USEPA, 2009). As specified in § 257.98(c) of the CCR Rule, in order to complete corrective action monitoring the following must be demonstrated:
  - Compliance with the GWPS at all points within the plume of contamination that lie beyond the Detection/Assessment Monitoring groundwater monitoring well system.
  - Compliance with the GWPS where concentrations of constituents listed in appendix IV to this part have not exceeded the GWPS for a period of three consecutive years.
- Includes groundwater sampling methods and procedures to be utilized for collection of groundwater samples. Methods to be performed are in accordance with generally accepted practices within the industry and within provisions of the Mississippi regulations.
- Specifies a corrective action groundwater monitoring well network, groundwater sampling frequency, and parameters to be sampled under corrective action.
- Provides analytical and quality control procedures.

5.2 Documents the Effectiveness of the Corrective Action Remedy

The CCR Rule (§ 257.98(a)(1)(ii)) requires that the CAP document the effectiveness of the corrective action remedy. As outlined in USEPA 1999 (And referenced in USEPA 2007a and ITRC 2010), there are eight (8) key objectives for performance monitoring of MNA, which are as follows:

1) Demonstrate that natural attenuation is occurring according to expectations

2) Detect changes in environmental conditions ((e.g., hydrogeologic, geochemical, microbiological, or other changes) that may reduce the efficacy of any of the natural attenuation processes
3) Identify any potentially toxic and/or mobile transformation products
4) Verify that the plume(s) is not expanding downgradient, laterally or vertically.
5) Verify no unacceptable impacts to downgradient receptors
6) Detect new releases of contaminants to the environment that could impact the effectiveness of the natural attenuation remedy
7) Demonstrate the efficacy of institution controls that were put in place to protect potential receptors
8) Verify attainment of remediation objects.

The CAP will outline steps to ensure that these key objectives are met. Specifically, the GMP will ensure the monitoring well data, site conditions, and statistical analysis is routinely evaluated. Should these data, as a whole, call the efficacy of MNA into question, RD Morrow will reassess alternative technologies.

5.3 Demonstrate Compliance with the Groundwater Protection Standards

Statistical analysis will be completed after each sampling event to determine if corrective action monitoring wells are in compliance with the GWPS. Sampling requirements and statistical methods used for these evaluations will be provided in the CAP. As required by the CCR Rule (40 CFR § 257.98(c)(2)), compliance will be achieved by demonstrating that concentrations of Appendix IV parameters are below the GWPS for three consecutive years using the corrective action statistical methods and performance standards in § 257.93(f) and (g).

6.0 SCHEDULE

The owner or operator must specify as part of the selected remedy a schedule(s) for implementing and completing remedial activities. Such a schedule must require the completion of remedial activities within a reasonable period of time taking into consideration the factors set forth in paragraphs § 257.97(d)(1) through (6). The following section discusses each of these scheduling factors for implementation of Closure in Place and MNA.

- **Extent and nature of contamination, as determined by the characterization required under § 257.95(g);**

The extent and nature of molybdenum and lithium in groundwater has been established through assessment monitoring and the nature and extent evaluation as presented herein. The horizontal and vertical extents have been bound. For source control, closure of the CCR Unit with a geomembrane cover system is the primary source control mechanism at the Site. Placement of the cover system has effectively eliminated infiltration into the CCR Landfill Unit. This along with continued leachate removal from within the CCR Unit achieves the source control measures outlined in the closure plan.

- **Reasonable probabilities of remedial technologies in achieving compliance with the groundwater protection standards established under § 257.95(h) and other objectives of the remedy;**

Source control measures (cap and closure with modification of the leachate collection system) have already resulted in documented statistically significant decreasing trends ($p < 0.05$) for both lithium and molybdenum in groundwater at MW-05. These results show a reasonable probability of achieving compliance with the GWPSs.

During the Tier III MNA evaluation, mean downgradient decay rates were used to estimate the number of years it would take for elevated groundwater molybdenum and lithium concentrations to decrease to their GWPS. The maximum concentration of molybdenum observed in downgradient wells in 2021 (3.25 mg/L) would take approximately 30 years based on the site decay rate that has been observed since 2019. This estimation is conservative, as it does not account for various attenuation processes (e.g., dilution, dispersion, or sorption) or complete source control. Lithium is projected to achieve its respective GWPS in 5-7 years.

- **Availability of treatment or disposal capacity for CCR managed during implementation of the remedy;**

Chemical and physical attenuation is currently occurring, and levels are stable across the site. Since May 2019, lithium and molybdenum have shown statistically significant decreasing trends, and the aquifer has the capacity to attenuate lithium and molybdenum.

- **Potential risks to human health and the environment from exposure to contamination prior to completion of the remedy:**

For MNA, the current and future potential for exposure is low. Onsite, the area is capped over residual materials, preventing exposure to Site workers. No exceedances have been identified at the property boundary, and therefore, no off-site exposure has been identified. Further, concentrations at MW-05 have been significantly declining following source control measures.

- **Resource value of the aquifer including: current and future uses, proximity and withdrawal rate of users, groundwater quantity and quality, the potential damage to wildlife, crops, vegetation, and**

physical structures caused by exposure to CCR constituents, the hydrogeologic characteristic of the facility and surrounding land, the availability of alternative water supplies, other relevant factors.

There are no public groundwater supply sources in the vicinity or downgradient of the RD Morrow CCR Landfill Unit. The closest public water supply well is located approximately 4.5 miles away in Purvis, Mississippi. Morrow currently uses groundwater from industrial supply wells located near the plant, north of the CCR Landfill Unit Morrow property; however, these wells are screened in different geologic units upgradient of the landfill and approximately 688 to 789 feet below ground surface. The groundwater from the industrial supply wells comes from a different aquifer than the one monitored by the CCR Landfill Unit monitoring network, which is limited to the upper aquifer (Stratum III) located approximately 5 to 25 feet below ground surface.

Closure of the CCR Landfill Unit is complete, no damage has been documented to local wildlife, crops vegetation or physical structures as a result of exposure to CCR constituents. Hydrogeologic characteristics of the aquifer are not expected to be altered by the selected remedy beyond what is anticipated by the presence of the permitted CCR Landfill Unit.

Based on these facts, the following schedules are provided for implementing the chosen remedy for CCR Landfill Unit.

6.1 Site Closure and Source Control

As discussed above in Section 2.2.3 and 2.2.6, source control with the installation of geomembrane cover system has been completed and closure certification has been approved by the MDEQ. Groundwater monitoring results at MW-05 since the closure have displayed decreasing concentrations of lithium and molybdenum in groundwater. Therefore, source control is complete, and no further schedule is warranted.

6.2 Monitored Natural Attenuation

MNA is currently working at the site, as displayed in Figures 2.2.3.1 and 2.2.3.2, with a decline in lithium and molybdenum in the groundwater at MW-05. For remedy selection, a formalized process to continue to evaluate the effectiveness of MNA will be provided in the Corrective Action Groundwater Monitoring Plan. This plan, as discussed above, will be completed within 90 days of remedy selection. A more detailed schedule to compliance, along with adaptive triggers and contingency plans will be incorporated in the plan. Overall, the implementation of the MNA program is anticipated to have the following schedule:

1) Preparation of a Corrective Action GMP within 90 days of remedy selection
2) Completed semi-annual sampling of all Appendix III and IV parameters until there are no statistical exceedances for Appendix IV parameters above the GWPS for three consecutive years.
3) Remedy complete: This is estimated to take 30 years at MW-05 and is estimated to be completed by 2051.

7.0 RECORD KEEPING

Cooperative Energy, the owner and operator of the CCR Unit, will comply with the recordkeeping requirements specified in § 257.105(h), the notification requirements specified in § 257.106(h), and the internet requirements specified in § 257.107(h).

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Figures

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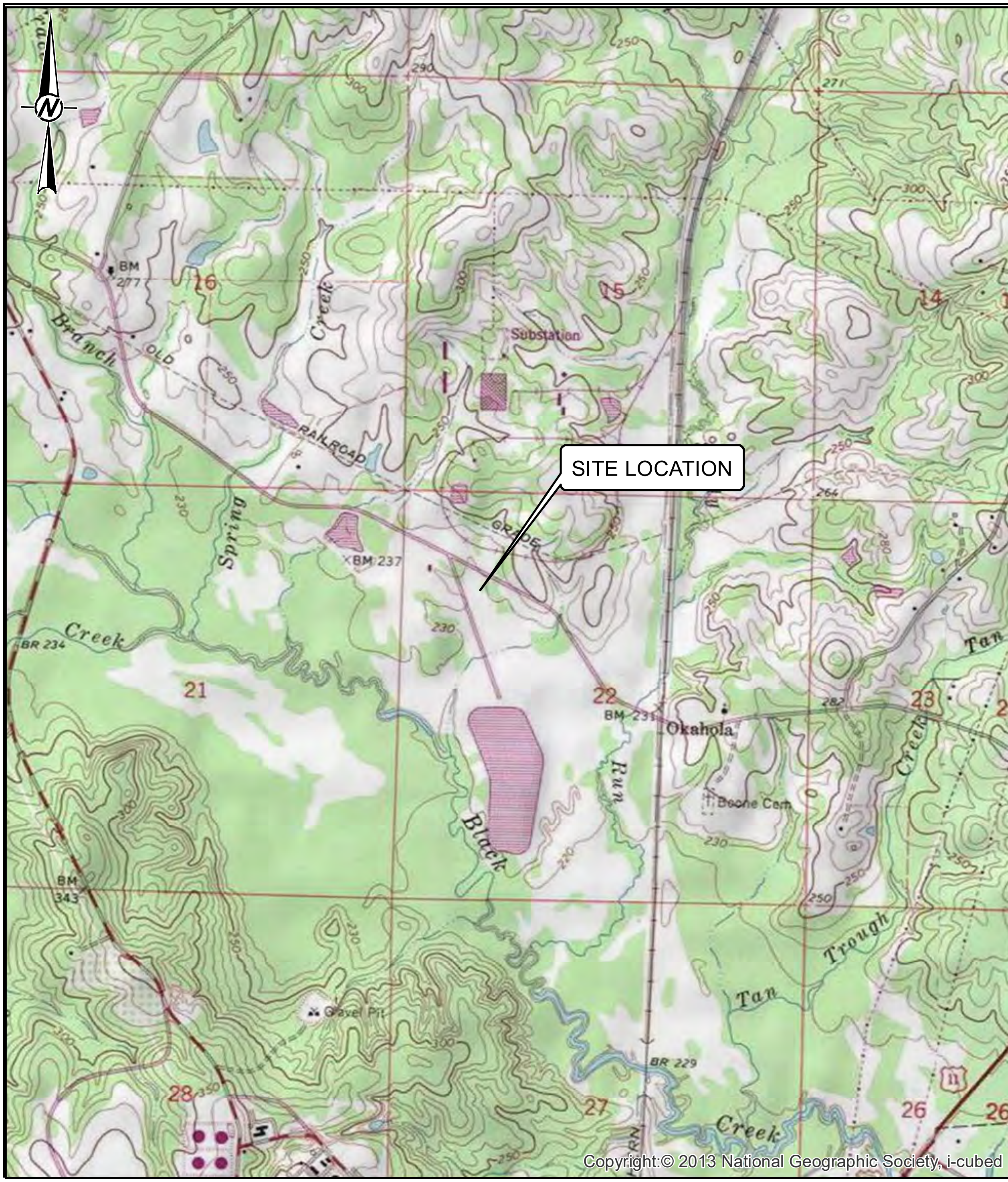

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CLIENT
COOPERATIVE ENERGY

PROJECT
RD MORROW GENERATING STATION
PURVIS, MISSISSIPPI

TITLE
SITE LOCATION MAP

CONSULTANT

YYYY-MM-DD	2020-04-30
PREPARED	DJC
DESIGN	DLP
REVIEW	DLK
APPROVED	DLP

PROJECT No.	CONTROL	Rev.	FIGURE
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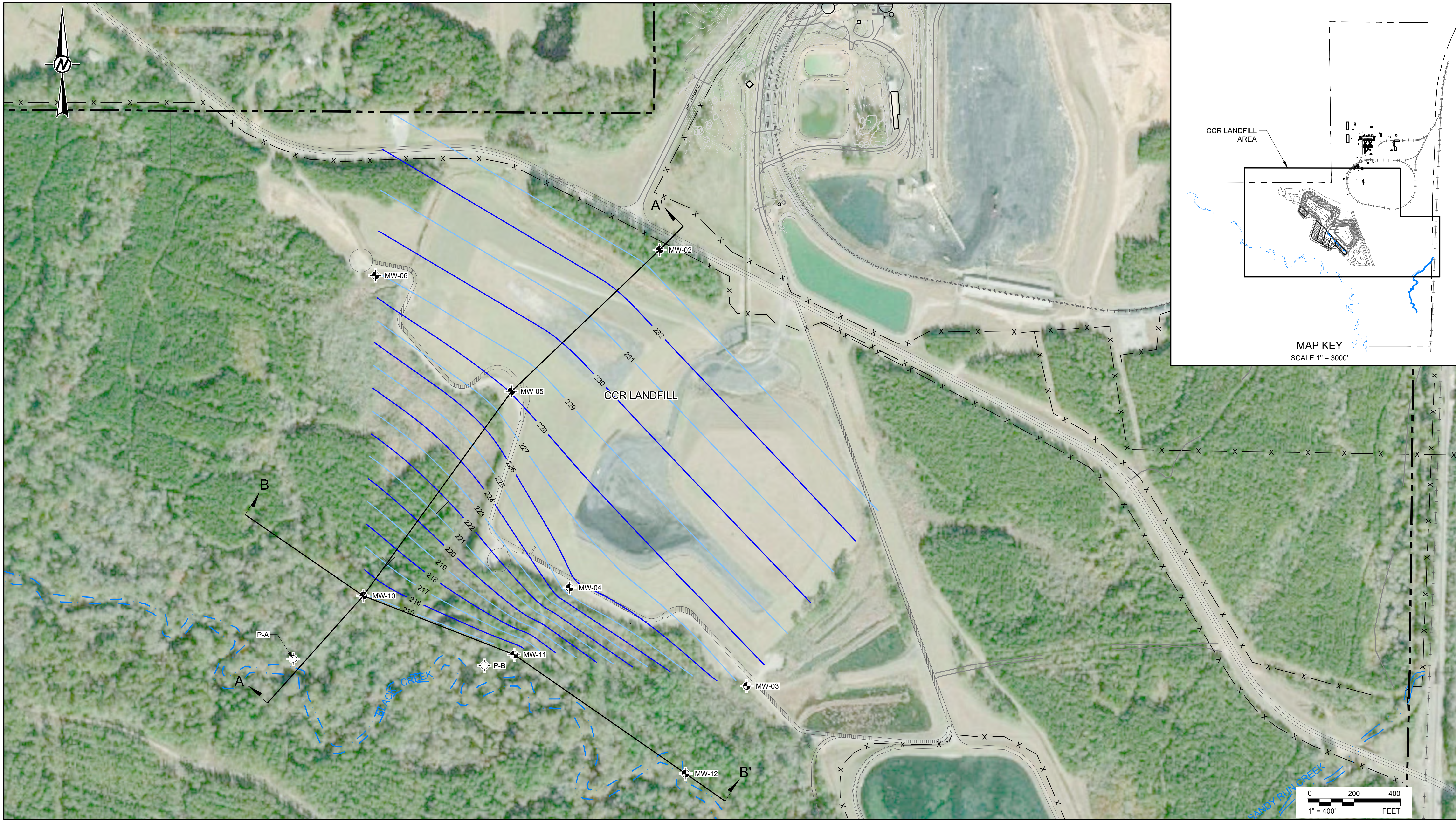

LEGEND

- PROPERTY BOUNDARY
- MW-XX MONITORING WELL LOCATION AND NUMBER
- MW-XX TEMPORARY MONITORING POINT LOCATION PIEZOMETERS
- 220 GROUNDWATER ELEVATION CONTOUR (FT MSL)
- CROSS SECTION LOCATION
- x x FENCE

REFERENCE

BASE MAP TAKEN FROM ENVIRONMENTAL MANAGEMENT SERVICES, INC., MONITORING WELL LOCATIONS, DATED 2017-02-17 DELIVERED IN .DWG FORMAT.

CLIENT
COOPERATIVE ENERGY

PROJECT
RD MORROW GENERATING STATION
PURVIS, MISSISSIPPI

CONSULTANT
wsp

YYYY-MM-DD	2022-06-20
DESIGNED	DLK
PREPARED	DJC
REVIEWED	PJN
APPROVED	DLP

TITLE
WELL LOCATION AND POTENTIOMETRIC SURFACE ELEVATION CONTOUR MAP
SEPTEMBER 14, 2021

PROJECT NO.	CONTROL	REV.	FIGURE
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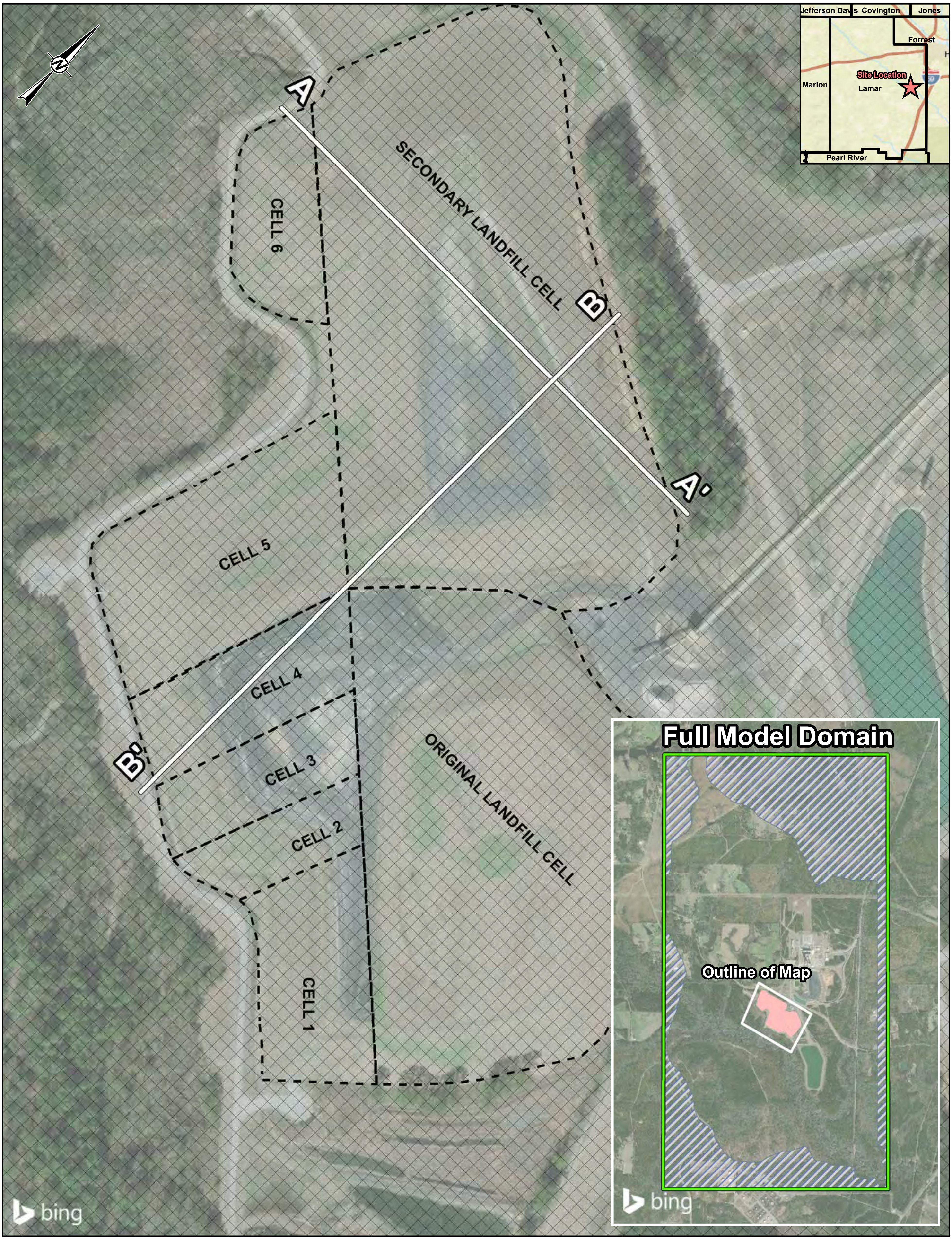

LEGEND

- Approximate Landfill Cell Boundaries
- Inactive Model Area
- Groundwater Model Boundary

0 250 500

Feet

NOTE(S)

1. LOCATIONS AND BOUNDARIES ARE APPROXIMATE

REFERENCE(S)

1. COORDINATE SYSTEM: NAD 1927 STATEPLANE MISSISSIPPI EAST FIPS 2301.

CLIENT

COOPERATIVE ENERGY

PROJECT

R.D. MORROW, SR. GENERATING STATION
PURVIS, LAMAR COUNTY, MISSISSIPPI
CCR LANDFILL CLOSURE PROJECT

TITLE

CCR LANDFILL DETAILS

CONSULTANT

wsp

YYYY-MM-DD	2020-03-05
DESIGNED	JSI
PREPARED	JSI
REVIEWED	JS
APPROVED	JM

PROJECT NO.	CONTROL	REV.	FIGURE
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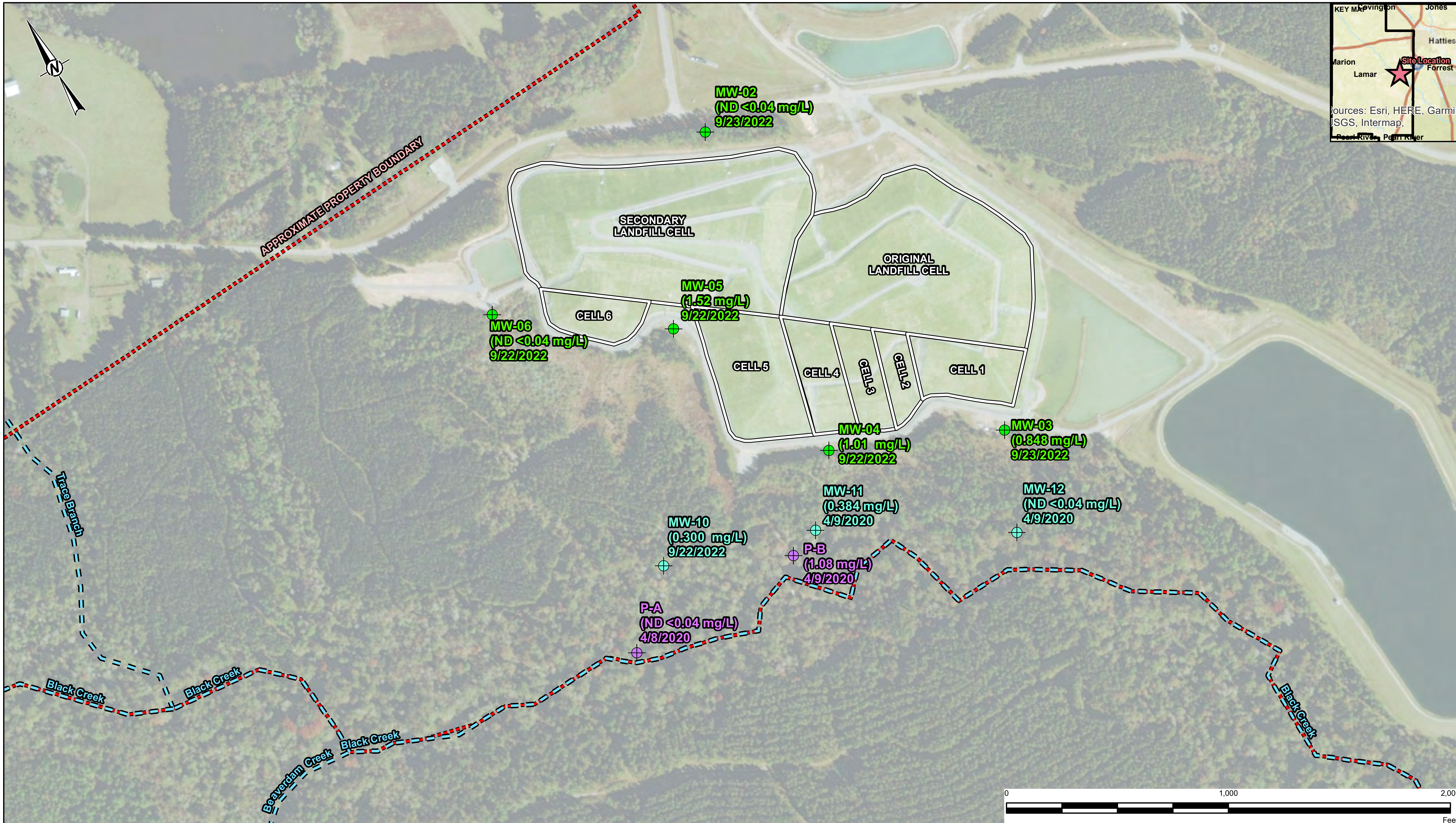

LEGEND

- CCR Rule Monitoring Well
- Nature and Extent Monitoring Well
- Temporary Piezometer
- Approximate Creek Locations
- CCR Landfill Cells
- Approximate Property Boundary

NOTE(S)

1. ND - NON-DETECT.
2. MG/L - MILLIGRAMS PER LITER.
3. CONCENTRATIONS DISPLAYED WITH SAMPLE DATE AND ARE FROM THE MOST RECENT SAMPLING EVENT FOR EACH MONITONRING WELL.

REFERENCE(S)

1. 2021 CORRECTIVE ACTION ANNUAL GROUNDWATER MONITORING REPORT.
2. 2020 CORRECTIVE ACTION ANNUAL GROUNDWATER MONITORING REPORT.

CLIENT
COOPERATIVE ENERGY

CONSULTANT
wsp

YYYY-MM-DD	2022-06-10
DESIGNED	JSI
PREPARED	JSI
REVIEWED	GTM
APPROVED	DLP

PROJECT
RD MORROW GENERATION STATION
PURVIS, MISSISSIPPI

TITLE
SPATIAL DISTRIBUTION OF LITHIUM CONCENTRATIONS

PROJECT NO.	REV.	FIGURE
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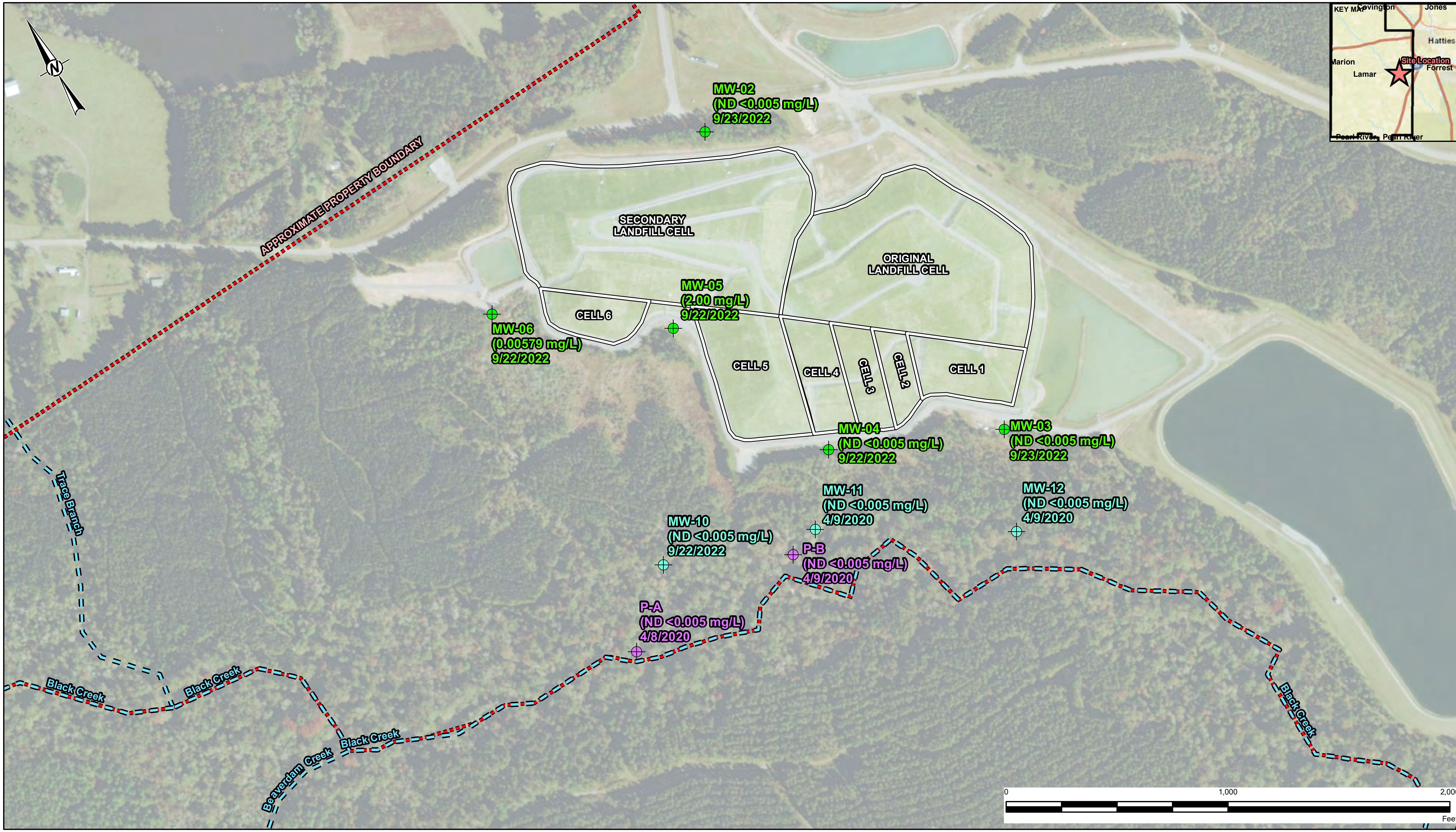

LEGEND

- CCR Rule Monitoring Well
- Nature and Extent Monitoring Well
- Temporary Piezometer
- Approximate Creek Locations
- CCR Landfill Cells
- Approximate Property Boundary

NOTE(S)

1. ND - NON-DETECT.
2. MG/L - MILLIGRAMS PER LITER.
3. CONCENTRATIONS DISPLAYED WITH SAMPLE DATE AND ARE FROM THE MOST RECENT SAMPLING EVENT FOR EACH MONITONRING WELL.

REFERENCE(S)

1. 2021 CORRECTIVE ACTION ANNUAL GROUNDWATER MONITORING REPORT.
2. 2020 CORRECTIVE ACTION ANNUAL GROUNDWATER MONITORING REPORT.

CLIENT
COOPERATIVE ENERGY

CONSULTANT
wsp

YYYY-MM-DD	2022-06-10
DESIGNED	JSI
PREPARED	JSI
REVIEWED	GTM
APPROVED	DLP

PROJECT
RD MORROW GENERATION STATION
PURVIS, MISSISSIPPI

TITLE
SPATIAL DISTRIBUTION OF MOLYBDENUM CONCENTRATIONS

PROJECT NO.	REV.	FIGURE
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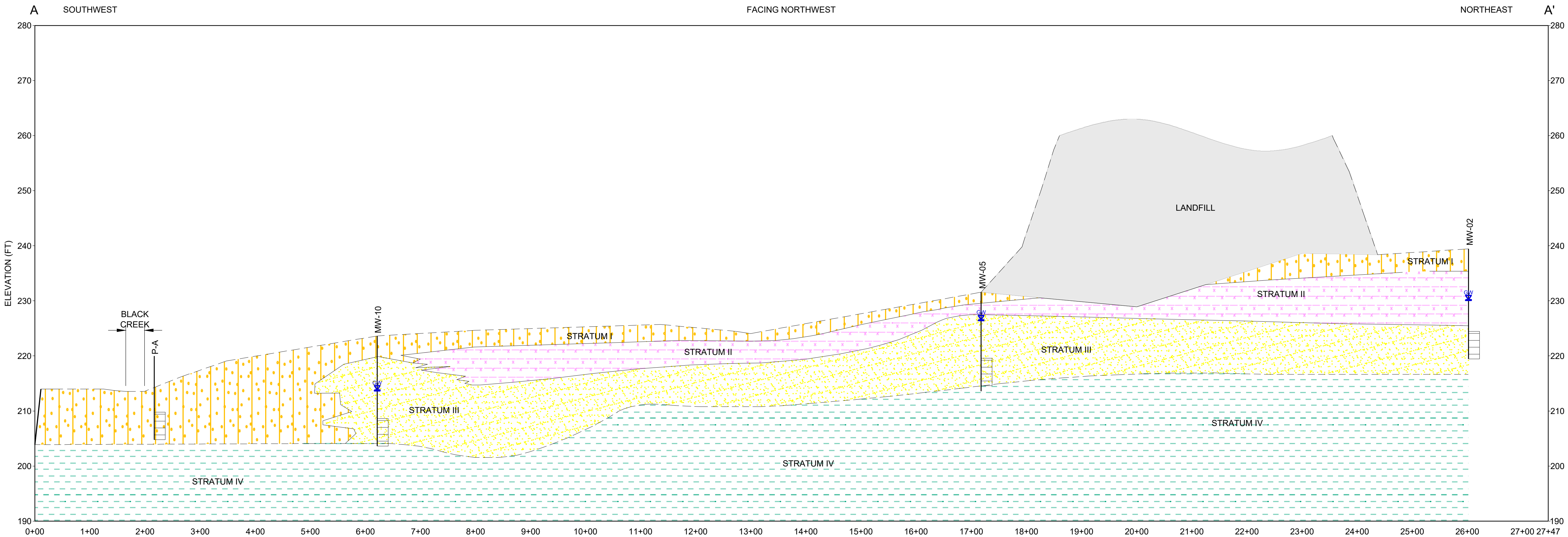
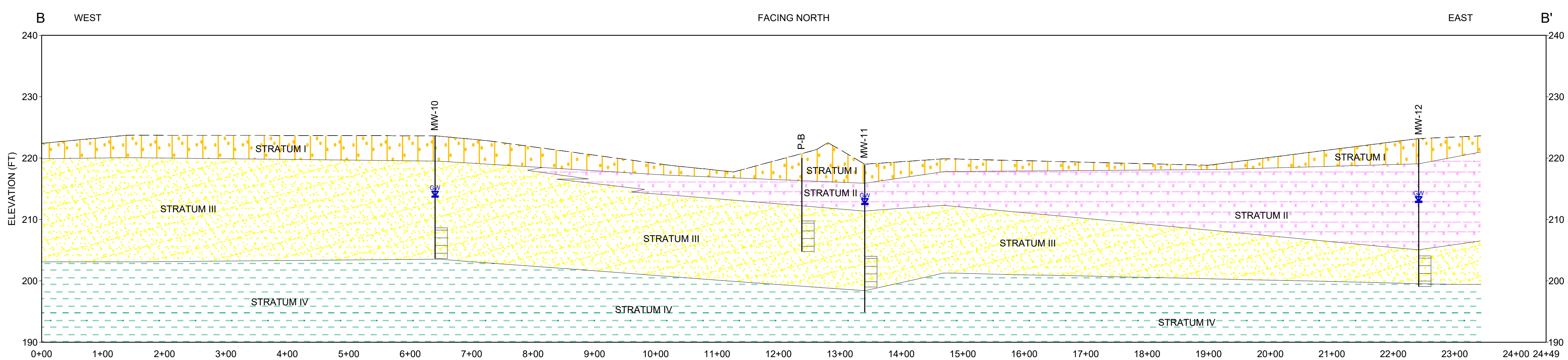


A-A'



B-B'

HORIZONTAL SCALE 1" = 200'

0 100 200

1" = 200' FEET

10x VERTICAL EXAGGERATION

LEGEND

- APPROXIMATE GROUND SURFACE
- GROUNDWATER ELEVATION BASED ON DATA COLLECTED IN OCTOBER, 2022
- WELL SCREEN

STRATA KEY

- STRATA I: SILTY SAND
- STRATA II: SILTY CLAY
- STRATA III: SAND AND SILTY SAND AND GRAVEL (AQUIFER UNIT)
- STRATA IV: BLUE-GREEN CLAY (HATTIESBURG FORMATION)

CLIENT
COOPERATIVE ENERGY

PROJECT
RD MORROW GENERATING STATION
PURVIS, MISSISSIPPI

CONSULTANT
wsp

YYYY-MM-DD	2023-01-09
DESIGNED	DLK
PREPARED	ETF
REVIEWED	PJN
APPROVED	DLP

TITLE
INTERPRETIVE SUBSURFACE GEOLOGIC CROSS SECTION A-A' AND B-B'

PROJECT NO.	CONTROL	REV.	FIGURE
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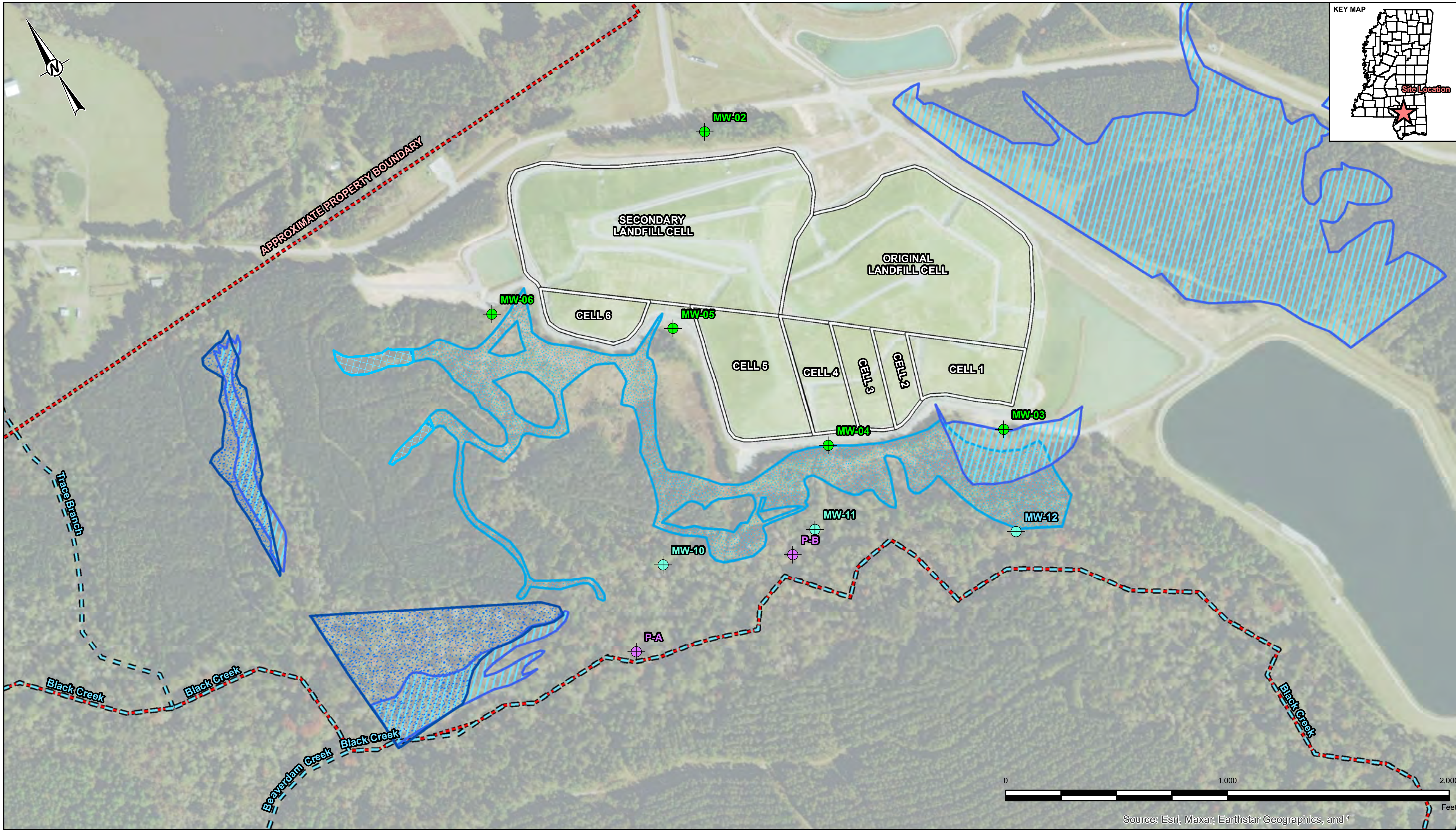

LEGEND

- CCR Landfill Cells
- Approximate Property Boundary
- Approximate Creek Locations
- CCR Rule Monitoring Well
- Nature and Extent Monitoring Well
- Temporary Piezometer
- Areas Deliniated as Wetlands in 2003
- Areas Deliniated As Wetlands in 2007
- Wetlands Impact Areas (Permitted)
- Wetlands Mitigation Area

NOTE(S)

1. ALL LOCATIONS AND BOUNDARIES DISPLAYED ARE APPROXIMATE.

REFERENCE(S)

1. ADAPTED FROM ENVIRONMENTAL MANAGEMENT SERVICES, INC. FIGURE 4 - SITE AND WELL LOCATIONS (2010).

CLIENT
COOPERATIVE ENERGY

CONSULTANT
wsp

YYYY-MM-DD	2022-06-15
DESIGNED	JSI
PREPARED	GTM
REVIEWED	JSI
APPROVED	DLP

PROJECT
RD MORROW GENERATION STATION
PURVIS, MISSISSIPPI

TITLE
WETLAND DELINIATION SURVEY LOCATIONS

PROJECT NO.	REV.	FIGURE
GL21453914	0	7

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

APPENDIX A

MNA EVALUATION REPORT

REPORT

Monitored Natural Attenuation Evaluation

R.D. Morrow Sr. Generating Station - CCR Landfill Unit

Submitted to:

Cooperative Energy

7037 US HWY 49, Hattiesburg, MS 39402

Submitted by:

WSP USA Inc.

27200 Haggerty Road, Suite B-12,

Farmington Hills, Michigan, USA 48331-5719

Tel: +1 248 295-0135

GL21453914

April 2023

Checklist

Elements of MNA Evaluation	Characterization	Applicable Section(s)
Pre-Tier 1 - Site Background Information		
Site Layout	Identify potential source(s)	2.1, 3.1
	Identify potential exposure points/receptors	2.1, 3.1
Site History	History and Inventory of contaminants released	2.0, 3.0
	Mode of contaminant release	3.1
	Chemistry of CCR source and release	3.1, 3.2, 4.1
Tier 1 - Demonstrate Active Contaminant Removal from Groundwater		
Hydrogeologic Elements	Potential migration pathways identified	2.1, 5.0
	Nature and extent of contaminant plume	2.1, 3.1, 5.0
	Basic groundwater flow direction and aquifer hydrostratigraphy	5.0, App. D
General Site Chemistry	General chemistry (groundwater, surface water, and/or aquifer solids) for preliminary evaluation of contaminant degradation	3.1, 3.2, 4.1, 4.2, App. A, App. C
	Trend evaluation of groundwater data	3.1, 4.1
	Distribution of contaminants between aqueous and solid phases	4.1, 4.2
Elements of MNA Evaluation	**Characterization**	**Applicable Section(s)**
Tier 2 - Determine Mechanisms and Rate of Attenuation		
Define Contaminant/Aquifer Solid Interactions	Identify aquifer mineralogy, attenuation mechanisms, and microbiological processes (if applicable)	4.1, 4.2, 6.1, 6.2, 6.3, App. B, App. C
Chemistry and Spatial Distribution of Contaminants	Groundwater characteristics for source(s) and contaminant plume, including field parameters, Appendix III parameters, Appendix IV parameters, major cations and anions, and speciation data (if applicable)	3.1, 3.2, 4.1, 5.0, App. A, App. C, App. D
Detailed Hydrogeology	Groundwater flow regime, including direction, velocity, potentiometric surface, gradients, etc.	2.1, 5.0, App. D
Tier 3 – Determine System Capacity and Stability of Attenuation		
Measurement of Attenuation Capacity	Determination of contaminant and dissolved reactant fluxes (concentration data and water flux)	6.1, 6.2, 6.3
	Determination of mass of available solid phase reactant(s)	4.2, 6.2, 6.3
Stability of Attenuated Contaminated Mass	Laboratory testing of immobilized contaminant stability	4.2, 6.2, App. C
	Model analyses to characterize aquifer capacity and evaluation of immobilized contaminant stability	6.1, 6.2, 6.3
Elements of MNA Evaluation	**Characterization**	**Applicable Section(s)**
Tier 4 - Design of Performance Monitoring Program and Identify Alternative Remedy		
Long-Term Monitoring Program	Selection of monitoring locations and sampling frequency based on site conditions	Not applicable - to be provided in separate report.
	Selection of key monitoring parameters used to assess effectiveness of the remedy	
	Selection of monitoring criteria that would trigger re-evaluation of adequacy of the monitoring program and the remedy selected	

Note: Table based on summaries provided in United States Environmental Protection Agency (USEPA) *Monitored Natural Attenuation of Inorganic Contaminants in Ground Water* (USEPA, 2007), and Interstate Technology & Regulatory Council (ITRC) *A Decision Framework for Applying Monitoring Natural Attenuation Processes to Metals and Radionuclides in Groundwater* (ITRC, 2010).

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Tables

Figures

Appendices

1.0 INTRODUCTION

Based on the results of the corrective measures assessment conducted under 40 CFR § 257.91, Coal Combustion Residual (CCR) pore water and solid materials were characterized and evaluated to determine the feasibility of Monitored Natural Attenuation (MNA) as a component of remedy selection process on behalf of Cooperative Energy, a Mississippi electric cooperative ("Cooperative Energy") for the CCR Landfill Unit ("the Landfill Unit" or the "Unit") located at the RD Morrow, Sr. Generating Station in Lamar County, Mississippi (hereafter, the "Site", "Morrow" or "RD Morrow"). The structure of this feasibility evaluation closely follows the United States Environmental Protection Agency (USEPA) guidance on using MNA as a remedial strategy (USEPA 2007a, b) and considers best practices from the Interstate Technology Regulatory Council (ITRC) document: "A Decision Framework for Applying Monitored Natural Attenuation Processes to Metals and Radionuclides in Groundwater" (ITRC 2010). This MNA feasibility evaluation was completed using the following tiers (USEPA 2007a, b; USEPA 2015):

1) Demonstrate active constituent removal from groundwater and dissolved plume stability (Tier I)
2) Determine the mechanism(s) and rate(s) of the operative attenuation processes (Tier II)
3) Determine the long-term capacity for attenuation and the stability of immobilized constituents (Tier III)

Following the completion of this multi-tier evaluation, the fourth and final tier of an MNA program, which involves the design of a performance monitoring program, and the development of contingency plan will occur upon final remedy selection and corrective action program implementation pursuant to 40 CFR § 257.98.

2.0 SITE BACKGROUND

RD Morrow is located in the community of Okahola, a rural area of Lamar County, approximately 4.5 miles north of the City of Purvis and 8 miles southwest of Hattiesburg (Figure 1). Old Okahola School Road bisects the property into a northern and southern parcel. Figure 2 shows the landfill CCR unit, along with site monitoring wells, nearby roads and topography.

The certified monitoring well network for the Site includes one upgradient and four downgradient monitoring wells. Three additional assessment monitoring wells are also monitored at the site. The detection and assessment well networks are summarized below along with construction details provided in Table 1. The monitoring system was designed to meet the performance standards specified in § 257.91 related to protectiveness of human health and the environment.

Landfill CCR Unit Groundwater Sampling Locations	
Detection Monitoring Wells	MW-02 (upgradient), MW-03, MW-04, MW-05, MW-06
Assessment Monitoring Wells	MW-10
Additional Nature and Extent monitoring Wells and Supplemental Monitoring Points	MW-11, MW-12 and Supplemental monitoring points, P-A and P-B

Detection monitoring identified the following statistically significant increases (SSIs) of Appendix III constituents over background:

- **Sulfate** – MW-3, MW-4, and MW-5
- **Total Dissolved Solids** – MW-3, MW-4, and MW-5
- **pH** – MW-5

Assessment monitoring in accordance with § 257.95 was initiated on May 16, 2018. Assessment monitoring identified statistically significant levels (SSL) of molybdenum and lithium as follows:

- **Lithium** – MW-3, MW-4, and MW-5
- **Molybdenum** – MW-5

An Alternative Source Demonstration (ASD) was submitted on September 11, 2020 (Golder, 2020) that addresses SSLs for lithium identified at MW-3 and MW-4. The ASD concludes that the elevated concentrations of lithium at MW-3 and MW-4 are not the result of a release from the CCR Landfill Unit but are instead attributable to naturally occurring lithium in subsurface aquifer materials. Thus, the present MNA report has been prepared to address the concentrations of lithium and molybdenum in groundwater at MW-5.

The Assessment of Corrective Measures (ACM) was initiated on May 15, 2019 and was filed in the operating record on September 12, 2019. Semi-Annual Remedy Selection and Design Progress Reports have been prepared to document progress toward remedy selection.

The RD Morrow Sr. Generating Station CCR Landfill Closure and Post-Closure Plan specifies that the final cover system will consist of ClosureTurf that utilizes a 50-mil and 40-mil microdrain and microspike geomembrane (infiltration layer) on the side slopes and top deck, respectively. The geomembranes are overlain with an artificial turf and 0.5 inches of sand infill that protects the geomembrane and provides the required erosion layer. Together, the final cover system is designed to meet design and performance requirements [in accordance with 40 CFR § 257.102(b)(1)(iii) and 40 CFR § 257.102(d)(3)] and will provide a final cover permeability less than 1.0x10-7 centimeter per second (cm/sec) that protects and controls the CCR from infiltration and the atmosphere.

2.1 Site Hydrogeologic Conditions

To adequately evaluate remedial options, the ACM considered site specific information and evaluated the conceptual site model (CSM). This subsection provides a high-level overview of the CSM and site hydrogeology.

Geological and hydrogeological units exposed at the surface and occurring to a depth of a few hundred feet in this region of Mississippi, as described by Environmental Management Services, Inc. (EMS) (EMS 2003). Aquifers within the geologic units present at the site are continuously recharged by direct rainfall on the outcrop areas, which are located generally farther to the north. The rainfall also replenishes stream beds, lakes and ponds, which act as reservoirs that provide longer term sources of recharge. Leakage from these reservoirs percolates downward through the overlying formations to recharge shallow aquifers which in turn recharge adjacent and deeper aquifers.

As presented by EMS (2003), the groundwater aquifer underlying the Landfill Unit is located within the reworked Citronelle Formation. Figure 3 shows that groundwater flows generally south, which is consistent with historical observations (EMS 2018).

Hydraulic flow characteristics of the shallow aquifer were determined based on aquifer testing (i.e., rising- and falling-head slug tests) conducted by EMS (EMS 2018). Horizontal groundwater flow velocity is approximately 0.1 feet/day (approximately 35 to 50 feet/year) across the Landfill Unit. These calculated groundwater velocities are generally consistent with historical calculations (Golder 2021).

3.0 SITE EVALUATION

This evaluation was performed to determine the feasibility, mechanisms, rates, and stability of MNA as a remedy for groundwater impacts for the Landfill Unit. In order to perform this evaluation, groundwater, CCR pore water, and soil samples were collected between May 2019 and July 2021 for geochemical characterization. Supplemental data collection for evaluation of MNA includes:

- Groundwater characterization (including major cations and anions) to identify water types and temporal and geographical trends, where present.
- Geochemical modeling to identify the major aqueous species and evaluate saturation indices of minerals relevant to attenuation of lithium and molybdenum.
- Mineralogical analysis of aquifer soil materials to identify and quantify the major mineral components.
- Chemical analysis of aquifer soil materials to quantify the total metal content and identify the environmentally available fraction of metals.

The results generated by this supplemental assessment were used by WSP to complete the Tier I, Tier II, and Tier III evaluations in accordance with USEPA (2007a, b). The results of the Tier I, Tier II, and Tier III are summarized in the subsequent sections to establish a basis for the likely success of MNA at the Landfill Unit.

3.1 Groundwater and Pore water Sampling

EMS collected water samples from Site monitoring wells and piezometers as summarized below. Sampling locations are presented on Figure 2.

Summary of Sample Locations					
Background Wells	**Downgradient Wells**	**Assessment Wells**	**Supplemental Monitoring Points**	**CCR Pore water Piezometers**	**Leachate Samples**
MW-02	MW-03 MW-04 MW-05 MW-06	MW-10	MW-11 MW-12 P-A P-B	LF-P-3 LF-P-6 LF-P-7	EW-1, EW-2, EW-3, EW-4, EW-5, EW-6, EW-10, EW-11, EW-12, EW-13, EW-14, EW-15

3.1.1 Groundwater and Pore water Analysis

Geochemical analysis of groundwater and pore water samples included the determination of field parameters and the concentrations of total metals and major cations and anions. The rationale and methods used were as follows:

- Field Parameters: Parameters measured in the field included pH, dissolved oxygen, oxidation reduction potential (ORP), conductivity, and temperature. These parameters were used to determine general geochemical conditions in the groundwater and support geochemical modeling.
- Metals: Analysis of Appendix III and IV metals concentrations was conducted to understand the geochemical composition of groundwater and CCR pore water. Metal analysis allows for the delineation of a potential plume, evaluation of mineral saturation indices through geochemical modeling, development of partitioning coefficients (in conjunction with solid material analyses), and evaluation of background contributions from natural or anthropogenic sources.

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

The groundwater and pore water samples were analyzed using the following methods:

- pH following SW846 9040C "pH Electrometric Measurement" (USEPA 2004)
- Total dissolved solids standard method (SM) 2540C "Total Dissolved Solids Dried at 180°C" (USEPA 1993a)
- Total hardness following SM 2340B (USEPA 1997)
- Chloride and fluoride, following USEPA SW846 9056A "Determination of Inorganic Anions by Ion Chromatography", Revision 1 (USEPA 2007c)
- Nitrate and nitrite following EPA 353.2 "Determination of Nitrate-Nitrite Nitrogen by Automated Colorimetry, Revision 2.0" (USEPA 1993b)
- Alkalinity following SM 2320B "Alkalinity by Titration" (USEPA 2005a)
- Phosphorous following SM 4500-P E "Phosphorous by Ascorbic Acid Method" (USEPA 2005b)
- Total Target Analyte List (TAL) metals following USEPA SW846 6010C "Inductively Coupled Plasma-Atomic Emission Spectrometry", Revision 3, SW846 6020B "Inductively Coupled Plasma-Mass Spectrometry", Revision 2, and SW846 6020A "Inductively Coupled Plasma-Mass Spectrometry", Revision 1 (USEPA 1998a)

3.2 Overburden Soil Sampling and Analysis

3.2.1 Sample Collection

In 2019, four soil samples were collected to evaluate geochemical properties of the overburden at the Site. Soil samples were collected from a soil boring (SB-02), upgradient of the Landfill Unit as well as downgradient of the Landfill Unit at SB-05, SB-106, SB-107 in May 2019. The soil boring locations are shown on Figure 2. The soil boring locations were selected to provide a comparison of soils upgradient and downgradient from the Landfill Unit. Samples were obtained from SB-2 (14 -19 feet below ground surface [bgs]), SB-5 (12 -17 feet bgs), SB-106 (10 -15 feet bgs), and SB-107 (19 – 24 feet bgs) for the analyses described in Section 3.2.2.

3.2.2 Overburden Soil Analyses

Multiple geochemical analytical methods were used to assess the mineralogical and chemical composition of the overburden soil samples. The selected geochemical test methods included:

- Mineralogical composition: The purpose of the mineralogical analysis was to identify and quantify the crystalline mineral phases in each sample. This information is required for geochemical modeling as the release or attenuation of constituents of concern (COC) is influenced by the mineral phase(s) present in the aquifer (Hem 1985). The mineralogical analysis was performed using quantitative (Rietveld) X-ray diffraction (XRD) (ME-LR-MIN-MET-MN-DO5) and a Bruker AXS D8 Advance Diffractometer.
- Total metals: This test was used to quantify the chemical composition of overburden materials. The total mass of metals, in combination with the results of sequential extraction testing, can be used to determine the provenance of metals and verify sequential extraction results. Target metals were analyzed using USEPA Method SW846 6010C "Inductively Coupled Plasma-Atomic Emission Spectrometry", Revision 3 (November 2000).

- Sequential extraction (SEP): This test consists of a seven-step metals extraction from solids as per Tessier et al. (1979) to identify the provenance of COCs (i.e., the operationally defined fraction that contains the metal)[1] and determine their potential environmental mobility. For instance, metals bound in the carbonate fraction, or that are exchangeable, are much more likely to become mobile due to changes in groundwater conditions than metals bound within a sulfide or silicate fraction. The total concentration of a metal measured from all seven steps can be compared to the concentration determined from the total metal analysis for compositional accountability. The metals content of the extracted samples was determined using USEPA Method SW846 6020B "Inductively Coupled Plasma-Mass Spectrometry", Revision 2 (July 2014).

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

Step 1 - Exchangeable Fraction: This extraction includes trace elements that are reversibly adsorbed to overburden minerals, amorphous solids, and/or organic material by electrostatic forces.

Step 2 - Carbonate Fraction: This extraction targets trace elements that are adsorbed or otherwise bound to carbonate minerals.

Step 3 - Non-Crystalline Materials Fraction: This extraction targets trace elements that are complexed by amorphous minerals (e.g., iron).

Step 4 - Metal Hydroxide Fraction: Trace elements bound to hydroxides of iron, manganese, and/or aluminum.

Step 5 - Organic Fraction: This extraction targets trace elements strongly bound via chemisorption to organic material.

Step 6 - Acid/Sulfide Fraction: The extraction is used to identify trace elements precipitated as sulfide minerals.

Step 7 - Residual Fraction: Trace elements remaining in the overburden after the previous extractions will be distributed between silicates, phosphates, and refractory oxides.

4.0 GROUNDWATER, CCR PORE WATER, AND SOIL CHARACTERIZATION

4.1 Geochemical Evaluation

The water quality monitoring data used for the geochemical evaluation were obtained from Site monitoring wells and piezometers. Results for MNA-specific parameters are presented in Appendix A (Groundwater Analytical Data) and are summarized as follows:

General Chemistry Parameters

- pH: The pH of groundwater samples collected from CCR monitoring well network ranged from 3.7 to 7.4 in April 2020. Historically, the pH in the CCR monitoring well network has ranged from 3.3 to 7.1. Isolated values as low as 2.6 and as high as 10.3 have been recorded in some wells; however, these conditions do not persist, which suggests sampling error or equipment failure may be the cause. By the next sampling round, the pH returns to circumneutral or slightly acidic values. Monitoring well MW-5 is the only well in the monitoring network with pH values consistently above 5.0. In comparison, the pH of pore water at the three piezometers (LF-P- 3, 6 and 7) ranged from 7.0 to 8.0 in July 2021. The pH of leachate samples (EW-1 to EW-6 and EW-10 to EW-15) collected in July 2021 ranged from 6.9 to 7.7.

- ORP (Redox): Field-measured redox values, corrected to Eh (+200 mV), ranged from +112 to +398 mV in April 2020. Historically, redox values ranged from -345 to +428 mV in the groundwater samples of the CCR monitoring well network. The assessment monitoring wells (MW-10, MW-11, and MW-12) and supplemental monitoring points P-A and P-B report redox data for sampling events from August 2019 through April 2020 and groundwater in these wells was oxidizing, with Eh values ranging from +279 to +508 mV. Leachate and pore water was also consistently moderately oxidizing or oxidizing across sampling events, with Eh values ranging from +73 to +374 mV.

- Total Dissolved Solids (TDS): Groundwater TDS concentrations were variable in April 2020 in the CCR monitoring well network. The lowest TDS concentration in groundwater (31 mg/L) occurred in supplemental monitoring point P-A (farthest downgradient from the Unit) and the highest TDS value (2,964 mg/L) was observed at CCR monitoring well MW-5 (immediately downgradient of the Unit). Historically, groundwater TDS concentrations demonstrate higher variability, ranging from 24 mg/L to 9,130 mg/L.

- Major ion chemistry: A Piper plot was generated for groundwater samples from the CCR monitoring network and pore water samples to facilitate the identification of water types and source contributions (Figure 4a). Piper plots can also be used to evaluate water quality groupings where mineral saturation and pH is considered when comparing waters that are mostly native. For the conditions at this specific site, Piper plots are an effective tool for use, concurrently, with analysis of groundwater chemistry (mineral saturation). Two distinct groupings of samples are apparent based on their major ion proportions, with well MW-6 and supplemental monitor point P-A plotting separate from other wells. Upgradient well MW-2 shows close similarity with the water samples from all downgradient wells except MW-5. Groundwater at MW-5 is most similar to that of the pore water wells (LF-P 3, 6 and 7) in terms of major ion chemistry. Based on the molar ratios of boron, chloride, and lithium (Figure 4b), all groundwater locations plot differently than pore water samples, which demonstrate higher boron and lithium proportions. The EW leachate samples plot with pore water samples.

- Nutrients: Nitrate was not present in groundwater (<0.05 mg/L) in assessment monitoring wells in August 2019 (Appendix A). Phosphate concentrations in groundwater were below detection (< 0.291 mg/L), but phosphate was present in pore water samples, ranging from 0.36 to 1.34 mg/L). Phosphate and nitrate were not analyzed in EW leachate samples.

- Lithium: Lithium concentrations in groundwater have exceeded the previous GWPS (0.177 mg/L) since October 2015 in three wells: MW-3, MW-4, and MW-5 (Figure 5a). Since October 2015, excluding well MW-5, lithium concentrations in these wells have ranged from 0.289 mg/L to 1.42 mg/L. In April 2020, a new site-specific background standard was adopted resulting from the ASD's findings that the site has naturally-occurring lithium in soils. Only the monitoring results at MW-5 have shown an SSL of lithium in comparison to the new standard. WSP further performed statistical analysis on groundwater results from MW-10, MW-11, and MW-12, where lithium concentrations were observed to be similar to those in MW-3 and MW-4, as well as P-A and P-B. Investigations into the nature and extent of groundwater impacts in the vicinity of MW-5 show that downgradient groundwater has not been impacted, based on results from MW-10, MW-11, MW-12, P-A, and P-B. Lithium levels at MW-5 currently show a statistically significant ($p < 0.05$) decreasing trend based on a Mann-Kendall test and Sen's Slope estimate (Figure 5b). Lithium is likely present in groundwater as the monovalent cation Li^+ based on the pH and Eh of groundwater (Figure 6a).

- Molybdenum: Molybdenum concentrations in groundwater have exceeded the GWPS (0.1 mg/L) since October 2015 in one well: MW-5 (Figure 7a). No other well at the site has ever reported measured molybdenum in groundwater above 0.01 mg/L, which is an order of magnitude lower than the GWPS. Investigations into the nature and extent of groundwater impacts in the vicinity of MW-5 show that groundwater from MW-10, MW-11, MW-12, P-A, and P-B has not been impacted, and molybdenum concentrations in the wells downgradient of MW-5 have never exceeded detection limits. Molybdenum levels in groundwater at MW-5 show a statistically significant decreasing trend ($p < 0.05$) using a Mann-Kendall test and Sen's Slope estimate (Figure 7b). Most notably, molybdenum levels at MW-5 as of the April 2021 sampling was 3.25 mg/L, which was lower than what they were two years prior (8.14 mg/L; April 2019). Molybdenum is likely predominantly present in the form of the divalent anion species molybdate (MoO_4^{-2}) based on field-measured pH and redox conditions (Figure 6b).

- Iron: Iron concentrations were variable, ranging from 0.139 mg/L to 6.38 mg/L during the May and August 2019 sampling event. Iron in groundwater in the monitoring well network generally occurred in oxidized form as ferric iron (Fe^{+3}). However, in the assessment monitoring wells (MW-10, MW-11, and MW-12), iron in groundwater was predominantly reduced, as ferrous iron (Fe^{+2}). Iron in the pore water samples was all present in ferric form. Iron in the EW leachate samples was not speciated, but total iron ranged from non-detect (0.05 mg/L) to 17.4 mg/L. Based on the pH and redox of the leachate samples, iron in those samples would predominantly occur as ferric iron. The results of iron speciation modeling (Figures 6a, b) generally show good agreement with the analytical speciation results, with most samples plotting along the Fe^{+2}-ferrihydrite [$Fe(OH)_3$] equivalency boundary, indicating dynamic equilibrium between Fe^{+2} and Fe^{+3}.

In summary, the groundwater data show that concentrations of lithium from the Unit have only impacted MW-5, while other lithium concentrations are naturally-occurring. Molybdenum concentrations have generally been one order of magnitude lower than the GWPS for molybdenum in all wells, except at MW-5. Well MW-10, which is downgradient of MW-5, does not exceed the GWPS for lithium or molybdenum, and both lithium and molybdenum in groundwater at MW-5 show a statistically significant decreasing trend ($p <0.05$).

4.1.1 Mineralogical Controls in Groundwater and Pore Water

The results of saturation index modeling for relevant minerals for groundwater and pore water at upgradient, downgradient, and nature and extent wells are presented in Table 2. Mineral saturation can play an important role in attenuation of metals, either directly by their removal through mineral precipitation, or indirectly by providing sorptive surfaces or opportunities for co- precipitation.

- Iron-bearing minerals: Ferrihydrite was indicated to be at equilibrium with groundwater or oversaturated in all of the monitoring well and leachate samples, indicating a strong potential for ongoing precipitation of solid-phase iron oxides. Only groundwater samples from assessment wells MW-10, MW-11, and MW-12 were modeled to be undersaturated with respect to ferrihydrite. Thus, it is assumed that iron (hydr)oxides are prevalent in the Site aquifer but may be less common where groundwater is more acidic.
- Other minerals: All groundwater and pore water samples were simulated to be in equilibrium or oversaturated with respect to barite ($BaSO_4$). Fluorite (CaF_2) was at equilibrium with leachate samples as was gypsum ($CaSO_4{:}2H_2O$). Gypsum was also in equilibrium with groundwater in monitoring wells MW-3, MW-4, and MW-5. Calcite ($CaCO_3$) was oversaturated in leachate samples and only in equilibrium with groundwater at MW-5, which is the well with the highest pH, as illustrated on Figures 6a and 6b.

In summary, several mineral phases likely control groundwater composition at some or all wells: barite, calcite, fluorite, ferrihydrite, and gypsum. In the case of ferrihydrite (or calcite to a lesser degree), the dissolved concentrations of COCs can be reduced through their ability to act as a substrate for adsorption.

4.2 Compositional Analysis of Overburden

4.2.1 Mineralogical Composition

Quantitative X-ray diffraction (XRD) with Rietveld refinement was used to identify and quantify minerals in four overburden samples collected during the drilling activities - one sample from each of the soil borings completed in 2019 (SB-02, SB-05, SB-106, and SB-107), as described in Section 3.2.1. These samples were obtained to determine the mineralogical composition of the aquifer system and identify any minerals that would potentially influence attenuation of COCs. In contrast, the presence of certain minerals could also indicate a potential for naturally occurring release of metals into groundwater, for instance due to oxidation of sulfide minerals.

The mineralogical analysis in this case only identified quartz (SiO_2) in the soil samples due to relatively high detection limits associated with the Rietveld XRD method (10,000ppm; Table 3). Laboratory analytical reports for the XRD samples, including the XRD patterns, are provided in Appendix B. Thus, at this site, chemical methods likely provide better characterization of aquifer materials given the lower detection limits of those methods.

4.2.2 Chemical Composition and Sequential Extraction

Chemical analysis and sequential extractions were used to determine the chemical composition of the overburden and the distribution of COCs over various operationally defined fractions. As described in Section 3.2.1, this testing was conducted on overburden samples from four borehole locations. Select results are presented in Table 4 and the laboratory data are included in Appendix C.

A description of the individual fractions determined by sequential extraction is presented in Footnote 1, Section 3.2.2. Metals extracted in steps 1 through 5 are considered environmentally available, whereas metals extracted in steps 6 and 7 are present in refractory fractions and are not expected to be released under conditions typically encountered in aquifers (Tessier et al. 1979). Total metal quantities from the sequential extraction are expressed as “SEP Total” in Table 4. The sum of the sequential extraction steps is also presented for comparison but does not represent an analytically determined value.

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

General Chemistry Parameters

- Aluminum: Aluminum is not a COC at the Site, but it has been well studied as a potential sorbing medium in soils (e.g., Karamalidis and Dzombak 2010). Total aluminum in soils ranged from 2,800 to 7,900 mg/kg, and the environmentally available fraction ranged from 391 (SB-2) to 832 mg/kg (SB-5; Figure 8). Aluminum in the soil at the site is, therefore, largely (~57% to 77%) present in the residual, or silicate-bound fraction. The environmentally available fraction is likely partially represented by hydrous aluminum phyllosilicate minerals or clays intermixed in the silica sand matrix, but such minerals were not identified by the mineralogical analysis due to the high detection limits (Section 4.2.1). Clays can represent an important sorptive reservoir for numerous trace metals and metalloids, including the COCs at this site (Uddin 2017).

- Iron: While not a COC, iron and its minerals commonly represent one of most abundant reservoirs for metal/metalloid attenuation in soils (Dzombak and Morel 1990; Smith 1999). Iron was present in all four core samples analyzed, varying from 710 (SB-2) to 2,400 mg/kg (SB-106). In two soil borings (SB-2 and SB-106), the non-environmentally available (sulfide and residual) fractions accounted for the largest proportion of total iron (59% to 76%) and, as such, most of the iron is not environmentally available (Figure 9). In samples from the other two soils borings, SB-5 and SB-107, the majority of the iron was present in either the amorphous or metal hydroxide fractions. These phases, part of the labile fraction in steps 1 through 5, can generally be considered representative of the amount of iron in soil that may be available as a sorbing medium and can, therefore, be important for attenuation of lithium and molybdenum under certain conditions.

Metals identified as a SSL

- Lithium: Total lithium in soil ranged from 2.2 to 5.3 mg/kg, of which between zero (SB-2) and 51% (SB-5) was present in the environmentally available fraction (Figure 10). Lithium that was environmentally available (0.25 to 1.92 mg/kg) was all contained in the metal hydroxide fraction of SB-106 and SB-107, while SB-5 also reported a large amount of lithium (1.1 mg/kg) in the exchangeable fraction. This indicates cation exchange likely plays an important role in the attenuation of lithium from groundwater by aquifer materials. These results further indicate a large amount of naturally-occurring lithium at the site that is contained within non-environmentally available fractions while attenuation of lithium by metal hydroxide minerals also appears to be taking place.

- Molybdenum: Total molybdenum in soil ranged from zero to 6.0 mg/kg, of which up to 100% (SB-5) was present in the environmentally available fraction (Figure 11). Molybdenum at SB-5 was contained in the exchangeable, amorphous, and metal hydroxide fractions. At other borings, of the small amount of molybdenum identified, all was present in the amorphous and metal hydroxide fractions. These results indicate that attenuation of molybdenum by amorphous and metal hydroxide minerals is occurring at the Site, while exchange of molybdenum plays an additional, significant role in aquifer material from SB-5.

The results of the SEP analysis confirm both the natural occurrence of lithium in the aquifer materials and attenuation of both lithium and molybdenum is occurring by aquifer materials through exchange reactions and adsorption/co-precipitation onto/with amorphous and metal hydroxide minerals.

5.0 GROUNDWATER MODELING

The numerical computer code MODFLOW – developed by the United States Geological Survey (USGS) – was selected for the groundwater modeling because it is well suited to represent a wide range of hydrologic and hydrogeologic conditions, has been widely tested and accepted in the professional hydrology community and by regulatory agencies, and has been scrutinized closely in a number of legal proceedings over the past 20 years. In total, five software packages were used for the groundwater investigation:

- Groundwater flow: USGS software package MODFLOW (McDonald and Harbaugh 1988, Harbaugh and McDonald 1996, Harbaugh et al. 2000, Harbaugh 2005). MODFLOW-2005 was the version used in the analyses presented here.
- Groundwater transport: USGS software package MT3DMS (Zheng and Wang, 1999).
- Particle tracking: USGS software package MODPATH (Pollock 2012)
- Parameter estimation: PEST (Doherty 2010 and 2016)
- Graphical user interface: Groundwater Vistas (Environmental Simulations 2020, Rumbaugh and Rumbaugh 2011).

The groundwater model simulates steady-state and transient flow conditions for the site area. The groundwater model was developed based on the following:

- Natural hydrologic boundaries wherever possible.
- Ground surface topography and landfill geometry.
- Geologic layers with representative structural properties based on boring logs.
- Hydraulic properties of geologic layers based on historical aquifer tests conducted at the site.
- Historical groundwater elevation measurements.

Details of the flow model development and results are presented in Appendix D. The results of the model were used to for the geochemical evaluation as discussed in Section 6.

6.0 GEOCHEMICAL ANALYSIS AND MODELING

6.1 Empirical Attenuation Rates

To evaluate the attenuation of lithium and molybdenum in groundwater at the Site and to assess the rate of attenuation, WSP applied the point decay method (Newell et al. 2002). The point decay method is used to determine the rate at which a constituent's concentrations are increasing or decreasing in groundwater at a single well between sampling events, and this method can thus be used to predict when the constituent's concentrations will fall back below regulatory limits.

Equation 1 describes first-order decay for a constituent:

$$Ln(Ct) = kt + Ln(C0) \qquad \text{(Equation 1)}$$

where C0 is the initial constituent concentration, Ct is the constituent concentration at time t, t is the amount of time in years that has passed since the initial concentration measurement, and k is the first-order decay rate constant (1 per year). Equation 2 shows Equation 1 reorganized to solve for the decay rate constant:

$$k = (Ln(Ct)- Ln(C0))/t \qquad \text{(Equation 2)}$$

Groundwater water quality data from the background and downgradient wells collected between October 2015 and April 2021 were used to determine the mean first-order decay rate for each constituent of interest. A first-order decay rate was also calculated using data collected from May 2019 to April 2021 to evaluate the effect of changing conditions at the Unit due to civil engineering efforts related to closure. For both sets of data, due to variable detection limits, results that were reported as below detection limits were not used in the point decay analysis. Using Equation 1 and the mean first-order decay rate, WSP calculated the number of years that it would take for COC concentrations higher than their respective GWPS to decline below these values.

6.2 Geochemical Modeling

Geochemical modeling was conducted to evaluate general groundwater and pore water quality, determine the potential for precipitation of sorbent media, evaluate the potential for mineral precipitation or adsorption in the aquifer, and determine the speciation of metals of interest. The geochemical computer code developed by the United States Geological Survey (USGS), PHREEQC, was used for these simulations (Parkhurst and Appelo 2013). PHREEQC version 3.6 is a general-purpose geochemical modeling code used to simulate reactions in water and between water and solid mineral phases (e.g., rocks and sediments). Reactions include aqueous equilibria, mineral dissolution and precipitation, ion exchange, surface complexation, solid solutions, gas-water equilibrium, and kinetic biogeochemical reactions. The widely accepted thermodynamic database Minteq.v4, 2017 edition (USEPA 1998b, as amended), was used as a basis for the thermodynamic constants required for modeling, with additions and modifications from recent literature as required.

The Geochemist's Workbench (Release 15; Bethke et al. 2021) was used to generate graphical representations of geochemical modeling outputs in the form of predominance, or Pourbaix diagrams (also known as Eh-pH diagrams) for the species of interest (i.e., lithium and molybdenum) and trilinear plots (also known as Piper plots) displaying the relative abundance of major ions. The Minteq.v4 database was used as the basis for the Pourbaix diagrams.

Geochemical modeling was also used for evaluation of surface complexation of molybdenum, the role of Cation Exchange Capacity (CEC) of lithium attenuation, the determination of attenuation rates for post-closure scenarios, mineral precipitation and co-precipitation, and to assess the long-term stability of attenuated COCs. More detail on each approach is presented in the sections that follow.

6.2.1 Surface Complexation Modeling - Molybdenum

Adsorption is an important mechanism by which constituents in groundwater can be attenuated. The adsorptive partitioning between dissolved and solid phases was simulated using a two-layer surface complexation model (SCM). The SCM approach is described in Davis and Kent (1990), with additional parameterization based on Dzombak and Morel (1990) and Karamalidis and Dzombak (2010) utilizing iron (hydrous ferric oxide [Hfo]) as ferrihydrite [$Fe(OH)_{3(am)}$], and aluminum (hydrous aluminum oxide [Hao]) as gibbsite [$Al(OH)_{3(am)}$], as adsorbing surfaces.

The amounts of Hfo and Hao available at the site for attenuation were based on the amorphous and metal hydroxide phase iron and aluminum concentrations measured in the SEP as described in Section 4.2.2. The minimum, mean, and maximum concentrations in soil borings were used in the adsorption models to capture the range of expected site concentrations. The Hfo and Hao surface properties (i.e., surface area, site density, and types of sites) from Dzombak and Morel (1990) and Karamalidis and Dzombak (2010) were used to quantify the iron and aluminum adsorption sites per mole of mineral.

The calculation methodology of Appelo and Postma (2010) was used to determine the specific quantity of sites on each mineral surface type as a function of the amount of mineral available to participate in these reactions. The methodology assumes the number of surface sites (sites) equals the product of the moles of iron ([Fe]) and the moles of surface sites per mole of iron ([sites]/[Fe]= 0.2 moles of sites per mole of iron). For the amount of ferrihydrite available for sorption, the Appelo and Postma methodology further assumes the mass of ferrihydrite (m_{Hfo}) in grams (g) available equals the product of the [Fe] and the molecular weight of ferrihydrite (m_{wHfo} = 88.85 g/mole). The same approach was used to calculate the number of sites from gibbsite, assuming the [sites]/[Al] is 0.41 moles of sites per mole of aluminum and the molecular weight of gibbsite is 78.003 g/mole.

The geochemical thermodynamic database Minteq V.4 was used to conduct adsorption modeling. However, new and updated thermodynamic data have been released in scientific literature. These new data are important to include in the geochemical modeling exercises for certain elements or minerals as they allow further refinement of potential reactions, or for correction of previous data that may have been less accurate or more broadly defined. For groundwater modeling at the Site, WSP made numerous updates to the Minteq V.4 database, including the addition of data relating to partitioning coefficients for metals on gibbsite, developed by Karamalidis and Dzombak (2010). Of the two constituents of interest, the database did not contain partitioning coefficients for ferrihydrite or gibbsite for lithium, so its potential for adsorption could not be assessed using this method. Instead, lithium was modeled using the CEC as described in Section 6.2.2.

To quantify current levels of adsorption of molybdenum, its adsorbed concentration (as milligram (mg) of constituent/kilogram (kg) of soil) was modeled for the minimum, maximum, and mean Hfo and Hao contents when equilibrated with the range of groundwater qualities observed at the Site. To quantify the capacity of soil to adsorb additional molybdenum, a step-wise increase in molybdenum concentrations was simulated, similar in concept to a titration. This was accomplished using the mean concentration of molybdenum observed in pore water, as well as the concentrations of other constituents present in pore water, allowing for site competition. This simulated “titration” took place into the range of observed groundwater qualities while allowing equilibration with the sorption surfaces in soils as shown below (minimum and maximum Hfo and Hao). The model was then used to predict the quantity of each constituent that would adsorb due to this titration of additional molybdenum and other pore water constituents.

Parameter	Unit	Ferrihydrite		Gibbsite	
		Minimum	Maximum	Minimum	Maximum
Geometric Mean of Aquifer Solids Composition	mg/kg	353	880	391	832
	mmol	6.32	15.76	14.49	30.84
	mol	6.32E-03	1.58E-02	1.45E-02	3.08E-02
Surface Site Concentration	mol weak sites / mol	0.2	0.2	0.41	0.41
	mol strong sites / mol	0.005	0.005	---	
Surface Sites	mol weak	1.3E-03	3.2E-03	5.9E-03	1.3E-02
	mol strong	3.2E-05	7.9E-05	---	
Mass of Ferrihydrite or Gibbsite	grams	5.6E-01	1.40	1.13	2.41

6.2.2 Cation Exchange Capacity Modeling - Lithium

To quantify the CEC, a generalized CEC model was used in PHREEQC. The CEC represents the total number of negative charge sites in a given amount of solid at which reversible cation adsorption and desorption can occur (Hem 1985). Cation exchange also commonly refers to the replacement of one cation by another in a selective series or preferred adsorption. In this case, the sorption selectivity increases with the ionic radius of the ion, for instance in the following series: $K^+ > Na^+ > Li^+ > Ba^{2+} > Sr^{2+} > Ca^{2+} > Mg^{2+}$ (Smith 1999). In practical use, cation exchange can be quantified using Step 1 from SEP results for lithium (Section 3.2.2) or estimated by direct measurement in a laboratory. For modeling purposes, the number of sites can be calculated using Equation 3 (Breeuwsma et al. 1986):

$$X^{-}(\text{sites}) = CEC/(100/sw)(n/(1-n)) \quad \text{(Equation 3)}$$

where *sw* is the bulk density of the soil matrix, and *n* is the porosity. For lithium attenuation modeling, where the amount of attenuated lithium in Step 1 of SEP is known, an integrative process was used to determine the appropriate number of sites (X^-) to match measured conditions such that the modeled lithium on surfaces was equal to the measured lithium on those surfaces.

6.2.3 Geochemical Modeling of Attenuation Rate

Geochemical modeling was conducted to estimate the rate of attenuation (meeting GWPS limits) in addition to the development of the empirical attenuation rates discussed in Section 6.1 and presented in Section 6.3.1. These models consisted of a series of mixing simulations for each year post closure and considering source control, using mixing ratios for monitoring well MW-5 provided by groundwater modeling. Post closure, the increasing amount of background groundwater and decrease in leachate contribution to groundwater at MW-5 were then considered in a model using the SCM approach (molybdenum - Section 6.2.1) or the CEC approach (lithium - Section 6.2.2) to evaluate the attenuation rate.

6.2.4 Mineral Precipitation and Co-precipitation

The potential for mineral precipitation was assessed in PHREEQC using a saturation index (SI) calculated according to Equation 4.

$$SI = \log(IAP/Ksp) \quad \text{(Equation 4)}$$

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

In addition to adsorption, co-precipitation, or the direct incorporation of trace metals such as molybdenum into precipitated iron oxide-oxyhydroxides, has been previously identified as a process of potential importance in trace metal sequestration (e.g., Butt et al. 2000; Dzombak and Morel 1990; Smith 1999). Metals may also be attenuated during the formation of ferrihydrite as opposed to following its formation (Tebo et al. 2004). Co-precipitation is not considered a relevant attenuation mechanism for lithium.

6.2.5 Long-Term Stability of Attenuated Constituents

Three sensitivity analyses were performed to assess the long-term stability of attenuated molybdenum and lithium under variable pH, redox, and ionic strength conditions. Variations in pH, redox, and ionic strength are the most likely types of changes that will occur in an aquifer over time, thereby potentially affecting the stability of the constituents of interest (ITRC 2010). The sensitivity analyses were conducted applying the minimum, mean, and maximum Hfo and Hao contents determined for the Site soils, equilibrated with the groundwater qualities observed at the Site at the measured pH and redox conditions. For each sensitivity analysis, a single parameter was varied:

- pH - Hydrochloric acid or sodium hydroxide addition was used in the modeling simulations to vary the pH between 4 and 12 Standard Units (SU). A pH range of 4 to 10 SU is the typical range considered for evaluating metal speciation, but at a pH lower than 5, Hfo tends to become unstable, limiting attenuation/adsorption, which causes an observed decrease in modeled attenuation at lower pH values even in the presence of Hao, which will remain stable until a pH range of approximately 3.5 SU.
- Redox – Addition of dissolved oxygen (DO) was simulated to adjust redox (Eh) values between -200 and +700 millivolts (mV) based on the historical and anticipated range of Eh in the region.
- Ionic Strength - Total dissolved solids (TDS) concentrations were increased by titrating in calcium, magnesium, sodium, potassium, chloride, and sulfate in the proportions observed in pore water. TDS concentrations were evaluated up to 8,000 mg/L (lithium) and 10,000 mg/L (molybdenum), which is approximately three to four times higher than the highest TDS concentration observed in groundwater at the Landfill Unit.

6.2.6 Geochemical Modeling Assumptions and Data Handling

Geochemical modeling assumptions and data handling included the following:

- Groundwater continuity: Multiple groundwater quality samples were collected from each well during sampling events conducted between April 2019 and July 2021. Samples from this period were selected for the geochemical modeling because all wells related to the Landfill Unit were sampled and analyzed for the full suite of parameters described in Section 3.1.1 and the resulting data are assumed to provide a comprehensive overview of groundwater conditions. Temporal trend analysis for lithium and molybdenum made use of all available sampling events between October 2015 and July 2021.

- Pore water chemistry: Pore water samples collected from LF-P-3, LF-P-6, and LF-P-7 in May 2019 were assumed to be representative of pore water found in the Landfill Unit. Data from the July 2021 sampling from the leachate collection system (EW-1 to EW-6 and EW-10 to EW-15) were assumed to accurately represent the range of leachate from the Unit.
- Redox values: ORP values measured in the field were converted to Eh by adding 200 mV to the field-measured values as per YSI Tech Note (YSI 2015).
- Non-detect values: Constituents with concentrations less than their respective method reporting limits were assumed to have a concentration equal to half the reporting limit in model simulations.
- Total recoverable concentrations: Total recoverable fraction results were used for geochemical modeling.
- Charge balance: Groundwater and pore water compositions with charge balance errors less than 10% were considered valid. Compositions with charge balance errors greater than 10% were flagged as potentially less reliable, but still included in the geochemical modeling effort.

6.3 Results

6.3.1 Empirical Attenuation Rate

The results of the point decay analysis for groundwater at background and downgradient wells between October 2015 and Jul 2021 are provided below, as mean, site-wide attenuation rates. This evaluation reveals that, despite lithium concentrations increasing in the background well (as indicated by positive point decay constants), net decreases in concentrations of both lithium and molybdenum at downgradient monitoring wells are occurring (as indicated by negative point decay constants). Both lithium and molybdenum concentrations in downgradient wells have a decreasing trend (negative point decay constants) This trend is stronger since May 2019, likely due to site improvements made in 2018, thus decreasing the time to compliance.

Constituents	Units	Average Point Decay Rates		
		Background Well	Monitoring Wells	Time to Compliance
October 2015 to July 2021				
Lithium	yr^{-1}	0.39	-0.34	2.0
Molybdenum	yr^{-1}	0	-0.04	96
Since May 2019				
Lithium	yr^{-1}	1.07	-0.45	1.5
Molybdenum	yr^{-1}	0	-0.12	30

The mean downgradient decay rates can be used to estimate the number of years it would take for elevated groundwater molybdenum and lithium concentrations to decrease to their GWPS. The maximum concentration of molybdenum observed in downgradient wells in 2021 (3.25 mg/L) would take approximately 30 years based on the site decay rate that has been observed since 2019. This estimation is conservative, as it does not account for various attenuation processes (e.g., dilution, dispersion, or sorption). A less conservative approach that accounts for these processes is reported in Section 6.3.2

6.3.2 Modeled Rate of Attenuation

Attenuation modeling was conducted for two closure scenarios. The two scenarios varied based on the results of the groundwater model that used different conductivity values for the uppermost aquifer. The two conductivity values utilized for modeling represent the minimum and maximum conductivity of the reported range (Appendix D).

Results of attenuation modeling demonstrate that as the release of pore water from the Landfill Unit decreases due to source control and the proportion of background groundwater increases at MW-5, both molybdenum and lithium concentrations will decrease to below the respective GWPS for each constituent (Figures 12 a, b). For lithium, the concentrations in groundwater at MW-5 are estimated to decrease to below the GWPS in approximately 5 to 7 years, depending on the closure scenario. For molybdenum, it is estimated that concentrations at MW-5 will decrease to below the GWPS in approximately 27 to 29 years. However, given the substantial decrease in lithium and molybdenum concentrations since May 2019 due to site improvements, these estimated timeframes are likely biased high.

6.3.3 Capacity of Attenuation Mechanisms

Attenuation modeling was conducted in PHREEQC as a function of the amount of attenuating substrate present (minimum, mean and maximum from soil analyses). The modeling revealed a large range of attenuation capacities for lithium and molybdenum. Figures 13 a, b display the predicted trajectories of aqueous lithium and molybdenum concentrations, respectively, before and after attenuation, as additional lithium and molybdenum are titrated into solution. The bold lines display the geometric means for all groundwater scenarios within each soil scenario, and the grey area represents the range for the 5th to 95th percentile of all soil scenarios. As mentioned in Section 6.2.1, lithium adsorption to iron and aluminum oxyhydroxides was not modeled due to a lack of available thermodynamic data. Instead, lithium attenuation was evaluated considering CEC, as described in Section 6.2.2.

The predicted trajectories are compared against the GWPS and pore water concentrations. On the plots, the further the predicted trajectories are to the right of the diagonal 1:1 line, the larger the amount of the constituent that has attenuation in soils, and it is no longer predicted to reside in the aqueous phase. For lithium (Figure 13a), a moderate proportion is expected to attenuate, with a capacity to bring average lithium concentrations to below 1.42 mg/L (the site specific GWPS) when concentrations are at approximately 3 mg/L or lower prior to exchange. For molybdenum (Figure 13b), the trajectories run parallel to the 1:1 line, indicating that sorption capacity is directly proportional to the concentration before adsorption. The modeling results suggest that adsorption has the capacity to reduce molybdenum concentrations below approximately 3 mg/L down to the GWPS of 0.1 mg/L. The 95th percentile of modeled trajectories shows that a majority of pH and redox conditions at the Site are favorable for attenuating molybdenum, as seen by the distance to the 1:1 line. At higher molybdenum concentrations (> 5 mg/L), the attenuation is less effective as sorption sites are filled, resulting in predicted aqueous concentrations after adsorption above its GWPS. In this case, source control (capping) is designed to eliminate the infiltration of pore water over time to the groundwater, which reduces the use of the aquifer's chemical attenuation capacity. As a result, the less-burdened chemical attenuation nature of the aquifer is expected to continue to effectively attenuate molybdenum.

6.3.4 Long-Term Stability of Attenuated Constituents

To determine the long-term stability of sequestered lithium and molybdenum, simulations were conducted varying three variables known to affect their attenuation: pH, redox, and TDS. The modeled variations in dissolved lithium and molybdenum concentration as a function of changes in pH, Eh, and TDS are shown in Figures 14, 15, and 16 respectively. Results are presented along with GWPS values and the range of pH, Eh, or TDS values (5th percentile to 95th percentile) observed at the Site. Responses to changes in pH, Eh, and

TDS vary widely by constituent. The results of the attenuation stability modeling for lithium and molybdenum can be summarized as follows:

- Lithium: Lithium concentrations in groundwater and lithium attenuation show little response to changes in pH across the typical pH range at the site (Figure 14a). For the range of CEC values observed, lithium concentrations remain well below the GWPS across the entire pH range modeled (4 to 10). Lithium concentrations are also expected to stay well below the GWPS across the entire modeled redox range (-200 to +700 mV) (Figure 15a). While some response to redox is apparent for lithium, the variations are small and predicted concentrations are all well below the GWPS. Under increasing TDS concentrations (Figure 16a), lithium attenuation declines as other cations compete with and replace lithium from exchange surfaces. However, all predicted lithium concentrations are below the GWPS for the range of TDS values modeled.
- Molybdenum: For molybdenum, lower pH values (more acidic conditions) are generally more favorable for adsorption (Figure 14b). Under alkaline conditions (pH greater than 10), nearly all molybdenum is desorbed and present in the dissolved phase in concentrations exceeding the GWPS. Over the range of Eh values at site (Figure 15b), molybdenum sorption is relatively stable. Even highly reducing and oxidizing conditions are predicted to have minimal impact on molybdenum concentrations, which remain below the GWPS. Molybdenum adsorption is generally insensitive to increases in TDS concentrations (Figure 16b), with TDS concentrations up to ~7,000 mg/L less than doubling the aqueous molybdenum concentrations due to desorption.

7.0 TIER I EVALUATION

The potential for natural attenuation of lithium and molybdenum was evaluated in accordance with recommended practices and guidance promulgated by the USEPA and the ITRC (USEPA 2007a; USEPA 2007b; ITRC 2010). According to USEPA (USEPA 2007a), the purpose of the Tier 1 evaluation is to "Demonstrate that the groundwater plume is not expanding and that sorption of the contaminant onto aquifer solids is occurring where immobilization is the predominant attenuation process." Based on this definition, the following observations support MNA as a viable corrective measure for the CCR Unit:

- Plume Stability: Based on the water quality monitoring data presented during assessment monitoring, groundwater concentrations of lithium and molybdenum outside of the CCR Unit appear to be stable or decreasing. Statistically significant ($p<0.05$) downward trends are observed at MW-5 (the only monitoring well with SSLs; Figures 5 and 7 for lithium and molybdenum, respectively). All other wells at the site show stable trends in lithium and molybdenum. These observations indicate that the distributions of lithium and molybdenum in the aquifer are stable.
- Magnitude of Exceedances: Lithium levels across the site remain at or below the GWPS of 1.42 mg/L, except at MW-5. Molybdenum concentrations in all wells have been generally one order of magnitude below the GWPS since October 2015, except at MW-5, indicating a low likelihood of future exceedances based on historical trends.
- Groundwater Chemistry: The groundwater monitoring results, and the findings of the geochemical modeling support the potential for natural attenuation of lithium and molybdenum. Groundwater was modeled to be in equilibrium with the mineral phase ferrihydrite for all monitoring wells included in this assessment and calcite equilibrium was indicated at MW-5. This is consistent with the results from the sequential extraction analysis that indicate exchangeable, amorphous, and metal hydroxide fractions sequester lithium and molybdenum.
- Confirmation of Attenuation/Immobilization: Based on both mineralogical and chemical analysis, it is evident that attenuation of lithium and molybdenum by aquifer materials is occurring. Iron, capable of forming (hydr)oxide phases that facilitate metals attenuation (Dzombak and Morel 1990), was identified in all overburden samples. Both lithium and molybdenum were not measured above the GWPS at MW-10 and P-A, which are downgradient of MW-5, indicating attenuation of both constituents. Lithium and molybdenum demonstrated a high degree of immobilization due to cation exchange and adsorption, respectively. This indicates that aquifer solids have been and are scavenging or attenuating lithium and molybdenum that were once present in solution. As a result, the groundwater concentrations of these constituents are maintained at low levels due to chemical attenuation as confirmed by SEP.

Based on these findings, lithium and molybdenum were considered candidates for an MNA remedy application and were deemed to meet the criteria for Tier I MNA in accordance with USEPA guidance (USEPA 2007a, b).

8.0 TIER II EVALUATION

The purpose of the Tier II evaluation is to "Identify mechanisms and rates of the operative attenuation process." Based on this definition, the following modeling results and observations support MNA as a viable corrective measure for the CCR Unit:

- Attenuation Mechanisms: PHREEQC modeling results (supported by results of SEP analysis) show that adsorption is attenuating molybdenum downgradient of the CCR Unit in addition to physical mechanisms. Additionally, CEC modeling indicates that lithium is being attenuated, which is also supported by SEP analysis. This is concluded based on equilibration of site-specific groundwater compositions with the range of Hfo, Hao, and CEC concentrations observed in SEP results of Site overburden soils. The attenuation capacity of Hfo and Hao surface sites and exchange sites is partially dependent on the concentrations of the COCs in groundwater. The titration modeling (Figure 13) demonstrates the soil's capacity to attenuate lithium and molybdenum if concentrations of lithium and molybdenum were to increase above current levels. In addition to metal oxyhydroxides, clay minerals and/or particulate organics can also act as a substrate for attenuation (Goldberg and Forster 1996), but these mechanisms were not directly addressed in the current evaluation.
- Estimated Site Attenuation Rates: Concentrations of lithium and molybdenum are decreasing at MW-5, which is the only location where SSLs are present. Decreasing trends are also occurring in all downgradient monitoring wells, resulting in negative calculated point decay rates. Using the mean decay rate, the maximum 2021 concentrations of lithium and molybdenum observed in downgradient monitoring wells would take approximate 1.5 and 30 years respectively, to attenuate to below GWPS (based on the trend since May 2019). Modeled attenuation rates, taking into account dilution, sorption, and a decrease in downgradient pH (enhancing chemical attenuation of molybdenum), are estimated to range from 5 to 7 years and 27 to 29 years for lithium and molybdenum, respectively.

Based on these findings, lithium and molybdenum were considered to be candidates for an MNA remedy application and deemed to meet the criteria for Tier II MNA in accordance with USEPA guidance (USEPA 2007a and 2007b).

9.0 TIER III EVALUATION

According to USEPA (USEPA 2007a), the purpose of the Tier III evaluation is to eliminate sites for an MNA remedy where (1) “Capacity of the aquifer is insufficient to attenuate the COC mass to regulatory standards” and/or (2) “Stability of the immobilized COC is insufficient to prevent remobilization due to future changes in groundwater chemistry”. Based on this definition, the following observations support MNA as a viable corrective measure for the CCR Unit:

- Adsorption Capacity Modeling: For lithium, a moderate proportion is expected to attenuate, with a capacity to bring average lithium concentrations to below 1.42 mg/L when concentrations are at approximately 3 mg/L or lower prior to exchange (Figure 13a). For molybdenum, the trajectories run parallel to the 1:1 line, indicating that sorption capacity is directly proportional to the concentration before adsorption (Figure 13b). The modeling results suggest that adsorption has the capacity to reduce molybdenum concentrations below approximately 3 mg/L down to the GWPS of 0.1 mg/L. The 95th percentile of modeled trajectories show that a majority of pH and redox conditions at site are favorable for attenuating molybdenum. In addition to aluminum oxides and iron oxyhydroxides, molybdenum is known to adsorb to manganese oxides, clay minerals, and particulate organic matter, providing additional opportunity for sequestration.

- Stability Modeling for Adsorbed Constituents: Stability modeling indicates that over the ranges of pH, Eh, and TDS observed in groundwater at the Site, the adsorbed molybdenum and exchanged lithium are relatively stable and remain attenuated. The modeling results further suggest that the adsorption of molybdenum can be reversed if conditions become sufficiently alkaline, but there is no historical basis to expect such an occurrence. Lithium concentrations are predicted to be relatively constant in response to changes in pH and redox. Generally, site groundwater is slightly acidic and has remained stable across the sampling period. Thus, it is likely acidic conditions will persist, which supports continued molybdenum attenuation. Modeling results also indicate that increasing TDS concentrations could result in a very slight increase in aqueous concentrations of lithium and molybdenum due to competition for exchange and sorption sites. However, this effect is predicted to be minor over the range of TDS concentrations observed at the site.

10.0 CONCLUSIONS

WSP performed a supplemental data collection followed by an attenuation evaluation, which serve as the Tier I, II, and III evaluation of MNA feasibility at the RD Morrow Generating Station for lithium and molybdenum. This evaluation has been completed in accordance with guidance and best practices promulgated by the USEPA (USEPA 2007a and 2007b) and the ITRC (ITRC 2010). Based on the results of this evaluation, the following is concluded:

- Lithium: Physical and chemical attenuation is occurring, and levels are stable across the site. Lithium at MW-5 (the only SSL) shows a statistically significant decreasing trend, and the aquifer has the capacity to attenuate lithium (no SSLs exist downgradient of MW-5). Lithium is a candidate for MNA at the Site.
- Molybdenum: Physical and chemical attenuation is occurring, and levels are stable across the site. Molybdenum at MW-5 (the only SSL) shows a statistically significant decreasing trend, and the aquifer has the capacity to attenuate molybdenum (no SSLs exist downgradient of MW-5). Molybdenum is a candidate for MNA at the Site.

Therefore, it is recommended that a Tier IV evaluation be completed to design a long-term monitoring plan and contingent remedy for lithium and molybdenum.

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Signature Page

WSP USA Inc.

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TABLES & FIGURES

TABLE 1.
WELL CONSTRUCTION SUMMARY
COOPERATIVE ENERGY - RD MORROW SR. GENERATING PLANT

Well ID	Hydraulic Location	Well Material	Well Diameter	Top of Casing Elevation (feet msl)	Ground Surface Elevation (feet msl)	Total Depth (feet bgs)	Top of Screen Elevation (feet msl)	Bottom of Screen Elevation (feet msl)	Screen Length (feet)
LANDFILL CCR UNIT - DETECTION MONITORING WELL NETWORK									
MW-2	Upgradient	Stainless Steel	2"	241.83	239.44	20.0	220.4	225.4	5'
MW-3	Downgradient	Stainless Steel	2"	231.50	229.27	16.0	216.3	221.3	5'
MW-4	Downgradient	Stainless Steel	2"	234.32	232.01	20.5	211.5	216.5	5'
MW-5	Downgradient	Stainless Steel	2"	233.85	231.57	18.0	211.6	216.6	5'
MW-6	Downgradient	Stainless Steel	2"	232.44	230.13	15.0	212.4	217.4	5'
LANDFILL CCR UNIT ASSESSMENT MONITORING WELL									
MW-10	Downgradient	PVC	2"	226.42	223.63	20.0	198.6	203.6	5'
MW-11	Downgradient	PVC	2"	222.13	218.99	24.0	193.9	198.9	5'
MW-12	Downgradient	PVC	2"	226.31	223.17	24.0	194.2	199.2	5'

Notes:

1. feet msl = feet mean sea level
2. feet bgs = feet below ground surface

TABLE 2
MINERAL SATURATION INDICES
COOPERATIVE ENERGY - RD MORROW SR. GENERATING PLANT

MINERAL PHASES Saturation Indices (a)		MW-02	MW-03	MW-04	MW-05	MW-06	LF-P-3	LF-P-6	LF-P-7	MW-10	MW-11	MW-12
Otavite	CdCO3	-6.03	-5.76	-6.51	-2.41	-5.58	-1.02	-1.12	-1.20	-6.42	-6.54	-6.33
Ferrihydrite	Fe(OH)3	**-0.19**	**1.67**	**0.40**	**2.94**	**-0.30**	**3.79**	**3.91**	**3.71**	-1.30	-0.92	-1.61
Siderite	FeCO3	-5.72	-3.88	-6.01	-2.22	-5.30	-1.50	-1.61	-1.69	-5.52	-4.26	-4.54
Melanterite	FeSO4 7H2O	-6.68	-4.95	-6.32	-6.64	-7.74	-6.63	-6.70	-6.71	-6.03	-4.62	-5.17
Anglesite	PbSO4	-3.03	-2.55	-2.70	-3.69	-4.59	-3.36	-3.33	-3.36	-3.12	-2.94	-3.20
Gypsum	CaSO4:2H2O	-0.85	**-0.08**	**-0.14**	**-0.03**	-3.79	**0.00**	**0.03**	**0.04**	-1.00	-0.53	-0.95
Calcite	CaCO3	-3.96	-3.09	-3.91	**0.31**	-5.43	**1.05**	**1.03**	**0.97**	-4.56	-4.26	-4.41
Magnesite	MgCO3	-4.89	-4.13	-4.88	**-0.49**	-5.98	**0.29**	-1.15	-1.04	-5.30	-5.20	-5.44
Barite	BaSO4	**0.44**	**0.91**	**0.94**	**1.06**	**-0.09**	**1.03**	**1.37**	**1.38**	**0.67**	**0.80**	**0.53**
Witherite	BaCO3	-7.98	-7.41	-8.15	-3.91	-7.04	-3.24	-2.93	-3.00	-8.20	-8.24	-8.24
Fluorite	CaF2	-1.28	-1.57	-1.65	-1.68	-3.14	**0.37**	**0.38**	**-0.01**	-2.04	-1.33	-1.90
CoCO3	CoCO3	-5.61	-5.82	-6.30	-3.61	-7.05	-2.61	-2.31	-2.34	-6.19	-6.30	-6.56
Cerrusite	PbCO3	-4.61	-4.02	-4.94	-1.81	-4.70	-0.78	-0.79	-0.90	-5.13	-5.15	-5.13

(a) Saturation indices between -0.5 and 0.5 identified by bold type and grey shading; those greater than 0.5 shown in blue

(b) pCO2(g) values presented at 10^value atm

TABLE 3
QUANTITATIVE X-RAY DIFFRACTION RESULTS
COOPERATIVE ENERGY - RD MORROW SR. GENERATING PLANT

Mineral/Compound	1 SB-2 (14-19) (wt %)	2 SB-5 (12-17) (wt %)	3 SB-106 (10-15) (wt %)	4 SB-107 (19-24) (wt %)
Quartz	100.0	100.0	100.0	100.0
TOTAL	100.0	100.0	100.0	100.0

Zero values indicate that the mineral was included in the refinement, but the calculated concentration is below a measurable value.

Dashes indicate that the mineral was not identified by the analyst and not included in the refinement calculation for the sample.

Mineral/Compound	Formula
Quartz	SiO_2

TABLE 4
SEQUENTIAL EXTRACTION AND TOTAL METAL RESULTS FOR AQUIFER SOLIDS
COOPERATIVE ENERGY - RD MORROW SR. GENERATING PLANT

Analyte	SEP Step	SAMPLE IDENTIFICATION			
		SB-2 (14-19)	SB-5 (12-17)	SB-106 (10-15)	SB-107 (19-24)
		5/20/2019	5/20/2019	5/20/2019	5/20/2019
		mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	SEP Step 1 - Exchangeable Fraction	< 46 U	< 46 U	25 J	37 J
Aluminum	SEP Step 2 - Carbonate Fraction	< 35 U	< 34 U	12 J	18 J
Aluminum	SEP Step 3 - Non-crystalline Fraction	11 J	20	38	47
Aluminum	SEP Step 4 - Metal Hydroxide Fraction	250	320	600	600
Aluminum	SEP Step 5 - Organic Fraction	130 J	140 J	110 J	130 J
Aluminum	SEP Step 6 - Acid/Sulfide Fraction	370	300	640	650
Aluminum	SEP Step 7 - Residual Fraction	1500	1200	4900	2000
Aluminum	SEP Sum of Steps	2200	2000	6400	3500
Aluminum	Total from Chemical Analysis	2800	2900	7900	6000
Iron	SEP Step 1 - Exchangeable Fraction	< 23 U	< 23 U	< 26 U	< 23 U
Iron	SEP Step 2 - Carbonate Fraction	< 17 U	< 17 U	< 20 U	< 17 U
Iron	SEP Step 3 - Non-crystalline Fraction	13	59	120	160
Iron	SEP Step 4 - Metal Hydroxide Fraction	340	500	760	620
Iron	SEP Step 5 - Organic Fraction	< 87 U	< 86 U	< 98 U	< 87 U
Iron	SEP Step 6 - Acid/Sulfide Fraction	480	120	380	340
Iron	SEP Step 7 - Residual Fraction	620	250	910	410
Iron	SEP Sum of Steps	1500	930	2200	1500
Iron	Total from Chemical Analysis	710	1300	2400	2000
Lithium	SEP Step 1 - Exchangeable Fraction	< 12 U	1.1 J	< 13 U	< 12 U
Lithium	SEP Step 2 - Carbonate Fraction	< 8.7 U	< 8.6 U	< 9.8 U	< 8.7 U
Lithium	SEP Step 3 - Non-crystalline Fraction	< 2.9 U	< 2.9 U	< 3.3 U	< 2.9 U
Lithium	SEP Step 4 - Metal Hydroxide Fraction	< 2.9 U	0.82 J	0.25 J	0.32 J
Lithium	SEP Step 5 - Organic Fraction	< 44 U	< 43 U	< 49 U	< 44 U
Lithium	SEP Step 6 - Acid/Sulfide Fraction	0.21 J	0.43 J	0.46 J	0.41 J
Lithium	SEP Step 7 - Residual Fraction	1.6 J	1.4 J	2.9 J	1.4 J
Lithium	SEP Sum of Steps	1.8 J	3.8	3.6	2.1 J
Lithium	Total from Chemical Analysis	2.2 J	5.3	4.2	3.5

TABLE 4
SEQUENTIAL EXTRACTION AND TOTAL METAL RESULTS FOR AQUIFER SOLIDS
COOPERATIVE ENERGY - RD MORROW SR. GENERATING PLANT

Molybdenum	SEP Step 1 - Exchangeable Fraction	< 9.3 U	3.1 J	< 10 U	< 9.3 U
Molybdenum	SEP Step 2 - Carbonate Fraction	< 7.0 U	< 6.9 U	< 7.8 U	< 7.0 U
Molybdenum	SEP Step 3 - Non-crystalline Fraction	< 2.3 U	0.92 J	0.11 J	0.29 J
Molybdenum	SEP Step 4 - Metal Hydroxide Fraction	< 2.3 U	0.49 J	< 2.6 U	0.13 J
Molybdenum	SEP Step 5 - Organic Fraction	< 35 U	< 34 U	< 39 U	< 35 U
Molybdenum	SEP Step 6 - Acid/Sulfide Fraction	< 2.3 U	< 2.3 U	< 2.6 U	< 2.3 U
Molybdenum	SEP Step 7 - Residual Fraction	< 2.3 U	< 2.3 U	< 2.6 U	< 2.3 U
Molybdenum	SEP Sum of Steps	< 2.0 U	4.5	0.11 J	0.42 J
Molybdenum	Total from Chemical Analysis	0.24 J	6.0	0.27 J	0.72 J

Notes:
1. mg/kg - milligrams per kilogram
2. SEP - Sequential Extraction Procedure. Each of the 7 steps is described in more detail in the accompanying report.
3. Laboratory flags and quality control notes can be found in the Laboratory Analytical Report.
4. J - Result is an estimated value. Result is less that the Reportng Limit (RL) but greater that or equal to the Method Detection Limit (MDL).
5. Sum may not equal "Total from Chemical Analysis" due to variability in extraction step efficiency.
6. U - Result is less than the MDL.

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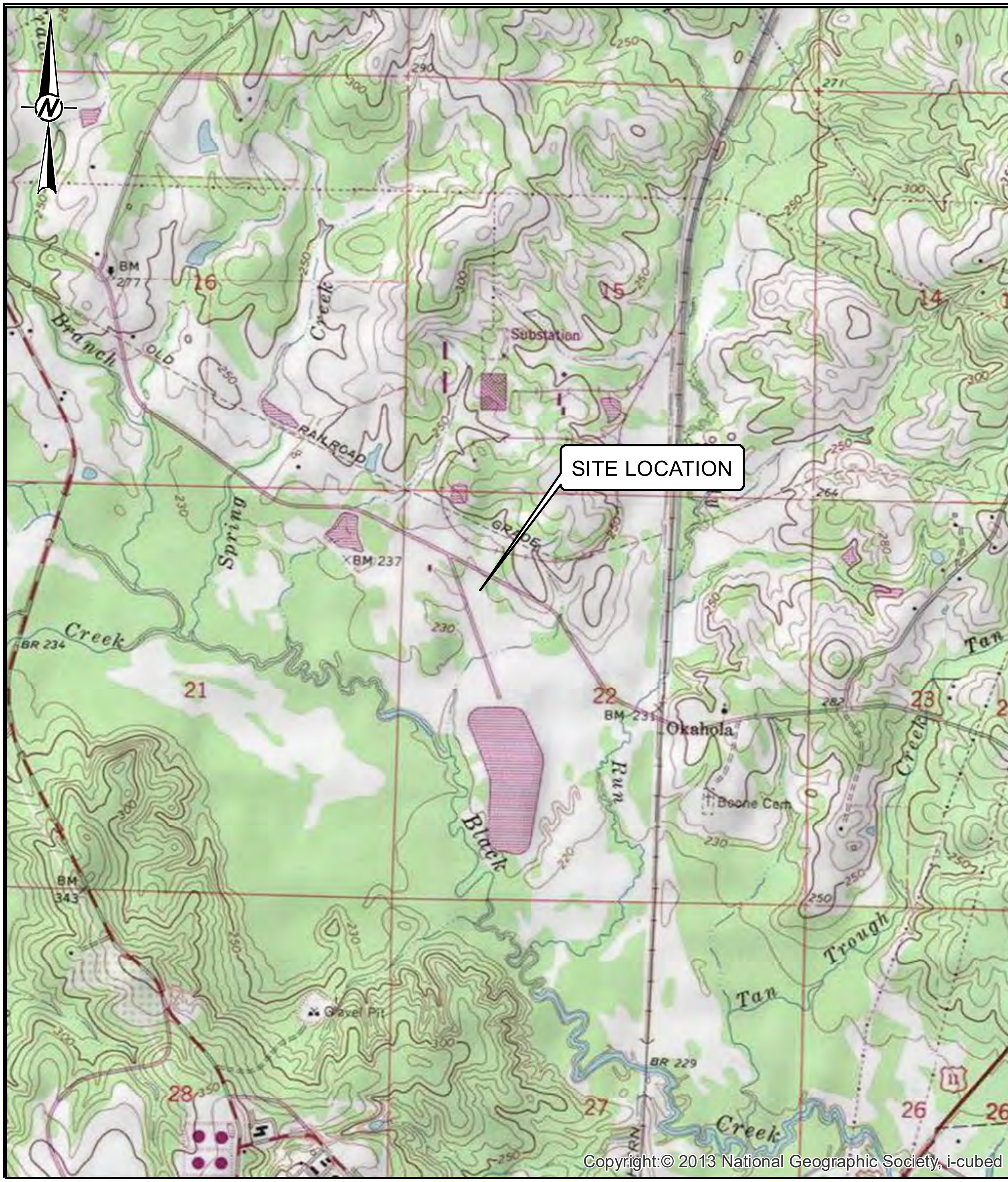

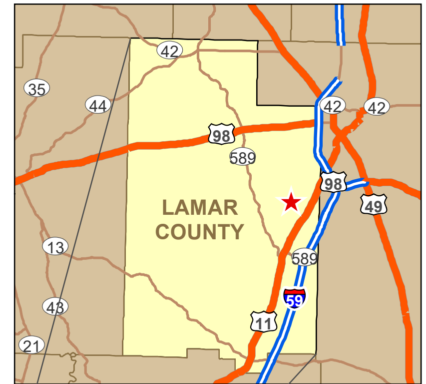

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Feet

CLIENT
COOPERATIVE ENERGY

PROJECT
RD MORROW GENERATING STATION
PURVIS, MISSISSIPPI

TITLE
SITE LOCATION MAP

CONSULTANT
wsp

YYYY-MM-DD	2020-04-30
PREPARED	DJC
DESIGN	DLP
REVIEW	DLK
APPROVED	DLP

PROJECT No.	CONTROL	Rev.	FIGURE
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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN MODIFIED FROM: ANSI A

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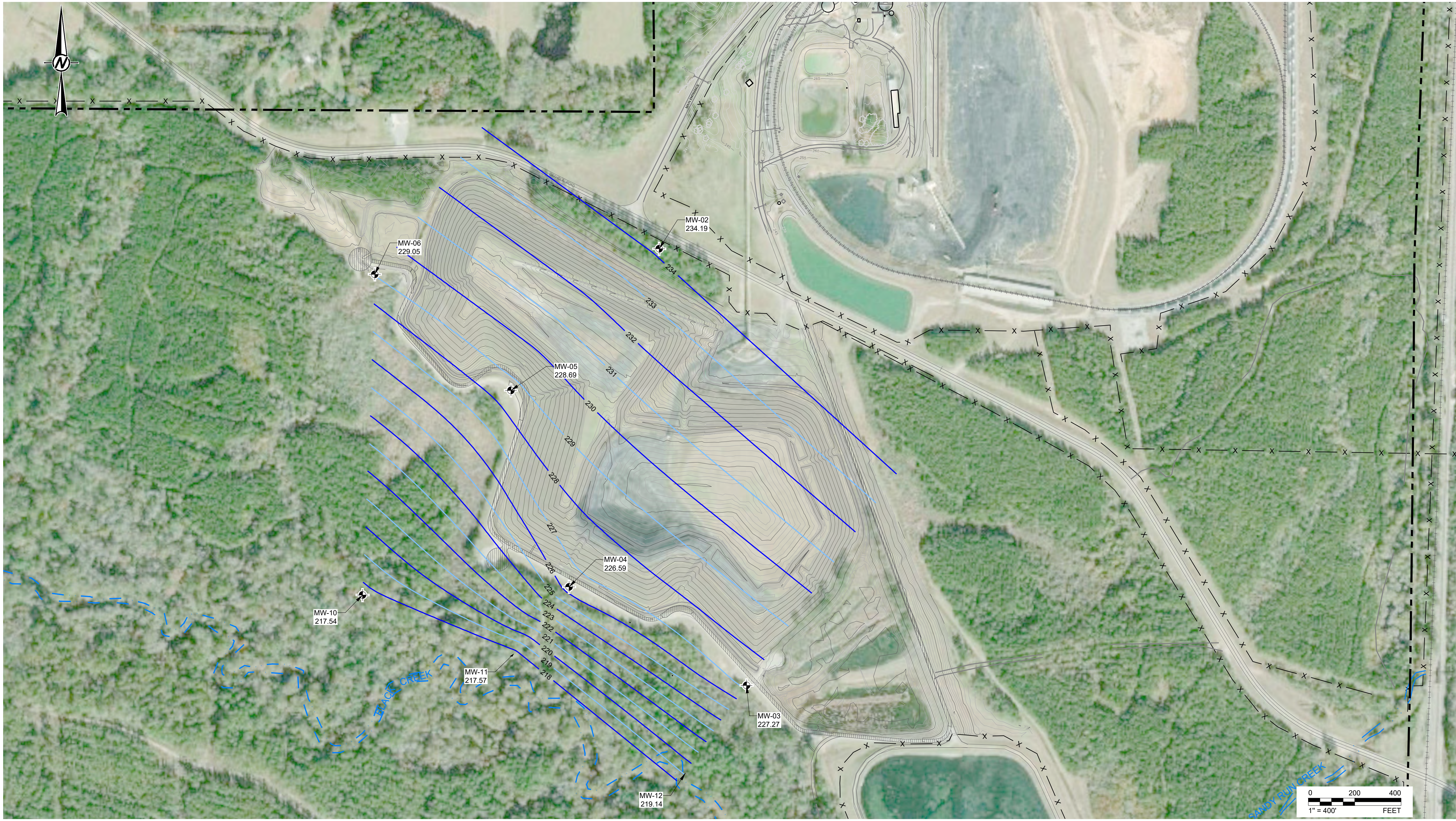
LEGEND

- MW-XX LANDFILL UNIT MONITORING WELL LOCATION
- SB-XX SOIL BORING LOCATION
- P-A SUPPLEMENTAL MONITORING POINT LOCATION
- —— X —— FENCE

REFERENCE

BASE MAP TAKEN FROM ENVIRONMENTAL MANAGEMENT SERVICES, INC., MONITORING WELL LOCATIONS, DATED 2017-02-17 DELIVERED IN .DWG FORMAT.

CLIENT	COOPERATIVE ENERGY LLC
PROJECT	RD MORROW GENERATING STATION PURVIS, MISSISSIPPI
CONSULTANT	wsp
YYYY-MM-DD	2021-11-01
DESIGNED	DLK
PREPARED	DJC
REVIEWED	
APPROVED	
TITLE	**WELL LOCATION MAP**
PROJECT NO.	21453914
CONTROL	21453914A001.dwg
REV.	0
FIGURE	2



LEGEND

PROPERTY BOUNDARY

MW-XX MONITORING WELL LOCATION WITH GROUNDWATER ELEVATION

PIEZOMETER LOCATION

220 GROUNDWATER ELEVATION CONTOUR

REFERENCE

BASE MAP TAKEN FROM ENVIRONMENTAL MANAGEMENT SERVICES, INC., MONITORING WELL LOCATIONS, DATED 2017-02-17 DELIVERED IN .DWG FORMAT.

CLIENT
COOPERATIVE ENERGY LLC

CONSULTANT

YYYY-MM-DD	2021-11-01
DESIGNED	DLK
PREPARED	DJC
REVIEWED	
APPROVED	

PROJECT
RD MORROW GENERATING STATION
PURVIS, MISSISSIPPI

TITLE
FIRST SEMI-ANNUAL 2021 POTENTIOMETRIC SURFACE ELEVATION CONTOUR MAP - *APRIL 27, 2021*

PROJECT NO.	CONTROL	REV.	FIGURE
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Fig.4a

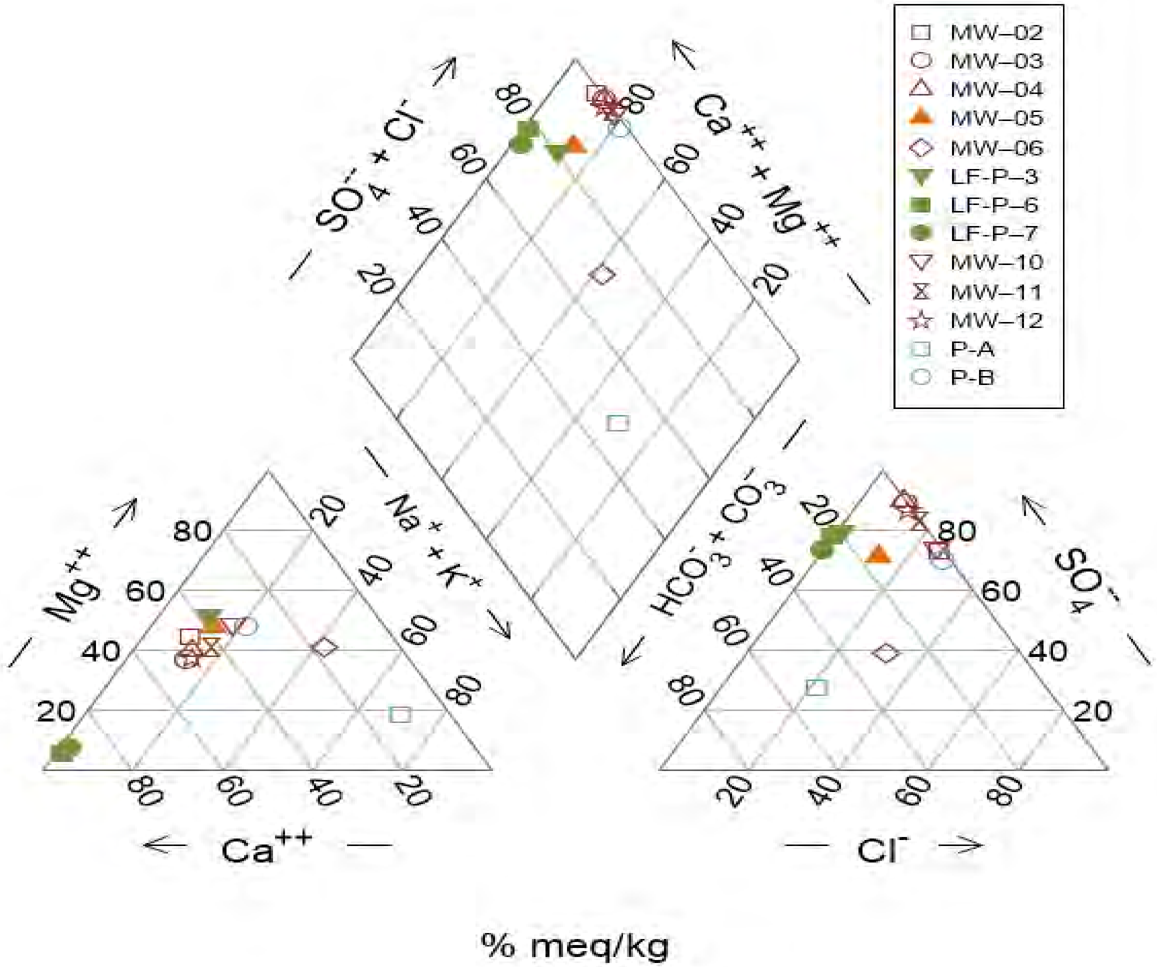
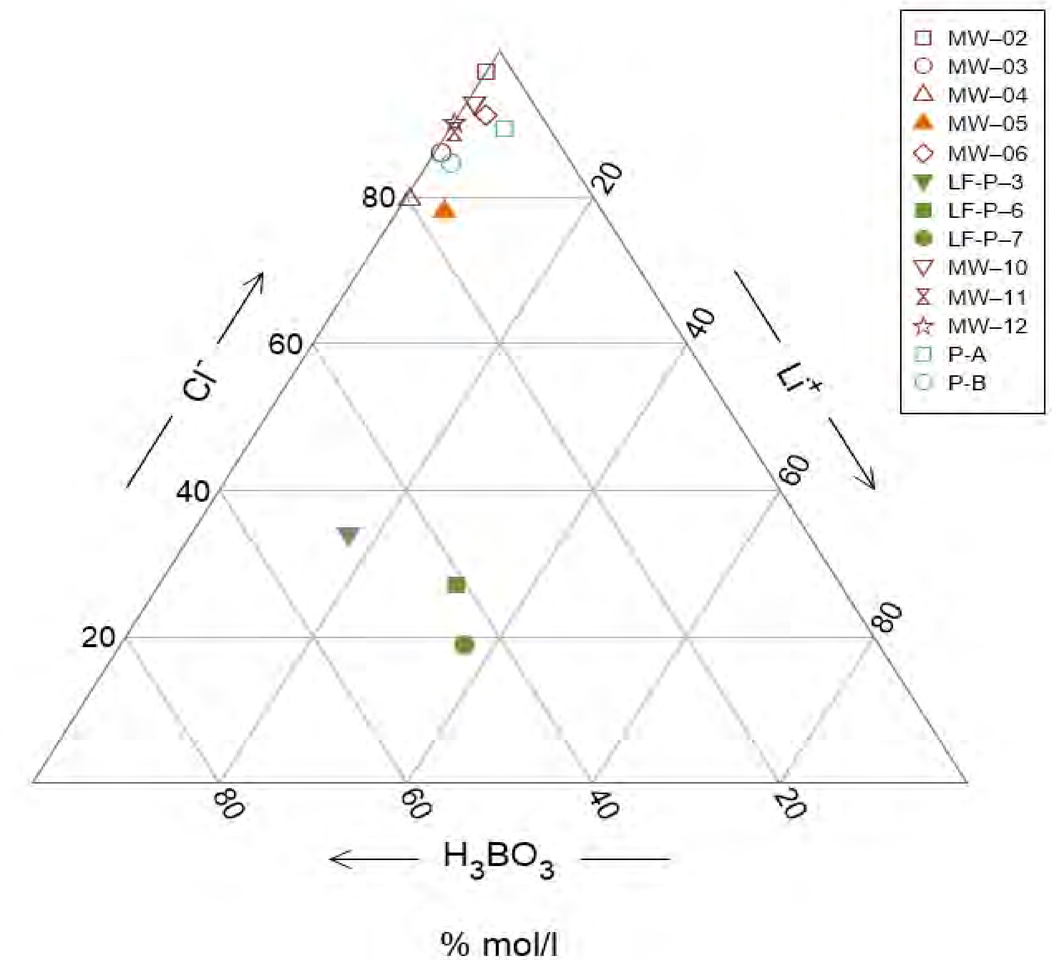


Fig. 4b



CLIENT
Cooperative Energy
RD Morrow Generating Station

PROJECT
Monitored Natural Attenuation Assessment

CONSULTANT
wsp

TITLE
Geochemical Characteristics of Groundwater by Major Ion Abundance and Select Metals

PROJECT NO.	PHASE	REV.	FIGURE
19117989	001	A	4

Fig.5a

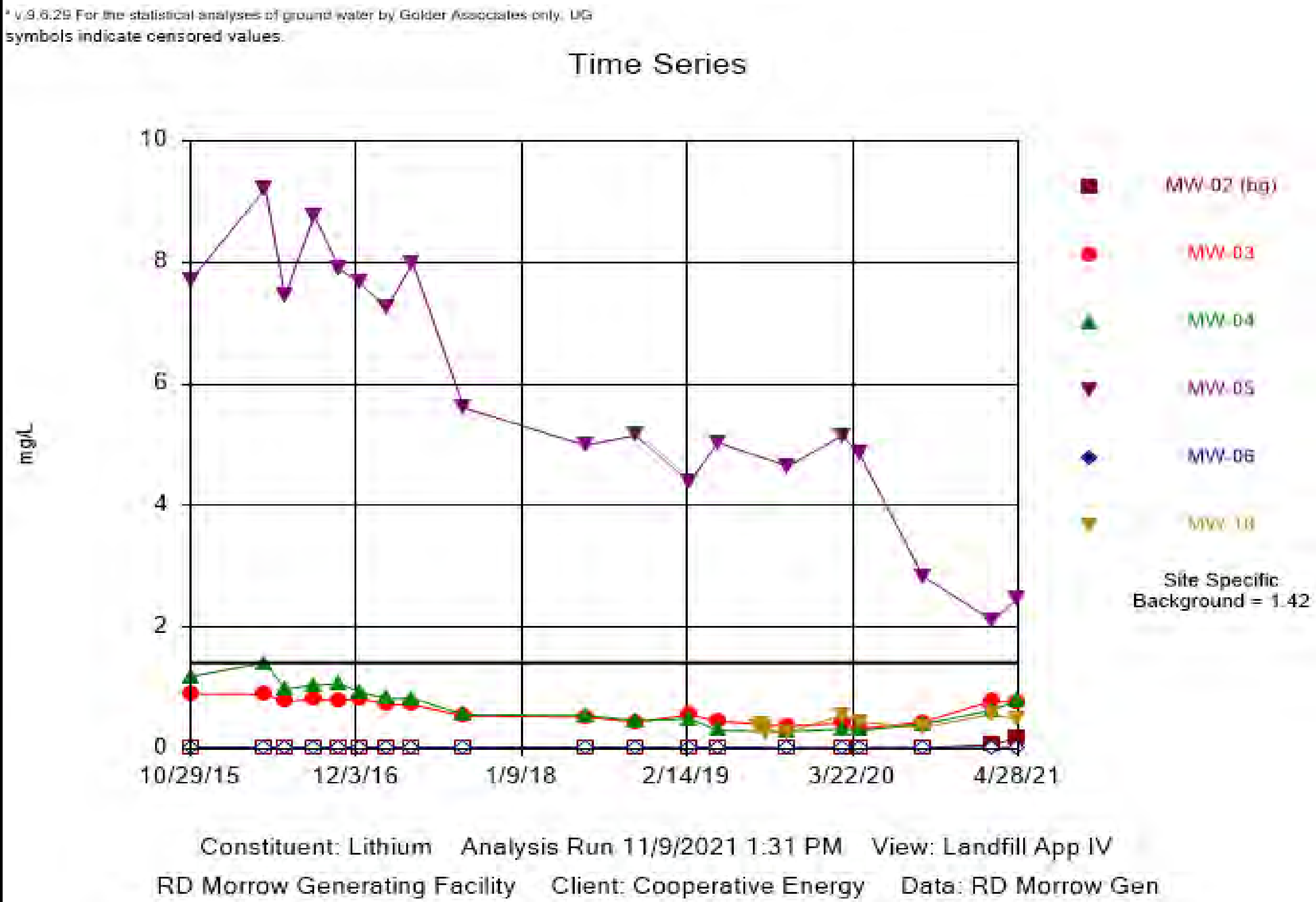
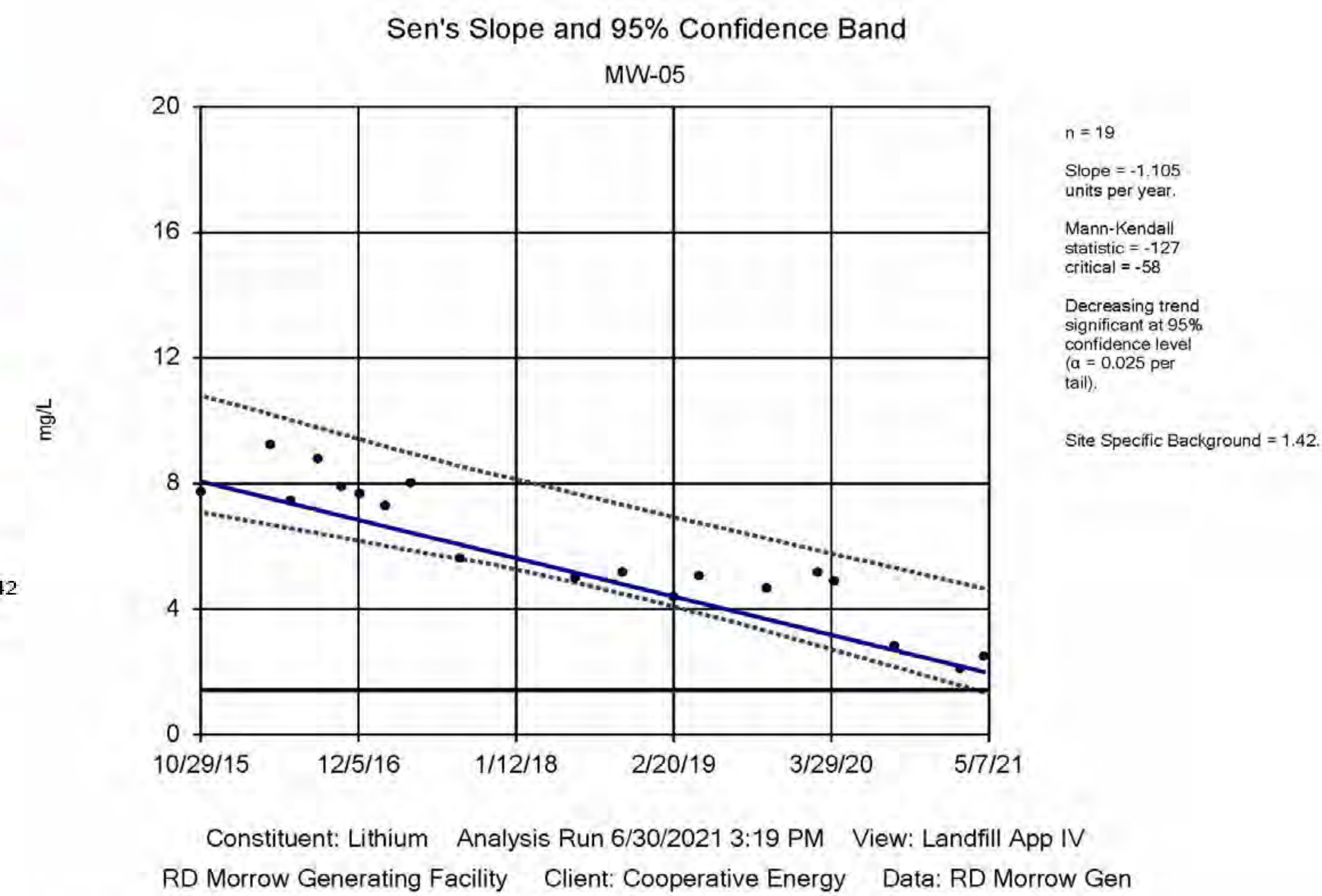


Fig. 5b



CLIENT Cooperative Energy RD Morrow Generating Station	PROJECT Monitored Natural Attenuation Assessment
CONSULTANT wsp	TITLE **Lithium Concentrations in wells (a) and Statistical Trend of Lithium at MW-5 (b)**
	PROJECT NO. 19117989 / PHASE 001 / REV. A / FIGURE 5

Fig.6a

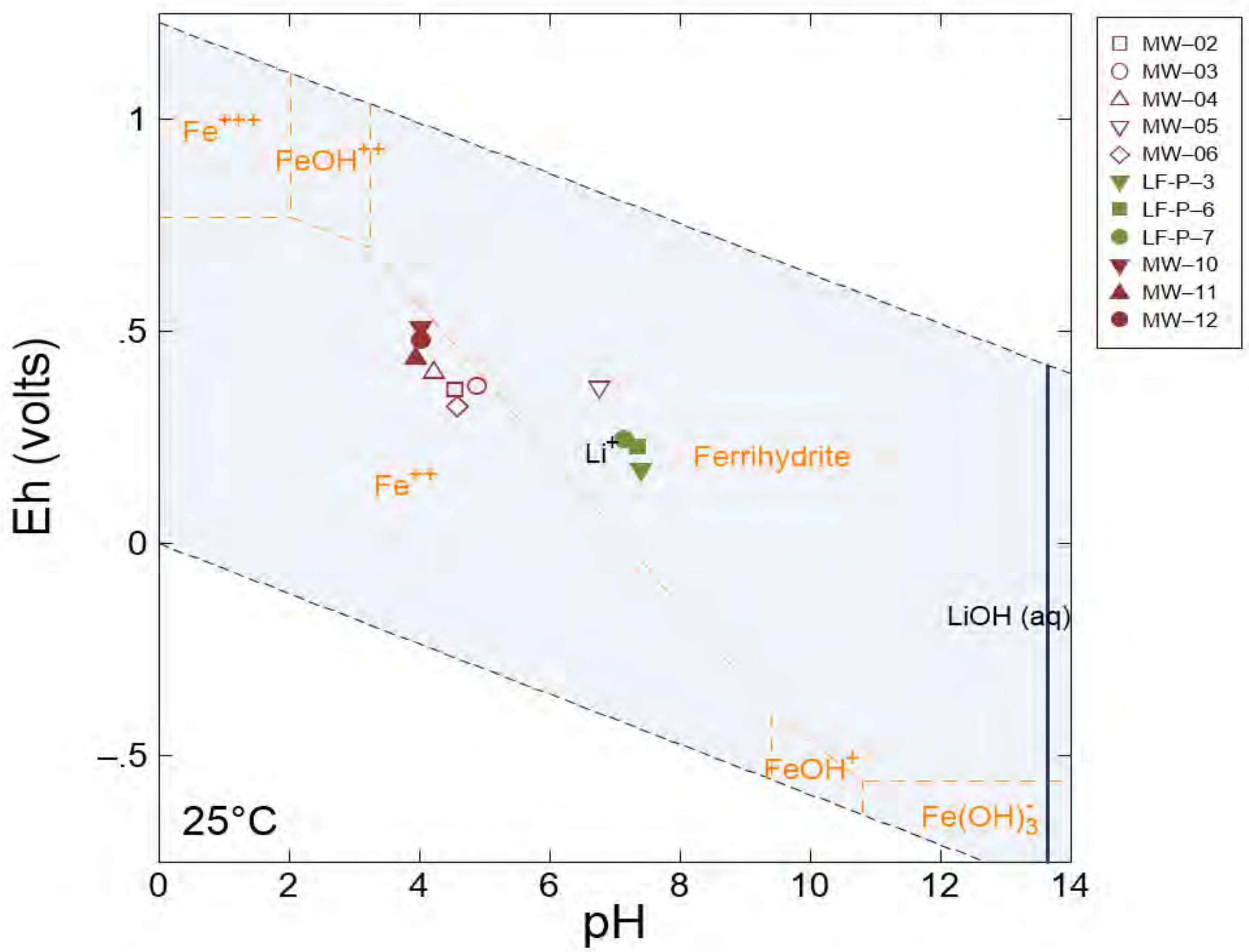
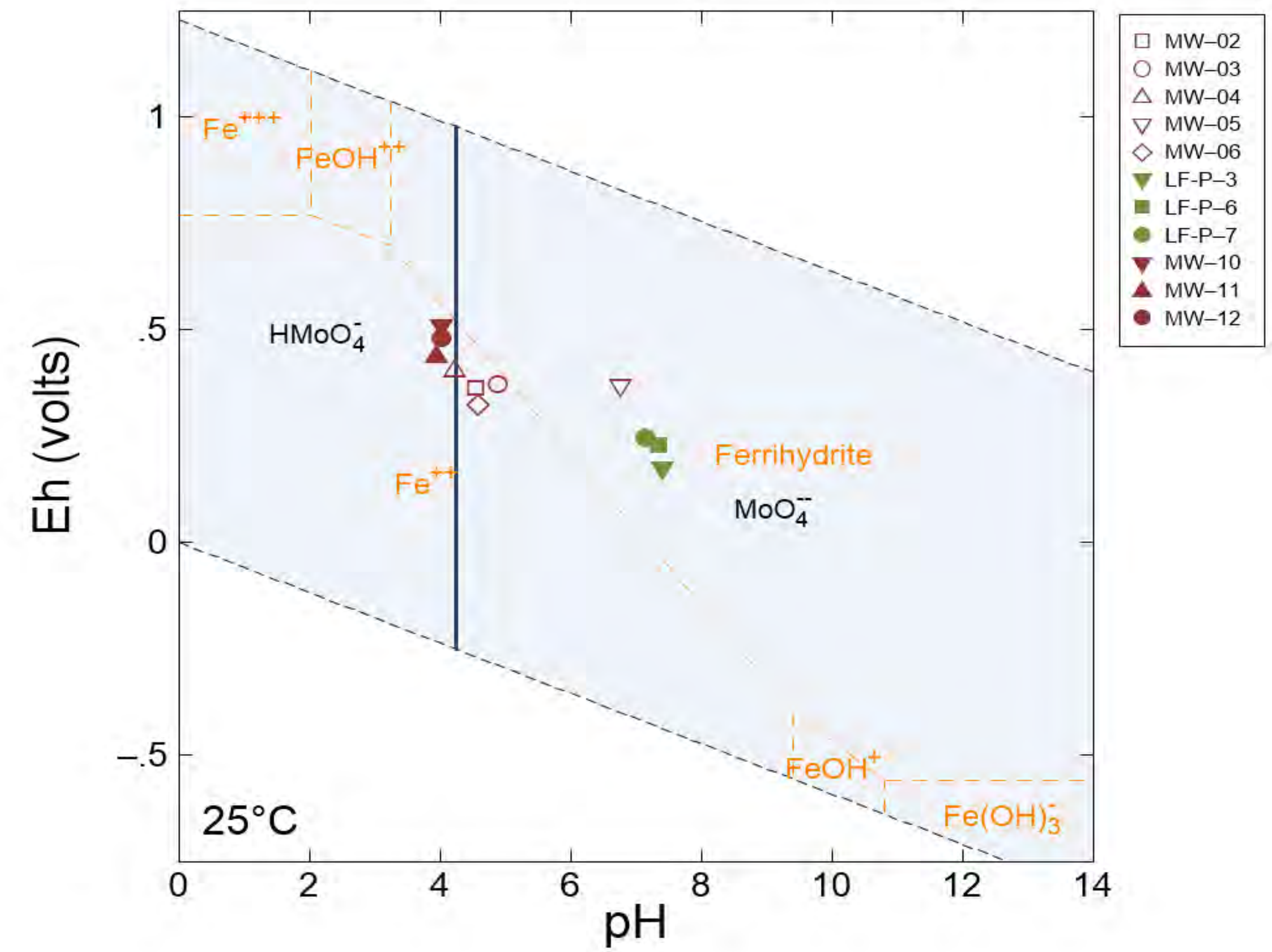


Fig. 6b



CLIENT Cooperative Energy RD Morrow Generating Station	PROJECT Monitored Natural Attenuation Assessment
CONSULTANT	TITLE **Speciation of Lithium (a) and Molybdenum (b) in Groundwater (Iron stability fields shown in orange)**

PROJECT NO.	PHASE	REV.	FIGURE
19117989	001	A	6

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Fig.7a

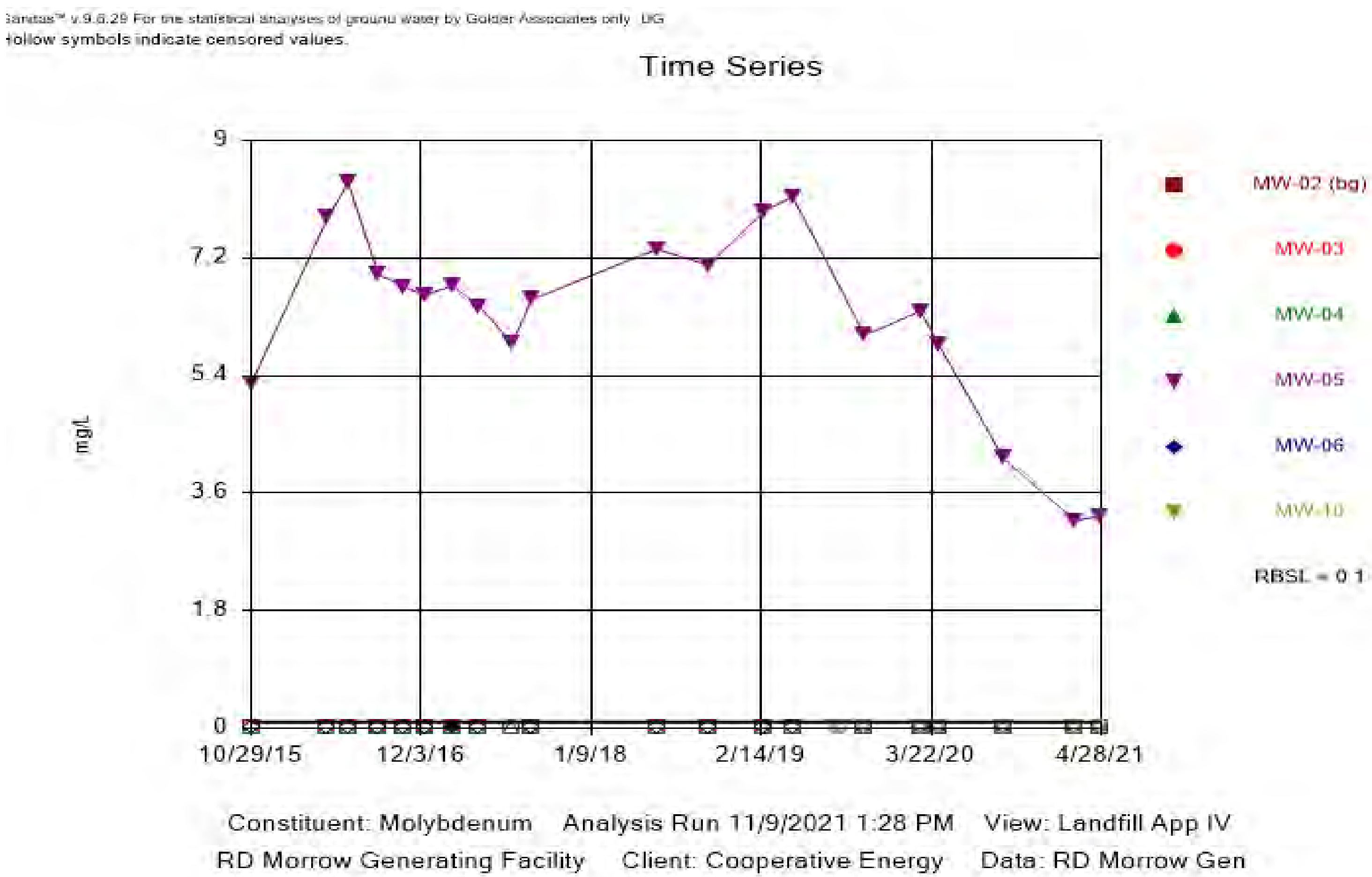
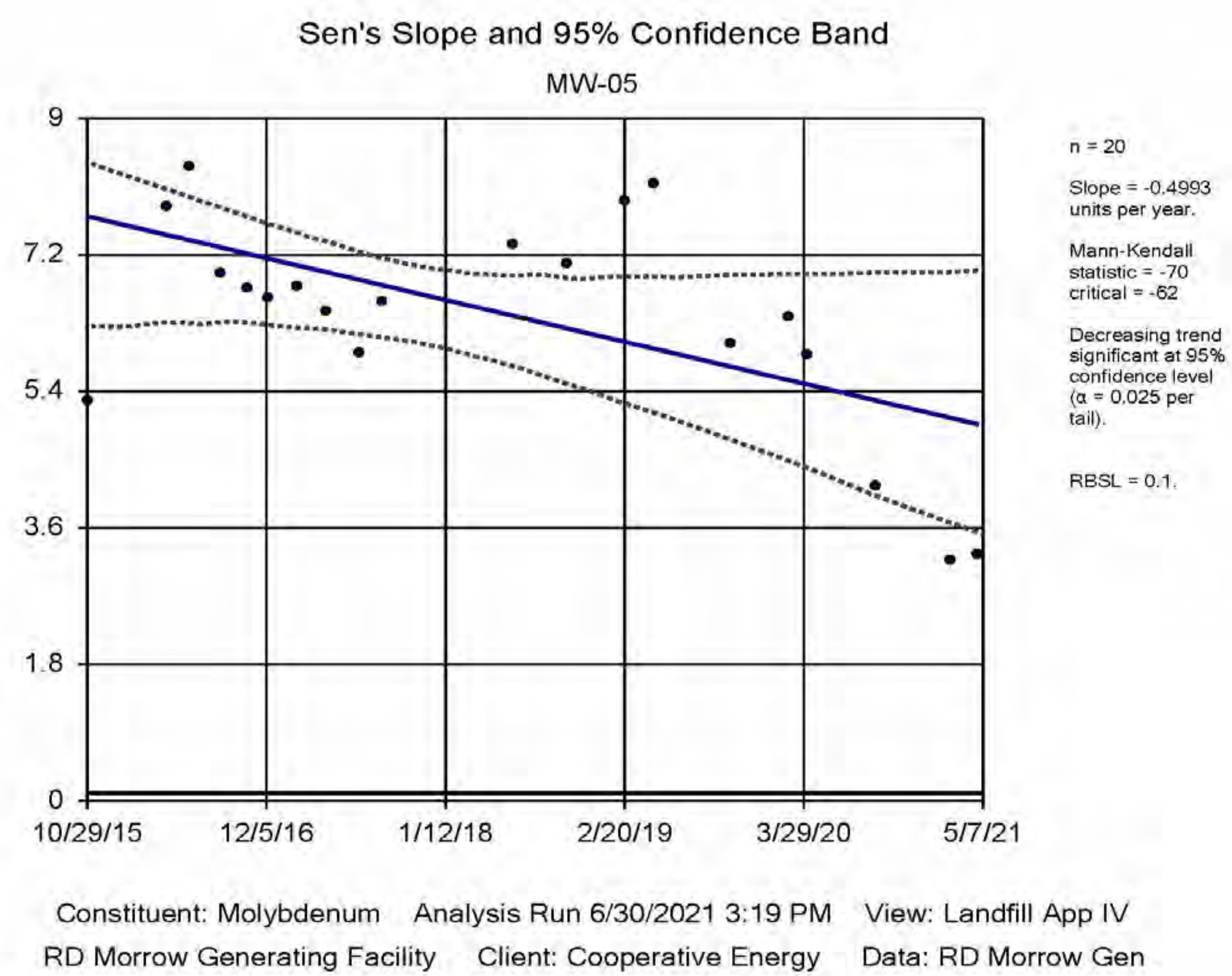


Fig. 7b



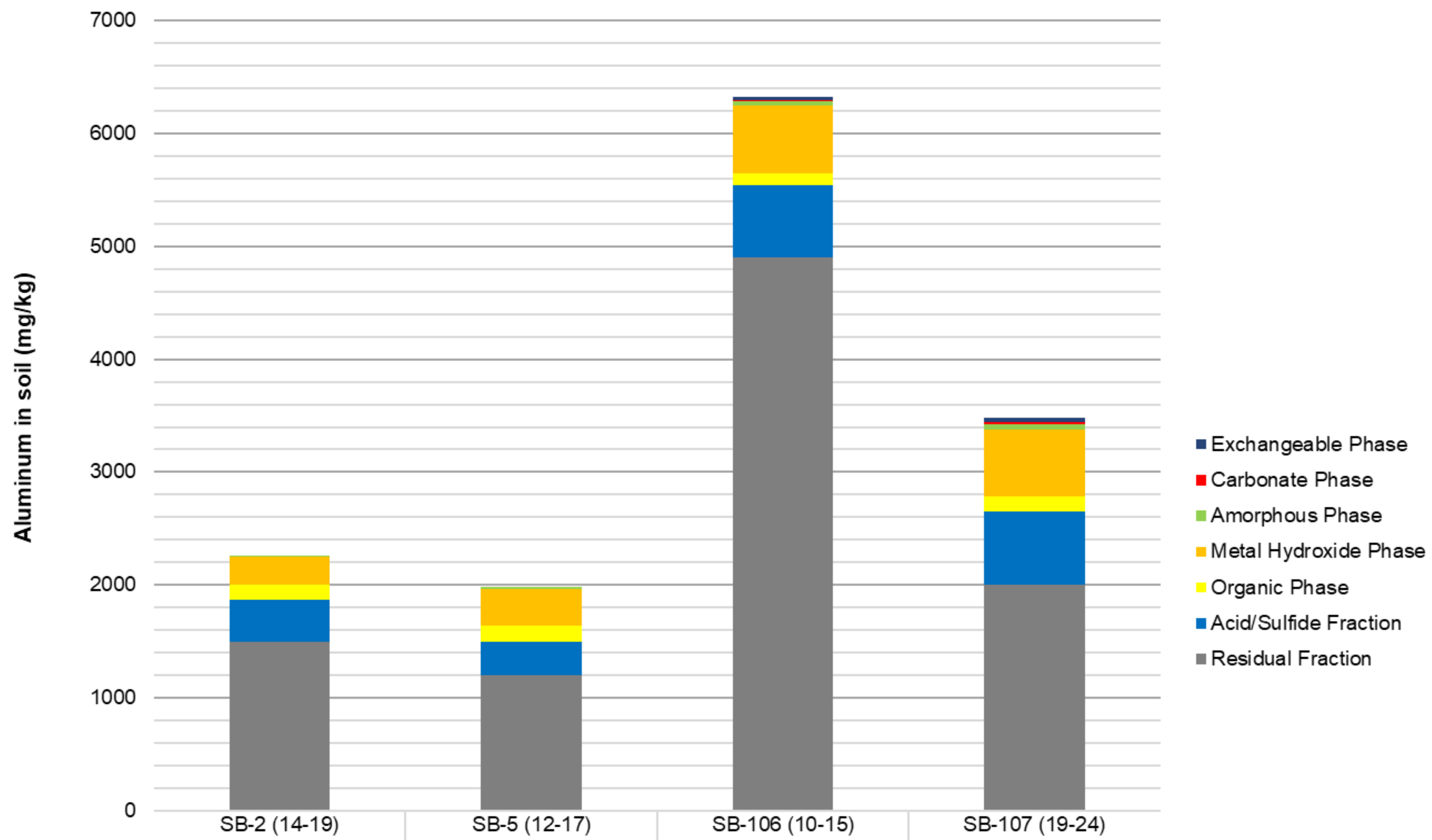
CLIENT
Cooperative Energy
RD Morrow Generating Station

CONSULTANT

PROJECT
Monitored Natural Attenuation Assessment

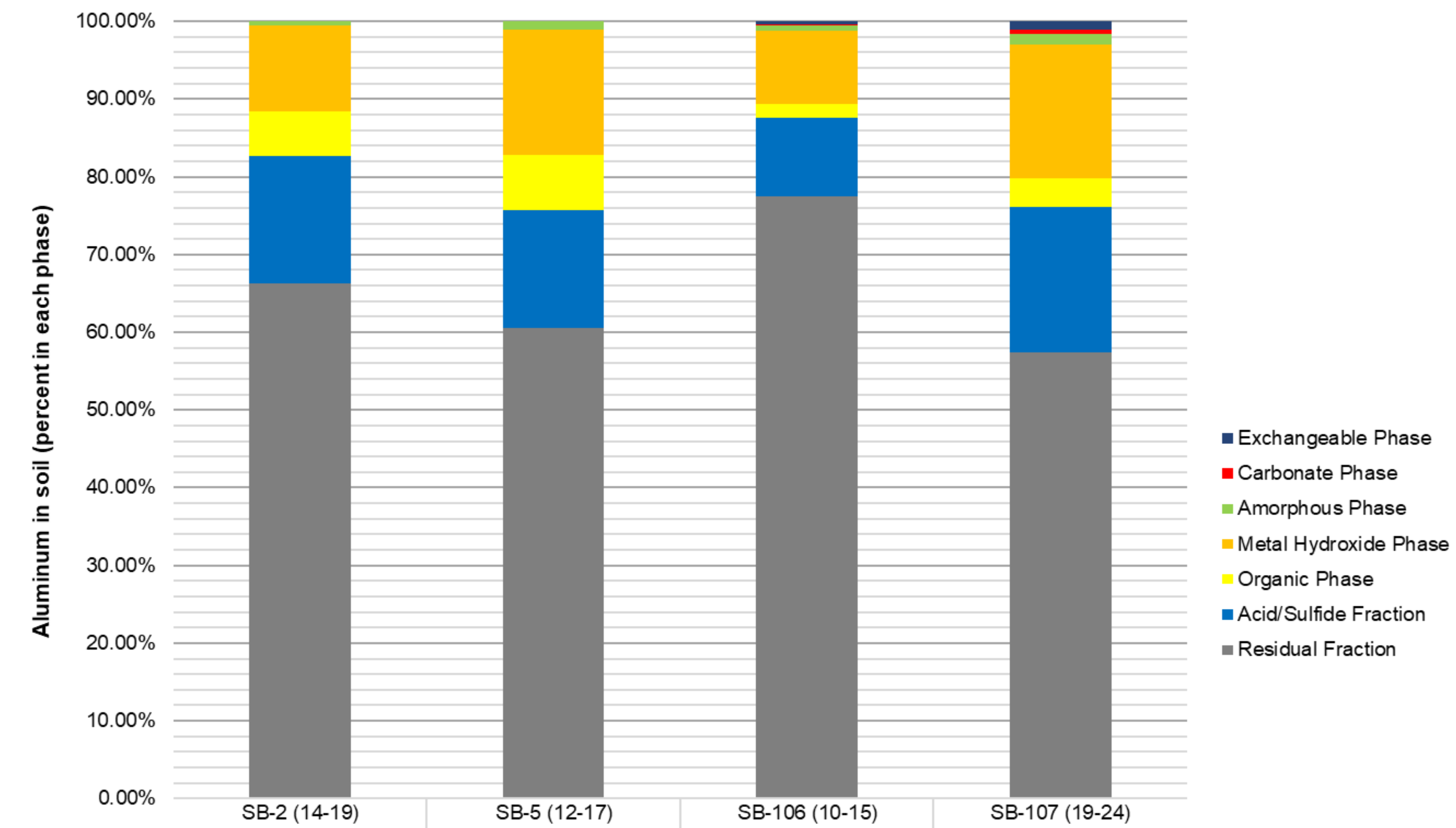
TITLE
Molybdenum Concentrations in wells (a) and Statistical Trend of Molybdenum at MW-5 (b)

PROJECT NO.	PHASE	REV.	FIGURE
19117989	001	A	7



	SB-2 (14-19)	SB-5 (12-17)	SB-106 (10-15)	SB-107 (19-24)
Exchangeable Phase	0	0	25	37
Carbonate Phase	0	0	12	18
Amorphous Phase	11	20	38	47
Metal Hydroxide Phase	250	320	600	600
Organic Phase	130	140	110	130
Acid/Sulfide Fraction	370	300	640	650
Residual Fraction	1500	1200	4900	2000

Borehole and depth below ground surface



	SB-2 (14-19)	SB-5 (12-17)	SB-106 (10-15)	SB-107 (19-24)
Exchangeable Phase	0.00%	0.00%	0.40%	1.06%
Carbonate Phase	0.00%	0.00%	0.19%	0.52%
Amorphous Phase	0.49%	1.01%	0.60%	1.35%
Metal Hydroxide Phase	11.06%	16.16%	9.49%	17.23%
Organic Phase	5.75%	7.07%	1.74%	3.73%
Acid/Sulfide Fraction	16.36%	15.15%	10.12%	18.67%
Residual Fraction	66.34%	60.61%	77.47%	57.44%

Borehole and depth below ground surface

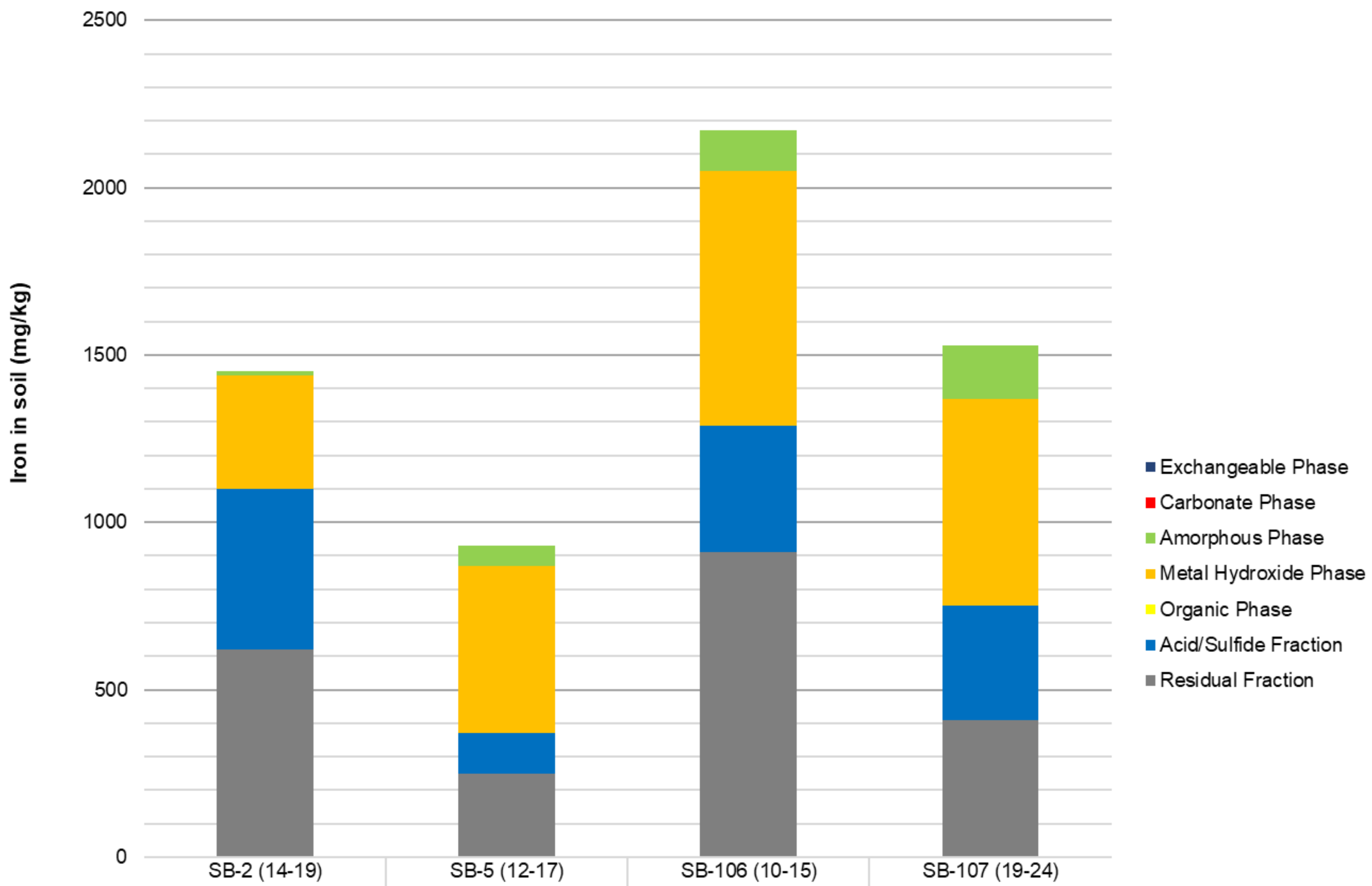
CLIENT
Cooperative Energy
RD Morrow Generating Station

PROJECT
Monitored Natural Attenuation Assessment

CONSULTANT

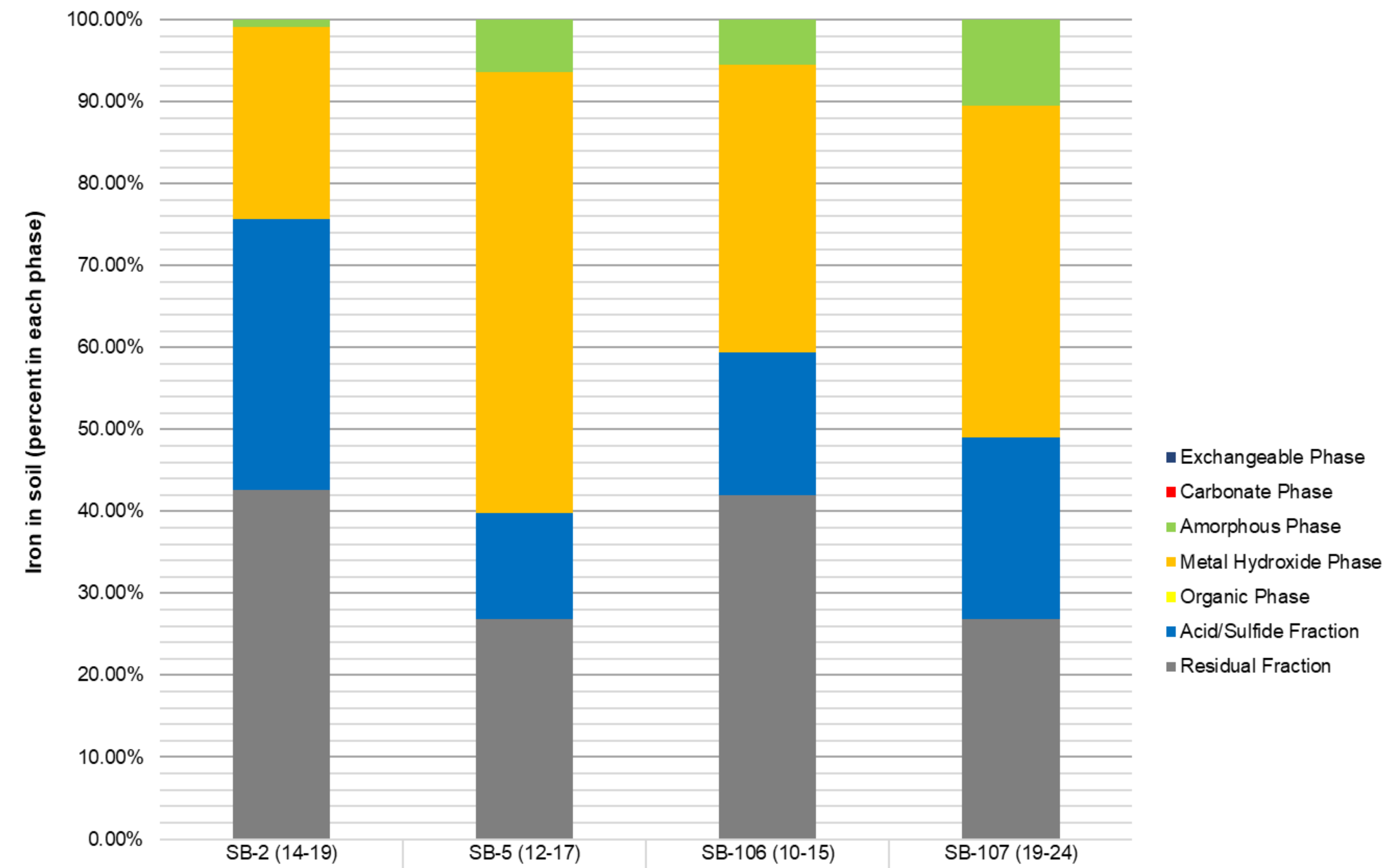
TITLE
Sequential Extraction of Aluminum from Soil Borings

PROJECT NO.	PHASE	REV.	FIGURE
19117989	001	A	8



	SB-2 (14-19)	SB-5 (12-17)	SB-106 (10-15)	SB-107 (19-24)
Exchangeable Phase	0	0	0	0
Carbonate Phase	0	0	0	0
Amorphous Phase	13	59	120	160
Metal Hydroxide Phase	340	500	760	620
Organic Phase	0	0	0	0
Acid/Sulfide Fraction	480	120	380	340
Residual Fraction	620	250	910	410

Borehole and depth below ground surface



	SB-2 (14-19)	SB-5 (12-17)	SB-106 (10-15)	SB-107 (19-24)
Exchangeable Phase	0.00%	0.00%	0.00%	0.00%
Carbonate Phase	0.00%	0.00%	0.00%	0.00%
Amorphous Phase	0.89%	6.35%	5.53%	10.46%
Metal Hydroxide Phase	23.40%	53.82%	35.02%	40.52%
Organic Phase	0.00%	0.00%	0.00%	0.00%
Acid/Sulfide Fraction	33.04%	12.92%	17.51%	22.22%
Residual Fraction	42.67%	26.91%	41.94%	26.80%

Borehole and depth below ground surface

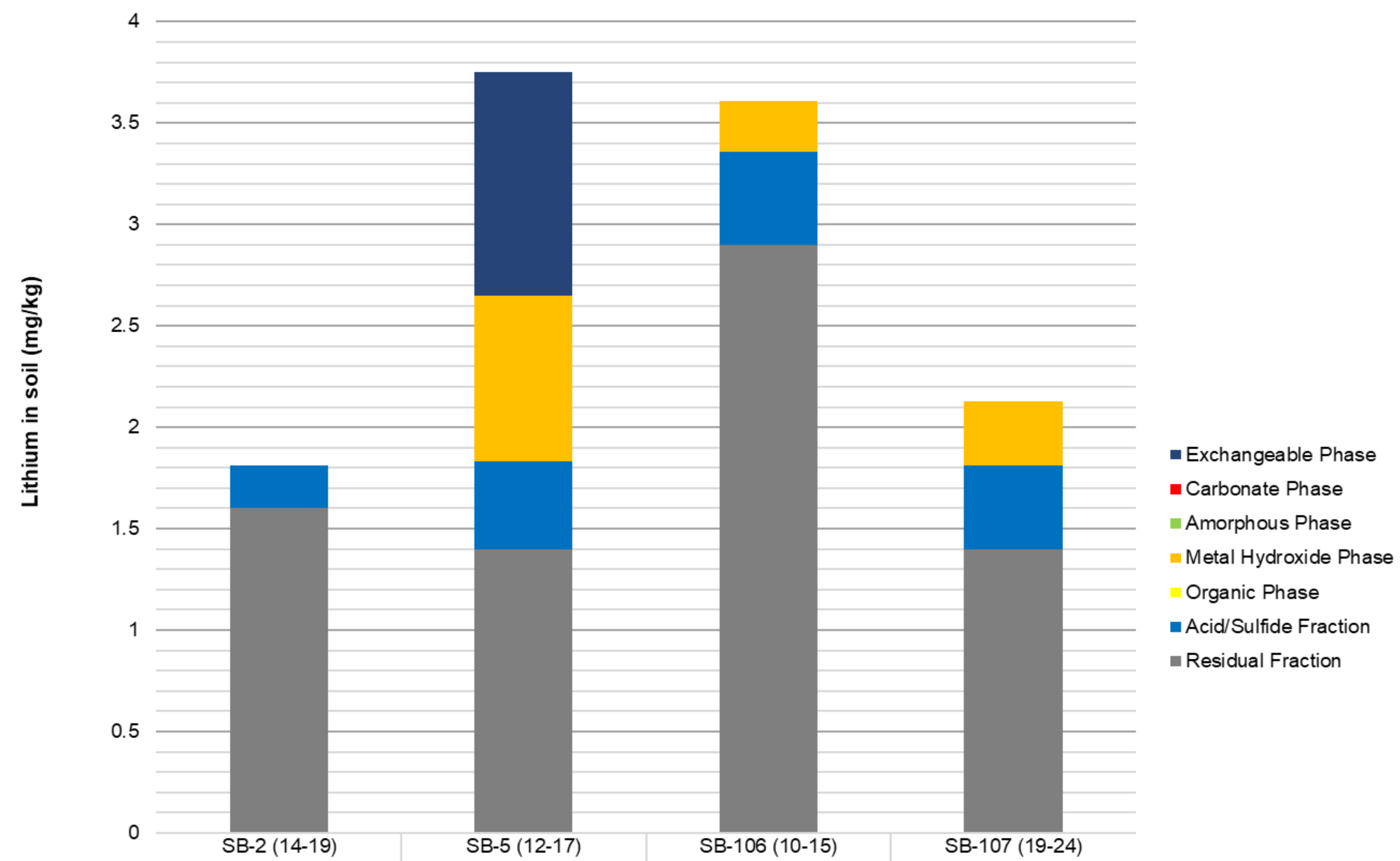
CLIENT
Cooperative Energy
RD Morrow Generating Station

PROJECT
Monitored Natural Attenuation Assessment

CONSULTANT

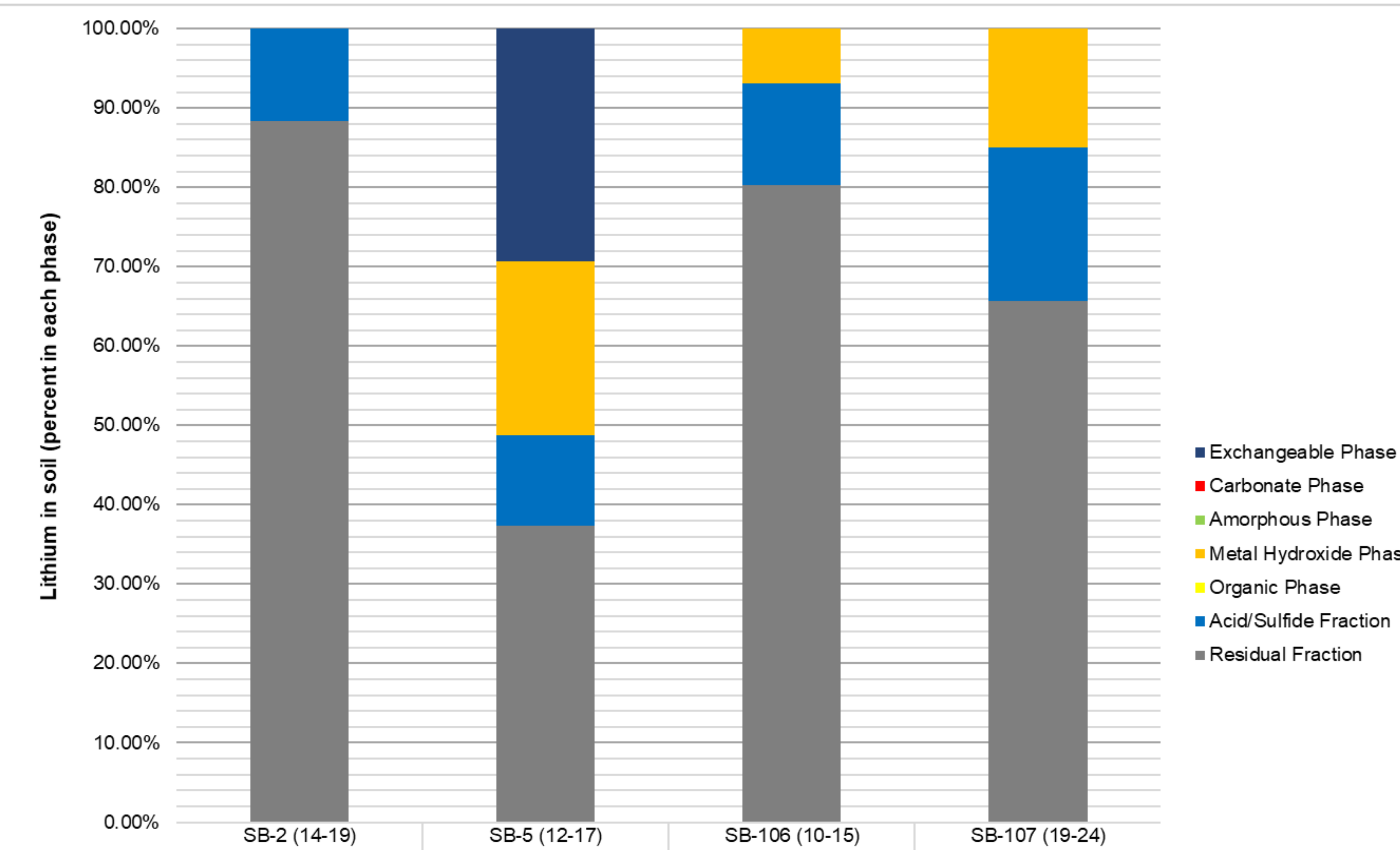
TITLE
Sequential Extraction of Iron from Soil Borings

PROJECT NO.	PHASE	REV.	FIGURE
19117989	001	A	9



	SB-2 (14-19)	SB-5 (12-17)	SB-106 (10-15)	SB-107 (19-24)
Exchangeable Phase	0	1.1	0	0
Carbonate Phase	0	0	0	0
Amorphous Phase	0	0	0	0
Metal Hydroxide Phase	0	0.82	0.25	0.32
Organic Phase	0	0	0	0
Acid/Sulfide Fraction	0.21	0.43	0.46	0.41
Residual Fraction	1.6	1.4	2.9	1.4

Borehole and depth below ground surface



	SB-2 (14-19)	SB-5 (12-17)	SB-106 (10-15)	SB-107 (19-24)
Exchangeable Phase	0.00%	29.33%	0.00%	0.00%
Carbonate Phase	0.00%	0.00%	0.00%	0.00%
Amorphous Phase	0.00%	0.00%	0.00%	0.00%
Metal Hydroxide Phase	0.00%	21.87%	6.93%	15.02%
Organic Phase	0.00%	0.00%	0.00%	0.00%
Acid/Sulfide Fraction	11.60%	11.47%	12.74%	19.25%
Residual Fraction	88.40%	37.33%	80.33%	65.73%

Borehole and depth below ground surface

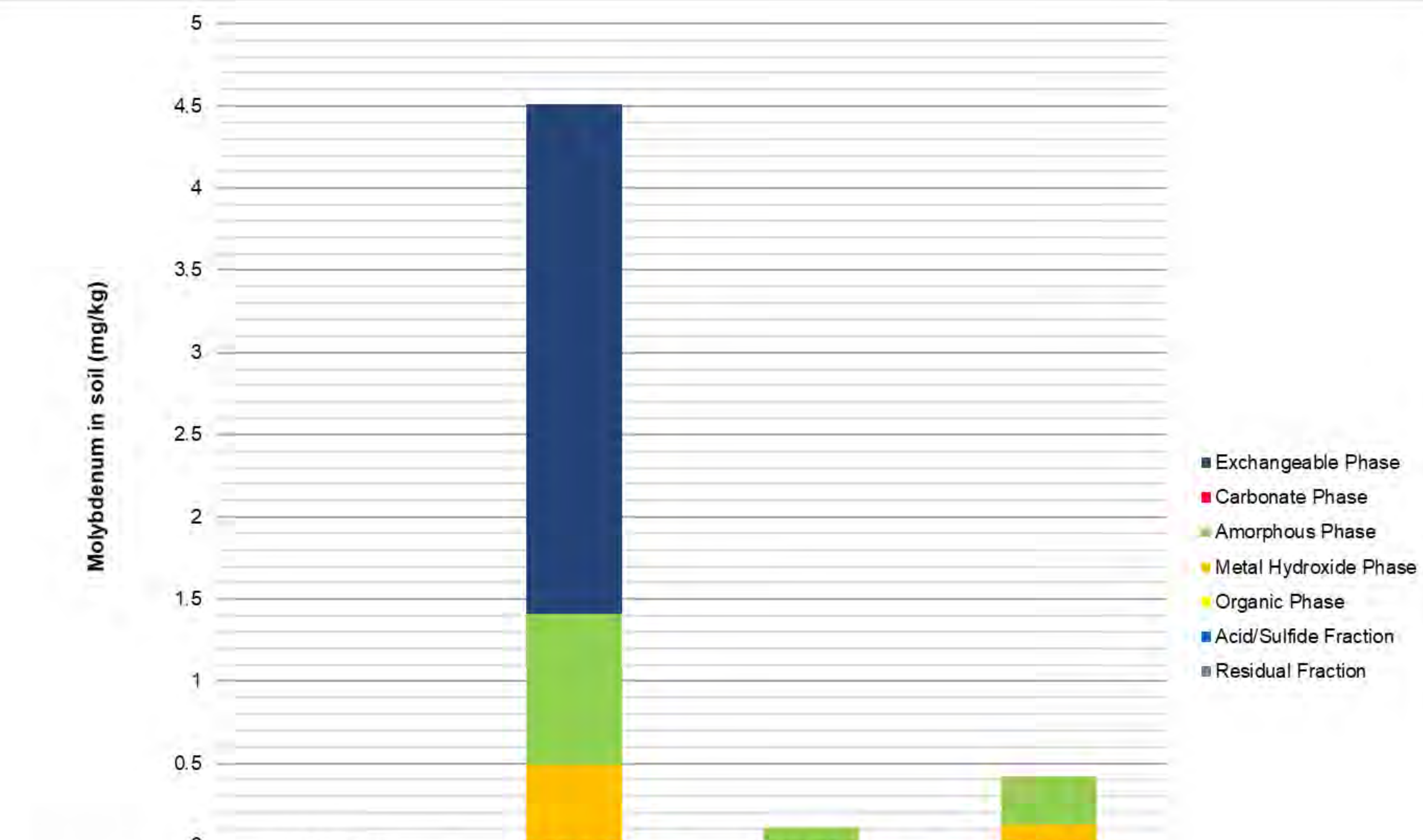
CLIENT
Cooperative Energy
RD Morrow Generating Station

PROJECT
Monitored Natural Attenuation Assessment

CONSULTANT

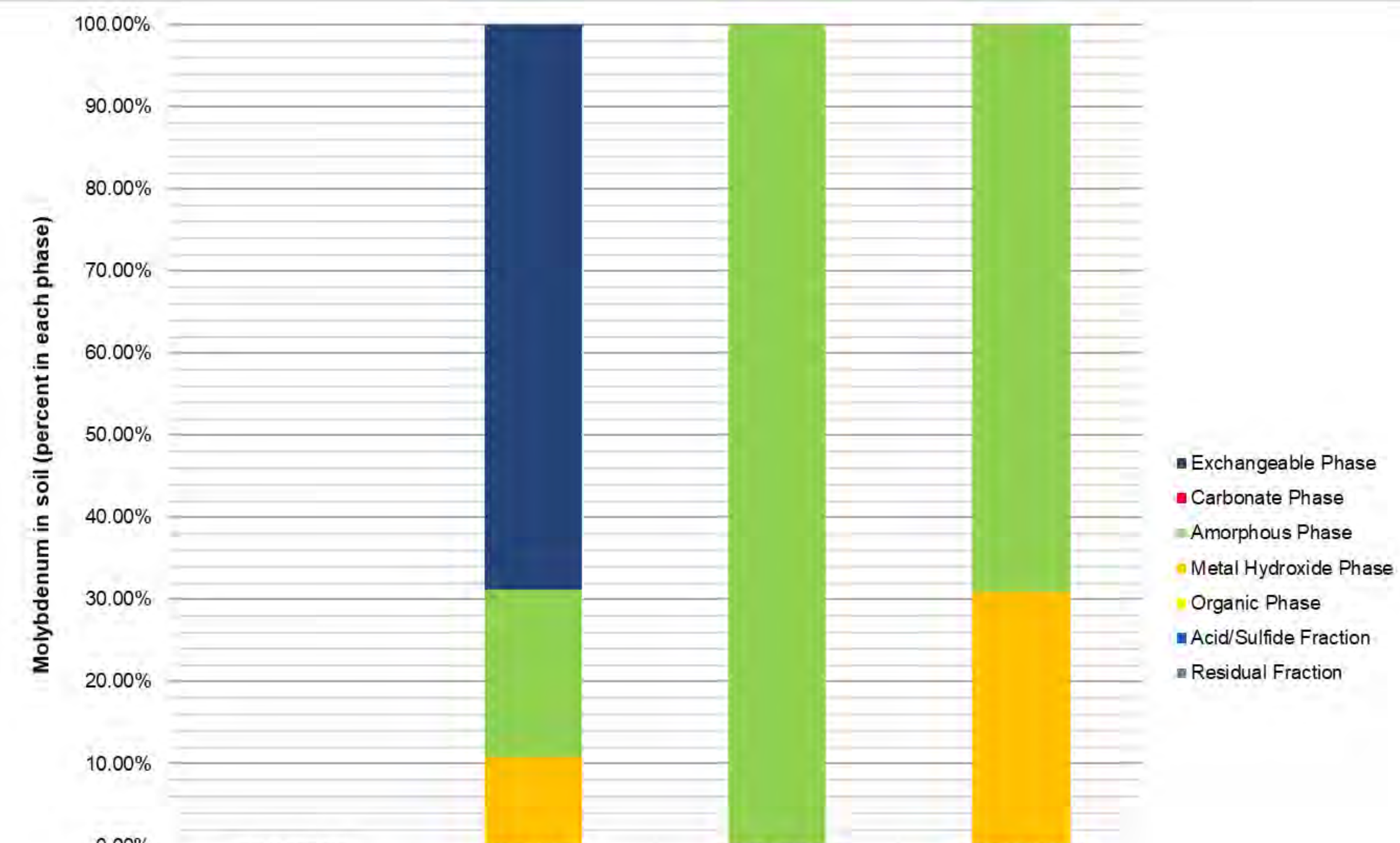
TITLE
Sequential Extraction of Lithium from Soil Borings

PROJECT NO.	PHASE	REV.	FIGURE
19117989	001	A	10



	SB-2 (14-19)	SB-5 (12-17)	SB-106 (10-15)	SB-107 (19-24)
Exchangeable Phase	0	3.1	0	0
Carbonate Phase	0	0	0	0
Amorphous Phase	0	0.92	0.11	0.29
Metal Hydroxide Phase	0	0.49	0	0.13
Organic Phase	0	0	0	0
Acid/Sulfide Fraction	0	0	0	0
Residual Fraction	0	0	0	0

Borehole and depth below ground surface



	SB-2 (14-19)	SB-5 (12-17)	SB-106 (10-15)	SB-107 (19-24)
Exchangeable Phase	0.00%	68.74%	0.00%	0.00%
Carbonate Phase	0.00%	0.00%	0.00%	0.00%
Amorphous Phase	0.00%	20.40%	100.00%	69.05%
Metal Hydroxide Phase	0.00%	10.86%	0.00%	30.95%
Organic Phase	0.00%	0.00%	0.00%	0.00%
Acid/Sulfide Fraction	0.00%	0.00%	0.00%	0.00%
Residual Fraction	0.00%	0.00%	0.00%	0.00%

Borehole and depth below ground surface

CLIENT
Cooperative Energy
RD Morrow Generating Station

PROJECT
Monitored Natural Attenuation Assessment

CONSULTANT
wsp

TITLE
Sequential Extraction of Molybdenum from Soil Borings

PROJECT NO.	PHASE	REV.	FIGURE
19117989	001	A	11

Fig.12a

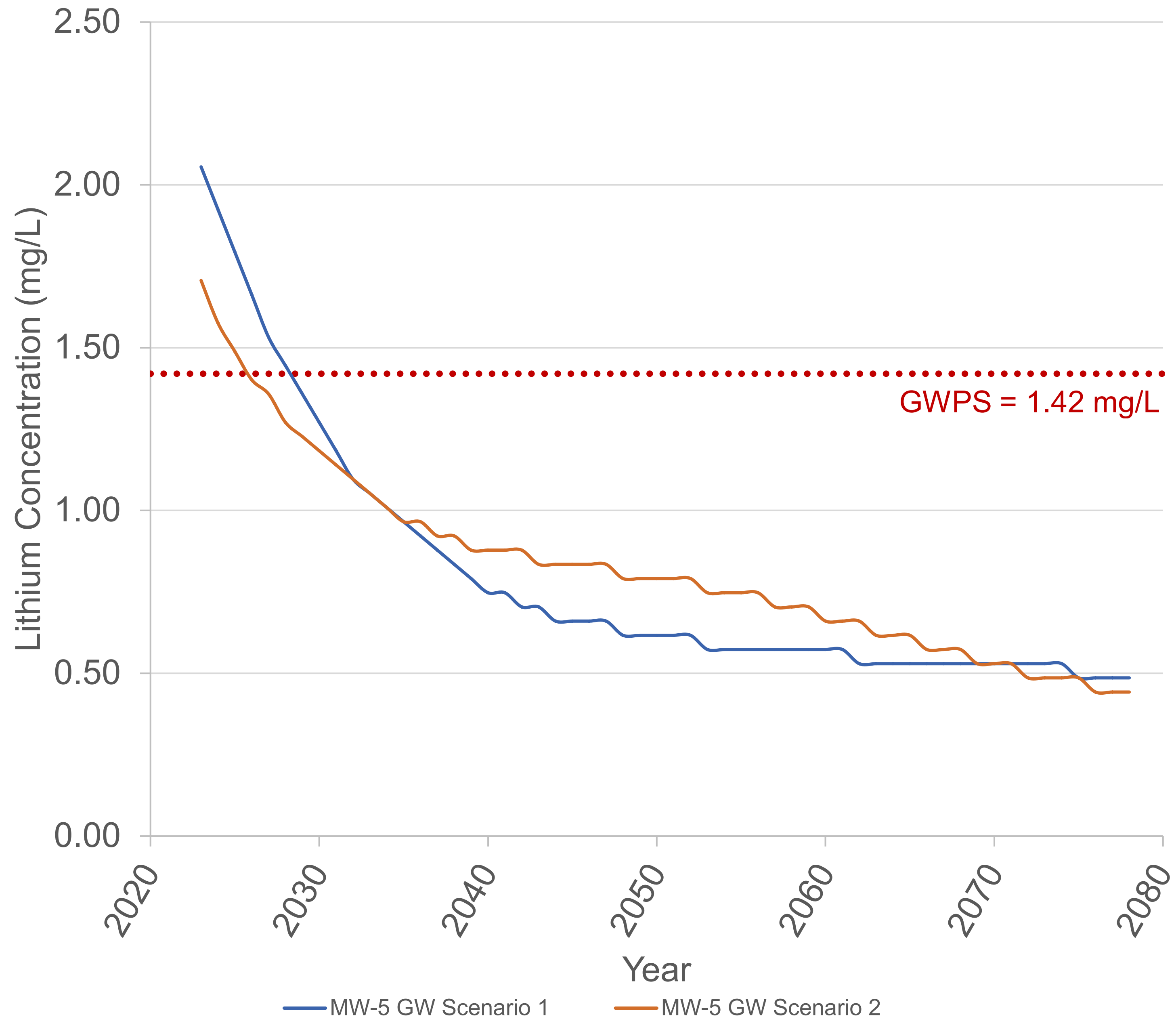
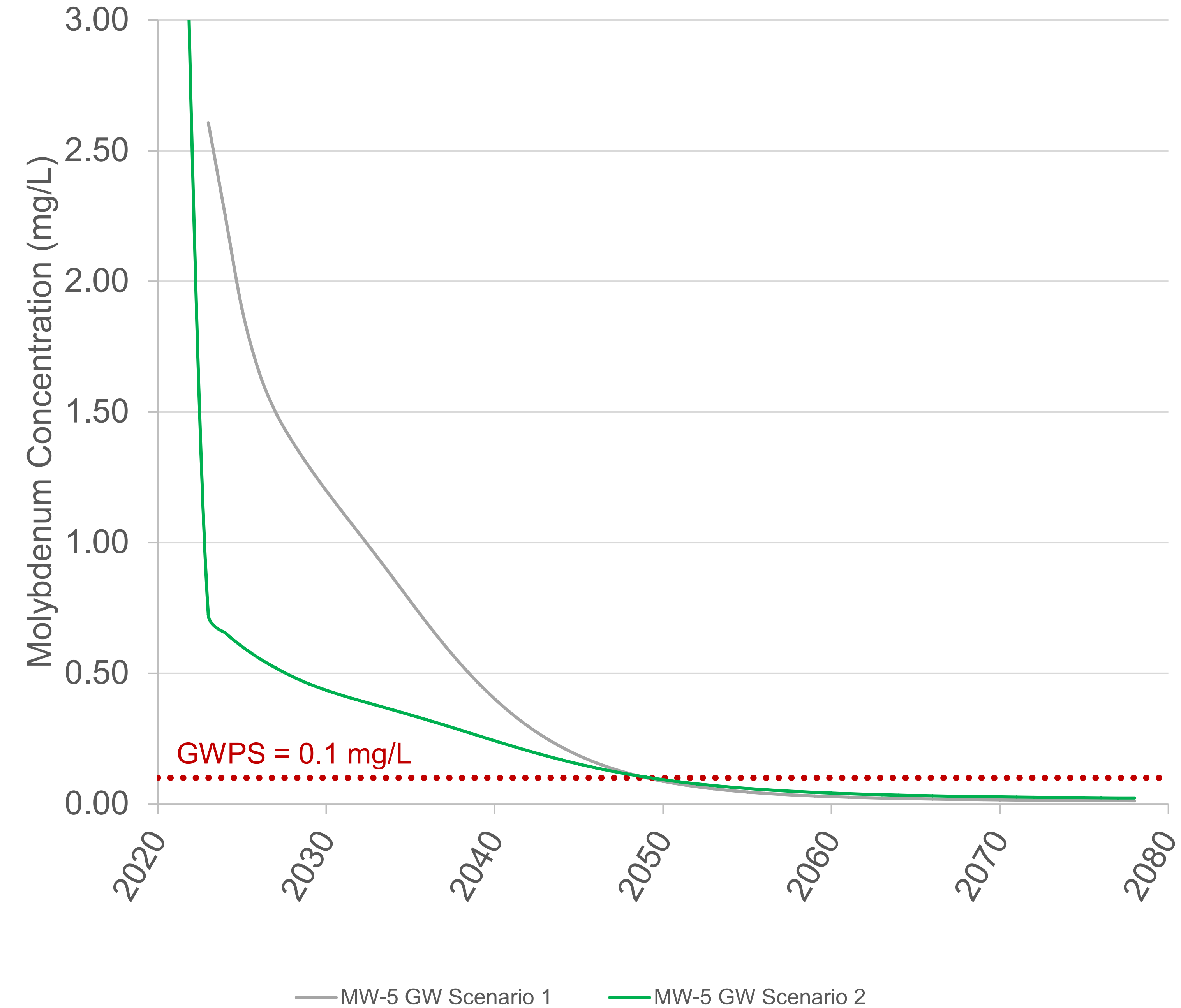


Fig. 12b



CLIENT Cooperative Energy RD Morrow Generating Station	PROJECT Monitored Natural Attenuation Assessment
CONSULTANT wsp	TITLE **Modeled Rate of Attenuation for Lithium (a) and Molybdenum (b)**

PROJECT NO.	PHASE	REV.	FIGURE
19117989	001	A	12

PATH: https://golderassociates.sharepoint.com/sites/104953/Project Files/200 Reports/MNA Final Remedy Selection Report/MNA Feasibility Study/MNA Report/Internal | FILE NAME: CoOp-MNA Figure and Table Layouts.xlsx

Fig.13a

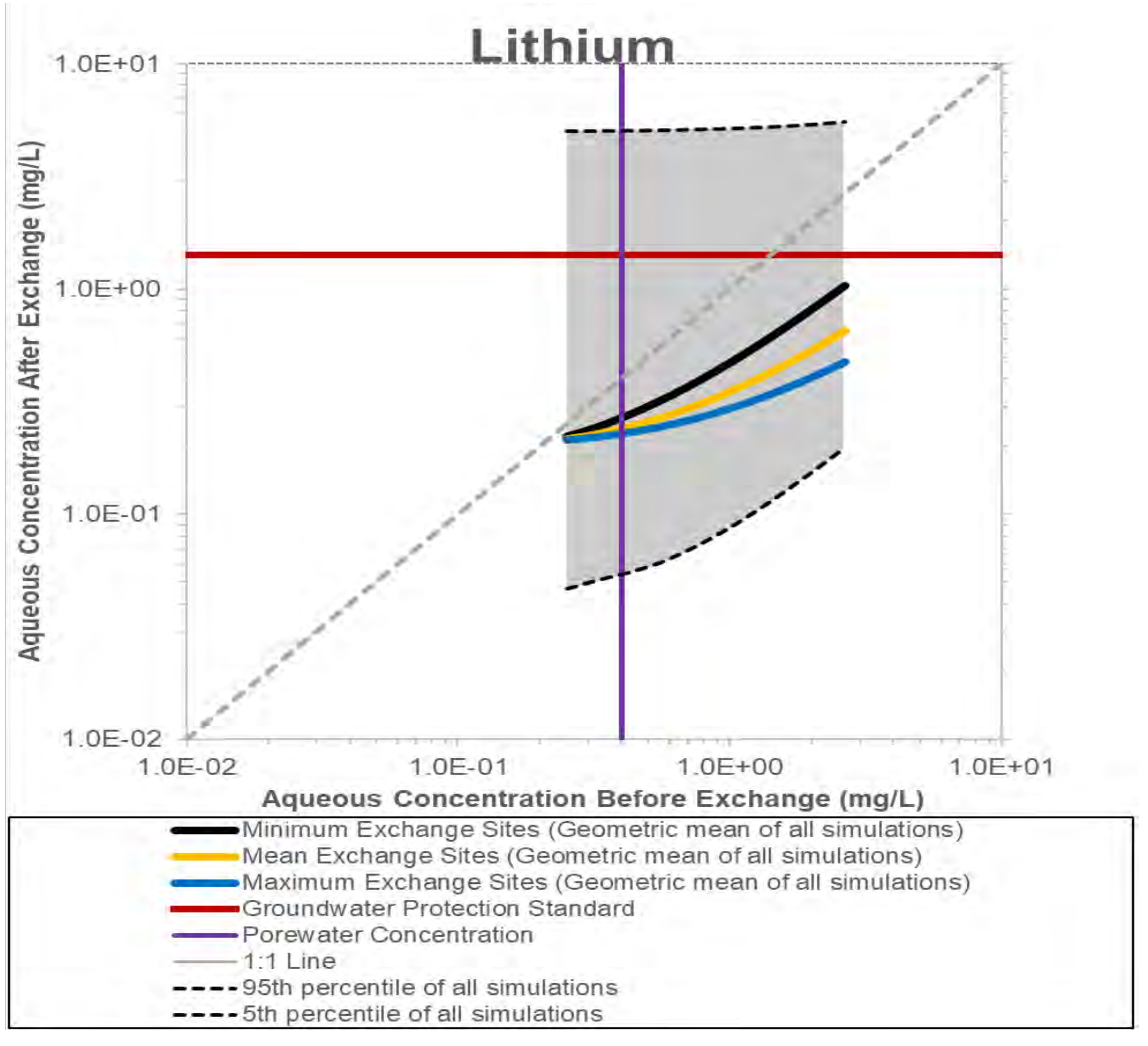
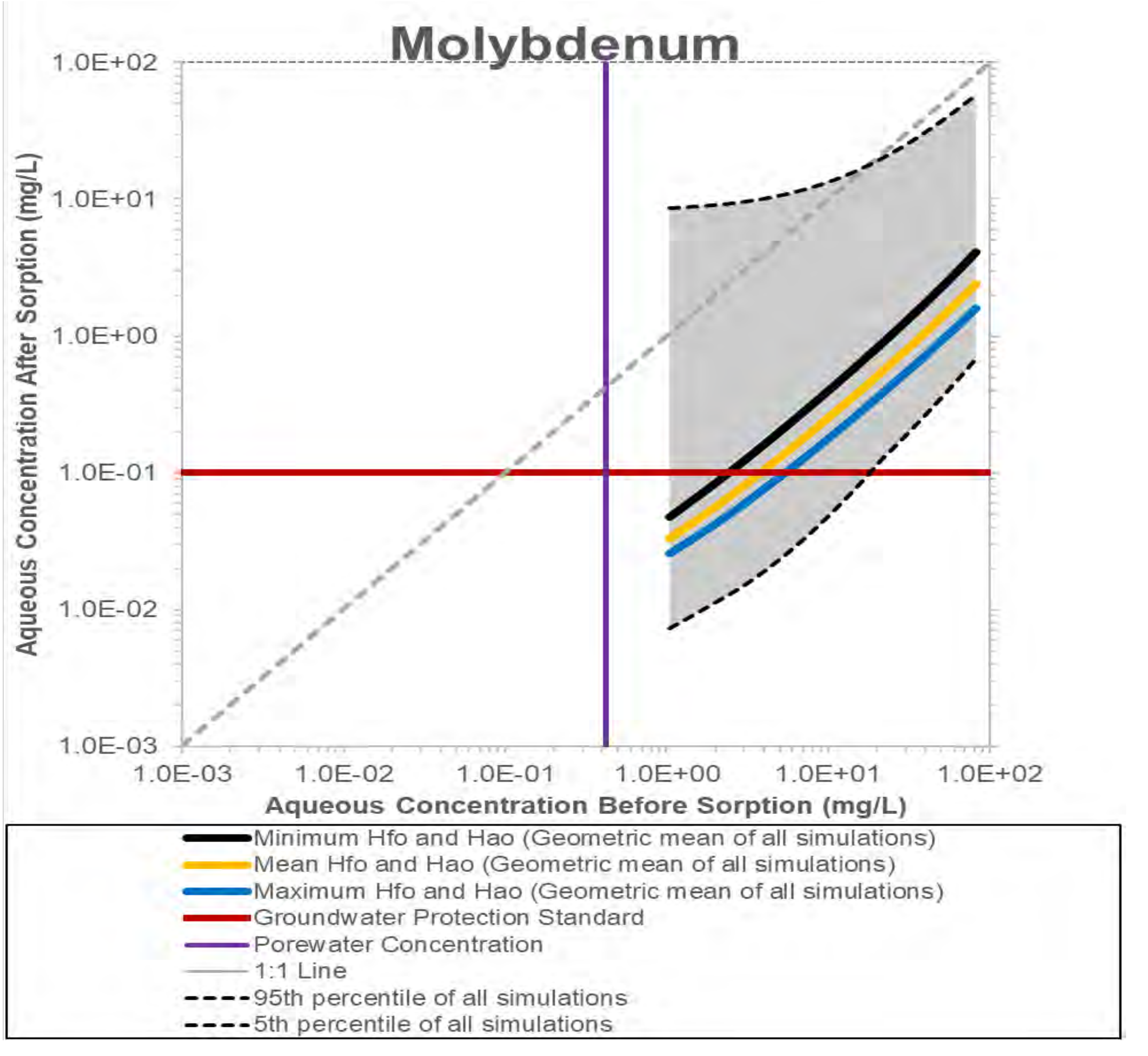


Fig. 13b



CLIENT
Cooperative Energy
RD Morrow Generating Station

PROJECT
Monitored Natural Attenuation Assessment

CONSULTANT

TITLE
Attenuation Capacity Models for Lithium (a) and Molybdenum (b)

PROJECT NO.	PHASE	REV.	FIGURE
19117989	001	A	13

Fig.14a

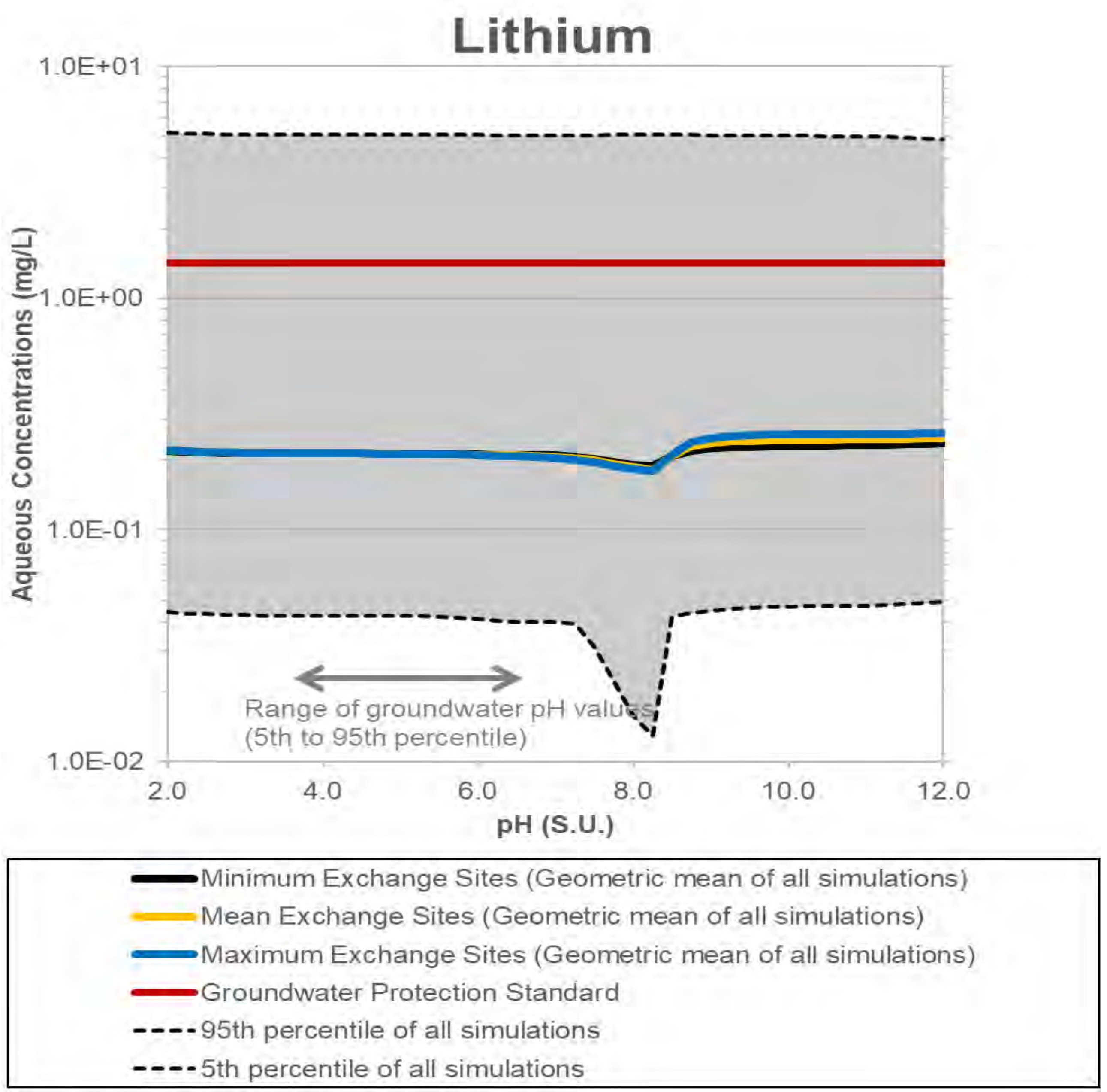
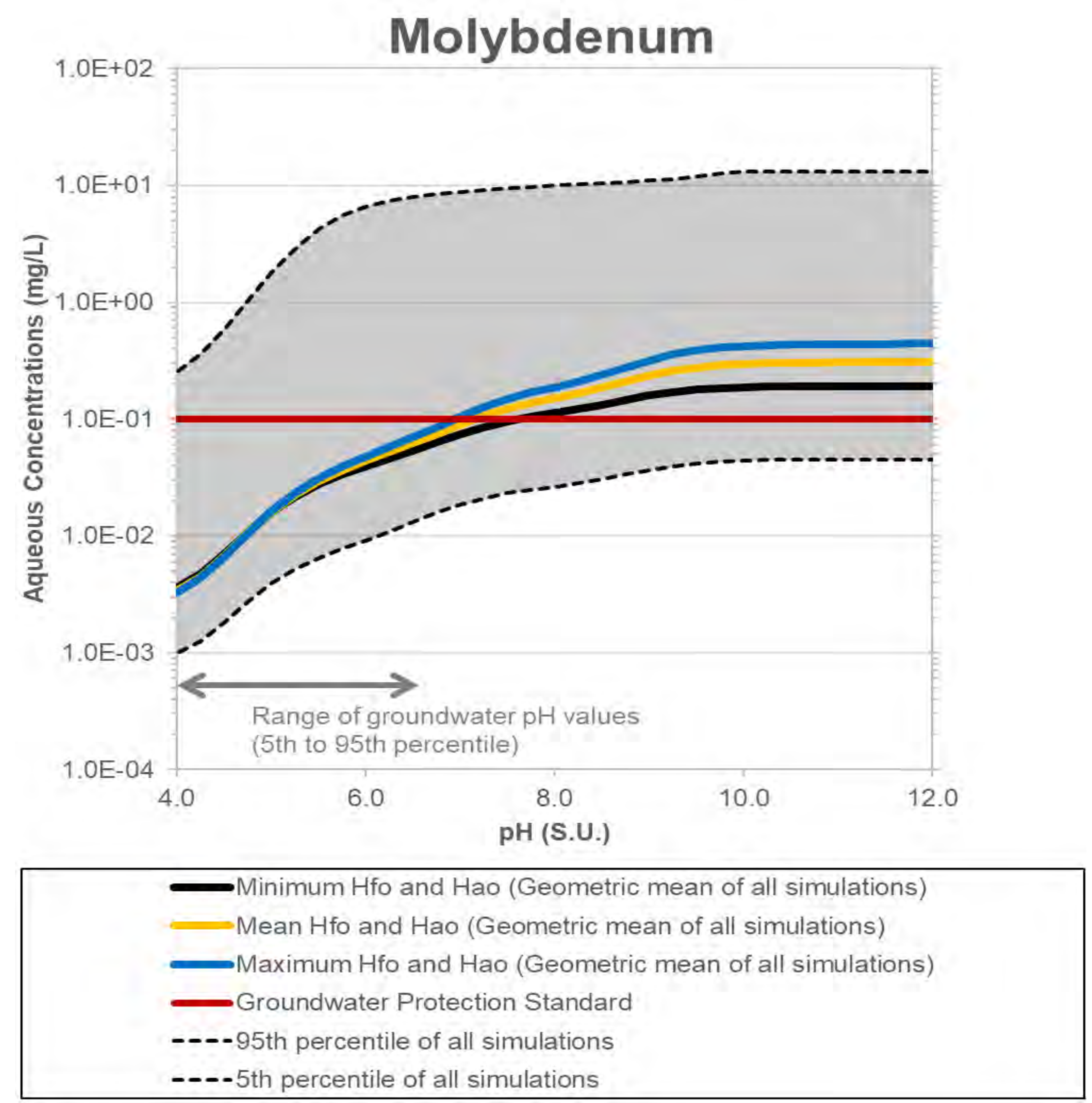


Fig. 14b



CLIENT
Cooperative Energy
RD Morrow Generating Station

PROJECT
Monitored Natural Attenuation Assessment

CONSULTANT
wsp

TITLE
Long-Term Stability of Lithium (a) and Molybdenum (b) in Response to Changes in pH

PROJECT NO.	PHASE	REV.	FIGURE
19117989	001	A	**14**

Fig.15a

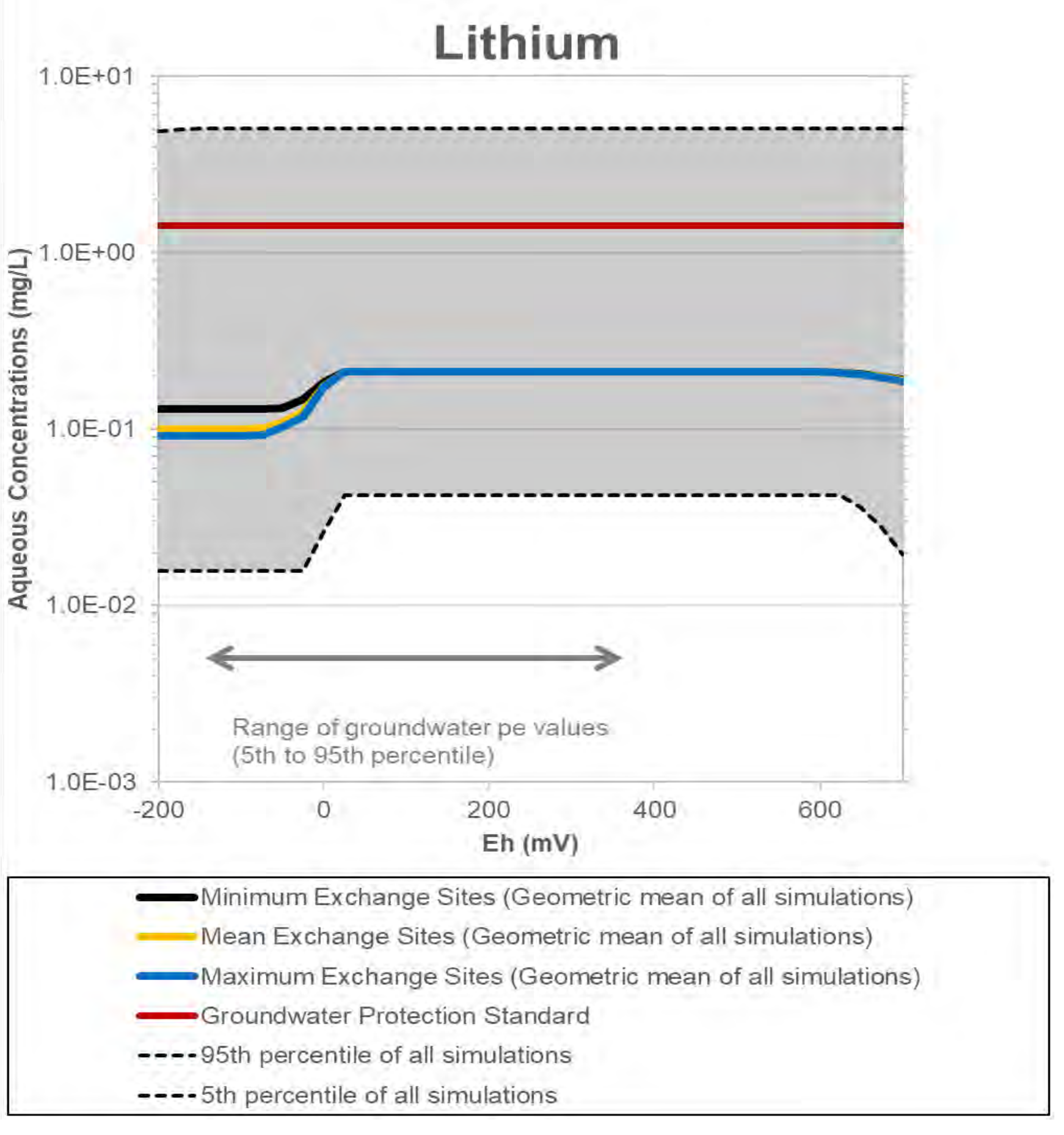
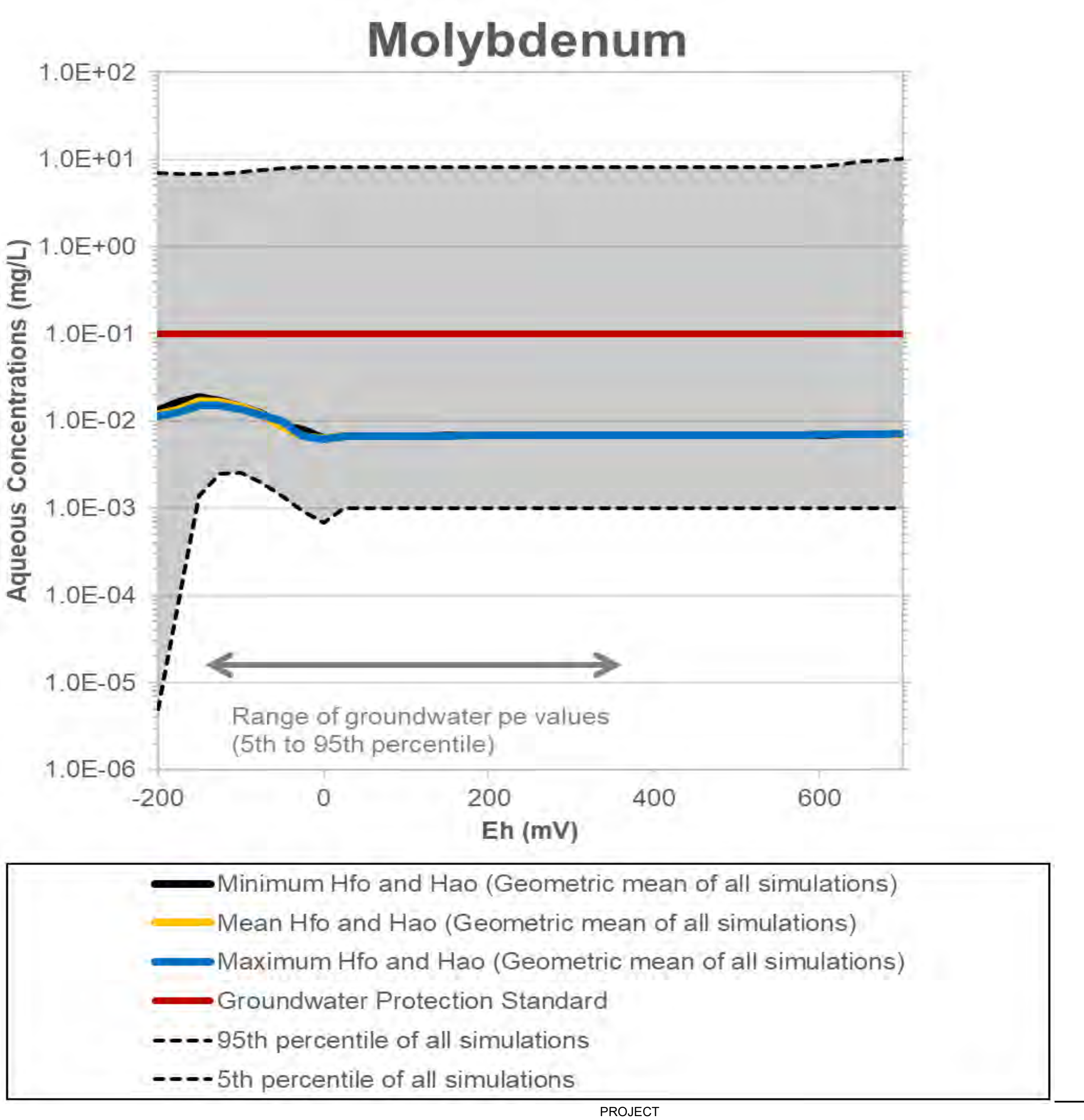


Fig. 15b



CLIENT
Cooperative Energy
RD Morrow Generating Station

PROJECT
Monitored Natural Attenuation Assessment

CONSULTANT

TITLE
Long-Term Stability of Lithium (a) and Molybdenum (b) in Response to Changes in Redox (Eh)

PROJECT NO.	PHASE	REV.	FIGURE
19117989	001	A	15

PATH: https://golderassociates.sharepoint.com/sites/104953/Project Files/200 Reports/MNA Final Remedy Selection Report/MNA Feasibility Study/MNA Report/Internal | FILE NAME: CoOp-MNA Figure and Table Layouts.xlsx

Fig.16a

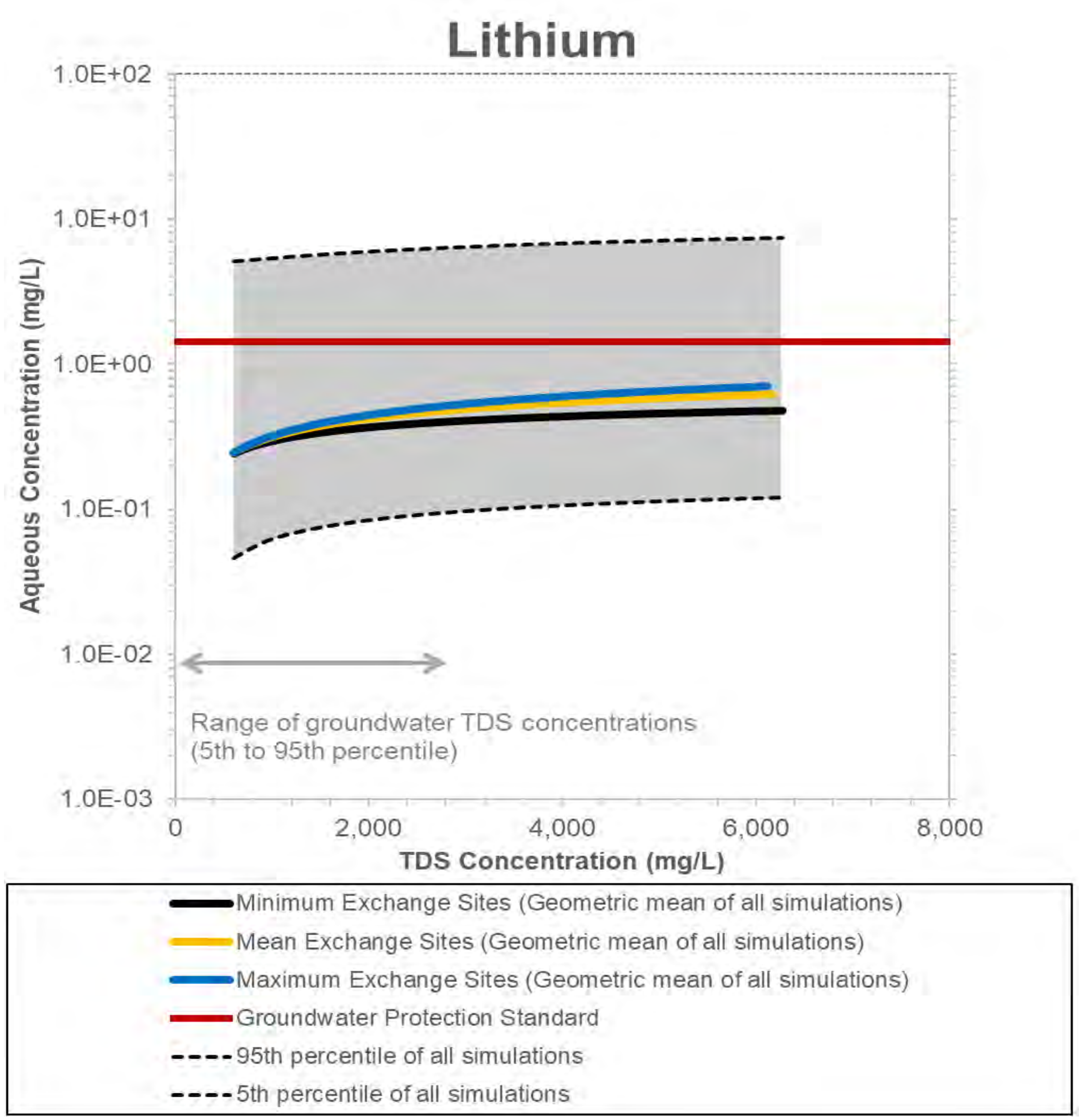
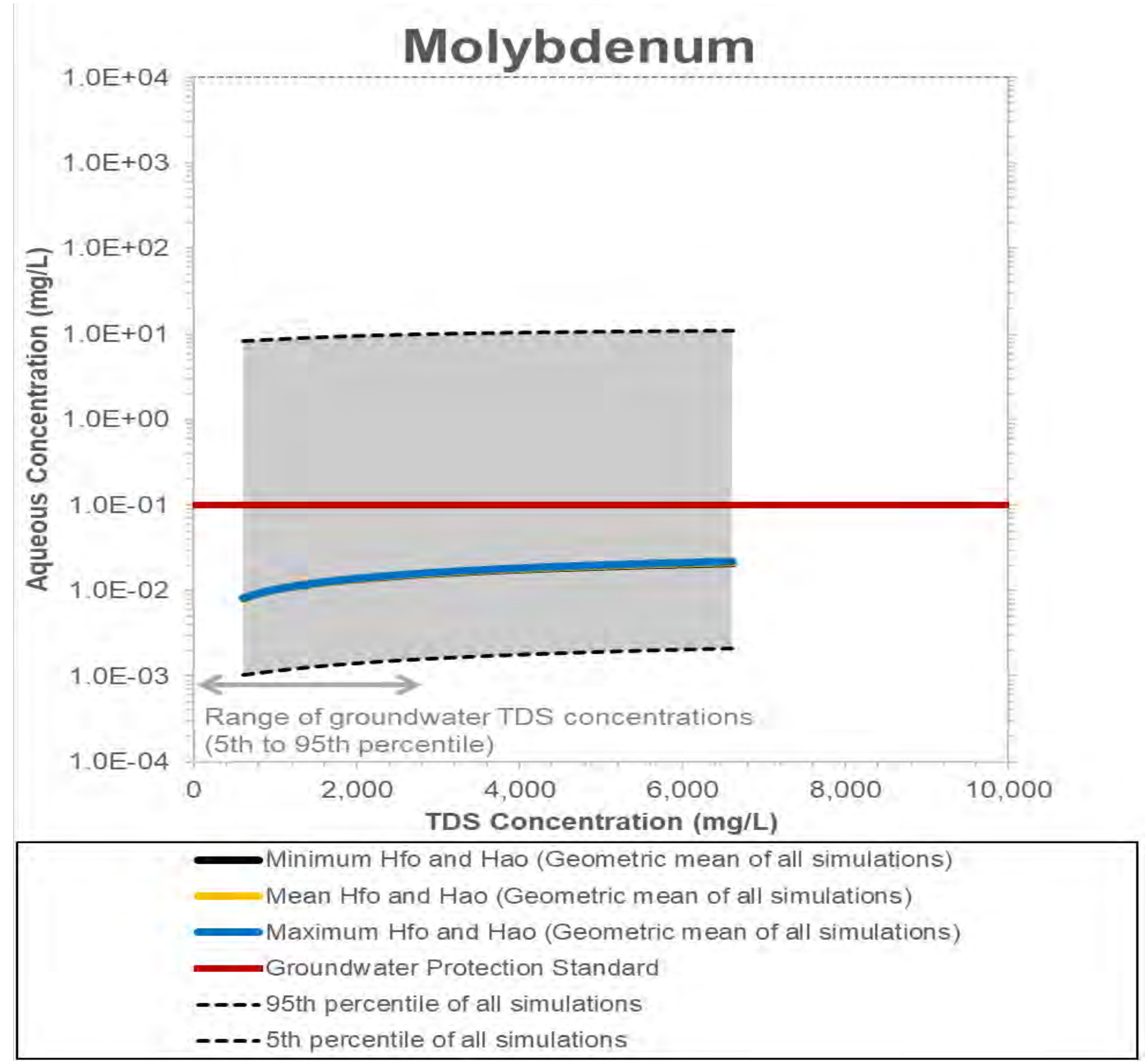


Fig. 16b



CLIENT
Cooperative Energy
RD Morrow Generating Station

PROJECT
Monitored Natural Attenuation Assessment

CONSULTANT

TITLE
Long-Term Stability of Lithium (a) and Molybdenum (b) in Response to Increasing TDS

PROJECT NO.	PHASE	REV.	FIGURE
19117989	001	A	16

APPENDIX A

Groundwater Analytical Data

Mailing Address:
PO Box 1410
Ocean Springs, MS
39566-1410

6500 Sunplex Drive
Ocean Springs, MS 39564
228.875.6420 Phone
228.875.6423 Fax

May 15, 2023

Ken Ruckstuhl

Work Order # : 1905080

Environmental Management Services
PO Box 15369
Hattiesburg, MS 39404-5369

Purchase Order #:

RE: Cooperative Energy

Enclosed are Micro-Methods Laboratory, Inc. results of analyses performed on samples received 05/03/2019 07:59. If you have any questions concerning this report, please feel free to contact the office.

Sincerely,

Mitch Spicer

Lab Director
Micro-Methods Laboratory, Inc.

6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	**Reported:** 05/15/2023 13:58

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date/Time Sampled	Sampled by	Date/Time Received
LF-P-3	1905080-09	Water	05/01/2019 15:25	*Robert Gates*	05/03/2019 07:59
LF-P-6	1905080-10	Water	05/01/2019 16:05	*Robert Gates*	05/03/2019 07:59
LF-P-7	1905080-11	Water	05/01/2019 16:45	*Robert Gates*	05/03/2019 07:59

MICRO-METHODS LABORATORY, INC.

6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	**Reported:** 05/15/2023 13:58

Sample Receipt Conditions

Date/Time Received: 5/3/2019 7:59:00AM

Shipped by: Fed Ex

Received by: Sarah E. Tomek

Submitted by: Jeremy Van Slyke

Date/Time Logged: 5/3/2019 9:48:00AM

Logged by: Sarah E. Tomek

Cooler ID: **#1102**

Receipt Temperature: 0.4 °C

Cooler Custody Seals Present	Yes	*Received on Ice but Not Frozen*	Yes
Containers Intact	Yes	*No Ice, Short Trip*	No
COC/Labels Agree	Yes	*Obvious Contamination*	No
Labels Complete	Yes	*Rush to meet HT*	No
COC Complete	Yes	*Received within HT*	No
Volatile Vial Headspace >6mm	No	*Proper Containers for Analysis*	No
Field Sheet/Instructions Included	No	*Correct Preservation*	No
Samples Rejected/Documented in Log	No	*Adequate Sample for Analysis*	No
Temp Taken From Temp Blank	No	*Sample Custody Seals Present*	No
Temp Taken From Sample Container	No	*Samples Missing from COC/Cooler*	No
Temp Taken From Cooler	No		
COC meets acceptance criteria	No		

MICRO-METHODS LABORATORY, INC.

6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
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Environmental Management Services	Project:	Cooperative Energy	
PO Box 15369	Project Number:	SOU2-19-001	**Reported:**
Hattiesburg MS, 39404-5369	Project Manager:	Ken Ruckstuhl	05/15/2023 13:58

Cooler ID: **#1103**

Receipt Temperature: 2.3 °C

Cooler Custody Seals Present	Yes	*Received on Ice but Not Frozen*	Yes
Containers Intact	Yes	*No Ice, Short Trip*	No
COC/Labels Agree	Yes	*Obvious Contamination*	No
Labels Complete	Yes	*Rush to meet HT*	No
COC Complete	Yes	*Received within HT*	No
Volatile Vial Headspace >6mm	No	*Proper Containers for Analysis*	No
Field Sheet/Instructions Included	No	*Correct Preservation*	No
Samples Rejected/Documented in Log	No	*Adequate Sample for Analysis*	No
Temp Taken From Temp Blank	No	*Sample Custody Seals Present*	No
Temp Taken From Sample Container	No	*Samples Missing from COC/Cooler*	No
Temp Taken From Cooler	No		
COC meets acceptance criteria	No		

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Environmental Management Services	Project:	Cooperative Energy	
PO Box 15369	Project Number:	SOU2-19-001	**Reported:**
Hattiesburg MS, 39404-5369	Project Manager:	Ken Ruckstuhl	05/15/2023 13:58

Cooler ID: **#1112**

Receipt Temperature: 1.8 °C

Cooler Custody Seals Present	Yes	*Received on Ice but Not Frozen*	Yes
Containers Intact	Yes	*No Ice, Short Trip*	No
COC/Labels Agree	Yes	*Obvious Contamination*	No
Labels Complete	Yes	*Rush to meet HT*	No
COC Complete	Yes	*Received within HT*	No
Volatile Vial Headspace >6mm	No	*Proper Containers for Analysis*	No
Field Sheet/Instructions Included	No	*Correct Preservation*	No
Samples Rejected/Documented in Log	No	*Adequate Sample for Analysis*	No
Temp Taken From Temp Blank	No	*Sample Custody Seals Present*	No
Temp Taken From Sample Container	No	*Samples Missing from COC/Cooler*	No
Temp Taken From Cooler	No		
COC meets acceptance criteria	No		

MICRO-METHODS LABORATORY, INC.

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Environmental Management Services	Project:	Cooperative Energy	
PO Box 15369	Project Number:	SOU2-19-001	**Reported:**
Hattiesburg MS, 39404-5369	Project Manager:	Ken Ruckstuhl	05/15/2023 13:58

Cooler ID: **#1114**

Receipt Temperature: 2.0 °C

Cooler Custody Seals Present	Yes	*Received on Ice but Not Frozen*	Yes
Containers Intact	Yes	*No Ice, Short Trip*	No
COC/Labels Agree	Yes	*Obvious Contamination*	No
Labels Complete	Yes	*Rush to meet HT*	No
COC Complete	Yes	*Received within HT*	No
Volatile Vial Headspace >6mm	No	*Proper Containers for Analysis*	No
Field Sheet/Instructions Included	No	*Correct Preservation*	No
Samples Rejected/Documented in Log	No	*Adequate Sample for Analysis*	No
Temp Taken From Temp Blank	No	*Sample Custody Seals Present*	No
Temp Taken From Sample Container	No	*Samples Missing from COC/Cooler*	No
Temp Taken From Cooler	No		
COC meets acceptance criteria	No		

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	**Reported:** 05/15/2023 13:58

CASE NARRATIVE SUMMARY

All reported results are within Micro-Methods Laboratory, Inc.defined laboratory quality control objectives unless detailed in narrative summary or identified as qualifications. NOTE: All results listed on this report are calculated on a wet weight basis (as received by the laboratory) unless otherwise noted in the analysis qualification sections.

Summary Comments:

Inorganics Analyst Comments-GMS:
All Carbonite Alkalinity tests are reported at "0" due to initial pH values that were below the pH limit of 8.3 for this test. Two ot the Bicaronbate tests resulted in "0" value due to initial pH being below the 4.3 threshold for this test.

Metals anaylst comments- ADB:
CAR# M060519-01: Reanalysis of samples at x2 yielded acceptable internal standard recoveries. Results reported to the lowest calibration standard. EPA 200.8

Report submitted as a sub-report of existing data as requested by client. - HMS 5/12/23

MICRO-METHODS LABORATORY, INC.

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 05/15/2023 13:58

Total Metals-EPA 200.7 Rev 4.4

Qualifiers:

L2 LCS and/or LCSD Recovery below acceptance limit.

Lithium

9E06038-BSD1

M3 MS/MSD Precision Limit exceeded.

Ferrous Iron

9E06039-MSD2

QM-09 The spike recovery was above acceptance limits for the MS and/or MSD. The results were accepted based on acceptable LCS and/or LCSD recoveries.

Boron

9E06038-MS2, 9E06038-MSD2

Total Metals-EPA 200.8 Rev 5.4

Qualifiers:

L1 LCS and/or LCSD Recovery Limit exceeded.

Arsenic [NG], Beryllium [He], Selenium [HHe]

9E07051-BSD1

QM-09 The spike recovery was above acceptance limits for the MS and/or MSD. The results were accepted based on acceptable LCS and/or LCSD recoveries.

Molybdenum [He]

9E07051-MS2, 9E07051-MSD2

Alkalinity Carbonate as CaCO3-SM 2320B 2011

Qualifiers:

SN See Case Narrative Summary

Carbonate Alkalinity

1905080-09[LF-P-3], 1905080-10[LF-P-6], 1905080-11[LF-P-7], 9E10009-BLK1, 9E10009-BS1, 9E10009-DUP1

MICRO-METHODS LABORATORY, INC.

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Ocean Springs, MS 39564
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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	**Reported:** 05/15/2023 13:58

LF-P-3

1905080-09 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Chloride	**44.8**	5.00	mg/L	10.0	9E06027	DLW	05/03/2019 11:54	05/03/2019 14:02	SM 4110B 2011	
Nitrate as N	ND	5.00	"	"	"	DLW	"	"	"	
Sulfate as SO4	**3000**	500	"	100.0	"	DLW	"	05/14/2019 19:36	"	
Bicarbonate Alkalinity	**773**	10.0	"	1.0	9E10010	GMS	05/08/2019 14:30	05/08/2019 15:45	SM 2320B 2011	
Carbonate Alkalinity	ND	10.0	"	"	9E10009	GMS	"	"	"	SN
Fluoride	**5.45**	0.50	"	"	9E07053	HRS	05/07/2019 11:15	05/07/2019 13:00	SM 4500-F C 2011	
Orthophosphate	**0.364**	0.291	"	"	9E03017	DLW	05/03/2019 11:20	05/03/2019 12:21	SM 4500-P-E-2011	
Total Dissolved Solids	**5100**	4	"	"	9E08037	DLW	05/06/2019 15:15	05/06/2019 15:15	SM 2540 C-2015	
Metals by EPA 200 Series Methods ICP-AES										
Ferric Iron	**1.25**	0.050	mg/L	1.0	9E06043	ADB	05/06/2019 12:15	05/16/2019 14:24	EPA 200.7 Rev 4.4	
Barium	**0.050**	0.010	"	"	9E06038	ADB	"	"	"	
Boron	**19.9**	0.100	"	"	"	ADB	"	"	"	
Calcium	**605**	5.00	"	50.0	"	ADB	"	05/16/2019 11:20	"	
Lithium	**4.41**	0.050	"	1.0	"	SCH	"	05/10/2019 16:22	"	
Magnesium	**500**	5.00	"	50.0	"	ADB	"	05/16/2019 11:20	"	
Potassium	**225**	1.50	"	5.0	"	ADB	"	05/16/2019 11:47	"	
Sodium	**88.2**	0.300	"	1.0	"	ADB	"	05/16/2019 14:24	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [HHe]	**0.0477**	0.00200	mg/L	2.0	9E07051	ADB	05/07/2019 10:00	06/07/2019 15:02	EPA 200.8 Rev 5.4	
Arsenic [HHe]	**0.337**	0.00200	"	"	"	ADB	"	06/06/2019 20:50	"	
Beryllium [He]	ND	0.00400	"	"	"	ADB	"	"	"	
Cadmium [HHe]	ND	0.00500	"	"	"	ADB	"	"	"	
Chromium [He]	**0.0272**	0.0100	"	"	"	ADB	"	"	"	
Cobalt [He]	**0.0100**	0.00100	"	"	"	ADB	"	"	"	
Lead [He]	**0.0107**	0.00100	"	"	"	ADB	"	"	"	
Molybdenum [He]	**5.86**	0.0100	"	10.0	"	ADB	"	06/07/2019 16:26	"	
Selenium [HHe]	**0.0834**	0.0500	"	2.0	"	ADB	"	06/06/2019 20:50	"	
Thallium [He]	**0.00800**	0.00100	"	"	"	ADB	"	"	"	
Mercury by EPA 200 Series Methods CVAAS										
Mercury	ND	0.00200	mg/L	1.0	9E08052	CLV	05/08/2019 11:30	05/14/2019 14:38	EPA 245.1 Rev 3.0	
Metals (Dissolved) by EPA 200 Series Methods ICP-AES										
Ferrous Iron	ND	0.060	mg/L	1.0	9E06039	ADB	05/06/2019 11:00	05/07/2019 15:53	EPA 200.7 Rev 4.4	

MICRO-METHODS LABORATORY, INC.

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228-875-6420 Phone
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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	**Reported:** 05/15/2023 13:58

LF-P-6

1905080-10 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Chloride	**1.99**	0.500	mg/L	1.0	9E06027	DLW	05/03/2019 11:54	05/03/2019 13:06	SM 4110B 2011	
Nitrate as N	ND	5.00	"	10.0	"	DLW	"	05/03/2019 14:20	"	
Sulfate as SO4	**1420**	250	"	50.0	"	DLW	"	05/14/2019 19:54	"	
Bicarbonate Alkalinity	**426**	10.0	"	1.0	9E10010	GMS	05/08/2019 14:30	05/08/2019 15:45	SM 2320B 2011	
Carbonate Alkalinity	ND	10.0	"	"	9E10009	GMS	"	"	"	SN
Fluoride	**2.68**	0.50	"	"	9E07053	HRS	05/07/2019 11:18	05/07/2019 13:00	SM 4500-F C 2011	
Orthophosphate	**1.30**	0.291	"	"	9E03017	DLW	05/03/2019 11:20	05/03/2019 12:21	SM 4500-P-E-2011	
Total Dissolved Solids	**2556**	2	"	"	9E08037	DLW	05/06/2019 15:15	05/06/2019 15:15	SM 2540 C-2015	
Metals by EPA 200 Series Methods ICP-AES										
Ferric Iron	**1.81**	0.050	mg/L	1.0	9E06043	ADB	05/06/2019 12:15	05/16/2019 14:28	EPA 200.7 Rev 4.4	
Barium	**0.166**	0.010	"	"	9E06038	ADB	"	"	"	
Boron	**0.929**	0.100	"	"	"	ADB	"	"	"	
Calcium	**843**	5.00	"	50.0	"	ADB	"	05/16/2019 11:22	"	
Magnesium	**26.8**	0.100	"	1.0	"	ADB	"	05/16/2019 14:28	"	
Lithium	**0.462**	0.050	"	"	"	SCH	"	05/10/2019 16:28	"	
Potassium	**20.2**	0.300	"	"	"	ADB	"	05/16/2019 14:28	"	
Sodium	**5.17**	0.300	"	"	"	ADB	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [HHe]	**0.0410**	0.00200	mg/L	2.0	9E07051	ADB	05/07/2019 10:00	06/07/2019 15:10	EPA 200.8 Rev 5.4	
Arsenic [HHe]	**0.133**	0.00200	"	"	"	ADB	"	06/06/2019 20:57	"	
Beryllium [He]	**0.00593**	0.00400	"	"	"	ADB	"	"	"	
Cadmium [HHe]	ND	0.00500	"	"	"	ADB	"	"	"	
Chromium [He]	**0.0741**	0.0100	"	"	"	ADB	"	"	"	
Cobalt [He]	**0.0247**	0.00100	"	"	"	ADB	"	"	"	
Lead [He]	**0.0105**	0.00100	"	"	"	ADB	"	"	"	
Molybdenum [He]	**0.195**	0.00500	"	"	"	ADB	"	06/07/2019 15:10	"	
Selenium [HHe]	**0.122**	0.0500	"	"	"	ADB	"	06/06/2019 20:57	"	
Thallium [He]	**0.00311**	0.00100	"	"	"	ADB	"	"	"	
Mercury by EPA 200 Series Methods CVAAS										
Mercury	ND	0.00200	mg/L	1.0	9E08052	CLV	05/08/2019 11:30	05/14/2019 14:38	EPA 245.1 Rev 3.0	
Metals (Dissolved) by EPA 200 Series Methods ICP-AES										
Ferrous Iron	ND	0.060	mg/L	1.0	9E06039	ADB	05/06/2019 11:00	05/07/2019 15:56	EPA 200.7 Rev 4.4	

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 05/15/2023 13:58

LF-P-7

1905080-11 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Chloride	**2.14**	0.500	mg/L	1.0	9E06027	DLW	05/03/2019 11:54	05/03/2019 13:24	SM 4110B 2011	
Nitrate as N	ND	5.00	"	10.0	"	DLW	"	05/03/2019 14:38	"	
Sulfate as SO4	**1480**	250	"	50.0	"	DLW	"	05/14/2019 20:12	"	
Bicarbonate Alkalinity	**568**	10.0	"	1.0	9E10010	GMS	05/08/2019 14:30	05/08/2019 15:45	SM 2320B 2011	
Carbonate Alkalinity	ND	10.0	"	"	9E10009	GMS	"	"	"	SN
Fluoride	**1.75**	0.50	"	"	9E07053	HRS	05/07/2019 11:23	05/07/2019 13:00	SM 4500-F C 2011	
Orthophosphate	**1.34**	0.291	"	"	9E03017	DLW	05/03/2019 11:20	05/03/2019 12:21	SM 4500-P-E-2011	
Total Dissolved Solids	**2686**	2	"	"	9E08037	DLW	05/06/2019 15:15	05/06/2019 15:15	SM 2540 C-2015	
Metals by EPA 200 Series Methods ICP-AES										
Ferric Iron	**1.71**	0.050	mg/L	1.0	9E06043	ADB	05/06/2019 12:15	05/16/2019 14:33	EPA 200.7 Rev 4.4	
Barium	**0.172**	0.010	"	"	9E06038	ADB	"	"	"	
Boron	**1.55**	0.100	"	"	"	ADB	"	"	"	
Calcium	**880**	5.00	"	50.0	"	ADB	"	05/16/2019 11:25	"	
Lithium	**0.833**	0.050	"	1.0	"	SCH	"	05/10/2019 16:55	"	
Magnesium	**41.7**	0.100	"	"	"	ADB	"	05/16/2019 14:33	"	
Potassium	**29.9**	0.300	"	"	"	ADB	"	"	"	
Sodium	**8.81**	0.300	"	"	"	ADB	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [HHe]	**0.0273**	0.00200	mg/L	2.0	9E07051	ADB	05/07/2019 10:00	06/07/2019 15:25	EPA 200.8 Rev 5.4	
Arsenic [HHe]	**0.133**	0.00200	"	"	"	ADB	"	06/06/2019 21:20	"	
Beryllium [He]	**0.00681**	0.00400	"	"	"	ADB	"	"	"	
Cadmium [HHe]	ND	0.00500	"	"	"	ADB	"	"	"	
Chromium [He]	**0.0556**	0.0100	"	"	"	ADB	"	"	"	
Cobalt [He]	**0.0291**	0.00100	"	"	"	ADB	"	"	"	
Lead [He]	**0.00921**	0.00100	"	"	"	ADB	"	"	"	
Molybdenum [He]	**0.308**	0.00500	"	"	"	ADB	"	06/07/2019 15:25	"	
Selenium [HHe]	**0.0733**	0.0500	"	"	"	ADB	"	06/06/2019 21:20	"	
Thallium [He]	**0.00572**	0.00100	"	"	"	ADB	"	"	"	
Mercury by EPA 200 Series Methods CVAAS										
Mercury	ND	0.00200	mg/L	1.0	9E08052	CLV	05/08/2019 11:30	05/14/2019 14:38	EPA 245.1 Rev 3.0	
Metals (Dissolved) by EPA 200 Series Methods ICP-AES										
Ferrous Iron	ND	0.060	mg/L	1.0	9E06039	ADB	05/06/2019 11:00	05/07/2019 15:59	EPA 200.7 Rev 4.4	

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 05/15/2023 13:58

Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9E03017 - Default Prep GenChem											
Blank (9E03017-BLK1)											
Orthophosphate	5/3/19 11:57	ND	0.291	mg/L							
LCS (9E03017-BS1)											
Orthophosphate	5/3/19 11:57	0.848	0.291	mg/L	0.800		106	85.6-120			
LCS Dup (9E03017-BSD1)											
Orthophosphate	5/3/19 11:57	0.898	0.291	mg/L	0.800		112	85.6-120	5.80	20	
Duplicate (9E03017-DUP1)			**Source: 1905080-11**								
Orthophosphate	5/3/19 12:21	1.34	0.291	mg/L		1.34			0.00	30	
Matrix Spike (9E03017-MS1)			**Source: 1905080-11**								
Orthophosphate	5/3/19 12:21	5.77	1.16	mg/L	5.00	1.34	88.6	70-130			
Matrix Spike Dup (9E03017-MSD1)			**Source: 1905080-11**								
Orthophosphate	5/3/19 12:21	5.72	1.16	mg/L	5.00	1.34	87.7	70-130	0.783	30	
Batch 9E03020 - Default Prep GenChem											
Blank (9E03020-BLK1)											
Orthophosphate	5/3/19 14:03	ND	0.291	mg/L							
LCS (9E03020-BS1)											
Orthophosphate	5/3/19 14:03	0.878	0.291	mg/L	0.800		110	85.6-120			
LCS Dup (9E03020-BSD1)											
Orthophosphate	5/3/19 14:03	0.911	0.291	mg/L	0.800		114	85.6-120	3.77	20	

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Environmental Management Services	Project: Cooperative Energy	
PO Box 15369	Project Number: SOU2-19-001	Reported:
Hattiesburg MS, 39404-5369	Project Manager: Ken Ruckstuhl	05/15/2023 13:58

Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9E03020 - Default Prep GenChem											
Duplicate (9E03020-DUP1)			**Source: 1905080-01**								
Orthophosphate	5/3/19 14:03	ND	0.291	mg/L		ND				30	
Matrix Spike (9E03020-MS1)			**Source: 1905080-01**								
Orthophosphate	5/3/19 14:03	0.776	0.291	mg/L	0.800	ND	97.0	70-130			
Matrix Spike Dup (9E03020-MSD1)			**Source: 1905080-01**								
Orthophosphate	5/3/19 14:03	0.778	0.291	mg/L	0.800	ND	97.3	70-130	0.241	30	
Batch 9E06027 - Default Prep GenChem											
Blank (9E06027-BLK1)											
Chloride	5/3/19 11:36	ND	0.500	mg/L							
Nitrate as N	5/3/19 11:36	ND	0.500	"							
Sulfate as SO4	5/3/19 11:36	ND	5.00	"							
Blank (9E06027-BLK2)											
Chloride	5/14/19 13:17	ND	0.500	mg/L							
Sulfate as SO4	5/14/19 13:17	ND	5.00	"							
Blank (9E06027-BLK3)											
Sulfate as SO4	5/16/19 3:32	ND	5.00	mg/L							
LCS (9E06027-BS1)											
Chloride	5/3/19 9:48	3.11	0.500	mg/L	3.00		104	85.4-110			
Nitrate as N	5/3/19 9:48	2.29	0.500	"	2.26		101	84.6-110			
Sulfate as SO4	5/3/19 9:48	16.6	5.00	"	15.0		110	83.3-120			

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Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9E06027 - Default Prep GenChem											
LCS (9E06027-BS2)											
Chloride	5/14/19 10:23	3.13	0.500	mg/L	3.00		104	85.4-110			
Sulfate as SO4	5/14/19 10:23	14.8	5.00	"	15.0		98.7	83.3-120			
LCS (9E06027-BS3)											
Sulfate as SO4	5/16/19 2:57	14.5	5.00	mg/L	15.0		96.5	83.3-120			
LCS Dup (9E06027-BSD1)											
Chloride	5/3/19 10:05	3.02	0.500	mg/L	3.00		101	85.4-110	2.94	20	
Nitrate as N	5/3/19 10:05	2.06	0.500	"	2.26		91.3	84.6-110	10.3	20	
Sulfate as SO4	5/3/19 10:05	14.7	5.00	"	15.0		98.2	83.3-120	11.8	20	
LCS Dup (9E06027-BSD2)											
Chloride	5/14/19 10:41	3.08	0.500	mg/L	3.00		103	85.4-110	1.87	20	
Sulfate as SO4	5/14/19 10:41	14.7	5.00	"	15.0		97.7	83.3-120	0.984	20	
LCS Dup (9E06027-BSD3)											
Sulfate as SO4	5/16/19 3:15	14.4	5.00	mg/L	15.0		96.3	83.3-120	0.221	20	
Duplicate (9E06027-DUP1)			**Source: 1905073-02**								
Nitrate as N	5/3/19 15:16	4.89	0.500	mg/L		4.92			0.611	20	
Duplicate (9E06027-DUP2)			**Source: 1905080-01**								
Chloride	5/14/19 16:19	159	10.0	mg/L		159			0.0504	20	
Sulfate as SO4	5/14/19 16:19	594	100	"		597			0.504	20	
Matrix Spike (9E06027-MS1)			**Source: 1905073-02**								
Nitrate as N	5/3/19 15:43	26.9	2.00	mg/L	22.6	4.92	97.2	73.1-122			

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Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9E06027 - Default Prep GenChem											
Matrix Spike Dup (9E06027-MSD1)			**Source: 1905073-02**								
Nitrate as N	5/3/19 16:00	26.9	2.00	mg/L	22.6	4.92	97.3	73.1-122	0.149	20	
Batch 9E07053 - Default Prep GenChem											
Blank (9E07053-BLK1)											
Fluoride	5/7/19 13:00	ND	0.50	mg/L							
LCS (9E07053-BS1)											
Fluoride	5/7/19 13:00	1.84	0.50	mg/L	2.00		92.0	75-125			
LCS Dup (9E07053-BSD1)											
Fluoride	5/7/19 13:00	1.85	0.50	mg/L	2.00		92.5	75-125	0.542	30	
Duplicate (9E07053-DUP1)			**Source: 1905080-11**								
Fluoride	5/7/19 13:00	1.74	0.50	mg/L		1.75			0.573	35	
Matrix Spike (9E07053-MS1)			**Source: 1905080-11**								
Fluoride	5/7/19 13:00	5.76	0.50	mg/L	5.00	1.75	80.2	70-130			
Matrix Spike Dup (9E07053-MSD1)			**Source: 1905080-11**								
Fluoride	5/7/19 13:00	5.78	0.50	mg/L	5.00	1.75	80.6	70-130	0.347	30	
Batch 9E08037 - Default Prep GenChem											
Blank (9E08037-BLK1)											
Total Dissolved Solids	5/6/19 15:15	ND	1	mg/L							

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Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9E08037 - Default Prep GenChem											
LCS (9E08037-BS1)											
Total Dissolved Solids	5/6/19 15:15	88	1	mg/L	104		84.6	82.2-100			
LCS Dup (9E08037-BSD1)											
Total Dissolved Solids	5/6/19 15:15	94	1	mg/L	104		90.4	82.2-100	6.59	15	
Duplicate (9E08037-DUP1)			**Source: 1905080-01**								
Total Dissolved Solids	5/6/19 15:15	1187	1	mg/L		1192			0.420	5	
Duplicate (9E08037-DUP2)			**Source: 1905110-01**								
Total Dissolved Solids	5/6/19 15:15	3120	4	mg/L		3096			0.772	5	
Batch 9E10009 - Default Prep GenChem											
Blank (9E10009-BLK1)											
Carbonate Alkalinity	5/8/19 15:45	ND	10.0	mg/L							SN
LCS (9E10009-BS1)											
Carbonate Alkalinity	5/8/19 15:45	483	10.0	mg/L	500		96.6	0-200			SN
Duplicate (9E10009-DUP1)			**Source: 1905080-11**								
Carbonate Alkalinity	5/8/19 15:45	ND	10.0	mg/L		ND				200	SN
Batch 9E10010 - Default Prep GenChem											
Blank (9E10010-BLK1)											
Bicarbonate Alkalinity	5/8/19 15:45	ND	10.0	mg/L							

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Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9E10010 - Default Prep GenChem											
LCS (9E10010-BS1)											
Bicarbonate Alkalinity	5/8/19 15:45	942	10.0	mg/L	950		99.1	80-120			
Duplicate (9E10010-DUP1)			**Source: 1905080-11**								
Bicarbonate Alkalinity	5/8/19 15:45	584	10.0	mg/L		568			2.74	30	

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Metals by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9E06038 - EPA 200.2 DCN 1017 Rev 8											
Blank (9E06038-BLK1)											
Boron	5/10/19 14:42	ND	0.050	mg/L							
Calcium	5/10/19 14:42	ND	0.100	"							
Lithium	5/10/19 14:42	ND	0.040	"							
Magnesium	5/10/19 14:42	ND	0.100	"							
Potassium	5/10/19 14:42	ND	0.300	"							
Sodium	5/10/19 14:42	ND	0.300	"							
LCS (9E06038-BS1)											
Boron	5/10/19 14:46	0.212	0.050	mg/L	0.200		106	85-115			
Calcium	5/10/19 14:46	0.202	0.100	"	0.200		101	85-115			
Lithium	5/10/19 14:46	0.229	0.040	"	0.200		114	85-115			
Magnesium	5/10/19 14:46	0.203	0.100	"	0.200		101	85-115			
Potassium	5/10/19 14:46	0.427	0.300	"	0.400		107	85-115			
Sodium	5/10/19 14:46	0.440	0.300	"	0.400		110	85-115			
LCS Dup (9E06038-BSD1)											
Boron	5/10/19 14:51	0.204	0.050	mg/L	0.200		102	85-115	3.63	20	
Calcium	5/10/19 14:51	0.209	0.100	"	0.200		105	85-115	3.69	20	
Magnesium	5/10/19 14:51	0.181	0.100	"	0.200		90.4	85-115	11.4	20	
Lithium	5/10/19 14:51	0.233	0.040	"	0.200		117	85-115	2.05	20	L2
Potassium	5/10/19 14:51	0.408	0.300	"	0.400		102	85-115	4.58	20	
Sodium	5/10/19 14:51	0.450	0.300	"	0.400		113	85-115	2.28	20	
Duplicate (9E06038-DUP1)			**Source: 1905080-11**								
Calcium	5/16/19 11:27	889	5.00	mg/L		880			0.963	20	
Magnesium	5/16/19 14:37	40.8	0.100	"		41.7			2.22	20	
Potassium	5/16/19 14:37	29.0	0.300	"		29.9			3.04	20	
Sodium	5/16/19 14:37	9.09	0.300	"		8.81			3.13	20	

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Metals by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9E06038 - EPA 200.2 DCN 1017 Rev 8											
Duplicate (9E06038-DUP2)			**Source: 1905080-01**								
Calcium	5/16/19 10:38	127	0.500	mg/L		120			5.39	20	
Magnesium	5/16/19 12:41	72.7	0.100	"		71.3			1.90	20	
Sodium	5/16/19 12:41	32.7	0.300	"		31.6			3.59	20	
Matrix Spike (9E06038-MS1)			**Source: 1905080-11**								
Boron	5/16/19 14:37	1.70	0.050	mg/L	0.200	1.55	74.9	70-130			
Lithium	5/10/19 17:00	1.06	0.040	"	0.200	0.833	114	70-130			
Matrix Spike (9E06038-MS2)			**Source: 1905080-01**								
Boron	5/16/19 12:41	1.74	0.050	mg/L	0.200	1.44	150	70-130			QM-09
Lithium	5/10/19 15:02	0.242	0.040	"	0.200	0.015	114	70-130			
Potassium	5/16/19 12:41	2.84	0.300	"	0.400	2.48	89.8	70-130			
Matrix Spike Dup (9E06038-MSD1)			**Source: 1905080-11**								
Boron	5/16/19 14:41	1.71	0.050	mg/L	0.200	1.55	77.8	70-130	0.343	20	
Lithium	5/10/19 17:05	0.990	0.040	"	0.200	0.833	78.8	70-130	6.90	20	
Matrix Spike Dup (9E06038-MSD2)			**Source: 1905080-01**								
Boron	5/16/19 12:45	1.73	0.050	mg/L	0.200	1.44	146	70-130	0.507	20	QM-09
Lithium	5/10/19 15:07	0.242	0.040	"	0.200	0.015	114	70-130	0.0593	20	
Potassium	5/16/19 12:45	2.85	0.300	"	0.400	2.48	91.6	70-130	0.255	20	
Batch 9E06043 - EPA 200.2 DCN 1017 Rev 8											
Blank (9E06043-BLK1)											
Ferric Iron	5/10/19 14:42	ND	0.050	mg/L							

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Metals by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9E06043 - EPA 200.2 DCN 1017 Rev 8											
LCS (9E06043-BS1)											
Ferric Iron	5/10/19 14:46	0.203	0.050	mg/L				85-115			
LCS Dup (9E06043-BSD1)											
Ferric Iron	5/10/19 14:51	0.192	0.050	mg/L				85-115	5.78	20	

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Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9E07051 - EPA 200.2 DCN 1017 Rev 8											
Blank (9E07051-BLK1)											
Antimony [HHe]	6/7/19 12:22	ND	0.00200	mg/L							
Arsenic [HHe]	6/6/19 17:55	ND	0.00200	"							
Arsenic [NG]	6/7/19 12:22	ND	0.00200	"							
Beryllium [He]	6/6/19 17:55	ND	0.00200	"							
Cadmium [HHe]	6/6/19 17:55	ND	0.00200	"							
Chromium [He]	6/6/19 17:55	ND	0.0100	"							
Cobalt [He]	6/6/19 17:55	ND	0.00100	"							
Lead [He]	6/6/19 17:55	ND	0.00100	"							
Molybdenum [He]	6/6/19 17:55	ND	0.00200	"							
Selenium [HHe]	6/6/19 17:55	ND	0.0500	"							
Thallium [He]	6/6/19 17:55	ND	0.00100	"							
LCS (9E07051-BS1)											
Antimony [HHe]	6/10/19 11:22	0.109	0.00400	mg/L	0.100		109	85-115			
Arsenic [NG]	6/7/19 12:30	0.111	0.00200	"	0.100		111	85-115			
Arsenic [HHe]	6/6/19 18:03	0.105	0.00200	"	0.100		105	85-115			
Beryllium [He]	6/6/19 18:03	0.111	0.00200	"	0.100		111	85-115			
Cadmium [HHe]	6/6/19 18:03	0.102	0.00200	"	0.100		102	85-115			
Chromium [He]	6/6/19 18:03	0.107	0.0100	"	0.100		107	85-115			
Cobalt [He]	6/6/19 18:03	0.103	0.00100	"	0.100		103	85-115			
Lead [He]	6/6/19 18:03	0.104	0.00100	"	0.100		104	85-115			
Molybdenum [He]	6/6/19 18:03	0.098	0.00200	"	0.100		97.6	85-115			
Selenium [HHe]	6/6/19 18:03	0.113	0.0500	"	0.100		113	85-115			
Thallium [He]	6/6/19 18:03	0.107	0.00100	"	0.100		107	85-115			
LCS Dup (9E07051-BSD1)											
Antimony [HHe]	6/10/19 11:30	0.112	0.00400	mg/L	0.100		112	85-115	2.28	20	
Arsenic [HHe]	6/6/19 18:10	0.111	0.00200	"	0.100		111	85-115	5.50	20	
Arsenic [NG]	6/7/19 12:38	0.116	0.00200	"	0.100		116	85-115	4.11	20	L1
Beryllium [He]	6/6/19 18:10	0.117	0.00200	"	0.100		117	85-115	4.74	20	L1
Cadmium [HHe]	6/6/19 18:10	0.107	0.00200	"	0.100		107	85-115	4.95	20	
Chromium [He]	6/6/19 18:10	0.112	0.0100	"	0.100		112	85-115	4.44	20	
Cobalt [He]	6/6/19 18:10	0.108	0.00100	"	0.100		108	85-115	4.30	20	
Lead [He]	6/6/19 18:10	0.107	0.00100	"	0.100		107	85-115	2.52	20	
Molybdenum [He]	6/6/19 18:10	0.102	0.00200	"	0.100		102	85-115	4.72	20	
Selenium [HHe]	6/6/19 18:10	0.119	0.0500	"	0.100		119	85-115	5.62	20	L1
Thallium [He]	6/6/19 18:10	0.109	0.00100	"	0.100		109	85-115	1.57	20	

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 05/15/2023 13:58

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9E07051 - EPA 200.2 DCN 1017 Rev 8											
Matrix Spike (9E07051-MS1)			**Source: 1905080-01**								
Antimony [HHe]	6/7/19 12:53	0.109	0.00400	mg/L	0.100	ND	109	70-130			
Arsenic [NG]	6/7/19 12:53	0.092	0.00200	"	0.100	ND	92.4	70-130			
Arsenic [HHe]	6/6/19 18:25	0.118	0.00200	"	0.100	0.012	106	70-130			
Beryllium [He]	6/6/19 18:25	0.118	0.00200	"	0.100	0.006	111	70-130			
Cadmium [HHe]	6/6/19 18:25	0.104	0.00200	"	0.100	0.0006	103	70-130			
Chromium [He]	6/6/19 18:25	0.109	0.0100	"	0.100	0.0008	108	70-130			
Cobalt [He]	6/6/19 18:25	0.251	0.00100	"	0.100	0.141	111	70-130			
Lead [He]	6/6/19 18:25	0.109	0.00100	"	0.100	0.004	105	70-130			
Molybdenum [He]	6/6/19 18:25	0.108	0.00200	"	0.100	0.0004	107	70-130			
Selenium [HHe]	6/6/19 18:25	0.159	0.0500	"	0.100	0.047	111	70-130			
Thallium [He]	6/6/19 18:25	0.108	0.00100	"	0.100	0.0002	108	70-130			
Matrix Spike (9E07051-MS2)			**Source: 1905080-11**								
Antimony [HHe]	6/7/19 15:32	0.142	0.00400	mg/L	0.100	0.027	114	70-130			
Arsenic [NG]	6/6/19 21:27	0.235	0.00200	"	0.100	0.122	112	70-130			
Arsenic [HHe]	6/6/19 21:27	0.214	0.00200	"	0.100	0.133	80.9	70-130			
Beryllium [He]	6/6/19 21:27	0.098	0.00200	"	0.100	0.007	90.9	70-130			
Cadmium [HHe]	6/6/19 21:27	0.097	0.00200	"	0.100	0.002	95.0	70-130			
Chromium [He]	6/6/19 21:27	0.154	0.0100	"	0.100	0.056	98.3	70-130			
Cobalt [He]	6/6/19 21:27	0.121	0.00100	"	0.100	0.029	92.2	70-130			
Lead [He]	6/6/19 21:27	0.114	0.00100	"	0.100	0.009	105	70-130			
Molybdenum [He]	6/7/19 15:32	0.464	0.00200	"	0.100	0.308	156	70-130			QM-09
Selenium [HHe]	6/6/19 21:27	0.159	0.0500	"	0.100	0.073	85.5	70-130			
Thallium [He]	6/6/19 21:27	0.117	0.00100	"	0.100	0.006	112	70-130			
Matrix Spike Dup (9E07051-MSD1)			**Source: 1905080-01**								
Antimony [HHe]	6/7/19 13:00	0.098	0.00400	mg/L	0.100	ND	97.5	70-130	11.3	20	
Arsenic [NG]	6/7/19 13:00	0.092	0.00200	"	0.100	ND	92.0	70-130	0.390	20	
Arsenic [HHe]	6/6/19 18:33	0.103	0.00200	"	0.100	0.012	90.5	70-130	14.4	20	
Beryllium [He]	6/6/19 18:33	0.098	0.00200	"	0.100	0.006	91.5	70-130	18.5	20	
Cadmium [HHe]	6/6/19 18:33	0.089	0.00200	"	0.100	0.0006	88.1	70-130	15.9	20	
Chromium [He]	6/6/19 18:33	0.092	0.0100	"	0.100	0.0008	91.2	70-130	16.5	20	
Cobalt [He]	6/6/19 18:33	0.216	0.00100	"	0.100	0.141	75.7	70-130	14.9	20	
Lead [He]	6/6/19 18:33	0.094	0.00100	"	0.100	0.004	90.1	70-130	15.1	20	
Molybdenum [He]	6/6/19 18:33	0.091	0.00200	"	0.100	0.0004	90.1	70-130	17.4	20	
Selenium [HHe]	6/6/19 18:33	0.137	0.0500	"	0.100	0.047	90.0	70-130	14.3	20	
Thallium [He]	6/6/19 18:33	0.094	0.00100	"	0.100	0.0002	93.4	70-130	14.7	20	

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 05/15/2023 13:58

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9E07051 - EPA 200.2 DCN 1017 Rev 8											
Matrix Spike Dup (9E07051-MSD2)			**Source: 1905080-11**								
Antimony [HHe]	6/7/19 15:40	0.145	0.00400	mg/L	0.100	0.027	117	70-130	2.04	20	
Arsenic [HHe]	6/6/19 21:35	0.221	0.00200	"	0.100	0.133	87.5	70-130	3.04	20	
Arsenic [NG]	6/6/19 21:35	0.244	0.00200	"	0.100	0.122	122	70-130	3.92	20	
Beryllium [He]	6/6/19 21:35	0.099	0.00200	"	0.100	0.007	92.6	70-130	1.69	20	
Cadmium [HHe]	6/6/19 21:35	0.099	0.00200	"	0.100	0.002	97.9	70-130	2.95	20	
Chromium [He]	6/6/19 21:35	0.172	0.0100	"	0.100	0.056	116	70-130	10.8	20	
Cobalt [He]	6/6/19 21:35	0.133	0.00100	"	0.100	0.029	104	70-130	9.50	20	
Lead [He]	6/6/19 21:35	0.123	0.00100	"	0.100	0.009	114	70-130	7.52	20	
Molybdenum [He]	6/7/19 15:40	0.469	0.00200	"	0.100	0.308	160	70-130	1.02	20	QM-09
Selenium [HHe]	6/6/19 21:35	0.160	0.0500	"	0.100	0.073	86.3	70-130	0.542	20	
Thallium [He]	6/6/19 21:35	0.124	0.00100	"	0.100	0.006	119	70-130	5.90	20	

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 05/15/2023 13:58

Mercury by EPA 200 Series Methods CVAAS - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9E08052 - EPA 245.1 DCN 1017 Rev 8											
Blank (9E08052-BLK1)											
Mercury	5/15/19 14:36	ND	0.00200	mg/L							
LCS (9E08052-BS1)											
Mercury	5/14/19 14:38	0.005	0.00200	mg/L	0.00500		104	85-115			
LCS Dup (9E08052-BSD1)											
Mercury	5/14/19 14:38	0.005	0.00200	mg/L	0.00500		98.0	85-115	5.94	20	
Matrix Spike (9E08052-MS1)			**Source: 1905080-01**								
Mercury	5/14/19 14:38	0.006	0.00200	mg/L	0.00500	ND	118	70-130			
Matrix Spike (9E08052-MS2)			**Source: 1905080-11**								
Mercury	5/15/19 14:36	0.006	0.00200	mg/L	0.00500	ND	116	70-130			
Matrix Spike Dup (9E08052-MSD1)			**Source: 1905080-01**								
Mercury	5/14/19 14:38	0.006	0.00200	mg/L	0.00500	ND	110	70-130	7.02	20	
Matrix Spike Dup (9E08052-MSD2)			**Source: 1905080-11**								
Mercury	5/15/19 14:36	0.006	0.00200	mg/L	0.00500	ND	114	70-130	1.74	20	

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 05/15/2023 13:58

Metals (Dissolved) by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9E06039 - EPA 200.2 DCN 1017 Rev 8											
Blank (9E06039-BLK1)											
Ferrous Iron	5/7/19 14:38	ND	0.060	mg/L							
LCS (9E06039-BS1)											
Ferrous Iron	5/7/19 14:41	0.091	0.060	mg/L				85-115			
LCS Dup (9E06039-BSD1)											
Ferrous Iron	5/7/19 14:43	0.091	0.060	mg/L				85-115	0.399	20	
Matrix Spike (9E06039-MS1)			**Source: 1905080-01**								
Ferrous Iron	5/7/19 14:49	0.099	0.060	mg/L		ND		70-130			
Matrix Spike (9E06039-MS2)			**Source: 1905080-11**								
Ferrous Iron	5/7/19 16:02	0.102	0.060	mg/L		ND		70-130			
Matrix Spike Dup (9E06039-MSD1)			**Source: 1905080-01**								
Ferrous Iron	5/7/19 14:52	0.097	0.060	mg/L		ND		70-130	2.23	20	
Matrix Spike Dup (9E06039-MSD2)			**Source: 1905080-11**								
Ferrous Iron	5/7/19 16:05	0.135	0.060	mg/L		ND		70-130	28.3	20	M3

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 05/15/2023 13:58

Certified Analyses Included in this Report

Analyte	Certification Code
EPA 200.7 Rev 4.4 in Water	
Aluminum	C01,C02
Antimony	C01,C02
Arsenic	C01,C02
Barium	C01,C02
Beryllium	C01,C02
Boron	C01,C02
Cadmium	C01,C02
Calcium	C01,C02
Chromium	C01,C02
Cobalt	C01,C02
Copper	C01,C02
Iron	C01,C02
Lead	C01,C02
Magnesium	C01,C02
Manganese	C01,C02
Molybdenum	C01,C02
Nickel	C01,C02
Potassium	C01,C02
Selenium	C01,C02
Silver	C01,C02
Sodium	C01,C02
Strontium	C01,C02
Thallium	C01,C02
Vanadium	C01,C02
Zinc	C01,C02
Phosphorus	C01,C02
EPA 200.8 Rev 5.4 in Water	
Aluminum [He]	C01,C02
Antimony [He]	C01,C02
Antimony [HHe]	C01,C02
Antimony [NG]	C01,C02
Arsenic [He]	C01,C02
Arsenic [HHe]	C01,C02
Arsenic [NG]	C01,C02
Barium [He]	C01,C02
Beryllium [He]	C01,C02
Boron [NG]	C01,C02
Cadmium [He]	C01,C02
Cadmium [HHe]	C01,C02
Cadmium [NG]	C01,C02
Chromium [He]	C01,C02

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Environmental Management Services	Project: Cooperative Energy	
PO Box 15369	Project Number: SOU2-19-001	Reported:
Hattiesburg MS, 39404-5369	Project Manager: Ken Ruckstuhl	05/15/2023 13:58

Cobalt [He]	C01,C02
Copper [He]	C01,C02
Copper [NG]	C01,C02
Iron [He]	C01,C02
Lead [He]	C01,C02
Lead [NG]	C01,C02
Manganese [He]	C01,C02
Molybdenum [He]	C01,C02
Nickel [He]	C01,C02
Selenium [He]	C01,C02
Selenium [HHe]	C01,C02
Selenium [NG]	C01,C02
Silver [He]	C01,C02
Silver [NG]	C01,C02
Strontium [He]	C01,C02
Thallium [He]	C01,C02
Vanadium [He]	C01,C02
Zinc [He]	C01,C02

EPA 245.1 Rev 3.0 in Water

Mercury	C01,C02

SM 2540 C-2015 in Water

Total Dissolved Solids	C01,C02

****Only compounds included in this list are associated with accredited analyses****

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	**Reported:** 05/15/2023 13:58

Laboratory Accreditations/Certifications

Code	Description	Number	Expires
C01	*LA Environmental Lab Accreditation Program*	*01960*	*06/30/2023*
C02	*The NELAC Institute (NELAP)*	*TNI01397*	*06/30/2023*
C03	*Ms Dept of Health (Drinking Water Microbiology)*	*MS00021*	*12/31/2023*
C04	*Ms Dept of Health (Drinking Water Chemistry)*	*MS00021*	*12/31/2023*
C05	*Ms DEQ Lead Firm Certification*	*PBF-00000028*	*03/31/2024*
C06	*MsDEQ Asbestos Inspector : C.D. Bingham*	*ABI-00001348*	*02/09/2024*
C07	*MsDEQ Air Monitor : C.D. Bingham*	*AM-011572*	*02/10/2024*
C08	*MsDEQ Asbestos Inspector: C. W. Meins*	*ABI-00001821*	*09/09/2022*
C09	*MsDEQ Air Monitor : C.W. Meins*	*AM-011189*	*02/10/2024*
C14	*MsDEQ Lead Paint Inspector : C.D. Bingham*	*PBI-00003690*	*02/07/2024*
C15	*MsDEQ Lead Paint Inspector : C.W. Meins*	*PBI-00001740*	*02/07/2024*

Report Definitions

TNC	Too Numerous To Count
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the minimum reporting limit
NR	Not Reported
RPD	Relative Percent Difference
ICV	Initial Calibration Verfiication
CCV	Continuing Calibration Verification Standard
SSV	Secondary Source Verfication Standard
LCS	Lab Control Spike - Lab matrix prepared with known concentration of analyte/s of interest analyzed by method.
MS	Matrix Spike - Sample prepared with known concentration of analyte/s of interest analyzed by method.
MSD	Matrix Spike Duplicate - Duplicate sample prepared with known concentration of analyte/s of interest analyzed by method.
MRL	Minimum Reporting Limit
%REC	Percentage Recovery of known concentration added to matrix
Batch	Group of samples prepared for analysis not to exceed 20 samples.
Matrix	Material containing analyte/s of interest
Surrogate	Analyte added to sample to determine extraction efficiency of method.

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	**Reported:** 05/15/2023 13:58

Analyst Initials Key

FullName	Initials
Alyssa D Bennett	ADB
Charles L Vorhoff	CLV
Dortha L. Wells	DLW
Gayle M. Sparling	GMS
Howard Mitch Spicer	HMS
Harold R Scruggs	HRS
Sarah E. Tomek	SET
Samantha C. Hall	SCH
Teresa Meins	TKM
Tina Tomek	TPT

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Chain of Custody Record

Lab ID# MS00021
LELAP ID # 01960
TNI ID # TNI01397

M-M Lab WO # 1905080

Company Name: EMS
Address: 7350 US Hwy 98
City: Hattiesburg State: MS Zip: 39402
Phone: 601 544 3674
Fax: 601 544 0504

Project Manager: Ken Ruckstuhl
Purchase Order #:
Email Address: kruckstuhl@env-mgt.com
Sampler Name Printed: Robert V. Gates
Sampler Name Signed: R.V. Gates

Turn Around Time & Reporting
Our normal turn around time is 10 working days
X Normal
__Next Day*
__2nd Day*
__Other*______
*All rush order requests must be prior approved.
__Phone
__Mail
__Fax
__Email

QC Level: Level 1 ☐ Level 2 ☐ Level 3 ☐

Project Name: Cooperative Energy
Project #:

List Analyses Requested

Sample Identification	Sampling Date/Time	Matrix Code	# of Containers	Grab (G) or Composite (C)	Appendix III	Appendix IV	Cations/Anions	Nitrate (Total)	Phosphate (Inorganic)
LF-P-3	5.1.19 / 1525	W	5	G	X	X	X	X	X
LF-P-6	5.1.19 / 1605	W	5	G	X	X	X	X	X
LF-P-7	5.1.19 / 1645	W	5	G	X	X	X	X	X

Field Testing: ID# Field Test | ID# Field Test | ID# Field Test | ID# Field Test

Matrix:
W = Water
DW = Drinking Water
S = Solid
SO = Soil
SE = Sediment
L = Liquid
A = Air
O = Oil
SL = Sludge

Preservation:
1= H2SO4
2= H3PO4
3=NaOH
4=ZnC4H10O6
5=ZnC4H10O6 & NaOH
6=HNO3
7=Na2S2O3
8=HCl
9=NaHSO4

Received on Ice? Y N Thermometer#________ Cooler #________
Receipt Temp Corrected(°C)
Sample____ Blank____ Cooler________
Date & Time ____________ By:
All Temps are Corrected Values

	Printed Name	Signature	Company	Date	Time
Relinquished by	Robert V. Gates	R.V. Gates	EMS	5.2.19	11:45
Received by	Jeremy Van Slyke	J Van Slyke	EMS	5.2.19	1145
Relinquished by	Jeremy Van Slyke	J Van Slyke	EMS	5.2.19	1532
Received by	Fed Ex				
Relinquished by	Fed Ex				
Received by	Sarah Tomek	Sarah Tomek	MM	5/03/19	0759

Notes: App III: Boron, Calcium, Chloride, Fluoride, Sulfate, TDS
App IV: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Fluoride, Lead, Lithium, Mercury, Molybdenum, Selenium, Thallium, Radium 226/228
Cations/Anions: Calcium, Magnesium, Potassium, Sodium, Bicarbonate/Carbonate Alkalinity, Ferrous and Ferric Iron

Physical Address: 6500 Sunplex Drive, Ocean Springs MS 39564

Mailing Address:
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September 18, 2019

Ken Ruckstuhl

Work Order # : 1908450

Environmental Management Services
PO Box 15369
Hattiesburg, MS 39404-5369

Purchase Order #:

RE: Cooperative Energy

Enclosed are Micro-Methods Laboratory, Inc. results of analyses performed on samples received 08/22/2019 13:45. If you have any questions concerning this report, please feel free to contact the office.

Harry P. Howell

President
Micro-Methods Laboratory, Inc.

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Environmental Management Services
PO Box 15369
Hattiesburg MS, 39404-5369

Project: Cooperative Energy
Project Number: SOU2-19-001
Project Manager: Ken Ruckstuhl

Reported:
09/18/2019 13:16

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date/Time Sampled	Sampled by	Date/Time Received
MW-10	1908450-01	Water	08/22/2019 11:35	*Robert Gates*	08/22/2019 13:45
MW-11	1908450-02	Water	08/22/2019 09:55	*Robert Gates*	08/22/2019 13:45
MW-12	1908450-03	Water	08/22/2019 08:40	*Robert Gates*	08/22/2019 13:45
BD-1	1908450-04	Water	08/22/2019 08:00	*Robert Gates*	08/22/2019 13:45

Sample Receipt Conditions

Date/Time Received: 8/22/2019 1:45:00PM

Shipped by: Client Delivery

Received by: Macy Spiers

Submitted by: Robbie Gates

Date/Time Logged: 8/22/2019 2:19:00PM

Logged by: Macy Spiers

Cooler ID: 1126

Receipt Temperature: 2.8 °C

Cooler Custody Seals Present	*No*	*Received on Ice*	*Yes*
Containers Intact	*Yes*	*No Ice, Short Trip*	*No*
COC/Labels Agree	*Yes*	*Obvious Contamination*	*No*
Labels Complete	*No*	*Rush to meet HT*	*No*
COC Complete	*Yes*		

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	**Reported:** 09/18/2019 13:16

CASE NARRATIVE SUMMARY

All reported results are within Micro-Methods Laboratory, Inc.defined laboratory quality control objectives unless detailed in narrative summary or identified as qualifications. NOTE: All results listed on this report are calculated on a wet weight basis (as received by the laboratory) unless otherwise noted in the analysis qualification sections.

Summary Comments:

Inorganic Analysis Notes:
Nitrate analysis was analyzed at a secondary dilution due to high Sulfate. SM 4110 B--DLW

SN: Initial pH samples ranged 4.0 to 4.1 which is below the titration endpoint of 8.3 (carbonate alkalinity) and 4.3 (bicarbonate alkalinity) resulting in "0" results --HRS

See attached radiological results from Sub-Contract Laboratory

Alkalinity, Bicarbonate as CaCO3-SM 2320B 2011

Qualifiers:

SN See Case Narrative Summary

Bicarbonate Alkalinity, Carbonate Alkalinity

1908450-01[MW-10], 1908450-02[MW-11], 1908450-03[MW-12], 1908450-04[BD-1]

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Project: Cooperative Energy
Project Number: SOU2-19-001
Project Manager: Ken Ruckstuhl

Reported:
09/18/2019 13:16

MW-10

1908450-01 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Bicarbonate Alkalinity	ND	10.0	mg/L	1.0	9H23038	HRS	08/23/2019 14:40	08/23/2019 14:40	SM 2320B 2011	SN
Chloride	**162**	10.0	"	20.0	9H22025	DLW	08/22/2019 14:53	08/22/2019 18:28	SM 4110B 2011	
Carbonate Alkalinity	ND	10.0	"	1.0	9H23037	HRS	08/23/2019 14:40	08/23/2019 14:40	SM 2320B 2011	SN
Sulfate as SO4	**437**	100	"	20.0	9H22025	DLW	08/22/2019 14:53	08/22/2019 18:28	SM 4110B 2011	
Fluoride	**0.58**	0.50	"	1.0	9H23015	TKM	08/23/2019 09:30	08/23/2019 10:05	SM 4500-F C 2011	
Nitrate as N	ND	10.0	"	20.0	9H22025	DLW	08/22/2019 14:53	08/22/2019 18:28	SM 4110B 2011	
Total Dissolved Solids	**952**	2	"	1.0	9H22013	DLW	08/22/2019 15:30	08/23/2019 16:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Ferric Iron	**0.057**	0.050	mg/L	1.0	9H29010	ADB	08/26/2019 09:15	08/28/2019 11:32	EPA 200.7 Rev 4.4	
Boron	**3.81**	0.050	"	"	9H26032	ADB	"	"	"	
Calcium	**73.5**	0.100	"	"	"	ADB	"	08/28/2019 14:59	"	
Iron	**0.215**	0.050	"	"	"	ADB	"	08/28/2019 11:32	"	
Lithium	**0.343**	0.040	"	"	"	ADB	"	"	"	
Magnesium	**64.8**	0.100	"	"	"	ADB	"	"	"	
Potassium	**11.5**	0.300	"	"	"	ADB	"	"	"	
Sodium	**40.4**	0.300	"	"	"	ADB	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [HHe]	ND	0.00500	mg/L	1.0	9H26034	ADB	"	08/29/2019 12:24	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	ADB	"	"	"	
Barium [He]	**0.0323**	0.00100	"	"	"	ADB	"	"	"	
Beryllium [He]	**0.00973**	0.00100	"	"	"	ADB	"	"	"	
Cadmium [HHe]	ND	0.00100	"	"	"	ADB	"	"	"	
Chromium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Cobalt [He]	**0.0895**	0.00100	"	"	"	ADB	"	"	"	
Lead [He]	**0.00272**	0.00100	"	"	"	ADB	"	"	"	
Molybdenum [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Selenium [NG]	ND	0.00500	"	"	"	ADB	"	"	"	
Thallium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Mercury by EPA 200 Series Methods CVAAS										
Mercury	ND	0.002	mg/L	1.0	9H28034	CLV	08/28/2019 10:00	08/28/2019 14:18	EPA 245.1 Rev 3.0	
Metals (Dissolved) by EPA 200 Series Methods ICP-AES										
Ferrous Iron	**0.158**	0.050	mg/L	1.0	9H27039	ADB	08/27/2019 09:10	08/28/2019 13:41	EPA 200.7 Rev 4.4	

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MW-11

1908450-02 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Chloride	**168**	25.0	mg/L	50.0	9H22025	DLW	08/22/2019 14:53	08/22/2019 18:46	SM 4110B 2011	
Bicarbonate Alkalinity	ND	10.0	"	1.0	9H23038	HRS	08/23/2019 14:40	08/23/2019 14:40	SM 2320B 2011	SN
Carbonate Alkalinity	ND	10.0	"	"	9H23037	HRS	"	"	"	SN
Sulfate as SO4	**1140**	250	"	50.0	9H22025	DLW	08/22/2019 14:53	08/22/2019 18:46	SM 4110B 2011	
Fluoride	**0.91**	0.50	"	1.0	9H23015	TKM	08/23/2019 09:30	08/23/2019 10:05	SM 4500-F C 2011	
Nitrate as N	ND	25.0	"	50.0	9H22025	DLW	08/22/2019 14:53	08/22/2019 18:46	SM 4110B 2011	
Total Dissolved Solids	**1688**	2	"	1.0	9H22013	DLW	08/22/2019 15:30	08/23/2019 16:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Ferric Iron	**6.21**	0.050	mg/L	1.0	9H29010	ADB	08/26/2019 09:15	08/28/2019 11:51	EPA 200.7 Rev 4.4	
Boron	**6.90**	0.050	"	"	9H26032	ADB	"	"	"	
Calcium	**30.2**	0.100	"	"	"	ADB	"	08/28/2019 15:08	"	
Iron	**6.35**	0.050	"	"	"	ADB	"	08/28/2019 11:51	"	
Lithium	**0.392**	0.040	"	"	"	ADB	"	"	"	
Magnesium	**17.3**	0.100	"	"	"	ADB	"	08/28/2019 15:08	"	
Potassium	**44.8**	0.300	"	"	"	ADB	"	08/28/2019 11:51	"	
Sodium	**60.5**	0.300	"	"	"	ADB	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [HHe]	ND	0.00500	mg/L	1.0	9H26034	ADB	"	08/29/2019 13:15	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	ADB	"	"	"	
Barium [He]	**0.0394**	0.00100	"	"	"	ADB	"	"	"	
Beryllium [He]	**0.00493**	0.00200	"	2.0	"	ADB	"	08/29/2019 12:32	"	
Cadmium [HHe]	ND	0.00100	"	1.0	"	ADB	"	08/29/2019 13:15	"	
Chromium [He]	ND	0.00200	"	2.0	"	ADB	"	08/29/2019 12:32	"	
Cobalt [He]	**0.0847**	0.00200	"	"	"	ADB	"	"	"	
Lead [He]	**0.00348**	0.00100	"	1.0	"	ADB	"	08/29/2019 13:15	"	
Molybdenum [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Selenium [NG]	ND	0.00500	"	"	"	ADB	"	"	"	
Thallium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Mercury by EPA 200 Series Methods CVAAS										
Mercury	ND	0.002	mg/L	1.0	9H28034	CLV	08/28/2019 10:00	08/28/2019 14:18	EPA 245.1 Rev 3.0	
Metals (Dissolved) by EPA 200 Series Methods ICP-AES										
Ferrous Iron	**0.298**	0.060	mg/L	1.0	9H27039	ADB	08/27/2019 09:10	08/28/2019 13:49	EPA 200.7 Rev 4.4	

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MW-12

1908450-03 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Chloride	**56.1**	12.5	mg/L	25.0	9H22025	DLW	08/22/2019 14:53	08/22/2019 19:04	SM 4110B 2011	
Bicarbonate Alkalinity	ND	10.0	"	1.0	9H23038	HRS	08/23/2019 14:40	08/23/2019 14:40	SM 2320B 2011	SN
Carbonate Alkalinity	ND	10.0	"	"	9H23037	HRS	"	"	"	SN
Sulfate as SO4	**566**	125	"	25.0	9H22025	DLW	08/22/2019 14:53	08/22/2019 19:04	SM 4110B 2011	
Fluoride	ND	0.50	"	1.0	9H23015	TKM	08/23/2019 09:30	08/23/2019 10:05	SM 4500-F C 2011	
Nitrate as N	ND	12.5	"	25.0	9H22025	DLW	08/22/2019 14:53	08/22/2019 19:04	SM 4110B 2011	
Total Dissolved Solids	**874**	2	"	1.0	9H22013	DLW	08/22/2019 15:30	08/23/2019 16:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Ferric Iron	**1.50**	0.050	mg/L	1.0	9H29010	ADB	08/26/2019 09:15	08/28/2019 11:57	EPA 200.7 Rev 4.4	
Boron	**2.02**	0.050	"	"	9H26032	ADB	"	"	"	
Calcium	**49.3**	0.100	"	"	"	ADB	"	08/28/2019 15:10	"	
Iron	**1.57**	0.050	"	"	"	ADB	"	08/28/2019 11:57	"	
Magnesium	**43.9**	0.100	"	"	"	ADB	"	"	"	
Lithium	**0.043**	0.040	"	"	"	ADB	"	"	"	
Potassium	**22.6**	0.300	"	"	"	ADB	"	"	"	
Sodium	**21.1**	0.300	"	"	"	ADB	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [HHe]	ND	0.00500	mg/L	1.0	9H26034	ADB	"	08/28/2019 13:53	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	ADB	"	08/29/2019 13:31	"	
Barium [He]	**0.0265**	0.00200	"	2.0	"	ADB	"	08/29/2019 12:49	"	
Beryllium [He]	**0.00269**	0.00200	"	"	"	ADB	"	"	"	
Cadmium [HHe]	ND	0.00200	"	"	"	ADB	"	"	"	
Chromium [He]	ND	0.00200	"	"	"	ADB	"	"	"	
Cobalt [He]	**0.0310**	0.00200	"	"	"	ADB	"	"	"	
Lead [He]	**0.00127**	0.00100	"	1.0	"	ADB	"	08/29/2019 13:31	"	
Molybdenum [He]	ND	0.00200	"	2.0	"	ADB	"	08/29/2019 12:49	"	
Selenium [NG]	ND	0.00500	"	1.0	"	ADB	"	08/29/2019 13:31	"	
Thallium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Mercury by EPA 200 Series Methods CVAAS										
Mercury	ND	0.002	mg/L	1.0	9H28034	CLV	08/28/2019 10:00	08/28/2019 14:18	EPA 245.1 Rev 3.0	
Metals (Dissolved) by EPA 200 Series Methods ICP-AES										
Ferrous Iron	**0.074**	0.060	mg/L	1.0	9H27039	ADB	08/27/2019 09:10	08/28/2019 13:52	EPA 200.7 Rev 4.4	

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BD-1

1908450-04 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Bicarbonate Alkalinity	ND	10.0	mg/L	1.0	9H23038	HRS	08/23/2019 14:40	08/23/2019 14:40	SM 2320B 2011	SN
Chloride	**158**	25.0	"	50.0	9H22025	DLW	08/22/2019 14:53	08/22/2019 19:22	SM 4110B 2011	
Carbonate Alkalinity	ND	10.0	"	1.0	9H23037	HRS	08/23/2019 14:40	08/23/2019 14:40	SM 2320B 2011	SN
Sulfate as SO4	**1120**	250	"	50.0	9H22025	DLW	08/22/2019 14:53	08/22/2019 19:22	SM 4110B 2011	
Fluoride	**0.91**	0.50	"	1.0	9H23015	TKM	08/23/2019 09:30	08/23/2019 10:05	SM 4500-F C 2011	
Nitrate as N	ND	25.0	"	50.0	9H22025	DLW	08/22/2019 14:53	08/22/2019 19:22	SM 4110B 2011	
Total Dissolved Solids	**1724**	2	"	1.0	9H22013	DLW	08/22/2019 15:30	08/23/2019 16:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Ferric Iron	**6.27**	0.050	mg/L	1.0	9H29010	ADB	08/26/2019 09:15	08/28/2019 12:04	EPA 200.7 Rev 4.4	
Boron	**6.88**	0.050	"	"	9H26032	ADB	"	"	"	
Calcium	**36.0**	0.100	"	"	"	ADB	"	08/28/2019 15:13	"	
Iron	**6.55**	0.050	"	"	"	ADB	"	08/28/2019 12:04	"	
Lithium	**0.401**	0.040	"	"	"	ADB	"	"	"	
Magnesium	**20.3**	0.100	"	"	"	ADB	"	08/28/2019 15:13	"	
Potassium	**47.0**	0.300	"	"	"	ADB	"	08/28/2019 12:04	"	
Sodium	**61.2**	0.300	"	"	"	ADB	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [HHe]	ND	0.00500	mg/L	1.0	9H26034	ADB	"	08/29/2019 13:48	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	ADB	"	"	"	
Barium [He]	**0.0384**	0.00100	"	"	"	ADB	"	"	"	
Beryllium [He]	**0.00511**	0.00200	"	2.0	"	ADB	"	08/29/2019 12:58	"	
Cadmium [HHe]	ND	0.00100	"	1.0	"	ADB	"	08/29/2019 13:48	"	
Chromium [He]	ND	0.00200	"	2.0	"	ADB	"	08/29/2019 12:58	"	
Cobalt [He]	**0.0895**	0.00200	"	"	"	ADB	"	"	"	
Lead [He]	**0.00343**	0.00100	"	1.0	"	ADB	"	08/29/2019 13:48	"	
Molybdenum [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Selenium [NG]	ND	0.00500	"	"	"	ADB	"	"	"	
Thallium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Mercury by EPA 200 Series Methods CVAAS										
Mercury	ND	0.002	mg/L	1.0	9H28034	CLV	08/28/2019 10:00	08/28/2019 14:18	EPA 245.1 Rev 3.0	
Metals (Dissolved) by EPA 200 Series Methods ICP-AES										
Ferrous Iron	**0.276**	0.060	mg/L	1.0	9H27039	ADB	08/27/2019 09:10	08/28/2019 13:55	EPA 200.7 Rev 4.4	

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Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H22013 - Default Prep GenChem											
Blank (9H22013-BLK1)											
Total Dissolved Solids	8/23/19 16:00	ND	1	mg/L							
LCS (9H22013-BS1)											
Total Dissolved Solids	8/23/19 16:00	100	1	mg/L	104		96.2	82.2-100			
LCS Dup (9H22013-BSD1)											
Total Dissolved Solids	8/23/19 16:00	94	1	mg/L	104		90.4	82.2-100	6.19	15	
Duplicate (9H22013-DUP1)			**Source: 1908408-01**								
Total Dissolved Solids	8/23/19 16:00	450	1	mg/L		446			0.893	5	
Batch 9H22025 - Default Prep GenChem											
Blank (9H22025-BLK1)											
Chloride	8/22/19 9:54	ND	0.500	mg/L							
Sulfate as SO4	8/22/19 9:54	ND	5.00	"							
Nitrate as N	8/22/19 9:54	ND	0.500	"							
LCS (9H22025-BS1)											
Chloride	8/22/19 10:12	2.84	0.500	mg/L	3.00		94.6	85.4-110			
Sulfate as SO4	8/22/19 10:12	14.1	5.00	"	15.0		93.7	83.3-120			
Nitrate as N	8/22/19 10:12	2.09	0.500	"	2.26		92.6	84.6-110			
LCS Dup (9H22025-BSD1)											
Chloride	8/22/19 10:30	2.85	0.500	mg/L	3.00		94.9	85.4-110	0.281	20	
Sulfate as SO4	8/22/19 10:30	14.1	5.00	"	15.0		93.8	83.3-120	0.0569	20	
Nitrate as N	8/22/19 10:30	2.10	0.500	"	2.26		92.8	84.6-110	0.191	20	

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Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H22025 - Default Prep GenChem											
Duplicate (9H22025-DUP1)			**Source: 1908411-01**								
Chloride	8/22/19 11:19	3.17	0.500	mg/L		3.18			0.315	20	
Sulfate as SO4	8/22/19 11:19	8.21	5.00	"		8.48			3.26	20	
Nitrate as N	8/22/19 11:19	0.843	0.500	"		0.772			8.79	20	
Matrix Spike (9H22025-MS1)			**Source: 1908411-01**								
Chloride	8/22/19 11:37	23.6	0.500	mg/L	20.0	3.18	102	79-119			
Sulfate as SO4	8/22/19 11:37	28.6	5.00	"	20.0	8.48	101	43.5-124			
Nitrate as N	8/22/19 11:37	4.90	0.500	"	4.52	0.772	91.3	73.1-122			
Matrix Spike Dup (9H22025-MSD1)			**Source: 1908411-01**								
Chloride	8/22/19 11:55	23.6	0.500	mg/L	20.0	3.18	102	79-119	0.127	20	
Sulfate as SO4	8/22/19 11:55	28.5	5.00	"	20.0	8.48	100	43.5-124	0.249	20	
Nitrate as N	8/22/19 11:55	4.91	0.500	"	4.52	0.772	91.4	73.1-122	0.143	20	
Batch 9H23015 - Default Prep GenChem											
Blank (9H23015-BLK1)											
Fluoride	8/23/19 10:05	ND	0.50	mg/L							
LCS (9H23015-BS1)											
Fluoride	8/23/19 10:05	1.95		mg/L	2.00		97.5	75-125			
Duplicate (9H23015-DUP1)			**Source: 1908450-04**								
Fluoride	8/23/19 10:05	0.90	0.50	mg/L		0.91			0.776	35	
Matrix Spike (9H23015-MS1)			**Source: 1908450-04**								
Fluoride	8/23/19 10:05	2.37	0.50	mg/L	2.00	0.91	73.3	70-130			

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Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H23015 - Default Prep GenChem											
Matrix Spike Dup (9H23015-MSD1)			**Source: 1908450-04**								
Fluoride	8/23/19 10:05	2.40	0.50	mg/L	2.00	0.91	74.8	70-130	1.26	30	
Batch 9H23037 - Default Prep GenChem											
Blank (9H23037-BLK1)											
Carbonate Alkalinity	8/23/19 14:40	ND	10.0	mg/L							
LCS (9H23037-BS1)											
Carbonate Alkalinity	8/23/19 14:40	434		mg/L	500		86.8	75-135			
Duplicate (9H23037-DUP1)			**Source: 1908450-04**								
Carbonate Alkalinity	8/23/19 14:40	ND	10.0	mg/L		ND				200	
Batch 9H23038 - Default Prep GenChem											
Blank (9H23038-BLK1)											
Bicarbonate Alkalinity	8/23/19 14:40	ND	10.0	mg/L							
LCS (9H23038-BS1)											
Bicarbonate Alkalinity	8/23/19 14:40	947		mg/L	950		99.6	80-120			
Duplicate (9H23038-DUP1)			**Source: 1908450-04**								
Bicarbonate Alkalinity	8/23/19 14:40	ND	10.0	mg/L		ND				30	

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 09/18/2019 13:16

Metals by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H26032 - EPA 200.2 DCN 1017 Rev 8											
Blank (9H26032-BLK1)											
Boron	8/28/19 11:17	ND	0.050	mg/L							
Calcium	8/28/19 11:17	ND	0.100	"							
Iron	8/28/19 11:17	ND	0.050	"							
Lithium	8/28/19 11:17	ND	0.040	"							
Magnesium	8/28/19 11:17	ND	0.100	"							
Potassium	8/28/19 11:17	ND	0.300	"							
Sodium	8/28/19 11:17	ND	0.300	"							
LCS (9H26032-BS1)											
Boron	8/28/19 11:21	0.208	0.050	mg/L	0.200		104	85-115			
Calcium	8/28/19 11:21	0.223	0.100	"	0.200		111	85-115			
Iron	8/28/19 11:21	0.197	0.050	"	0.200		98.6	85-115			
Lithium	8/28/19 11:21	0.194	0.040	"	0.200		97.1	85-115			
Magnesium	8/28/19 11:21	0.182	0.100	"	0.200		91.0	85-115			
Potassium	8/29/19 10:22	0.396	0.300	"	0.400		98.9	85-115			
Sodium	8/28/19 11:21	0.403	0.300	"	0.400		101	85-115			
LCS Dup (9H26032-BSD1)											
Boron	8/28/19 11:26	0.204	0.050	mg/L	0.200		102	85-115	1.94	20	
Calcium	8/29/19 10:25	0.199	0.100	"	0.200		99.4	85-115	11.3	20	
Iron	8/28/19 11:26	0.193	0.050	"	0.200		96.7	85-115	1.95	20	
Lithium	8/28/19 11:26	0.196	0.040	"	0.200		98.2	85-115	1.07	20	
Magnesium	8/29/19 10:25	0.192	0.100	"	0.200		96.1	85-115	5.41	20	
Potassium	8/28/19 11:26	0.358	0.300	"	0.400		89.5	85-115	9.96	20	
Sodium	8/28/19 11:26	0.409	0.300	"	0.400		102	85-115	1.52	20	
Duplicate (9H26032-DUP1)			**Source: 1908450-01**								
Boron	8/28/19 11:38	3.87	0.050	mg/L		3.81			1.44	20	
Calcium	8/28/19 11:38	79.7	0.100	"		73.5			8.02	20	
Magnesium	8/28/19 11:38	62.5	0.100	"		64.8			3.73	20	
Potassium	8/28/19 11:38	11.8	0.300	"		11.5			2.36	20	
Sodium	8/28/19 11:38	39.4	0.300	"		40.4			2.64	20	

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Metals by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H26032 - EPA 200.2 DCN 1017 Rev 8											
Matrix Spike (9H26032-MS1)			**Source: 1908450-01**								
Iron	8/28/19 11:38	0.401	0.050	mg/L	0.200	0.215	93.3	70-130			
Lithium	8/28/19 11:38	0.529	0.040	"	0.200	0.343	92.8	70-130			
Matrix Spike Dup (9H26032-MSD1)			**Source: 1908450-01**								
Iron	8/28/19 11:45	0.396	0.050	mg/L	0.200	0.215	90.5	70-130	1.40	20	
Lithium	8/28/19 11:45	0.523	0.040	"	0.200	0.343	89.8	70-130	1.13	20	
Batch 9H29010 - EPA 200.2 DCN 1017 Rev 8											
Blank (9H29010-BLK1)											
Ferric Iron	8/28/19 11:17	ND	0.050	mg/L							
LCS (9H29010-BS1)											
Ferric Iron	8/28/19 11:21	0.197	0.050	mg/L	0.200		98.6	85-115			
LCS Dup (9H29010-BSD1)											
Ferric Iron	8/28/19 11:26	0.193	0.050	mg/L	0.200		96.7	85-115	1.95	20	

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Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H26034 - EPA 200.2 DCN 1017 Rev 8											
Blank (9H26034-BLK1)											
Antimony [HHe]	8/27/19 21:34	ND	0.00500	mg/L							
Arsenic [NG]	8/27/19 21:34	ND	0.00200	"							
Barium [He]	8/27/19 21:34	ND	0.00100	"							
Beryllium [He]	8/27/19 21:34	ND	0.00100	"							
Cadmium [HHe]	8/27/19 21:34	ND	0.00100	"							
Chromium [He]	8/27/19 21:34	ND	0.00100	"							
Cobalt [He]	8/27/19 21:34	ND	0.00100	"							
Lead [He]	8/27/19 21:34	ND	0.00100	"							
Molybdenum [He]	8/27/19 21:34	ND	0.00100	"							
Selenium [NG]	8/27/19 21:34	ND	0.00500	"							
Thallium [He]	8/27/19 21:34	ND	0.00100	"							
LCS (9H26034-BS1)											
Antimony [HHe]	8/27/19 21:43	0.113	0.00500	mg/L	0.100		113	85-115			
Arsenic [NG]	8/27/19 21:43	0.106	0.00200	"	0.100		106	85-115			
Barium [He]	8/27/19 21:43	0.106	0.00100	"	0.100		106	85-115			
Beryllium [He]	8/27/19 21:43	0.107	0.00100	"	0.100		107	85-115			
Cadmium [HHe]	8/27/19 21:43	0.100	0.00100	"	0.100		99.9	85-115			
Chromium [He]	8/27/19 21:43	0.107	0.00100	"	0.100		107	85-115			
Cobalt [He]	8/27/19 21:43	0.107	0.00100	"	0.100		107	85-115			
Lead [He]	8/27/19 21:43	0.104	0.00100	"	0.100		104	85-115			
Molybdenum [He]	8/27/19 21:43	0.106	0.00100	"	0.100		106	85-115			
Selenium [NG]	8/27/19 21:43	0.106	0.00500	"	0.100		106	85-115			
Thallium [He]	8/27/19 21:43	0.107	0.00100	"	0.100		107	85-115			
LCS Dup (9H26034-BSD1)											
Antimony [HHe]	8/27/19 21:51	0.111	0.00500	mg/L	0.100		111	85-115	1.89	20	
Arsenic [NG]	8/27/19 21:51	0.105	0.00200	"	0.100		105	85-115	0.787	20	
Barium [He]	8/27/19 21:51	0.106	0.00100	"	0.100		106	85-115	0.0865	20	
Beryllium [He]	8/27/19 21:51	0.105	0.00100	"	0.100		105	85-115	1.99	20	
Cadmium [HHe]	8/27/19 21:51	0.098	0.00100	"	0.100		97.7	85-115	2.27	20	
Chromium [He]	8/27/19 21:51	0.106	0.00100	"	0.100		106	85-115	0.865	20	
Cobalt [He]	8/27/19 21:51	0.107	0.00100	"	0.100		107	85-115	0.268	20	
Lead [He]	8/27/19 21:51	0.104	0.00100	"	0.100		104	85-115	0.0683	20	
Molybdenum [He]	8/27/19 21:51	0.106	0.00100	"	0.100		106	85-115	0.310	20	
Selenium [NG]	8/27/19 21:51	0.104	0.00500	"	0.100		104	85-115	1.64	20	
Thallium [He]	8/27/19 21:51	0.106	0.00100	"	0.100		106	85-115	0.587	20	

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 09/18/2019 13:16

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H26034 - EPA 200.2 DCN 1017 Rev 8											
Matrix Spike (9H26034-MS1)			**Source: 1908443-01**								
Antimony [HHe]	8/27/19 22:41	0.113	0.00500	mg/L	0.100	ND	113	70-130			
Arsenic [NG]	8/27/19 22:41	0.107	0.00200	"	0.100	0.0005	106	70-130			
Barium [He]	8/27/19 22:41	0.149	0.00100	"	0.100	0.043	106	70-130			
Beryllium [He]	8/27/19 22:41	0.105	0.00100	"	0.100	ND	105	70-130			
Cadmium [HHe]	8/27/19 22:41	0.097	0.00100	"	0.100	0.0004	96.2	70-130			
Chromium [He]	8/27/19 22:41	0.137	0.00100	"	0.100	0.032	105	70-130			
Cobalt [He]	8/27/19 22:41	0.103	0.00100	"	0.100	0.0002	103	70-130			
Lead [He]	8/27/19 22:41	0.106	0.00100	"	0.100	0.0004	106	70-130			
Selenium [NG]	8/27/19 22:41	0.099	0.00500	"	0.100	0.001	99.5	70-130			
Thallium [He]	8/27/19 22:41	0.110	0.00100	"	0.100	ND	110	70-130			
Matrix Spike (9H26034-MS2)			**Source: 1908443-01RE1**								
Molybdenum [He]	8/28/19 14:52	0.434	0.00100	mg/L	0.100	0.323	111	70-130			
Matrix Spike Dup (9H26034-MSD1)			**Source: 1908443-01**								
Antimony [HHe]	8/27/19 22:50	0.114	0.00500	mg/L	0.100	ND	114	70-130	0.650	20	
Arsenic [NG]	8/27/19 22:50	0.107	0.00200	"	0.100	0.0005	106	70-130	0.194	20	
Barium [He]	8/27/19 22:50	0.152	0.00100	"	0.100	0.043	109	70-130	1.69	20	
Beryllium [He]	8/27/19 22:50	0.106	0.00100	"	0.100	ND	106	70-130	1.01	20	
Cadmium [HHe]	8/27/19 22:50	0.097	0.00100	"	0.100	0.0004	96.7	70-130	0.552	20	
Chromium [He]	8/27/19 22:50	0.138	0.00100	"	0.100	0.032	106	70-130	0.825	20	
Cobalt [He]	8/27/19 22:50	0.103	0.00100	"	0.100	0.0002	103	70-130	0.106	20	
Lead [He]	8/27/19 22:50	0.107	0.00100	"	0.100	0.0004	106	70-130	0.575	20	
Selenium [NG]	8/27/19 22:50	0.101	0.00500	"	0.100	0.001	101	70-130	1.43	20	
Thallium [He]	8/27/19 22:50	0.110	0.00100	"	0.100	ND	110	70-130	0.584	20	
Matrix Spike Dup (9H26034-MSD2)			**Source: 1908443-01RE1**								
Molybdenum [He]	8/28/19 15:01	0.439	0.00100	mg/L	0.100	0.323	117	70-130	1.28	20	

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Mercury by EPA 200 Series Methods CVAAS - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H28034 - EPA 245.1 DCN 1017 Rev 8											
Blank (9H28034-BLK1)											
Mercury	8/28/19 14:18	ND	0.002	mg/L							
LCS (9H28034-BS1)											
Mercury	8/28/19 14:18	0.005	0.002	mg/L	0.00500		108	85-115			
LCS Dup (9H28034-BSD1)											
Mercury	8/28/19 14:18	0.005	0.002	mg/L	0.00500		104	85-115	3.77	20	
Matrix Spike (9H28034-MS1)			**Source: 1908362-01**								
Mercury	8/28/19 14:18	0.006	0.002	mg/L	0.00500	ND	112	70-130			
Matrix Spike Dup (9H28034-MSD1)			**Source: 1908362-01**								
Mercury	8/28/19 14:18	0.006	0.002	mg/L	0.00500	ND	112	70-130	0.00	20	

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Metals (Dissolved) by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H27039 - EPA 200.2 DCN 1017 Rev 8											
Blank (9H27039-BLK1)											
Ferrous Iron	8/28/19 13:33	ND	0.060	mg/L							
LCS (9H27039-BS1)											
Ferrous Iron	8/28/19 13:36	0.372	0.060	mg/L				85-115			
LCS Dup (9H27039-BSD1)											
Ferrous Iron	8/28/19 13:38	0.371	0.060	mg/L				85-115	0.293	20	
Matrix Spike (9H27039-MS1)			**Source: 1908450-01**								
Ferrous Iron	8/28/19 13:44	0.533	0.060	mg/L		0.158		70-130			
Matrix Spike Dup (9H27039-MSD1)			**Source: 1908450-01**								
Ferrous Iron	8/28/19 13:47	0.554	0.060	mg/L		0.158		70-130	3.89	20	

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Certified Analyses Included in this Report

Analyte	Certification Code
EPA 200.7 Rev 4.4 in Water	
Aluminum	C01,C02
Antimony	C01,C02
Arsenic	C01,C02
Barium	C01,C02
Beryllium	C01,C02
Boron	C01,C02
Cadmium	C01,C02
Calcium	C01,C02
Chromium	C01,C02
Cobalt	C01,C02
Copper	C01,C02
Iron	C01,C02
Lead	C01,C02
Magnesium	C01,C02
Manganese	C01,C02
Molybdenum	C01,C02
Nickel	C01,C02
Potassium	C01,C02
Selenium	C01,C02
Silver	C01,C02
Sodium	C01,C02
Strontium	C01,C02
Thallium	C01,C02
Vanadium	C01,C02
Zinc	C01,C02
Phosphorus	C01
EPA 200.8 Rev 5.4 in Water	
Aluminum [He]	C01,C02
Antimony [HHe]	C01,C02
Antimony [NG]	C01,C02
Arsenic [HHe]	C01,C02
Arsenic [NG]	C01,C02
Barium [He]	C01,C02
Beryllium [He]	C01,C02
Boron [NG]	C01,C02
Cadmium [HHe]	C01,C02
Cadmium [NG]	C01,C02
Chromium [He]	C01,C02
Cobalt [He]	C01,C02
Copper [He]	C01,C02
Copper [NG]	C01,C02

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Iron [He]	C01,C02
Lead [He]	C01,C02
Lead [NG]	C01,C02
Manganese [He]	C01,C02
Molybdenum [He]	C01,C02
Nickel [He]	C01,C02
Selenium [HHe]	C01,C02
Selenium [NG]	C01,C02
Silver [He]	C01,C02
Silver [NG]	C01,C02
Strontium [He]	C01,C02
Thallium [He]	C01,C02
Vanadium [He]	C01,C02
Zinc [He]	C01,C02
Antimony [He]	C01,C02

EPA 245.1 Rev 3.0 in Water

Mercury	C01,C02

SM 2540 C-2011 in Water

Total Dissolved Solids	C01,C02

SM 4110B 2011 in Water

Chloride	C01,C02
Sulfate as SO4	C01,C02
Nitrate as N	C01,C02

****Only compounds included in this list are associated with accredited analyses****

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	**Reported:** 09/18/2019 13:16

Laboratory Accreditations/Certifications

Code	Description	Number	Expires
C01	*LA Environmental Lab Accreditation Program*	*01960*	*06/30/2020*
C02	*The NELAC Institute (NELAP)*	*TNI01397*	*06/30/2020*
C03	*Ms Dept of Health (Drinking Water Microbiology)*	*MS00021*	*12/31/2019*
C04	*Ms Dept of Health (Drinking Water Chemistry)*	*MS00021*	*12/31/2019*
C05	*Ms DEQ Lead Firm Certification*	*PBF-00000028*	*03/24/2020*
C06	*MsDEQ Asbestos Inspector : C.D. Bingham*	*ABI-00001348*	*02/21/2020*
C07	*MsDEQ Air Monitor : C.D. Bingham*	*AM-011572*	*03/07/2020*
C08	*MsDEQ Asbestos Inspector: C. W. Meins*	*ABI-00001821*	*09/06/2019*
C09	*MsDEQ Air Monitor : C.W. Meins*	*AM-011189*	*03/07/2020*
C12			
C14	*MsDEQ Lead Paint Inspector : C.D. Bingham*	*PBI-00003690*	*02/22/2020*
C15	*MsDEQ Lead Paint Inspector : C.W. Meins*	*PBI-00001740*	*02/22/2020*

Report Definitions

TNC	Too Numerous To Count
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the minimum reporting limit
NR	Not Reported
RPD	Relative Percent Difference
ICV	Initial Calibration Verfiication
CCV	Continuing Calibration Verification Standard
SSV	Secondary Source Verfication Standard
LCS	Lab Control Spike - Lab matrix prepared with known concentration of analyte/s of interest analyzed by method.
MS	Matrix Spike - Sample prepared with known concentration of analyte/s of interest analyzed by method.
MSD	Matrix Spike Duplicate - Duplicate sample prepared with known concentration of anlayte/s of interest analyzed by method.
MRL	Minimum Reporting Limit
%REC	Percentage Recovery of known concentration added to matrix
Batch	Group of samples prepared for analysis not to exceed 20 samples.
Matrix	Material containing analyte/s of interest
Surrogate	Analyte added to sample to determine extraction efficiency of method.

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Environmental Management Services	Project: Cooperative Energy	
PO Box 15369	Project Number: SOU2-19-001	Reported:
Hattiesburg MS, 39404-5369	Project Manager: Ken Ruckstuhl	09/18/2019 13:16

Analyst Initials Key

FullName	Initials
Alyssa D Bennett	ADB
Charles L Vorhoff	CLV
Dortha L. Wells	DLW
Harry P. Howell	HPH
Harold R Scruggs	HRS
Macy Spiers	MNS
Teresa Meins	TKM
Tina Tomek	TPT

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Chain of Custody Record

Lab ID# MS00021
LELAP ID # 01960
TNI ID # TNI01397

Print Form

M-M Lab WO # 1908450

Company Name: EMS	Project Manager: KEN RUCKSTUHL
Address: P.O. BOX 15366	Purchase Order #:
City: HATTIESBURG State: MS Zip: 39404	Email Address: KRUCKSTUHL@ENV-MGT.COM
Phone: 601-544-3674	Sampler Name Printed: ROBERT V. GATES
Fax: 601-544-0504	Sampler Name Signed: R.V. Gates

Turn Around Time & Reporting
Our normal turn around time is 10 working days

~~Normal~~
__Next Day*
__2nd Day*
X Other* RUSH

*All rush order requests must be prior approved.

__Phone
__Mail
__Fax
__Email

~~QC Level: Level 1~~ ☐ Level 2 ☐ Level 3 ☐

Project Name: COOPERATIVE ENERGY
Project #: SDD219001

List Analyses Requested

Sample Identification	Sampling Date/Time	Matrix Code	# of Containers	Grab (G) or Composite (C)	RADIOLOGICAL	METALS	WET LAB
MW-10	8-22-19 11:35	W	4	G	X	X	X
MW-11	8-22-19 09:55	W	4	G	X	X	X
MW-12	8-22-19 08:40	W	4	G	X	X	X
BD-1	8-22-19 08:00	W	4	G	X	X	X

Preservative:

Field Testing

ID# Field Test	ID# Field Test	ID# Field Test	ID# Field Test

All Temps are Corrected Values

Matrix:
W = Water
DW = Drinking Water
S = Solid
SO = Soil
SE = Sediment
L = Liquid
A = Air
O = Oil
SL = Sludge

Preservation:
1=H2SO4
2=H3PO4
3=NaOH
4=ZnC4H10O6
5=ZnC4H10O6 & NaOH
6=HNO3
7=Na2S2O3
8=HCl
9=NaHSO4

Received on Ice? (Y) N Thermometer# 4 Cooler # 1126 **Receipt Temp Corrected(°C)** 2.8
Date & Time 8/22/19 1345 By: MS Sample___ Blank X Cooler___

	Printed Name	Signature	Company	Date	Time
Relinquished by	Robert V. Gates	R.V. Gates	EMS	8-22-19	13:45
Received by	Mary Spiers	Mary Spiers	MM	8/22/19	1345
Relinquished by					
Received by					
Relinquished by					
Received by					

Notes:
Appendix III: Boron, Calcium, Chloride, Fluoride, Sulfate, TDS
App IV: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Lead, Lithium, Mercury, Selenium, Thallium, Combined Radium (226 + 228)
Cation/Anions: Magnesium, Potassium, Sodium, bicarbonate/carbonate alkalinity, Ferrous and Ferric Iron, Nitrate (total)

Physical Address: 6500 Sunplex Drive, Ocean Springs MS 39564

	Micro-Methods Issue Date: 11-22-17	**Micro-Methods Laboratory Log-In Checklist**	DCN: F207 Date Revised: 11-22-17 Revision: 5

Client EMS **WO** 1908450 **Shipped By** client
Date/Time Received 8/22/19 1345 **Unpacked/Checked By** MS

Cooler ID	Ice Present Yes/No	Temperature (Corrected)	Thermometer ID	Custody Sealed Yes/No	Custody Seal Intact Yes/No
#1126	yes	2.8°c	T#4	no	n/a

If not iced, were samples received within one hour of collection? Yes___No___N/A X
Temperature Blank Used Yes X No_____If not, temperature taken from cooler_____or bottle___
Multi Cooler shipment: ID of samples in coolers that exceed 6°C____________________

Custody Seals on Bottles Present Yes ___ No X
Containers Intact Yes X No___
Proper Containers for Requested Analysis Yes X No___

Correct Preservation Used for All Samples Yes X No___
Adequate Sample for Analysis Requested Yes X No___

Volatile Vials Headspace Greater than 6mm in Diameter Yes ___ No ___ N/A X

Chain of Custody Form Included Yes X No___
Chain of Custody Form Complete Yes X No___
Chain of Custody Form Properly Relinquished Yes X No___
Field Sheets/Special Instructions Included Yes ___ No___ N/A X
Samples Missing on COC or From Cooler Yes ___ No X
Sample Container Labels Match COC Yes X No___

Samples Received Within Holding Time Yes X No___
Dept. Manager Notified of Rush/Short Holding Times Yes X No___N/A___

Does work order meet Micro Methods sample acceptance criteria Yes X No ___
Note: Samples that do not meet acceptance criteria must be documented in the Sample Rejection Log.

Client Contacted____________**Contacted By**_________**Date/Time**__________
Client Instructions: Cancel Work Order _____
Proceed with Work Order______**(Data will be qualified)**

Comments: ____

Pace Analytical Services, LLC
1000 Riverbend Blvd - Suite F
St. Rose, LA 70087
(504)469-0333

September 18, 2019

Harry Howell
Micro Methods Laboratory, Inc.
P. O. Box 1410
Ocean Springs, MS 39566

RE: Project: 1908450
Pace Project No.: 20118725

Dear Harry Howell:

Enclosed are the analytical results for sample(s) received by the laboratory on August 26, 2019. 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,

Karen Brown
karen.brown@pacelabs.com
(504)469-0333
Project Manager

Enclosures

Pace Analytical Services, LLC
1000 Riverbend Blvd - Suite F
St. Rose, LA 70087
(504)469-0333

CERTIFICATIONS

Project:	1908450
Pace Project No.:	20118725

Pennsylvania Certification IDs

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

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1000 Riverbend Blvd - Suite F
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(504)469-0333

SAMPLE SUMMARY

Project: 1908450
Pace Project No.: 20118725

Lab ID	Sample ID	Matrix	Date Collected	Date Received
20118725001	**1908450-01**	Water	08/22/19 11:35	08/26/19 10:00
20118725002	**1908450-02**	Water	08/22/19 09:55	08/26/19 10:00
20118725003	**1908450-03**	Water	08/22/19 08:40	08/26/19 10:00
20118725004	**1908450-04**	Water	08/22/19 08:00	08/26/19 10:00

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(504)469-0333

SAMPLE ANALYTE COUNT

Project: 1908450
Pace Project No.: 20118725

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
20118725001	**1908450-01**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
20118725002	**1908450-02**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
20118725003	**1908450-03**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
20118725004	**1908450-04**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA

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St. Rose, LA 70087
(504)469-0333

PROJECT NARRATIVE

Project:	1908450
Pace Project No.:	20118725

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: Micro Methods
Date: September 18, 2019

General Information:
4 samples were analyzed for EPA 903.1. 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.

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

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.

Additional Comments:

Pace Analytical Services, LLC
1000 Riverbend Blvd - Suite F
St. Rose, LA 70087
(504)469-0333

PROJECT NARRATIVE

Project: 1908450
Pace Project No.: 20118725

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: Micro Methods
Date: September 18, 2019

General Information:
4 samples were analyzed for EPA 904.0. 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.

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

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.

Additional Comments:

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

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St. Rose, LA 70087
(504)469-0333

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1908450
Pace Project No.: 20118725

Sample: 1908450-01 **Lab ID: 20118725001** Collected: 08/22/19 11:35 Received: 08/26/19 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 2.5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.758 ± 0.555 (0.764) C:NA T:94%**	pCi/L	09/12/19 12:23	13982-63-3	
Radium-228	EPA 904.0	**1.13 ± 0.466 (0.750) C:74% T:93%**	pCi/L	09/13/19 17:23	15262-20-1	

Sample: 1908450-02 **Lab ID: 20118725002** Collected: 08/22/19 09:55 Received: 08/26/19 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 2.5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.520 ± 0.503 (0.780) C:NA T:100%**	pCi/L	09/12/19 12:23	13982-63-3	
Radium-228	EPA 904.0	**2.20 ± 0.647 (0.766) C:77% T:86%**	pCi/L	09/13/19 17:23	15262-20-1	

Sample: 1908450-03 **Lab ID: 20118725003** Collected: 08/22/19 08:40 Received: 08/26/19 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 2.5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.275 ± 0.471 (0.825) C:NA T:91%**	pCi/L	09/12/19 12:23	13982-63-3	
Radium-228	EPA 904.0	**1.73 ± 0.558 (0.754) C:73% T:95%**	pCi/L	09/13/19 17:23	15262-20-1	

Sample: 1908450-04 **Lab ID: 20118725004** Collected: 08/22/19 08:00 Received: 08/26/19 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 2.5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.544 ± 0.432 (0.561) C:NA T:93%**	pCi/L	09/12/19 12:23	13982-63-3	
Radium-228	EPA 904.0	**2.74 ± 0.718 (0.724) C:76% T:88%**	pCi/L	09/13/19 17:23	15262-20-1	

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www.pacelabs.com

Pace Analytical Services, LLC
1000 Riverbend Blvd - Suite F
St. Rose, LA 70087
(504)469-0333

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1908450
Pace Project No.: 20118725

QC Batch: 359141 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 20118725001, 20118725002, 20118725003, 20118725004

METHOD BLANK: 1743550 Matrix: Water
Associated Lab Samples: 20118725001, 20118725002, 20118725003, 20118725004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.107 ± 0.363 (0.700) C:NA T:80%	pCi/L	09/12/19 12:34	

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

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1908450
Pace Project No.: 20118725

QC Batch: 359140 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 20118725001, 20118725002, 20118725003, 20118725004

METHOD BLANK: 1743548 Matrix: Water
Associated Lab Samples: 20118725001, 20118725002, 20118725003, 20118725004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.665 ± 0.433 (0.826) C:75% T:81%	pCi/L	09/13/19 17:25	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1000 Riverbend Blvd - Suite F
St. Rose, LA 70087
(504)469-0333

QUALIFIERS

Project: 1908450
Pace Project No.: 20118725

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The Nelac Institute

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1000 Riverbend Blvd - Suite F
St. Rose, LA 70087
(504)469-0333

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 1908450
Pace Project No.: 20118725

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
20118725001	**1908450-01**	EPA 903.1	359141		
20118725002	**1908450-02**	EPA 903.1	359141		
20118725003	**1908450-03**	EPA 903.1	359141		
20118725004	**1908450-04**	EPA 903.1	359141		
20118725001	**1908450-01**	EPA 904.0	359140		
20118725002	**1908450-02**	EPA 904.0	359140		
20118725003	**1908450-03**	EPA 904.0	359140		
20118725004	**1908450-04**	EPA 904.0	359140		

P-4613

MICRO-METHODS LABORATORY, INC.

SUBCONTRACT ORDER

Sending Laboratory:

Micro-Methods Laboratory, Inc.
6500 Sunplex Drive
Ocean Springs, MS 39564
Phone: 228.875.6420
Fax: 228.875.6423

Project Manager: Teresa Meins

Subcontracted Laboratory:

Pace Analytical
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
Phone: -
Fax: -

WO#: 20118725

20118725

Work Order: 1908450

Analysis	Due	Expires	Comments
Sample ID: 1908450-01 *Water* *Sampled: 08/22/2019 11:35*			*Sample Name: MW-10*
Radium,Total 226 & 228 by 901.1	8 ~~08/29/2019~~	09/19/2019 11:35	
Containers Supplied: 1000mL Plastic (A) 1000mL Plastic (B)			
Sample ID: 1908450-02 *Water* *Sampled: 08/22/2019 09:55*			*Sample Name: MW-11*
Radium,Total 226 & 228 by 901.1	8 ~~08/29/2019~~	09/19/2019 09:55	
Containers Supplied: 1000mL Plastic (A) 1000mL Plastic (B)			
Sample ID: 1908450-03 *Water* *Sampled: 08/22/2019 08:40*			*Sample Name: MW-12*
Radium,Total 226 & 228 by 901.1	8 ~~08/29/2019~~	09/19/2019 08:40	
Containers Supplied: 1000mL Plastic (A) 1000mL Plastic (B)			
Sample ID: 1908450-04 *Water* *Sampled: 08/22/2019 08:00*			*Sample Name: BD-1*
Radium,Total 226 & 228 by 901.1	8 ~~08/29/2019~~	09/19/2019 08:00	
Containers Supplied: 1000mL Plastic (A) 1000mL Plastic (B)			

*need Standard TAT

ambient

[signature] 8/23/19 1630		UPS	8/23/19 1630
Released By	Date	Received By	Date
UPS	8/24/19 1000	[signature] / Pace	8-26-19 1000
Released By	Date	Received By	Date

WO#:20118725

Pace Analytical

1000 Riverbend. Blvd., Suite F
St. Rose, LA 70087

Sample Condition Upon Re

PM: KHB **Due Date: 09/18/19**

CLIENT: 20-MICRO

Projec

Courier: ☐ Pace Courier ☐ Hired Courier ☐ Fed X ☑ UPS ☐ DHL ☐ USPS ☐ Customer ☐ Other

Custody Seal on Cooler/Box Present: [see COC] **Custody Seals intact:** ☑ Yes ☐ No

Therometer Used:	☐ Therm Fisher IR 5 ☐ Therm Fisher IR 6 ☐ Therm Fisher IR 7

Type of Ice: Wet Blue None

Samples on ice: [see COC]

Cooler Temperature: [see COC] Temp should be above freezing to 6°C

Date and Initials of person examining contents: 8-26-19 J

Temp must be measured from Temperature blank when present

				Comments:
Temperature Blank Present"?	☐Yes	☑No	☐N/A	1
Chain of Custody Present:	☑Yes	☐No	☐N/A	2
Chain of Custody Complete:	☑Yes	☐No	☐N/A	3
Chain of Custody Relinquished:	☑Yes	☐No	☐N/A	4
Sampler Name & Signature on COC:	☐Yes	☑No	☐N/A	5
Samples Arrived within Hold Time:	☑Yes	☐No	☐N/A	6
Sufficient Volume:	☑Yes	☐No	☐N/A	7
Correct Containers Used:	☑Yes	☐No	☐N/A	8
Filtered vol. Rec. for Diss. tests	☐Yes	☑No	☐N/A	9
Sample Labels match COC:	☑Yes	☐No	☐N/A	10
All containers received within manafacture's precautionary and/or expiration dates.	☑Yes	☐No	☐N/A	11
All containers needing chemical preservation have been checked (except VOA, coliform, & O&G).	☐Yes	☐No	☑N/A	12 unpreserved
All containers preservation checked found to be in compliance with EPA recommendation.	☐Yes	☐No	☑N/A	13 If No, was preserative added? ☐Yes ☑No If added record lot no.: HNO3 ______ H2SO4 ______
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☑N/A	14
Trip Blank Present:	☐Yes	☑No		15

Client Notification/ Resolution:

Person Contacted: ______________________ Date/Time: __________

Comments/ Resolution: ______________________

Mailing Address:
PO Box 1410
Ocean Springs, MS
39566-1410

6500 Sunplex Drive
Ocean Springs, MS 39564
228.875.6420 Phone
228.875.6423 Fax

September 10, 2019

Ken Ruckstuhl

Work Order # : 1908321

Purchase Order #:

Environmental Management Services
PO Box 15369
Hattiesburg, MS 39404-5369

RE: Cooperative Energy

Enclosed are Micro-Methods Laboratory, Inc. results of analyses performed on samples received 08/15/2019 14:40. If you have any questions concerning this report, please feel free to contact the office.

Harry P. Howell

Harry P. Howell

President
Micro-Methods Laboratory, Inc.

DISCLAIMER
The results only relate to the items or the sample and/or samples received by the laboratory. This report shall not be reproduced except in full, without the approval of the laboratory. All NELAP certified test methods performed meet the requirements of NELAC 2009 Standards. Any variances and/or deviations specific to this analytical report are referenced in the lab report using qualifiers and detailed explanations found in the case narrative.

MICRO-METHODS LABORATORY, INC.

6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 09/10/2019 16:07

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date/Time Sampled	Sampled by	Date/Time Received
BD-1	1908321-01	Water	08/15/2019 08:00	*Robert Gates*	08/15/2019 14:40
MW-10	1908321-02	Water	08/15/2019 11:05	*Robert Gates*	08/15/2019 14:40
MW-11	1908321-03	Water	08/15/2019 09:30	*Robert Gates*	08/15/2019 14:40
MW-12	1908321-04	Water	08/15/2019 08:30	*Robert Gates*	08/15/2019 14:40

Sample Receipt Conditions

Date/Time Received:	8/15/2019 2:40:00PM	Shipped by:	Lab Pick-up
Received by:	Sarah E. Tomek	Submitted by:	Clifford W. Meins
Date/Time Logged:	8/15/2019 4:10:00PM	Logged by:	Sarah E. Tomek
Cooler ID:	**#1143**	**Receipt Temperature:**	3.8 °C

Cooler Custody Seals Present	*No*	*Received on Ice*	*Yes*
Containers Intact	*Yes*	*No Ice, Short Trip*	*No*
COC/Labels Agree	*Yes*	*Obvious Contamination*	*No*
Labels Complete	*Yes*	*Rush to meet HT*	*Yes*
COC Complete	*Yes*		

MICRO-METHODS LABORATORY, INC.

6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	**Reported:** 09/10/2019 16:07

CASE NARRATIVE SUMMARY

All reported results are within Micro-Methods Laboratory, Inc.defined laboratory quality control objectives unless detailed in narrative summary or identified as qualifications. NOTE: All results listed on this report are calculated on a wet weight basis (as received by the laboratory) unless otherwise noted in the analysis qualification sections.

Summary Comments:

Inorganic Analyst Notes-HRS:
SN: Initial pH samples ranged 3.7 to 4.1 which is below the titration endpoint of 8.3 (carbonate alkalinity) and 4.3 (bicarbonate alkalinity) resulting in "0" results

See attached Radiological results from Sub-Contract Laboratory

Total Metals-EPA 200.7 Rev 4.4

Qualifiers:

L3 LCS/LCSD Precision Limit exceeded.

Potassium
9H19045-BSD1

QM-09 The spike recovery was above acceptance limits for the MS and/or MSD. The results were accepted based on acceptable LCS and/or LCSD recoveries.

Boron, Iron
9H19045-MS1

Total Metals-EPA 200.8 Rev 5.4

Qualifiers:

L2 LCS and/or LCSD Recovery below acceptance limit.

Beryllium [He]
9H19046-BS1

Alkalinity, Bicarbonate as CaCO3-SM 2320B 2011

Qualifiers:

SN See Case Narrative Summary

Bicarbonate Alkalinity, Carbonate Alkalinity
1908321-01[BD-1], 1908321-02[MW-10], 1908321-03[MW-11], 1908321-04[MW-12]

MICRO-METHODS LABORATORY, INC.

6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 09/10/2019 16:07

BD-1

1908321-01 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Bicarbonate Alkalinity	ND	10.0	mg/L	1.0	9H19057	HRS	08/19/2019 14:25	08/19/2019 14:25	SM 2320B 2011	SN
Chloride	**178**	25.0	"	50.0	9H19024	DLW	08/16/2019 11:09	08/16/2019 15:48	SM 4110B 2011	
Carbonate Alkalinity	ND	10.0	"	1.0	9H19056	HRS	08/19/2019 14:35	08/19/2019 14:35	SM 2320B 2011	SN
Sulfate as SO4	**1320**	250	"	50.0	9H19024	DLW	08/16/2019 11:09	08/16/2019 15:48	SM 4110B 2011	
Fluoride	**0.96**	0.50	"	1.0	9H16020	TKM	08/16/2019 11:00	08/16/2019 13:20	SM 4500-F C 2011	
Nitrate as N	ND	0.500	"	"	9H19024	DLW	08/16/2019 11:09	08/16/2019 11:09	SM 4110B 2011	
Total Dissolved Solids	**2064**	2	"	"	9H16037	DLW	08/16/2019 16:00	08/19/2019 00:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Boron	**6.31**	0.050	mg/L	1.0	9H19045	ADB	08/19/2019 10:30	08/20/2019 14:31	EPA 200.7 Rev 4.4	
Calcium	**169**	0.200	"	2.0	"	ADB	"	08/20/2019 16:21	"	
Iron	**5.72**	0.050	"	1.0	"	ADB	"	08/20/2019 15:58	"	
Lithium	**0.413**	0.040	"	"	"	ADB	"	08/20/2019 14:31	"	
Magnesium	**106**	0.200	"	2.0	"	ADB	"	08/20/2019 16:21	"	
Potassium	**46.2**	0.300	"	1.0	"	ADB	"	08/20/2019 14:31	"	
Sodium	**59.2**	0.300	"	"	"	ADB	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [HHe]	ND	0.00500	mg/L	1.0	9H19046	ADB	"	08/20/2019 18:33	EPA 200.8 Rev 5.4	
Ferric Iron	**5.25**	0.010	"	"	9H21061	ADB	"	08/20/2019 15:58	EPA 200.7 Rev 4.4	
Arsenic [NG]	ND	0.00200	"	"	9H19046	ADB	"	08/20/2019 18:33	EPA 200.8 Rev 5.4	
Barium [He]	**0.0372**	0.00100	"	"	"	ADB	"	"	"	
Beryllium [He]	**0.00338**	0.00100	"	"	"	ADB	"	"	"	
Cadmium [HHe]	ND	0.00100	"	"	"	ADB	"	"	"	
Chromium [He]	**0.00100**	0.00100	"	"	"	ADB	"	"	"	
Cobalt [He]	**0.0883**	0.00100	"	"	"	ADB	"	"	"	
Lead [He]	**0.00402**	0.00100	"	"	"	ADB	"	"	"	
Molybdenum [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Selenium [NG]	**0.00574**	0.00500	"	"	"	ADB	"	"	"	
Thallium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Mercury by EPA 200 Series Methods CVAAS										
Mercury	ND	0.002	mg/L	1.0	9H21054	CLV	08/21/2019 10:00	08/21/2019 15:12	EPA 245.1 Rev 3.0	
Metals (Dissolved) By EPA 200 Series Methods ICP-MS [Analysis Mode]										
Ferrous Iron	**0.472**	0.012	mg/L	1.0	9H19059	ADB	08/19/2019 15:30	08/19/2019 23:45	EPA 200.7 Rev 4.4	

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Project: Cooperative Energy
Project Number: SOU2-19-001
Project Manager: Ken Ruckstuhl

Reported:
09/10/2019 16:07

MW-10

1908321-02 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Bicarbonate Alkalinity	ND	10.0	mg/L	1.0	9H19057	HRS	08/19/2019 14:25	08/19/2019 14:25	SM 2320B 2011	SN
Chloride	**181**	10.0	"	20.0	9H19024	DLW	08/16/2019 11:09	08/16/2019 14:54	SM 4110B 2011	
Carbonate Alkalinity	ND	10.0	"	1.0	9H19056	HRS	08/19/2019 14:35	08/19/2019 14:35	SM 2320B 2011	SN
Sulfate as SO4	**542**	100	"	20.0	9H19024	DLW	08/16/2019 11:09	08/16/2019 14:54	SM 4110B 2011	
Fluoride	**0.61**	0.50	"	1.0	9H16020	TKM	08/16/2019 11:00	08/16/2019 13:20	SM 4500-F C 2011	
Nitrate as N	ND	0.500	"	"	9H19024	DLW	08/16/2019 11:09	08/16/2019 11:27	SM 4110B 2011	
Total Dissolved Solids	**1190**	2	"	"	9H16037	DLW	08/16/2019 16:00	08/19/2019 00:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Boron	**3.96**	0.050	mg/L	1.0	9H19045	ADB	08/19/2019 10:30	08/20/2019 14:38	EPA 200.7 Rev 4.4	
Calcium	**80.2**	0.100	"	"	"	ADB	"	"	"	
Iron	**0.139**	0.050	"	"	"	ADB	"	08/20/2019 16:01	"	
Magnesium	**67.1**	0.100	"	"	"	ADB	"	"	"	
Lithium	**0.402**	0.040	"	"	"	ADB	"	08/20/2019 14:38	"	
Potassium	**12.8**	0.300	"	"	"	ADB	"	"	"	
Sodium	**41.0**	0.300	"	"	"	ADB	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [HHe]	ND	0.00500	mg/L	1.0	9H19046	ADB	"	08/20/2019 18:41	EPA 200.8 Rev 5.4	
Ferric Iron	ND	0.010	"	"	9H21061	ADB	"	08/20/2019 16:01	EPA 200.7 Rev 4.4	
Arsenic [NG]	ND	0.00200	"	"	9H19046	ADB	"	08/20/2019 18:41	EPA 200.8 Rev 5.4	
Barium [He]	**0.0314**	0.00100	"	"	"	ADB	"	"	"	
Beryllium [He]	**0.00728**	0.00100	"	"	"	ADB	"	"	"	
Cadmium [HHe]	ND	0.00100	"	"	"	ADB	"	"	"	
Chromium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Cobalt [He]	**0.0937**	0.00100	"	"	"	ADB	"	"	"	
Lead [He]	**0.00293**	0.00100	"	"	"	ADB	"	"	"	
Molybdenum [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Selenium [NG]	ND	0.00500	"	"	"	ADB	"	"	"	
Thallium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Mercury by EPA 200 Series Methods CVAAS										
Mercury	ND	0.002	mg/L	1.0	9H21054	CLV	08/21/2019 10:00	08/21/2019 15:12	EPA 245.1 Rev 3.0	
Metals (Dissolved) By EPA 200 Series Methods ICP-MS [Analysis Mode]										
Ferrous Iron	**0.140**	0.012	mg/L	1.0	9H19059	ADB	08/19/2019 15:30	08/19/2019 23:54	EPA 200.7 Rev 4.4	

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MW-11

1908321-03 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Chloride	**183**	25.0	mg/L	50.0	9H19024	DLW	08/16/2019 11:09	08/16/2019 15:30	SM 4110B 2011	
Bicarbonate Alkalinity	ND	10.0	"	1.0	9H19057	HRS	08/19/2019 14:25	08/19/2019 14:25	SM 2320B 2011	SN
Carbonate Alkalinity	ND	10.0	"	"	9H19056	HRS	08/19/2019 14:35	08/19/2019 14:35	"	SN
Sulfate as SO4	**1390**	250	"	50.0	9H19024	DLW	08/16/2019 11:09	08/16/2019 15:30	SM 4110B 2011	
Fluoride	**0.95**	0.50	"	1.0	9H16020	TKM	08/16/2019 11:00	08/16/2019 13:20	SM 4500-F C 2011	
Nitrate as N	ND	0.500	"	"	9H19024	DLW	08/16/2019 11:09	08/16/2019 11:44	SM 4110B 2011	
Total Dissolved Solids	**1990**	2	"	"	9H16037	DLW	08/16/2019 16:00	08/19/2019 00:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Boron	**6.59**	0.050	mg/L	1.0	9H19045	ADB	08/19/2019 10:30	08/20/2019 14:45	EPA 200.7 Rev 4.4	
Calcium	**179**	0.200	"	2.0	"	ADB	"	08/20/2019 16:24	"	
Iron	**6.12**	0.050	"	1.0	"	ADB	"	08/20/2019 16:04	"	
Magnesium	**110**	0.200	"	2.0	"	ADB	"	08/20/2019 16:24	"	
Lithium	**0.418**	0.040	"	1.0	"	ADB	"	08/20/2019 14:45	"	
Potassium	**43.9**	0.300	"	"	"	ADB	"	"	"	
Sodium	**60.9**	0.300	"	"	"	ADB	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Ferric Iron	**5.64**	0.010	mg/L	1.0	9H21061	ADB	"	08/20/2019 16:04	EPA 200.7 Rev 4.4	
Antimony [HHe]	ND	0.00500	"	"	9H19046	ADB	"	08/20/2019 18:50	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	ADB	"	"	"	
Barium [He]	**0.0393**	0.00100	"	"	"	ADB	"	"	"	
Beryllium [He]	**0.00336**	0.00100	"	"	"	ADB	"	"	"	
Cadmium [HHe]	ND	0.00100	"	"	"	ADB	"	"	"	
Chromium [He]	**0.00101**	0.00100	"	"	"	ADB	"	"	"	
Cobalt [He]	**0.0969**	0.00100	"	"	"	ADB	"	"	"	
Lead [He]	**0.00438**	0.00100	"	"	"	ADB	"	"	"	
Molybdenum [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Selenium [NG]	**0.00580**	0.00500	"	"	"	ADB	"	"	"	
Thallium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Mercury by EPA 200 Series Methods CVAAS										
Mercury	ND	0.002	mg/L	1.0	9H21054	CLV	08/21/2019 10:00	08/21/2019 15:12	EPA 245.1 Rev 3.0	
Metals (Dissolved) By EPA 200 Series Methods ICP-MS [Analysis Mode]										
Ferrous Iron	**0.476**	0.012	mg/L	1.0	9H19059	ADB	08/19/2019 15:30	08/20/2019 00:17	EPA 200.7 Rev 4.4	

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MW-12

1908321-04 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Chloride	**55.9**	12.5	mg/L	25.0	9H19024	DLW	08/16/2019 11:09	08/16/2019 14:05	SM 4110B 2011	
Bicarbonate Alkalinity	ND	10.0	"	1.0	9H19057	HRS	08/19/2019 14:25	08/19/2019 14:25	SM 2320B 2011	SN
Carbonate Alkalinity	ND	10.0	"	"	9H19056	HRS	08/19/2019 14:35	08/19/2019 14:35	"	SN
Sulfate as SO4	**581**	125	"	25.0	9H19024	DLW	08/16/2019 11:09	08/16/2019 14:05	SM 4110B 2011	
Fluoride	ND	0.50	"	1.0	9H16020	TKM	08/16/2019 11:00	08/16/2019 13:20	SM 4500-F C 2011	
Nitrate as N	ND	0.500	"	"	9H19024	DLW	08/16/2019 11:09	08/16/2019 12:02	SM 4110B 2011	
Total Dissolved Solids	**850**	1	"	"	9H16037	DLW	08/16/2019 16:00	08/19/2019 00:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Boron	**1.70**	0.050	mg/L	1.0	9H19045	ADB	08/19/2019 10:30	08/20/2019 14:52	EPA 200.7 Rev 4.4	
Calcium	**89.2**	0.200	"	2.0	"	ADB	"	08/20/2019 16:27	"	
Iron	**2.03**	0.050	"	1.0	"	ADB	"	08/20/2019 16:07	"	
Lithium	ND	0.040	"	"	"	ADB	"	08/20/2019 14:52	"	
Magnesium	**39.7**	0.100	"	"	"	ADB	"	08/20/2019 16:07	"	
Potassium	**20.9**	0.300	"	"	"	ADB	"	08/20/2019 14:52	"	
Sodium	**18.8**	0.300	"	"	"	ADB	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [HHe]	ND	0.00500	mg/L	1.0	9H19046	ADB	"	08/20/2019 18:58	EPA 200.8 Rev 5.4	
Ferric Iron	**1.92**	0.010	"	"	9H21061	ADB	"	08/20/2019 16:07	EPA 200.7 Rev 4.4	
Arsenic [NG]	ND	0.00200	"	"	9H19046	ADB	"	08/20/2019 18:58	EPA 200.8 Rev 5.4	
Barium [He]	**0.0266**	0.00100	"	"	"	ADB	"	"	"	
Beryllium [He]	**0.00197**	0.00100	"	"	"	ADB	"	"	"	
Cadmium [HHe]	ND	0.00100	"	"	"	ADB	"	"	"	
Chromium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Cobalt [He]	**0.0307**	0.00100	"	"	"	ADB	"	"	"	
Lead [He]	**0.00253**	0.00100	"	"	"	ADB	"	"	"	
Molybdenum [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Selenium [NG]	ND	0.00500	"	"	"	ADB	"	"	"	
Thallium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Mercury by EPA 200 Series Methods CVAAS										
Mercury	ND	0.002	mg/L	1.0	9H21054	CLV	08/21/2019 10:00	08/21/2019 15:12	EPA 245.1 Rev 3.0	
Metals (Dissolved) By EPA 200 Series Methods ICP-MS [Analysis Mode]										
Ferrous Iron	**0.111**	0.012	mg/L	1.0	9H19059	ADB	08/19/2019 15:30	08/20/2019 00:26	EPA 200.7 Rev 4.4	

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Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H16020 - Default Prep GenChem											
Blank (9H16020-BLK1)											
Fluoride	8/16/19 13:20	ND	0.50	mg/L							
LCS (9H16020-BS1)											
Fluoride	8/16/19 13:20	1.94		mg/L	2.00		97.0	75-125			
Duplicate (9H16020-DUP1)			**Source: 1908314-01**								
Fluoride	8/16/19 13:20	0.10	0.50	mg/L		0.10			2.37	35	
Duplicate (9H16020-DUP2)			**Source: 1908321-04**								
Fluoride	8/16/19 13:20	0.28	0.50	mg/L		0.29			4.26	35	
Matrix Spike (9H16020-MS1)			**Source: 1908314-01**								
Fluoride	8/16/19 13:20	1.94	0.50	mg/L	2.00	0.10	92.1	70-130			
Matrix Spike (9H16020-MS2)			**Source: 1908321-04**								
Fluoride	8/16/19 13:20	1.96	0.50	mg/L	2.00	0.29	83.6	70-130			
Matrix Spike Dup (9H16020-MSD1)			**Source: 1908314-01**								
Fluoride	8/16/19 13:20	2.00	0.50	mg/L	2.00	0.10	95.1	70-130	3.05	30	
Matrix Spike Dup (9H16020-MSD2)			**Source: 1908321-04**								
Fluoride	8/16/19 13:20	1.98	0.50	mg/L	2.00	0.29	84.6	70-130	1.02	30	
Batch 9H16037 - Default Prep GenChem											
Blank (9H16037-BLK1)											
Total Dissolved Solids	8/19/19 0:00	ND	1	mg/L							

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Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H16037 - Default Prep GenChem											
LCS (9H16037-BS1)											
Total Dissolved Solids	8/19/19 0:00	94	1	mg/L	104		90.4	82.2-100			
LCS Dup (9H16037-BSD1)											
Total Dissolved Solids	8/19/19 0:00	100	1	mg/L	104		96.2	82.2-100	6.19	15	
Duplicate (9H16037-DUP1)			**Source: 1908314-14**								
Total Dissolved Solids	8/19/19 0:00	3306	2	mg/L		3282			0.729	5	
Duplicate (9H16037-DUP2)			**Source: 1908321-04**								
Total Dissolved Solids	8/19/19 0:00	840	1	mg/L		850			1.18	5	
Batch 9H19024 - Default Prep GenChem											
Blank (9H19024-BLK1)											
Chloride	8/16/19 10:10	ND	0.500	mg/L							
Sulfate as SO4	8/16/19 10:10	ND	5.00	"							
Nitrate as N	8/16/19 10:10	ND	0.500	"							
Blank (9H19024-BLK2)											
Chloride	8/19/19 10:48	ND	0.500	mg/L							
Sulfate as SO4	8/19/19 10:48	ND	5.00	"							
LCS (9H19024-BS1)											
Chloride	8/16/19 10:27	2.88	0.500	mg/L	3.00		96.0	85.4-110			
Sulfate as SO4	8/16/19 10:27	14.1	5.00	"	15.0		94.2	83.3-120			
Nitrate as N	8/16/19 10:27	2.12	0.500	"	2.26		93.6	84.6-110			

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Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H19024 - Default Prep GenChem											
LCS (9H19024-BS2)											
Chloride	8/19/19 10:12	2.87	0.500	mg/L	3.00		95.5	85.4-110			
Sulfate as SO4	8/19/19 10:12	14.1	5.00	"	15.0		93.8	83.3-120			
LCS Dup (9H19024-BSD1)											
Chloride	8/16/19 10:45	2.89	0.500	mg/L	3.00		96.3	85.4-110	0.312	20	
Sulfate as SO4	8/16/19 10:45	14.1	5.00	"	15.0		93.8	83.3-120	0.418	20	
Nitrate as N	8/16/19 10:45	2.11	0.500	"	2.26		93.1	84.6-110	0.474	20	
LCS Dup (9H19024-BSD2)											
Chloride	8/19/19 10:30	2.86	0.500	mg/L	3.00		95.2	85.4-110	0.350	20	
Sulfate as SO4	8/19/19 10:30	14.0	5.00	"	15.0		93.5	83.3-120	0.370	20	
Duplicate (9H19024-DUP1)			**Source: 1908321-04**								
Nitrate as N	8/16/19 12:51	ND	0.500	mg/L		ND				20	
Duplicate (9H19024-DUP2)			**Source: 1908321-04**								
Chloride	8/19/19 11:06	56.8	12.5	mg/L		55.9			1.60	20	
Sulfate as SO4	8/19/19 11:06	580	125	"		581			0.310	20	
Matrix Spike (9H19024-MS1)			**Source: 1908321-04**								
Nitrate as N	8/16/19 13:08	5.10	0.500	mg/L	6.78	ND	75.2	73.1-122			
Matrix Spike Dup (9H19024-MSD1)			**Source: 1908321-04**								
Nitrate as N	8/16/19 13:26	5.12	0.500	mg/L	6.78	ND	75.5	73.1-122	0.391	20	
Batch 9H19056 - Default Prep GenChem											
Blank (9H19056-BLK1)											
Carbonate Alkalinity	8/19/19 14:35	ND	10.0	mg/L							

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Environmental Management Services	Project:	Cooperative Energy	
PO Box 15369	Project Number:	SOU2-19-001	Reported:
Hattiesburg MS, 39404-5369	Project Manager:	Ken Ruckstuhl	09/10/2019 16:07

Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H19056 - Default Prep GenChem											
LCS (9H19056-BS1)											
Carbonate Alkalinity	8/19/19 14:35	434		mg/L	500		86.8	75-135			
Duplicate (9H19056-DUP1)			**Source: 1908321-04**								
Carbonate Alkalinity	8/19/19 14:35	ND	10.0	mg/L		ND				200	
Batch 9H19057 - Default Prep GenChem											
Blank (9H19057-BLK1)											
Bicarbonate Alkalinity	8/19/19 14:25	ND	10.0	mg/L							
LCS (9H19057-BS1)											
Bicarbonate Alkalinity	8/19/19 14:25	956		mg/L	950		101	80-120			
Duplicate (9H19057-DUP1)			**Source: 1908321-04**								
Bicarbonate Alkalinity	8/19/19 14:25	ND	10.0	mg/L		ND				30	

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 09/10/2019 16:07

Metals by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H19045 - EPA 200.2 DCN 1017 Rev 8											
Blank (9H19045-BLK1)											
Boron	8/20/19 14:15	ND	0.050	mg/L							
Calcium	8/20/19 14:15	ND	0.100	"							
Iron	8/20/19 14:15	ND	0.050	"							
Lithium	8/20/19 14:15	ND	0.040	"							
Magnesium	8/20/19 14:15	ND	0.100	"							
Potassium	8/20/19 14:15	ND	0.300	"							
Sodium	8/20/19 14:15	ND	0.300	"							
LCS (9H19045-BS1)											
Boron	8/20/19 14:20	0.206	0.050	mg/L	0.200		103	85-115			
Calcium	8/20/19 14:20	0.191	0.100	"	0.200		95.6	85-115			
Iron	8/20/19 14:20	0.193	0.050	"	0.200		96.5	85-115			
Lithium	8/20/19 14:20	0.209	0.040	"	0.200		105	85-115			
Magnesium	8/20/19 14:20	0.179	0.100	"	0.200		89.5	85-115			
Potassium	8/20/19 14:20	0.447	0.300	"	0.400		112	85-115			
Sodium	8/20/19 14:20	0.407	0.300	"	0.400		102	85-115			
LCS Dup (9H19045-BSD1)											
Boron	8/20/19 14:24	0.199	0.050	mg/L	0.200		99.6	85-115	3.15	20	
Calcium	8/20/19 14:24	0.193	0.100	"	0.200		96.3	85-115	0.786	20	
Iron	8/20/19 14:24	0.185	0.050	"	0.200		92.5	85-115	4.20	20	
Lithium	8/20/19 14:24	0.204	0.040	"	0.200		102	85-115	2.64	20	
Magnesium	8/20/19 14:24	0.176	0.100	"	0.200		88.1	85-115	1.53	20	
Potassium	8/20/19 14:24	0.356	0.300	"	0.400		89.1	85-115	22.5	20	L3
Sodium	8/20/19 14:24	0.397	0.300	"	0.400		99.3	85-115	2.37	20	
Duplicate (9H19045-DUP1)			**Source: 1908321-04**								
Calcium	8/20/19 16:29	92.0	0.200	mg/L		89.2			3.14	20	
Magnesium	8/20/19 14:59	39.8	0.100	"		39.7			0.496	20	
Potassium	8/20/19 14:59	21.2	0.300	"		20.9			1.54	20	
Sodium	8/20/19 14:59	19.9	0.300	"		18.8			5.65	20	

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Metals by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H19045 - EPA 200.2 DCN 1017 Rev 8											
Matrix Spike (9H19045-MS1)			**Source: 1908321-04**								
Boron	8/20/19 14:59	1.97	0.050	mg/L	0.200	1.70	136	70-130			QM-09
Iron	8/20/19 16:09	2.34	0.050	"	0.200	2.03	155	70-130			QM-09
Lithium	8/20/19 14:59	0.239	0.040	"	0.200	0.039	100	70-130			
Matrix Spike Dup (9H19045-MSD1)			**Source: 1908321-04**								
Boron	8/20/19 15:06	1.88	0.050	mg/L	0.200	1.70	88.1	70-130	4.93	20	
Iron	8/20/19 16:12	2.23	0.050	"	0.200	2.03	100	70-130	4.73	20	
Lithium	8/20/19 15:06	0.231	0.040	"	0.200	0.039	96.1	70-130	3.62	20	

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Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H19046 - EPA 200.2 DCN 1017 Rev 8											
Blank (9H19046-BLK1)											
Antimony [HHe]	8/20/19 18:08	ND	0.00500	mg/L							
Arsenic [HHe]	8/20/19 18:08	ND	0.00200	"							
Arsenic [NG]	8/20/19 18:08	ND	0.00200	"							
Barium [He]	8/20/19 18:08	ND	0.00100	"							
Beryllium [He]	8/20/19 18:08	ND	0.00100	"							
Cadmium [HHe]	8/20/19 18:08	ND	0.00100	"							
Chromium [He]	8/20/19 18:08	ND	0.00100	"							
Cobalt [He]	8/20/19 18:08	ND	0.00100	"							
Lead [He]	8/20/19 18:08	ND	0.00100	"							
Molybdenum [He]	8/20/19 18:08	ND	0.00100	"							
Selenium [HHe]	8/20/19 18:08	ND	0.00100	"							
Selenium [NG]	8/20/19 18:08	ND	0.00500	"							
Thallium [He]	8/20/19 18:08	ND	0.00100	"							
LCS (9H19046-BS1)											
Antimony [HHe]	8/20/19 18:17	0.106	0.00500	mg/L	0.100		106	85-115			
Arsenic [NG]	8/20/19 18:17	0.093	0.00200	"	0.100		93.0	85-115			
Arsenic [HHe]	8/20/19 18:17	0.097	0.00200	"	0.100		97.4	85-115			
Barium [He]	8/20/19 18:17	0.102	0.00100	"	0.100		102	85-115			
Beryllium [He]	8/20/19 18:17	0.083	0.00100	"	0.100		83.5	85-115			L2
Cadmium [HHe]	8/20/19 18:17	0.102	0.00100	"	0.100		102	85-115			
Chromium [He]	8/20/19 18:17	0.095	0.00100	"	0.100		95.0	85-115			
Cobalt [He]	8/20/19 18:17	0.099	0.00100	"	0.100		99.0	85-115			
Lead [He]	8/20/19 18:17	0.100	0.00100	"	0.100		99.8	85-115			
Molybdenum [He]	8/20/19 18:17	0.102	0.00100	"	0.100		102	85-115			
Selenium [NG]	8/20/19 18:17	0.096	0.00500	"	0.100		95.7	85-115			
Selenium [HHe]	8/20/19 18:17	0.100	0.00100	"	0.100		99.8	85-115			
Thallium [He]	8/20/19 18:17	0.098	0.00100	"	0.100		98.2	85-115			

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Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H19046 - EPA 200.2 DCN 1017 Rev 8											
LCS Dup (9H19046-BSD1)											
Antimony [HHe]	8/20/19 18:25	0.107	0.00500	mg/L	0.100		107	85-115	0.919	20	
Arsenic [NG]	8/20/19 18:25	0.086	0.00200	"	0.100		85.8	85-115	8.02	20	
Arsenic [HHe]	8/20/19 18:25	0.099	0.00200	"	0.100		98.6	85-115	1.18	20	
Barium [He]	8/20/19 18:25	0.106	0.00100	"	0.100		106	85-115	4.43	20	
Beryllium [He]	8/20/19 18:25	0.088	0.00100	"	0.100		88.4	85-115	5.72	20	
Cadmium [HHe]	8/20/19 18:25	0.102	0.00100	"	0.100		102	85-115	0.173	20	
Chromium [He]	8/20/19 18:25	0.100	0.00100	"	0.100		99.6	85-115	4.75	20	
Cobalt [He]	8/20/19 18:25	0.104	0.00100	"	0.100		104	85-115	5.16	20	
Lead [He]	8/20/19 18:25	0.104	0.00100	"	0.100		104	85-115	4.22	20	
Molybdenum [He]	8/20/19 18:25	0.106	0.00100	"	0.100		106	85-115	3.05	20	
Selenium [NG]	8/20/19 18:25	0.089	0.00500	"	0.100		88.7	85-115	7.53	20	
Selenium [HHe]	8/20/19 18:25	0.103	0.00100	"	0.100		103	85-115	3.42	20	
Thallium [He]	8/20/19 18:25	0.102	0.00100	"	0.100		102	85-115	3.70	20	
Matrix Spike (9H19046-MS1)			**Source: 1908321-04**								
Antimony [HHe]	8/20/19 19:06	0.108	0.00500	mg/L	0.100	ND	108	70-130			
Arsenic [HHe]	8/20/19 19:06	0.101	0.00200	"	0.100	0.003	97.2	70-130			
Arsenic [NG]	8/20/19 19:06	0.094	0.00200	"	0.100	0.0005	93.5	70-130			
Barium [He]	8/20/19 19:06	0.129	0.00100	"	0.100	0.027	102	70-130			
Beryllium [He]	8/20/19 19:06	0.083	0.00100	"	0.100	0.002	81.4	70-130			
Cadmium [HHe]	8/20/19 19:06	0.089	0.00100	"	0.100	0.0002	88.7	70-130			
Chromium [He]	8/20/19 19:06	0.093	0.00100	"	0.100	0.0004	92.5	70-130			
Cobalt [He]	8/20/19 19:06	0.129	0.00100	"	0.100	0.031	98.1	70-130			
Lead [He]	8/20/19 19:06	0.101	0.00100	"	0.100	0.003	98.9	70-130			
Molybdenum [He]	8/20/19 19:06	0.108	0.00100	"	0.100	ND	108	70-130			
Selenium [HHe]	8/20/19 19:06	0.102	0.00100	"	0.100	0.005	97.5	70-130			
Selenium [NG]	8/20/19 19:06	0.096	0.00500	"	0.100	0.002	94.4	70-130			
Thallium [He]	8/20/19 19:06	0.100	0.00100	"	0.100	ND	99.6	70-130			

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Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H19046 - EPA 200.2 DCN 1017 Rev 8											
Matrix Spike Dup (9H19046-MSD1)			**Source: 1908321-04**								
Antimony [HHe]	8/20/19 19:14	0.112	0.00500	mg/L	0.100	ND	112	70-130	4.00	20	
Arsenic [NG]	8/20/19 19:14	0.098	0.00200	"	0.100	0.0005	97.2	70-130	3.85	20	
Arsenic [HHe]	8/20/19 19:14	0.103	0.00200	"	0.100	0.003	99.6	70-130	2.35	20	
Barium [He]	8/20/19 19:14	0.130	0.00100	"	0.100	0.027	104	70-130	1.08	20	
Beryllium [He]	8/20/19 19:14	0.084	0.00100	"	0.100	0.002	81.6	70-130	0.231	20	
Cadmium [HHe]	8/20/19 19:14	0.092	0.00100	"	0.100	0.0002	91.7	70-130	3.28	20	
Chromium [He]	8/20/19 19:14	0.093	0.00100	"	0.100	0.0004	92.7	70-130	0.296	20	
Cobalt [He]	8/20/19 19:14	0.130	0.00100	"	0.100	0.031	99.0	70-130	0.681	20	
Lead [He]	8/20/19 19:14	0.104	0.00100	"	0.100	0.003	102	70-130	2.84	20	
Molybdenum [He]	8/20/19 19:14	0.109	0.00100	"	0.100	ND	109	70-130	1.04	20	
Selenium [NG]	8/20/19 19:14	0.101	0.00500	"	0.100	0.002	98.9	70-130	4.59	20	
Selenium [HHe]	8/20/19 19:14	0.104	0.00100	"	0.100	0.005	99.1	70-130	1.63	20	
Thallium [He]	8/20/19 19:14	0.102	0.00100	"	0.100	ND	102	70-130	2.02	20	
Batch 9H21061 - EPA 200.2 DCN 1017 Rev 8											
Blank (9H21061-BLK1)											
Ferric Iron	8/20/19 14:15	ND	0.010	mg/L							
LCS (9H21061-BS1)											
Ferric Iron	8/20/19 14:20	0.193	0.010	mg/L	0.200		96.5	85-115			
LCS Dup (9H21061-BSD1)											
Ferric Iron	8/20/19 14:24	0.185	0.010	mg/L	0.200		92.5	85-115	4.20	20	

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Mercury by EPA 200 Series Methods CVAAS - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H21054 - EPA 245.1 DCN 1017 Rev 8											
Blank (9H21054-BLK1)											
Mercury	8/21/19 15:12	ND	0.002	mg/L							
LCS (9H21054-BS1)											
Mercury	8/21/19 15:12	0.005	0.002	mg/L	0.00500		100	85-115			
LCS Dup (9H21054-BSD1)											
Mercury	8/21/19 15:12	0.006	0.002	mg/L	0.00500		112	85-115	11.3	20	
Matrix Spike (9H21054-MS1)			**Source: 1908321-04**								
Mercury	8/21/19 15:12	0.006	0.002	mg/L	0.00500	ND	122	70-130			
Matrix Spike Dup (9H21054-MSD1)			**Source: 1908321-04**								
Mercury	8/21/19 15:12	0.005	0.002	mg/L	0.00500	ND	104	70-130	15.9	20	

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Environmental Management Services	Project:	Cooperative Energy	
PO Box 15369	Project Number:	SOU2-19-001	**Reported:**
Hattiesburg MS, 39404-5369	Project Manager:	Ken Ruckstuhl	09/10/2019 16:07

Metals (Dissolved) By EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H19059 - EPA 200.2 DCN 1017 Rev 8											
Blank (9H19059-BLK1)											
Ferrous Iron	8/19/19 23:21	ND	0.012	mg/L							
LCS (9H19059-BS1)											
Ferrous Iron	8/19/19 23:29	0.090	0.012	mg/L	0.100		90.0	85-115			
LCS Dup (9H19059-BSD1)											
Ferrous Iron	8/19/19 23:37	0.095	0.012	mg/L	0.100		94.7	85-115	5.12	20	
Matrix Spike (9H19059-MS1)			**Source: 1908321-02**								
Ferrous Iron	8/20/19 0:02	0.235	0.012	mg/L	0.100	0.140	94.5	70-130			
Matrix Spike Dup (9H19059-MSD1)			**Source: 1908321-02**								
Ferrous Iron	8/20/19 0:10	0.230	0.012	mg/L	0.100	0.140	89.3	70-130	2.23	20	

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 09/10/2019 16:07

Certified Analyses Included in this Report

Analyte	Certification Code
EPA 200.7 Rev 4.4 in Water	
Aluminum	C01,C02
Antimony	C01,C02
Arsenic	C01,C02
Barium	C01,C02
Beryllium	C01,C02
Boron	C01,C02
Cadmium	C01,C02
Calcium	C01,C02
Chromium	C01,C02
Cobalt	C01,C02
Copper	C01,C02
Iron	C01,C02
Lead	C01,C02
Magnesium	C01,C02
Manganese	C01,C02
Molybdenum	C01,C02
Nickel	C01,C02
Potassium	C01,C02
Selenium	C01,C02
Silver	C01,C02
Sodium	C01,C02
Strontium	C01,C02
Thallium	C01,C02
Vanadium	C01,C02
Zinc	C01,C02
Phosphorus	C01
EPA 200.8 Rev 5.4 in Water	
Aluminum [He]	C01,C02
Antimony [HHe]	C01,C02
Antimony [NG]	C01,C02
Arsenic [HHe]	C01,C02
Arsenic [NG]	C01,C02
Barium [He]	C01,C02
Beryllium [He]	C01,C02
Boron [NG]	C01,C02
Cadmium [HHe]	C01,C02
Cadmium [NG]	C01,C02
Chromium [He]	C01,C02
Cobalt [He]	C01,C02
Copper [He]	C01,C02
Copper [NG]	C01,C02

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Iron [He]	C01,C02
Lead [He]	C01,C02
Lead [NG]	C01,C02
Manganese [He]	C01,C02
Molybdenum [He]	C01,C02
Nickel [He]	C01,C02
Selenium [HHe]	C01,C02
Selenium [NG]	C01,C02
Silver [He]	C01,C02
Silver [NG]	C01,C02
Strontium [He]	C01,C02
Thallium [He]	C01,C02
Vanadium [He]	C01,C02
Zinc [He]	C01,C02
Antimony [He]	C01,C02

EPA 245.1 Rev 3.0 in Water

Mercury	C01,C02

SM 2540 C-2011 in Water

Total Dissolved Solids	C01,C02

SM 4110B 2011 in Water

Chloride	C01,C02
Sulfate as SO4	C01,C02
Nitrate as N	C01,C02

****Only compounds included in this list are associated with accredited analyses****

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Laboratory Accreditations/Certifications

Code	Description	Number	Expires
C01	LA Environmental Lab Accreditation Program	01960	06/30/2020
C02	The NELAC Institute (NELAP)	TNI01397	06/30/2020
C03	Ms Dept of Health (Drinking Water Microbiology)	MS00021	12/31/2019
C04	Ms Dept of Health (Drinking Water Chemistry)	MS00021	12/31/2019
C05	Ms DEQ Lead Firm Certification	PBF-00000028	03/24/2020
C06	MsDEQ Asbestos Inspector : C.D. Bingham	ABI-00001348	02/21/2020
C07	MsDEQ Air Monitor : C.D. Bingham	AM-011572	03/07/2020
C08	MsDEQ Asbestos Inspector: C. W. Meins	ABI-00001821	09/06/2019
C09	MsDEQ Air Monitor : C.W. Meins	AM-011189	03/07/2020
C12			
C14	MsDEQ Lead Paint Inspector : C.D. Bingham	PBI-00003690	02/22/2020
C15	MsDEQ Lead Paint Inspector : C.W. Meins	PBI-00001740	02/22/2020

Report Definitions

TNC	Too Numerous To Count
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the minimum reporting limit
NR	Not Reported
RPD	Relative Percent Difference
ICV	Initial Calibration Verfiication
CCV	Continuing Calibration Verification Standard
SSV	Secondary Source Verfication Standard
LCS	Lab Control Spike - Lab matrix prepared with known concentration of analyte/s of interest analyzed by method.
MS	Matrix Spike - Sample prepared with known concentration of analyte/s of interest analyzed by method.
MSD	Matrix Spike Duplicate - Duplicate sample prepared with known concentration of anlayte/s of interest analyzed by method.
MRL	Minimum Reporting Limit
%REC	Percentage Recovery of known concentration added to matrix
Batch	Group of samples prepared for analysis not to exceed 20 samples.
Matrix	Material containing analyte/s of interest
Surrogate	Analyte added to sample to determine extraction efficiency of method.

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Environmental Management Services	Project:	Cooperative Energy		
PO Box 15369	Project Number:	SOU2-19-001		Reported:
Hattiesburg MS, 39404-5369	Project Manager:	Ken Ruckstuhl		09/10/2019 16:07

Analyst Initials Key

FullName	Initials
Alyssa D Bennett	ADB
Charles L Vorhoff	CLV
Dortha L. Wells	DLW
Harry P. Howell	HPH
Harold R Scruggs	HRS
Sarah E. Tomek	SET
Teresa Meins	TKM
Tina Tomek	TPT

MICRO-METHODS LABORATORY, INC.
PO Box 1410, Ocean Springs, MS 39566-1410
(228) 875-6420 FAX (228) 875-6423
www.micromethodslab.com

Chain of Custody Record

Lab ID# MS00021
LELAP ID # 01960
TNI ID # TNI01397

M-M Lab WO # 1908321

Company Name: EMS	Project Manager: KEN RUCKSTUHL
Address: P.O. Box 15369	Purchase Order #:
City: HATTIESBURG State: MS Zip: 39402	Email Address: KRUCKSTUHL@ENV-MGT.COM
Phone: 601-544-3674	Sampler Name Printed: ROBERT V. GATES
Fax: 601-544-0504	Sampler Name Signed: R.V. Gates

Turn Around Time & Reporting
Our normal turn around time is 10 working days
__Normal __Next Day* __2nd Day* X Other* ONE WEEK
*All rush order requests must be prior approved.
__Phone __Mail __Fax __Email
QC Level: Level 1 ☐ Level 2 ☐ Level 3 ☐

Project Name: COOPERATIVE ENERGY
Project #: S002-19-001

Sample Identification	Sampling Date/Time	Matrix Code	# of Containers	Grab (G) or Composite (C)	RADIOLOGICAL	WETLAB	METALS
BD1	8-15-19 0830	W	4	G	X	X	X
MW-10	8-15-19 11:05	W	4	G	X	X	X
MW-11	8-15-19 09:30	W	4	G	X	X	X
MW-12	8-15-19 08:30	W	4	G	X	X	X

Preservative:

List Analyses Requested

Field Testing

ID# Field Test	ID# Field Test	ID# Field Test	ID# Field Test

All Temps are Corrected Values

Matrix:
W = Water
DW = Drinking Water
S = Solid
SO = Soil
SE = Sediment
L = Liquid
A = Air
O = Oil
SL = Sludge

Preservation:
1= H2SO4
2= H3PO4
3=NaOH
4=ZnC4H10O6
5=ZnC4H10O6 & NaOH
6=HNO3
7=Na2S2O3
8=HCl
9=NaHSO4

Received on Ice? Y N Thermometer#________ Cooler #________
Receipt Temp Corrected(°C)
Date & Time __________ By: __________ Sample____ Blank____ Cooler________

	Printed Name	Signature	Company	Date	Time
Relinquished by	ROBERT V. GATES	R.V. Gates	EMS	8-15-19	12:40
Received by	CLIFFORD MEINS	Cliffor Meins	Micro methods	8.15.19	12:40
Relinquished by	CLIFFORD MEINS	Cliff Meins	MM	8/15/19	1440
Received by	Sarah Tomek	Sarah Tomek	MM	8/15/19	1440
Relinquished by					
Received by					

Notes: BORON CALCIUM CHLORIDE SULFATE FLUORIDE TDS ANTIMONY ARSENIC BARIUM BERYLLIUM CADMIUM CHROMIUM LEAD LITHIUM MERCURY SELENIUM THALLIUM RADIUM 226/228 MAGNESIUM POTASSIUM SODIUM BICARBONATE/CARBONATE ALKALINITY FERROUS IRON FERRIC IRON TOTAL NITRATE

Client EMS **WO** 1908321 **Shipped By** CM
Date/Time Received 8/15/19 @ 1440 **Unpacked/Checked By** ST

Cooler ID	Ice Present Yes/No	Temperature (Corrected)	Thermometer ID	Custody Sealed Yes/No	Custody Seal Intact Yes/No
#1143	yes	3.8°C	T#4	no	n/a

If not iced, were samples received within one hour of collection? Yes___ No___ N/A X
Temperature Blank Used Yes X No_____ If not, temperature taken from cooler_____ or bottle___
Multi Cooler shipment: ID of samples in coolers that exceed 6°C ____________________

Custody Seals on Bottles Present Yes ___ No X
Containers Intact Yes X No___
Proper Containers for Requested Analysis Yes X No___

Correct Preservation Used for All Samples Yes X No___
Adequate Sample for Analysis Requested Yes X No___

Volatile Vials Headspace Greater than 6mm in Diameter Yes ___ No ___ N/A X

Chain of Custody Form Included Yes X No___
Chain of Custody Form Complete Yes X No___
Chain of Custody Form Properly Relinquished Yes X No___
Field Sheets/Special Instructions Included Yes ___ No ___ N/A X
Samples Missing on COC or From Cooler Yes ___ No X
Sample Container Labels Match COC Yes X No___

Samples Received Within Holding Time Yes X No___
Dept. Manager Notified of Rush/Short Holding Times Yes ___ No ___ N/A X

Does work order meet Micro Methods sample acceptance criteria Yes X No ___
Note: Samples that do not meet acceptance criteria must be documented in the Sample Rejection Log.

Client Contacted____________ **Contacted By**_________ **Date/Time**_________
Client Instructions: Cancel Work Order _____
Proceed with Work Order_____ **(Data will be qualified)**
Comments: ____________________

Pace Analytical Services, LLC
1000 Riverbend Blvd - Suite F
St. Rose, LA 70087
(504)469-0333

September 10, 2019

Harry Howell
Micro Methods Laboratory, Inc.
P. O. Box 1410
Ocean Springs, MS 39566

RE: Project: 1908321
Pace Project No.: 20117665

Dear Harry Howell:

Enclosed are the analytical results for sample(s) received by the laboratory on August 19, 2019. 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,

Karen Brown
karen.brown@pacelabs.com
(504)469-0333
Project Manager

Enclosures

Pace Analytical Services, LLC
1000 Riverbend Blvd - Suite F
St. Rose, LA 70087
(504)469-0333

CERTIFICATIONS

Project:	1908321
Pace Project No.:	20117665

Pennsylvania Certification IDs

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

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SAMPLE SUMMARY

Project: 1908321
Pace Project No.: 20117665

Lab ID	Sample ID	Matrix	Date Collected	Date Received
20117665001	**1908321-01**	Water	08/15/19 08:00	08/19/19 10:15
20117665002	**1908321-02**	Water	08/15/19 11:05	08/19/19 10:15
20117665003	**1908321-03**	Water	08/15/19 09:30	08/19/19 10:15
20117665004	**1908321-04**	Water	08/15/19 08:30	08/19/19 10:15

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SAMPLE ANALYTE COUNT

Project: 1908321
Pace Project No.: 20117665

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
20117665001	**1908321-01**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
20117665002	**1908321-02**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
20117665003	**1908321-03**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
20117665004	**1908321-04**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA

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PROJECT NARRATIVE

Project: 1908321
Pace Project No.: 20117665

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: Micro Methods
Date: September 10, 2019

General Information:
4 samples were analyzed for EPA 903.1. 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.

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

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.

Additional Comments:

Pace Analytical Services, LLC
1000 Riverbend Blvd - Suite F
St. Rose, LA 70087
(504)469-0333

PROJECT NARRATIVE

Project: 1908321
Pace Project No.: 20117665

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: Micro Methods
Date: September 10, 2019

General Information:
4 samples were analyzed for EPA 904.0. 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.

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

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.

Additional Comments:

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

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1908321
Pace Project No.: 20117665

Sample: 1908321-01 **Lab ID: 20117665001** Collected: 08/15/19 08:00 Received: 08/19/19 10:15 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 2.5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.547 ± 0.510 (0.794) C:NA T:89%**	pCi/L	09/09/19 15:35	13982-63-3	
Radium-228	EPA 904.0	**1.70 ± 0.594 (0.886) C:76% T:89%**	pCi/L	09/05/19 14:22	15262-20-1	

Sample: 1908321-02 **Lab ID: 20117665002** Collected: 08/15/19 11:05 Received: 08/19/19 10:15 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 2.5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.664 ± 0.356 (0.129) C:NA T:82%**	pCi/L	09/09/19 15:35	13982-63-3	
Radium-228	EPA 904.0	**1.13 ± 0.486 (0.816) C:78% T:93%**	pCi/L	09/05/19 14:22	15262-20-1	

Sample: 1908321-03 **Lab ID: 20117665003** Collected: 08/15/19 09:30 Received: 08/19/19 10:15 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 2.5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.844 ± 0.477 (0.535) C:NA T:90%**	pCi/L	09/09/19 15:35	13982-63-3	
Radium-228	EPA 904.0	**2.11 ± 0.649 (0.843) C:77% T:82%**	pCi/L	09/05/19 14:23	15262-20-1	

Sample: 1908321-04 **Lab ID: 20117665004** Collected: 08/15/19 08:30 Received: 08/19/19 10:15 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 2.5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.676 ± 0.489 (0.704) C:NA T:94%**	pCi/L	09/09/19 15:35	13982-63-3	
Radium-228	EPA 904.0	**0.875 ± 0.444 (0.780) C:75% T:89%**	pCi/L	09/05/19 14:23	15262-20-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1000 Riverbend Blvd - Suite F
St. Rose, LA 70087
(504)469-0333

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1908321
Pace Project No.: 20117665

QC Batch: 357800 | Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 | Analysis Description: 903.1 Radium-226
Associated Lab Samples: 20117665001, 20117665002, 20117665003, 20117665004

METHOD BLANK: 1737468 | Matrix: Water
Associated Lab Samples: 20117665001, 20117665002, 20117665003, 20117665004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.718 ± 0.376 (0.370) C:NA T:89%	pCi/L	09/09/19 15:22	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1000 Riverbend Blvd - Suite F
St. Rose, LA 70087
(504)469-0333

QUALITY CONTROL - RADIOCHEMISTRY

Project: 1908321
Pace Project No.: 20117665

QC Batch: 357799 | Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 | Analysis Description: 904.0 Radium 228
Associated Lab Samples: 20117665001, 20117665002, 20117665003, 20117665004

METHOD BLANK: 1737467 | Matrix: Water
Associated Lab Samples: 20117665001, 20117665002, 20117665003, 20117665004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.519 ± 0.331 (0.621) C:85% T:90%	pCi/L	09/05/19 14:15	

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

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St. Rose, LA 70087
(504)469-0333

QUALIFIERS

Project: 1908321
Pace Project No.: 20117665

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The Nelac Institute

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
1000 Riverbend Blvd - Suite F
St. Rose, LA 70087
(504)469-0333

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 1908321
Pace Project No.: 20117665

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
20117665001	**1908321-01**	EPA 903.1	357800		
20117665002	**1908321-02**	EPA 903.1	357800		
20117665003	**1908321-03**	EPA 903.1	357800		
20117665004	**1908321-04**	EPA 903.1	357800		
20117665001	**1908321-01**	EPA 904.0	357799		
20117665002	**1908321-02**	EPA 904.0	357799		
20117665003	**1908321-03**	EPA 904.0	357799		
20117665004	**1908321-04**	EPA 904.0	357799		

MICRO-METHODS LABORATORY, INC.

SUBCONTRACT ORDER

4613 / 14

Sending Laboratory:

Micro-Methods Laboratory, Inc.
6500 Sunplex Drive
Ocean Springs, MS 39564
Phone: 228.875.6420
Fax: 228.875.6423

Project Manager: Teresa Meins

Subcontracted Laboratory:

Pace Analytical
1000 Riverbend Blvd. Suite F
St. R[illegible] LA 70087
Phor[illegible]
Fax:

WO#: 20117665

20117665

Work Order: 1908321

Analysis	Due	Expires	Comments
Sample ID: 1908321-01 *Water* *Sampled: 08/15/2019 08:00*			*Sample Name: BD-1*
Radium,Total 226 & 228 by 901.1	S ~~08/22/2019~~	09/12/2019 08:00	
Containers Supplied: 1000mL Plastic (A) 1000mL Plastic (B)			
Sample ID: 1908321-02 *Water* *Sampled: 08/15/2019 11:05*			*Sample Name: MW-10*
Radium,Total 226 & 228 by 901.1	S ~~08/22/2019~~	09/12/2019 11:05	
Containers Supplied: 1000mL Plastic (A) 1000mL Plastic (B)			
Sample ID: 1908321-03 *Water* *Sampled: 08/15/2019 09:30*			*Sample Name: MW-11*
Radium,Total 226 & 228 by 901.1	S ~~08/22/2019~~	09/12/2019 09:30	
Containers Supplied: 1000mL Plastic (A) 1000mL Plastic (B)			
Sample ID: 1908321-04 *Water* *Sampled: 08/15/2019 08:30*			*Sample Name: MW-12*
Radium,Total 226 & 228 by 901.1	S ~~08/22/2019~~	09/12/2019 08:30	
Containers Supplied: 1000mL Plastic (A) 1000mL Plastic (B)			

* Standard TAT

Released By	Date	Received By	Date
Sarah Jomet	8/16/19 @ 1630	UPS	8/16/19 @ 1630
UPS	8/19/19 @	UPS / [signature]	8/19/19 1015

Pace Analytical

1000 Riverbend. Blvd., Suite F
St. Rose, LA 70087

Sample Condition Upon R

Proj

WO#:20117665

PM: KHB Due Date: 09/12/19

CLIENT: 20-MICRO

Courier: ☐ Pace Courier ☐ Hired Courier ☐ Fed X ☑ UPS ☐ DHL ☐ USPS ☐ Customer ☐ Other

Custody Seal on Cooler/Box Present: [see COC]

Custody Seals intact: ☐Yes ☐No

Therometer Used: Amb	☐ Therm Fisher IR 5 ☐ Therm Fisher IR 6 ☑ Therm Fisher IR 7

Type of Ice: Wet Blue None

Samples on ice: [see COC]

Cooler Temperature: [see COC]

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 8/19/19 [illegible]

Temp must be measured from Temperature blank when present

Comments:

Temperature Blank Present"?	☐Yes	☐No	☑N/A	1
Chain of Custody Present:	☑Yes	☐No	☐N/A	2
Chain of Custody Complete:	☑Yes	☐No	☐N/A	3
Chain of Custody Relinquished:	☑Yes	☐No	☐N/A	4
Sampler Name & Signature on COC:	☑Yes	☐No	☐N/A	5
Samples Arrived within Hold Time:	☑Yes	☐No	☐N/A	6
Sufficient Volume:	☑Yes	☐No	☐N/A	7
Correct Containers Used:	☑Yes	☐No	☐N/A	8
Filtered vol. Rec. for Diss. tests	☐Yes	☐No	☑N/A	9
Sample Labels match COC:	☑Yes	☐No	☐N/A	10
All containers received within manafacture's precautionary and/or expiration dates.	☑Yes	☐No	☐N/A	11
All containers needing chemical preservation have been checked (except VOA, coliform, & O&G).	☐Yes	☐No	☑N/A	12
All containers preservation checked found to be in compliance with EPA recommendation.	☑Yes	☐No	☐N/A	13 If No, was preservative added? ☐Yes ☐No If added record lot no.: HNO3 ______ H2SO4 ______
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☑N/A	14
Trip Blank Present:	☐Yes	☑No		15

Client Notification/ Resolution:

Person Contacted: ______________________ Date/Time: __________

Comments/ Resolution: ______________________

MICRO-METHODS LABORATORY, INC.

Mailing Address:
PO Box 1410
Ocean Springs, MS
39566-1410

6500 Sunplex Drive
Ocean Springs, MS 39564
228.875.6420 Phone
228.875.6423 Fax

September 20, 2019

Ken Ruckstuhl

Work Order # : 1908536

Purchase Order #:

Environmental Management Services
PO Box 15369
Hattiesburg, MS 39404-5369

RE: Cooperative Energy

Enclosed are Micro-Methods Laboratory, Inc. results of analyses performed on samples received 08/28/2019 14:15. If you have any questions concerning this report, please feel free to contact the office.

Harry P. Howell

Harry P. Howell

President
Micro-Methods Laboratory, Inc.

NELAP ACCREDITED TNI LABORATORY

DISCLAIMER

The results only relate to the items or the sample and/or samples received by the laboratory. This report shall not be reproduced except in full, without the approval of the laboratory. All NELAP certified test methods performed meet the requirements of NELAC 2009 Standards. Any variances and/or deviations specific to this analytical report are referenced in the lab report using qualifiers and detailed explanations found in the case narrative.

MICRO-METHODS LABORATORY, INC.

6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 09/20/2019 15:33

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date/Time Sampled	Sampled by	Date/Time Received
MW-10	1908536-01	Water	08/28/2019 11:00	*Robert Gates*	08/28/2019 14:15
MW-11	1908536-02	Water	08/28/2019 09:45	*Robert Gates*	08/28/2019 14:15
MW-12	1908536-03	Water	08/28/2019 08:40	*Robert Gates*	08/28/2019 14:15
BD-1	1908536-04	Water	08/28/2019 08:00	*Robert Gates*	08/28/2019 14:15

Sample Receipt Conditions

Date/Time Received:	8/28/2019 2:15:00PM	Shipped by:	Client Delivery
Received by:	Sarah E. Tomek	Submitted by:	Robbie Gates
Date/Time Logged:	8/28/2019 2:25:00PM	Logged by:	Sarah E. Tomek
Cooler ID:	**#1143**	**Receipt Temperature:**	1.3 °C

Cooler Custody Seals Present	No	*Received on Ice*	Yes
Containers Intact	Yes	*No Ice, Short Trip*	No
COC/Labels Agree	Yes	*Obvious Contamination*	No
Labels Complete	Yes	*Rush to meet HT*	Yes
COC Complete	Yes	*Received within HT*	Yes
Volatile Vial Headspace >6mm	No	*Proper Containers for Analysis*	Yes
Field Sheet or Special Instructions Incl	No	*Correct Preservation*	Yes
Samples Documented in Rejection Lo	No	*Adequate Sample for Analysis*	Yes
Temp Taken From Temp Blank	Yes	*Sample Custody Seals Present*	No
Temp Taken From Sample Container	No	*Samples Missing from COC/Cooler*	No
Temp Taken From Cooler	No		
WO meets Micro Methods acceptance crite	Yes		

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 09/20/2019 15:33

CASE NARRATIVE SUMMARY

All reported results are within Micro-Methods Laboratory, Inc.defined laboratory quality control objectives unless detailed in narrative summary or identified as qualifications. NOTE: All results listed on this report are calculated on a wet weight basis (as received by the laboratory) unless otherwise noted in the analysis qualification sections.

Summary Comments:

Inorganic Analyst Notes-HRS:
SN: Initial pH samples ranged 4.0 to 4.2 which is below the titration endpoint of 8.3 (carbonate alkalinity) and 4.3 (bicarbonate alkalinity) resulting in "0" results

See attached radiological results from Sub-Contract Laboratory

Total Metals-EPA 200.7 Rev 4.4

Qualifiers:

L1 LCS and/or LCSD Recovery Limit exceeded.

Potassium

9H30015-BS1

Alkalinity, Bicarbonate as CaCO3-SM 2320B 2011

Qualifiers:

SN See Case Narrative Summary

Bicarbonate Alkalinity, Carbonate Alkalinity

1908536-01[MW-10], 1908536-02[MW-11], 1908536-03[MW-12], 1908536-04[BD-1]

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Project: Cooperative Energy
Project Number: SOU2-19-001
Project Manager: Ken Ruckstuhl

Reported:
09/20/2019 15:33

MW-10

1908536-01 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Bicarbonate Alkalinity	ND	10.0	mg/L	1.0	9H29016	HRS	08/29/2019 12:10	08/29/2019 12:10	SM 2320B 2011	SN
Chloride	**173**	10.0	"	20.0	9H29005	DLW	08/28/2019 16:22	08/28/2019 19:03	SM 4110B 2011	
Carbonate Alkalinity	ND	10.0	"	1.0	9H29017	HRS	08/29/2019 12:10	08/29/2019 14:32	SM 2320B 2011	SN
Sulfate as SO4	**537**	100	"	20.0	9H29005	DLW	08/28/2019 16:22	08/28/2019 19:03	SM 4110B 2011	
Fluoride	**0.62**	0.50	"	1.0	9I03029	DLW	09/03/2019 09:30	09/03/2019 11:19	SM 4500-F C 2011	
Nitrate as N	ND	10.0	"	20.0	9H29005	DLW	08/28/2019 16:22	08/28/2019 16:22	SM 4110B 2011	
Total Dissolved Solids	**990**	2	"	1.0	9H29019	DLW	08/29/2019 14:20	08/30/2019 00:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Ferric Iron	ND	0.050	mg/L	1.0	9I04043	ADB	08/30/2019 09:30	09/03/2019 13:25	EPA 200.7 Rev 4.4	
Boron	**3.39**	0.050	"	"	9H30015	ADB	"	"	"	
Calcium	**72.0**	0.100	"	"	"	ADB	"	09/04/2019 10:19	"	
Iron	**0.192**	0.050	"	"	"	ADB	"	09/03/2019 13:25	"	
Lithium	**0.271**	0.040	"	"	"	ADB	"	"	"	
Magnesium	**58.9**	0.100	"	"	"	ADB	"	"	"	
Potassium	**10.3**	0.300	"	"	"	ADB	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [HHe]	ND	0.00500	mg/L	1.0	9H30014	ADB	"	09/03/2019 19:40	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	ADB	"	"	"	
Barium [He]	**0.0348**	0.00100	"	"	"	ADB	"	"	"	
Beryllium [He]	**0.00804**	0.00100	"	"	"	ADB	"	"	"	
Cadmium [HHe]	ND	0.00100	"	"	"	ADB	"	"	"	
Chromium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Cobalt [He]	**0.0853**	0.00100	"	"	"	ADB	"	"	"	
Lead [He]	**0.00251**	0.00100	"	"	"	ADB	"	"	"	
Molybdenum [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Selenium [NG]	ND	0.00500	"	"	"	ADB	"	"	"	
Thallium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Sodium [He]	**39.0**	1.25	"	50.0	"	ADB	"	09/04/2019 12:45	"	
Mercury by EPA 200 Series Methods CVAAS										
Mercury	ND	0.002	mg/L	1.0	9I04044	CLV	09/04/2019 11:00	09/04/2019 16:00	EPA 245.1 Rev 3.0	
Metals (Dissolved) by EPA 200 Series Methods ICP-AES										
Ferrous Iron	**0.202**	0.060	mg/L	1.0	9H29015	ADB	08/29/2019 12:40	09/04/2019 11:46	EPA 200.7 Rev 4.4	

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Project: Cooperative Energy
Project Number: SOU2-19-001
Project Manager: Ken Ruckstuhl

Reported:
09/20/2019 15:33

MW-11

1908536-02 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Chloride	**184**	25.0	mg/L	50.0	9H29005	DLW	08/28/2019 16:22	08/28/2019 18:46	SM 4110B 2011	
Bicarbonate Alkalinity	ND	10.0	"	1.0	9H29016	HRS	08/29/2019 12:10	08/29/2019 12:10	SM 2320B 2011	SN
Carbonate Alkalinity	ND	10.0	"	"	9H29017	HRS	"	08/29/2019 14:32	"	SN
Sulfate as SO4	**1270**	250	"	50.0	9H29005	DLW	08/28/2019 16:22	08/28/2019 18:46	SM 4110B 2011	
Fluoride	**0.96**	0.50	"	1.0	9I03029	DLW	09/03/2019 09:30	09/03/2019 11:19	SM 4500-F C 2011	
Nitrate as N	ND	25.0	"	50.0	9H29005	DLW	08/28/2019 16:22	08/28/2019 16:40	SM 4110B 2011	
Total Dissolved Solids	**1678**	2	"	1.0	9H29019	DLW	08/29/2019 14:20	08/30/2019 00:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Ferric Iron	**6.05**	0.050	mg/L	1.0	9I04043	ADB	08/30/2019 09:30	09/03/2019 13:31	EPA 200.7 Rev 4.4	
Boron	**6.25**	0.050	"	"	9H30015	ADB	"	"	"	
Calcium	**168**	0.500	"	5.0	"	ADB	"	09/04/2019 10:21	"	
Iron	**6.38**	0.050	"	1.0	"	ADB	"	09/03/2019 13:31	"	
Lithium	**0.383**	0.040	"	"	"	ADB	"	"	"	
Magnesium	**103**	0.500	"	5.0	"	ADB	"	09/04/2019 11:24	"	
Potassium	**45.2**	0.300	"	1.0	"	ADB	"	09/03/2019 13:31	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [HHe]	ND	0.00500	mg/L	1.0	9H30014	ADB	"	09/03/2019 20:12	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	ADB	"	"	"	
Barium [He]	**0.0386**	0.00100	"	"	"	ADB	"	"	"	
Beryllium [He]	**0.00354**	0.00100	"	"	"	ADB	"	"	"	
Cadmium [HHe]	ND	0.00100	"	"	"	ADB	"	"	"	
Chromium [He]	**0.00162**	0.00100	"	"	"	ADB	"	"	"	
Cobalt [He]	**0.0934**	0.00100	"	"	"	ADB	"	"	"	
Lead [He]	**0.00350**	0.00100	"	"	"	ADB	"	"	"	
Molybdenum [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Selenium [NG]	ND	0.00500	"	"	"	ADB	"	"	"	
Thallium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Sodium [He]	**63.4**	1.25	"	50.0	"	ADB	"	09/04/2019 12:53	"	
Mercury by EPA 200 Series Methods CVAAS										
Mercury	ND	0.002	mg/L	1.0	9I04044	CLV	09/04/2019 11:00	09/04/2019 16:00	EPA 245.1 Rev 3.0	
Metals (Dissolved) by EPA 200 Series Methods ICP-AES										
Ferrous Iron	**0.333**	0.060	mg/L	1.0	9H29015	ADB	08/29/2019 12:40	09/04/2019 11:54	EPA 200.7 Rev 4.4	

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MW-12

1908536-03 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Bicarbonate Alkalinity	ND	10.0	mg/L	1.0	9H29016	HRS	08/29/2019 12:10	08/29/2019 12:10	SM 2320B 2011	SN
Chloride	**60.8**	12.5	"	25.0	9H29005	DLW	08/28/2019 16:22	08/28/2019 18:28	SM 4110B 2011	
Carbonate Alkalinity	ND	10.0	"	1.0	9H29017	HRS	08/29/2019 12:10	08/29/2019 14:32	SM 2320B 2011	SN
Sulfate as SO4	**553**	125	"	25.0	9H29005	DLW	08/28/2019 16:22	08/28/2019 18:28	SM 4110B 2011	
Fluoride	ND	0.50	"	1.0	9I03029	DLW	09/03/2019 09:30	09/03/2019 11:19	SM 4500-F C 2011	
Nitrate as N	ND	12.5	"	25.0	9H29005	DLW	08/28/2019 16:22	08/28/2019 16:58	SM 4110B 2011	
Total Dissolved Solids	**796**	2	"	1.0	9H29019	DLW	08/29/2019 14:20	08/30/2019 00:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Ferric Iron	**1.91**	0.050	mg/L	1.0	9I04043	ADB	08/30/2019 09:30	09/03/2019 13:50	EPA 200.7 Rev 4.4	
Boron	**1.79**	0.050	"	"	9H30015	ADB	"	"	"	
Calcium	**87.5**	0.200	"	2.0	"	ADB	"	09/04/2019 10:29	"	
Iron	**1.99**	0.050	"	1.0	"	ADB	"	09/03/2019 13:50	"	
Lithium	**0.040**	0.040	"	"	"	ADB	"	"	"	
Magnesium	**39.0**	0.100	"	"	"	ADB	"	"	"	
Potassium	**20.4**	0.300	"	"	"	ADB	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [HHe]	ND	0.00500	mg/L	1.0	9H30014	ADB	"	09/03/2019 20:29	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	ADB	"	"	"	
Barium [He]	**0.0265**	0.00100	"	"	"	ADB	"	"	"	
Beryllium [He]	**0.00208**	0.00100	"	"	"	ADB	"	"	"	
Cadmium [HHe]	ND	0.00100	"	"	"	ADB	"	"	"	
Chromium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Cobalt [He]	**0.0323**	0.00100	"	"	"	ADB	"	"	"	
Lead [He]	**0.00254**	0.00100	"	"	"	ADB	"	"	"	
Molybdenum [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Selenium [NG]	ND	0.00500	"	"	"	ADB	"	"	"	
Thallium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Sodium [He]	**20.0**	1.25	"	50.0	"	ADB	"	09/04/2019 13:18	"	
Mercury by EPA 200 Series Methods CVAAS										
Mercury	ND	0.002	mg/L	1.0	9I04044	CLV	09/04/2019 11:00	09/04/2019 16:00	EPA 245.1 Rev 3.0	
Metals (Dissolved) by EPA 200 Series Methods ICP-AES										
Ferrous Iron	**0.084**	0.060	mg/L	1.0	9H29015	ADB	08/29/2019 12:40	09/04/2019 11:57	EPA 200.7 Rev 4.4	

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Project: Cooperative Energy
Project Number: SOU2-19-001
Project Manager: Ken Ruckstuhl

Reported:
09/20/2019 15:33

BD-1

1908536-04 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Bicarbonate Alkalinity	ND	10.0	mg/L	1.0	9H29016	HRS	08/29/2019 12:10	08/29/2019 12:10	SM 2320B 2011	SN
Chloride	**183**	25.0	"	50.0	9H29005	DLW	08/28/2019 08:34	08/28/2019 17:52	SM 4110B 2011	
Carbonate Alkalinity	ND	10.0	"	1.0	9H29017	HRS	08/29/2019 12:10	08/29/2019 14:32	SM 2320B 2011	SN
Sulfate as SO4	**1420**	250	"	50.0	9H29005	DLW	08/28/2019 08:34	08/28/2019 17:52	SM 4110B 2011	
Fluoride	**0.96**	0.50	"	1.0	9I03029	DLW	09/03/2019 09:30	09/03/2019 11:19	SM 4500-F C 2011	
Nitrate as N	ND	25.0	"	50.0	9H29005	DLW	08/28/2019 08:34	08/28/2019 17:16	SM 4110B 2011	
Total Dissolved Solids	**1664**	2	"	1.0	9H29019	DLW	08/29/2019 14:20	08/30/2019 00:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Ferric Iron	**6.21**	0.050	mg/L	1.0	9I04043	ADB	08/30/2019 09:30	09/03/2019 13:56	EPA 200.7 Rev 4.4	
Boron	**6.31**	0.050	"	"	9H30015	ADB	"	"	"	
Calcium	**176**	0.500	"	5.0	"	ADB	"	09/04/2019 10:31	"	
Iron	**6.54**	0.050	"	1.0	"	ADB	"	09/03/2019 13:56	"	
Magnesium	**105**	0.200	"	2.0	"	ADB	"	09/04/2019 11:31	"	
Lithium	**0.375**	0.040	"	1.0	"	ADB	"	09/03/2019 13:56	"	
Potassium	**45.1**	0.300	"	"	"	ADB	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [HHe]	ND	0.00500	mg/L	1.0	9H30014	ADB	"	09/03/2019 20:45	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	ADB	"	"	"	
Barium [He]	**0.0386**	0.00100	"	"	"	ADB	"	"	"	
Beryllium [He]	**0.00325**	0.00100	"	"	"	ADB	"	"	"	
Cadmium [HHe]	ND	0.00100	"	"	"	ADB	"	"	"	
Chromium [He]	**0.00124**	0.00100	"	"	"	ADB	"	"	"	
Cobalt [He]	**0.0925**	0.00100	"	"	"	ADB	"	"	"	
Lead [He]	**0.00350**	0.00100	"	"	"	ADB	"	"	"	
Molybdenum [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Selenium [NG]	ND	0.00500	"	"	"	ADB	"	"	"	
Thallium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Sodium [He]	**63.3**	1.25	"	50.0	"	ADB	"	09/04/2019 13:27	"	
Mercury by EPA 200 Series Methods CVAAS										
Mercury	ND	0.002	mg/L	1.0	9I04044	CLV	09/04/2019 11:00	09/04/2019 16:00	EPA 245.1 Rev 3.0	
Metals (Dissolved) by EPA 200 Series Methods ICP-AES										
Ferrous Iron	**0.327**	0.060	mg/L	1.0	9H29015	ADB	08/29/2019 12:40	09/04/2019 12:00	EPA 200.7 Rev 4.4	

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Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H29005 - Default Prep GenChem											
Blank (9H29005-BLK1)											
Chloride	8/28/19 10:11	ND	0.500	mg/L							
Sulfate as SO4	8/28/19 10:11	ND	5.00	"							
Nitrate as N	8/28/19 10:11	ND	0.500	"							
LCS (9H29005-BS1)											
Chloride	8/28/19 10:29	2.95	0.500	mg/L	3.00		98.3	85.4-110			
Sulfate as SO4	8/28/19 10:29	14.4	5.00	"	15.0		96.1	83.3-120			
Nitrate as N	8/28/19 10:29	2.30	0.500	"	2.26		102	84.6-110			
LCS Dup (9H29005-BSD1)											
Chloride	8/28/19 10:46	2.93	0.500	mg/L	3.00		97.5	85.4-110	0.749	20	
Sulfate as SO4	8/28/19 10:46	14.2	5.00	"	15.0		95.0	83.3-120	1.21	20	
Nitrate as N	8/28/19 10:46	2.26	0.500	"	2.26		100	84.6-110	1.88	20	
Duplicate (9H29005-DUP1)			**Source: 1908522-01**								
Chloride	8/28/19 11:22	28.3	0.500	mg/L		28.3			0.0742	20	
Sulfate as SO4	8/28/19 11:22	5.52	5.00	"		5.48			0.745	20	
Nitrate as N	8/28/19 11:22	2.43	0.500	"		2.43			0.0823	20	
Matrix Spike (9H29005-MS1)			**Source: 1908522-01**								
Chloride	8/28/19 11:45	133	2.00	mg/L	100	28.3	105	79-119			
Sulfate as SO4	8/28/19 11:45	107	20.0	"	100	5.48	102	43.5-124			
Nitrate as N	8/28/19 11:45	26.2	2.00	"	22.6	2.43	105	73.1-122			
Matrix Spike Dup (9H29005-MSD1)			**Source: 1908522-01**								
Chloride	8/28/19 12:03	133	2.00	mg/L	100	28.3	105	79-119	0.135	20	
Sulfate as SO4	8/28/19 12:03	107	20.0	"	100	5.48	102	43.5-124	0.0484	20	
Nitrate as N	8/28/19 12:03	26.3	2.00	"	22.6	2.43	106	73.1-122	0.442	20	

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Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H29016 - Default Prep GenChem											
Blank (9H29016-BLK1)											
Bicarbonate Alkalinity	8/29/19 12:10	ND	10.0	mg/L							
LCS (9H29016-BS1)											
Bicarbonate Alkalinity	8/29/19 12:10	917		mg/L	950		96.5	80-120			
Duplicate (9H29016-DUP1)			**Source: 1908536-04**								
Bicarbonate Alkalinity	8/29/19 12:10	ND	10.0	mg/L		ND				30	
Batch 9H29017 - Default Prep GenChem											
Blank (9H29017-BLK1)											
Carbonate Alkalinity	8/29/19 14:32	ND	10.0	mg/L							
LCS (9H29017-BS1)											
Carbonate Alkalinity	8/29/19 14:32	444		mg/L	500		88.7	0-200			
Duplicate (9H29017-DUP1)			**Source: 1908536-04**								
Carbonate Alkalinity	8/29/19 14:32	ND	10.0	mg/L		ND				200	
Batch 9H29019 - Default Prep GenChem											
Blank (9H29019-BLK1)											
Total Dissolved Solids	8/30/19 0:00	ND	1	mg/L							
LCS (9H29019-BS1)											
Total Dissolved Solids	8/30/19 0:00	92	1	mg/L	104		88.5	82.2-100			

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Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H29019 - Default Prep GenChem											
LCS Dup (9H29019-BSD1)											
Total Dissolved Solids	8/30/19 0:00	96	1	mg/L	104		92.3	82.2-100	4.26	15	
Duplicate (9H29019-DUP1)			**Source: 1908561-02**								
Total Dissolved Solids	8/30/19 0:00	43	1	mg/L		42			2.35	5	
Batch 9I03029 - Default Prep GenChem											
Blank (9I03029-BLK1)											
Fluoride	9/3/19 11:19	ND	0.50	mg/L							
LCS (9I03029-BS1)											
Fluoride	9/3/19 11:19	1.96	0.50	mg/L	2.00		98.0	75-125			
LCS Dup (9I03029-BSD1)											
Fluoride	9/3/19 11:19	1.97	0.50	mg/L	2.00		98.5	75-125	0.509	30	
Duplicate (9I03029-DUP1)			**Source: 1908561-02**								
Fluoride	9/3/19 11:19	ND	0.50	mg/L		ND				35	
Matrix Spike (9I03029-MS1)			**Source: 1908561-02**								
Fluoride	9/3/19 11:19	1.99	1.00	mg/L	2.00	ND	99.6	70-130			
Matrix Spike Dup (9I03029-MSD1)			**Source: 1908561-02**								
Fluoride	9/3/19 11:19	1.99	1.00	mg/L	2.00	ND	99.4	70-130	0.201	30	

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 09/20/2019 15:33

Metals by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H30015 - EPA 200.2 DCN 1017 Rev 8											
Blank (9H30015-BLK1)											
Boron	9/3/19 13:11	ND	0.050	mg/L							
Calcium	9/3/19 13:11	ND	0.100	"							
Iron	9/3/19 13:11	ND	0.050	"							
Lithium	9/3/19 13:11	ND	0.040	"							
Magnesium	9/3/19 13:11	ND	0.100	"							
Potassium	9/3/19 13:11	ND	0.300	"							
LCS (9H30015-BS1)											
Boron	9/3/19 13:15	0.215	0.050	mg/L	0.200		107	85-115			
Calcium	9/3/19 13:15	0.225	0.100	"	0.200		112	85-115			
Iron	9/3/19 13:15	0.194	0.050	"	0.200		97.1	85-115			
Lithium	9/3/19 13:15	0.204	0.040	"	0.200		102	85-115			
Magnesium	9/3/19 13:15	0.191	0.100	"	0.200		95.6	85-115			
Potassium	9/3/19 13:15	0.463	0.300	"	0.400		116	85-115			L1
LCS Dup (9H30015-BSD1)											
Boron	9/3/19 13:19	0.207	0.050	mg/L	0.200		103	85-115	3.59	20	
Calcium	9/3/19 13:19	0.222	0.100	"	0.200		111	85-115	1.13	20	
Iron	9/3/19 13:19	0.190	0.050	"	0.200		95.2	85-115	1.96	20	
Lithium	9/3/19 13:19	0.203	0.040	"	0.200		102	85-115	0.202	20	
Magnesium	9/3/19 13:19	0.181	0.100	"	0.200		90.7	85-115	5.33	20	
Potassium	9/3/19 13:19	0.400	0.300	"	0.400		100	85-115	14.6	20	
Duplicate (9H30015-DUP1)			**Source: 1908536-02**								
Boron	9/3/19 13:38	6.52	0.050	mg/L		6.25			4.31	20	
Calcium	9/4/19 10:24	171	0.500	"		168			1.53	20	
Iron	9/3/19 13:38	6.75	0.050	"		6.38			5.56	20	
Magnesium	9/4/19 11:26	110	0.500	"		103			6.57	20	
Potassium	9/3/19 13:38	45.3	0.300	"		45.2			0.203	20	

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Metals by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H30015 - EPA 200.2 DCN 1017 Rev 8											
Matrix Spike (9H30015-MS1)			**Source: 1908536-02**								
Lithium	9/3/19 13:38	0.572	0.040	mg/L	0.200	0.383	94.4	70-130			
Matrix Spike Dup (9H30015-MSD1)			**Source: 1908536-02**								
Lithium	9/3/19 13:44	0.581	0.040	mg/L	0.200	0.383	98.9	70-130	1.53	20	
Batch 9I04043 - EPA 200.2 DCN 1017 Rev 8											
Blank (9I04043-BLK1)											
Ferric Iron	9/3/19 13:11	ND	0.050	mg/L							
LCS (9I04043-BS1)											
Ferric Iron	9/3/19 13:15	0.194	0.050	mg/L	0.200		97.1	85-115			
LCS Dup (9I04043-BSD1)											
Ferric Iron	9/3/19 13:19	0.190	0.050	mg/L	0.200		95.2	85-115	1.96	20	

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Environmental Management Services	Project:	Cooperative Energy	
PO Box 15369	Project Number:	SOU2-19-001	Reported:
Hattiesburg MS, 39404-5369	Project Manager:	Ken Ruckstuhl	09/20/2019 15:33

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H30014 - EPA 200.2 DCN 1017 Rev 8											
Blank (9H30014-BLK1)											
Antimony [HHe]	9/3/19 19:15	ND	0.00500	mg/L							
Arsenic [NG]	9/3/19 19:15	ND	0.00200	"							
Arsenic [HHe]	9/3/19 19:15	ND	0.00200	"							
Barium [He]	9/3/19 19:15	ND	0.00100	"							
Beryllium [He]	9/3/19 19:15	ND	0.00100	"							
Cadmium [HHe]	9/3/19 19:15	ND	0.00100	"							
Chromium [He]	9/3/19 19:15	ND	0.00100	"							
Cobalt [He]	9/3/19 19:15	ND	0.00100	"							
Lead [He]	9/3/19 19:15	ND	0.00100	"							
Molybdenum [He]	9/3/19 19:15	ND	0.00100	"							
Selenium [NG]	9/3/19 19:15	ND	0.00500	"							
Selenium [HHe]	9/3/19 19:15	ND	0.00100	"							
Thallium [He]	9/3/19 19:15	ND	0.00100	"							
LCS (9H30014-BS1)											
Antimony [HHe]	9/3/19 19:24	0.114	0.00500	mg/L	0.100		114	85-115			
Arsenic [NG]	9/3/19 19:24	0.102	0.00200	"	0.100		102	85-115			
Arsenic [HHe]	9/3/19 19:24	0.102	0.00200	"	0.100		102	85-115			
Barium [He]	9/3/19 19:24	0.104	0.00100	"	0.100		104	85-115			
Beryllium [He]	9/3/19 19:24	0.096	0.00100	"	0.100		96.0	85-115			
Cadmium [HHe]	9/3/19 19:24	0.098	0.00100	"	0.100		98.0	85-115			
Chromium [He]	9/3/19 19:24	0.107	0.00100	"	0.100		107	85-115			
Cobalt [He]	9/3/19 19:24	0.105	0.00100	"	0.100		105	85-115			
Lead [He]	9/3/19 19:24	0.103	0.00100	"	0.100		103	85-115			
Molybdenum [He]	9/3/19 19:24	0.105	0.00100	"	0.100		105	85-115			
Selenium [NG]	9/3/19 19:24	0.099	0.00500	"	0.100		99.0	85-115			
Selenium [HHe]	9/3/19 19:24	0.100	0.00100	"	0.100		100	85-115			
Thallium [He]	9/3/19 19:24	0.101	0.00100	"	0.100		101	85-115			

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 09/20/2019 15:33

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H30014 - EPA 200.2 DCN 1017 Rev 8											
LCS Dup (9H30014-BSD1)											
Antimony [HHe]	9/3/19 19:32	0.114	0.00500	mg/L	0.100		114	85-115	0.104	20	
Arsenic [NG]	9/3/19 19:32	0.105	0.00200	"	0.100		105	85-115	2.78	20	
Arsenic [HHe]	9/3/19 19:32	0.103	0.00200	"	0.100		103	85-115	1.51	20	
Barium [He]	9/3/19 19:32	0.110	0.00100	"	0.100		110	85-115	5.47	20	
Beryllium [He]	9/3/19 19:32	0.101	0.00100	"	0.100		101	85-115	5.39	20	
Cadmium [HHe]	9/3/19 19:32	0.098	0.00100	"	0.100		98.0	85-115	0.0207	20	
Chromium [He]	9/3/19 19:32	0.111	0.00100	"	0.100		111	85-115	3.56	20	
Cobalt [He]	9/3/19 19:32	0.111	0.00100	"	0.100		111	85-115	5.68	20	
Lead [He]	9/3/19 19:32	0.110	0.00100	"	0.100		110	85-115	6.57	20	
Molybdenum [He]	9/3/19 19:32	0.111	0.00100	"	0.100		111	85-115	6.05	20	
Selenium [NG]	9/3/19 19:32	0.103	0.00500	"	0.100		103	85-115	3.48	20	
Selenium [HHe]	9/3/19 19:32	0.102	0.00100	"	0.100		102	85-115	1.85	20	
Thallium [He]	9/3/19 19:32	0.110	0.00100	"	0.100		110	85-115	7.99	20	
Matrix Spike (9H30014-MS1)			**Source: 1908536-01**								
Antimony [HHe]	9/3/19 19:48	0.120	0.00500	mg/L	0.100	ND	120	70-130			
Arsenic [HHe]	9/3/19 19:48	0.109	0.00200	"	0.100	0.012	96.9	70-130			
Arsenic [NG]	9/3/19 19:48	0.094	0.00200	"	0.100	ND	94.4	70-130			
Barium [He]	9/3/19 19:48	0.143	0.00100	"	0.100	0.035	108	70-130			
Beryllium [He]	9/3/19 19:48	0.096	0.00100	"	0.100	0.008	88.2	70-130			
Cadmium [HHe]	9/3/19 19:48	0.094	0.00100	"	0.100	0.0003	93.9	70-130			
Chromium [He]	9/3/19 19:48	0.104	0.00100	"	0.100	0.0004	104	70-130			
Cobalt [He]	9/3/19 19:48	0.183	0.00100	"	0.100	0.085	98.1	70-130			
Lead [He]	9/3/19 19:48	0.110	0.00100	"	0.100	0.003	108	70-130			
Molybdenum [He]	9/3/19 19:48	0.119	0.00100	"	0.100	0.0003	119	70-130			
Selenium [HHe]	9/3/19 19:48	0.110	0.00100	"	0.100	0.018	92.2	70-130			
Selenium [NG]	9/3/19 19:48	0.099	0.00500	"	0.100	0.003	96.4	70-130			
Thallium [He]	9/3/19 19:48	0.107	0.00100	"	0.100	0.0004	107	70-130			

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Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H30014 - EPA 200.2 DCN 1017 Rev 8											
Matrix Spike Dup (9H30014-MSD1)			**Source: 1908536-01**								
Antimony [HHe]	9/3/19 19:55	0.120	0.00500	mg/L	0.100	ND	120	70-130	0.322	20	
Arsenic [HHe]	9/3/19 19:55	0.108	0.00200	"	0.100	0.012	95.7	70-130	1.13	20	
Arsenic [NG]	9/3/19 19:55	0.095	0.00200	"	0.100	ND	95.1	70-130	0.709	20	
Barium [He]	9/3/19 19:55	0.145	0.00100	"	0.100	0.035	110	70-130	0.929	20	
Beryllium [He]	9/3/19 19:55	0.099	0.00100	"	0.100	0.008	90.6	70-130	2.47	20	
Cadmium [HHe]	9/3/19 19:55	0.094	0.00100	"	0.100	0.0003	93.9	70-130	0.0263	20	
Chromium [He]	9/3/19 19:55	0.105	0.00100	"	0.100	0.0004	104	70-130	0.425	20	
Cobalt [He]	9/3/19 19:55	0.186	0.00100	"	0.100	0.085	101	70-130	1.67	20	
Lead [He]	9/3/19 19:55	0.109	0.00100	"	0.100	0.003	107	70-130	0.978	20	
Molybdenum [He]	9/3/19 19:55	0.118	0.00100	"	0.100	0.0003	118	70-130	0.656	20	
Selenium [NG]	9/3/19 19:55	0.101	0.00500	"	0.100	0.003	98.4	70-130	1.97	20	
Selenium [HHe]	9/3/19 19:55	0.109	0.00100	"	0.100	0.018	91.9	70-130	0.231	20	
Thallium [He]	9/3/19 19:55	0.107	0.00100	"	0.100	0.0004	107	70-130	0.0876	20	

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Mercury by EPA 200 Series Methods CVAAS - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9I04044 - EPA 245.1 DCN 1017 Rev 8											
Blank (9I04044-BLK1)											
Mercury	9/4/19 16:00	ND	0.002	mg/L							
LCS (9I04044-BS1)											
Mercury	9/4/19 16:00	0.005	0.002	mg/L	0.00500		98.0	85-115			
LCS Dup (9I04044-BSD1)											
Mercury	9/4/19 16:00	0.005	0.002	mg/L	0.00500		98.0	85-115	0.00	20	
Matrix Spike (9I04044-MS1)			**Source: 1908536-01**								
Mercury	9/4/19 16:00	0.005	0.002	mg/L	0.00500	ND	102	70-130			
Matrix Spike Dup (9I04044-MSD1)			**Source: 1908536-01**								
Mercury	9/4/19 16:00	0.005	0.002	mg/L	0.00500	ND	100	70-130	1.98	20	

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Metals (Dissolved) by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 9H29015 - EPA 200.2 DCN 1017 Rev 8											
Blank (9H29015-BLK1)											
Ferrous Iron	8/29/19 14:44	ND	0.060	mg/L							
LCS (9H29015-BS1)											
Ferrous Iron	8/29/19 14:47	0.195	0.060	mg/L	0.200		97.4	85-115			
LCS Dup (9H29015-BSD1)											
Ferrous Iron	8/29/19 14:50	0.199	0.060	mg/L	0.200		99.4	85-115	2.03	20	
Matrix Spike (9H29015-MS1)			**Source: 1908536-01**								
Ferrous Iron	9/4/19 11:49	0.390	0.060	mg/L	0.200	0.202	94.3	70-130			
Matrix Spike Dup (9H29015-MSD1)			**Source: 1908536-01**								
Ferrous Iron	9/4/19 11:52	0.378	0.060	mg/L	0.200	0.202	88.1	70-130	3.23	20	

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 09/20/2019 15:33

Certified Analyses Included in this Report

Analyte	Certification Code
EPA 200.7 Rev 4.4 in Water	
Aluminum	C01,C02
Antimony	C01,C02
Arsenic	C01,C02
Barium	C01,C02
Beryllium	C01,C02
Boron	C01,C02
Cadmium	C01,C02
Calcium	C01,C02
Chromium	C01,C02
Cobalt	C01,C02
Copper	C01,C02
Iron	C01,C02
Lead	C01,C02
Magnesium	C01,C02
Manganese	C01,C02
Molybdenum	C01,C02
Nickel	C01,C02
Potassium	C01,C02
Selenium	C01,C02
Silver	C01,C02
Sodium	C01,C02
Strontium	C01,C02
Thallium	C01,C02
Vanadium	C01,C02
Zinc	C01,C02
Phosphorus	C01
EPA 200.8 Rev 5.4 in Water	
Aluminum [He]	C01,C02
Antimony [HHe]	C01,C02
Antimony [NG]	C01,C02
Arsenic [HHe]	C01,C02
Arsenic [NG]	C01,C02
Barium [He]	C01,C02
Beryllium [He]	C01,C02
Boron [NG]	C01,C02
Cadmium [HHe]	C01,C02
Cadmium [NG]	C01,C02
Chromium [He]	C01,C02
Cobalt [He]	C01,C02
Copper [He]	C01,C02
Copper [NG]	C01,C02

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Iron [He]	C01,C02
Lead [He]	C01,C02
Lead [NG]	C01,C02
Manganese [He]	C01,C02
Molybdenum [He]	C01,C02
Nickel [He]	C01,C02
Selenium [HHe]	C01,C02
Selenium [NG]	C01,C02
Silver [He]	C01,C02
Silver [NG]	C01,C02
Strontium [He]	C01,C02
Thallium [He]	C01,C02
Vanadium [He]	C01,C02
Zinc [He]	C01,C02
Antimony [He]	C01,C02
EPA 245.1 Rev 3.0 in Water	
Mercury	C01,C02
SM 2540 C-2011 in Water	
Total Dissolved Solids	C01,C02
SM 4110B 2011 in Water	
Chloride	C01,C02
Sulfate as SO4	C01,C02
Nitrate as N	C01,C02

****Only compounds included in this list are associated with accredited analyses****

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Laboratory Accreditations/Certifications

Code	Description	Number	Expires
C01	LA Environmental Lab Accreditation Program	01960	06/30/2020
C02	The NELAC Institute (NELAP)	TNI01397	06/30/2020
C03	Ms Dept of Health (Drinking Water Microbiology)	MS00021	12/31/2019
C04	Ms Dept of Health (Drinking Water Chemistry)	MS00021	12/31/2019
C05	Ms DEQ Lead Firm Certification	PBF-00000028	03/24/2020
C06	MsDEQ Asbestos Inspector : C.D. Bingham	ABI-00001348	02/21/2020
C07	MsDEQ Air Monitor : C.D. Bingham	AM-011572	03/07/2020
C08	MsDEQ Asbestos Inspector: C. W. Meins	ABI-00001821	09/06/2019
C09	MsDEQ Air Monitor : C.W. Meins	AM-011189	03/07/2020
C12			
C14	MsDEQ Lead Paint Inspector : C.D. Bingham	PBI-00003690	02/22/2020
C15	MsDEQ Lead Paint Inspector : C.W. Meins	PBI-00001740	02/22/2020

Report Definitions

TNC	Too Numerous To Count
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the minimum reporting limit
NR	Not Reported
RPD	Relative Percent Difference
ICV	Initial Calibration Verfiication
CCV	Continuing Calibration Verification Standard
SSV	Secondary Source Verfication Standard
LCS	Lab Control Spike - Lab matrix prepared with known concentration of analyte/s of interest analyzed by method.
MS	Matrix Spike - Sample prepared with known concentration of analyte/s of interest analyzed by method.
MSD	Matrix Spike Duplicate - Duplicate sample prepared with known concentration of analyte/s of interest analyzed by method.
MRL	Minimum Reporting Limit
%REC	Percentage Recovery of known concentration added to matrix
Batch	Group of samples prepared for analysis not to exceed 20 samples.
Matrix	Material containing analyte/s of interest
Surrogate	Analyte added to sample to determine extraction efficiency of method.

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Environmental Management Services	Project:	Cooperative Energy	
PO Box 15369	Project Number:	SOU2-19-001	**Reported:**
Hattiesburg MS, 39404-5369	Project Manager:	Ken Ruckstuhl	09/20/2019 15:33

Analyst Initials Key

FullName	Initials
Alyssa D Bennett	ADB
Charles L Vorhoff	CLV
Dortha L. Wells	DLW
Harry P. Howell	HPH
Harold R Scruggs	HRS
Sarah E. Tomek	SET
Teresa Meins	TKM
Tina Tomek	TPT

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Chain of Custody Record

Lab ID# MS00021
LELAP ID # 01960
TNI ID # TNI01397

M-M Lab WO # 1908536

Print Form

Company Name: EMS
Address: P.O. Box 15369
City: Hattiesburg State: MS Zip: 39402
Phone: 601-544-3674
Fax: 601-544-0504

Project Manager: Ken Ruckstuhl
Purchase Order #:
Email Address: KRuckstuhl@env-mgt.com
Sampler Name Printed: Robert V. Gates
Sampler Name Signed: R.V. Gates

Turn Around Time & Reporting
Our normal turn around time is 10 working days
__Normal __Next Day* __2nd Day* X Other* Rush
*All rush order requests must be prior approved.
__Phone __Mail __Fax __Email
~~QC Level: Level 1~~ ☐ Level 2 ☐ Level 3 ☐

Project Name: Cooperative Energy
Project #: S002-19-001

List Analyses Requested

Sample Identification	Sampling Date/Time	Matrix Code	# of Containers	Grab (G) or Composite (C)	Radiological	Wet Lab	Metals
MW-10	8-28-19 11:00	W	4	G	X	X	X
MW-11	8-28-19 09:45	W	4	G	X	X	X
MW-12	8-28-19 08:40	W	4	G	X	X	X
BD-1	8-28-19 08:00	W	4	G	X	X	X

Field Testing

ID# Field Test	ID# Field Test	ID# Field Test	ID# Field Test

All Temps are Corrected Values

Matrix:
W = Water
DW = Drinking Water
S = Solid
SO = Soil
SE = Sediment
L = Liquid
A = Air
O = Oil
SL = Sludge

Preservation:
1= H2SO4
2= H3PO4
3=NaOH
4=ZnC4H1006
5=ZnC4H1006 & NaOH
6=HNO3
7=Na2S2O3
8=HCl
9=NaHSO4

Received on Ice? (Y) N Thermometer# 48 Cooler # 1143 **Receipt Temp Corrected(°C)** 1.3°c
Date & Time ____ By: 8 Sample ___ Blank X Cooler ___

	Printed Name	Signature	Company	Date	Time
Relinquished by	Robert V. Gates	R.V. Gates	EMS	8-28-19	14:15
Received by	Sarah Tomek	Sarah Tomek	MM	8/28/19	1415
Relinquished by					
Received by					
Relinquished by					
Received by					

Notes:
Appendix III: Boron, Calcium, Chloride, Fluoride, Sulfate, TDS
App IV: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Lithium, Mercury, Molybdenum, Selenium, Thallium, Combined Radium (226 + 228)
Cation/Anions: Magnesium, Potassium, Sodium, bicarbonate carbonate alkalinity, Ferrous and Ferric Iron, Nitrate (total)

Physical Address: 6500 Sunplex Drive, Ocean Springs MS 39564

Micro-Methods	Micro-Methods Laboratory Log-In Checklist	
Issue Date 11-22-17		DCN F207
		Date Revised 11-22-17
		Revision 5

Client EMS **WO** 1908536 **Shipped By** client ST
Date/Time Received 8/28/19 1415 **Unpacked/Checked By** ST

Cooler ID	Ice Present Yes/No	Temperature (Corrected)	Thermometer ID	Custody Sealed Yes/No	Custody Seal Intact Yes/No
#1143	yes	1.3 c	T#4	no	n/a

If not iced, were samples received within one hour of collection? Yes__ No__ N/A X
Temperature Blank Used Yes X No__ If not, temperature taken from cooler__ or bottle__
Multi Cooler shipment: ID of samples in coolers that exceed 6°C ________

Custody Seals on Bottles Present Yes__ No X
Containers Intact Yes X No__
Proper Containers for Requested Analysis Yes X No__

Correct Preservation Used for All Samples Yes X No__
Adequate Sample for Analysis Requested Yes X No__

Volatile Vials Headspace Greater than 6mm in Diameter Yes__ No__ N/A X

Chain of Custody Form Included Yes X No__
Chain of Custody Form Complete Yes X No__
Chain of Custody Form Properly Relinquished Yes X No__
Field Sheets/Special Instructions Included Yes__ No__ N/A X
Samples Missing on COC or From Cooler Yes__ No X
Sample Container Labels Match COC Yes X No__

Samples Received Within Holding Time Yes X No__
Dept. Manager Notified of Rush/Short Holding Times Yes X No__ N/A__

Does work order meet Micro Methods sample acceptance criteria Yes X No__
Note: Samples that do not meet acceptance criteria must be documented in the Sample Rejection Log.

Client Contacted________ **Contacted By**________ **Date/Time**________
Client Instructions: Cancel Work Order ____
Proceed with Work Order____ **(Data will be qualified)**
Comments: ________

Pace Analytical
www.pacelabs.com

Pace Analytical Services, LLC
1000 Riverbend Blvd - Suite F
St. Rose, LA 70087
(504)469-0333

September 20, 2019

Harry Howell
Micro Methods Laboratory, Inc.
P. O. Box 1410
Ocean Springs, MS 39566

RE: Project: 1908536
Pace Project No.: 20119399

Dear Harry Howell:

Enclosed are the analytical results for sample(s) received by the laboratory on August 30, 2019. 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,

Karen Brown

Karen Brown
karen.brown@pacelabs.com
(504)469-0333
Project Manager

Enclosures

Pace Analytical Services, LLC
1000 Riverbend Blvd - Suite F
St. Rose, LA 70087
(504)469-0333

CERTIFICATIONS

Project:	1908536
Pace Project No.:	20119399

Pennsylvania Certification IDs

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

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St. Rose, LA 70087
(504)469-0333

SAMPLE SUMMARY

Project: 1908536
Pace Project No.: 20119399

Lab ID	Sample ID	Matrix	Date Collected	Date Received
20119399001	**1908536-01**	Water	08/28/19 11:00	08/30/19 10:11
20119399002	**1908536-02**	Water	08/28/19 09:45	08/30/19 10:11
20119399003	**1908536-03**	Water	08/28/19 08:40	08/30/19 10:11
20119399004	**1908536-04**	Water	08/28/19 08:00	08/30/19 10:11

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SAMPLE ANALYTE COUNT

Project: 1908536
Pace Project No.: 20119399

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
20119399001	**1908536-01**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
20119399002	**1908536-02**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
20119399003	**1908536-03**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
20119399004	**1908536-04**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA

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PROJECT NARRATIVE

Project: 1908536
Pace Project No.: 20119399

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: Micro Methods
Date: September 20, 2019

General Information:
4 samples were analyzed for EPA 903.1. 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.

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

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.

Additional Comments:

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St. Rose, LA 70087
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PROJECT NARRATIVE

Project: 1908536
Pace Project No.: 20119399

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: Micro Methods
Date: September 20, 2019

General Information:
4 samples were analyzed for EPA 904.0. 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.

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

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.

Additional Comments:

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

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(504)469-0333

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 1908536
Pace Project No.: 20119399

Sample: 1908536-01 **Lab ID: 20119399001** Collected: 08/28/19 11:00 Received: 08/30/19 10:11 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 2.5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis. The samples were not preserved <2 within the required 5 days of collection.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.231 ± 0.358 (0.621) C:NA T:97%**	pCi/L	09/18/19 11:26	13982-63-3	
Radium-228	EPA 904.0	**0.929 ± 0.491 (0.877) C:81% T:76%**	pCi/L	09/19/19 14:34	15262-20-1	

Sample: 1908536-02 **Lab ID: 20119399002** Collected: 08/28/19 09:45 Received: 08/30/19 10:11 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 2.5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis. The samples were not preserved <2 within the required 5 days of collection.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.230 ± 0.452 (0.825) C:NA T:83%**	pCi/L	09/18/19 11:26	13982-63-3	
Radium-228	EPA 904.0	**2.36 ± 0.721 (0.921) C:80% T:78%**	pCi/L	09/19/19 14:34	15262-20-1	

Sample: 1908536-03 **Lab ID: 20119399003** Collected: 08/28/19 08:40 Received: 08/30/19 10:11 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 2.5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis. The samples were not preserved <2 within the required 5 days of collection.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.281 ± 0.456 (0.793) C:NA T:94%**	pCi/L	09/18/19 11:26	13982-63-3	
Radium-228	EPA 904.0	**1.32 ± 0.518 (0.799) C:80% T:84%**	pCi/L	09/19/19 14:33	15262-20-1	

Sample: 1908536-04 **Lab ID: 20119399004** Collected: 08/28/19 08:00 Received: 08/30/19 10:11 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 2.5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis. The samples were not preserved <2 within the required 5 days of collection.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.641 ± 0.497 (0.701) C:NA T:102%**	pCi/L	09/18/19 11:26	13982-63-3	
Radium-228	EPA 904.0	**2.13 ± 0.621 (0.720) C:80% T:89%**	pCi/L	09/19/19 14:33	15262-20-1	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1908536
Pace Project No.: 20119399

QC Batch: 359944 | Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 | Analysis Description: 903.1 Radium-226
Associated Lab Samples: 20119399001, 20119399002, 20119399003, 20119399004

METHOD BLANK: 1747335 | Matrix: Water
Associated Lab Samples: 20119399001, 20119399002, 20119399003, 20119399004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.111 ± 0.345 (0.668) C:NA T:85%	pCi/L	09/18/19 10:59	

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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St. Rose, LA 70087
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QUALITY CONTROL - RADIOCHEMISTRY

Project: 1908536
Pace Project No.: 20119399

QC Batch: 359950 | Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 | Analysis Description: 904.0 Radium 228
Associated Lab Samples: 20119399001, 20119399002, 20119399003, 20119399004

METHOD BLANK: 1747350 | Matrix: Water
Associated Lab Samples: 20119399001, 20119399002, 20119399003, 20119399004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.487 ± 0.393 (0.780) C:82% T:77%	pCi/L	09/19/19 11:32	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1000 Riverbend Blvd - Suite F
St. Rose, LA 70087
(504)469-0333

QUALIFIERS

Project: 1908536
Pace Project No.: 20119399

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The Nelac Institute

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
1000 Riverbend Blvd - Suite F
St. Rose, LA 70087
(504)469-0333

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 1908536
Pace Project No.: 20119399

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
20119399001	**1908536-01**	EPA 903.1	359944		
20119399002	**1908536-02**	EPA 903.1	359944		
20119399003	**1908536-03**	EPA 903.1	359944		
20119399004	**1908536-04**	EPA 903.1	359944		
20119399001	**1908536-01**	EPA 904.0	359950		
20119399002	**1908536-02**	EPA 904.0	359950		
20119399003	**1908536-03**	EPA 904.0	359950		
20119399004	**1908536-04**	EPA 904.0	359950		

MICRO-METHODS LABORATORY, INC.

SUBCONTRACT ORDER

WO#: 20119399

20119399

Sending Laboratory:

Micro-Methods Laboratory, Inc.
6500 Sunplex Drive
Ocean Springs, MS 39564
Phone: 228.875.6420
Fax: 228.875.6423

Project Manager: Teresa Meins

...Analytical
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
Phone: -
Fax: -

Work Order: 1908536

Analysis	Due	Expires	Comments
Sample ID: 1908536-01 *Water* ***Sampled: 08/28/2019 11:00***			***Sample Name: MW-10***
Radium,Total 226 & 228 by 901.1	ST ~~09/04/2019~~	09/25/2019 11:00	
Containers Supplied: 1000mL Plastic (B)			
Sample ID: 1908536-02 *Water* ***Sampled: 08/28/2019 09:45***			***Sample Name: MW-11***
Radium,Total 226 & 228 by 901.1	ST ~~09/04/2019~~	09/25/2019 09:45	
Containers Supplied: 1000mL Plastic (A) 1000mL Plastic (B)			
Sample ID: 1908536-03 *Water* ***Sampled: 08/28/2019 08:40***			***Sample Name: MW-12***
Radium,Total 226 & 228 by 901.1	ST ~~09/04/2019~~	09/25/2019 08:40	
Containers Supplied: 1000mL Plastic (A) 1000mL Plastic (B)			
Sample ID: 1908536-04 *Water* ***Sampled: 08/28/2019 08:00***			***Sample Name: BD-1***
Radium,Total 226 & 228 by 901.1	ST ~~09/04/2019~~	09/25/2019 08:00	
Containers Supplied: 1000mL Plastic (A) 1000mL Plastic (B)			

*need Standard TAT

Sarah Jomeh	8/29/19 @ 1630	UPS	8/29/19 @ 1630
Released By	Date	Received By	Date
UPS	8/30/19 @	K... / IPA...	8/30
Released By	Date	Received By	Date

WO# : 20119399

Pace Analytical

Sample Condition Upon R

PM: KHB Due Date: 09/23/19

CLIENT: 20-MICRO

1000 Riverbend. Blvd., Suite F
St Rose, LA 70087

Proj

Courier: ☐ Pace Courier ☐ Hired Courier ☐ Fed X ☒ UPS ☐ DHL ☐ USPS ☐ Customer ☐ Other

Custody Seal on Cooler/Box Present: [see COC]

Custody Seals intact: ☒ Yes ☐ No

Therometer Used:	☐ Therm Fisher IR 5 ☐ Therm Fisher IR 6 ☐ Therm Fisher IR 7

Type of Ice: Wet Blue None

Samples on ice: [see COC]

Cooler Temperature: [see COC]

Temp should be above freezing to 6°C

Date and Initials of person examining contents:

Temp must be measured from Temperature blank when present

Comments:

		Comments
Temperature Blank Present"?	☐Yes ☐No ☒N/A	1
Chain of Custody Present:	☒Yes ☐No ☐N/A	2
Chain of Custody Complete:	☒Yes ☐No ☐N/A	3
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	4
Sampler Name & Signature on COC:	☐Yes ☒No ☐N/A	5
Samples Arrived within Hold Time:	☒Yes ☐No ☐N/A	6
Sufficient Volume:	☒Yes ☐No ☐N/A	7
Correct Containers Used:	☒Yes ☐No ☐N/A	8
Filtered vol. Rec. for Diss. tests	☐Yes ☐No ☒N/A	9
Sample Labels match COC:	☒Yes ☐No ☐N/A	10
All containers received within manafacture's precautionary and/or expiration dates.	☒Yes ☐No ☐N/A	11
All containers needing chemical preservation have been checked (except VOA, coliform, & O&G).	☒Yes ☐No ☐N/A	12
All containers preservation checked found to be in compliance with EPA recommendation.	☒Yes ☐No ☐N/A	13 If No, was preserative added? ☐Yes ☐No If added record lot no.: HNO3 ______ H2SO4 ______
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☒N/A	14
Trip Blank Present:	☐Yes ☒No	15

Client Notification/ Resolution:

Person Contacted: ______________________ Date/Time: ____________

Comments/ Resolution: ______________________

Mailing Address:
PO Box 1410
Ocean Springs, MS
39566-1410

6500 Sunplex Drive
Ocean Springs, MS 39564
228.875.6420 Phone
228.875.6423 Fax

January 31, 2020

Ken Ruckstuhl

Work Order # : 2001195

Environmental Management Services
PO Box 15369
Hattiesburg, MS 39404-5369

Purchase Order #:

RE: Cooperative Energy

Enclosed are Micro-Methods Laboratory, Inc. results of analyses performed on samples received 01/10/2020 08:02. If you have any questions concerning this report, please feel free to contact the office.

Harry P. Howell

President
Micro-Methods Laboratory, Inc.

DISCLAIMER
The results only relate to the items or the sample and/or samples received by the laboratory. This report shall not be reproduced except in full, without the approval of the laboratory. All NELAP certified test methods performed meet the requirements of NELAC 2009 Standards. Any variances and/or deviations specific to this analytical report are referenced in the lab report using qualifiers and detailed explanations found in the case narrative.

6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 01/31/2020 11:55

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date/Time Sampled	Sampled by	Date/Time Received
P-A-01	2001195-01	Water	01/09/2020 11:55	*JT Howell*	01/10/2020 08:02
P-B-01	2001195-02	Water	01/09/2020 14:10	*JT Howell*	01/10/2020 08:02
P-C-01	2001195-03	Water	01/09/2020 15:00	*JT Howell*	01/10/2020 08:02
Rinse Blank	2001195-04	Water	01/09/2020 16:00	*JT Howell*	01/10/2020 08:02

Sample Receipt Conditions

Date/Time Received: 1/10/2020 8:02:00AM

Shipped by: Fed Ex

Received by: Sarah E. Tomek

Submitted by: JT Howell

Date/Time Logged: 1/10/2020 1:53:00PM

Logged by: Sarah E. Tomek

Cooler ID: **#1142**

Receipt Temperature: 0.6 °C

Cooler Custody Seals Present	Yes	*Received on Ice but Not Frozen*	Yes
Containers Intact	Yes	*No Ice, Short Trip*	No
COC/Labels Agree	Yes	*Obvious Contamination*	No
Labels Complete	Yes	*Rush to meet HT*	No
COC Complete	Yes	*Received within HT*	Yes
Volatile Vial Headspace >6mm	No	*Proper Containers for Analysis*	Yes
Field Sheet/Instructions Included	No	*Correct Preservation*	Yes
Samples Rejected/Documented in Log	No	*Adequate Sample for Analysis*	Yes
Temp Taken From Temp Blank	Yes	*Sample Custody Seals Present*	No
Temp Taken From Sample Container	No	*Samples Missing from COC/Cooler*	No
Temp Taken From Cooler	No		
COC meets acceptance criteria	Yes		

6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 01/31/2020 11:55

CASE NARRATIVE SUMMARY

All reported results are within Micro-Methods Laboratory, Inc.defined laboratory quality control objectives unless detailed in narrative summary or identified as qualifications. NOTE: All results listed on this report are calculated on a wet weight basis (as received by the laboratory) unless otherwise noted in the analysis qualification sections.

Summary Comments:

Initial pH was below the carbonate alkalinity threshold/endpoint, of 8.3 resulting in "0" alkalinity.
Initial pH was below the bicarbonate alkalinity threshold/endpoint of 4.3 for samples 2(P-B-01) and 3 (P-C-01), giving "0" alklainty - GMS

See attached Radiological results from Sub-Contract Laboratory.

Alkalinity, Bicarbonate as CaCO3-SM 2320B 2011

Qualifiers:

SN See Case Narrative Summary

Bicarbonate Alkalinity, Carbonate Alkalinity

2001195-02[P-B-01], 2001195-03[P-C-01], 0A16022-BLK1, 0A16022-BS1, 0A16022-DUP1, 2001195-01[P-A-01], 2001195-04[Rinse Blank]

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 01/31/2020 11:55

P-A-01

2001195-01 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Chloride	**3.00**	0.500	mg/L	1.0	0A13046	DLW	01/13/2020 12:47	01/13/2020 12:47	SM 4110B 2011	
Sulfate as SO4	ND	5.00	"	"	"	DLW	"	"	"	
Bicarbonate Alkalinity	ND	10.0	"	"	0A16023	GMS	01/15/2020 14:45	01/15/2020 15:15	SM 2320B 2011	
Carbonate Alkalinity	ND	10.0	"	"	0A16022	GMS	"	"	"	SN
Fluoride	ND	0.50	"	"	0A20041	DLW	01/16/2020 11:40	01/20/2020 12:57	SM 4500-F C 2011	
Total Dissolved Solids	**35**	1	"	"	0A13035	DLW	01/10/2020 16:10	01/11/2020 16:40	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Boron	ND	0.050	mg/L	1.0	0A13024	ADB	01/13/2020 09:30	01/17/2020 10:54	EPA 200.7 Rev 4.4	
Calcium	**0.351**	0.100	"	"	"	ADB	"	"	"	
Lithium	ND	0.040	"	"	"	ADB	"	"	"	
Magnesium	**0.335**	0.100	"	"	"	ADB	"	"	"	
Potassium	ND	0.300	"	"	"	ADB	"	"	"	
Sodium	**2.31**	0.300	"	"	"	ADB	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [HHe]	ND	0.00500	mg/L	1.0	0A13023	ADB	"	01/14/2020 12:35	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	ADB	"	"	"	
Barium [He]	**0.0752**	0.00100	"	"	"	ADB	"	"	"	
Beryllium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Cadmium [HHe]	ND	0.00100	"	"	"	ADB	"	"	"	
Chromium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Cobalt [He]	**0.00494**	0.00100	"	"	"	ADB	"	"	"	
Lead [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Molybdenum [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Selenium [HHe]	ND	0.00100	"	"	"	ADB	"	"	"	
Thallium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Mercury by EPA 200 Series Methods CVAAS										
Mercury	ND	0.002	mg/L	1.0	0A14065	CLV	01/14/2020 09:30	01/15/2020 11:55	EPA 245.1 Rev 3.0	

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P-B-01

2001195-02 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Chloride	**115**	5.00	mg/L	10.0	0A13046	DLW	01/13/2020 12:47	01/13/2020 13:25	SM 4110B 2011	
Sulfate as SO4	**374**	50.0	"	"	"	DLW	"	"	"	
Bicarbonate Alkalinity	ND	10.0	"	1.0	0A16023	GMS	01/15/2020 14:45	01/15/2020 15:15	SM 2320B 2011	SN
Carbonate Alkalinity	ND	10.0	"	"	0A16022	GMS	"	"	"	SN
Fluoride	**0.81**	0.50	"	"	0A20041	DLW	01/16/2020 11:40	01/20/2020 12:57	SM 4500-F C 2011	
Total Dissolved Solids	**757**	1	"	"	0A13035	DLW	01/10/2020 16:10	01/11/2020 16:40	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Boron	**5.38**	0.050	mg/L	1.0	0A13024	ADB	01/13/2020 09:30	01/17/2020 11:12	EPA 200.7 Rev 4.4	
Calcium	**62.4**	0.100	"	"	"	ADB	"	"	"	
Lithium	**0.721**	0.040	"	"	"	ADB	"	"	"	
Magnesium	**58.8**	0.100	"	"	"	ADB	"	"	"	
Potassium	**27.3**	0.300	"	"	"	ADB	"	"	"	
Sodium	**34.7**	0.300	"	"	"	ADB	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [HHe]	ND	0.00500	mg/L	1.0	0A13023	ADB	"	01/14/2020 13:00	EPA 200.8 Rev 5.4	
Arsenic [NG]	**0.00310**	0.00200	"	"	"	ADB	"	"	"	
Barium [He]	**0.0517**	0.00100	"	"	"	ADB	"	"	"	
Beryllium [He]	**0.00465**	0.00100	"	"	"	ADB	"	"	"	
Cadmium [HHe]	ND	0.00100	"	"	"	ADB	"	"	"	
Chromium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Cobalt [He]	**0.00141**	0.00100	"	"	"	ADB	"	"	"	
Lead [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Molybdenum [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Selenium [HHe]	ND	0.00100	"	"	"	ADB	"	"	"	
Thallium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Mercury by EPA 200 Series Methods CVAAS										
Mercury	ND	0.002	mg/L	1.0	0A14065	CLV	01/14/2020 09:30	01/15/2020 11:55	EPA 245.1 Rev 3.0	

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Environmental Management Services
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Project: Cooperative Energy
Project Number: SOU2-19-001
Project Manager: Ken Ruckstuhl

Reported:
01/31/2020 11:55

P-C-01

2001195-03 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Chloride	**115**	5.00	mg/L	10.0	0A13046	DLW	01/13/2020 12:47	01/13/2020 14:00	SM 4110B 2011	
Sulfate as SO4	**378**	50.0	"	"	"	DLW	"	"	"	
Bicarbonate Alkalinity	ND	10.0	"	1.0	0A16023	GMS	01/15/2020 14:45	01/15/2020 15:15	SM 2320B 2011	SN
Carbonate Alkalinity	ND	10.0	"	"	0A16022	GMS	"	"	"	SN
Fluoride	**0.83**	0.50	"	"	0A20041	DLW	01/16/2020 11:40	01/20/2020 12:57	SM 4500-F C 2011	
Total Dissolved Solids	**797**	1	"	"	0A13035	DLW	01/10/2020 16:10	01/11/2020 16:40	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Boron	**5.43**	0.050	mg/L	1.0	0A13024	ADB	01/13/2020 09:30	01/17/2020 11:18	EPA 200.7 Rev 4.4	
Calcium	**60.5**	0.100	"	"	"	ADB	"	"	"	
Magnesium	**58.8**	0.100	"	"	"	ADB	"	"	"	
Lithium	**0.707**	0.040	"	"	"	ADB	"	"	"	
Potassium	**27.0**	0.300	"	"	"	ADB	"	"	"	
Sodium	**34.3**	0.300	"	"	"	ADB	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [HHe]	ND	0.00500	mg/L	1.0	0A13023	ADB	"	01/14/2020 13:17	EPA 200.8 Rev 5.4	
Arsenic [NG]	**0.00363**	0.00200	"	"	"	ADB	"	"	"	
Barium [He]	**0.0647**	0.00100	"	"	"	ADB	"	"	"	
Beryllium [He]	**0.00540**	0.00100	"	"	"	ADB	"	"	"	
Cadmium [HHe]	ND	0.00100	"	"	"	ADB	"	"	"	
Chromium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Cobalt [He]	**0.00178**	0.00100	"	"	"	ADB	"	"	"	
Lead [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Molybdenum [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Selenium [HHe]	ND	0.00100	"	"	"	ADB	"	"	"	
Thallium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Mercury by EPA 200 Series Methods CVAAS										
Mercury	ND	0.002	mg/L	1.0	0A14065	CLV	01/14/2020 09:30	01/15/2020 11:55	EPA 245.1 Rev 3.0	

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Rinse Blank

2001195-04 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Chloride	ND	0.500	mg/L	1.0	0A13046	DLW	01/13/2020 12:47	01/13/2020 14:18	SM 4110B 2011	
Sulfate as SO4	ND	5.00	"	"	"	DLW	"	"	"	
Bicarbonate Alkalinity	ND	10.0	"	"	0A16023	GMS	01/15/2020 14:45	01/15/2020 15:15	SM 2320B 2011	
Carbonate Alkalinity	ND	10.0	"	"	0A16022	GMS	"	"	"	SN
Fluoride	ND	0.50	"	"	0A20041	DLW	01/16/2020 11:40	01/20/2020 12:57	SM 4500-F C 2011	
Total Dissolved Solids	ND	1	"	"	0A13035	DLW	01/10/2020 16:10	01/11/2020 16:40	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Boron	ND	0.050	mg/L	1.0	0A13024	ADB	01/13/2020 09:30	01/17/2020 11:25	EPA 200.7 Rev 4.4	
Calcium	**0.278**	0.100	"	"	"	ADB	"	"	"	
Magnesium	ND	0.100	"	"	"	ADB	"	"	"	
Lithium	ND	0.040	"	"	"	ADB	"	"	"	
Potassium	ND	0.300	"	"	"	ADB	"	"	"	
Sodium	**0.769**	0.300	"	"	"	ADB	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [HHe]	ND	0.00500	mg/L	1.0	0A13023	ADB	"	01/14/2020 13:34	EPA 200.8 Rev 5.4	
Arsenic [NG]	ND	0.00200	"	"	"	ADB	"	"	"	
Barium [He]	**0.00255**	0.00100	"	"	"	ADB	"	"	"	
Beryllium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Cadmium [HHe]	ND	0.00100	"	"	"	ADB	"	"	"	
Chromium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Cobalt [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Lead [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Molybdenum [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Selenium [HHe]	ND	0.00100	"	"	"	ADB	"	"	"	
Thallium [He]	ND	0.00100	"	"	"	ADB	"	"	"	
Mercury by EPA 200 Series Methods CVAAS										
Mercury	ND	0.002	mg/L	1.0	0A14065	CLV	01/14/2020 09:30	01/15/2020 11:55	EPA 245.1 Rev 3.0	

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Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 0A13035 - Default Prep GenChem											
Blank (0A13035-BLK1)											
Total Dissolved Solids	1/11/20 16:40	ND	1	mg/L							
LCS (0A13035-BS1)											
Total Dissolved Solids	1/11/20 16:40	88	1	mg/L	104		84.6	82.2-100			
LCS Dup (0A13035-BSD1)											
Total Dissolved Solids	1/11/20 16:40	92	1	mg/L	104		88.5	82.2-100	4.44	15	
Duplicate (0A13035-DUP1)			**Source: 2001138-01**								
Total Dissolved Solids	1/11/20 16:40	382	1	mg/L		386			1.04	5	
Batch 0A13046 - Default Prep GenChem											
Blank (0A13046-BLK1)											
Chloride	1/13/20 12:29	ND	0.500	mg/L							
Sulfate as SO4	1/13/20 12:29	ND	5.00	"							
LCS (0A13046-BS1)											
Chloride	1/13/20 11:54	2.87	0.500	mg/L	3.00		95.7	85.4-110			
Sulfate as SO4	1/13/20 11:54	14.8	5.00	"	15.0		98.7	83.3-120			
LCS Dup (0A13046-BSD1)											
Chloride	1/13/20 12:12	2.90	0.500	mg/L	3.00		96.6	85.4-110	0.902	20	
Sulfate as SO4	1/13/20 12:12	15.1	5.00	"	15.0		101	83.3-120	2.15	20	
Duplicate (0A13046-DUP1)			**Source: 2001195-04**								
Chloride	1/13/20 17:26	0.194	0.500	mg/L		0.201			3.54	20	
Sulfate as SO4	1/13/20 17:26	ND	5.00	"		ND				20	

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Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 0A13046 - Default Prep GenChem											
Matrix Spike (0A13046-MS1)			**Source: 2001195-04**								
Chloride	1/13/20 17:44	10.3	0.500	mg/L	10.0	0.201	101	79-119			
Sulfate as SO4	1/13/20 17:44	10.6	5.00	"	10.0	ND	106	43.5-124			
Matrix Spike Dup (0A13046-MSD1)			**Source: 2001195-04**								
Chloride	1/13/20 18:02	10.3	0.500	mg/L	10.0	0.201	101	79-119	0.00974	20	
Sulfate as SO4	1/13/20 18:02	10.7	5.00	"	10.0	ND	107	43.5-124	0.688	20	
Batch 0A16022 - Default Prep GenChem											
Blank (0A16022-BLK1)											
Carbonate Alkalinity	1/15/20 15:15	ND	10.0	mg/L							SN
LCS (0A16022-BS1)											
Carbonate Alkalinity	1/15/20 15:15	469		mg/L	500		93.8	0-200			SN
Duplicate (0A16022-DUP1)			**Source: 2001195-01**								
Carbonate Alkalinity	1/15/20 15:15	ND	10.0	mg/L		ND				200	SN
Batch 0A16023 - Default Prep GenChem											
Blank (0A16023-BLK1)											
Bicarbonate Alkalinity	1/15/20 15:15	ND	10.0	mg/L							
LCS (0A16023-BS1)											
Bicarbonate Alkalinity	1/15/20 15:15	1010		mg/L	950		106	80-120			

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Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 0A16023 - Default Prep GenChem											
Duplicate (0A16023-DUP1)			**Source: 2001195-01**								
Bicarbonate Alkalinity	1/15/20 15:15	ND	10.0	mg/L		ND				30	
Batch 0A20041 - Default Prep GenChem											
Blank (0A20041-BLK1)											
Fluoride	1/20/20 12:57	ND	0.50	mg/L							
LCS (0A20041-BS1)											
Fluoride	1/20/20 12:57	1.87	0.50	mg/L	2.00		93.5	75-125			
LCS Dup (0A20041-BSD1)											
Fluoride	1/20/20 12:57	1.90	0.50	mg/L	2.00		95.0	75-125	1.59	30	
Duplicate (0A20041-DUP1)			**Source: 2001195-04**								
Fluoride	1/20/20 12:57	ND	0.50	mg/L		ND				35	
Matrix Spike (0A20041-MS1)			**Source: 2001195-04**								
Fluoride	1/20/20 12:57	1.97	1.00	mg/L	2.00	ND	98.6	70-130			
Matrix Spike Dup (0A20041-MSD1)			**Source: 2001195-04**								
Fluoride	1/20/20 12:57	1.96	1.00	mg/L	2.00	ND	98.2	70-130	0.407	30	

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Metals by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 0A13024 - EPA 200.2 DCN 1017 Rev 9											
Blank (0A13024-BLK1)											
Boron	1/17/20 10:39	ND	0.050	mg/L							
Calcium	1/17/20 10:39	ND	0.100	"							
Iron	1/17/20 10:39	ND	0.050	"							
Lithium	1/17/20 10:39	ND	0.040	"							
Magnesium	1/17/20 10:39	ND	0.100	"							
Potassium	1/17/20 10:39	ND	0.300	"							
Sodium	1/17/20 10:39	ND	0.300	"							
LCS (0A13024-BS1)											
Boron	1/17/20 10:43	0.207	0.050	mg/L	0.200		104	85-115			
Calcium	1/17/20 10:43	0.196	0.100	"	0.200		98.0	85-115			
Iron	1/17/20 10:43	0.179	0.050	"	0.200		89.5	85-115			
Lithium	1/17/20 10:43	0.212	0.040	"	0.200		106	85-115			
Magnesium	1/17/20 10:43	0.189	0.100	"	0.200		94.5	85-115			
Potassium	1/17/20 10:43	0.407	0.300	"	0.400		102	85-115			
Sodium	1/17/20 10:43	0.424	0.300	"	0.400		106	85-115			
LCS Dup (0A13024-BSD1)											
Boron	1/17/20 10:48	0.209	0.050	mg/L	0.200		104	85-115	0.699	20	
Calcium	1/17/20 10:48	0.194	0.100	"	0.200		97.2	85-115	0.794	20	
Iron	1/17/20 10:48	0.181	0.050	"	0.200		90.6	85-115	1.13	20	
Lithium	1/17/20 10:48	0.223	0.040	"	0.200		111	85-115	4.64	20	
Magnesium	1/17/20 10:48	0.188	0.100	"	0.200		93.8	85-115	0.715	20	
Potassium	1/17/20 10:48	0.371	0.300	"	0.400		92.8	85-115	9.11	20	
Sodium	1/17/20 10:48	0.425	0.300	"	0.400		106	85-115	0.235	20	
Matrix Spike (0A13024-MS1)			**Source: 2001195-01**								
Boron	1/17/20 11:00	0.214	0.050	mg/L	0.200	0.006	104	70-130			
Calcium	1/17/20 11:00	0.520	0.100	"	0.200	0.351	84.8	70-130			
Iron	1/17/20 11:00	2.70	0.050	"	0.200	2.55	71.9	70-130			
Magnesium	1/17/20 11:00	0.518	0.100	"	0.200	0.335	91.8	70-130			
Lithium	1/17/20 11:00	0.214	0.040	"	0.200	ND	107	70-130			
Potassium	1/17/20 11:00	0.491	0.300	"	0.400	ND	123	70-130			
Sodium	1/17/20 11:00	2.65	0.300	"	0.400	2.31	84.6	70-130			

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Metals by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 0A13024 - EPA 200.2 DCN 1017 Rev 9											
Matrix Spike Dup (0A13024-MSD1)			**Source: 2001195-01**								
Boron	1/17/20 11:06	0.214	0.050	mg/L	0.200	0.006	104	70-130	0.140	20	
Calcium	1/17/20 11:06	0.529	0.100	"	0.200	0.351	89.5	70-130	1.79	20	
Iron	1/17/20 11:06	2.75	0.050	"	0.200	2.55	96.8	70-130	1.83	20	
Magnesium	1/17/20 11:06	0.533	0.100	"	0.200	0.335	98.9	70-130	2.70	20	
Lithium	1/17/20 11:06	0.222	0.040	"	0.200	ND	111	70-130	3.44	20	
Potassium	1/17/20 11:06	0.459	0.300	"	0.400	ND	115	70-130	6.78	20	
Sodium	1/17/20 11:06	2.69	0.300	"	0.400	2.31	95.0	70-130	1.56	20	

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 01/31/2020 11:55

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 0A13023 - EPA 200.2 DCN 1017 Rev 9											
Blank (0A13023-BLK1)											
Antimony [HHe]	1/13/20 18:51	ND	0.00500	mg/L							
Arsenic [HHe]	1/13/20 18:51	ND	0.00200	"							
Arsenic [NG]	1/13/20 18:51	ND	0.00200	"							
Barium [He]	1/13/20 18:51	ND	0.00100	"							
Beryllium [He]	1/13/20 18:51	ND	0.00100	"							
Cadmium [HHe]	1/13/20 18:51	ND	0.00100	"							
Chromium [He]	1/13/20 18:51	ND	0.00100	"							
Cobalt [He]	1/13/20 18:51	ND	0.00100	"							
Lead [He]	1/13/20 18:51	ND	0.00100	"							
Molybdenum [He]	1/13/20 18:51	ND	0.00100	"							
Selenium [HHe]	1/13/20 18:51	ND	0.00100	"							
Selenium [NG]	1/13/20 18:51	ND	0.00500	"							
Thallium [He]	1/13/20 18:51	ND	0.00100	"							
LCS (0A13023-BS1)											
Antimony [HHe]	1/13/20 18:59	0.102	0.00500	mg/L	0.100		102	85-115			
Arsenic [HHe]	1/13/20 18:59	0.100	0.00200	"	0.100		100	85-115			
Arsenic [NG]	1/13/20 18:59	0.100	0.00200	"	0.100		100	85-115			
Barium [He]	1/13/20 18:59	0.094	0.00100	"	0.100		94.4	85-115			
Beryllium [He]	1/13/20 18:59	0.097	0.00100	"	0.100		96.9	85-115			
Cadmium [HHe]	1/13/20 18:59	0.094	0.00100	"	0.100		94.2	85-115			
Chromium [He]	1/13/20 18:59	0.097	0.00100	"	0.100		97.4	85-115			
Cobalt [He]	1/13/20 18:59	0.096	0.00100	"	0.100		96.4	85-115			
Lead [He]	1/13/20 18:59	0.097	0.00100	"	0.100		97.2	85-115			
Molybdenum [He]	1/13/20 18:59	0.097	0.00100	"	0.100		97.3	85-115			
Selenium [HHe]	1/13/20 18:59	0.097	0.00100	"	0.100		97.4	85-115			
Selenium [NG]	1/13/20 18:59	0.100	0.00500	"	0.100		99.7	85-115			
Thallium [He]	1/13/20 18:59	0.100	0.00100	"	0.100		100	85-115			

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 01/31/2020 11:55

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 0A13023 - EPA 200.2 DCN 1017 Rev 9											
LCS Dup (0A13023-BSD1)											
Antimony [HHe]	1/13/20 19:08	0.100	0.00500	mg/L	0.100		100	85-115	1.80	20	
Arsenic [HHe]	1/13/20 19:08	0.099	0.00200	"	0.100		98.8	85-115	1.57	20	
Arsenic [NG]	1/13/20 19:08	0.101	0.00200	"	0.100		101	85-115	0.770	20	
Barium [He]	1/13/20 19:08	0.098	0.00100	"	0.100		97.7	85-115	3.41	20	
Beryllium [He]	1/13/20 19:08	0.104	0.00100	"	0.100		104	85-115	7.25	20	
Cadmium [HHe]	1/13/20 19:08	0.092	0.00100	"	0.100		92.0	85-115	2.32	20	
Chromium [He]	1/13/20 19:08	0.103	0.00100	"	0.100		103	85-115	5.22	20	
Cobalt [He]	1/13/20 19:08	0.103	0.00100	"	0.100		103	85-115	6.65	20	
Lead [He]	1/13/20 19:08	0.102	0.00100	"	0.100		102	85-115	5.25	20	
Molybdenum [He]	1/13/20 19:08	0.103	0.00100	"	0.100		103	85-115	6.09	20	
Selenium [HHe]	1/13/20 19:08	0.099	0.00100	"	0.100		98.5	85-115	1.20	20	
Selenium [NG]	1/13/20 19:08	0.101	0.00500	"	0.100		101	85-115	1.60	20	
Thallium [He]	1/13/20 19:08	0.104	0.00100	"	0.100		104	85-115	3.41	20	
Matrix Spike (0A13023-MS1)			**Source: 2001195-01**								
Antimony [HHe]	1/14/20 12:43	0.109	0.00500	mg/L	0.100	ND	109	70-130			
Arsenic [NG]	1/14/20 12:43	0.110	0.00200	"	0.100	ND	110	70-130			
Arsenic [HHe]	1/14/20 12:43	0.108	0.00200	"	0.100	0.0002	108	70-130			
Barium [He]	1/14/20 12:43	0.178	0.00100	"	0.100	0.075	103	70-130			
Beryllium [He]	1/14/20 12:43	0.113	0.00100	"	0.100	ND	113	70-130			
Cadmium [HHe]	1/14/20 12:43	0.101	0.00100	"	0.100	ND	101	70-130			
Chromium [He]	1/14/20 12:43	0.105	0.00100	"	0.100	0.0003	105	70-130			
Cobalt [He]	1/14/20 12:43	0.108	0.00100	"	0.100	0.005	103	70-130			
Lead [He]	1/14/20 12:43	0.100	0.00100	"	0.100	ND	100	70-130			
Molybdenum [He]	1/14/20 12:43	0.102	0.00100	"	0.100	ND	102	70-130			
Selenium [HHe]	1/14/20 12:43	0.087	0.00100	"	0.100	ND	86.6	70-130			
Selenium [NG]	1/14/20 12:43	0.085	0.00500	"	0.100	ND	84.9	70-130			
Thallium [He]	1/14/20 12:43	0.106	0.00100	"	0.100	ND	106	70-130			

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 01/31/2020 11:55

Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 0A13023 - EPA 200.2 DCN 1017 Rev 9											
Matrix Spike Dup (0A13023-MSD1)			**Source: 2001195-01**								
Antimony [HHe]	1/14/20 12:52	0.107	0.00500	mg/L	0.100	ND	107	70-130	1.46	20	
Arsenic [NG]	1/14/20 12:52	0.109	0.00200	"	0.100	ND	109	70-130	1.18	20	
Arsenic [HHe]	1/14/20 12:52	0.108	0.00200	"	0.100	0.0002	108	70-130	0.355	20	
Barium [He]	1/14/20 12:52	0.188	0.00100	"	0.100	0.075	113	70-130	5.66	20	
Beryllium [He]	1/14/20 12:52	0.117	0.00100	"	0.100	ND	117	70-130	3.60	20	
Cadmium [HHe]	1/14/20 12:52	0.100	0.00100	"	0.100	ND	100	70-130	1.01	20	
Chromium [He]	1/14/20 12:52	0.108	0.00100	"	0.100	0.0003	108	70-130	3.47	20	
Cobalt [He]	1/14/20 12:52	0.112	0.00100	"	0.100	0.005	107	70-130	3.65	20	
Lead [He]	1/14/20 12:52	0.104	0.00100	"	0.100	ND	104	70-130	3.02	20	
Molybdenum [He]	1/14/20 12:52	0.107	0.00100	"	0.100	ND	107	70-130	4.12	20	
Selenium [NG]	1/14/20 12:52	0.083	0.00500	"	0.100	ND	82.7	70-130	2.67	20	
Selenium [HHe]	1/14/20 12:52	0.085	0.00100	"	0.100	ND	85.4	70-130	1.36	20	
Thallium [He]	1/14/20 12:52	0.109	0.00100	"	0.100	ND	109	70-130	3.29	20	

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 01/31/2020 11:55

Mercury by EPA 200 Series Methods CVAAS - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 0A14065 - EPA 245.1 DCN 1017 Rev 9											
Blank (0A14065-BLK1)											
Mercury	1/15/20 11:55	ND	0.002	mg/L							
LCS (0A14065-BS1)											
Mercury	1/15/20 11:55	0.005	0.002	mg/L	0.00500		104	85-115			
LCS Dup (0A14065-BSD1)											
Mercury	1/15/20 11:55	0.005	0.002	mg/L	0.00500		106	85-115	1.90	20	
Matrix Spike (0A14065-MS1)			**Source: 2001195-01**								
Mercury	1/15/20 11:55	0.006	0.002	mg/L	0.00500	ND	112	70-130			
Matrix Spike Dup (0A14065-MSD1)			**Source: 2001195-01**								
Mercury	1/15/20 11:55	0.005	0.002	mg/L	0.00500	ND	104	70-130	7.41	20	

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 01/31/2020 11:55

Certified Analyses Included in this Report

Analyte	Certification Code
EPA 200.7 Rev 4.4 in Water	
Aluminum	C01,C02
Antimony	C01,C02
Arsenic	C01,C02
Barium	C01,C02
Beryllium	C01,C02
Boron	C01,C02
Cadmium	C01,C02
Calcium	C01,C02
Chromium	C01,C02
Cobalt	C01,C02
Copper	C01,C02
Iron	C01,C02
Lead	C01,C02
Magnesium	C01,C02
Manganese	C01,C02
Molybdenum	C01,C02
Nickel	C01,C02
Potassium	C01,C02
Selenium	C01,C02
Silver	C01,C02
Sodium	C01,C02
Strontium	C01,C02
Thallium	C01,C02
Vanadium	C01,C02
Zinc	C01,C02
Phosphorus	C01,C02
EPA 200.8 Rev 5.4 in Water	
Aluminum [He]	C01,C02
Antimony [HHe]	C01,C02
Antimony [NG]	C01,C02
Arsenic [HHe]	C01,C02
Arsenic [NG]	C01,C02
Barium [He]	C01,C02
Beryllium [He]	C01,C02
Boron [NG]	C01,C02
Cadmium [HHe]	C01,C02
Cadmium [NG]	C01,C02
Chromium [He]	C01,C02
Cobalt [He]	C01,C02
Copper [He]	C01,C02
Copper [NG]	C01,C02

Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 01/31/2020 11:55

Iron [He]	C01,C02
Lead [He]	C01,C02
Lead [NG]	C01,C02
Manganese [He]	C01,C02
Molybdenum [He]	C01,C02
Nickel [He]	C01,C02
Selenium [HHe]	C01,C02
Selenium [NG]	C01,C02
Silver [He]	C01,C02
Silver [NG]	C01,C02
Strontium [He]	C01,C02
Thallium [He]	C01,C02
Vanadium [He]	C01,C02
Zinc [He]	C01,C02
Antimony [He]	C01,C02

EPA 245.1 Rev 3.0 in Water

Mercury	C01,C02

SM 2540 C-2011 in Water

Total Dissolved Solids	C01,C02

****Only compounds included in this list are associated with accredited analyses****

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	Reported: 01/31/2020 11:55

Laboratory Accreditations/Certifications

Code	Description	Number	Expires
C01	*LA Environmental Lab Accreditation Program*	*01960*	*06/30/2020*
C02	*The NELAC Institute (NELAP)*	*TNI01397*	*06/30/2020*
C03	*Ms Dept of Health (Drinking Water Microbiology)*	*MS00021*	*12/31/2020*
C04	*Ms Dept of Health (Drinking Water Chemistry)*	*MS00021*	*12/31/2020*
C05	*Ms DEQ Lead Firm Certification*	*PBF-00000028*	*03/24/2020*
C06	*MsDEQ Asbestos Inspector : C.D. Bingham*	*ABI-00001348*	*02/21/2020*
C07	*MsDEQ Air Monitor : C.D. Bingham*	*AM-011572*	*03/07/2020*
C08	*MsDEQ Asbestos Inspector: C. W. Meins*	*ABI-00001821*	*09/04/2020*
C09	*MsDEQ Air Monitor : C.W. Meins*	*AM-011189*	*03/07/2020*
C12			
C14	*MsDEQ Lead Paint Inspector : C.D. Bingham*	*PBI-00003690*	*02/22/2020*
C15	*MsDEQ Lead Paint Inspector : C.W. Meins*	*PBI-00001740*	*02/22/2020*
Not Certi	*Not certified by an accrediting body*	*No certification held*	*06/30/2020*

Report Definitions

TNC	Too Numerous To Count
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the minimum reporting limit
NR	Not Reported
RPD	Relative Percent Difference
ICV	Initial Calibration Verfiication
CCV	Continuing Calibration Verification Standard
SSV	Secondary Source Verfication Standard
LCS	Lab Control Spike - Lab matrix prepared with known concentration of analyte/s of interest analyzed by method.
MS	Matrix Spike - Sample prepared with known concentration of analyte/s of interest analyzed by method.
MSD	Matrix Spike Duplicate - Duplicate sample prepared with known concentration of analyte/s of interest analyzed by method.
MRL	Minimum Reporting Limit
%REC	Percentage Recovery of known concentration added to matrix
Batch	Group of samples prepared for analysis not to exceed 20 samples.
Matrix	Material containing analyte/s of interest
Surrogate	Analyte added to sample to determine extraction efficiency of method.

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Cooperative Energy Project Number: SOU2-19-001 Project Manager: Ken Ruckstuhl	**Reported:** 01/31/2020 11:55

Analyst Initials Key

FullName	Initials
Alyssa D Bennett	ADB
Charles L Vorhoff	CLV
Dortha L. Wells	DLW
Gayle M. Sparling	GMS
Harry P. Howell	HPH
Jacob S. Mizelle	JSM
Sarah E. Tomek	SET
Teresa Meins	TKM
Tina Tomek	TPT

MICRO-METHODS LABORATORY, INC.
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www.micromethodslab.com

Chain of Custody Record

Lab ID# MS00021
LELAP ID # 01960
TNI ID # TNI01397

Print Form

M-M Lab WO # 2001195

Company Name: EMS Inc.		Project Manager: Ken Ruckstuhl	
Address: 7350 US Hwy 98		Purchase Order #:	
City: Hattiesburg	State: MS Zip: 39402	Email Address: kruckstuhl@env-mgt.com	
Phone: 601-544-3674		Sampler Name Printed: JT Howell	
Fax: 601-544-0504		Sampler Name Signed: JT Howell	

Turn Around Time & Reporting
Our normal turn around time is 10 working days

- x Normal
- __ Next Day*
- __ 2nd Day*
- __ Other* ____

*All rush order requests must be prior approved.

__ Phone __ Mail __ Fax __ Email

QC Level: Level 1 ☐ Level 2 ☐ Level 3 ☐

Project Name: Cooperative Energy
Project #: SOU2-19-001

List Analyses Requested

Sample Identification	Sampling Date/Time	Matrix Code	# of Containers	Grab (G) or Composite (C)	radiological	wet lab	metals							
Preservative														
P-A-01	1/9/20 1155	W	45	G	X	X	X							
P-B-01	1/9/20 1410	W	45	G	X	X	X							
P-C-01	1/9/20 1500	W	45	G	X	X	X							
Rinse Blank	1/9/20 1600	W	23	G		X	X							
			8											

Field Testing

ID# Field Test	ID# Field Test	ID# Field Test	ID# Field Test

Matrix:
W = Water
DW = Drinking Water
S = Solid
SO = Soil
SE = Sediment
L = Liquid
A = Air
O = Oil
SL = Sludge

Preservation:
1=H2SO4
2=H3PO4
3=NaOH
4=ZnC4H10O6
5=ZnC4H10O6 & NaOH
6=HNO3
7=Na2S2O3
8=HCl
9=NaHSO4

Received on Ice? (Y) N Thermometer# 4 Cooler # 1142 **Receipt Temp Corrected(°C)** 0.6°c
Date & Time ________ By: SJ Sample ____ Blank X Cooler ____

All Temps are Corrected Values

	Printed Name	Signature	Company	Date	Time
Relinquished by	JT Howell	JT Howell	EMS	1/9/20	1800
Received by	Fedex				
Relinquished by	Fedex				
Received by	Sarah Tomek	Sarah Tomek	MM	1/10/2020	0802
Relinquished by					
Received by					

Notes:
Appendix III: Boron, Calcium, Chloride, Fluoride, Sulfate, TDS
App IV: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Fluoride, Lead, Lithium, Mercury, Molybdenum, Selenium, Thallium, Combined Radium (226 + 228)
Cation/Anions: Magnesium, Potassium, Sodium, bicarbonate/carbonate alkalinity.

Physical Address: 6500 Sunplex Drive, Ocean Springs MS 39564

Pace Analytical Services, LLC
1000 Riverbend Blvd - Suite F
St. Rose, LA 70087
(504)469-0333

January 31, 2020

Harry Howell
Micro Methods Laboratory, Inc.
P. O. Box 1410
Ocean Springs, MS 39566

RE: Project: 2001195
Pace Project No.: 20138311

Dear Harry Howell:

Enclosed are the analytical results for sample(s) received by the laboratory on January 14, 2020. 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,

Karen Brown
karen.brown@pacelabs.com
(504)469-0333
Project Manager

Enclosures

Pace Analytical Services, LLC
1000 Riverbend Blvd - Suite F
St. Rose, LA 70087
(504)469-0333

CERTIFICATIONS

Project:	2001195
Pace Project No.:	20138311

Pace Analytical Services Pennsylvania

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1000 Riverbend Blvd - Suite F
St. Rose, LA 70087
(504)469-0333

SAMPLE SUMMARY

Project: 2001195
Pace Project No.: 20138311

Lab ID	Sample ID	Matrix	Date Collected	Date Received
20138311001	**2001195-01**	Water	01/09/20 11:55	01/14/20 10:30
20138311002	**2001195-02**	Water	01/09/20 14:10	01/14/20 10:30
20138311003	**2001195-03**	Water	01/09/20 15:00	01/14/20 10:30

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St. Rose, LA 70087
(504)469-0333

SAMPLE ANALYTE COUNT

Project: 2001195
Pace Project No.: 20138311

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
20138311001	**2001195-01**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
20138311002	**2001195-02**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
20138311003	**2001195-03**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA

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PROJECT NARRATIVE

Project: 2001195
Pace Project No.: 20138311

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: Micro Methods
Date: January 31, 2020

General Information:
3 samples were analyzed for EPA 903.1. 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.

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

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.

Additional Comments:

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PROJECT NARRATIVE

Project:	2001195
Pace Project No.:	20138311

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: Micro Methods
Date: January 31, 2020

General Information:
3 samples were analyzed for EPA 904.0. 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.

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

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.

Additional Comments:

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

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 2001195
Pace Project No.: 20138311

Sample: 2001195-01 **Lab ID: 20138311001** Collected: 01/09/20 11:55 Received: 01/14/20 10:30 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 2.5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis. The samples were not preserved <2 within the required 5 days of collection.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.122 ± 0.379 (0.733) C:NA T:92%**	pCi/L	01/28/20 14:38	13982-63-3	
Radium-228	EPA 904.0	**-0.176 ± 0.392 (0.935) C:85% T:73%**	pCi/L	01/29/20 10:58	15262-20-1	

Sample: 2001195-02 **Lab ID: 20138311002** Collected: 01/09/20 14:10 Received: 01/14/20 10:30 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 2.5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis. The samples were not preserved <2 within the required 5 days of collection.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.0604 ± 0.458 (0.957) C:NA T:86%**	pCi/L	01/29/20 11:40	13982-63-3	
Radium-228	EPA 904.0	**0.867 ± 0.485 (0.902) C:75% T:82%**	pCi/L	01/30/20 12:24	15262-20-1	

Sample: 2001195-03 **Lab ID: 20138311003** Collected: 01/09/20 15:00 Received: 01/14/20 10:30 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Upon receipt at the laboratory, 2.5 mls of nitric acid were added to the sample to meet the sample preservation requirement of pH <2 for radiochemistry analysis. The samples were not preserved <2 within the required 5 days of collection.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.121 ± 0.412 (0.911) C:NA T:89%**	pCi/L	01/29/20 11:40	13982-63-3	
Radium-228	EPA 904.0	**1.34 ± 0.602 (1.04) C:71% T:75%**	pCi/L	01/30/20 12:24	15262-20-1	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 2001195
Pace Project No.: 20138311

QC Batch: 379895 | Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 | Analysis Description: 903.1 Radium-226
Associated Lab Samples: 20138311001

METHOD BLANK: 1841776 | Matrix: Water
Associated Lab Samples: 20138311001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.102 ± 0.246 (0.476) C:NA T:81%	pCi/L	01/28/20 14:12	

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

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 2001195
Pace Project No.: 20138311

QC Batch: 379897 | Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 | Analysis Description: 904.0 Radium 228
Associated Lab Samples: 20138311002, 20138311003

METHOD BLANK: 1841779 | Matrix: Water
Associated Lab Samples: 20138311002, 20138311003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.0290 ± 0.406 (0.945) C:77% T:72%	pCi/L	01/30/20 12:24	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 2001195
Pace Project No.: 20138311

QC Batch: 379896 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 20138311001

METHOD BLANK: 1841777 Matrix: Water
Associated Lab Samples: 20138311001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.412 ± 0.351 (0.707) C:89% T:76%	pCi/L	01/29/20 10:57	

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

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QUALITY CONTROL - RADIOCHEMISTRY

Project: 2001195
Pace Project No.: 20138311

QC Batch: 379898 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 20138311002, 20138311003

METHOD BLANK: 1841780 Matrix: Water
Associated Lab Samples: 20138311002, 20138311003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.108 ± 0.258 (0.499) C:NA T:81%	pCi/L	01/29/20 11:40	

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: 2001195
Pace Project No.: 20138311

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The Nelac Institute

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 2001195
Pace Project No.: 20138311

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
20138311001	**2001195-01**	EPA 903.1	379895		
20138311002	**2001195-02**	EPA 903.1	379898		
20138311003	**2001195-03**	EPA 903.1	379898		
20138311001	**2001195-01**	EPA 904.0	379896		
20138311002	**2001195-02**	EPA 904.0	379897		
20138311003	**2001195-03**	EPA 904.0	379897		

MICRO-METHODS LABORATORY, INC.

WO#: 20138311

20138311

Sending Laboratory:

Micro-Methods Laboratory, Inc.
6500 Sunplex Drive
Ocean Springs, MS 39564
Phone: 228.875.6420
Fax: 228.875.6423

Project Manager: Teresa Meins

Subc

Pace Analytical
1000 Riverbend Blvd. Suite F
St. Rose, LA 70087
Phone: -
Fax: -

Work Order: 2001195

Analysis	Due	Expires	Comments
Sample ID: 2001195-01 ***Water*** ***Sampled: 01/09/2020 11:55*** ***Sample Name: P-A-01***			
Radium,Total 226 & 228 by EPA 903.1 & 90	01/20/2020	02/06/2020 11:55	
Containers Supplied: 1000mL Plastic (A) 1000mL Plastic (B)			
Sample ID: 2001195-02 ***Water*** ***Sampled: 01/09/2020 14:10*** ***Sample Name: P-B-01***			
Radium,Total 226 & 228 by EPA 903.1 & 9C	01/20/2020	02/06/2020 14:10	
Containers Supplied: 1000mL Plastic (A) 1000mL Plastic (B)			
Sample ID: 2001195-03 ***Water*** ***Sampled: 01/09/2020 15:00*** ***Sample Name: P-C-01***			
Radium,Total 226 & 228 by EPA 903.1 & 9C	01/20/2020	02/06/2020 15:00	
Containers Supplied: 1000mL Plastic (A) 1000mL Plastic (B)			

4.1

ambient

Sarah Jomeh 1/13/2020	@ 1030	UPS 1/13/2020	@ 1630
Released By	Date	Received By	Date
UPS 1/14/2020	@ 10:30	[signature] / Pace	1-14-20 10:30
Released By	Date	Received By	Date
Released By	Date	Received By	Date
Released By	Date	Received By	Date
Released By	Date	Received By	Date

WO#:20138311

Pace Analytical

1000 Riverbend. Blvd., Suite F
St. Rose, LA 70087

Sample Condition Upon Re

PM: KHB Due Date: 02/05/20
CLIENT: 20-MICRO

Proje

Courier: ☐ Pace Courier ☐ Hired Courier ☐ Fed X ☒ UPS ☐ DHL ☐ USPS ☐ Customer ☐ Other

Custody Seal on Cooler/Box Present: [see COC]

Custody Seals intact: ☒ Yes ☐ No

Therometer Used:	☐ Therm Fisher IR 7 ☐ Therm Fisher IR 10

Type of Ice: Wet Blue None

Samples on ice: [see COC]

Cooler Temperature: [see COC]

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 01-14-20 M

Temp must be measured from Temperature blank when present

		Comments:
Temperature Blank Present"?	☐Yes ☐No ☒N/A	1
Chain of Custody Present:	☒Yes ☐No ☐N/A	2
Chain of Custody Complete:	☒Yes ☐No ☐N/A	3
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	4
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	5
Samples Arrived within Hold Time:	☒Yes ☐No ☐N/A	6
Sufficient Volume:	☒Yes ☐No ☐N/A	7
Correct Containers Used:	☒Yes ☐No ☐N/A	8
Filtered vol. Rec. for Diss. tests	☐Yes ☐No ☒N/A	9
Sample Labels match COC:	☒Yes ☐No ☐N/A	10
All containers received within manafacture's precautionary and/or expiration dates.	☒Yes ☐No ☐N/A	11
All containers needing chemical preservation have been checked (except VOA, coliform, & O&G).	☒Yes ☐No ☐N/A	12
All containers preservation checked found to be in compliance with EPA recommendation.	☒Yes ☐No ☐N/A	13 If No, was preserative added? ☐Yes ☐No If added record lot no.: HNO3 _____ H2SO4 _____
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☒N/A	14
Trip Blank Present:	☐Yes ☒No	15

Client Notification/ Resolution:

Person Contacted: __________ Date/Time: __________

Comments/ Resolution: __________

ALLC003rev.09, 10Oct2019 SCUR Form-mod

Pace Pitt

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Ship To:
Pace Analytical Pittsburgh
1638 Roseytown Road
Suites 2,3, & 4
Greensburg, PA 15601
Phone (724)850-5600

INTER_LABORATORY WORK ORDER # 20138311
(To be completed by sending lab)

Sending Project No:	20138311
Receiving Project No:	
Check Box for Consolidated Invoice:	☐
Date Prepared:	01/14/20
REQUESTED COMPLETION DATE:	**2/5/2020**

Sending Region	IR20-New Orleans	Sending Project Mgr.	Karen Brown
Receiving Region	IR30-Pittsburgh	External Client	Micro Methods
State of Sample Origin	MS	QC Deliverable	STD REPORT

All questions should be addressed to sending project manager.

Requested Reportable Units ________ Report Wet or Dry Weight? Wet ________ Cert. Needed ________

WORK REQUESTED

Method Description	Container Type	Quantity of Containers	Preservative	Quantity of Samples	Unit Price	Amount
= Ra 226 (903.1)	BP1N	1	HNO3	3	$80.00	$240.00
Ra 228 (904.0)	BP1N	1	HNO3	3	$80.00	$240.00
					TOTAL	$480.00

Special Requirements: ________

Receiving Region Department	Acctg. Code	Totals from above	Revenue Allocation	
			Receiving Region (80%)	Client Services Dept Sending Region (20%)
Radiochemistry	38	$480.00	$384.00	$96.00
* Custom Revenue Allocation	**TOTAL**	$480.00	$384.00	$96.00

FOR ANALYTICAL WORK COMPLETED THIS SECTION ALSO

Chain of Custody Included: ☒ Yes ☐ No   Return Samples to Sending Region: ☐ Yes ☒ No

Matrix: ☐ Drinking Water ☐ Soil ☒ Water ☐ Air ☐ Other (identify) ________

CONFIRMATION OF WORK COMPLETED

Date Completed: ________ Receiving Project Manager: ________

DISPOSITION of FORM

Original sent to the receiving lab - Copy kept at the sending lab.

When work completed: Original sent to the ABM at the receiving laboratory. Copies are made to corporate as needed.

Invoice:
Customer :
Phone : (724)850-5600
Dept :
Date : 15Jan20
Weight : 19.7 LBS
COD :
DV :
Svcs: STANDARD OVERNIGHT
TRCK: 1246 2337 4247
0.00
Shipping : 39.22
Special : 3.04
Handling : 0.00
Total : 42.26

COPY

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

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State Of Origin: MS
Cert. Needed: ☐ Yes ☐ No
Owner Received Date: 1/14/2020 **Results Requested By:** 2/5/2020

Workorder: 20138311 **Workorder Name:** 2001195

Report To	Subcontract To
Karen Brown Pace Analytical New Orleans 1000 Riverbend Blvd Suite F St. Rose, LA 70087 Phone (504)469-0333	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3	liter	Plastic				= Ra 226 (903.1)	Ra 228 (904.0)	LAB USE ONLY
1	2001195-01	PS	1/9/2020 11:55	20138311001	Water	2						X	X	
2	2001195-02	PS	1/9/2020 14:10	20138311002	Water	2						X	X	
3	2001195-03	PS	1/9/2020 15:00	20138311003	Water	2						X	X	
4														
5														

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] Pace	1/15/20 16:21	FedEx	1/15/20 16:21
2	FedEx			
3				

Comments:

Cooler Temperature on Receipt °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

COPY

Mailing Address:
PO Box 1410
Ocean Springs, MS
39566-1410

6500 Sunplex Drive
Ocean Springs, MS 39564
228.875.6420 Phone
228.875.6423 Fax

August 03, 2021

Ken Ruckstuhl

Work Order # : 2107363

Purchase Order #:

Environmental Management Services
PO Box 15369
Hattiesburg, MS 39404-5369

RE: Plant Morrow Extraction Wells

Enclosed are Micro-Methods Laboratory, Inc. results of analyses performed on samples received 07/19/2021 13:00. If you have any questions concerning this report, please feel free to contact the office.

Sincerely,

Mitch Spicer

Lab Director
Micro-Methods Laboratory, Inc.

DISCLAIMER
The results only relate to the items or the sample and/or samples received by the laboratory. This report shall not be reproduced except in full, without the approval of the laboratory. All NELAP certified test methods performed meet the requirements of NELAC 2009 Standards. Any variances and/or deviations specific to this analytical report are referenced in the lab report using qualifiers and detailed explanations found in the case narrative.

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Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Plant Morrow Extraction Wells Project Number: [none] Project Manager: Ken Ruckstuhl	Reported: 08/03/2021 14:59

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date/Time Sampled	Sampled by	Date/Time Received
EW-6	2107363-01	Water	07/16/2021 11:15	*Alan Niven*	07/19/2021 13:00
EW-5	2107363-02	Water	07/16/2021 11:45	*Alan Niven*	07/19/2021 13:00
EW-4	2107363-03	Water	07/16/2021 11:50	*Alan Niven*	07/19/2021 13:00
EW-3	2107363-04	Water	07/16/2021 11:52	*Alan Niven*	07/19/2021 13:00
EW-2	2107363-05	Water	07/16/2021 12:00	*Alan Niven*	07/19/2021 13:00
EW-1	2107363-06	Water	07/16/2021 12:16	*Alan Niven*	07/19/2021 13:00
EW-10	2107363-07	Water	07/16/2021 12:31	*Alan Niven*	07/19/2021 13:00
EW-11	2107363-08	Water	07/16/2021 12:40	*Alan Niven*	07/19/2021 13:00
EW-12	2107363-09	Water	07/16/2021 12:45	*Alan Niven*	07/19/2021 13:00
EW-13	2107363-10	Water	07/16/2021 12:52	*Alan Niven*	07/19/2021 13:00
EW-14	2107363-11	Water	07/16/2021 13:00	*Alan Niven*	07/19/2021 13:00
EW-15	2107363-12	Water	07/16/2021 13:05	*Alan Niven*	07/19/2021 13:00

MICRO-METHODS LABORATORY, INC.

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Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Plant Morrow Extraction Wells Project Number: [none] Project Manager: Ken Ruckstuhl	**Reported:** 08/03/2021 14:59

Sample Receipt Conditions

Date/Time Received: 7/19/2021 1:00:00PM

Shipped by:

Received by: Teresa Meins

Submitted by: Alan Niven

Date/Time Logged: 7/20/2021 11:04:00AM

Logged by: Teresa Meins

Cooler ID: **Default Cooler**

Receipt Temperature: 2.0 °C

Cooler Custody Seals Present	Yes	*Received on Ice but Not Frozen*	Yes
Containers Intact	Yes	*No Ice, Short Trip*	No
COC/Labels Agree	Yes	*Obvious Contamination*	No
Labels Complete	Yes	*Rush to meet HT*	No
COC Complete	Yes	*Received within HT*	No
Volatile Vial Headspace >6mm	No	*Proper Containers for Analysis*	No
Field Sheet/Instructions Included	No	*Correct Preservation*	No
Samples Rejected/Documented in Log	No	*Adequate Sample for Analysis*	Yes
Temp Taken From Temp Blank	No	*Sample Custody Seals Present*	No
Temp Taken From Sample Container	Yes	*Samples Missing from COC/Cooler*	No
Temp Taken From Cooler	No		
COC meets acceptance criteria	Yes		

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Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Plant Morrow Extraction Wells Project Number: [none] Project Manager: Ken Ruckstuhl	Reported: 08/03/2021 14:59

CASE NARRATIVE SUMMARY

All reported results are within Micro-Methods Laboratory, Inc.defined laboratory quality control objectives unless detailed in narrative summary or identified as qualifications. NOTE: All results listed on this report are calculated on a wet weight basis (as received by the laboratory) unless otherwise noted in the analysis qualification sections.

Summary Comments: *No Summary Comments*

Total Metals-EPA 200.7 Rev 4.4

Qualifiers:

M2 MS/MSD Recovery below acceptable limit.

Barium 455.403 [Radial], Molybdenum 202.030 [Axial]

1G22037-MS2, 1G22037-MSD2

M3 MS/MSD Precision Limit exceeded.

Barium 455.403 [Radial]

1G22037-MSD2

M8 Target recovery is outside of established control limits due to matrix interference.

Molybdenum 202.030 [Axial]

1G22037-MS2, 1G22037-MSD2

Total Metals-EPA 200.8 Rev 5.4

Qualifiers:

M1 MS/MSD Recovery limit exceeded.

Molybdenum [He]

1G22032-MS1, 1G22032-MSD1

M8 Target recovery is outside of established control limits due to matrix interference.

Molybdenum [He]

1G22032-MS1, 1G22032-MSD1

MICRO-METHODS LABORATORY, INC.

6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Plant Morrow Extraction Wells Project Number: [none] Project Manager: Ken Ruckstuhl	Reported: 08/03/2021 14:59

EW-6

2107363-01 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Total Alkalinity	**581**	10.0	mg/L	1.0	1G23016	GMS	07/22/2021 13:00	07/23/2021 11:15	SM 2320B 2011	
Chloride	**264**	0.50	"	"	1G27024	DLW	07/26/2021 15:10	07/27/2021 09:08	SM 4500-Cl B 2011	
Fluoride	**3.24**	0.50	"	"	1G26030	DLW	07/26/2021 08:50	07/26/2021 12:39	SM 4500-F C 2011	
Total Sulfate	**2770**	10.0	"	"	1G22045	GMS	07/22/2021 11:00	07/23/2021 14:00	SM 4500-SO4-D 2011	
Total Dissolved Solids	**4928**	4	"	"	1G23030	DLW	07/21/2021 14:50	07/23/2021 00:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	**0.050**	0.010	mg/L	1.0	1G22037	CLV	07/22/2021 09:30	07/29/2021 12:40	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	**13.2**	1.25	"	25.0	"	CLV	"	07/29/2021 16:10	"	
Calcium 315.887 [Radial]	**595**	1.25	"	"	"	CLV	"	"	"	
Iron 259.940 [Radial]	**0.310**	0.050	"	1.0	"	CLV	"	07/29/2021 12:40	"	
Lithium 610.362 [Axial]	**4.80**	0.040	"	"	"	CLV	"	"	"	
Magnesium 285.213 [Radial]	**388**	1.25	"	25.0	"	CLV	"	07/29/2021 16:10	"	
Manganese 257.610 [Axial]	**0.616**	0.050	"	1.0	"	CLV	"	07/29/2021 12:40	"	
Molybdenum 202.030 [Axial]	**1.14**	0.050	"	"	"	CLV	"	"	"	
Potassium 766.490 [Radial]	**194**	2.50	"	25.0	"	CLV	"	07/29/2021 16:10	"	
Sodium 589.592 [Radial]	**131**	2.50	"	"	"	CLV	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [He]	ND	0.0100	mg/L	5.0	1G22032	SCH	"	07/28/2021 18:43	EPA 200.8 Rev 5.4	
Arsenic [He]	**0.0348**	0.0100	"	"	"	SCH	"	"	"	
Barium [He]	**0.0502**	0.00500	"	"	"	SCH	"	"	"	
Beryllium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	SCH	"	"	"	
Cobalt [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Lead [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Molybdenum [He]	**1.50**	0.00500	"	"	"	SCH	"	"	"	
Selenium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Thallium [He]	ND	0.0100	"	"	"	SCH	"	"	"	

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Project: Plant Morrow Extraction Wells
Project Number: [none]
Project Manager: Ken Ruckstuhl

Reported: 08/03/2021 14:59

EW-5

2107363-02 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Total Alkalinity	**173**	10.0	mg/L	1.0	1G23016	GMS	07/22/2021 13:00	07/23/2021 11:15	SM 2320B 2011	
Chloride	**315**	0.50	"	"	1G27024	DLW	07/26/2021 15:10	07/27/2021 09:08	SM 4500-Cl B 2011	
Fluoride	**3.99**	0.50	"	"	1G26030	DLW	07/26/2021 08:50	07/26/2021 12:39	SM 4500-F C 2011	
Total Sulfate	**2550**	10.0	"	"	1G22045	GMS	07/22/2021 11:00	07/23/2021 14:00	SM 4500-SO4-D 2011	
Total Dissolved Solids	**4604**	4	"	"	1G23030	DLW	07/21/2021 14:50	07/23/2021 00:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	**0.051**	0.010	mg/L	1.0	1G22037	CLV	07/22/2021 09:30	07/29/2021 12:44	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	**17.8**	1.25	"	25.0	"	CLV	"	07/29/2021 16:13	"	
Calcium 315.887 [Radial]	**588**	1.25	"	"	"	CLV	"	"	"	
Iron 259.940 [Radial]	**0.355**	0.050	"	1.0	"	CLV	"	07/29/2021 12:44	"	
Lithium 610.362 [Axial]	**2.18**	0.040	"	"	"	CLV	"	"	"	
Magnesium 285.213 [Radial]	**277**	1.25	"	25.0	"	CLV	"	07/29/2021 16:13	"	
Manganese 257.610 [Axial]	**0.816**	0.050	"	1.0	"	CLV	"	07/29/2021 12:44	"	
Molybdenum 202.030 [Axial]	ND	0.050	"	"	"	CLV	"	"	"	
Potassium 766.490 [Radial]	**151**	2.50	"	25.0	"	CLV	"	07/29/2021 16:13	"	
Sodium 589.592 [Radial]	**196**	2.50	"	"	"	CLV	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [He]	ND	0.0100	mg/L	5.0	1G22032	SCH	"	07/28/2021 19:01	EPA 200.8 Rev 5.4	
Arsenic [He]	**3.82**	0.0200	"	10.0	"	SCH	"	07/29/2021 14:25	"	
Barium [He]	**0.0626**	0.00500	"	5.0	"	SCH	"	07/28/2021 19:01	"	
Beryllium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	SCH	"	"	"	
Cobalt [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Lead [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Molybdenum [He]	**0.0139**	0.00500	"	"	"	SCH	"	"	"	
Selenium [He]	ND	0.0100	"	10.0	"	SCH	"	07/29/2021 14:25	"	
Thallium [He]	ND	0.0100	"	5.0	"	SCH	"	07/28/2021 19:01	"	

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Project: Plant Morrow Extraction Wells
Project Number: [none]
Project Manager: Ken Ruckstuhl

Reported: 08/03/2021 14:59

EW-4

2107363-03 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Total Alkalinity	**348**	10.0	mg/L	1.0	1G23016	GMS	07/22/2021 13:00	07/23/2021 11:15	SM 2320B 2011	
Chloride	**122**	0.50	"	"	1G27024	DLW	07/26/2021 15:10	07/27/2021 09:08	SM 4500-Cl B 2011	
Fluoride	**4.22**	0.50	"	"	1G26030	DLW	07/26/2021 08:50	07/26/2021 12:39	SM 4500-F C 2011	
Total Sulfate	**2260**	10.0	"	"	1G22045	GMS	07/22/2021 11:00	07/23/2021 14:00	SM 4500-SO4-D 2011	
Total Dissolved Solids	**4260**	4	"	"	1G23030	DLW	07/21/2021 14:50	07/23/2021 00:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	**0.042**	0.010	mg/L	1.0	1G22037	CLV	07/22/2021 09:30	07/29/2021 12:48	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	**15.6**	1.25	"	25.0	"	CLV	"	07/29/2021 16:17	"	
Calcium 315.887 [Radial]	**616**	1.25	"	"	"	CLV	"	"	"	
Iron 259.940 [Radial]	**17.4**	0.050	"	1.0	"	CLV	"	07/29/2021 12:48	"	
Lithium 610.362 [Axial]	**1.96**	0.040	"	"	"	CLV	"	"	"	
Magnesium 285.213 [Radial]	**303**	1.25	"	25.0	"	CLV	"	07/29/2021 16:17	"	
Manganese 257.610 [Axial]	**0.980**	0.050	"	1.0	"	CLV	"	07/29/2021 12:48	"	
Molybdenum 202.030 [Axial]	ND	0.050	"	"	"	CLV	"	"	"	
Potassium 766.490 [Radial]	**147**	2.50	"	25.0	"	CLV	"	07/29/2021 16:17	"	
Sodium 589.592 [Radial]	**95.0**	2.50	"	"	"	CLV	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [He]	ND	0.0100	mg/L	5.0	1G22032	SCH	"	07/28/2021 19:07	EPA 200.8 Rev 5.4	
Arsenic [He]	**2.01**	0.0100	"	"	"	SCH	"	"	"	
Barium [He]	**0.0483**	0.00500	"	"	"	SCH	"	"	"	
Beryllium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	SCH	"	"	"	
Cobalt [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Lead [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Molybdenum [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Selenium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Thallium [He]	ND	0.0100	"	"	"	SCH	"	"	"	

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Project: Plant Morrow Extraction Wells
Project Number: [none]
Project Manager: Ken Ruckstuhl

Reported: 08/03/2021 14:59

EW-3

2107363-04 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Total Alkalinity	**292**	10.0	mg/L	1.0	1G23016	GMS	07/22/2021 13:00	07/23/2021 11:15	SM 2320B 2011	
Chloride	**207**	0.50	"	"	1G27024	DLW	07/26/2021 15:10	07/27/2021 09:08	SM 4500-Cl B 2011	
Fluoride	**3.91**	0.50	"	"	1G26030	DLW	07/26/2021 08:50	07/26/2021 12:39	SM 4500-F C 2011	
Total Sulfate	**2080**	10.0	"	"	1G22045	GMS	07/22/2021 11:00	07/23/2021 14:00	SM 4500-SO4-D 2011	
Total Dissolved Solids	**4120**	4	"	"	1G23030	DLW	07/21/2021 14:50	07/23/2021 00:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	**0.033**	0.010	mg/L	1.0	1G22037	CLV	07/22/2021 09:30	07/29/2021 12:51	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	**15.7**	1.25	"	25.0	"	CLV	"	07/29/2021 16:21	"	
Calcium 315.887 [Radial]	**581**	1.25	"	"	"	CLV	"	"	"	
Iron 259.940 [Radial]	**0.148**	0.050	"	1.0	"	CLV	"	07/29/2021 12:51	"	
Lithium 610.362 [Axial]	**2.19**	0.040	"	"	"	CLV	"	"	"	
Magnesium 285.213 [Radial]	**218**	1.25	"	25.0	"	CLV	"	07/29/2021 16:21	"	
Manganese 257.610 [Axial]	ND	0.050	"	1.0	"	CLV	"	07/29/2021 12:51	"	
Molybdenum 202.030 [Axial]	**2.10**	0.050	"	"	"	CLV	"	"	"	
Potassium 766.490 [Radial]	**155**	2.50	"	25.0	"	CLV	"	07/29/2021 16:21	"	
Sodium 589.592 [Radial]	**160**	2.50	"	"	"	CLV	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [He]	ND	0.0100	mg/L	5.0	1G22032	SCH	"	07/28/2021 19:13	EPA 200.8 Rev 5.4	
Arsenic [He]	**0.0206**	0.0100	"	"	"	SCH	"	"	"	
Barium [He]	**0.0404**	0.00500	"	"	"	SCH	"	"	"	
Beryllium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	SCH	"	"	"	
Cobalt [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Lead [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Molybdenum [He]	**2.89**	0.00500	"	"	"	SCH	"	"	"	
Selenium [He]	**0.0381**	0.00500	"	"	"	SCH	"	"	"	
Thallium [He]	ND	0.0100	"	"	"	SCH	"	"	"	

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EW-2

2107363-05 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Total Alkalinity	**382**	10.0	mg/L	1.0	1G23016	GMS	07/22/2021 13:00	07/23/2021 11:15	SM 2320B 2011	
Chloride	**207**	0.50	"	"	1G27024	DLW	07/26/2021 15:10	07/27/2021 09:08	SM 4500-Cl B 2011	
Fluoride	**4.25**	0.50	"	"	1G26030	DLW	07/26/2021 08:50	07/26/2021 12:39	SM 4500-F C 2011	
Total Sulfate	**2090**	10.0	"	"	1G22045	GMS	07/22/2021 11:00	07/23/2021 14:00	SM 4500-SO4-D 2011	
Total Dissolved Solids	**4264**	4	"	"	1G23030	DLW	07/21/2021 14:50	07/23/2021 00:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	**0.027**	0.010	mg/L	1.0	1G22037	CLV	07/22/2021 09:30	07/29/2021 12:55	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	**13.8**	1.25	"	25.0	"	CLV	"	07/29/2021 16:24	"	
Calcium 315.887 [Radial]	**656**	1.25	"	"	"	CLV	"	"	"	
Iron 259.940 [Radial]	**0.081**	0.050	"	1.0	"	CLV	"	07/29/2021 12:55	"	
Lithium 610.362 [Axial]	**1.98**	0.040	"	"	"	CLV	"	"	"	
Magnesium 285.213 [Radial]	**245**	1.25	"	25.0	"	CLV	"	07/29/2021 16:24	"	
Manganese 257.610 [Axial]	ND	0.050	"	1.0	"	CLV	"	07/29/2021 12:55	"	
Molybdenum 202.030 [Axial]	**1.80**	0.050	"	"	"	CLV	"	"	"	
Potassium 766.490 [Radial]	**120**	2.50	"	25.0	"	CLV	"	07/29/2021 16:24	"	
Sodium 589.592 [Radial]	**138**	2.50	"	"	"	CLV	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [He]	ND	0.0100	mg/L	5.0	1G22032	SCH	"	07/28/2021 19:19	EPA 200.8 Rev 5.4	
Arsenic [He]	**0.0304**	0.0100	"	"	"	SCH	"	"	"	
Barium [He]	**0.0299**	0.00500	"	"	"	SCH	"	"	"	
Beryllium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	SCH	"	"	"	
Cobalt [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Lead [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Molybdenum [He]	**2.26**	0.00500	"	"	"	SCH	"	"	"	
Selenium [He]	**0.216**	0.00500	"	"	"	SCH	"	"	"	
Thallium [He]	ND	0.0100	"	"	"	SCH	"	"	"	

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EW-1

2107363-06 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Total Alkalinity	**366**	10.0	mg/L	1.0	1G23016	GMS	07/22/2021 13:00	07/23/2021 11:15	SM 2320B 2011	
Chloride	**143**	0.50	"	"	1G27024	DLW	07/26/2021 15:10	07/27/2021 09:08	SM 4500-Cl B 2011	
Fluoride	**4.15**	0.50	"	"	1G26030	DLW	07/26/2021 08:50	07/26/2021 12:39	SM 4500-F C 2011	
Total Sulfate	**2570**	10.0	"	"	1G22045	GMS	07/22/2021 11:00	07/23/2021 14:00	SM 4500-SO4-D 2011	
Total Dissolved Solids	**4296**	4	"	"	1G23030	DLW	07/21/2021 14:50	07/23/2021 00:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	**0.030**	0.010	mg/L	1.0	1G22037	CLV	07/22/2021 09:30	07/29/2021 13:06	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	**18.8**	1.25	"	25.0	"	CLV	"	07/29/2021 16:35	"	
Calcium 315.887 [Radial]	**569**	1.25	"	"	"	CLV	"	"	"	
Iron 259.940 [Radial]	**0.123**	0.050	"	1.0	"	CLV	"	07/29/2021 13:06	"	
Lithium 610.362 [Axial]	**2.43**	0.040	"	"	"	CLV	"	"	"	
Magnesium 285.213 [Radial]	**316**	1.25	"	25.0	"	CLV	"	07/29/2021 16:35	"	
Manganese 257.610 [Axial]	ND	0.050	"	1.0	"	CLV	"	07/29/2021 13:06	"	
Molybdenum 202.030 [Axial]	**1.74**	0.050	"	"	"	CLV	"	"	"	
Potassium 766.490 [Radial]	**146**	2.50	"	25.0	"	CLV	"	07/29/2021 16:35	"	
Sodium 589.592 [Radial]	**137**	2.50	"	"	"	CLV	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [He]	ND	0.0100	mg/L	5.0	1G22032	SCH	"	07/28/2021 19:25	EPA 200.8 Rev 5.4	
Arsenic [He]	**0.0593**	0.0100	"	"	"	SCH	"	"	"	
Barium [He]	**0.0322**	0.00500	"	"	"	SCH	"	"	"	
Beryllium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	SCH	"	"	"	
Cobalt [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Lead [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Molybdenum [He]	**2.16**	0.00500	"	"	"	SCH	"	"	"	
Selenium [He]	**0.0763**	0.00500	"	"	"	SCH	"	"	"	
Thallium [He]	ND	0.0100	"	"	"	SCH	"	"	"	

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EW-10

2107363-07 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Total Alkalinity	**320**	10.0	mg/L	1.0	1G23016	GMS	07/22/2021 13:00	07/23/2021 11:15	SM 2320B 2011	
Chloride	**6.90**	0.50	"	"	1G27024	DLW	07/26/2021 15:10	07/27/2021 09:08	SM 4500-Cl B 2011	
Fluoride	**4.66**	0.50	"	"	1G26030	DLW	07/26/2021 08:50	07/26/2021 12:39	SM 4500-F C 2011	
Total Sulfate	**1930**	10.0	"	"	1G22045	GMS	07/22/2021 11:00	07/23/2021 14:00	SM 4500-SO4-D 2011	
Total Dissolved Solids	**3214**	2	"	"	1G23030	DLW	07/21/2021 14:50	07/23/2021 00:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	**0.024**	0.010	mg/L	1.0	1G22037	CLV	07/22/2021 09:30	07/29/2021 13:09	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	**6.36**	1.25	"	25.0	"	CLV	"	07/29/2021 17:05	"	
Calcium 315.887 [Radial]	**653**	1.25	"	"	"	CLV	"	"	"	
Iron 259.940 [Radial]	**0.581**	0.050	"	1.0	"	CLV	"	07/29/2021 13:09	"	
Lithium 610.362 [Axial]	**0.781**	0.040	"	"	"	CLV	"	"	"	
Magnesium 285.213 [Radial]	**128**	1.25	"	25.0	"	CLV	"	07/29/2021 17:05	"	
Manganese 257.610 [Axial]	**0.255**	0.050	"	1.0	"	CLV	"	07/29/2021 13:09	"	
Molybdenum 202.030 [Axial]	**0.293**	0.050	"	"	"	CLV	"	"	"	
Potassium 766.490 [Radial]	**73.1**	2.50	"	25.0	"	CLV	"	07/29/2021 17:05	"	
Sodium 589.592 [Radial]	**19.6**	0.100	"	1.0	"	CLV	"	08/02/2021 12:00	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [He]	**0.0131**	0.0100	mg/L	5.0	1G22032	SCH	"	07/28/2021 19:31	EPA 200.8 Rev 5.4	
Arsenic [He]	**0.0381**	0.0100	"	"	"	SCH	"	"	"	
Barium [He]	**0.0243**	0.00500	"	"	"	SCH	"	"	"	
Beryllium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	SCH	"	"	"	
Cobalt [He]	**0.0142**	0.00500	"	"	"	SCH	"	"	"	
Lead [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Molybdenum [He]	**0.341**	0.00500	"	"	"	SCH	"	"	"	
Selenium [He]	**0.0413**	0.00500	"	"	"	SCH	"	"	"	
Thallium [He]	ND	0.0100	"	"	"	SCH	"	"	"	

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Environmental Management Services
PO Box 15369
Hattiesburg MS, 39404-5369

Project: Plant Morrow Extraction Wells
Project Number: [none]
Project Manager: Ken Ruckstuhl

Reported: 08/03/2021 14:59

EW-11

2107363-08 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Total Alkalinity	**364**	10.0	mg/L	1.0	1G23016	GMS	07/22/2021 13:00	07/23/2021 11:15	SM 2320B 2011	
Chloride	**6.90**	0.50	"	"	1G27024	DLW	07/26/2021 15:10	07/27/2021 09:08	SM 4500-Cl B 2011	
Fluoride	**4.39**	0.50	"	"	1G26030	DLW	07/26/2021 08:50	07/26/2021 12:39	SM 4500-F C 2011	
Total Sulfate	**1830**	10.0	"	"	1G22045	GMS	07/22/2021 11:00	07/23/2021 14:00	SM 4500-SO4-D 2011	
Total Dissolved Solids	**3056**	2	"	"	1G23030	DLW	07/21/2021 14:50	07/23/2021 00:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	**0.027**	0.010	mg/L	1.0	1G22037	CLV	07/22/2021 09:30	07/29/2021 13:13	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	**6.17**	1.25	"	25.0	"	CLV	"	07/29/2021 17:08	"	
Calcium 315.887 [Radial]	**680**	1.25	"	"	"	CLV	"	"	"	
Iron 259.940 [Radial]	**0.128**	0.050	"	1.0	"	CLV	"	07/29/2021 13:13	"	
Lithium 610.362 [Axial]	**0.868**	0.040	"	"	"	CLV	"	"	"	
Magnesium 285.213 [Radial]	**125**	1.25	"	25.0	"	CLV	"	07/29/2021 17:08	"	
Manganese 257.610 [Axial]	**0.205**	0.050	"	1.0	"	CLV	"	07/29/2021 13:13	"	
Molybdenum 202.030 [Axial]	**0.369**	0.050	"	"	"	CLV	"	"	"	
Potassium 766.490 [Radial]	**74.5**	2.50	"	25.0	"	CLV	"	07/29/2021 17:08	"	
Sodium 589.592 [Radial]	**20.2**	0.100	"	1.0	"	CLV	"	08/02/2021 12:04	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [He]	**0.0126**	0.0100	mg/L	5.0	1G22032	SCH	"	07/28/2021 19:36	EPA 200.8 Rev 5.4	
Arsenic [He]	**0.0348**	0.0100	"	"	"	SCH	"	"	"	
Barium [He]	**0.0286**	0.00500	"	"	"	SCH	"	"	"	
Beryllium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	SCH	"	"	"	
Cobalt [He]	**0.0155**	0.00500	"	"	"	SCH	"	"	"	
Lead [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Molybdenum [He]	**0.464**	0.00500	"	"	"	SCH	"	"	"	
Selenium [He]	**0.0520**	0.00500	"	"	"	SCH	"	"	"	
Thallium [He]	ND	0.0100	"	"	"	SCH	"	"	"	

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Plant Morrow Extraction Wells Project Number: [none] Project Manager: Ken Ruckstuhl	Reported: 08/03/2021 14:59

EW-12

2107363-09 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Total Alkalinity	**361**	10.0	mg/L	1.0	1G23016	GMS	07/22/2021 13:00	07/23/2021 11:15	SM 2320B 2011	
Chloride	**29.0**	0.50	"	"	1G27024	DLW	07/26/2021 15:10	07/27/2021 09:08	SM 4500-Cl B 2011	
Fluoride	**4.69**	0.50	"	"	1G26030	DLW	07/26/2021 08:50	07/26/2021 12:39	SM 4500-F C 2011	
Total Sulfate	**1970**	10.0	"	"	1G22045	GMS	07/22/2021 11:00	07/23/2021 14:00	SM 4500-SO4-D 2011	
Total Dissolved Solids	**3368**	2	"	"	1G23030	DLW	07/21/2021 14:50	07/23/2021 00:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	**0.028**	0.010	mg/L	1.0	1G22037	CLV	07/22/2021 09:30	07/29/2021 13:17	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	**21.4**	1.25	"	25.0	"	CLV	"	07/29/2021 17:12	"	
Calcium 315.887 [Radial]	**581**	1.25	"	"	"	CLV	"	"	"	
Iron 259.940 [Radial]	**0.080**	0.050	"	1.0	"	CLV	"	07/29/2021 13:17	"	
Lithium 610.362 [Axial]	**2.52**	0.040	"	"	"	CLV	"	"	"	
Magnesium 285.213 [Radial]	**230**	1.25	"	25.0	"	CLV	"	07/29/2021 17:12	"	
Manganese 257.610 [Axial]	**0.143**	0.050	"	1.0	"	CLV	"	07/29/2021 13:17	"	
Molybdenum 202.030 [Axial]	**0.863**	0.050	"	"	"	CLV	"	"	"	
Potassium 766.490 [Radial]	**135**	2.50	"	25.0	"	CLV	"	07/29/2021 17:12	"	
Sodium 589.592 [Radial]	**46.4**	2.50	"	"	"	CLV	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [He]	**0.0304**	0.0100	mg/L	5.0	1G22032	SCH	"	07/28/2021 19:42	EPA 200.8 Rev 5.4	
Arsenic [He]	**0.119**	0.0100	"	"	"	SCH	"	"	"	
Barium [He]	**0.0315**	0.00500	"	"	"	SCH	"	"	"	
Beryllium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	SCH	"	"	"	
Cobalt [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Lead [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Molybdenum [He]	**1.16**	0.00500	"	"	"	SCH	"	"	"	
Selenium [He]	**0.0719**	0.00500	"	"	"	SCH	"	"	"	
Thallium [He]	ND	0.0100	"	"	"	SCH	"	"	"	

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EW-13

2107363-10 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Total Alkalinity	**498**	10.0	mg/L	1.0	1G23016	GMS	07/22/2021 13:00	07/23/2021 11:15	SM 2320B 2011	
Chloride	**321**	0.50	"	"	1G27024	DLW	07/26/2021 15:10	07/27/2021 09:08	SM 4500-Cl B 2011	
Fluoride	**6.22**	1.00	"	2.0	1G26030	DLW	07/26/2021 08:50	07/26/2021 12:39	SM 4500-F C 2011	
Total Sulfate	**2920**	10.0	"	1.0	1G22045	GMS	07/22/2021 11:00	07/23/2021 14:00	SM 4500-SO4-D 2011	
Total Dissolved Solids	**5760**	4	"	"	1G23030	DLW	07/21/2021 14:50	07/23/2021 00:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	**0.034**	0.010	mg/L	1.0	1G22037	CLV	07/22/2021 09:30	07/29/2021 13:28	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	**31.9**	1.25	"	25.0	"	CLV	"	07/29/2021 17:23	"	
Calcium 315.887 [Radial]	**640**	1.25	"	"	"	CLV	"	"	"	
Iron 259.940 [Radial]	**0.051**	0.050	"	1.0	"	CLV	"	07/29/2021 13:28	"	
Lithium 610.362 [Axial]	**6.27**	0.040	"	"	"	CLV	"	"	"	
Magnesium 285.213 [Radial]	**509**	1.25	"	25.0	"	CLV	"	07/29/2021 17:23	"	
Manganese 257.610 [Axial]	**0.064**	0.050	"	1.0	"	CLV	"	07/29/2021 13:28	"	
Molybdenum 202.030 [Axial]	**2.89**	0.050	"	"	"	CLV	"	"	"	
Potassium 766.490 [Radial]	**266**	2.50	"	25.0	"	CLV	"	07/29/2021 17:23	"	
Sodium 589.592 [Radial]	**157**	2.50	"	"	"	CLV	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [He]	**0.0463**	0.0100	mg/L	5.0	1G22032	SCH	"	07/28/2021 20:29	EPA 200.8 Rev 5.4	
Arsenic [He]	**0.369**	0.0100	"	"	"	SCH	"	"	"	
Barium [He]	**0.0383**	0.00500	"	"	"	SCH	"	"	"	
Beryllium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	SCH	"	"	"	
Cobalt [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Lead [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Molybdenum [He]	**4.11**	0.00500	"	"	"	SCH	"	"	"	
Selenium [He]	**0.0870**	0.00500	"	"	"	SCH	"	"	"	
Thallium [He]	ND	0.0100	"	"	"	SCH	"	"	"	

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EW-14

2107363-11 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Total Alkalinity	**135**	10.0	mg/L	1.0	1G23016	GMS	07/22/2021 13:00	07/23/2021 11:15	SM 2320B 2011	
Chloride	**4.83**	0.50	"	"	1G27024	DLW	07/26/2021 15:10	07/27/2021 09:08	SM 4500-Cl B 2011	
Fluoride	**3.46**	0.50	"	"	1G26030	DLW	07/26/2021 08:50	07/26/2021 12:39	SM 4500-F C 2011	
Total Sulfate	**2100**	10.0	"	"	1G22045	GMS	07/22/2021 11:00	07/23/2021 14:00	SM 4500-SO4-D 2011	
Total Dissolved Solids	**3288**	2	"	"	1G23030	DLW	07/21/2021 14:50	07/23/2021 00:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	**0.031**	0.010	mg/L	1.0	1G22037	CLV	07/22/2021 09:30	07/29/2021 14:26	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	**6.35**	1.25	"	25.0	"	CLV	"	07/29/2021 17:27	"	
Calcium 315.887 [Radial]	**639**	1.25	"	"	"	CLV	"	"	"	
Iron 259.940 [Radial]	**0.076**	0.050	"	1.0	"	CLV	"	07/29/2021 14:26	"	
Lithium 610.362 [Axial]	**0.950**	0.040	"	"	"	CLV	"	"	"	
Magnesium 285.213 [Radial]	**188**	1.25	"	25.0	"	CLV	"	07/29/2021 17:27	"	
Manganese 257.610 [Axial]	**0.079**	0.050	"	1.0	"	CLV	"	07/29/2021 14:26	"	
Molybdenum 202.030 [Axial]	**0.224**	0.050	"	"	"	CLV	"	"	"	
Potassium 766.490 [Radial]	**68.7**	2.50	"	25.0	"	CLV	"	07/29/2021 17:27	"	
Sodium 589.592 [Radial]	**16.4**	0.100	"	1.0	"	CLV	"	08/02/2021 12:08	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [He]	**0.0342**	0.0100	mg/L	5.0	1G22032	SCH	"	07/28/2021 20:35	EPA 200.8 Rev 5.4	
Arsenic [He]	**0.363**	0.0100	"	"	"	SCH	"	"	"	
Barium [He]	**0.0342**	0.00500	"	"	"	SCH	"	"	"	
Beryllium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	SCH	"	"	"	
Cobalt [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Lead [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Molybdenum [He]	**0.286**	0.00500	"	"	"	SCH	"	"	"	
Selenium [He]	**0.00725**	0.00500	"	"	"	SCH	"	"	"	
Thallium [He]	ND	0.0100	"	"	"	SCH	"	"	"	

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EW-15

2107363-12 (Water)

Analyte	Result	MRL	Units	Dil	Batch	Analyst	Date Time Prepared	Date Time Analyzed	Method	Qualifiers
Classical Chemistry Parameters										
Total Alkalinity	**139**	10.0	mg/L	1.0	1G23016	GMS	07/22/2021 13:00	07/23/2021 11:15	SM 2320B 2011	
Chloride	ND	0.50	"	"	1G27024	DLW	07/26/2021 15:10	07/27/2021 09:08	SM 4500-Cl B 2011	
Fluoride	**6.80**	1.00	"	2.0	1G26030	DLW	07/26/2021 08:50	07/26/2021 12:39	SM 4500-F C 2011	
Total Sulfate	**2110**	10.0	"	1.0	1G22045	GMS	07/22/2021 11:00	07/23/2021 14:00	SM 4500-SO4-D 2011	
Total Dissolved Solids	**3452**	2	"	"	1G23030	DLW	07/21/2021 14:50	07/23/2021 00:00	SM 2540 C-2011	
Metals by EPA 200 Series Methods ICP-AES										
Barium 455.403 [Radial]	**0.023**	0.010	mg/L	1.0	1G22037	CLV	07/22/2021 09:30	07/29/2021 14:30	EPA 200.7 Rev 4.4	
Boron 249.773 [Radial]	**8.44**	1.25	"	25.0	"	CLV	"	07/29/2021 17:30	"	
Calcium 315.887 [Radial]	**606**	1.25	"	"	"	CLV	"	"	"	
Iron 259.940 [Radial]	**0.114**	0.050	"	1.0	"	CLV	"	07/29/2021 14:30	"	
Lithium 610.362 [Axial]	**1.18**	0.040	"	"	"	CLV	"	"	"	
Magnesium 285.213 [Radial]	**218**	1.25	"	25.0	"	CLV	"	07/29/2021 17:30	"	
Manganese 257.610 [Axial]	**0.083**	0.050	"	1.0	"	CLV	"	07/29/2021 14:30	"	
Molybdenum 202.030 [Axial]	**0.333**	0.050	"	"	"	CLV	"	"	"	
Potassium 766.490 [Radial]	**98.8**	2.50	"	25.0	"	CLV	"	07/29/2021 17:30	"	
Sodium 589.592 [Radial]	**30.9**	2.50	"	"	"	CLV	"	"	"	
Metals by EPA 200 Series Methods ICP-MS [Analysis Mode]										
Antimony [He]	**0.0354**	0.0100	mg/L	5.0	1G22032	SCH	"	07/28/2021 20:41	EPA 200.8 Rev 5.4	
Arsenic [He]	**0.360**	0.0100	"	"	"	SCH	"	"	"	
Barium [He]	**0.0275**	0.00500	"	"	"	SCH	"	"	"	
Beryllium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Cadmium [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Chromium [He]	ND	0.0100	"	"	"	SCH	"	"	"	
Cobalt [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Lead [He]	ND	0.00500	"	"	"	SCH	"	"	"	
Molybdenum [He]	**0.406**	0.00500	"	"	"	SCH	"	"	"	
Selenium [He]	**0.0416**	0.00500	"	"	"	SCH	"	"	"	
Thallium [He]	ND	0.0100	"	"	"	SCH	"	"	"	

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Plant Morrow Extraction Wells Project Number: [none] Project Manager: Ken Ruckstuhl	Reported: 08/03/2021 14:59

Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 1G22045 - Default Prep GenChem											
Blank (1G22045-BLK1)											
Total Sulfate	7/23/21 14:00	ND	10.0	mg/L							
Duplicate (1G22045-DUP1)			**Source: 2107363-12**								
Total Sulfate	7/23/21 14:00	2270	10.0	mg/L		2110			7.54	30	
Batch 1G23016 - Default Prep GenChem											
Blank (1G23016-BLK1)											
Total Alkalinity	7/23/21 11:15	ND	10.0	mg/L							
LCS (1G23016-BS1)											
Total Alkalinity	7/23/21 11:15	942		mg/L	1000		94.2	80-120			
Duplicate (1G23016-DUP1)			**Source: 2107363-05**								
Total Alkalinity	7/23/21 11:15	390	10.0	mg/L		382			2.01	30	
Duplicate (1G23016-DUP2)			**Source: 2107363-12**								
Total Alkalinity	7/23/21 11:15	134	10.0	mg/L		139			3.77	30	
Batch 1G23030 - Default Prep GenChem											
Blank (1G23030-BLK1)											
Total Dissolved Solids	7/23/21 0:00	ND	1	mg/L							
LCS (1G23030-BS1)											
Total Dissolved Solids	7/23/21 0:00	119	1	mg/L	150		79.3	65-105			

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Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 1G23030 - Default Prep GenChem											
LCS Dup (1G23030-BSD1)											
Total Dissolved Solids	7/23/21 0:00	125	1	mg/L	150		83.3	65-105	4.92	15	
Duplicate (1G23030-DUP1)			**Source: 2107363-01**								
Total Dissolved Solids	7/23/21 0:00	4960	4	mg/L		4928			0.647	10	
Duplicate (1G23030-DUP2)			**Source: 2107379-01**								
Total Dissolved Solids	7/23/21 0:00	2404	2	mg/L		2412			0.332	10	
Batch 1G26030 - Default Prep GenChem											
Blank (1G26030-BLK1)											
Fluoride	7/26/21 12:39	ND	0.50	mg/L							
LCS (1G26030-BS1)											
Fluoride	7/26/21 12:39	2.05	0.50	mg/L	2.00		103	83.3-107			
LCS Dup (1G26030-BSD1)											
Fluoride	7/26/21 12:39	2.05	0.50	mg/L	2.00		103	83.3-107	0.00	30	
Duplicate (1G26030-DUP1)			**Source: 2107318-01**								
Fluoride	7/26/21 12:39	1.42	0.50	mg/L		1.47			3.46	20	
Matrix Spike (1G26030-MS1)			**Source: 2107318-01**								
Fluoride	7/26/21 12:39	3.32	0.50	mg/L	2.00	1.47	92.5	79.3-113			
Matrix Spike Dup (1G26030-MSD1)			**Source: 2107318-01**								
Fluoride	7/26/21 12:39	3.30	0.50	mg/L	2.00	1.47	91.5	79.3-113	0.604	30	

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Plant Morrow Extraction Wells Project Number: [none] Project Manager: Ken Ruckstuhl	Reported: 08/03/2021 14:59

Classical Chemistry Parameters - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 1G27024 - Default Prep GenChem											
LCS (1G27024-BS1)											
Chloride	7/27/21 9:31	483		mg/L	500		96.6	75-125			
Duplicate (1G27024-DUP1)			**Source: 2107363-12**								
Chloride	7/27/21 9:08	ND	0.50	mg/L		ND				30	

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Plant Morrow Extraction Wells Project Number: [none] Project Manager: Ken Ruckstuhl	Reported: 08/03/2021 14:59

Metals by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 1G22037 - EPA 200.2 DCN 1017 Rev 10											
Blank (1G22037-BLK1)											
Barium 455.403 [Radial]	7/29/21 12:29	ND	0.010	mg/L							
Boron 249.773 [Radial]	7/29/21 12:29	ND	0.050	"							
Calcium 315.887 [Radial]	7/29/21 12:29	ND	0.050	"							
Iron 259.940 [Radial]	7/29/21 12:29	ND	0.050	"							
Lithium 610.362 [Axial]	7/29/21 12:29	ND	0.040	"							
Magnesium 285.213 [Radial]	7/29/21 12:29	ND	0.050	"							
Manganese 257.610 [Axial]	7/29/21 12:29	ND	0.050	"							
Molybdenum 202.030 [Axial]	7/29/21 12:29	ND	0.050	"							
Potassium 766.490 [Radial]	7/29/21 12:29	ND	0.100	"							
Sodium 589.592 [Radial]	7/29/21 12:29	ND	0.100	"							
LCS (1G22037-BS1)											
Barium 455.403 [Radial]	7/29/21 12:33	0.220	0.010	mg/L	0.200		110	85-115			
Boron 249.773 [Radial]	7/29/21 12:33	0.200	0.050	"	0.200		100	85-115			
Calcium 315.887 [Radial]	7/29/21 12:33	0.188	0.050	"	0.200		93.8	85-115			
Iron 259.940 [Radial]	7/29/21 12:33	0.193	0.050	"	0.200		96.7	85-115			
Lithium 610.362 [Axial]	7/29/21 12:33	0.197	0.040	"	0.200		98.4	85-115			
Magnesium 285.213 [Radial]	7/29/21 12:33	0.202	0.050	"	0.200		101	85-115			
Manganese 257.610 [Axial]	7/29/21 12:33	0.217	0.050	"	0.200		108	85-115			
Molybdenum 202.030 [Axial]	7/29/21 12:33	0.198	0.050	"	0.200		99.2	85-115			
Potassium 766.490 [Radial]	7/29/21 12:33	0.418	0.100	"	0.400		105	85-115			
Sodium 589.592 [Radial]	7/29/21 12:33	0.419	0.100	"	0.400		105	85-115			
LCS Dup (1G22037-BSD1)											
Barium 455.403 [Radial]	7/29/21 12:37	0.218	0.010	mg/L	0.200		109	85-115	0.861	20	
Boron 249.773 [Radial]	7/29/21 12:37	0.200	0.050	"	0.200		100	85-115	0.144	20	
Calcium 315.887 [Radial]	7/29/21 12:37	0.185	0.050	"	0.200		92.6	85-115	1.30	20	
Iron 259.940 [Radial]	7/29/21 12:37	0.199	0.050	"	0.200		99.5	85-115	2.90	20	
Lithium 610.362 [Axial]	7/29/21 12:37	0.197	0.040	"	0.200		98.3	85-115	0.105	20	
Magnesium 285.213 [Radial]	7/29/21 12:37	0.201	0.050	"	0.200		100	85-115	0.750	20	
Manganese 257.610 [Axial]	7/29/21 12:37	0.214	0.050	"	0.200		107	85-115	1.28	20	
Molybdenum 202.030 [Axial]	7/29/21 12:37	0.196	0.050	"	0.200		98.2	85-115	0.996	20	
Potassium 766.490 [Radial]	7/29/21 12:37	0.438	0.100	"	0.400		109	85-115	4.48	20	
Sodium 589.592 [Radial]	7/29/21 12:37	0.427	0.100	"	0.400		107	85-115	1.88	20	

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Metals by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 1G22037 - EPA 200.2 DCN 1017 Rev 10											
Duplicate (1G22037-DUP1)			**Source: 2107363-05**								
Boron 249.773 [Radial]	7/29/21 16:28	13.4	1.25	mg/L		13.8			2.95	20	
Calcium 315.887 [Radial]	7/29/21 16:28	629	1.25	"		656			4.25	20	
Lithium 610.362 [Axial]	7/29/21 12:59	2.10	0.040	"		1.98			5.64	20	
Magnesium 285.213 [Radial]	7/29/21 16:28	236	1.25	"		245			3.46	20	
Potassium 766.490 [Radial]	7/29/21 16:28	115	2.50	"		120			4.89	20	
Sodium 589.592 [Radial]	7/29/21 16:28	132	2.50	"		138			4.49	20	
Duplicate (1G22037-DUP2)			**Source: 2107363-09**								
Boron 249.773 [Radial]	7/29/21 17:16	22.1	1.25	mg/L		21.4			3.19	20	
Calcium 315.887 [Radial]	7/29/21 17:16	478	1.25	"		581			19.4	20	
Lithium 610.362 [Axial]	7/29/21 13:21	2.57	0.040	"		2.52			2.07	20	
Magnesium 285.213 [Radial]	7/29/21 17:16	235	1.25	"		230			2.13	20	
Potassium 766.490 [Radial]	7/29/21 17:16	137	2.50	"		135			1.67	20	
Sodium 589.592 [Radial]	7/29/21 17:16	47.6	2.50	"		46.4			2.63	20	
Matrix Spike (1G22037-MS1)			**Source: 2107363-05**								
Barium 455.403 [Radial]	7/29/21 12:59	0.209	0.010	mg/L	0.200	0.027	90.9	70-130			
Iron 259.940 [Radial]	7/29/21 12:59	0.244	0.050	"	0.200	0.081	81.7	70-130			
Manganese 257.610 [Axial]	7/29/21 12:59	0.169	0.050	"	0.200	0.002	83.6	70-130			
Molybdenum 202.030 [Axial]	7/29/21 12:59	1.96	0.050	"	0.200	1.80	79.9	70-130			
Matrix Spike (1G22037-MS2)			**Source: 2107363-09**								
Barium 455.403 [Radial]	7/29/21 13:21	0.144	0.010	mg/L	0.200	0.028	58.0	70-130			M2
Iron 259.940 [Radial]	7/29/21 13:21	0.220	0.050	"	0.200	0.080	70.3	70-130			
Manganese 257.610 [Axial]	7/29/21 13:21	0.291	0.050	"	0.200	0.143	73.9	70-130			
Molybdenum 202.030 [Axial]	7/29/21 13:21	0.979	0.050	"	0.200	0.863	57.9	70-130			M2, M8
Matrix Spike Dup (1G22037-MSD1)			**Source: 2107363-05**								
Barium 455.403 [Radial]	7/29/21 13:02	0.215	0.010	mg/L	0.200	0.027	93.9	70-130	2.82	20	
Iron 259.940 [Radial]	7/29/21 13:02	0.248	0.050	"	0.200	0.081	83.7	70-130	1.61	20	
Manganese 257.610 [Axial]	7/29/21 13:02	0.169	0.050	"	0.200	0.002	83.5	70-130	0.168	20	
Molybdenum 202.030 [Axial]	7/29/21 13:02	1.94	0.050	"	0.200	1.80	70.2	70-130	0.991	20	

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Metals by EPA 200 Series Methods ICP-AES - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 1G22037 - EPA 200.2 DCN 1017 Rev 10											
Matrix Spike Dup (1G22037-MSD2)			**Source: 2107363-09**								
Barium 455.403 [Radial]	7/29/21 13:24	0.186	0.010	mg/L	0.200	0.028	79.2	70-130	25.6	20	M3
Iron 259.940 [Radial]	7/29/21 13:24	0.251	0.050	"	0.200	0.080	85.4	70-130	12.8	20	
Manganese 257.610 [Axial]	7/29/21 13:24	0.291	0.050	"	0.200	0.143	74.3	70-130	0.259	20	
Molybdenum 202.030 [Axial]	7/29/21 13:24	0.967	0.050	"	0.200	0.863	52.1	70-130	1.19	20	M2, M8

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Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 1G22032 - EPA 200.2 DCN 1017 Rev 10											
Blank (1G22032-BLK1)											
Antimony [He]	7/28/21 11:17	ND	0.00200	mg/L							
Arsenic [He]	7/28/21 11:17	ND	0.00200	"							
Barium [He]	7/28/21 11:17	ND	0.00100	"							
Beryllium [He]	7/28/21 11:17	ND	0.00400	"							
Cadmium [He]	7/28/21 11:17	ND	0.00500	"							
Chromium [He]	7/28/21 11:17	ND	0.0100	"							
Cobalt [He]	7/28/21 11:17	ND	0.00100	"							
Lead [He]	7/28/21 11:17	ND	0.00100	"							
Molybdenum [He]	7/28/21 11:17	ND	0.00500	"							
Selenium [He]	7/28/21 11:17	ND	0.00100	"							
Thallium [He]	7/28/21 11:17	ND	0.00100	"							
LCS (1G22032-BS1)											
Antimony [He]	7/28/21 11:23	0.104	0.00200	mg/L	0.100		104	85-115			
Arsenic [He]	7/28/21 11:23	0.106	0.00200	"	0.100		106	85-115			
Barium [He]	7/28/21 11:23	0.103	0.00100	"	0.100		103	85-115			
Beryllium [He]	7/28/21 11:23	0.102	0.00100	"	0.100		102	85-115			
Cadmium [He]	7/28/21 11:23	0.104	0.00100	"	0.100		104	85-115			
Chromium [He]	7/28/21 11:23	0.104	0.00100	"	0.100		104	85-115			
Cobalt [He]	7/28/21 11:23	0.105	0.00100	"	0.100		105	85-115			
Lead [He]	7/28/21 11:23	0.103	0.00100	"	0.100		103	85-115			
Molybdenum [He]	7/28/21 11:23	0.103	0.00100	"	0.100		103	85-115			
Selenium [He]	7/28/21 11:23	0.106	0.00100	"	0.100		106	85-115			
Thallium [He]	7/28/21 11:23	0.104	0.00100	"	0.100		104	85-115			
LCS Dup (1G22032-BSD1)											
Antimony [He]	7/28/21 11:29	0.104	0.00200	mg/L	0.100		104	85-115	0.482	20	
Arsenic [He]	7/28/21 11:29	0.106	0.00200	"	0.100		106	85-115	0.0565	20	
Barium [He]	7/28/21 11:29	0.102	0.00100	"	0.100		102	85-115	0.380	20	
Beryllium [He]	7/28/21 11:29	0.106	0.00100	"	0.100		106	85-115	4.16	20	
Cadmium [He]	7/28/21 11:29	0.104	0.00100	"	0.100		104	85-115	0.0979	20	
Chromium [He]	7/28/21 11:29	0.104	0.00100	"	0.100		104	85-115	0.234	20	
Cobalt [He]	7/28/21 11:29	0.103	0.00100	"	0.100		103	85-115	1.02	20	
Lead [He]	7/28/21 11:29	0.104	0.00100	"	0.100		104	85-115	0.149	20	
Molybdenum [He]	7/28/21 11:29	0.103	0.00100	"	0.100		103	85-115	0.00359	20	
Selenium [He]	7/28/21 11:29	0.103	0.00100	"	0.100		103	85-115	2.98	20	
Thallium [He]	7/28/21 11:29	0.104	0.00100	"	0.100		104	85-115	0.0131	20	

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Metals by EPA 200 Series Methods ICP-MS [Analysis Mode] - Quality Control

Analyte	Analyzed	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifiers
Batch 1G22032 - EPA 200.2 DCN 1017 Rev 10											
Duplicate (1G22032-DUP1)			**Source: 2107363-09**								
Antimony [He]	7/28/21 19:48	0.029	0.0100	mg/L		0.030			5.07	20	
Arsenic [He]	7/28/21 19:48	0.117	0.0100	"		0.119			1.29	20	
Barium [He]	7/28/21 19:48	0.032	0.00500	"		0.032			0.325	20	
Beryllium [He]	7/28/21 19:48	ND	0.00500	"		ND				20	
Cadmium [He]	7/28/21 19:48	ND	0.00500	"		ND				20	
Chromium [He]	7/28/21 19:48	ND	0.00500	"		ND				20	
Cobalt [He]	7/28/21 19:48	0.002	0.00500	"		0.002			0.0244	20	
Lead [He]	7/28/21 19:48	ND	0.00500	"		ND				20	
Molybdenum [He]	7/28/21 19:48	1.15	0.00500	"		1.16			1.48	20	
Selenium [He]	7/28/21 19:48	0.065	0.00500	"		0.072			9.54	20	
Thallium [He]	7/28/21 19:48	0.002	0.00500	"		0.002				20	
Matrix Spike (1G22032-MS1)			**Source: 2107363-01**								
Antimony [He]	7/28/21 18:49	0.110	0.0100	mg/L	0.100	0.002	110	70-130			
Arsenic [He]	7/28/21 18:49	0.143	0.0100	"	0.100	0.035	108	70-130			
Barium [He]	7/28/21 18:49	0.158	0.00500	"	0.100	0.050	108	70-130			
Beryllium [He]	7/28/21 18:49	0.093	0.00500	"	0.100	ND	92.9	70-130			
Cadmium [He]	7/28/21 18:49	0.102	0.00500	"	0.100	ND	102	70-130			
Chromium [He]	7/28/21 18:49	0.104	0.00500	"	0.100	ND	104	70-130			
Cobalt [He]	7/28/21 18:49	0.098	0.00500	"	0.100	ND	97.6	70-130			
Lead [He]	7/28/21 18:49	0.103	0.00500	"	0.100	ND	103	70-130			
Molybdenum [He]	7/28/21 18:49	1.64	0.00500	"	0.100	1.50	146	70-130			M1, M8
Selenium [He]	7/28/21 18:49	0.109	0.00500	"	0.100	0.002	107	70-130			
Thallium [He]	7/28/21 18:49	0.101	0.00500	"	0.100	ND	101	70-130			
Matrix Spike Dup (1G22032-MSD1)			**Source: 2107363-01**								
Antimony [He]	7/28/21 18:55	0.116	0.0100	mg/L	0.100	0.002	116	70-130	5.54	20	
Arsenic [He]	7/28/21 18:55	0.156	0.0100	"	0.100	0.035	121	70-130	8.91	20	
Barium [He]	7/28/21 18:55	0.167	0.00500	"	0.100	0.050	117	70-130	5.86	20	
Beryllium [He]	7/28/21 18:55	0.099	0.00500	"	0.100	ND	98.9	70-130	6.23	20	
Cadmium [He]	7/28/21 18:55	0.109	0.00500	"	0.100	ND	109	70-130	6.10	20	
Chromium [He]	7/28/21 18:55	0.108	0.00500	"	0.100	ND	108	70-130	3.70	20	
Cobalt [He]	7/28/21 18:55	0.102	0.00500	"	0.100	ND	102	70-130	4.82	20	
Lead [He]	7/28/21 18:55	0.112	0.00500	"	0.100	ND	112	70-130	7.70	20	
Molybdenum [He]	7/28/21 18:55	1.72	0.00500	"	0.100	1.50	221	70-130	4.45	20	M1, M8
Selenium [He]	7/28/21 18:55	0.126	0.00500	"	0.100	0.002	125	70-130	14.7	20	
Thallium [He]	7/28/21 18:55	0.107	0.00500	"	0.100	ND	107	70-130	5.79	20	

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Certified Analyses Included in this Report

Analyte	Certification Code
EPA 200.7 Rev 4.4 in Water	
Aluminum 237.312 [Radial]	C01,C02
Aluminum 394.401 [Radial]	C01,C02
Aluminum 396.152 [Radial]	C01,C02
Antimony 206.833 [Axial]	C01,C02
Arsenic 193.759 [Axial]	C01,C02
Barium 455.403 [Radial]	C01,C02
Barium 493.409 [Radial]	C01,C02
Beryllium 313.042 [Axial]	C01,C02
Boron 249.773 [Radial]	C01,C02
Cadmium 228.802 [Axial]	C01,C02
Calcium 315.887 [Radial]	C01,C02
Chromium 283.563 [Axial]	C01,C02
Cobalt 228.616 [Axial]	C01,C02
Copper 324.754 [Axial]	C01,C02
Iron 259.940 [Axial]	C01,C02
Iron 259.940 [Radial]	C01,C02
Lead 220.353 [Axial]	C01,C02
Lithium 610.362 [Axial]	C01,C02
Magnesium 285.213 [Radial]	C01,C02
Manganese 257.610 [Axial]	C01,C02
Molybdenum 202.030 [Axial]	C01,C02
Nickel 231.604 [Axial]	C01,C02
Potassium 766.490 [Radial]	C01,C02
Phosphorus 178.284 [Axial]	C01,C02
Phosphorus 178.284 [Radial]	C01,C02
Selenium 196.090 [Axial]	C01,C02
Silver 328.068 [Axial]	C01,C02
Sodium 589.592 [Axial]	C01,C02
Sodium 589.592 [Radial]	C01,C02
Strontium 346.446 [Radial]	C01,C02
Strontium 421.552 [Radial]	C01,C02
Thallium 190.856 [Axial]	C01,C02
Tin 189.989 [Axial]	C01,C02
Titanium 334.941 [Axial]	C01,C02
Vanadium 309.311 [Axial]	C01,C02
Zinc 213.856 [Axial]	C01,C02
EPA 200.8 Rev 5.4 in Water	
Aluminum [He]	C01,C02
Antimony [He]	C01,C02
Antimony [HHe]	C01,C02
Antimony [NG]	C01,C02

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Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Plant Morrow Extraction Wells Project Number: [none] Project Manager: Ken Ruckstuhl	Reported: 08/03/2021 14:59

Arsenic [He]	C01
Arsenic [HHe]	C01,C02
Arsenic [NG]	C01,C02
Barium [He]	C01,C02
Beryllium [He]	C01,C02
Boron [NG]	C01,C02
Cadmium [He]	C01
Cadmium [HHe]	C01,C02
Cadmium [NG]	C01,C02
Chromium [He]	C01,C02
Cobalt [He]	C01,C02
Copper [He]	C01,C02
Copper [NG]	C01,C02
Iron [He]	C01,C02
Lead [He]	C01,C02
Lead [NG]	C01,C02
Manganese [He]	C01,C02
Molybdenum [He]	C01,C02
Nickel [He]	C01,C02
Selenium [He]	C01
Selenium [HHe]	C01,C02
Selenium [NG]	C01,C02
Silver [He]	C01,C02
Silver [NG]	C01,C02
Strontium [He]	C01,C02
Thallium [He]	C01,C02
Vanadium [He]	C01,C02
Zinc [He]	C01,C02

SM 2320B 2011 in Water

Total Alkalinity	C01,C02

SM 2540 C-2011 in Water

Total Dissolved Solids	C01,C02

****Only compounds included in this list are associated with accredited analyses****

MICRO-METHODS LABORATORY, INC.

6500 Sunplex Drive
Ocean Springs, MS 39564
228-875-6420 Phone
228-875-6423 Fax

Environmental Management Services PO Box 15369 Hattiesburg MS, 39404-5369	Project: Plant Morrow Extraction Wells Project Number: [none] Project Manager: Ken Ruckstuhl	Reported: 08/03/2021 14:59

Laboratory Accreditations/Certifications

Code	Description	Number	Expires
C01	*LA Environmental Lab Accreditation Program*	*01960*	*06/30/2022*
C02	*The NELAC Institute (NELAP)*	*TNI01397*	*06/30/2022*
C03	*Ms Dept of Health (Drinking Water Microbiology)*	*MS00021*	*12/31/2021*
C04	*Ms Dept of Health (Drinking Water Chemistry)*	*MS00021*	*12/31/2021*
C05	*Ms DEQ Lead Firm Certification*	*PBF-00000028*	*03/24/2022*
C06	*MsDEQ Asbestos Inspector : C.D. Bingham*	*ABI-00001348*	*02/12/2022*
C07	*MsDEQ Air Monitor : C.D. Bingham*	*AM-011572*	*02/13/2022*
C08	*MsDEQ Asbestos Inspector: C. W. Meins*	*ABI-00001821*	*09/04/2021*
C09	*MsDEQ Air Monitor : C.W. Meins*	*AM-011189*	*02/13/2022*
C14	*MsDEQ Lead Paint Inspector : C.D. Bingham*	*PBI-00003690*	*03/24/2022*
C15	*MsDEQ Lead Paint Inspector : C.W. Meins*	*PBI-00001740*	*03/24/2022*

Report Definitions

TNC	Too Numerous To Count
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the minimum reporting limit
NR	Not Reported
RPD	Relative Percent Difference
ICV	Initial Calibration Verfiication
CCV	Continuing Calibration Verification Standard
SSV	Secondary Source Verfication Standard
LCS	Lab Control Spike - Lab matrix prepared with known concentration of analyte/s of interest analyzed by method.
MS	Matrix Spike - Sample prepared with known concentration of analyte/s of interest analyzed by method.
MSD	Matrix Spike Duplicate - Duplicate sample prepared with known concentration of analyte/s of interest analyzed by method.
MRL	Minimum Reporting Limit
%REC	Percentage Recovery of known concentration added to matrix
Batch	Group of samples prepared for analysis not to exceed 20 samples.
Matrix	Material containing analyte/s of interest
Surrogate	Analyte added to sample to determine extraction efficiency of method.

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Environmental Management Services	Project: Plant Morrow Extraction Wells	
PO Box 15369	Project Number: [none]	Reported:
Hattiesburg MS, 39404-5369	Project Manager: Ken Ruckstuhl	08/03/2021 14:59

Analyst Initials Key

FullName	Initials
Charles L Vorhoff	CLV
Dortha L. Wells	DLW
Gayle M. Sparling	GMS
Samantha C. Hall	SCH
Teresa Meins	TKM
Tina Tomek	TPT

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MICRO-METHODS LABORATORY, INC.

PO Box 1410, Ocean Springs, MS 39566-1410
(228) 875-6420 FAX (228) 875-6423
www.micromethodslab.com

Chain of Custody Record

Lab ID# MS00021
LELAP ID # 01960
TNI ID # TNI01397

M-M Lab WO #: 2107363

Company Name: Environmental Management Services
Address: P/O Box 15369
City: Hattiesburg State: MS Zip: 39404
Phone: (601) 544-3674
Fax:

Project Manager: Ken Ruckstahl
Purchase Order #:
Email Address :
Sampler Name Printed: Alan Niven
Sampler Name Signed: Alan Niven

Turn Around Time & Reporting
Our normal turn around time is 10 working days
✓ Normal
__Next Day*
__2nd Day*
__Other*______
*All rush order requests must be prior approved.
__Phone
__Mail
__Fax
__Email

QC Level: Level 1 ☐ Level 2 ☐ Level 3 ☐

Project Name: Plant Morrow Extration Well
Project #:

List Analyses Requested

Sample Identification	Sampling Date/Time	Matrix Code	# of Containers	Grab (G) or Composite (C)	Metals	Wetlab
EW-6	7-16-21 11:15	W	3	G	X	X
EW-5	7-16-21 11:45		3			
EW-4	7-16-21 11:50		3			
EW-3	7-16-21 11:52		3			
EW-2	7-16-21 12:00		2			
EW-1	7-16-21 12:16		2			
EW-10	7-16-21 12:31		3			
EW-11	7-16-21 12:40		3			
EW-12	7-16-21 12:45		2			
EW-13	7-16-21 12:52		3			
EW-14	7-16-21 13:00		2			

Preservative:

Field Testing

ID# Field Test	ID# Field Test	ID# Field Test	ID# Field Test

All Temps are Corrected Values

Matrix:
W = Water
DW = Drinking Water
S = Solid
SO = Soil
SE = Sediment
L = Liquid
A = Air
O = Oil
SL = Sludge

Preservation:
1= H2SO4
2= H3PO4
3=NaOH
4=ZnC4H10O6
5=ZnC4H10O6 & NaOH
6=HNO3
7=Na2S2O3
8=HCl
9=NaHSO4

Received on Ice? Y N Thermometer# 5 Cooler # 34
Date & Time 7/19/21 1300 By: TEM CLi
Receipt Temp Corrected(°C) 2.0
Sample ✓ Blank____ Cooler______

	Printed Name	Signature	Company	Date	Time
Relinquished by	Alan Niven	Alan Niven	EMS	7-19-21	13:00
Received by	Teresa Meins	Teresa Meins	MM	7-19-21	1300
Relinquished by					
Received by					
Relinquished by					
Received by					

Notes: Refer to Sample Analysis request form

DCN# F316 Rev.#5

Physical Address: 6500 Sunplex Drive, Ocean Springs MS 39564

Pg 2 of

MICRO-METHODS LABORATORY, INC.
PO Box 1410, Ocean Springs, MS 39566-1410
(228) 875-6420 FAX (228) 875-6423
www.micromethodslab.com

Chain of Custody Record

Lab ID# MS00021
LELAP ID # 01960
TNI ID # TNI01397

M-M Lab WO # 2107363

Company Name: Environmental Management Services	Project Manager: Ken Ruckstuhl
Address: PO Box 15369	Purchase Order #:
City: Hattiesburg State: MS Zip: 39404	Email Address :
Phone: Plant Marrow Extraction Wells	Sampler Name Printed: Alan Niven
Fax:	Sampler Name Signed: Alan Niven

Turn Around Time & Reporting
Our normal turn around time is 10 working days

__Normal
__Next Day*
__2nd Day*
__Other*______

*All rush order requests must be prior approved.

__Phone
__Mail
__Fax
__Email

QC Level: Level 1 ☐ Level 2 ☐ Level 3 ☐

Project Name: Plant Morrow Extraction Well
Project #:

List Analyses Requested (Preservative:)

Sample Identification	Sampling Date/Time	Matrix Code	# of Containers	Grab (G) or Composite (C)	Metals	Wetlab								
EW-15	7-16-21 13:05	W	2	G	X	X								

Field Testing

ID# Field Test	ID# Field Test	ID# Field Test	ID# Field Test

Matrix:
W = Water
DW = Drinking Water
S = Solid
SO = Soil
SE = Sediment
L = Liquid
A = Air
O = Oil
SL = Sludge

Preservation:
1= H_2SO_4
2= H_3PO_4
3=NaOH
4=$ZnC_4H_{10}O_6$
5=$ZnC_4H_{10}O_6$ & NaOH
6=HNO_3
7=$Na_2S_2O_3$
8=HCl
9=$NaHSO_4$

Received on Ice? (Y) N Thermometer# 5 Cooler # NA Receipt Temp Corrected(°C) 2.1°C
Date & Time 7-19-21 1300 By: [signature] Sample ✓ Blank ____ Cooler ______

All Temps are Corrected Values

	Printed Name	Signature	Company	Date	Time
Relinquished by	Alan Niven	Alan Niven	EMS	7-19-21	13:00
Received by	Teresa Meins	Teresa Meins	MML	7-19-21	1300
Relinquished by					
Received by					
Relinquished by					
Received by					

Notes:

Physical Address: 6500 Sunplex Drive, Ocean Springs MS 39564

Ship to Hbrg

boxed up

Sarah Tomek

From: alan niven [aniven@env-mgt.com]
Sent: Thursday, July 15, 2021 9:42 AM
To: Sarah Tomek
Subject: FW: Morrow Samples

Cooperative Energy samples

Sent from my Galaxy

-------- Original message --------
From: Jeremy Van Slyke <jvanslyke@cooperativeenergy.com>
Date: 7/13/21 10:54 AM (GMT-06:00)
To: "Liz Williamson (ewilliamson@williamsmullen.com)" <ewilliamson@williamsmullen.com>, Jeff Pittman <jpittman@cooperativeenergy.com>, alan niven <aniven@env-mgt.com>
Cc: Stephanie Kilgore <skilgore@cooperativeenergy.com>
Subject: Morrow Samples

PRIVILEDGED AND CONFIDENTIAL

* 14 sample points *

Alan, we would like to collect samples from cells 1, 2, 3, 4, 5, and 6 along with the six new extraction wells EW-10 through EW-15 (numbering is from west to east). Jeff please correct me if the nomenclature for the locations are incorrect. The parameters are listed in the table below. Please coordinate with Jeff Pittman so that we can have someone assist you with operating the pumps to collect the samples. One of the cells is awaiting a pump replacement so please bring a portable pump and tubing or other sampling devices to retrieve the sample if necessary.

Sampling Parameters
Field Parameters
pH
Specific Conductance
Temperature
ORP
CCR Rule - Appendix III
Boron
Calcium
Chloride
Fluoride
Sulfate
Total Dissolved Solids
CCR Rule - Appendix IV
Antimony
Arsenic

1000pL - Wet Lab
250pL ~~500pL~~ - Metals - 28

Barium
Beryllium
Chromium
Cobalt
Lead
Lithium
Molybdenum
Selenium
Thallium
Cations and Anions
Alkalinity
Iron
Magnesium
Manganese
Potassium
Sodium

Jeremy Van Slyke
Environmental Analyst

Cooperative ENERGY.

Post Office Box 15849
Hattiesburg, MS 39404
601-705-2654

APPENDIX B

Mineralogical Analysis Laboratory Report

Quantitative X-Ray Diffraction by Rietveld Refinement

Report Prepared for:	*Golder Associates - Dawn Prell*
Project Number/ LIMS No.	*17024-02 / MI7000-JUN19*
Sample Receipt:	*June 4, 2019*
Sample Analysis:	*June 13, 2019*
Reporting Date:	*June 21, 2019*
Instrument:	Panalytical X'pert Pro Diffractometer
Test Conditions:	Co radiation, 40 kV, 45 mA Regular Scanning: Step: 0.033°, Step time:0.15s, 2θ range: 6-70°
Interpretations :	HighScore Plus software using Crystallography Open Database (COD) and Joint Committee on Powder Diffraction Standards -International Center for Diffraction Data (JCPDS-ICDD).
Detection Limit :	0.5-2%. Strongly dependent on crystallinity.

Contents:

Ben Eaton
Junior Mineralogist

Lain Glossop H.B.Sc
Senior Mineralogist

SGS Minerals
a division of SGS Canada Inc.
3260 Production Way, Burnaby, British Columbia, Canada V5A 4W4
Tel: (604) 638-2349 Fax: (604) 444-5486 www.sgs.com www.sgs.com/met
Member of the SGS Group (SGS SA)

Method Summary

Mineral Identification and Interpretation:

Mineral identification and interpretation involve matching the diffraction pattern of a test sample material to patterns of single-phase reference materials. The reference patterns from the Crystallography Open Database (COD) and the Joint Committee on Powder Diffraction Standards - International Center for Diffraction Data (JCPDS-ICDD).

Interpretations do not reflect the presence of non-crystalline and/or amorphous compounds, except when internal standards have been added by request. Mineral proportions may be strongly influenced by crystallinity, crystal structure and preferred orientations. Mineral or compound identification and quantitative analysis results should be accompanied by supporting chemical assay data or other additional tests.

Quantitative Rietveld Analysis:

Panalytcal Highscore Plus software was used to perform the quantitative Rietveld Analysis. This software uses a graphics based profile analysis program built around a non-linear least squares fitting system, to quantitatively determine the amount of different phases present in a multicomponent sample. Whole pattern analyses are predicated by the fact that the X-ray diffraction pattern is a total sum of both instrumental and specimen factors. Unlike other peak intensity-based methods, the Rietveld method uses a least squares approach to refine a theoretical line profile (shown as a blue pattern in the analyses plots) until it matches the obtained experimental patterns (shown as the coloured pattern in the analyses plots).

Rietveld refinement is completed with a set of minerals specifically identified for the sample. Zero values indicate that the mineral was included in the refinement calculations, but the calculated concentration was less than 0.5 wt%. Minerals not identified by the analyst are not included in refinement calculations for specific samples and are indicated with a dash.

SGS Minerals
a division of SGS Canada Inc.
3260 Production Way, Burnaby, British Columbia, Canada V5A 4W4
Tel: (604) 638-2349 Fax: (604) 444-5486 www.sgs.com www.sgs.com/met
Member of the SGS Group (SGS SA)

Summary of Rietveld Quantitative Analysis X-ray Diffraction Results

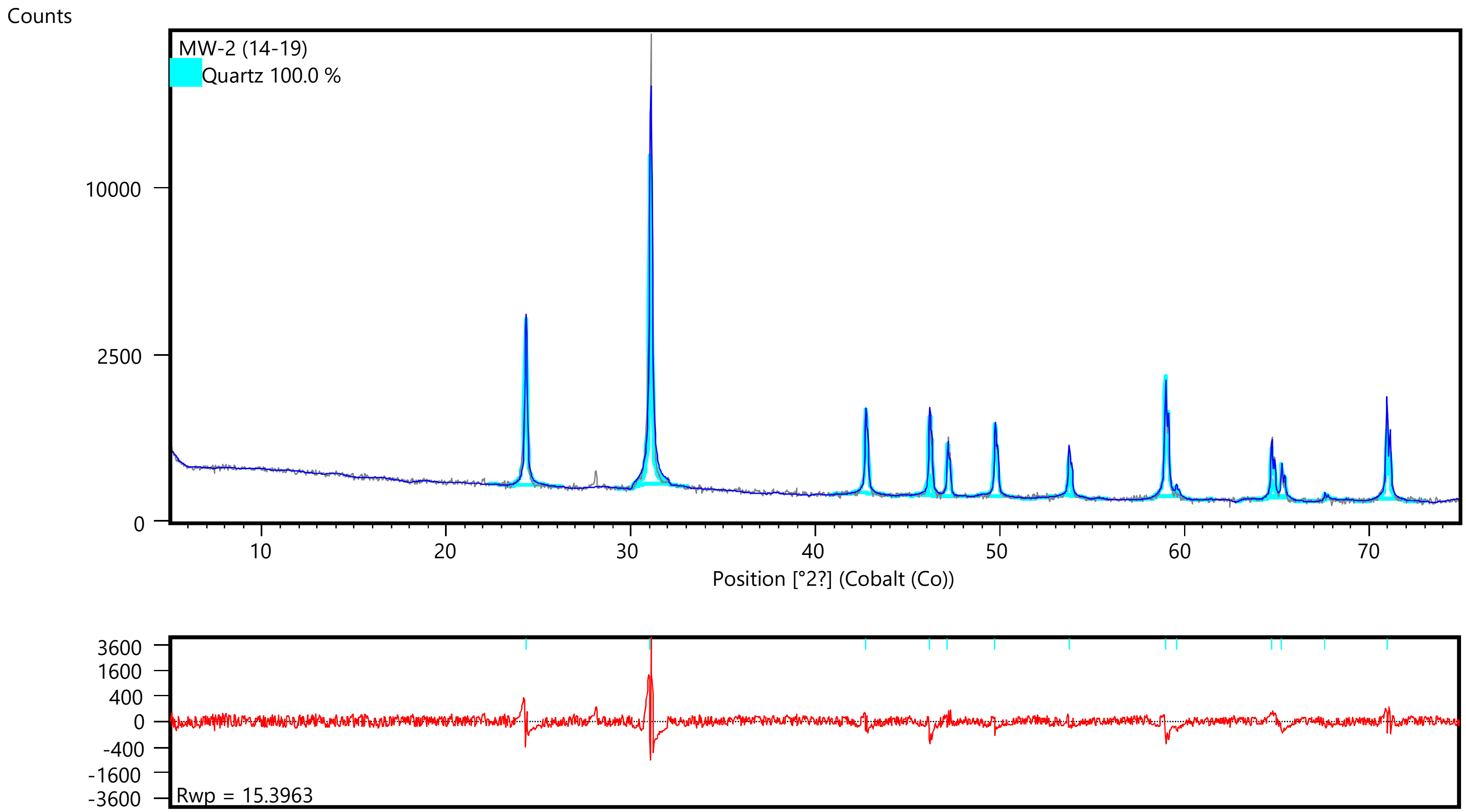
Quantitative X-ray Diffraction Results

Mineral/Compound	1 MW-2 (14-19)	2 MW-5 (12-17)	3 MW-106 (10-15)	4 MW-107 (19-24)
	(wt %)	(wt %)	(wt %)	(wt %)
Quartz	100.0	100.0	100.0	100.0
TOTAL	100	100	100	100

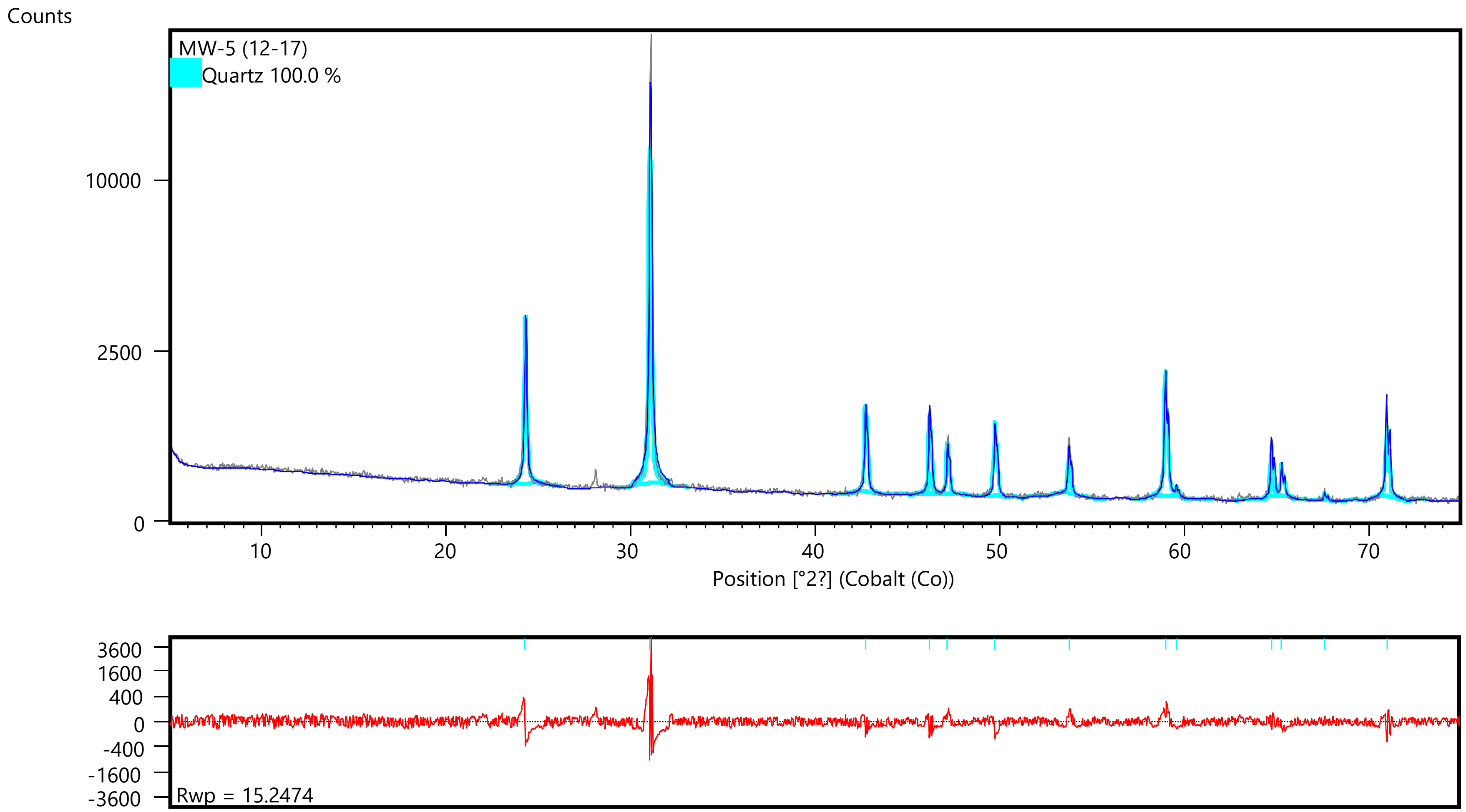
Zero values indicate that the mineral was included in the refinement, but the calculated concentration is below a measurable value.

Dashes indicate that the mineral was not identified by the analyst and not included in the refinement calculation for the sample.

Mineral/Compound	Formula
Quartz	SiO_2

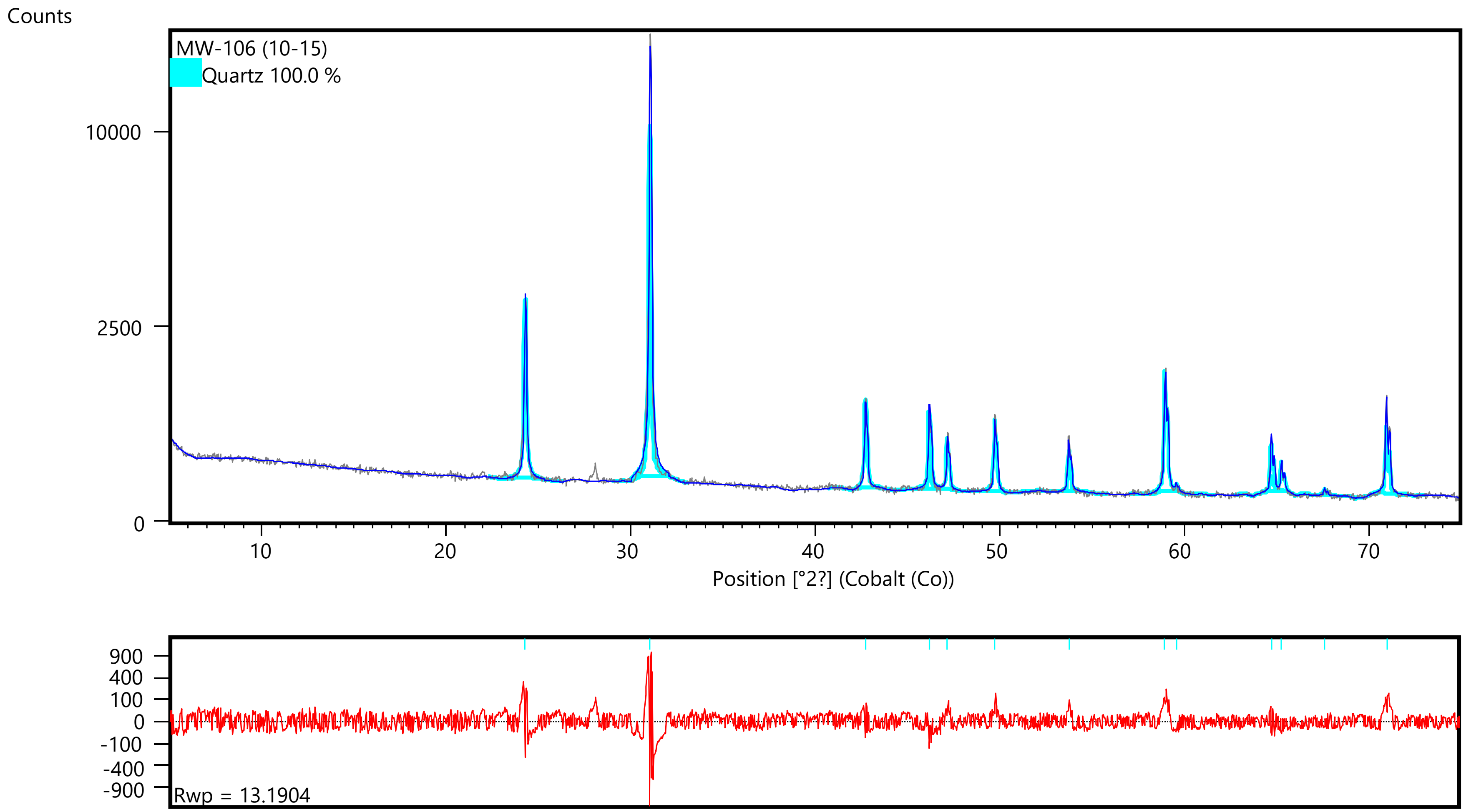


X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement and the lower red curve is the difference plot.

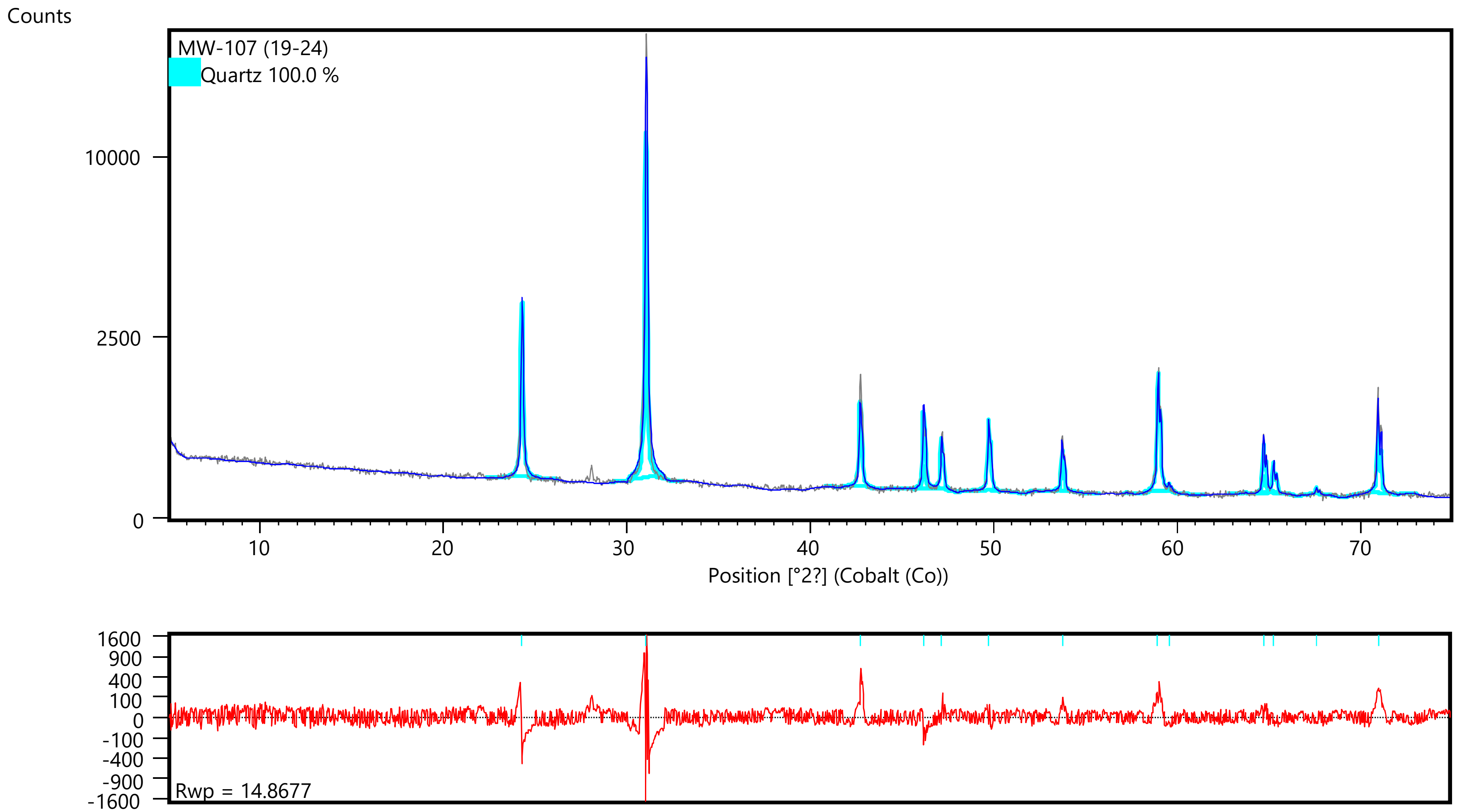


X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement and the lower red curve is the difference plot.

Golder Associates - Dawn Prell
17024-02 / MI7000-JUN19
June 21, 2019



X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement and the lower red curve is the difference plot.



X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement and the lower red curve is the difference plot.

APPENDIX C

Sequential Extraction Laboratory Report

eurofins

Environment Testing
TestAmerica

ANALYTICAL REPORT

Job Number: 140-15390-1

Job Description: RDMorrow (19117989)

For:
Golder Associates Inc.
27200 Haggerty Road, Suite B-12
Farmington Hills, MI 48331-5719

Attention: Dawn Prell

Approved for release.
Terry Walker Wasmund
Project Manager II
7/14/2019 6:02 PM

Terry Walker Wasmund, Project Manager II
5815 Middlebrook Pike, Knoxville, TN, 37921
(865)291-3000
terry.wasmund@testamericainc.com
07/14/2019

cc: PJ Nolan

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike, Knoxville, TN 37921
Tel (865) 291-3000 Fax (865) 584-4315 www.testamericainc.com

Table of Contents

Table of Contents

Qualifiers

Metals

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
*	RPD of the LCS and LCSD exceeds the control limits
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Job Narrative
140-15390-1

Receipt
The samples were received on 5/25/2019 at 10:30 AM. The samples arrived in good condition, properly preserved, and on ice. The temperature of the cooler at receipt was 0.7º C.

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

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

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

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

Results were calculated using the following equation:

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

Where:
C = Concentration from instrument readout, µg/mL
V = Final volume of digestate, mL
D = Instrument dilution factor
V1 = Total volume of leachate, mL
V2 = Volume of leachate digested, mL
W = Wet weight of sample, g
S = Percent solids/100

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

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

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

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

The step 1 digestates were reanalyzed for vanadium at a 1/10 dilution due to positive interelement interferences resulting from the high magnesium results. The reporting limits were adjusted accordingly.

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

The serial dilution performed for samples (140-15376-A-1-A SD ^5), (140-15376-A-1-A SD ^50) and (140-15376-A-1-AA SD ^50) associated with batch 140-31255 was outside control limits.

The sample duplicate (DUP) precision for preparation batch 140-30852 and analytical batch 140-31255 was outside control limits. Sample non-homogeneity is suspected.

Samples MW-2 (14-19) (140-15390-1), MW-5 (12-17) (140-15390-2), MW-106 (10-15) (140-15390-3) and MW-107 (19-24) (140-15390-4) were diluted due to the presence of silicon or titanium which interferes with Arsenic, Cobalt, Selenium and Thallium. Elevated reporting limits (RLs) are provided.

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

General Chemistry - % Moisture
% Moisture: The samples were analyzed for percent moisture using SOP number KNOX-WC-0012 (based on Modified MCAWW 160.3 and SM2540B and on the percent moisture determinations described in methods 3540C and 3550B).

General Chemistry - Method 9060
Reanalysis of samples (580-86114-D-1), (580-86114-D-1 DU), (580-86114-D-1 MS) and (580-86114-D-1 MSD) was performed outside of the analytical holding time as the Leco instrument went out of service and needed repair. :

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

Comments
No additional comments.

Detection Summary

Client: Golder Associates Inc.	Job ID: 140-15390-1
Project/Site: RDMorrow (19117989)

Client Sample ID: MW-2 (14-19) — Lab Sample ID: 140-15390-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	1.1	J	3.5	0.14	mg/Kg	4	☼	6010B SEP	Step 1
Aluminum	11	J	12	2.4	mg/Kg	1	☼	6010B SEP	Step 3
Iron	13		5.8	3.4	mg/Kg	1	☼	6010B SEP	Step 3
Manganese	0.16	J B	0.87	0.031	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	250		12	1.9	mg/Kg	1	☼	6010B SEP	Step 4
Cobalt	0.14	J	2.9	0.062	mg/Kg	1	☼	6010B SEP	Step 4
Iron	340		5.8	3.4	mg/Kg	1	☼	6010B SEP	Step 4
Manganese	0.58	J	0.87	0.15	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	130	J *	170	27	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	370		12	1.9	mg/Kg	1	☼	6010B SEP	Step 6
Cobalt	0.089	J	2.9	0.053	mg/Kg	1	☼	6010B SEP	Step 6
Iron	480		5.8	3.4	mg/Kg	1	☼	6010B SEP	Step 6
Li	0.21	J	2.9	0.17	mg/Kg	1	☼	6010B SEP	Step 6
Manganese	0.74	J	0.87	0.29	mg/Kg	1	☼	6010B SEP	Step 6
Aluminum	1500		120	19	mg/Kg	10	☼	6010B SEP	Step 7
Iron	620		5.8	4.8	mg/Kg	1	☼	6010B SEP	Step 7
Li	1.6	J	2.9	0.17	mg/Kg	1	☼	6010B SEP	Step 7
Manganese	4.1	B	0.87	0.060	mg/Kg	1	☼	6010B SEP	Step 7
Aluminum	2200		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Cobalt	0.23	J	2.5	0.023	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Iron	1500		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Li	1.8	J	2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Manganese	6.6		0.75	0.052	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Aluminum	2800		120	19	mg/Kg	10	☼	6010B	Total/NA
Cobalt	0.43	J	5.8	0.35	mg/Kg	2	☼	6010B	Total/NA
Iron	710		5.8	4.8	mg/Kg	1	☼	6010B	Total/NA
Lithium	2.2	J	2.9	0.17	mg/Kg	1	☼	6010B	Total/NA
Manganese	11		0.87	0.060	mg/Kg	1	☼	6010B	Total/NA
Molybdenum	0.24	J	2.3	0.095	mg/Kg	1	☼	6010B	Total/NA

Client Sample ID: MW-5 (12-17) — Lab Sample ID: 140-15390-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Li	1.1	J	11	0.69	mg/Kg	4	☼	6010B SEP	Step 1
Manganese	0.53	J	3.4	0.14	mg/Kg	4	☼	6010B SEP	Step 1
Mo	3.1	J	9.2	0.38	mg/Kg	4	☼	6010B SEP	Step 1
Aluminum	20		11	2.4	mg/Kg	1	☼	6010B SEP	Step 3
Iron	59		5.7	3.3	mg/Kg	1	☼	6010B SEP	Step 3
Manganese	0.98	B	0.86	0.031	mg/Kg	1	☼	6010B SEP	Step 3
Mo	0.92	J	2.3	0.094	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	320		11	1.8	mg/Kg	1	☼	6010B SEP	Step 4
Iron	500		5.7	3.3	mg/Kg	1	☼	6010B SEP	Step 4
Li	0.82	J	2.9	0.17	mg/Kg	1	☼	6010B SEP	Step 4
Manganese	1.3		0.86	0.15	mg/Kg	1	☼	6010B SEP	Step 4
Mo	0.49	J	2.3	0.094	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	140	J *	170	27	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	300		11	1.8	mg/Kg	1	☼	6010B SEP	Step 6
Iron	120		5.7	3.3	mg/Kg	1	☼	6010B SEP	Step 6

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-5 (12-17) (Continued) Lab Sample ID: 140-15390-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Li	0.43	J	2.9	0.17	mg/Kg	1	☼	6010B SEP	Step 6
Manganese	0.60	J	0.86	0.29	mg/Kg	1	☼	6010B SEP	Step 6
Aluminum	1200		110	18	mg/Kg	10	☼	6010B SEP	Step 7
Iron	250		5.7	4.7	mg/Kg	1	☼	6010B SEP	Step 7
Li	1.4	J	2.9	0.17	mg/Kg	1	☼	6010B SEP	Step 7
Manganese	2.4	B	0.86	0.060	mg/Kg	1	☼	6010B SEP	Step 7
Aluminum	2000		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Iron	930		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Li	3.8		2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Manganese	5.7		0.75	0.052	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Mo	4.5		2.0	0.082	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Aluminum	2900		110	18	mg/Kg	10	☼	6010B	Total/NA
Cobalt	0.38	J	5.7	0.34	mg/Kg	2	☼	6010B	Total/NA
Iron	1300		5.7	4.7	mg/Kg	1	☼	6010B	Total/NA
Lithium	5.3		2.9	0.17	mg/Kg	1	☼	6010B	Total/NA
Manganese	11		0.86	0.060	mg/Kg	1	☼	6010B	Total/NA
Molybdenum	6.0		2.3	0.094	mg/Kg	1	☼	6010B	Total/NA

Client Sample ID: MW-106 (10-15) Lab Sample ID: 140-15390-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	25	J	52	8.4	mg/Kg	4	☼	6010B SEP	Step 1
Cobalt	0.32	J	13	0.24	mg/Kg	4	☼	6010B SEP	Step 1
Manganese	8.7		3.9	0.16	mg/Kg	4	☼	6010B SEP	Step 1
Aluminum	12	J *	39	6.3	mg/Kg	3	☼	6010B SEP	Step 2
Aluminum	38		13	2.7	mg/Kg	1	☼	6010B SEP	Step 3
Cobalt	0.093	J	3.3	0.059	mg/Kg	1	☼	6010B SEP	Step 3
Iron	120		6.5	3.8	mg/Kg	1	☼	6010B SEP	Step 3
Manganese	4.7	B	0.98	0.035	mg/Kg	1	☼	6010B SEP	Step 3
Mo	0.11	J	2.6	0.11	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	600		13	2.1	mg/Kg	1	☼	6010B SEP	Step 4
Cobalt	0.21	J	3.3	0.069	mg/Kg	1	☼	6010B SEP	Step 4
Iron	760		6.5	3.8	mg/Kg	1	☼	6010B SEP	Step 4
Li	0.25	J	3.3	0.20	mg/Kg	1	☼	6010B SEP	Step 4
Manganese	5.2		0.98	0.17	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	110	J *	200	31	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	640		13	2.1	mg/Kg	1	☼	6010B SEP	Step 6
Cobalt	0.16	J	3.3	0.060	mg/Kg	1	☼	6010B SEP	Step 6
Iron	380		6.5	3.8	mg/Kg	1	☼	6010B SEP	Step 6
Li	0.46	J	3.3	0.20	mg/Kg	1	☼	6010B SEP	Step 6
Manganese	2.2		0.98	0.33	mg/Kg	1	☼	6010B SEP	Step 6
Aluminum	4900		130	21	mg/Kg	10	☼	6010B SEP	Step 7
Iron	910		6.5	5.4	mg/Kg	1	☼	6010B SEP	Step 7
Li	2.9	J	3.3	0.20	mg/Kg	1	☼	6010B SEP	Step 7
Manganese	14	B	0.98	0.068	mg/Kg	1	☼	6010B SEP	Step 7
Aluminum	6400		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-106 (10-15) (Continued) Lab Sample ID: 140-15390-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.79	J	2.5	0.023	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Iron	2200		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Li	3.6		2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Manganese	35		0.75	0.052	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Mo	0.11	J	2.0	0.082	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Aluminum	7900		130	21	mg/Kg	10	☼	6010B	Total/NA
Cobalt	1.5	J	3.3	0.20	mg/Kg	1	☼	6010B	Total/NA
Iron	2400		6.5	5.4	mg/Kg	1	☼	6010B	Total/NA
Lithium	4.2		3.3	0.20	mg/Kg	1	☼	6010B	Total/NA
Manganese	54		0.98	0.068	mg/Kg	1	☼	6010B	Total/NA
Molybdenum	0.27	J	2.6	0.11	mg/Kg	1	☼	6010B	Total/NA
Total Organic Carbon - Average Dup	97	J	2000	44	mg/Kg	1		9060	Total/NA

Client Sample ID: MW-107 (19-24) Lab Sample ID: 140-15390-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	37	J	46	7.4	mg/Kg	4	☼	6010B SEP	Step 1
Cobalt	0.31	J	12	0.21	mg/Kg	4	☼	6010B SEP	Step 1
Manganese	10		3.5	0.14	mg/Kg	4	☼	6010B SEP	Step 1
Aluminum	18	J *	35	5.6	mg/Kg	3	☼	6010B SEP	Step 2
Aluminum	47		12	2.4	mg/Kg	1	☼	6010B SEP	Step 3
Cobalt	0.070	J	2.9	0.052	mg/Kg	1	☼	6010B SEP	Step 3
Iron	160		5.8	3.4	mg/Kg	1	☼	6010B SEP	Step 3
Manganese	5.7	B	0.87	0.031	mg/Kg	1	☼	6010B SEP	Step 3
Mo	0.29	J	2.3	0.095	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	600		12	1.9	mg/Kg	1	☼	6010B SEP	Step 4
Cobalt	0.13	J	2.9	0.062	mg/Kg	1	☼	6010B SEP	Step 4
Iron	620		5.8	3.4	mg/Kg	1	☼	6010B SEP	Step 4
Li	0.32	J	2.9	0.17	mg/Kg	1	☼	6010B SEP	Step 4
Manganese	4.1		0.87	0.15	mg/Kg	1	☼	6010B SEP	Step 4
Mo	0.13	J	2.3	0.095	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	130	J *	170	27	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	650		12	1.9	mg/Kg	1	☼	6010B SEP	Step 6
Cobalt	0.11	J	2.9	0.053	mg/Kg	1	☼	6010B SEP	Step 6
Iron	340		5.8	3.4	mg/Kg	1	☼	6010B SEP	Step 6
Li	0.41	J	2.9	0.17	mg/Kg	1	☼	6010B SEP	Step 6
Manganese	1.5		0.87	0.29	mg/Kg	1	☼	6010B SEP	Step 6
Aluminum	2000		120	19	mg/Kg	10	☼	6010B SEP	Step 7
Iron	410		5.8	4.8	mg/Kg	1	☼	6010B SEP	Step 7
Li	1.4	J	2.9	0.17	mg/Kg	1	☼	6010B SEP	Step 7
Manganese	4.3	B	0.87	0.060	mg/Kg	1	☼	6010B SEP	Step 7
Aluminum	3500		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Cobalt	0.62	J	2.5	0.023	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Iron	1500		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Li	2.1	J	2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-107 (19-24) (Continued) Lab Sample ID: 140-15390-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	26		0.75	0.052	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Mo	0.42	J	2.0	0.082	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Aluminum	6000		120	19	mg/Kg	10	☼	6010B	Total/NA
Cobalt	1.0	J	5.8	0.35	mg/Kg	2	☼	6010B	Total/NA
Iron	2000		5.8	4.8	mg/Kg	1	☼	6010B	Total/NA
Lithium	3.5		2.9	0.17	mg/Kg	1	☼	6010B	Total/NA
Manganese	31		0.87	0.060	mg/Kg	1	☼	6010B	Total/NA
Molybdenum	0.72	J	2.3	0.095	mg/Kg	1	☼	6010B	Total/NA
Total Organic Carbon - Average Dup	140	J	2000	44	mg/Kg	1		9060	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client Sample ID: MW-2 (14-19)

Lab Sample ID: 140-15390-1

Date Collected: 05/23/19 10:15
Matrix: Solid
Date Received: 05/25/19 10:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2200**		10	1.6	mg/Kg			07/11/19 10:59	1
Cobalt	**0.23**	**J**	2.5	0.023	mg/Kg			07/11/19 10:59	1
Iron	**1500**		5.0	4.1	mg/Kg			07/11/19 10:59	1
Li	**1.8**	**J**	2.5	0.15	mg/Kg			07/11/19 10:59	1
Manganese	**6.6**		0.75	0.052	mg/Kg			07/11/19 10:59	1
Mo	ND		2.0	0.082	mg/Kg			07/11/19 10:59	1
Thallium	ND		1.8	0.18	mg/Kg			07/11/19 10:59	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Average Dup	ND		2000	44	mg/Kg			06/10/19 12:29	1

Client Sample Results

Client: Golder Associates Inc. Job ID: 140-15390-1
Project/Site: RDMorrow (19117989)

Client Sample ID: MW-2 (14-19) Lab Sample ID: 140-15390-1

Date Collected: 05/23/19 10:15 **Matrix: Solid**
Date Received: 05/25/19 10:30 **Percent Solids: 86.1**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		46	7.4	mg/Kg	☼	05/31/19 08:00	06/17/19 14:50	4
Cobalt	ND		12	0.21	mg/Kg	☼	05/31/19 08:00	06/17/19 14:50	4
Iron	ND		23	13	mg/Kg	☼	05/31/19 08:00	06/17/19 14:50	4
Li	ND		12	0.70	mg/Kg	☼	05/31/19 08:00	06/17/19 14:50	4
Manganese	**1.1**	**J**	3.5	0.14	mg/Kg	☼	05/31/19 08:00	06/17/19 14:50	4
Mo	ND		9.3	0.38	mg/Kg	☼	05/31/19 08:00	06/17/19 14:50	4
Thallium	ND		8.1	0.98	mg/Kg	☼	05/31/19 08:00	06/17/19 14:50	4

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND	*	35	5.6	mg/Kg	☼	06/03/19 08:00	06/17/19 17:12	3
Cobalt	ND		8.7	0.22	mg/Kg	☼	06/03/19 08:00	06/17/19 17:12	3
Iron	ND	*	17	10	mg/Kg	☼	06/03/19 08:00	06/17/19 17:12	3
Li	ND		8.7	0.52	mg/Kg	☼	06/03/19 08:00	06/17/19 17:12	3
Manganese	ND		2.6	0.98	mg/Kg	☼	06/03/19 08:00	06/17/19 17:12	3
Mo	ND		7.0	0.29	mg/Kg	☼	06/03/19 08:00	06/17/19 17:12	3
Thallium	ND		6.1	0.73	mg/Kg	☼	06/03/19 08:00	06/17/19 17:12	3

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**11**	**J**	12	2.4	mg/Kg	☼	06/04/19 08:00	06/26/19 18:06	1
Cobalt	ND		2.9	0.052	mg/Kg	☼	06/04/19 08:00	06/26/19 18:06	1
Iron	**13**		5.8	3.4	mg/Kg	☼	06/04/19 08:00	06/26/19 18:06	1
Li	ND		2.9	0.17	mg/Kg	☼	06/04/19 08:00	06/26/19 18:06	1
Manganese	**0.16**	**J B**	0.87	0.031	mg/Kg	☼	06/04/19 08:00	06/26/19 18:06	1
Mo	ND		2.3	0.095	mg/Kg	☼	06/04/19 08:00	06/26/19 18:06	1
Thallium	ND		2.0	0.24	mg/Kg	☼	06/04/19 08:00	06/26/19 18:06	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**250**		12	1.9	mg/Kg	☼	06/10/19 08:00	06/26/19 19:23	1
Cobalt	**0.14**	**J**	2.9	0.062	mg/Kg	☼	06/10/19 08:00	06/26/19 19:23	1
Iron	**340**		5.8	3.4	mg/Kg	☼	06/10/19 08:00	06/26/19 19:23	1
Li	ND		2.9	0.17	mg/Kg	☼	06/10/19 08:00	06/26/19 19:23	1
Manganese	**0.58**	**J**	0.87	0.15	mg/Kg	☼	06/10/19 08:00	06/26/19 19:23	1
Mo	ND		2.3	0.095	mg/Kg	☼	06/10/19 08:00	06/26/19 19:23	1
Thallium	ND		2.0	0.34	mg/Kg	☼	06/10/19 08:00	06/26/19 19:23	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**130**	**J ***	170	27	mg/Kg	☼	06/12/19 08:00	06/26/19 20:46	5
Cobalt	ND	*	44	0.70	mg/Kg	☼	06/12/19 08:00	06/26/19 20:46	5
Iron	ND	*	87	51	mg/Kg	☼	06/12/19 08:00	06/26/19 20:46	5
Li	ND		44	2.6	mg/Kg	☼	06/12/19 08:00	06/26/19 20:46	5
Manganese	ND	*	13	2.1	mg/Kg	☼	06/12/19 08:00	06/26/19 20:46	5
Mo	ND		35	1.5	mg/Kg	☼	06/12/19 08:00	06/26/19 20:46	5
Thallium	ND	*	30	4.1	mg/Kg	☼	06/12/19 08:00	06/26/19 20:46	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**370**		12	1.9	mg/Kg	☼	06/15/19 08:00	06/26/19 22:25	1

Client Sample ID: MW-2 (14-19)

Lab Sample ID: 140-15390-1

Date Collected: 05/23/19 10:15
Date Received: 05/25/19 10:30

Matrix: Solid
Percent Solids: 86.1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.089	J	2.9	0.053	mg/Kg	☼	06/15/19 08:00	06/26/19 22:25	1
Iron	480		5.8	3.4	mg/Kg	☼	06/15/19 08:00	06/26/19 22:25	1
Li	0.21	J	2.9	0.17	mg/Kg	☼	06/15/19 08:00	06/26/19 22:25	1
Manganese	0.74	J	0.87	0.29	mg/Kg	☼	06/15/19 08:00	06/26/19 22:25	1
Mo	ND		2.3	0.12	mg/Kg	☼	06/15/19 08:00	06/26/19 22:25	1
Thallium	ND		2.0	0.24	mg/Kg	☼	06/15/19 08:00	06/26/19 22:25	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	1500		120	19	mg/Kg	☼	06/16/19 08:00	06/28/19 14:37	10
Cobalt	ND		5.8	0.35	mg/Kg	☼	06/16/19 08:00	06/28/19 18:04	2
Iron	620		5.8	4.8	mg/Kg	☼	06/16/19 08:00	06/28/19 13:30	1
Li	1.6	J	2.9	0.17	mg/Kg	☼	06/16/19 08:00	06/28/19 13:30	1
Manganese	4.1	B	0.87	0.060	mg/Kg	☼	06/16/19 08:00	06/28/19 13:30	1
Mo	ND		2.3	0.095	mg/Kg	☼	06/16/19 08:00	06/28/19 13:30	1
Thallium	ND		4.1	0.42	mg/Kg	☼	06/16/19 08:00	06/28/19 18:04	2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	2800		120	19	mg/Kg	☼	05/30/19 08:00	06/28/19 16:57	10
Cobalt	0.43	J	5.8	0.35	mg/Kg	☼	05/30/19 08:00	06/28/19 18:55	2
Iron	710		5.8	4.8	mg/Kg	☼	05/30/19 08:00	06/28/19 15:45	1
Lithium	2.2	J	2.9	0.17	mg/Kg	☼	05/30/19 08:00	06/28/19 15:45	1
Manganese	11		0.87	0.060	mg/Kg	☼	05/30/19 08:00	06/28/19 15:45	1
Molybdenum	0.24	J	2.3	0.095	mg/Kg	☼	05/30/19 08:00	06/28/19 15:45	1
Thallium	ND		4.1	0.42	mg/Kg	☼	05/30/19 08:00	06/28/19 18:55	2

Client Sample ID: MW-5 (12-17)

Date Collected: 05/23/19 12:50
Date Received: 05/25/19 10:30

Lab Sample ID: 140-15390-2

Matrix: Solid

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2000**		10	1.6	mg/Kg			07/11/19 10:59	1
Cobalt	ND		2.5	0.023	mg/Kg			07/11/19 10:59	1
Iron	**930**		5.0	4.1	mg/Kg			07/11/19 10:59	1
Li	**3.8**		2.5	0.15	mg/Kg			07/11/19 10:59	1
Manganese	**5.7**		0.75	0.052	mg/Kg			07/11/19 10:59	1
Mo	**4.5**		2.0	0.082	mg/Kg			07/11/19 10:59	1
Thallium	ND		1.8	0.18	mg/Kg			07/11/19 10:59	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Average Dup	ND		2000	44	mg/Kg			06/10/19 12:40	1

Client Sample ID: MW-5 (12-17)
Lab Sample ID: 140-15390-2

Date Collected: 05/23/19 12:50
Matrix: Solid
Date Received: 05/25/19 10:30
Percent Solids: 87.3

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		46	7.3	mg/Kg	☼	05/31/19 08:00	06/17/19 14:55	4
Cobalt	ND		11	0.21	mg/Kg	☼	05/31/19 08:00	06/17/19 14:55	4
Iron	ND		23	13	mg/Kg	☼	05/31/19 08:00	06/17/19 14:55	4
Li	**1.1**	**J**	11	0.69	mg/Kg	☼	05/31/19 08:00	06/17/19 14:55	4
Manganese	**0.53**	**J**	3.4	0.14	mg/Kg	☼	05/31/19 08:00	06/17/19 14:55	4
Mo	**3.1**	**J**	9.2	0.38	mg/Kg	☼	05/31/19 08:00	06/17/19 14:55	4
Thallium	ND		8.0	0.96	mg/Kg	☼	05/31/19 08:00	06/17/19 14:55	4

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND	*	34	5.5	mg/Kg	☼	06/03/19 08:00	06/17/19 16:14	3
Cobalt	ND		8.6	0.22	mg/Kg	☼	06/03/19 08:00	06/17/19 16:14	3
Iron	ND	*	17	10	mg/Kg	☼	06/03/19 08:00	06/17/19 16:14	3
Li	ND		8.6	0.52	mg/Kg	☼	06/03/19 08:00	06/17/19 16:14	3
Manganese	ND		2.6	0.96	mg/Kg	☼	06/03/19 08:00	06/17/19 16:14	3
Mo	ND		6.9	0.28	mg/Kg	☼	06/03/19 08:00	06/17/19 16:14	3
Thallium	ND		6.0	0.72	mg/Kg	☼	06/03/19 08:00	06/17/19 16:14	3

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**20**		11	2.4	mg/Kg	☼	06/04/19 08:00	06/26/19 18:11	1
Cobalt	ND		2.9	0.052	mg/Kg	☼	06/04/19 08:00	06/26/19 18:11	1
Iron	**59**		5.7	3.3	mg/Kg	☼	06/04/19 08:00	06/26/19 18:11	1
Li	ND		2.9	0.17	mg/Kg	☼	06/04/19 08:00	06/26/19 18:11	1
Manganese	**0.98**	**B**	0.86	0.031	mg/Kg	☼	06/04/19 08:00	06/26/19 18:11	1
Mo	**0.92**	**J**	2.3	0.094	mg/Kg	☼	06/04/19 08:00	06/26/19 18:11	1
Thallium	ND		2.0	0.24	mg/Kg	☼	06/04/19 08:00	06/26/19 18:11	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**320**		11	1.8	mg/Kg	☼	06/10/19 08:00	06/26/19 19:28	1
Cobalt	ND		2.9	0.061	mg/Kg	☼	06/10/19 08:00	06/26/19 19:28	1
Iron	**500**		5.7	3.3	mg/Kg	☼	06/10/19 08:00	06/26/19 19:28	1
Li	**0.82**	**J**	2.9	0.17	mg/Kg	☼	06/10/19 08:00	06/26/19 19:28	1
Manganese	**1.3**		0.86	0.15	mg/Kg	☼	06/10/19 08:00	06/26/19 19:28	1
Mo	**0.49**	**J**	2.3	0.094	mg/Kg	☼	06/10/19 08:00	06/26/19 19:28	1
Thallium	ND		2.0	0.33	mg/Kg	☼	06/10/19 08:00	06/26/19 19:28	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**140**	**J ***	170	27	mg/Kg	☼	06/12/19 08:00	06/26/19 20:51	5
Cobalt	ND	*	43	0.69	mg/Kg	☼	06/12/19 08:00	06/26/19 20:51	5
Iron	ND	*	86	50	mg/Kg	☼	06/12/19 08:00	06/26/19 20:51	5
Li	ND		43	2.5	mg/Kg	☼	06/12/19 08:00	06/26/19 20:51	5
Manganese	ND	*	13	2.1	mg/Kg	☼	06/12/19 08:00	06/26/19 20:51	5
Mo	ND		34	1.4	mg/Kg	☼	06/12/19 08:00	06/26/19 20:51	5
Thallium	ND	*	30	4.0	mg/Kg	☼	06/12/19 08:00	06/26/19 20:51	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**300**		11	1.8	mg/Kg	☼	06/15/19 08:00	06/26/19 22:30	1

Client Sample ID: MW-5 (12-17) Lab Sample ID: 140-15390-2

Date Collected: 05/23/19 12:50 **Matrix: Solid**
Date Received: 05/25/19 10:30 **Percent Solids: 87.3**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	ND		2.9	0.053	mg/Kg	☼	06/15/19 08:00	06/26/19 22:30	1
Iron	**120**		5.7	3.3	mg/Kg	☼	06/15/19 08:00	06/26/19 22:30	1
Li	**0.43**	**J**	2.9	0.17	mg/Kg	☼	06/15/19 08:00	06/26/19 22:30	1
Manganese	**0.60**	**J**	0.86	0.29	mg/Kg	☼	06/15/19 08:00	06/26/19 22:30	1
Mo	ND		2.3	0.11	mg/Kg	☼	06/15/19 08:00	06/26/19 22:30	1
Thallium	ND		2.0	0.24	mg/Kg	☼	06/15/19 08:00	06/26/19 22:30	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1200**		110	18	mg/Kg	☼	06/16/19 08:00	06/28/19 14:42	10
Cobalt	ND		5.7	0.34	mg/Kg	☼	06/16/19 08:00	06/28/19 18:09	2
Iron	**250**		5.7	4.7	mg/Kg	☼	06/16/19 08:00	06/28/19 13:35	1
Li	**1.4**	**J**	2.9	0.17	mg/Kg	☼	06/16/19 08:00	06/28/19 13:35	1
Manganese	**2.4**	**B**	0.86	0.060	mg/Kg	☼	06/16/19 08:00	06/28/19 13:35	1
Mo	ND		2.3	0.094	mg/Kg	☼	06/16/19 08:00	06/28/19 13:35	1
Thallium	ND		4.0	0.41	mg/Kg	☼	06/16/19 08:00	06/28/19 18:09	2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2900**		110	18	mg/Kg	☼	05/30/19 08:00	06/28/19 17:17	10
Cobalt	**0.38**	**J**	5.7	0.34	mg/Kg	☼	05/30/19 08:00	06/28/19 19:00	2
Iron	**1300**		5.7	4.7	mg/Kg	☼	05/30/19 08:00	06/28/19 15:50	1
Lithium	**5.3**		2.9	0.17	mg/Kg	☼	05/30/19 08:00	06/28/19 15:50	1
Manganese	**11**		0.86	0.060	mg/Kg	☼	05/30/19 08:00	06/28/19 15:50	1
Molybdenum	**6.0**		2.3	0.094	mg/Kg	☼	05/30/19 08:00	06/28/19 15:50	1
Thallium	ND		4.0	0.41	mg/Kg	☼	05/30/19 08:00	06/28/19 19:00	2

Client Sample Results

Client: Golder Associates Inc. | Job ID: 140-15390-1
Project/Site: RDMorrow (19117989)

Client Sample ID: MW-106 (10-15) | Lab Sample ID: 140-15390-3

Date Collected: 05/23/19 13:40 | **Matrix: Solid**
Date Received: 05/25/19 10:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	6400		10	1.6	mg/Kg			07/11/19 10:59	1
Cobalt	0.79	J	2.5	0.023	mg/Kg			07/11/19 10:59	1
Iron	2200		5.0	4.1	mg/Kg			07/11/19 10:59	1
Li	3.6		2.5	0.15	mg/Kg			07/11/19 10:59	1
Manganese	35		0.75	0.052	mg/Kg			07/11/19 10:59	1
Mo	0.11	J	2.0	0.082	mg/Kg			07/11/19 10:59	1
Thallium	ND		1.8	0.18	mg/Kg			07/11/19 10:59	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Average Dup	97	J	2000	44	mg/Kg			06/10/19 12:44	1

Client Sample ID: MW-106 (10-15) Lab Sample ID: 140-15390-3

Date Collected: 05/23/19 13:40 **Matrix: Solid**
Date Received: 05/25/19 10:30 **Percent Solids: 76.5**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**25**	**J**	52	8.4	mg/Kg	☼	05/31/19 08:00	06/17/19 15:00	4
Cobalt	**0.32**	**J**	13	0.24	mg/Kg	☼	05/31/19 08:00	06/17/19 15:00	4
Iron	ND		26	15	mg/Kg	☼	05/31/19 08:00	06/17/19 15:00	4
Li	ND		13	0.78	mg/Kg	☼	05/31/19 08:00	06/17/19 15:00	4
Manganese	**8.7**		3.9	0.16	mg/Kg	☼	05/31/19 08:00	06/17/19 15:00	4
Mo	ND		10	0.43	mg/Kg	☼	05/31/19 08:00	06/17/19 15:00	4
Thallium	ND		9.1	1.1	mg/Kg	☼	05/31/19 08:00	06/17/19 15:00	4

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**12**	**J ***	39	6.3	mg/Kg	☼	06/03/19 08:00	06/17/19 16:19	3
Cobalt	ND		9.8	0.25	mg/Kg	☼	06/03/19 08:00	06/17/19 16:19	3
Iron	ND	*	20	11	mg/Kg	☼	06/03/19 08:00	06/17/19 16:19	3
Li	ND		9.8	0.59	mg/Kg	☼	06/03/19 08:00	06/17/19 16:19	3
Manganese	ND		2.9	1.1	mg/Kg	☼	06/03/19 08:00	06/17/19 16:19	3
Mo	ND		7.8	0.32	mg/Kg	☼	06/03/19 08:00	06/17/19 16:19	3
Thallium	ND		6.9	0.82	mg/Kg	☼	06/03/19 08:00	06/17/19 16:19	3

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**38**		13	2.7	mg/Kg	☼	06/04/19 08:00	06/26/19 18:16	1
Cobalt	**0.093**	**J**	3.3	0.059	mg/Kg	☼	06/04/19 08:00	06/26/19 18:16	1
Iron	**120**		6.5	3.8	mg/Kg	☼	06/04/19 08:00	06/26/19 18:16	1
Li	ND		3.3	0.20	mg/Kg	☼	06/04/19 08:00	06/26/19 18:16	1
Manganese	**4.7**	**B**	0.98	0.035	mg/Kg	☼	06/04/19 08:00	06/26/19 18:16	1
Mo	**0.11**	**J**	2.6	0.11	mg/Kg	☼	06/04/19 08:00	06/26/19 18:16	1
Thallium	ND		2.3	0.27	mg/Kg	☼	06/04/19 08:00	06/26/19 18:16	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**600**		13	2.1	mg/Kg	☼	06/10/19 08:00	06/26/19 19:33	1
Cobalt	**0.21**	**J**	3.3	0.069	mg/Kg	☼	06/10/19 08:00	06/26/19 19:33	1
Iron	**760**		6.5	3.8	mg/Kg	☼	06/10/19 08:00	06/26/19 19:33	1
Li	**0.25**	**J**	3.3	0.20	mg/Kg	☼	06/10/19 08:00	06/26/19 19:33	1
Manganese	**5.2**		0.98	0.17	mg/Kg	☼	06/10/19 08:00	06/26/19 19:33	1
Mo	ND		2.6	0.11	mg/Kg	☼	06/10/19 08:00	06/26/19 19:33	1
Thallium	ND		2.3	0.38	mg/Kg	☼	06/10/19 08:00	06/26/19 19:33	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**110**	**J ***	200	31	mg/Kg	☼	06/12/19 08:00	06/26/19 21:12	5
Cobalt	ND	*	49	0.78	mg/Kg	☼	06/12/19 08:00	06/26/19 21:12	5
Iron	ND	*	98	57	mg/Kg	☼	06/12/19 08:00	06/26/19 21:12	5
Li	ND		49	2.9	mg/Kg	☼	06/12/19 08:00	06/26/19 21:12	5
Manganese	ND	*	15	2.4	mg/Kg	☼	06/12/19 08:00	06/26/19 21:12	5
Mo	ND		39	1.6	mg/Kg	☼	06/12/19 08:00	06/26/19 21:12	5
Thallium	ND	*	34	4.6	mg/Kg	☼	06/12/19 08:00	06/26/19 21:12	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**640**		13	2.1	mg/Kg	☼	06/15/19 08:00	06/26/19 22:35	1

Client Sample ID: MW-106 (10-15) Lab Sample ID: 140-15390-3

Date Collected: 05/23/19 13:40 **Matrix: Solid**
Date Received: 05/25/19 10:30 **Percent Solids: 76.5**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	**0.16**	**J**	3.3	0.060	mg/Kg	☼	06/15/19 08:00	06/26/19 22:35	1
Iron	**380**		6.5	3.8	mg/Kg	☼	06/15/19 08:00	06/26/19 22:35	1
Li	**0.46**	**J**	3.3	0.20	mg/Kg	☼	06/15/19 08:00	06/26/19 22:35	1
Manganese	**2.2**		0.98	0.33	mg/Kg	☼	06/15/19 08:00	06/26/19 22:35	1
Mo	ND		2.6	0.13	mg/Kg	☼	06/15/19 08:00	06/26/19 22:35	1
Thallium	ND		2.3	0.27	mg/Kg	☼	06/15/19 08:00	06/26/19 22:35	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**4900**		130	21	mg/Kg	☼	06/16/19 08:00	06/28/19 14:47	10
Cobalt	ND		6.5	0.39	mg/Kg	☼	06/16/19 08:00	06/28/19 18:14	2
Iron	**910**		6.5	5.4	mg/Kg	☼	06/16/19 08:00	06/28/19 13:40	1
Li	**2.9**	**J**	3.3	0.20	mg/Kg	☼	06/16/19 08:00	06/28/19 13:40	1
Manganese	**14**	**B**	0.98	0.068	mg/Kg	☼	06/16/19 08:00	06/28/19 13:40	1
Mo	ND		2.6	0.11	mg/Kg	☼	06/16/19 08:00	06/28/19 13:40	1
Thallium	ND		4.6	0.47	mg/Kg	☼	06/16/19 08:00	06/28/19 18:14	2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**7900**		130	21	mg/Kg	☼	05/30/19 08:00	06/28/19 17:22	10
Cobalt	**1.5**	**J**	3.3	0.20	mg/Kg	☼	05/30/19 08:00	06/28/19 15:55	1
Iron	**2400**		6.5	5.4	mg/Kg	☼	05/30/19 08:00	06/28/19 15:55	1
Lithium	**4.2**		3.3	0.20	mg/Kg	☼	05/30/19 08:00	06/28/19 15:55	1
Manganese	**54**		0.98	0.068	mg/Kg	☼	05/30/19 08:00	06/28/19 15:55	1
Molybdenum	**0.27**	**J**	2.6	0.11	mg/Kg	☼	05/30/19 08:00	06/28/19 15:55	1
Thallium	ND		2.3	0.24	mg/Kg	☼	05/30/19 08:00	06/28/19 15:55	1

Client Sample ID: MW-107 (19-24)

Lab Sample ID: 140-15390-4

Date Collected: 05/23/19 14:50
Matrix: Solid
Date Received: 05/25/19 10:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**3500**		10	1.6	mg/Kg			07/11/19 10:59	1
Cobalt	**0.62**	**J**	2.5	0.023	mg/Kg			07/11/19 10:59	1
Iron	**1500**		5.0	4.1	mg/Kg			07/11/19 10:59	1
Li	**2.1**	**J**	2.5	0.15	mg/Kg			07/11/19 10:59	1
Manganese	**26**		0.75	0.052	mg/Kg			07/11/19 10:59	1
Mo	**0.42**	**J**	2.0	0.082	mg/Kg			07/11/19 10:59	1
Thallium	ND		1.8	0.18	mg/Kg			07/11/19 10:59	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Average Dup	**140**	**J**	2000	44	mg/Kg			06/10/19 12:48	1

Client Sample Results

Client: Golder Associates Inc.
Project/Site: RDMorrow (19117989)

Job ID: 140-15390-1

Client Sample ID: MW-107 (19-24)

Date Collected: 05/23/19 14:50
Date Received: 05/25/19 10:30

Lab Sample ID: 140-15390-4

Matrix: Solid
Percent Solids: 86.1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**37**	**J**	46	7.4	mg/Kg	☼	05/31/19 08:00	06/17/19 15:06	4
Cobalt	**0.31**	**J**	12	0.21	mg/Kg	☼	05/31/19 08:00	06/17/19 15:06	4
Iron	ND		23	13	mg/Kg	☼	05/31/19 08:00	06/17/19 15:06	4
Li	ND		12	0.70	mg/Kg	☼	05/31/19 08:00	06/17/19 15:06	4
Manganese	**10**		3.5	0.14	mg/Kg	☼	05/31/19 08:00	06/17/19 15:06	4
Mo	ND		9.3	0.38	mg/Kg	☼	05/31/19 08:00	06/17/19 15:06	4
Thallium	ND		8.1	0.98	mg/Kg	☼	05/31/19 08:00	06/17/19 15:06	4

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**18**	**J ***	35	5.6	mg/Kg	☼	06/03/19 08:00	06/17/19 17:18	3
Cobalt	ND		8.7	0.22	mg/Kg	☼	06/03/19 08:00	06/17/19 17:18	3
Iron	ND	*	17	10	mg/Kg	☼	06/03/19 08:00	06/17/19 17:18	3
Li	ND		8.7	0.52	mg/Kg	☼	06/03/19 08:00	06/17/19 17:18	3
Manganese	ND		2.6	0.98	mg/Kg	☼	06/03/19 08:00	06/17/19 17:18	3
Mo	ND		7.0	0.29	mg/Kg	☼	06/03/19 08:00	06/17/19 17:18	3
Thallium	ND		6.1	0.73	mg/Kg	☼	06/03/19 08:00	06/17/19 17:18	3

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**47**		12	2.4	mg/Kg	☼	06/04/19 08:00	06/26/19 18:22	1
Cobalt	**0.070**	**J**	2.9	0.052	mg/Kg	☼	06/04/19 08:00	06/26/19 18:22	1
Iron	**160**		5.8	3.4	mg/Kg	☼	06/04/19 08:00	06/26/19 18:22	1
Li	ND		2.9	0.17	mg/Kg	☼	06/04/19 08:00	06/26/19 18:22	1
Manganese	**5.7**	**B**	0.87	0.031	mg/Kg	☼	06/04/19 08:00	06/26/19 18:22	1
Mo	**0.29**	**J**	2.3	0.095	mg/Kg	☼	06/04/19 08:00	06/26/19 18:22	1
Thallium	ND		2.0	0.24	mg/Kg	☼	06/04/19 08:00	06/26/19 18:22	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**600**		12	1.9	mg/Kg	☼	06/10/19 08:00	06/26/19 19:38	1
Cobalt	**0.13**	**J**	2.9	0.062	mg/Kg	☼	06/10/19 08:00	06/26/19 19:38	1
Iron	**620**		5.8	3.4	mg/Kg	☼	06/10/19 08:00	06/26/19 19:38	1
Li	**0.32**	**J**	2.9	0.17	mg/Kg	☼	06/10/19 08:00	06/26/19 19:38	1
Manganese	**4.1**		0.87	0.15	mg/Kg	☼	06/10/19 08:00	06/26/19 19:38	1
Mo	**0.13**	**J**	2.3	0.095	mg/Kg	☼	06/10/19 08:00	06/26/19 19:38	1
Thallium	ND		2.0	0.34	mg/Kg	☼	06/10/19 08:00	06/26/19 19:38	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**130**	**J ***	170	27	mg/Kg	☼	06/12/19 08:00	06/26/19 21:18	5
Cobalt	ND	*	44	0.70	mg/Kg	☼	06/12/19 08:00	06/26/19 21:18	5
Iron	ND	*	87	51	mg/Kg	☼	06/12/19 08:00	06/26/19 21:18	5
Li	ND		44	2.6	mg/Kg	☼	06/12/19 08:00	06/26/19 21:18	5
Manganese	ND	*	13	2.1	mg/Kg	☼	06/12/19 08:00	06/26/19 21:18	5
Mo	ND		35	1.5	mg/Kg	☼	06/12/19 08:00	06/26/19 21:18	5
Thallium	ND	*	30	4.1	mg/Kg	☼	06/12/19 08:00	06/26/19 21:18	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**650**		12	1.9	mg/Kg	☼	06/15/19 08:00	06/26/19 22:40	1

Client Sample Results

Client: Golder Associates Inc.
Project/Site: RDMorrow (19117989)

Job ID: 140-15390-1

Client Sample ID: MW-107 (19-24)

Date Collected: 05/23/19 14:50
Date Received: 05/25/19 10:30

Lab Sample ID: 140-15390-4

Matrix: Solid
Percent Solids: 86.1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	**0.11**	**J**	2.9	0.053	mg/Kg	☼	06/15/19 08:00	06/26/19 22:40	1
Iron	**340**		5.8	3.4	mg/Kg	☼	06/15/19 08:00	06/26/19 22:40	1
Li	**0.41**	**J**	2.9	0.17	mg/Kg	☼	06/15/19 08:00	06/26/19 22:40	1
Manganese	**1.5**		0.87	0.29	mg/Kg	☼	06/15/19 08:00	06/26/19 22:40	1
Mo	ND		2.3	0.11	mg/Kg	☼	06/15/19 08:00	06/26/19 22:40	1
Thallium	ND		2.0	0.24	mg/Kg	☼	06/15/19 08:00	06/26/19 22:40	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2000**		120	19	mg/Kg	☼	06/16/19 08:00	06/28/19 14:52	10
Cobalt	ND		5.8	0.35	mg/Kg	☼	06/16/19 08:00	06/28/19 18:19	2
Iron	**410**		5.8	4.8	mg/Kg	☼	06/16/19 08:00	06/28/19 13:46	1
Li	**1.4**	**J**	2.9	0.17	mg/Kg	☼	06/16/19 08:00	06/28/19 13:46	1
Manganese	**4.3**	**B**	0.87	0.060	mg/Kg	☼	06/16/19 08:00	06/28/19 13:46	1
Mo	ND		2.3	0.095	mg/Kg	☼	06/16/19 08:00	06/28/19 13:46	1
Thallium	ND		4.1	0.42	mg/Kg	☼	06/16/19 08:00	06/28/19 18:19	2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**6000**		120	19	mg/Kg	☼	05/30/19 08:00	06/28/19 17:27	10
Cobalt	**1.0**	**J**	5.8	0.35	mg/Kg	☼	05/30/19 08:00	06/28/19 19:06	2
Iron	**2000**		5.8	4.8	mg/Kg	☼	05/30/19 08:00	06/28/19 16:16	1
Lithium	**3.5**		2.9	0.17	mg/Kg	☼	05/30/19 08:00	06/28/19 16:16	1
Manganese	**31**		0.87	0.060	mg/Kg	☼	05/30/19 08:00	06/28/19 16:16	1
Molybdenum	**0.72**	**J**	2.3	0.095	mg/Kg	☼	05/30/19 08:00	06/28/19 16:16	1
Thallium	ND		4.1	0.42	mg/Kg	☼	05/30/19 08:00	06/28/19 19:06	2

Default Detection Limits

Client: Golder Associates Inc.
Project/Site: RDMorrow (19117989)

Job ID: 140-15390-1

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

Prep: 3010A

SEP: Exchangeable

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.031	mg/Kg
Mo	2.0	0.082	mg/Kg
Thallium	1.8	0.21	mg/Kg

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

Prep: 3010A

SEP: Carbonate

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Cobalt	2.5	0.063	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.28	mg/Kg
Mo	2.0	0.082	mg/Kg
Thallium	1.8	0.21	mg/Kg

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

Prep: 3010A

SEP: Non-Crystalline

Analyte	RL	MDL	Units
Aluminum	10	2.1	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.027	mg/Kg
Mo	2.0	0.082	mg/Kg
Thallium	1.8	0.21	mg/Kg

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

Prep: 3010A

SEP: Metal Hydroxide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Cobalt	2.5	0.053	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.13	mg/Kg
Mo	2.0	0.082	mg/Kg
Thallium	1.8	0.29	mg/Kg

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

Prep: 3010A

SEP: Organic-Bound

Analyte	RL	MDL	Units
Aluminum	30	4.7	mg/Kg
Cobalt	7.5	0.12	mg/Kg

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

Analyte	RL	MDL	Units
Iron	15	8.8	mg/Kg
Li	7.5	0.44	mg/Kg
Manganese	2.3	0.37	mg/Kg
Mo	6.0	0.25	mg/Kg
Thallium	5.3	0.70	mg/Kg

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

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Cobalt	2.5	0.046	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.25	mg/Kg
Mo	2.0	0.099	mg/Kg
Thallium	1.8	0.21	mg/Kg

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

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Cobalt	2.5	0.15	mg/Kg
Iron	5.0	4.1	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Mo	2.0	0.082	mg/Kg
Thallium	1.8	0.18	mg/Kg

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

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Cobalt	2.5	0.023	mg/Kg
Iron	5.0	4.1	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Mo	2.0	0.082	mg/Kg
Thallium	1.8	0.18	mg/Kg

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

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Cobalt	2.5	0.15	mg/Kg
Iron	5.0	4.1	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Thallium	1.8	0.18	mg/Kg

General Chemistry

Default Detection Limits

Client: Golder Associates Inc. Job ID: 140-15390-1
Project/Site: RDMorrow (19117989)

General Chemistry

Analyte	RL	MDL	Units
Total Organic Carbon - Average Dup	2000	44	mg/Kg

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

Lab Sample ID: MB 140-30373/11-A
Client Sample ID: Method Blank
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 31255
Prep Batch: 30373

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		05/30/19 08:00	06/28/19 12:27	1
Cobalt	ND		2.5	0.15	mg/Kg		05/30/19 08:00	06/28/19 12:27	1
Iron	ND		5.0	4.1	mg/Kg		05/30/19 08:00	06/28/19 12:27	1
Lithium	ND		2.5	0.15	mg/Kg		05/30/19 08:00	06/28/19 12:27	1
Manganese	ND		0.75	0.052	mg/Kg		05/30/19 08:00	06/28/19 12:27	1
Molybdenum	ND		2.0	0.082	mg/Kg		05/30/19 08:00	06/28/19 12:27	1
Thallium	ND		1.8	0.18	mg/Kg		05/30/19 08:00	06/28/19 12:27	1

Lab Sample ID: LCS 140-30373/12-A
Client Sample ID: Lab Control Sample
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 31255
Prep Batch: 30373

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	96.4		mg/Kg		96	75 - 125
Cobalt	5.00	5.25		mg/Kg		105	75 - 125
Iron	50.0	50.6		mg/Kg		101	75 - 125
Lithium	5.00	5.37		mg/Kg		107	75 - 125
Manganese	5.00	5.27		mg/Kg		105	75 - 125
Molybdenum	25.0	26.5		mg/Kg		106	75 - 125
Thallium	20.0	21.6		mg/Kg		108	75 - 125

Lab Sample ID: LCSD 140-30373/13-A
Client Sample ID: Lab Control Sample Dup
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 31255
Prep Batch: 30373

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	95.8		mg/Kg		96	75 - 125	1	30
Cobalt	5.00	5.22		mg/Kg		104	75 - 125	0	30
Iron	50.0	50.6		mg/Kg		101	75 - 125	0	30
Lithium	5.00	5.35		mg/Kg		107	75 - 125	0	30
Manganese	5.00	5.25		mg/Kg		105	75 - 125	0	30
Molybdenum	25.0	26.4		mg/Kg		106	75 - 125	0	30
Thallium	20.0	21.4		mg/Kg		107	75 - 125	1	30

Method: 6010B SEP - SEP Metals (ICP)

Lab Sample ID: MB 140-30374/11-B ^4
Client Sample ID: Method Blank
Matrix: Solid
Prep Type: Step 1
Analysis Batch: 30900
Prep Batch: 30422

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		40	6.4	mg/Kg		05/31/19 08:00	06/17/19 13:48	4
Cobalt	ND		10	0.18	mg/Kg		05/31/19 08:00	06/17/19 13:48	4
Iron	ND		20	12	mg/Kg		05/31/19 08:00	06/17/19 13:48	4
Li	ND		10	0.60	mg/Kg		05/31/19 08:00	06/17/19 13:48	4
Manganese	ND		3.0	0.12	mg/Kg		05/31/19 08:00	06/17/19 13:48	4
Mo	ND		8.0	0.33	mg/Kg		05/31/19 08:00	06/17/19 13:48	4
Thallium	ND		7.0	0.84	mg/Kg		05/31/19 08:00	06/17/19 13:48	4

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

Lab Sample ID: LCS 140-30374/12-B ^5
Matrix: Solid
Analysis Batch: 30900

Client Sample ID: Lab Control Sample
Prep Type: Step 1
Prep Batch: 30422

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	94.0		mg/Kg		94	75 - 125
Cobalt	5.00	5.06	J	mg/Kg		101	75 - 125
Iron	50.0	51.3		mg/Kg		103	75 - 125
Li	5.00	5.37	J	mg/Kg		107	75 - 125
Manganese	5.00	4.96		mg/Kg		99	75 - 125
Mo	25.0	25.8		mg/Kg		103	75 - 125
Thallium	20.0	19.6		mg/Kg		98	75 - 125

Lab Sample ID: LCSD 140-30374/13-B ^5
Matrix: Solid
Analysis Batch: 30900

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 1
Prep Batch: 30422

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	96.4		mg/Kg		96	75 - 125	3	30
Cobalt	5.00	4.97	J	mg/Kg		99	75 - 125	2	30
Iron	50.0	50.4		mg/Kg		101	75 - 125	2	30
Li	5.00	5.04	J	mg/Kg		101	75 - 125	6	30
Manganese	5.00	4.92		mg/Kg		98	75 - 125	1	30
Mo	25.0	25.3		mg/Kg		101	75 - 125	2	30
Thallium	20.0	19.4		mg/Kg		97	75 - 125	1	30

Lab Sample ID: MB 140-30423/11-B ^3
Matrix: Solid
Analysis Batch: 30900

Client Sample ID: Method Blank
Prep Type: Step 2
Prep Batch: 30452

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		30	4.8	mg/Kg		06/03/19 08:00	06/17/19 15:11	3
Cobalt	ND		7.5	0.19	mg/Kg		06/03/19 08:00	06/17/19 15:11	3
Iron	ND		15	8.7	mg/Kg		06/03/19 08:00	06/17/19 15:11	3
Li	ND		7.5	0.45	mg/Kg		06/03/19 08:00	06/17/19 15:11	3
Manganese	ND		2.3	0.84	mg/Kg		06/03/19 08:00	06/17/19 15:11	3
Mo	ND		6.0	0.25	mg/Kg		06/03/19 08:00	06/17/19 15:11	3
Thallium	ND		5.3	0.63	mg/Kg		06/03/19 08:00	06/17/19 15:11	3

Lab Sample ID: LCS 140-30423/12-B ^5
Matrix: Solid
Analysis Batch: 30900

Client Sample ID: Lab Control Sample
Prep Type: Step 2
Prep Batch: 30452

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	ND	*	mg/Kg		-4	75 - 125
Cobalt	5.00	4.75	J	mg/Kg		95	75 - 125
Iron	50.0	ND	*	mg/Kg		2	75 - 125
Li	5.00	4.71	J	mg/Kg		94	75 - 125
Manganese	5.00	4.63		mg/Kg		93	75 - 125
Mo	25.0	21.1		mg/Kg		84	75 - 125
Thallium	20.0	18.1		mg/Kg		90	75 - 125

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

Lab Sample ID: LCSD 140-30423/13-B ^5 **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid **Prep Type: Step 2**
Analysis Batch: 30900 **Prep Batch: 30452**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	ND	*	mg/Kg		-0.3	75 - 125	167	30
Cobalt	5.00	4.76	J	mg/Kg		95	75 - 125	0	30
Iron	50.0	ND	*	mg/Kg		4	75 - 125	57	30
Li	5.00	5.06	J	mg/Kg		101	75 - 125	7	30
Manganese	5.00	4.64		mg/Kg		93	75 - 125	0	30
Mo	25.0	21.2		mg/Kg		85	75 - 125	0	30
Thallium	20.0	18.8		mg/Kg		94	75 - 125	4	30

Lab Sample ID: MB 140-30453/11-B **Client Sample ID: Method Blank**
Matrix: Solid **Prep Type: Step 3**
Analysis Batch: 31197 **Prep Batch: 30480**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	2.1	mg/Kg		06/04/19 08:00	06/26/19 17:04	1
Cobalt	ND		2.5	0.045	mg/Kg		06/04/19 08:00	06/26/19 17:04	1
Iron	ND		5.0	2.9	mg/Kg		06/04/19 08:00	06/26/19 17:04	1
Li	ND		2.5	0.15	mg/Kg		06/04/19 08:00	06/26/19 17:04	1
Manganese	0.0625	J	0.75	0.027	mg/Kg		06/04/19 08:00	06/26/19 17:04	1
Mo	ND		2.0	0.082	mg/Kg		06/04/19 08:00	06/26/19 17:04	1
Thallium	ND		1.8	0.21	mg/Kg		06/04/19 08:00	06/26/19 17:04	1

Lab Sample ID: LCS 140-30453/12-B **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Step 3**
Analysis Batch: 31197 **Prep Batch: 30480**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	95.1		mg/Kg		95	75 - 125
Cobalt	5.00	4.87		mg/Kg		97	75 - 125
Iron	50.0	49.3		mg/Kg		99	75 - 125
Li	5.00	4.84		mg/Kg		97	75 - 125
Manganese	5.00	4.86		mg/Kg		97	75 - 125
Mo	25.0	24.5		mg/Kg		98	75 - 125
Thallium	20.0	20.0		mg/Kg		100	75 - 125

Lab Sample ID: LCSD 140-30453/13-B **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid **Prep Type: Step 3**
Analysis Batch: 31197 **Prep Batch: 30480**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	98.4		mg/Kg		98	75 - 125	3	30
Cobalt	5.00	4.99		mg/Kg		100	75 - 125	2	30
Iron	50.0	50.9		mg/Kg		102	75 - 125	3	30
Li	5.00	4.97		mg/Kg		99	75 - 125	3	30
Manganese	5.00	5.00		mg/Kg		100	75 - 125	3	30
Mo	25.0	25.2		mg/Kg		101	75 - 125	3	30
Thallium	20.0	20.7		mg/Kg		104	75 - 125	3	30

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

Lab Sample ID: MB 140-30481/11-B **Client Sample ID: Method Blank**
Matrix: Solid **Prep Type: Step 4**
Analysis Batch: 31197 **Prep Batch: 30528**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		06/10/19 08:00	06/26/19 18:27	1
Cobalt	ND		2.5	0.053	mg/Kg		06/10/19 08:00	06/26/19 18:27	1
Iron	ND		5.0	2.9	mg/Kg		06/10/19 08:00	06/26/19 18:27	1
Li	ND		2.5	0.15	mg/Kg		06/10/19 08:00	06/26/19 18:27	1
Manganese	ND		0.75	0.13	mg/Kg		06/10/19 08:00	06/26/19 18:27	1
Mo	ND		2.0	0.082	mg/Kg		06/10/19 08:00	06/26/19 18:27	1
Thallium	ND		1.8	0.29	mg/Kg		06/10/19 08:00	06/26/19 18:27	1

Lab Sample ID: LCS 140-30481/12-B **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Step 4**
Analysis Batch: 31197 **Prep Batch: 30528**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	96.7		mg/Kg		97	75 - 125
Cobalt	5.00	4.98		mg/Kg		100	75 - 125
Iron	50.0	50.1		mg/Kg		100	75 - 125
Li	5.00	5.01		mg/Kg		100	75 - 125
Manganese	5.00	4.99		mg/Kg		100	75 - 125
Mo	25.0	25.1		mg/Kg		100	75 - 125
Thallium	20.0	18.2		mg/Kg		91	75 - 125

Lab Sample ID: LCSD 140-30481/13-B **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid **Prep Type: Step 4**
Analysis Batch: 31197 **Prep Batch: 30528**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	100		mg/Kg		100	75 - 125	4	30
Cobalt	5.00	5.15		mg/Kg		103	75 - 125	3	30
Iron	50.0	51.4		mg/Kg		103	75 - 125	3	30
Li	5.00	5.15		mg/Kg		103	75 - 125	3	30
Manganese	5.00	5.14		mg/Kg		103	75 - 125	3	30
Mo	25.0	26.7		mg/Kg		107	75 - 125	6	30
Thallium	20.0	18.7		mg/Kg		94	75 - 125	3	30

Lab Sample ID: MB 140-30529/11-B ^5 **Client Sample ID: Method Blank**
Matrix: Solid **Prep Type: Step 5**
Analysis Batch: 31197 **Prep Batch: 30726**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		150	24	mg/Kg		06/12/19 08:00	06/26/19 19:48	5
Cobalt	ND		38	0.60	mg/Kg		06/12/19 08:00	06/26/19 19:48	5
Iron	ND		75	44	mg/Kg		06/12/19 08:00	06/26/19 19:48	5
Li	ND		38	2.2	mg/Kg		06/12/19 08:00	06/26/19 19:48	5
Manganese	ND		11	1.9	mg/Kg		06/12/19 08:00	06/26/19 19:48	5
Mo	ND		30	1.3	mg/Kg		06/12/19 08:00	06/26/19 19:48	5
Thallium	ND		26	3.5	mg/Kg		06/12/19 08:00	06/26/19 19:48	5

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

Lab Sample ID: LCS 140-30529/12-B ^5 **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Step 5**
Analysis Batch: 31197 **Prep Batch: 30726**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	300	30.0	J *	mg/Kg		10	75 - 125
Cobalt	15.0	5.06	J *	mg/Kg		34	75 - 125
Iron	150	ND	*	mg/Kg		0.4	75 - 125
Li	15.0	16.5	J	mg/Kg		110	75 - 125
Manganese	15.0	3.17	J *	mg/Kg		21	75 - 125
Mo	75.0	63.7		mg/Kg		85	75 - 125
Thallium	60.0	25.2	J *	mg/Kg		42	75 - 125

Lab Sample ID: LCSD 140-30529/13-B ^5 **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid **Prep Type: Step 5**
Analysis Batch: 31197 **Prep Batch: 30726**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	300	ND	*	mg/Kg		6	75 - 125	43	30
Cobalt	15.0	4.94	J *	mg/Kg		33	75 - 125	2	30
Iron	150	ND	*	mg/Kg		1	75 - 125	103	30
Li	15.0	17.4	J	mg/Kg		116	75 - 125	5	30
Manganese	15.0	4.43	J *	mg/Kg		30	75 - 125	33	30
Mo	75.0	64.0		mg/Kg		85	75 - 125	0	30
Thallium	60.0	26.1	*	mg/Kg		44	75 - 125	3	30

Lab Sample ID: MB 140-30781/11-A **Client Sample ID: Method Blank**
Matrix: Solid **Prep Type: Step 6**
Analysis Batch: 31197 **Prep Batch: 30781**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		06/15/19 08:00	06/26/19 21:23	1
Cobalt	ND		2.5	0.046	mg/Kg		06/15/19 08:00	06/26/19 21:23	1
Iron	ND		5.0	2.9	mg/Kg		06/15/19 08:00	06/26/19 21:23	1
Li	ND		2.5	0.15	mg/Kg		06/15/19 08:00	06/26/19 21:23	1
Manganese	ND		0.75	0.25	mg/Kg		06/15/19 08:00	06/26/19 21:23	1
Mo	ND		2.0	0.099	mg/Kg		06/15/19 08:00	06/26/19 21:23	1
Thallium	ND		1.8	0.21	mg/Kg		06/15/19 08:00	06/26/19 21:23	1

Lab Sample ID: LCS 140-30781/12-A **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Step 6**
Analysis Batch: 31197 **Prep Batch: 30781**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	97.3		mg/Kg		97	75 - 125
Cobalt	5.00	4.78		mg/Kg		96	75 - 125
Iron	50.0	49.6		mg/Kg		99	75 - 125
Li	5.00	4.67		mg/Kg		93	75 - 125
Manganese	5.00	4.87		mg/Kg		97	75 - 125
Mo	25.0	24.3		mg/Kg		97	75 - 125
Thallium	20.0	19.7		mg/Kg		99	75 - 125

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

Lab Sample ID: LCSD 140-30781/13-A **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid **Prep Type: Step 6**
Analysis Batch: 31197 **Prep Batch: 30781**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	103		mg/Kg		103	75 - 125	5	30
Cobalt	5.00	5.04		mg/Kg		101	75 - 125	5	30
Iron	50.0	52.4		mg/Kg		105	75 - 125	5	30
Li	5.00	4.93		mg/Kg		99	75 - 125	5	30
Manganese	5.00	5.14		mg/Kg		103	75 - 125	5	30
Mo	25.0	25.7		mg/Kg		103	75 - 125	6	30
Thallium	20.0	20.7		mg/Kg		104	75 - 125	5	30

Lab Sample ID: MB 140-30852/11-A **Client Sample ID: Method Blank**
Matrix: Solid **Prep Type: Step 7**
Analysis Batch: 31255 **Prep Batch: 30852**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		06/16/19 08:00	06/28/19 12:11	1
Cobalt	ND		2.5	0.15	mg/Kg		06/16/19 08:00	06/28/19 12:11	1
Iron	ND		5.0	4.1	mg/Kg		06/16/19 08:00	06/28/19 12:11	1
Li	ND		2.5	0.15	mg/Kg		06/16/19 08:00	06/28/19 12:11	1
Manganese	0.0585	J	0.75	0.052	mg/Kg		06/16/19 08:00	06/28/19 12:11	1
Mo	ND		2.0	0.082	mg/Kg		06/16/19 08:00	06/28/19 12:11	1
Thallium	ND		1.8	0.18	mg/Kg		06/16/19 08:00	06/28/19 12:11	1

Lab Sample ID: LCS 140-30852/12-A **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Step 7**
Analysis Batch: 31255 **Prep Batch: 30852**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	96.0		mg/Kg		96	75 - 125
Cobalt	5.00	5.26		mg/Kg		105	75 - 125
Iron	50.0	51.1		mg/Kg		102	75 - 125
Li	5.00	5.34		mg/Kg		107	75 - 125
Manganese	5.00	5.28		mg/Kg		106	75 - 125
Mo	25.0	26.6		mg/Kg		106	75 - 125
Thallium	20.0	21.5		mg/Kg		108	75 - 125

Lab Sample ID: LCSD 140-30852/13-A **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid **Prep Type: Step 7**
Analysis Batch: 31255 **Prep Batch: 30852**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	95.8		mg/Kg		96	75 - 125	0	30
Cobalt	5.00	5.29		mg/Kg		106	75 - 125	1	30
Iron	50.0	51.1		mg/Kg		102	75 - 125	0	30
Li	5.00	5.47		mg/Kg		109	75 - 125	2	30
Manganese	5.00	5.42		mg/Kg		108	75 - 125	3	30
Mo	25.0	26.8		mg/Kg		107	75 - 125	1	30
Thallium	20.0	21.6		mg/Kg		108	75 - 125	0	30

QC Sample Results

Client: Golder Associates Inc. Job ID: 140-15390-1
Project/Site: RDMorrow (19117989)

Method: 9060 - Organic Carbon, Total (TOC)

Lab Sample ID: MB 580-302804/22 **Client Sample ID: Method Blank**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 302804

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Average Dup	ND		2000	44	mg/Kg			06/10/19 10:46	1

Lab Sample ID: MB 580-302804/50 **Client Sample ID: Method Blank**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 302804

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Average Dup	ND		2000	44	mg/Kg			06/10/19 13:18	1

Lab Sample ID: LCS 580-302804/23 **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 302804

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Average Dup	4270	2570		mg/Kg		60	40 - 180

Lab Sample ID: LCS 580-302804/51 **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 302804

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Average Dup	4270	2510		mg/Kg		59	40 - 180

Lab Sample ID: LCSD 580-302804/24 **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 302804

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon - Average Dup	4270	2720		mg/Kg		64	40 - 180	8	32

Lab Sample ID: LCSD 580-302804/52 **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 302804

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon - Average Dup	4270	2670		mg/Kg		62	40 - 180	6	32

QC Association Summary

Client: Golder Associates Inc.
Project/Site: RDMorrow (19117989)

Job ID: 140-15390-1

Metals

Prep Batch: 30373

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-1	MW-2 (14-19)	Total/NA	Solid	Total	
140-15390-2	MW-5 (12-17)	Total/NA	Solid	Total	
140-15390-3	MW-106 (10-15)	Total/NA	Solid	Total	
140-15390-4	MW-107 (19-24)	Total/NA	Solid	Total	
MB 140-30373/11-A	Method Blank	Total/NA	Solid	Total	
LCS 140-30373/12-A	Lab Control Sample	Total/NA	Solid	Total	
LCSD 140-30373/13-A	Lab Control Sample Dup	Total/NA	Solid	Total	

SEP Batch: 30374

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-1	MW-2 (14-19)	Step 1	Solid	Exchangeable	
140-15390-2	MW-5 (12-17)	Step 1	Solid	Exchangeable	
140-15390-3	MW-106 (10-15)	Step 1	Solid	Exchangeable	
140-15390-4	MW-107 (19-24)	Step 1	Solid	Exchangeable	
MB 140-30374/11-B ^4	Method Blank	Step 1	Solid	Exchangeable	
LCS 140-30374/12-B ^5	Lab Control Sample	Step 1	Solid	Exchangeable	
LCSD 140-30374/13-B ^5	Lab Control Sample Dup	Step 1	Solid	Exchangeable	

Prep Batch: 30422

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-1	MW-2 (14-19)	Step 1	Solid	3010A	30374
140-15390-2	MW-5 (12-17)	Step 1	Solid	3010A	30374
140-15390-3	MW-106 (10-15)	Step 1	Solid	3010A	30374
140-15390-4	MW-107 (19-24)	Step 1	Solid	3010A	30374
MB 140-30374/11-B ^4	Method Blank	Step 1	Solid	3010A	30374
LCS 140-30374/12-B ^5	Lab Control Sample	Step 1	Solid	3010A	30374
LCSD 140-30374/13-B ^5	Lab Control Sample Dup	Step 1	Solid	3010A	30374

SEP Batch: 30423

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-1	MW-2 (14-19)	Step 2	Solid	Carbonate	
140-15390-2	MW-5 (12-17)	Step 2	Solid	Carbonate	
140-15390-3	MW-106 (10-15)	Step 2	Solid	Carbonate	
140-15390-4	MW-107 (19-24)	Step 2	Solid	Carbonate	
MB 140-30423/11-B ^3	Method Blank	Step 2	Solid	Carbonate	
LCS 140-30423/12-B ^5	Lab Control Sample	Step 2	Solid	Carbonate	
LCSD 140-30423/13-B ^5	Lab Control Sample Dup	Step 2	Solid	Carbonate	

Prep Batch: 30452

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-1	MW-2 (14-19)	Step 2	Solid	3010A	30423
140-15390-2	MW-5 (12-17)	Step 2	Solid	3010A	30423
140-15390-3	MW-106 (10-15)	Step 2	Solid	3010A	30423
140-15390-4	MW-107 (19-24)	Step 2	Solid	3010A	30423
MB 140-30423/11-B ^3	Method Blank	Step 2	Solid	3010A	30423
LCS 140-30423/12-B ^5	Lab Control Sample	Step 2	Solid	3010A	30423
LCSD 140-30423/13-B ^5	Lab Control Sample Dup	Step 2	Solid	3010A	30423

SEP Batch: 30453

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-1	MW-2 (14-19)	Step 3	Solid	Non-Crystalline	

Metals (Continued)

SEP Batch: 30453 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-2	MW-5 (12-17)	Step 3	Solid	Non-Crystalline	
140-15390-3	MW-106 (10-15)	Step 3	Solid	Non-Crystalline	
140-15390-4	MW-107 (19-24)	Step 3	Solid	Non-Crystalline	
MB 140-30453/11-B	Method Blank	Step 3	Solid	Non-Crystalline	
LCS 140-30453/12-B	Lab Control Sample	Step 3	Solid	Non-Crystalline	
LCSD 140-30453/13-B	Lab Control Sample Dup	Step 3	Solid	Non-Crystalline	

Prep Batch: 30480

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-1	MW-2 (14-19)	Step 3	Solid	3010A	30453
140-15390-2	MW-5 (12-17)	Step 3	Solid	3010A	30453
140-15390-3	MW-106 (10-15)	Step 3	Solid	3010A	30453
140-15390-4	MW-107 (19-24)	Step 3	Solid	3010A	30453
MB 140-30453/11-B	Method Blank	Step 3	Solid	3010A	30453
LCS 140-30453/12-B	Lab Control Sample	Step 3	Solid	3010A	30453
LCSD 140-30453/13-B	Lab Control Sample Dup	Step 3	Solid	3010A	30453

SEP Batch: 30481

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-1	MW-2 (14-19)	Step 4	Solid	Metal Hydroxide	
140-15390-2	MW-5 (12-17)	Step 4	Solid	Metal Hydroxide	
140-15390-3	MW-106 (10-15)	Step 4	Solid	Metal Hydroxide	
140-15390-4	MW-107 (19-24)	Step 4	Solid	Metal Hydroxide	
MB 140-30481/11-B	Method Blank	Step 4	Solid	Metal Hydroxide	
LCS 140-30481/12-B	Lab Control Sample	Step 4	Solid	Metal Hydroxide	
LCSD 140-30481/13-B	Lab Control Sample Dup	Step 4	Solid	Metal Hydroxide	

Prep Batch: 30528

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-1	MW-2 (14-19)	Step 4	Solid	3010A	30481
140-15390-2	MW-5 (12-17)	Step 4	Solid	3010A	30481
140-15390-3	MW-106 (10-15)	Step 4	Solid	3010A	30481
140-15390-4	MW-107 (19-24)	Step 4	Solid	3010A	30481
MB 140-30481/11-B	Method Blank	Step 4	Solid	3010A	30481
LCS 140-30481/12-B	Lab Control Sample	Step 4	Solid	3010A	30481
LCSD 140-30481/13-B	Lab Control Sample Dup	Step 4	Solid	3010A	30481

SEP Batch: 30529

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-1	MW-2 (14-19)	Step 5	Solid	Organic-Bound	
140-15390-2	MW-5 (12-17)	Step 5	Solid	Organic-Bound	
140-15390-3	MW-106 (10-15)	Step 5	Solid	Organic-Bound	
140-15390-4	MW-107 (19-24)	Step 5	Solid	Organic-Bound	
MB 140-30529/11-B ^5	Method Blank	Step 5	Solid	Organic-Bound	
LCS 140-30529/12-B ^5	Lab Control Sample	Step 5	Solid	Organic-Bound	
LCSD 140-30529/13-B ^5	Lab Control Sample Dup	Step 5	Solid	Organic-Bound	

Prep Batch: 30726

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-1	MW-2 (14-19)	Step 5	Solid	3010A	30529
140-15390-2	MW-5 (12-17)	Step 5	Solid	3010A	30529

Metals (Continued)

Prep Batch: 30726 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-3	MW-106 (10-15)	Step 5	Solid	3010A	30529
140-15390-4	MW-107 (19-24)	Step 5	Solid	3010A	30529
MB 140-30529/11-B ^5	Method Blank	Step 5	Solid	3010A	30529
LCS 140-30529/12-B ^5	Lab Control Sample	Step 5	Solid	3010A	30529
LCSD 140-30529/13-B ^5	Lab Control Sample Dup	Step 5	Solid	3010A	30529

SEP Batch: 30781

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-1	MW-2 (14-19)	Step 6	Solid	Acid/Sulfide	
140-15390-2	MW-5 (12-17)	Step 6	Solid	Acid/Sulfide	
140-15390-3	MW-106 (10-15)	Step 6	Solid	Acid/Sulfide	
140-15390-4	MW-107 (19-24)	Step 6	Solid	Acid/Sulfide	
MB 140-30781/11-A	Method Blank	Step 6	Solid	Acid/Sulfide	
LCS 140-30781/12-A	Lab Control Sample	Step 6	Solid	Acid/Sulfide	
LCSD 140-30781/13-A	Lab Control Sample Dup	Step 6	Solid	Acid/Sulfide	

Prep Batch: 30852

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-1	MW-2 (14-19)	Step 7	Solid	Residual	
140-15390-2	MW-5 (12-17)	Step 7	Solid	Residual	
140-15390-3	MW-106 (10-15)	Step 7	Solid	Residual	
140-15390-4	MW-107 (19-24)	Step 7	Solid	Residual	
MB 140-30852/11-A	Method Blank	Step 7	Solid	Residual	
LCS 140-30852/12-A	Lab Control Sample	Step 7	Solid	Residual	
LCSD 140-30852/13-A	Lab Control Sample Dup	Step 7	Solid	Residual	

Analysis Batch: 30900

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-1	MW-2 (14-19)	Step 1	Solid	6010B SEP	30422
140-15390-1	MW-2 (14-19)	Step 2	Solid	6010B SEP	30452
140-15390-2	MW-5 (12-17)	Step 1	Solid	6010B SEP	30422
140-15390-2	MW-5 (12-17)	Step 2	Solid	6010B SEP	30452
140-15390-3	MW-106 (10-15)	Step 1	Solid	6010B SEP	30422
140-15390-3	MW-106 (10-15)	Step 2	Solid	6010B SEP	30452
140-15390-4	MW-107 (19-24)	Step 1	Solid	6010B SEP	30422
140-15390-4	MW-107 (19-24)	Step 2	Solid	6010B SEP	30452
MB 140-30374/11-B ^4	Method Blank	Step 1	Solid	6010B SEP	30422
MB 140-30423/11-B ^3	Method Blank	Step 2	Solid	6010B SEP	30452
LCS 140-30374/12-B ^5	Lab Control Sample	Step 1	Solid	6010B SEP	30422
LCS 140-30423/12-B ^5	Lab Control Sample	Step 2	Solid	6010B SEP	30452
LCSD 140-30374/13-B ^5	Lab Control Sample Dup	Step 1	Solid	6010B SEP	30422
LCSD 140-30423/13-B ^5	Lab Control Sample Dup	Step 2	Solid	6010B SEP	30452

Analysis Batch: 31197

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-1	MW-2 (14-19)	Step 3	Solid	6010B SEP	30480
140-15390-1	MW-2 (14-19)	Step 4	Solid	6010B SEP	30528
140-15390-1	MW-2 (14-19)	Step 5	Solid	6010B SEP	30726
140-15390-1	MW-2 (14-19)	Step 6	Solid	6010B SEP	30781
140-15390-2	MW-5 (12-17)	Step 3	Solid	6010B SEP	30480
140-15390-2	MW-5 (12-17)	Step 4	Solid	6010B SEP	30528

Metals (Continued)

Analysis Batch: 31197 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-2	MW-5 (12-17)	Step 5	Solid	6010B SEP	30726
140-15390-2	MW-5 (12-17)	Step 6	Solid	6010B SEP	30781
140-15390-3	MW-106 (10-15)	Step 3	Solid	6010B SEP	30480
140-15390-3	MW-106 (10-15)	Step 4	Solid	6010B SEP	30528
140-15390-3	MW-106 (10-15)	Step 5	Solid	6010B SEP	30726
140-15390-3	MW-106 (10-15)	Step 6	Solid	6010B SEP	30781
140-15390-4	MW-107 (19-24)	Step 3	Solid	6010B SEP	30480
140-15390-4	MW-107 (19-24)	Step 4	Solid	6010B SEP	30528
140-15390-4	MW-107 (19-24)	Step 5	Solid	6010B SEP	30726
140-15390-4	MW-107 (19-24)	Step 6	Solid	6010B SEP	30781
MB 140-30453/11-B	Method Blank	Step 3	Solid	6010B SEP	30480
MB 140-30481/11-B	Method Blank	Step 4	Solid	6010B SEP	30528
MB 140-30529/11-B ^5	Method Blank	Step 5	Solid	6010B SEP	30726
MB 140-30781/11-A	Method Blank	Step 6	Solid	6010B SEP	30781
LCS 140-30453/12-B	Lab Control Sample	Step 3	Solid	6010B SEP	30480
LCS 140-30481/12-B	Lab Control Sample	Step 4	Solid	6010B SEP	30528
LCS 140-30529/12-B ^5	Lab Control Sample	Step 5	Solid	6010B SEP	30726
LCS 140-30781/12-A	Lab Control Sample	Step 6	Solid	6010B SEP	30781
LCSD 140-30453/13-B	Lab Control Sample Dup	Step 3	Solid	6010B SEP	30480
LCSD 140-30481/13-B	Lab Control Sample Dup	Step 4	Solid	6010B SEP	30528
LCSD 140-30529/13-B ^5	Lab Control Sample Dup	Step 5	Solid	6010B SEP	30726
LCSD 140-30781/13-A	Lab Control Sample Dup	Step 6	Solid	6010B SEP	30781

Analysis Batch: 31255

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-1	MW-2 (14-19)	Step 7	Solid	6010B SEP	30852
140-15390-1	MW-2 (14-19)	Step 7	Solid	6010B SEP	30852
140-15390-1	MW-2 (14-19)	Step 7	Solid	6010B SEP	30852
140-15390-1	MW-2 (14-19)	Total/NA	Solid	6010B	30373
140-15390-1	MW-2 (14-19)	Total/NA	Solid	6010B	30373
140-15390-1	MW-2 (14-19)	Total/NA	Solid	6010B	30373
140-15390-2	MW-5 (12-17)	Step 7	Solid	6010B SEP	30852
140-15390-2	MW-5 (12-17)	Step 7	Solid	6010B SEP	30852
140-15390-2	MW-5 (12-17)	Step 7	Solid	6010B SEP	30852
140-15390-2	MW-5 (12-17)	Total/NA	Solid	6010B	30373
140-15390-2	MW-5 (12-17)	Total/NA	Solid	6010B	30373
140-15390-2	MW-5 (12-17)	Total/NA	Solid	6010B	30373
140-15390-3	MW-106 (10-15)	Step 7	Solid	6010B SEP	30852
140-15390-3	MW-106 (10-15)	Step 7	Solid	6010B SEP	30852
140-15390-3	MW-106 (10-15)	Step 7	Solid	6010B SEP	30852
140-15390-3	MW-106 (10-15)	Total/NA	Solid	6010B	30373
140-15390-3	MW-106 (10-15)	Total/NA	Solid	6010B	30373
140-15390-4	MW-107 (19-24)	Step 7	Solid	6010B SEP	30852
140-15390-4	MW-107 (19-24)	Step 7	Solid	6010B SEP	30852
140-15390-4	MW-107 (19-24)	Step 7	Solid	6010B SEP	30852
140-15390-4	MW-107 (19-24)	Total/NA	Solid	6010B	30373
140-15390-4	MW-107 (19-24)	Total/NA	Solid	6010B	30373
140-15390-4	MW-107 (19-24)	Total/NA	Solid	6010B	30373
MB 140-30373/11-A	Method Blank	Total/NA	Solid	6010B	30373
MB 140-30852/11-A	Method Blank	Step 7	Solid	6010B SEP	30852
LCS 140-30373/12-A	Lab Control Sample	Total/NA	Solid	6010B	30373

Metals (Continued)

Analysis Batch: 31255 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 140-30852/12-A	Lab Control Sample	Step 7	Solid	6010B SEP	30852
LCSD 140-30373/13-A	Lab Control Sample Dup	Total/NA	Solid	6010B	30373
LCSD 140-30852/13-A	Lab Control Sample Dup	Step 7	Solid	6010B SEP	30852

Analysis Batch: 31570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-1	MW-2 (14-19)	Sum of Steps 1-7	Solid	6010B SEP	
140-15390-2	MW-5 (12-17)	Sum of Steps 1-7	Solid	6010B SEP	
140-15390-3	MW-106 (10-15)	Sum of Steps 1-7	Solid	6010B SEP	
140-15390-4	MW-107 (19-24)	Sum of Steps 1-7	Solid	6010B SEP	

General Chemistry

Analysis Batch: 30352

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-1	MW-2 (14-19)	Total/NA	Solid	Moisture	
140-15390-2	MW-5 (12-17)	Total/NA	Solid	Moisture	
140-15390-3	MW-106 (10-15)	Total/NA	Solid	Moisture	
140-15390-4	MW-107 (19-24)	Total/NA	Solid	Moisture	

Analysis Batch: 302804

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15390-1	MW-2 (14-19)	Total/NA	Solid	9060	
140-15390-2	MW-5 (12-17)	Total/NA	Solid	9060	
140-15390-3	MW-106 (10-15)	Total/NA	Solid	9060	
140-15390-4	MW-107 (19-24)	Total/NA	Solid	9060	
MB 580-302804/22	Method Blank	Total/NA	Solid	9060	
MB 580-302804/50	Method Blank	Total/NA	Solid	9060	
LCS 580-302804/23	Lab Control Sample	Total/NA	Solid	9060	
LCS 580-302804/51	Lab Control Sample	Total/NA	Solid	9060	
LCSD 580-302804/24	Lab Control Sample Dup	Total/NA	Solid	9060	
LCSD 580-302804/52	Lab Control Sample Dup	Total/NA	Solid	9060	

Client Sample ID: MW-2 (14-19)

Date Collected: 05/23/19 10:15
Date Received: 05/25/19 10:30

Lab Sample ID: 140-15390-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			31570	07/11/19 10:59	CLJ	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	9060		1			302804	06/10/19 12:29	JKM	TAL SEA
	Instrument ID: TAC105									
Total/NA	Analysis	Moisture		1			30352	05/28/19 16:16	BKD	TAL KNX
	Instrument ID: W3									

Client Sample ID: MW-2 (14-19)

Date Collected: 05/23/19 10:15
Date Received: 05/25/19 10:30

Lab Sample ID: 140-15390-1
Matrix: Solid
Percent Solids: 86.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30373	05/30/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31255	06/28/19 15:45	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30373	05/30/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31255	06/28/19 16:57	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30373	05/30/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			31255	06/28/19 18:55	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	30374	05/30/19 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	30422	05/31/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			30900	06/17/19 14:50	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	30423	05/31/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	30452	06/03/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			30900	06/17/19 17:12	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	30453	06/03/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	30480	06/04/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31197	06/26/19 18:06	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	30481	06/04/19 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	30528	06/10/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31197	06/26/19 19:23	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	30529	06/10/19 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	30726	06/12/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31197	06/26/19 20:46	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	30781	06/15/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31197	06/26/19 22:25	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: MW-2 (14-19) Lab Sample ID: 140-15390-1

Date Collected: 05/23/19 10:15 **Matrix: Solid**
Date Received: 05/25/19 10:30 **Percent Solids: 86.1**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	30852	06/16/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31255	06/28/19 13:30	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	30852	06/16/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31255	06/28/19 14:37	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	30852	06/16/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31255	06/28/19 18:04	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: MW-5 (12-17) Lab Sample ID: 140-15390-2

Date Collected: 05/23/19 12:50 **Matrix: Solid**
Date Received: 05/25/19 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			31570	07/11/19 10:59	CLJ	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	9060		1			302804	06/10/19 12:40	JKM	TAL SEA
	Instrument ID: TAC105									
Total/NA	Analysis	Moisture		1			30352	05/28/19 16:16	BKD	TAL KNX
	Instrument ID: W3									

Client Sample ID: MW-5 (12-17) Lab Sample ID: 140-15390-2

Date Collected: 05/23/19 12:50 **Matrix: Solid**
Date Received: 05/25/19 10:30 **Percent Solids: 87.3**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30373	05/30/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31255	06/28/19 15:50	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30373	05/30/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31255	06/28/19 17:17	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30373	05/30/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			31255	06/28/19 19:00	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	30374	05/30/19 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	30422	05/31/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			30900	06/17/19 14:55	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	30423	05/31/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	30452	06/03/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			30900	06/17/19 16:14	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client Sample ID: MW-5 (12-17)
Date Collected: 05/23/19 12:50
Date Received: 05/25/19 10:30

Lab Sample ID: 140-15390-2
Matrix: Solid
Percent Solids: 87.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	30453	06/03/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	30480	06/04/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31197	06/26/19 18:11	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	30481	06/04/19 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	30528	06/10/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31197	06/26/19 19:28	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	30529	06/10/19 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	30726	06/12/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31197	06/26/19 20:51	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	30781	06/15/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31197	06/26/19 22:30	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	30852	06/16/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31255	06/28/19 13:35	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	30852	06/16/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31255	06/28/19 14:42	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	30852	06/16/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31255	06/28/19 18:09	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: MW-106 (10-15)
Date Collected: 05/23/19 13:40
Date Received: 05/25/19 10:30

Lab Sample ID: 140-15390-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			31570	07/11/19 10:59	CLJ	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	9060		1			302804	06/10/19 12:44	JKM	TAL SEA
	Instrument ID: TAC105									
Total/NA	Analysis	Moisture		1			30352	05/28/19 16:16	BKD	TAL KNX
	Instrument ID: W3									

Client Sample ID: MW-106 (10-15)
Date Collected: 05/23/19 13:40
Date Received: 05/25/19 10:30

Lab Sample ID: 140-15390-3
Matrix: Solid
Percent Solids: 76.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30373	05/30/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31255	06/28/19 15:55	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: MW-106 (10-15)

Lab Sample ID: 140-15390-3

Date Collected: 05/23/19 13:40
Date Received: 05/25/19 10:30

Matrix: Solid
Percent Solids: 76.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30373	05/30/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31255	06/28/19 17:22	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	30374	05/30/19 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	30422	05/31/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			30900	06/17/19 15:00	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	30423	05/31/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	30452	06/03/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			30900	06/17/19 16:19	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	30453	06/03/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	30480	06/04/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31197	06/26/19 18:16	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	30481	06/04/19 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	30528	06/10/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31197	06/26/19 19:33	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	30529	06/10/19 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	30726	06/12/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31197	06/26/19 21:12	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	30781	06/15/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31197	06/26/19 22:35	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	30852	06/16/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31255	06/28/19 13:40	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	30852	06/16/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31255	06/28/19 14:47	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	30852	06/16/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31255	06/28/19 18:14	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: MW-107 (19-24)

Lab Sample ID: 140-15390-4

Date Collected: 05/23/19 14:50
Date Received: 05/25/19 10:30

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			31570	07/11/19 10:59	CLJ	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	9060		1			302804	06/10/19 12:48	JKM	TAL SEA
	Instrument ID: TAC105									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: RDMorrow (19117989)

Job ID: 140-15390-1

Client Sample ID: MW-107 (19-24)
Date Collected: 05/23/19 14:50
Date Received: 05/25/19 10:30

Lab Sample ID: 140-15390-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			30352	05/28/19 16:16	BKD	TAL KNX

Client Sample ID: MW-107 (19-24)
Date Collected: 05/23/19 14:50
Date Received: 05/25/19 10:30

Lab Sample ID: 140-15390-4
Matrix: Solid
Percent Solids: 86.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30373	05/30/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31255	06/28/19 16:16	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30373	05/30/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31255	06/28/19 17:27	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30373	05/30/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			31255	06/28/19 19:06	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	30374	05/30/19 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	30422	05/31/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			30900	06/17/19 15:06	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	30423	05/31/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	30452	06/03/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			30900	06/17/19 17:18	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	30453	06/03/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	30480	06/04/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31197	06/26/19 18:22	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	30481	06/04/19 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	30528	06/10/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31197	06/26/19 19:38	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	30529	06/10/19 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	30726	06/12/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31197	06/26/19 21:18	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	30781	06/15/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31197	06/26/19 22:40	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	30852	06/16/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31255	06/28/19 13:46	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	30852	06/16/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31255	06/28/19 14:52	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: MW-107 (19-24) Lab Sample ID: 140-15390-4
Date Collected: 05/23/19 14:50 **Matrix: Solid**
Date Received: 05/25/19 10:30 **Percent Solids: 86.1**

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	30852	06/16/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31255	06/28/19 18:19	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank Lab Sample ID: MB 140-30373/11-A
Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30373	05/30/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31255	06/28/19 12:27	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank Lab Sample ID: MB 140-30374/11-B ^4
Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	30374	05/30/19 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	30422	05/31/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			30900	06/17/19 13:48	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank Lab Sample ID: MB 140-30423/11-B ^3
Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	30423	05/31/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	30452	06/03/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			30900	06/17/19 15:11	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank Lab Sample ID: MB 140-30453/11-B
Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	30453	06/03/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	30480	06/04/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31197	06/26/19 17:04	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank

Lab Sample ID: MB 140-30481/11-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	30481	06/04/19 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	30528	06/10/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31197	06/26/19 18:27	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank

Lab Sample ID: MB 140-30529/11-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	30529	06/10/19 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	30726	06/12/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31197	06/26/19 19:48	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank

Lab Sample ID: MB 140-30781/11-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	30781	06/15/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31197	06/26/19 21:23	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank

Lab Sample ID: MB 140-30852/11-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	30852	06/16/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31255	06/28/19 12:11	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank

Lab Sample ID: MB 580-302804/22
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060		1			302804	06/10/19 10:46	JKM	TAL SEA
	Instrument ID: TAC105									

Client Sample ID: Method Blank
Lab Sample ID: MB 580-302804/50
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060		1			302804	06/10/19 13:18	JKM	TAL SEA
	Instrument ID: TAC105									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-30373/12-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30373	05/30/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31255	06/28/19 12:32	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-30374/12-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	30374	05/30/19 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	30422	05/31/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			30900	06/17/19 13:53	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-30423/12-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	30423	05/31/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	30452	06/03/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			30900	06/17/19 15:16	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-30453/12-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	30453	06/03/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	30480	06/04/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31197	06/26/19 17:09	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-30481/12-B

Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	30481	06/04/19 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	30528	06/10/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31197	06/26/19 18:32	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-30529/12-B ^5

Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	30529	06/10/19 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	30726	06/12/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31197	06/26/19 19:54	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-30781/12-A

Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	30781	06/15/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31197	06/26/19 21:28	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-30852/12-A

Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	30852	06/16/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31255	06/28/19 12:17	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 580-302804/23

Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060		1			302804	06/10/19 10:49	JKM	TAL SEA
	Instrument ID: TAC105									

Lab Chronicle

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 580-302804/51

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060		1			302804	06/10/19 13:20	JKM	TAL SEA
	Instrument ID: TAC105									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-30373/13-A

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30373	05/30/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31255	06/28/19 12:37	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-30374/13-B ^5

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	30374	05/30/19 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	30422	05/31/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			30900	06/17/19 13:58	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-30423/13-B ^5

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	30423	05/31/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	30452	06/03/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			30900	06/17/19 15:21	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-30453/13-B

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	30453	06/03/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	30480	06/04/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31197	06/26/19 17:14	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup Lab Sample ID: LCSD 140-30481/13-B
Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	30481	06/04/19 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	30528	06/10/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31197	06/26/19 18:37	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup Lab Sample ID: LCSD 140-30529/13-B ^5
Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	30529	06/10/19 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	30726	06/12/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31197	06/26/19 20:09	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup Lab Sample ID: LCSD 140-30781/13-A
Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	30781	06/15/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31197	06/26/19 21:33	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup Lab Sample ID: LCSD 140-30852/13-A
Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	30852	06/16/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31255	06/28/19 12:22	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup Lab Sample ID: LCSD 580-302804/24
Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060		1			302804	06/10/19 10:52	JKM	TAL SEA
	Instrument ID: TAC105									

Lab Chronicle

Client Sample ID: Lab Control Sample Dup **Lab Sample ID: LCSD 580-302804/52**
Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060		1			302804	06/10/19 13:22	JKM	TAL SEA
	Instrument ID: TAC105									

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

TAL SEA = Eurofins TestAmerica, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Method Summary

Method	Method Description	Protocol	Laboratory
6010B	SEP Metals (ICP) - Total	SW846	TAL KNX
6010B SEP	SEP Metals (ICP)	SW846	TAL KNX
9060	Organic Carbon, Total (TOC)	SW846	TAL SEA
Moisture	Percent Moisture	EPA	TAL KNX
3010A	Preparation, Total Metals	SW846	TAL KNX
Acid/Sulfide	Sequential Extraction Procedure, Acid/Sulfide Fraction	TAL-KNOX	TAL KNX
Carbonate	Sequential Extraction Procedure, Carbonate Fraction	TAL-KNOX	TAL KNX
Exchangeable	Sequential Extraction Procedure, Exchangeable Fraction	TAL-KNOX	TAL KNX
Metal Hydroxide	Sequential Extraction Procedure, Metal Hydroxide Fraction	TAL-KNOX	TAL KNX
Non-Crystalline	Sequential Extraction Procedure, Non-crystalline Materials	TAL-KNOX	TAL KNX
Organic-Bound	Sequential Extraction Procedure, Organic Bound Fraction	TAL-KNOX	TAL KNX
Residual	Sequential Extraction Procedure, Residual Fraction	TAL-KNOX	TAL KNX
Total	Preparation, Total Material	TAL-KNOX	TAL KNX

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-KNOX = TestAmerica Laboratories, Knoxville, Facility Standard Operating Procedure.

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

TAL SEA = Eurofins TestAmerica, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Sample Summary

Client: Golder Associates Inc.
Project/Site: RDMorrow (19117989)

Job ID: 140-15390-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-15390-1	MW-2 (14-19)	Solid	05/23/19 10:15	05/25/19 10:30	
140-15390-2	MW-5 (12-17)	Solid	05/23/19 12:50	05/25/19 10:30	
140-15390-3	MW-106 (10-15)	Solid	05/23/19 13:40	05/25/19 10:30	
140-15390-4	MW-107 (19-24)	Solid	05/23/19 14:50	05/25/19 10:30	

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent: Reagent ID	Parent Reagent: Volume Added	Analyte	Concentration
90CVCCVP_00393	06/18/19	06/17/19	5% HCl/5% HNO3, Lot NA	10 mL	90L1ICALP_00104	5 mL	Thallium	1 mg/L
							Li	2 mg/L
							Mo	2 mg/L
							Aluminum	25 mg/L
							Cobalt	2 mg/L
							Iron	25 mg/L
							Manganese	2 mg/L
.90L1ICALP_00104	09/16/19	06/16/19	5% HCl/5% HNO3, Lot NA	200 mL	90MXCAL3P_00005	4 mL	Thallium	2 mg/L
					90MXCAL4CP_00005	4 mL	Li	4 mg/L
							Mo	4 mg/L
					90MXCAL4EP_00005	4 mL	Aluminum	50 mg/L
							Cobalt	4 mg/L
							Iron	50 mg/L
							Manganese	4 mg/L
..90MXCAL3P_00005	10/25/20		CPI, Lot 10096218-3		(Purchased Reagent)		Thallium	100 mg/L
..90MXCAL4CP_00005	10/25/20		CPI, Lot 10096218-5		(Purchased Reagent)		Li	200 mg/L
							Mo	200 mg/L
..90MXCAL4EP_00005	10/25/20		CPI, Lot 10096218-6		(Purchased Reagent)		Aluminum	2500 mg/L
							Cobalt	200 mg/L
							Iron	2500 mg/L
							Manganese	200 mg/L
90CVCCVP_00400	06/27/19	06/26/19	5% HCl/5% HNO3, Lot NA	10 mL	90L1ICALP_00106	5 mL	Thallium	1 mg/L
							Li	2 mg/L
							Mo	2 mg/L
							Aluminum	25 mg/L
							Cobalt	2 mg/L
							Iron	25 mg/L
							Manganese	2 mg/L
.90L1ICALP_00106	09/24/19	06/24/19	5% HCl/5% HNO3, Lot NA	200 mL	90MXCAL3P_00005	4 mL	Thallium	2 mg/L
					90MXCAL4CP_00005	4 mL	Li	4 mg/L
							Mo	4 mg/L
					90MXCAL4EP_00005	4 mL	Aluminum	50 mg/L
							Cobalt	4 mg/L
							Iron	50 mg/L
							Manganese	4 mg/L
..90MXCAL3P_00005	10/25/20		CPI, Lot 10096218-3		(Purchased Reagent)		Thallium	100 mg/L
..90MXCAL4CP_00005	10/25/20		CPI, Lot 10096218-5		(Purchased Reagent)		Li	200 mg/L
							Mo	200 mg/L
..90MXCAL4EP_00005	10/25/20		CPI, Lot 10096218-6		(Purchased Reagent)		Aluminum	2500 mg/L
							Cobalt	200 mg/L
							Iron	2500 mg/L
							Manganese	200 mg/L
90CVCCVP_00401	06/29/19	06/28/19	5% HCl/5% HNO3, Lot NA	10 mL	90L1ICALP_00107	5 mL	Thallium	1 mg/L
							Li	2 mg/L
							Mo	2 mg/L
							Aluminum	25 mg/L
							Cobalt	2 mg/L

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent Reagent ID	Parent Reagent Volume Added	Analyte	Concentration
							Iron	25 mg/L
							Manganese	2 mg/L
.90L1ICALP_00107	09/28/19	06/28/19	5% HCl/5% HNO3, Lot NA	200 mL	90MXCAL3P_00005	4 mL	Thallium	2 mg/L
					90MXCAL4CP_00005	4 mL	Li	4 mg/L
							Mo	4 mg/L
					90MXCAL4EP_00005	4 mL	Aluminum	50 mg/L
							Cobalt	4 mg/L
							Iron	50 mg/L
							Manganese	4 mg/L
..90MXCAL3P_00005	10/25/20		CPI, Lot 10096218-3		(Purchased Reagent)		Thallium	100 mg/L
..90MXCAL4CP_00005	10/25/20		CPI, Lot 10096218-5		(Purchased Reagent)		Li	200 mg/L
							Mo	200 mg/L
..90MXCAL4EP_00005	10/25/20		CPI, Lot 10096218-6		(Purchased Reagent)		Aluminum	2500 mg/L
							Cobalt	200 mg/L
							Iron	2500 mg/L
							Manganese	200 mg/L
90L1HgCA1000P_00038	06/02/19	05/02/19	2% Nitric Acid, Lot na	100 mL	90IN1000HGCP_00005	1 mL	Hg	10 mg/L
.90IN1000HGCP_00005	03/30/20		SPEX, Lot 22-148HGY		(Purchased Reagent)		Hg	1000 mg/L
90L1HgCA1000P_00039	07/03/19	06/03/19	2% Nitric Acid, Lot na	100 mL	90IN1000HGCP_00005	1 mL	Hg	10 mg/L
.90IN1000HGCP_00005	03/30/20		SPEX, Lot 22-148HGY		(Purchased Reagent)		Hg	1000 mg/L
90SPKNX10P_00002	10/22/20		CPI, Lot 10093249-8		(Purchased Reagent)		Ag	5 mg/L
							Aluminum	200 mg/L
							As	10 mg/L
							B	100 mg/L
							Ba	10 mg/L
							Be	5 mg/L
							Cd	5 mg/L
							Cobalt	10 mg/L
							Cr	20 mg/L
							Cu	25 mg/L
							Iron	100 mg/L
							Li	10 mg/L
							Manganese	10 mg/L
							Ni	50 mg/L
							Pb	10 mg/L
							Se	15 mg/L
							Sr	50 mg/L
							Thallium	40 mg/L
							V	20 mg/L
							Zn	50 mg/L
90SPKNX8P_00001	10/22/20		CPI, Lot 10093249-6		(Purchased Reagent)		Ca	5000 mg/L
							K	5000 mg/L
							Mg	1000 mg/L
							Na	5000 mg/L
90SPKNX9P_00002	10/22/20		CPI, Lot 10093249-7		(Purchased Reagent)		Mo	50 mg/L
							P	500 mg/L

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent: Reagent ID	Parent Reagent: Volume Added	Analyte	Concentration
							Sb	50 mg/L
							Si	500 mg/L
							Sn	50 mg/L
							Ti	10 mg/L
90XXCCVLP_00360	06/18/19	06/17/19	5% HCl/5% HNO3, Lot NA	10 mL	90L1ICALP_00104	2.5 mL	Thallium	0.5 mg/L
							Li	1 mg/L
							Mo	1 mg/L
							Aluminum	12.5 mg/L
							Cobalt	1 mg/L
							Iron	12.5 mg/L
							Manganese	1 mg/L
.90L1ICALP_00104	09/16/19	06/16/19	5% HCl/5% HNO3, Lot NA	200 mL	90MXCAL3P_00005	4 mL	Thallium	2 mg/L
					90MXCAL4CP_00005	4 mL	Li	4 mg/L
							Mo	4 mg/L
					90MXCAL4EP_00005	4 mL	Aluminum	50 mg/L
							Cobalt	4 mg/L
							Iron	50 mg/L
							Manganese	4 mg/L
..90MXCAL3P_00005	10/25/20		CPI, Lot 10096218-3		(Purchased Reagent)		Thallium	100 mg/L
..90MXCAL4CP_00005	10/25/20		CPI, Lot 10096218-5		(Purchased Reagent)		Li	200 mg/L
							Mo	200 mg/L
..90MXCAL4EP_00005	10/25/20		CPI, Lot 10096218-6		(Purchased Reagent)		Aluminum	2500 mg/L
							Cobalt	200 mg/L
							Iron	2500 mg/L
							Manganese	200 mg/L
90XXCCVLP_00367	06/27/19	06/26/19	5% HCl/5% HNO3, Lot NA	10 mL	90L1ICALP_00106	2.5 mL	Thallium	0.5 mg/L
							Li	1 mg/L
							Mo	1 mg/L
							Aluminum	12.5 mg/L
							Cobalt	1 mg/L
							Iron	12.5 mg/L
							Manganese	1 mg/L
.90L1ICALP_00106	09/24/19	06/24/19	5% HCl/5% HNO3, Lot NA	200 mL	90MXCAL3P_00005	4 mL	Thallium	2 mg/L
					90MXCAL4CP_00005	4 mL	Li	4 mg/L
							Mo	4 mg/L
					90MXCAL4EP_00005	4 mL	Aluminum	50 mg/L
							Cobalt	4 mg/L
							Iron	50 mg/L
							Manganese	4 mg/L
..90MXCAL3P_00005	10/25/20		CPI, Lot 10096218-3		(Purchased Reagent)		Thallium	100 mg/L
..90MXCAL4CP_00005	10/25/20		CPI, Lot 10096218-5		(Purchased Reagent)		Li	200 mg/L
							Mo	200 mg/L
..90MXCAL4EP_00005	10/25/20		CPI, Lot 10096218-6		(Purchased Reagent)		Aluminum	2500 mg/L
							Cobalt	200 mg/L
							Iron	2500 mg/L
							Manganese	200 mg/L
90XXCCVLP_00368	06/29/19	06/28/19	5% HCl/5% HNO3, Lot NA	10 mL	90L1ICALP_00107	2.5 mL	Thallium	0.5 mg/L

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent: Reagent ID	Parent Reagent: Volume Added	Analyte	Concentration
							Li	1 mg/L
							Mo	1 mg/L
							Aluminum	12.5 mg/L
							Cobalt	1 mg/L
							Iron	12.5 mg/L
							Manganese	1 mg/L
.90L1ICALP_00107	09/28/19	06/28/19	5% HCl/5% HNO3, Lot NA	200 mL	90MXCAL3P_00005	4 mL	Thallium	2 mg/L
					90MXCAL4CP_00005	4 mL	Li	4 mg/L
							Mo	4 mg/L
					90MXCAL4EP_00005	4 mL	Aluminum	50 mg/L
							Cobalt	4 mg/L
							Iron	50 mg/L
							Manganese	4 mg/L
..90MXCAL3P_00005	10/25/20		CPI, Lot 10096218-3		(Purchased Reagent)		Thallium	100 mg/L
..90MXCAL4CP_00005	10/25/20		CPI, Lot 10096218-5		(Purchased Reagent)		Li	200 mg/L
							Mo	200 mg/L
..90MXCAL4EP_00005	10/25/20		CPI, Lot 10096218-6		(Purchased Reagent)		Aluminum	2500 mg/L
							Cobalt	200 mg/L
							Iron	2500 mg/L
							Manganese	200 mg/L
90XXCRDL100P_00408	06/18/19	06/17/19	5% HCl/5% HNO3, Lot NA	10 mL	90XXCRDLP_00023	0.1 mL	Aluminum	0.2 mg/L
							Iron	0.1 mg/L
							Cobalt	0.05 mg/L
							Li	0.05 mg/L
							Manganese	0.015 mg/L
							Mo	0.04 mg/L
							Thallium	0.01 mg/L
.90XXCRDLP_00023	09/10/19	06/10/19	5% HCl/5% HNO3, Lot NA	100 mL	90IN10000ALP_00005	0.2 mL	Aluminum	20 mg/L
					90IN10000FEP_00005	0.1 mL	Iron	10 mg/L
					90IN1000COP_00005	0.5 mL	Cobalt	5 mg/L
					90IN1000LIP_00005	0.5 mL	Li	5 mg/L
					90IN1000MNP_00005	0.15 mL	Manganese	1.5 mg/L
					90IN1000MOP_00005	0.4 mL	Mo	4 mg/L
					90IN1000TLP_00005	0.1 mL	Thallium	1 mg/L
..90IN10000ALP_00005	05/14/20		CPI, Lot 169484-20		(Purchased Reagent)		Aluminum	10000 mg/L
..90IN10000FEP_00005	05/14/20		CPI, Lot 156651-59		(Purchased Reagent)		Iron	10000 mg/L
..90IN1000COP_00005	05/14/20		CPI, Lot 161693-95		(Purchased Reagent)		Cobalt	1000 mg/L
..90IN1000LIP_00005	05/14/20		CPI, Lot 751942-43		(Purchased Reagent)		Li	1000 mg/L
..90IN1000MNP_00005	05/14/20		CPI, Lot 167539-78		(Purchased Reagent)		Manganese	1000 mg/L
..90IN1000MOP_00005	05/14/20		CPI, Lot 169424-45		(Purchased Reagent)		Mo	1000 mg/L
..90IN1000TLP_00005	05/14/20		CPI, Lot 148983-92		(Purchased Reagent)		Thallium	1000 mg/L
90XXCRDL100P_00415	06/27/19	06/26/19	5% HCl/5% HNO3, Lot NA	10 mL	90XXCRDLP_00023	0.1 mL	Aluminum	0.2 mg/L
							Iron	0.1 mg/L
							Cobalt	0.05 mg/L
							Li	0.05 mg/L
							Manganese	0.015 mg/L
							Mo	0.04 mg/L

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent: Reagent ID	Parent Reagent: Volume Added	Analyte	Concentration
							Thallium	0.01 mg/L
.90XXCRDLP_00023	09/10/19	06/10/19	5% HCl/5% HNO3, Lot NA	100 mL	90IN10000ALP_00005	0.2 mL	Aluminum	20 mg/L
					90IN10000FEP_00005	0.1 mL	Iron	10 mg/L
					90IN1000COP_00005	0.5 mL	Cobalt	5 mg/L
					90IN1000LIP_00005	0.5 mL	Li	5 mg/L
					90IN1000MNP_00005	0.15 mL	Manganese	1.5 mg/L
					90IN1000MOP_00005	0.4 mL	Mo	4 mg/L
					90IN1000TLP_00005	0.1 mL	Thallium	1 mg/L
..90IN10000ALP_00005	05/14/20		CPI, Lot 169484-20		(Purchased Reagent)		Aluminum	10000 mg/L
..90IN10000FEP_00005	05/14/20		CPI, Lot 156651-59		(Purchased Reagent)		Iron	10000 mg/L
..90IN1000COP_00005	05/14/20		CPI, Lot 161693-95		(Purchased Reagent)		Cobalt	1000 mg/L
..90IN1000LIP_00005	05/14/20		CPI, Lot 751942-43		(Purchased Reagent)		Li	1000 mg/L
..90IN1000MNP_00005	05/14/20		CPI, Lot 167539-78		(Purchased Reagent)		Manganese	1000 mg/L
..90IN1000MOP_00005	05/14/20		CPI, Lot 169424-45		(Purchased Reagent)		Mo	1000 mg/L
..90IN1000TLP_00005	05/14/20		CPI, Lot 148983-92		(Purchased Reagent)		Thallium	1000 mg/L
90XXCRDL100P_00416	06/29/19	06/28/19	5% HCl/5% HNO3, Lot NA	10 mL	90XXCRDLP_00023	0.1 mL	Aluminum	0.2 mg/L
							Iron	0.1 mg/L
							Cobalt	0.05 mg/L
							Li	0.05 mg/L
							Manganese	0.015 mg/L
							Mo	0.04 mg/L
							Thallium	0.01 mg/L
.90XXCRDLP_00023	09/10/19	06/10/19	5% HCl/5% HNO3, Lot NA	100 mL	90IN10000ALP_00005	0.2 mL	Aluminum	20 mg/L
					90IN10000FEP_00005	0.1 mL	Iron	10 mg/L
					90IN1000COP_00005	0.5 mL	Cobalt	5 mg/L
					90IN1000LIP_00005	0.5 mL	Li	5 mg/L
					90IN1000MNP_00005	0.15 mL	Manganese	1.5 mg/L
					90IN1000MOP_00005	0.4 mL	Mo	4 mg/L
					90IN1000TLP_00005	0.1 mL	Thallium	1 mg/L
..90IN10000ALP_00005	05/14/20		CPI, Lot 169484-20		(Purchased Reagent)		Aluminum	10000 mg/L
..90IN10000FEP_00005	05/14/20		CPI, Lot 156651-59		(Purchased Reagent)		Iron	10000 mg/L
..90IN1000COP_00005	05/14/20		CPI, Lot 161693-95		(Purchased Reagent)		Cobalt	1000 mg/L
..90IN1000LIP_00005	05/14/20		CPI, Lot 751942-43		(Purchased Reagent)		Li	1000 mg/L
..90IN1000MNP_00005	05/14/20		CPI, Lot 167539-78		(Purchased Reagent)		Manganese	1000 mg/L
..90IN1000MOP_00005	05/14/20		CPI, Lot 169424-45		(Purchased Reagent)		Mo	1000 mg/L
..90IN1000TLP_00005	05/14/20		CPI, Lot 148983-92		(Purchased Reagent)		Thallium	1000 mg/L
90XXICSABP_00031	08/08/19	05/08/19	5% HCl/5% HNO3, Lot NA	200 mL	90MXICSAP_00005	10 mL	Aluminum	250 mg/L
							Ca	250 mg/L
							Iron	100 mg/L
							Mg	250 mg/L
					90MXICSB2-AP_00006	20 mL	Ag	0.2 mg/L
							As	0.1 mg/L
							Ba	0.5 mg/L
							Be	0.5 mg/L
							Cd	1 mg/L
							Cobalt	0.5 mg/L
							Cr	0.5 mg/L

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent: Reagent ID	Parent Reagent: Volume Added	Analyte	Concentration
							Cu	0.5 mg/L
							K	10 mg/L
							Manganese	0.5 mg/L
							Na	10 mg/L
							Ni	1 mg/L
							Pb	0.05 mg/L
							Se	0.05 mg/L
							Thallium	0.1 mg/L
							V	0.5 mg/L
							Zn	1 mg/L
					90MXICSB3-AP_00005	20 mL	Li	1 mg/L
							Mo	1 mg/L
							P	1 mg/L
							Sb	0.6 mg/L
.90MXICSAP_00005	10/05/19	Inorganic Ventures, Lot K2MEB643109			(Purchased Reagent)		Aluminum	5000 mg/L
							Ca	5000 mg/L
							Iron	2000 mg/L
							Mg	5000 mg/L
.90MXICSB2-AP_00006	10/25/20	CPI, Lot 10096218-1			(Purchased Reagent)		Ag	2 mg/L
							As	1 mg/L
							Ba	5 mg/L
							Be	5 mg/L
							Cd	10 mg/L
							Cobalt	5 mg/L
							Cr	5 mg/L
							Cu	5 mg/L
							K	100 mg/L
							Manganese	5 mg/L
							Na	100 mg/L
							Ni	10 mg/L
							Pb	0.5 mg/L
							Se	0.5 mg/L
							Thallium	1 mg/L
							V	5 mg/L
							Zn	10 mg/L
.90MXICSB3-AP_00005	10/25/20	CPI, Lot 10096218-2			(Purchased Reagent)		Li	10 mg/L
							Mo	10 mg/L
							P	10 mg/L
							Sb	6 mg/L
90XXICSABP_00032	09/19/19	06/19/19	5% HCl/5% HNO3, Lot NA	200 mL	90MXICSAP_00005	10 mL	Aluminum	250 mg/L
							Ca	250 mg/L
							Iron	100 mg/L
							Mg	250 mg/L
					90MXICSB2-AP_00006	20 mL	Ag	0.2 mg/L
							As	0.1 mg/L
							Ba	0.5 mg/L
							Be	0.5 mg/L

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent: Reagent ID	Parent Reagent: Volume Added	Analyte	Concentration
							Cd	1 mg/L
							Cobalt	0.5 mg/L
							Cr	0.5 mg/L
							Cu	0.5 mg/L
							K	10 mg/L
							Manganese	0.5 mg/L
							Na	10 mg/L
							Ni	1 mg/L
							Pb	0.05 mg/L
							Se	0.05 mg/L
							Thallium	0.1 mg/L
							V	0.5 mg/L
							Zn	1 mg/L
					90MXICSB3-AP_00005	20 mL	Li	1 mg/L
							Mo	1 mg/L
							P	1 mg/L
							Sb	0.6 mg/L
.90MXICSAP_00005	10/05/19	Inorganic Ventures, Lot K2MEB643109			(Purchased Reagent)		Aluminum	5000 mg/L
							Ca	5000 mg/L
							Iron	2000 mg/L
							Mg	5000 mg/L
.90MXICSB2-AP_00006	10/25/20	CPI, Lot 10096218-1			(Purchased Reagent)		Ag	2 mg/L
							As	1 mg/L
							Ba	5 mg/L
							Be	5 mg/L
							Cd	10 mg/L
							Cobalt	5 mg/L
							Cr	5 mg/L
							Cu	5 mg/L
							K	100 mg/L
							Manganese	5 mg/L
							Na	100 mg/L
							Ni	10 mg/L
							Pb	0.5 mg/L
							Se	0.5 mg/L
							Thallium	1 mg/L
							V	5 mg/L
							Zn	10 mg/L
.90MXICSB3-AP_00005	10/25/20	CPI, Lot 10096218-2			(Purchased Reagent)		Li	10 mg/L
							Mo	10 mg/L
							P	10 mg/L
							Sb	6 mg/L
90XXICSAP_00026	08/03/19	05/03/19	5% HCl/5% HNO3, Lot NA	200 mL	90MXICSAP_00005	20 mL	Aluminum	500 mg/L
							Ca	500 mg/L
							Iron	200 mg/L
							Mg	500 mg/L
.90MXICSAP_00005	10/05/19	Inorganic Ventures, Lot K2MEB643109			(Purchased Reagent)		Aluminum	5000 mg/L

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent: Reagent ID	Parent Reagent: Volume Added	Analyte	Concentration
							Ca	5000 mg/L
							Iron	2000 mg/L
							Mg	5000 mg/L
90XXICSASiP_00028	09/19/19	06/19/19	5% HCl/5% HNO3, Lot NA	100 mL	90MXICSAP_00005	10 mL	Aluminum	500 mg/L
							Ca	500 mg/L
							Iron	200 mg/L
							Mg	500 mg/L
.90MXICSAP_00005	10/05/19	Inorganic Ventures, Lot K2MEB643109			(Purchased Reagent)		Aluminum	5000 mg/L
							Ca	5000 mg/L
							Iron	2000 mg/L
							Mg	5000 mg/L
90XXICVS_00095	09/17/19	06/17/19	5% HCl/5% HNO3, Lot NA	50 mL	90MXKNX4-500S_00001	1 mL	Li	1 mg/L
							Mo	1 mg/L
					90MXKNX5-500S_00001	1 mL	Aluminum	12.5 mg/L
							Cobalt	1 mg/L
							Iron	12.5 mg/L
							Manganese	1 mg/L
							Thallium	0.5 mg/L
.90MXKNX4-500S_00001	08/22/20	CPI, Lot 10093249-1			(Purchased Reagent)		Li	50 mg/L
							Mo	50 mg/L
.90MXKNX5-500S_00001	08/22/20	CPI, Lot 10093249-2			(Purchased Reagent)		Aluminum	625 mg/L
							Cobalt	50 mg/L
							Iron	625 mg/L
							Manganese	50 mg/L
							Thallium	25 mg/L
90XXICVS_00096	09/21/19	06/21/19	5% HCl/5% HNO3, Lot NA	50 mL	90MXKNX4-500S_00001	1 mL	Li	1 mg/L
							Mo	1 mg/L
					90MXKNX5-500S_00001	1 mL	Aluminum	12.5 mg/L
							Cobalt	1 mg/L
							Iron	12.5 mg/L
							Manganese	1 mg/L
							Thallium	0.5 mg/L
.90MXKNX4-500S_00001	08/22/20	CPI, Lot 10093249-1			(Purchased Reagent)		Li	50 mg/L
							Mo	50 mg/L
.90MXKNX5-500S_00001	08/22/20	CPI, Lot 10093249-2			(Purchased Reagent)		Aluminum	625 mg/L
							Cobalt	50 mg/L
							Iron	625 mg/L
							Manganese	50 mg/L
							Thallium	25 mg/L
90XXICVS_00097	09/28/19	06/28/19	5% HCl/5% HNO3, Lot NA	50 mL	90MXKNX4-500S_00001	1 mL	Li	1 mg/L
							Mo	1 mg/L
					90MXKNX5-500S_00001	1 mL	Aluminum	12.5 mg/L
							Cobalt	1 mg/L
							Iron	12.5 mg/L
							Manganese	1 mg/L
							Thallium	0.5 mg/L

 07/14/2019

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.90MXKNX4-500S_00001	08/22/20		CPI, Lot 10093249-1		(Purchased Reagent)		Li	50 mg/L
							Mo	50 mg/L
.90MXKNX5-500S_00001	08/22/20		CPI, Lot 10093249-2		(Purchased Reagent)		Aluminum	625 mg/L
							Cobalt	50 mg/L
							Iron	625 mg/L
							Manganese	50 mg/L
							Thallium	25 mg/L

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Seattle Job No.: 140-15390-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent: Reagent ID	Parent Reagent: Volume Added	Analyte	Concentration
CaCO3_00004_00007	08/17/20		LECO, Lot 1040		(Purchased Reagent)		TOC Result 1	120000 mg/Kg
							Total Organic Carbon - Average Dup	120000 mg/Kg
CaCO3_00008	09/30/21		ACROS, Lot A0311356		(Purchased Reagent)		TOC Result 1	120000 mg/Kg
							Total Organic Carbon - Average Dup	120000 mg/Kg
TOCS_LCS_00008	06/30/20		ERA, Lot D096-542		(Purchased Reagent)		Total Organic Carbon - Average Dup	4270 mg/Kg

Reagent

90IN10000ALP_00005

Rec 11-21-18
open 12-3-18
Exp 5-14-20

CPI INTERNATIONAL

CERTIFICATE OF ANALYSIS

Single-Element Aqueous CRM

Product #: TA-10M11

SE Std Aluminum (Al) – 10,000 µg/mL

Lot #: 169484-20

Matrix: 5% HNO_3

Element	Certified Concentration & Uncertainty
Al	**10,030 ± 20 µg/mL (w/v)**
	9428 ± 22 µg/g (w/w)

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to a nominal concentration of 10,000 µg/mL by gravimetric methods using 99.999% pure aluminum nitrate [$Al(NO_3)_3$] dissolved in high purity nitric acid (HNO_3) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentration and uncertainty were determined using the "High Performance ICP-OES" protocol developed by NIST, and both the certified concentration and uncertainty values are traceable to **NIST SRM 3101a, lot #140903**. The uncertainty associated with the certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Indicative Values: ICP-MS was used to determine trace metal concentrations for this product (nd = not determined).

Trace Concentrations (µg/L)

Ag	<5	Co	<10	Ge	<5	Mg	<50	Pd	<5	Si	<1000	V	<10
Al	MAJOR	Cs	<5	Hf	<2	Mn	<10	Pr	<2	Sm	<2	W	16
As	<20	Cr	89	Hg	<5	Mo	<5	Pt	<5	Sn	<5	Y	<5
Au	<5	Cu	<10	Ho	<2	Na	3315	Rb	<5	Sr	<10	Yb	<2
B	<50	Dy	<2	In	nd	Nb	<5	Re	<2	Ta	<5	Zn	30
Ba	<10	Er	<2	Ir	<2	Nd	<2	Rh	<5	Tb	<5		
Bi	<2	Eu	<2	K	<250	Ni	<20	Ru	<5	Te	<10		
Ca	330	Fe	890	La	<5	Os	<5	Sb	<5	Ti	<20		
Cd	<5	Ga	681	Li	<20	P	<1000	Sc	<50	Tl	10		
Ce	<2	Gd	<2	Lu	<2	Pb	<10	Se	<20	Tm	<2		

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

November 14, 2018
Certification Date

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Europe
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1013BG Amsterdam F: +31 20 420 28 36
The Netherlands

www.cpiinternational.com

Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
    - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

Reagent

90IN10000FEP_00005

Rec 11-21-18
Open 12-3-18
Exp 5-14-20

CPI INTERNATIONAL

CERTIFICATE OF ANALYSIS

Single-Element Aqueous CRM — Product #: TA-10M261

SE Std Iron (Fe) – 10,000 µg/mL — Lot #: 156651-59

Matrix: 5% HNO_3

Element	Certified Concentration & Uncertainty
Fe	**10,010 ± 40 µg/mL (w/v)**
	9609 ± 34 µg/g (w/w)

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to a nominal concentration of 10,000 µg/mL by gravimetric methods using 99.999% pure iron nitrate nonahydrate [$Fe(NO_3)_3$] dissolved in high purity nitric acid (HNO_3) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentration and uncertainty were determined using the "High Performance ICP-OES" protocol developed by NIST, and both the certified concentration and uncertainty values are traceable to **NIST SRM 3126a, lot #140812**. The uncertainty associated with the certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Indicative Values: ICP-MS was used to determine trace metal concentrations for this product (nd = not determined).

Trace Concentrations (µg/L)

Ag	<5	Co	24	Ge	<5	Mg	<50	Pd	<5	Si	<1000	V	<10
Al	37	Cs	<5	Hf	<2	Mn	13	Pr	<2	Sm	<2	W	<5
As	<20	Cr	37	Hg	<5	Mo	<5	Pt	<5	Sn	<5	Y	<5
Au	<5	Cu	<10	Ho	<2	Na	<250	Rb	<5	Sr	<10	Yb	<2
B	<50	Dy	<2	In	nd	Nb	<5	Re	<2	Ta	<5	Zn	<20
Ba	27	Er	<2	Ir	<2	Nd	<2	Rh	<5	Tb	<5		
Bi	<2	Eu	<2	K	<250	Ni	<20	Ru	<5	Te	<10		
Ca	<250	Fe	MAJOR	La	<5	Os	<5	Sb	<5	Ti	<20		
Cd	<5	Ga	<5	Li	<20	P	<1000	Sc	<50	Tl	<5		
Ce	<2	Gd	<2	Lu	<2	Pb	<10	Se	<20	Tm	<2		

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

November 14, 2018
Certification Date

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The Netherlands

www.cpiinternational.com

Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
    - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

Reagent

90IN1000COP_00005

Rec 11-21-18
Open 12-3-18
Exp 5-14-20

CPI INTERNATIONAL

CERTIFICATE OF ANALYSIS

Single-Element Aqueous CRM — Product #: TA-1000131

SE Std Cobalt (Co) – 1000 µg/mL — Lot #: 161693-95

Matrix: 5% HNO_3

Element	Certified Concentration & Uncertainty
Co	**1001 ± 2 µg/mL (w/v)**
	997 ± 2 µg/g (w/w)

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to a nominal concentration of 1000 µg/mL by gravimetric methods using 99.999% pure cobalt (Co) dissolved in high purity nitric acid (HNO_3) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentration and uncertainty were determined using the "High Performance ICP-OES" protocol developed by NIST, and both the certified concentration and uncertainty values are traceable to **NIST SRM 3113, lot #000630**. The uncertainty associated with the certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Indicative Values: ICP-MS was used to determine trace metal concentrations for this product (nd = not determined).

Trace Concentrations (µg/L)

Ag	<0.5	Co	MAJOR	Ge	<0.5	Mg	<5	Pd	1	Si	<100	V	<1
Al	10	Cs	<0.5	Hf	<0.2	Mn	<1	Pr	<0.2	Sm	<0.2	W	2
As	<2	Cr	<0.5	Hg	<0.5	Mo	<0.5	Pt	<0.5	Sn	<0.5	Y	<0.5
Au	<0.5	Cu	4	Ho	<0.2	Na	<25	Rb	<0.5	Sr	<1	Yb	<0.2
B	<5	Dy	<0.2	In	nd	Nb	<0.5	Re	<0.2	Ta	<0.5	Zn	<2
Ba	<1	Er	<0.2	Ir	<0.2	Nd	<0.2	Rh	<0.5	Tb	<0.5		
Bi	<0.2	Eu	<0.2	K	<25	Ni	<2	Ru	2	Te	<1		
Ca	<25	Fe	<10	La	<0.5	Os	<0.5	Sb	<0.5	Ti	<2		
Cd	<0.5	Ga	<0.5	Li	<2	P	<100	Sc	<5	Tl	<0.5		
Ce	0.4	Gd	<0.2	Lu	<0.2	Pb	3	Se	<2	Tm	<0.2		

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

November 14, 2018
Certification Date

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Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
    - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

Reagent

90IN1000HGCP_00005

Rec 3-29-19
open
Exp 3-30-20

ACCREDITED
Reference Materials Producer
Cert #2495.01

SPEXertificate®

Certificate of Reference Material

ilac-MRA ACCREDITED
Chemical Testing
Cert #2495.02

Catalog Number: PLHG4-2Y **Lot No.** 23-148HGY

Description: 1000 µg/mL Mercury

Matrix: 10% HNO_3

This **ASSURANCE®** Certified Reference Material, CRM, is intended primarily for use as a calibration standard or quality control standard for inorganic spectroscopic instrumentation such as ICP-OES, DCP, AA, ICP-MS, and XRF. It can be employed in USEPA, ASTM and other methods relevant to the certified properties listed below.

Certified Value: 1002 µg/mL ±5 µg/mL

Certified Value is Traceable to: 3133*

* - indicates NIST SRM † - indicates SPEX CertiPrep CRM (when NIST SRM is not available)

The CRM is prepared gravimetrically using high purity Mercury Metal, Lot# 03141E. The certified value listed is the average of values obtained by classical wet assay and ICP spectrometer analysis.

Refer to side 2 for details of measurement uncertainties.

Classical Wet Assay: 1003 µg/mL

Method: Titration with Ammonium Thiocyanate using Ferric Nitrate as indicator.

Instrumental Analysis by ICP Spectrometer: 1000 µg/mL

Uncertified Properties

Density: 1.051 g/mL @ 20.0°C

Trace Metallic Impurities in the Actual Solution via ICP-MS Analysis:

Element	µg/mL	Element	µg/mL	Element	µg/mL	Element	µg/mL	Element	µg/mL	Element	µg/mL
Ag	<0.001	Cr	<0.001	Ho	<0.001	Nb	<0.001	Ru	<0.001	Th	<0.001
Al	0.003	Cs	<0.001	In	<0.001	Nd	<0.001	Sb	<0.001	Ti	<0.001
As	<0.001	Cu	<0.001	Ir	<0.001	Ni	<0.001	Sc	<0.001	Tl	<0.001
Au	<0.01	Dy	<0.001	K	0.004	P	<0.1	Se	<0.004	Tm	<0.001
B	<0.003	Er	<0.001	La	<0.001	Pb	<0.001	Si	<0.1	U	<0.001
Ba	<0.001	Eu	<0.001	Li	<0.001	Pd	<0.01	Sm	<0.001	V	<0.002
Be	<0.001	Fe	<0.001	Lu	<0.001	Pr	<0.001	Sn	<0.001	W	<0.001
Bi	<0.001	Ga	<0.001	Mg	<0.003	Pt	<0.001	Sr	<0.001	Y	<0.001
Ca	0.01	Gd	<0.001	Mn	<0.001	Rb	<0.001	Ta	<0.001	Yb	<0.001
Cd	<0.001	Ge	<0.001	Mo	<0.001	Re	<0.001	Tb	<0.001	Zn	0.01
Ce	<0.001	Hf	<0.001	Na	0.003	Rh	<0.001	Te	<0.001	Zr	<0.001
Co	<0.001										

Balances are calibrated regularly with weight sets traceable to NIST #32856, #32867 and others. This CRM is guaranteed stable and accurate to +/- 0.5% of the certified value. This includes uncertainty components due to preparation, homogeneity by the most precise method, and short-term and long-term stability. This guarantee is valid for a period of one year from the date of certification only when the material is kept tightly capped and stored under ambient laboratory conditions.

Date of Certification: MAR - - 2019 Certifying Officer: Kathe Cull

Katherine Cullinan, QC Manager

Report of Certification

This Certified Reference Material (CRM) has been prepared and certified under an ISO 9001 (certified by DQS), ISO 17025 (accredited by A2LA) and ISO 17034 (accredited by A2LA) quality system consistent with the following guides:

- ISO 9001: Quality management systems – Requirements
- ISO/IEC 17025: General requirements for the competence of testing and calibration laboratories
- ISO 17034: General requirements for the competence of reference material producers
- ISO Guide 30: Reference Materials – Selected terms and definitions
- ISO Guide 31: Reference Materials – Contents of certificates and labels
- ISO Guide 35: Reference Materials – General and principals for certification
- Guide to the Expression of Uncertainty in Measurement, 2008
- EURACHEM/CITAC Guide: Qualifying Uncertainty in Analytical Measurement – Third Edition
- NIST Technical Note 1297

Material Source:
All analytes and matrix materials are obtained and verified by SPEX CertiPrep from pre-qualified vendors as per ISO 9001, ISO 17025, and ISO 17034 guidelines. Vendor identifications are proprietary; however, sources of all materials used in the preparation and testing of SPEX CertiPrep CRMs are tracked and documented. For further assistance, please contact Sales Support at crmsales@spexcsp.com.

Instructions for Use:
Primary usage of this CRM is in neat form or diluted serially with matrix of a purity at or greater than the purity of the original matrix solution. If dilution is required, the diluent must be compatible with all certified analytes and contain stabilizers appropriate for the period of intended use. The CRM can also be used as a spike or with a spike, again with appropriate compatibility considerations. All solutions should be thoroughly mixed, by shaking, prior to use and never pipetted directly from the bottle. Do not return excess solution to the bottle. All surfaces that come in contact with the solution must be thoroughly cleaned and leached prior to use. Dilutions should be performed only with Class A volumetric glassware. See SDS for health and safety information.

Method of Preparation:
Clean laboratory procedures and techniques have been used throughout the preparation. All materials, equipment, analytical instrumentation and personnel have been qualified prior to use. The highest purity acids applicable, 18 megohm, double deionized water, acid-leached triple-rinsed bottles (where appropriate), and Class A/calibrated volumetrics have been used in all preparations.

Homogeneity:
The homogeneity of the CRM has been confirmed by procedures consistent with ISO 17025, ISO 17034, and ASTM D6362-98 Appendix X2. Random, replicate samples of the final, packaged material have been analyzed to prove homogeneity in accordance with our internal procedure 4600-HOMOGEN-1A. Since the product is highly homogeneous, any sample size taken for analysis would be within the uncertainty budget. This is consistent with the intended use of the CRM.

Statistical Estimator and Confidence Limits:
The certified value 'X' listed on the reverse of this document is at the 95% level of confidence and can be expressed as:

- $X = x \pm U$ where X=certified value, U=expanded uncertainty, x=property value
- $U = ku_c$ where k=2 is the coverage factor at the 95% confidence level
- u_c=combined standard uncertainty obtained by combining the individual element standard uncertainty components u_i, and $u_c = \sqrt{\Sigma u_i^2}$

Certification Report:
All certified values reported were derived from the Certification Report, SPEX CertiPrep's traceability documentation, identified by the lot number of this CRM. During the stated period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution. For further assistance, please contact Sales Support at crmsales@spexcsp.com.

Legal Notice:
SPEX CertiPrep reference materials are not for any cosmetic, drug or household application and are to be used only by qualified individuals who are trained in appropriate procedures. No claims against SPEX CertiPrep, LLC. of any kind whatsoever, whether based on breach of warranty, alleged negligence, or otherwise, with respect to this Reference Material shall be greater than the purchase price. In no event shall SPEX CertiPrep, LLC. be liable for any loss of profits or any incidental, special, or consequential damages.

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Reagent

90IN1000LIP_00005

Rec 11-21-18
Open 12-3-18
Exp 5-14-20

CPI INTERNATIONAL

CERTIFICATE OF ANALYSIS

Single-Element Aqueous CRM — Product #: TA-1000291

SE Std Lithium (Li) – 1000 µg/mL — Lot #: 751942-43

Matrix: 5% HNO_3

Element	Certified Concentration & Uncertainty
Li	**1002 ± 3 µg/mL (w/v)**
	993 ± 3 µg/g (w/w)

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to a nominal concentration of 1000 µg/mL by gravimetric methods using 99.999% pure lithium carbonate (Li_2CO_3) dissolved in high purity nitric acid (HNO_3) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentration and uncertainty were determined using the "High Performance ICP-OES" protocol developed by NIST, and both the certified concentration and uncertainty values are traceable to **NIST SRM 3129a, lot #100714**. The uncertainty associated with the certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Indicative Values: ICP-MS was used to determine trace metal concentrations for this product (nd = not determined).

Trace Concentrations (µg/L)

Ag	35	Co	<1	Ge	<0.5	Mg	<5	Pd	<0.5	Si	<100	V	<1
Al	9	Cs	7	Hf	<0.2	Mn	<1	Pr	<0.2	Sm	<0.2	W	<0.5
As	<2	Cr	<0.5	Hg	30	Mo	<0.5	Pt	<0.5	Sn	<0.5	Y	<0.5
Au	<0.5	Cu	<1	Ho	<0.2	Na	<25	Rb	2	Sr	<1	Yb	<0.2
B	<5	Dy	<0.2	In	nd	Nb	<0.5	Re	<0.2	Ta	<0.5	Zn	<2
Ba	2	Er	<0.2	Ir	<0.2	Nd	<0.2	Rh	<0.5	Tb	<0.5		
Bi	<0.2	Eu	<0.2	K	<25	Ni	<2	Ru	<0.5	Te	<1		
Ca	<25	Fe	<10	La	<0.5	Os	<0.5	Sb	<0.5	Ti	<2		
Cd	<0.5	Ga	<0.5	Li	MAJOR	P	<100	Sc	<5	Tl	<0.5		
Ce	<0.2	Gd	<0.2	Lu	<0.2	Pb	<1	Se	<2	Tm	<0.2		

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

November 14, 2018
Certification Date

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The Netherlands

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Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
    - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

Reagent

90IN1000MNP_00005

Rec 11-21-18
Open 12-3-18
Exp 5-14-~~18~~ 20 lwe 12-3-18

CPI INTERNATIONAL

CERTIFICATE OF ANALYSIS

Single-Element Aqueous CRM — Product #: TA-1000321

SE Std Manganese (Mn) – 1000 µg/mL — Lot #: 167539-78

Matrix: 5% HNO_3

Element	Certified Concentration & Uncertainty
Mn	1001 ± 3 µg/mL (w/v)
	995 ± 3 µg/g (w/w)

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to a nominal concentration of 1000 µg/mL by gravimetric methods using 99.98% pure manganese (Mn) dissolved in high purity nitric acid (HNO_3) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentration and uncertainty were determined using the "High Performance ICP-OES" protocol developed by NIST, and both the certified concentration and uncertainty values are traceable to **NIST SRM 3132, lot #050429**. The uncertainty associated with the certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Indicative Values: ICP-MS was used to determine trace metal concentrations for this product (nd = not determined).

Trace Concentrations (µg/L)

Ag	<0.5	Co	2	Ge	<0.5	Mg	63	Pd	<0.5	Si	<100	V	3
Al	3	Cs	<0.5	Hf	<0.2	Mn	MAJOR	Pr	<0.2	Sm	<0.2	W	<0.5
As	<2	Cr	<0.5	Hg	<0.5	Mo	<0.5	Pt	<0.5	Sn	<0.5	Y	<0.5
Au	<0.5	Cu	<1	Ho	<0.2	Na	<25	Rb	<0.5	Sr	<1	Yb	<0.2
B	<5	Dy	<0.2	In	nd	Nb	<0.5	Re	<0.2	Ta	<0.5	Zn	<2
Ba	<1	Er	<0.2	Ir	<0.2	Nd	<0.2	Rh	<0.5	Tb	<0.5		
Bi	<0.2	Eu	<0.2	K	<25	Ni	<2	Ru	<0.5	Te	<1		
Ca	<25	Fe	<10	La	<0.5	Os	<0.5	Sb	<0.5	Ti	<2		
Cd	<0.5	Ga	<0.5	Li	<2	P	<100	Sc	<5	Tl	<0.5		
Ce	<0.2	Gd	<0.2	Lu	<0.2	Pb	2	Se	<2	Tm	<0.2		

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

November 14, 2018
Certification Date

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Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
    - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

Reagent

90IN1000MOP_00005

Rec 11-21-18
open 12-3-18
Exp 5-14-20

CPI INTERNATIONAL

CERTIFICATE OF ANALYSIS

Single-Element Aqueous CRM — Product #: TA-1000343

SE Std Molybdenum (Mo) – 1000 µg/mL — Lot #: 169424-45

Matrix: 5% HNO_3/tr. HF

Element	Certified Concentration & Uncertainty
Mo	**999 ± 3 µg/mL (w/v)**
	980 ± 3 µg/g (w/w)

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to a nominal concentration of 1000 µg/mL by gravimetric methods using 99.999% pure molybdenum (Mo) metal dissolved in high purity nitric acid (HNO_3), trace hydrofluoric acid (HF) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentration and uncertainty were determined using the "High Performance ICP-OES" protocol developed by NIST, and both the certified concentration and uncertainty values are traceable to **NIST SRM 3134, lot #891307**. The uncertainty associated with the certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Indicative Values: ICP-MS was used to determine trace metal concentrations for this product (nd = not determined).

Trace Concentrations (µg/L)

Ag	<0.5	Co	<1	Ge	<0.5	Mg	<5	Pd	<0.5	Si	<100	V	<1
Al	<2	Cs	<0.5	Hf	<0.2	Mn	<1	Pr	<0.2	Sm	<0.2	W	60
As	<2	Cr	<0.5	Hg	<0.5	Mo	MAJOR	Pt	<0.5	Sn	<0.5	Y	<0.5
Au	1	Cu	<1	Ho	<0.2	Na	<25	Rb	<0.5	Sr	<1	Yb	<0.2
B	<5	Dy	<0.2	In	nd	Nb	<0.5	Re	6	Ta	2	Zn	<2
Ba	<1	Er	<0.2	Ir	<0.2	Nd	<0.2	Rh	<0.5	Tb	<0.5		
Bi	<0.2	Eu	<0.2	K	<25	Ni	<2	Ru	<0.5	Te	<1		
Ca	<25	Fe	<10	La	<0.5	Os	<0.5	Sb	<0.5	Ti	<5		
Cd	<0.5	Ga	<0.5	Li	<2	P	<100	Sc	<5	Tl	<0.5		
Ce	<0.2	Gd	<0.2	Lu	<0.2	Pb	<1	Se	<2	Tm	<0.2		

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

November 14, 2018
Certification Date

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Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
    - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

Reagent

90IN1000TLP_00005

Rec 11-21-18
Open 12-3-18
Exp 5-14-20

CPI INTERNATIONAL

CERTIFICATE OF ANALYSIS

Single-Element Aqueous CRM | Product #: TA-1000581

SE Std Thallium (Tl) – 1000 µg/mL | Lot #: 148983-92

Matrix: 5% HNO_3

Element	Certified Concentration & Uncertainty
Tl	**1002 ± 3 µg/mL (w/v)**
	997 ± 3 µg/g (w/w)

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001, ISO 17034,** and **ISO/IEC 17025**. This CRM was prepared to a nominal concentration of 1000 µg/mL by gravimetric methods using 99.99% pure thallium (Tl) metal dissolved in high purity nitric acid (HNO_3) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentration and uncertainty were determined using the "High Performance ICP-OES" protocol developed by NIST, and both the certified concentration and uncertainty values are traceable to **NIST SRM 3158, lot #993012**. The uncertainty associated with the certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Indicative Values: ICP-MS was used to determine trace metal concentrations for this product (nd = not determined).

Trace Concentrations (µg/L)

Ag	<1	Co	<1	Ge	<0.5	Mg	<5	Pd	<0.5	Si	<100	V	<1
Al	<2	Cs	<0.5	Hf	<0.2	Mn	<1	Pr	<0.2	Sm	<0.2	W	<0.5
As	<2	Cr	<0.5	Hg	13	Mo	<0.5	Pt	<0.5	Sn	<0.5	Y	<0.5
Au	<0.5	Cu	2	Ho	<0.2	Na	<25	Rb	<0.5	Sr	<1	Yb	<0.2
B	<5	Dy	<0.2	In	nd	Nb	<0.5	Re	<0.2	Ta	<0.5	Zn	<2
Ba	<1	Er	<0.2	Ir	<0.2	Nd	<0.2	Rh	<0.5	Tb	<0.5		
Bi	0.3	Eu	<0.2	K	<25	Ni	<2	Ru	<0.5	Te	<1		
Ca	<25	Fe	<10	La	<0.5	Os	<0.5	Sb	<0.5	Ti	<2		
Cd	<0.5	Ga	<0.5	Li	<2	P	<100	Sc	<5	Tl	MAJOR		
Ce	<0.2	Gd	<0.2	Lu	<0.2	Pb	5	Se	<2	Tm	<0.2		

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

November 14, 2018
Certification Date

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Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
    - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

Reagent

90MXCAL3P_00005

Rec 4-29-19
open 5-3-19
Exp 10-25-20

CPI INTERNATIONAL

CERTIFICATE OF ANALYSIS

Multi-Element Aqueous CRM

Product #: TA-CM-JAN19-KNX1-500

Custom ISO G34 Cal 1

Lot #: 10096218-3

Matrix: 3% HNO_3/tr. HF

Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty
Ag	100.1 ± 0.5 µg/mL	Pb	50.17 ± 0.25 µg/mL	Tl	100.1 ± 0.5 µg/mL
As	50.00 ± 0.25 µg/mL	Sb	49.90 ± 0.25 µg/mL		
Cd	50.10 ± 0.25 µg/mL	Se	50.06 ± 0.25 µg/mL		

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to the certified concentrations shown above by gravimetric methods, using single-element concentrates that were certified using the "High Performance ICP-OES" protocol developed by NIST and are directly traceable to **NIST SRMs (see reverse side)**. The solution was stabilized using high purity nitric acid (HNO_3), trace hydrofluoric acid (HF) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentrations were determined based upon gravimetric procedures. Secondary verification of the certified concentrations was performed using ICP-OES that was calibrated and/or referenced against **NIST SRMs (see reverse side)**. The uncertainty associated with each certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

April 25, 2019
Certification Date

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Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
    - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

This CRM is traceable to the following NIST SRMs:

Analyte	Aq. SRM	MO SRM	Analyte	Aq. SRM	MO SRM	Analyte	Aq. SRM	MO SRM
Ag	3151	1077a	Hf	3122	—	S	3154	2770
Al	3101a	1075a	Hg	3133	3133	Sb	3102a	3102a
As	3103a	3103a	Ho	3123a	—	Sc	3148a	3148a
Au	3121	—	In	3124a	3124a	Se	3149	3149
B	3107	3107	K	3141a	3141a	Si	3150	1066a
Ba	3104a	1051b	La	3127a	3127a	Sm	3147a	—
Be	3105a	3105a	Li	3129a	3129a	Sn	3161a	1057b
Bi	3106	3106	Lu	3130a	—	SO_4^{-2}	3181	—
Br^-	3184	—	Mg	3131a	3131a	Sr	3153a	3153a
Ca	3109a	3109a	Mn	3132	3132	Ta	3155	—
Cd	3108	1053a	Mo	3134	3134	Tb	3157a	—
Ce	3110	3110	Na	3152a	3152a	Te	3156	—
Cl^-	3182	1818a	Nb	3137	—	Th	3159	—
Co	3113	3113	Nd	3135a	—	Ti	3162a	3162a
Cr	3112a	1078b	Ni	3136	1065b	Tl	3158	3158
Cs	3111a	—	NO_3^-	3185	—	Tm	3160a	—
Cu	3114	1080a	P	3139a	3139a	U	3164	—
Dy	3115a	—	Pb	3128	3128	V	3165	1052b
Er	3116a	—	Pd	3138	—	W	3163	3163
Eu	3117a	—	PO_4^{-3}	3186	—	Y	3167a	3167a
F^-	3183	—	Pr	3142a	—	Yb	3166a	—
Fe	3126a	1079b	Pt	3140	3140	Zn	3168a	3168a
Ga	3119a	—	Rb	3145a	—	Zr	3169	3169
Gd	3118a	—	Re	3143	—			
Ge	3120a	—	Rh	3144	3144			

Reagent

90MXCAL4CP_00005

Rec 4-29-19
Open 5-3-19
Exp 10-25-20

CPI INTERNATIONAL

CERTIFICATE OF ANALYSIS

Multi-Element Aqueous CRM

Product #: TA-CM-JAN19-KNX3-500

Custom ISO G34 Cal 3

Lot #: 10096218-5

Matrix: 3% HNO_3/tr. HF

Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty
B	200.1 ± 1.0 µg/mL	Mo	200.1 ± 1.0 µg/mL	Sn	200.1 ± 1.0 µg/mL
Li	200.2 ± 1.0 µg/mL	Si	200.1 ± 1.0 µg/mL	Ti	199.9 ± 1.0 µg/mL

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001, ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to the certified concentrations shown above by gravimetric methods, using single-element concentrates that were certified using the "High Performance ICP-OES" protocol developed by NIST and are directly traceable to **NIST SRMs (see reverse side)**. The solution was stabilized using high purity nitric acid (HNO_3), trace hydrofluoric acid (HF) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentrations were determined based upon gravimetric procedures. Secondary verification of the certified concentrations was performed using ICP-OES that was calibrated and/or referenced against **NIST SRMs (see reverse side)**. The uncertainty associated with each certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

April 25, 2019
Certification Date

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The Netherlands

www.cpiinternational.com

Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
    - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

This CRM is traceable to the following NIST SRMs:

Analyte	Aq. SRM	MO SRM		Analyte	Aq. SRM	MO SRM		Analyte	Aq. SRM	MO SRM
Ag	3151	1077a		Hf	3122	—		S	3154	2770
Al	3101a	1075a		Hg	3133	3133		Sb	3102a	3102a
As	3103a	3103a		Ho	3123a	—		Sc	3148a	3148a
Au	3121	—		In	3124a	3124a		Se	3149	3149
B	3107	3107		K	3141a	3141a		Si	3150	1066a
Ba	3104a	1051b		La	3127a	3127a		Sm	3147a	—
Be	3105a	3105a		Li	3129a	3129a		Sn	3161a	1057b
Bi	3106	3106		Lu	3130a	—		SO_4^{-2}	3181	—
Br^-	3184	—		Mg	3131a	3131a		Sr	3153a	3153a
Ca	3109a	3109a		Mn	3132	3132		Ta	3155	—
Cd	3108	1053a		Mo	3134	3134		Tb	3157a	—
Ce	3110	3110		Na	3152a	3152a		Te	3156	—
Cl^-	3182	1818a		Nb	3137	—		Th	3159	—
Co	3113	3113		Nd	3135a	—		Ti	3162a	3162a
Cr	3112a	1078b		Ni	3136	1065b		Tl	3158	3158
Cs	3111a	—		NO_3^-	3185	—		Tm	3160a	—
Cu	3114	1080a		P	3139a	3139a		U	3164	—
Dy	3115a	—		Pb	3128	3128		V	3165	1052b
Er	3116a	—		Pd	3138	—		W	3163	3163
Eu	3117a	—		PO_4^{-3}	3186	—		Y	3167a	3167a
F^-	3183	—		Pr	3142a	—		Yb	3166a	—
Fe	3126a	1079b		Pt	3140	3140		Zn	3168a	3168a
Ga	3119a	—		Rb	3145a	—		Zr	3169	3169
Gd	3118a	—		Re	3143	—				
Ge	3120a	—		Rh	3144	3144				

Reagent

90MXCAL4EP_00005

Rec 4-29-19
Open 5-3-19
Exp 10-25-20

CPI INTERNATIONAL

CERTIFICATE OF ANALYSIS

Multi-Element Aqueous CRM

Product #: TA-CM-JAN19-KNX2-500

Custom ISO G34 Cal 2

Lot #: 10096218-6

Matrix: 3% HNO_3

Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty
Al	2500 ± 13 µg/mL	Cu	200.0 ± 1.0 µg/mL	Ni	200.3 ± 1.0 µg/mL
Ba	200.0 ± 1.0 µg/mL	Fe	2499 ± 12 µg/mL	P	200.0 ± 1.0 µg/mL
Be	200.0 ± 1.0 µg/mL	K	5000 ± 25 µg/mL	Sr	200.2 ± 1.0 µg/mL
Ca	5000 ± 25 µg/mL	Mg	5001 ± 25 µg/mL	V	200.0 ± 1.0 µg/mL
Co	200.1 ± 1.0 µg/mL	Mn	200.2 ± 1.0 µg/mL	Zn	200.1 ± 1.0 µg/mL
Cr	200.0 ± 1.0 µg/mL	Na	5000 ± 25 µg/mL		

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to the certified concentrations shown above by gravimetric methods, using single-element concentrates that were certified using the "High Performance ICP-OES" protocol developed by NIST and are directly traceable to **NIST SRMs (see reverse side)**. The solution was stabilized using high purity nitric acid (HNO_3) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentrations were determined based upon gravimetric procedures. Secondary verification of the certified concentrations was performed using ICP-OES that was calibrated and/or referenced against **NIST SRMs (see reverse side)**. The uncertainty associated with each certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

April 25, 2019
Certification Date

USA
5580 Skylane Boulevard P: 707.525.5788
Santa Rosa, CA 95403 P: 800.878.7654
F: 707.545.7901

www.cpiinternational.com

Europe
Nieuwe Hemweg 7P P: +31 20 638 05 97
1013BG Amsterdam F: +31 20 420 28 36
The Netherlands

Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
    - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

This CRM is traceable to the following NIST SRMs:

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As	3103a	3103a	Ho	3123a	—	Sc	3148a	3148a
Au	3121	—	In	3124a	3124a	Se	3149	3149
B	3107	3107	K	3141a	3141a	Si	3150	1066a
Ba	3104a	1051b	La	3127a	3127a	Sm	3147a	—
Be	3105a	3105a	Li	3129a	3129a	Sn	3161a	1057b
Bi	3106	3106	Lu	3130a	—	SO_4^{-2}	3181	—
Br^-	3184	—	Mg	3131a	3131a	Sr	3153a	3153a
Ca	3109a	3109a	Mn	3132	3132	Ta	3155	—
Cd	3108	1053a	Mo	3134	3134	Tb	3157a	—
Ce	3110	3110	Na	3152a	3152a	Te	3156	—
Cl^-	3182	1818a	Nb	3137	—	Th	3159	—
Co	3113	3113	Nd	3135a	—	Ti	3162a	3162a
Cr	3112a	1078b	Ni	3136	1065b	Tl	3158	3158
Cs	3111a	—	NO_3^-	3185	—	Tm	3160a	—
Cu	3114	1080a	P	3139a	3139a	U	3164	—
Dy	3115a	—	Pb	3128	3128	V	3165	1052b
Er	3116a	—	Pd	3138	—	W	3163	3163
Eu	3117a	—	PO_4^{-3}	3186	—	Y	3167a	3167a
F^-	3183	—	Pr	3142a	—	Yb	3166a	—
Fe	3126a	1079b	Pt	3140	3140	Zn	3168a	3168a
Ga	3119a	—	Rb	3145a	—	Zr	3169	3169
Gd	3118a	—	Re	3143	—			
Ge	3120a	—	Rh	3144	3144			

Reagent

90MXICSAP_00005

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO Guide 34, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01

ACCREDITED Reference Material Producer Certificate 883.02

Rec 9-13-18
Open 10-5-18
Exp 10-5-19

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	CLPP-ICS-A
Lot Number:	K2-MEB643109
Matrix:	2% (v/v) HNO_3
Value / Analyte(s):	5 000 µg/mL ea: Aluminum, Calcium, Magnesium, 2 000 µg/mL ea: Iron

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	5 000 ± 22 µg/mL	Calcium, Ca	5 000 ± 20 µg/mL
Iron, Fe	2 000 ± 8 µg/mL	Magnesium, Mg	5 000 ± 20 µg/mL

Certified Density: 1.085 g/mL (measured at 20 ± 1 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Al	ICP Assay	3101a	060502
Al	EDTA	928	928
Ca	ICP Assay	3109a	050825
Ca	EDTA	928	928
Fe	ICP Assay	3126a	051031
Fe	EDTA	928	928
Mg	ICP Assay	3131a	050302
Mg	EDTA	928	928

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM by two independent methods   Characterization of CRM by one method

Characterization of CRM/RM by Two Methods

Certified Value, $X_{CRM/RM}$, where two methods of characterization are used is the weighted mean of the two results:

$X_{CRM/RM} = [(w_a)(X_a) + (w_b)(X_b)]$

X_a = mean of Assay Method A with standard uncertainty $u_{char\ a}$

X_b = mean of Assay Method B with standard uncertainty $u_{char\ b}$

w_a and w_b = the weighting factors for each method calculated using the inverse square of the variance:

$w_a = (1/u_{char\ a})^2 / ((1/u_{char\ a})^2 + (1/u_{char\ b})^2)$

$w_b = (1/u_{char\ b})^2 / ((1/u_{char\ a})^2 + (1/u_{char\ b})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a\&b} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2 in all cases at Inorganic Ventures

$u_{char\ a\&b} = [(w_a)^2 (u_{char\ a})^2 + (w_b)^2 (u_{char\ b})^2]^{1/2}$ where $u_{char\ a}$ and $u_{char\ b}$ are the square root of the sum of the squares of errors from characterization which include instrument measurement, density, NIST SRM uncertainty, weighing, and volume

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM}$ = mean of Assay Method A with standard uncertainty $u_{char\ a}$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2 in all cases at Inorganic Ventures

$u_{char\ a}$ = square root of the sum of the squares of the errors from characterization which include instrumental measurement, density, NIST SRM uncertainty, weighing, and volume

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000400	M	Eu	<	0.000100	O	Na		0.027559	M	Se	<	0.002091	M	Zn		0.008219
s	Al	<		s	Fe	<		M	Nb	<	0.000100	O	Si		0.217000	M	Zr	<	0.001002
M	As	<	0.005613	M	Ga	<	0.000100	M	Nd	<	0.000601	M	Sm	<	0.000100				
M	Au	<	0.000199	M	Gd	<	0.000100	M	Ni	<	0.005613	M	Sn	<	0.000200				
M	B	<	0.008420	M	Ge	<	0.000400	M	Os	<	0.000099	M	Sr		0.043302				
M	Ba	<	0.001603	M	Hf	<	0.000100	O	P	<	0.108500	M	Ta	<	0.000100				
O	Be	<	0.000217	M	Hg	<	0.000597	M	Pb		0.003408	M	Tb	<	0.000100				
M	Bi	<	0.000400	M	Ho	<	0.000100	M	Pd	<	0.000100	M	Te	<	0.003107				
s	Ca	<		M	In	<	0.000400	M	Pr	<	0.000200	M	Th	<	0.000100				
M	Cd	<	0.000100	M	Ir	<	0.000099	M	Pt	<	0.000100	M	Ti	<	0.000801				
M	Ce	<	0.002004	O	K		0.011718	M	Rb	<	0.000100	M	Tl	<	0.000100				
M	Co	<	0.003207	M	La	<	0.000801	M	Re	<	0.000100	M	Tm	<	0.000100				
M	Cr		0.024658	O	Li		0.005425	M	Rh	<	0.000100	M	U	<	0.000100				
M	Cs	<	0.000601	M	Lu	<	0.000100	M	Ru	<	0.000099	M	V	<	0.000400				
M	Cu	<	0.004610	s	Mg	<		O	S		0.422173	M	W	<	0.000100				
M	Dy	<	0.000100	M	Mn		0.002606	M	Sb	<	0.000200	M	Y	<	0.000100				
M	Er	<	0.000100	M	Mo	<	0.000400	M	Sc	<	0.001403	M	Yb	<	0.000100				

M - Checked by ICP-MS   O - Checked by ICP-OES   i - Spectral Interference
n - Not Checked For   s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag keep cap tightly sealed when not in use. Store and use at 20° ± 4° C. Do not pippette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 10CFR50 Appendix B - Nuclear Regulatory Commission

- Domestic Licensing of Production and Utilization Facilities

10.2 10CFR21 - Nuclear Regulatory Commission

- Reporting defects and Non-Compliance

10.3 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.4 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.5 ISO Guide 34 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION, PERIOD OF VALIDITY AND REVISION HISTORY

11.1 Certification Issue Date

July 01, 2016

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- July 01, 2020

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: 10-5-18

- This CRM/RM should not be used longer than one year from the date of removal from the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being handled and stored in accordance with the instructions given in Sec 7.1.

11.4 Revision Status

- Revision 1 - Wednesday, Apr 26, 2017. Added TMI data

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Joseph Burns
Technical Support Technician

Certificate Approved By:

Michael Booth
Supervisor, Quality Control

Michael L Booth

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

Paul R Gaines

Reagent

90MXICSB2-AP_00006

Rec 4-29-19
Open 5-3-19
Exp 10-25-20

CPI INTERNATIONAL

CERTIFICATE OF ANALYSIS

Multi-Element Aqueous CRM

Product #: TA-CM-JAN19-KNX6-500

Custom ISO G34 ICSAB 1

Lot #: 10096218-1

Matrix: 3% HNO_3

Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty
Ag	2.00 ± 0.01 µg/mL	Cr	5.00 ± 0.03 µg/mL	Pb*	0.50 ± 0.01 µg/mL
As	1.01 ± 0.01 µg/mL	Cu	5.01 ± 0.03 µg/mL	Se*	0.50 ± 0.01 µg/mL
Ba	5.00 ± 0.03 µg/mL	K	100.0 ± 0.5 µg/mL	Tl	1.00 ± 0.01 µg/mL
Be	5.00 ± 0.03 µg/mL	Mn	5.02 ± 0.03 µg/mL	V	5.00 ± 0.03 µg/mL
Cd	10.01 ± 0.05 µg/mL	Na	100.0 ± 0.5 µg/mL	Zn	10.01 ± 0.05 µg/mL
Co	5.01 ± 0.03 µg/mL	Ni	10.01 ± 0.05 µg/mL		

*Indicates indicative value

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

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Chuck Goudreau

Chuck Goudreau, Certifying Officer

April 25, 2019
Certification Date

Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

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As	3103a	3103a		Ho	3123a	—		Sc	3148a	3148a
Au	3121	—		In	3124a	3124a		Se	3149	3149
B	3107	3107		K	3141a	3141a		Si	3150	1066a
Ba	3104a	1051b		La	3127a	3127a		Sm	3147a	—
Be	3105a	3105a		Li	3129a	3129a		Sn	3161a	1057b
Bi	3106	3106		Lu	3130a	—		SO_4^{-2}	3181	—
Br	3184	—		Mg	3131a	3131a		Sr	3153a	3153a
Ca	3109a	3109a		Mn	3132	3132		Ta	3155	—
Cd	3108	1053a		Mo	3134	3134		Tb	3157a	—
Ce	3110	3110		Na	3152a	3152a		Te	3156	—
Cl^-	3182	1818a		Nb	3137	—		Th	3159	—
Co	3113	3113		Nd	3135a	—		Ti	3162a	3162a
Cr	3112a	1078b		Ni	3136	1065b		Ti	3158	3158
Cs	3111a	—		NO_3^-	3185	—		Tm	3160a	—
Cu	3114	1080a		P	3139a	3139a		U	3164	—
Dy	3115a	—		Pb	3128	3128		V	3165	1052b
Er	3116a	—		Pd	3138	—		W	3163	3163
Eu	3117a	—		PO_4^{-3}	3186	—		Y	3167a	3167a
F^-	3183	—		Pr	3142a	—		Yb	3166a	—
Fe	3126a	1079b		Pt	3140	3140		Zn	3168a	3168a
Ga	3119a	—		Rb	3145a	—		Zr	3169	3169
Gd	3118a	—		Re	3143	—				
Ge	3120a	—		Rh	3144	3144				

Reagent

90MXICSB3-AP_00005

Rec 4-29-19
Open 5-3-19
Exp 10-25-20

CPI INTERNATIONAL

CERTIFICATE OF ANALYSIS

Multi-Element Aqueous CRM

Product #: TA-CM-JAN19-KNX7-500

Custom ISO G34 ICSAB 2

Lot #: 10096218-2

Matrix: 3% HNO_3/tr. HF

Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty
B	10.00 ± 0.05 µg/mL	P	10.00 ± 0.05 µg/mL	Sn	10.00 ± 0.05 µg/mL
Li	10.00 ± 0.05 µg/mL	Sb	6.00 ± 0.03 µg/mL	Sr	10.00 ± 0.05 µg/mL
Mo	10.00 ± 0.05 µg/mL	Si	10.00 ± 0.05 µg/mL	Ti	10.00 ± 0.05 µg/mL

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to the certified concentrations shown above by gravimetric methods, using single-element concentrates that were certified using the "High Performance ICP-OES" protocol developed by NIST and are directly traceable to **NIST SRMs (see reverse side)**. The solution was stabilized using high purity nitric acid (HNO_3), trace hydrofluoric acid (HF) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentrations were determined based upon gravimetric procedures. Secondary verification of the certified concentrations was performed using ICP-OES that was calibrated and/or referenced against **NIST SRMs (see reverse side)**. The uncertainty associated with each certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

April 25, 2019
Certification Date

USA
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F: 707.545.7901

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Europe
Nieuwe Hemweg 7P P: +31 20 638 05 97
1013BG Amsterdam F: +31 20 420 28 36
The Netherlands

Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
    - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

This CRM is traceable to the following NIST SRMs:

Analyte	Aq. SRM	MO SRM	Analyte	Aq. SRM	MO SRM	Analyte	Aq. SRM	MO SRM
Ag	3151	1077a	Hf	3122	—	S	3154	2770
Al	3101a	1075a	Hg	3133	3133	Sb	3102a	3102a
As	3103a	3103a	Ho	3123a	—	Sc	3148a	3148a
Au	3121	—	in	3124a	3124a	Se	3149	3149
B	3107	3107	K	3141a	3141a	Si	3150	1066a
Ba	3104a	1051b	La	3127a	3127a	Sm	3147a	—
Be	3105a	3105a	Li	3129a	3129a	Sn	3161a	1057b
Bi	3106	3106	Lu	3130a	—	SO_4^{-2}	3181	—
Br^-	3184	—	Mg	3131a	3131a	Sr	3153a	3153a
Ca	3109a	3109a	Mn	3132	3132	Ta	3155	—
Cd	3108	1053a	Mo	3134	3134	Tb	3157a	—
Ce	3110	3110	Na	3152a	3152a	Te	3156	—
Cl^-	3182	1818a	Nb	3137	—	Th	3159	—
Co	3113	3113	Nd	3135a	—	Ti	3162a	3162a
Cr	3112a	1078b	Ni	3136	1065b	Tl	3158	3158
Cs	3111a	—	NO_3^-	3185	—	Tm	3160a	—
Cu	3114	1080a	P	3139a	3139a	U	3164	—
Dy	3115a	—	Pb	3128	3128	V	3165	1052b
Er	3116a	—	Pd	3138	—	W	3163	3163
Eu	3117a	—	PO_4^{-3}	3186	—	Y	3167a	3167a
F^-	3183	—	Pr	3142a	—	Yb	3166a	—
Fe	3126a	1079b	Pt	3140	3140	Zn	3168a	3168a
Ga	3119a	—	Rb	3145a	—	Zr	3169	3169
Gd	3118a	—	Re	3143	—			
Ge	3120a	—	Rh	3144	3144			

Reagent

90MXKNX4-500S_00001

Rec 2-26-19
Open 3-5-19
Exp 8-22-20

CPI INTERNATIONAL

CERTIFICATE OF ANALYSIS

Multi-Element Aqueous CRM

Product #: TA-CM-JAN19-KNX4-500

Custom ISO G34 ICV 1

Lot #: 10093249-1

Matrix: 3% HNO_3/tr. HF

Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty
B	49.99 ± 0.25 µg/mL	Mo	50.22 ± 0.25 µg/mL	Sn	49.96 ± 0.25 µg/mL
Li	50.07 ± 0.25 µg/mL	Si	50.04 ± 0.25 µg/mL	Ti	49.91 ± 0.25 µg/mL

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to the certified concentrations shown above by gravimetric methods, using single-element concentrates that were certified using the "High Performance ICP-OES" protocol developed by NIST and are directly traceable to **NIST SRMs (see reverse side)**. The solution was stabilized using high purity nitric acid (HNO_3), trace hydrofluoric acid (HF) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentrations were determined based upon gravimetric procedures. Secondary verification of the certified concentrations was performed using ICP-OES that was calibrated and/or referenced against **NIST SRMs (see reverse side)**. The uncertainty associated with each certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

February 22, 2019
Certification Date

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F: 707.545.7901

Europe
Nieuwe Hemweg 7P P: +31 20 638 05 97
1013BG Amsterdam F: +31 20 420 28 36
The Netherlands

www.cpiinternational.com

Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
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This CRM is traceable to the following NIST SRMs:

Analyte	Aq. SRM	MO SRM		Analyte	Aq. SRM	MO SRM		Analyte	Aq. SRM	MO SRM
Ag	3151	1077a		Hf	3122	—		S	3154	2770
Al	3101a	1075a		Hg	3133	3133		Sb	3102a	3102a
As	3103a	3103a		Ho	3123a	—		Sc	3148a	3148a
Au	3121	—		In	3124a	3124a		Se	3149	3149
B	3107	3107		K	3141a	3141a		Si	3150	1066a
Ba	3104a	1051b		La	3127a	3127a		Sm	3147a	—
Be	3105a	3105a		Li	3129a	3129a		Sn	3161a	1057b
Bi	3106	3106		Lu	3130a	—		SO_4^{-2}	3181	—
Br^-	3184	—		Mg	3131a	3131a		Sr	3153a	3153a
Ca	3109a	3109a		Mn	3132	3132		Ta	3155	—
Cd	3108	1053a		Mo	3134	3134		Tb	3157a	—
Ce	3110	3110		Na	3152a	3152a		Te	3156	—
Cl^-	3182	1818a		Nb	3137	—		Th	3159	—
Co	3113	3113		Nd	3135a	—		Ti	3162a	3162a
Cr	3112a	1078b		Ni	3136	1065b		Tl	3158	3158
Cs	3111a	—		NO_3^-	3185	—		Tm	3160a	—
Cu	3114	1080a		P	3139a	3139a		U	3164	—
Dy	3115a	—		Pb	3128	3128		V	3165	1052b
Er	3116a	—		Pd	3138	—		W	3163	3163
Eu	3117a	—		PO_4^{-3}	3186	—		Y	3167a	3167a
F^-	3183	—		Pr	3142a	—		Yb	3166a	—
Fe	3126a	1079b		Pt	3140	3140		Zn	3168a	3168a
Ga	3119a	—		Rb	3145a	—		Zr	3169	3169
Gd	3118a	—		Re	3143	—				
Ge	3120a	—		Rh	3144	3144				

Reagent

90MXKNX5-500S_00001

CPI INTERNATIONAL

Rec 2-26-19
Open 3-5-19
Exp 8-22-20

CERTIFICATE OF ANALYSIS

Multi-Element Aqueous CRM

Product #: TA-CM-JAN19-KNX5-500

Custom ISO G34 ICV 2

Lot #: 10093249-2

Matrix: 1% HNO_3/tr. HF

Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty	Element	Certified Concentration & Uncertainty
Ag	24.99 ± 0.12 µg/mL	Cr	50.00 ± 0.25 µg/mL	P	50.02 ± 0.25 µg/mL
Al	625.1 ± 3.1 µg/mL	Cu	50.01 ± 0.25 µg/mL	Pb	12.50 ± 0.06 µg/mL
As	12.50 ± 0.06 µg/mL	Fe	625.1 ± 3.1 µg/mL	Sb	12.50 ± 0.06 µg/mL
Ba	49.99 ± 0.25 µg/mL	K	1250 ± 6 µg/mL	Se	12.50 ± 0.06 µg/mL
Be	50.08 ± 0.25 µg/mL	Mg	1249 ± 6 µg/mL	Sr	50.00 ± 0.25 µg/mL
Ca	1249 ± 6 µg/mL	Mn	50.02 ± 0.25 µg/mL	Tl	25.00 ± 0.13 µg/mL
Cd	12.50 ± 0.06 µg/mL	Na	1250 ± 6 µg/mL	V	50.02 ± 0.25 µg/mL
Co	50.08 ± 0.25 µg/mL	Ni	50.04 ± 0.25 µg/mL	Zn	50.09 ± 0.25 µg/mL

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to the certified concentrations shown above by gravimetric methods, using single-element concentrates that were certified using the "High Performance ICP-OES" protocol developed by NIST and are directly traceable to **NIST SRMs (see reverse side)**. The solution was stabilized using high purity nitric acid (HNO_3), trace hydrofluoric acid (HF) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentrations were determined based upon gravimetric procedures. Secondary verification of the certified concentrations was performed using ICP-OES that was calibrated and/or referenced against **NIST SRMs (see reverse side)**. The uncertainty associated with each certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

February 22, 2019
Certification Date

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F: 707.545.7901

Europe
Nieuwe Hemweg 7P P: +31 20 638 05 97
1013BG Amsterdam F: +31 20 420 28 36
The Netherlands

www.cpiinternational.com

Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
    - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

This CRM is traceable to the following NIST SRMs:

Analyte	Aq. SRM	MO SRM		Analyte	Aq. SRM	MO SRM		Analyte	Aq. SRM	MO SRM
Ag	3151	1077a		Hf	3122	—		S	3154	2770
Al	3101a	1075a		Hg	3133	3133		Sb	3102a	3102a
As	3103a	3103a		Ho	3123a	—		Sc	3148a	3148a
Au	3121	—		In	3124a	3124a		Se	3149	3149
B	3107	3107		K	3141a	3141a		Si	3150	1066a
Ba	3104a	1051b		La	3127a	3127a		Sm	3147a	—
Be	3105a	3105a		Li	3129a	3129a		Sn	3161a	1057b
Bi	3106	3106		Lu	3130a	—		SO_4^{-2}	3181	—
Br^-	3184	—		Mg	3131a	3131a		Sr	3153a	3153a
Ca	3109a	3109a		Mn	3132	3132		Ta	3155	—
Cd	3108	1053a		Mo	3134	3134		Tb	3157a	—
Ce	3110	3110		Na	3152a	3152a		Te	3156	—
Cl^-	3182	1818a		Nb	3137	—		Th	3159	—
Co	3113	3113		Nd	3135a	—		Ti	3162a	3162a
Cr	3112a	1078b		Ni	3136	1065b		Tl	3158	3158
Cs	3111a	—		NO_3^-	3185	—		Tm	3160a	—
Cu	3114	1080a		P	3139a	3139a		U	3164	—
Dy	3115a	—		Pb	3128	3128		V	3165	1052b
Er	3116a	—		Pd	3138	—		W	3163	3163
Eu	3117a	—		PO_4^{-3}	3186	—		Y	3167a	3167a
F^-	3183	—		Pr	3142a	—		Yb	3166a	—
Fe	3126a	1079b		Pt	3140	3140		Zn	3168a	3168a
Ga	3119a	—		Rb	3145a	—		Zr	3169	3169
Gd	3118a	—		Re	3143	—				
Ge	3120a	—		Rh	3144	3144				

Reagent

CaCO3_00004_00007

LECO Reference Material

LECO Corporation; Saint Joseph, Michigan USA

Description: Calcium Carbonate
Part No: 501-034
Lot No: 1043

ACCREDITED
Reference Material Producer
Certificate # 3285.02

LECO Reference Materials are traceable to national or international Certified Reference Materials whenever possible. When these Certified Reference Materials do not exist or are inadequate for calibration purposes, other appropriate materials are used. The accuracy of the reported results for LECO Reference Materials is greatly influenced by the accuracy of the primary reference materials used. The intended use of this reference material is for calibration purposes.

Category	Reference Value	+/-
% Carbon	12.01	0.04

- +/- indicates two times the standard deviation (2s).
- Refer to the reverse side of certificate for additional information regarding calculations.

Homogeneity:
Homogeneity of this material was confirmed through analysis of a random selection of bottled material and was found to be highly homogeneous.

Material:
LECO 501-034 Lot: 1043 is a calcium carbonate calibration material.

This reference material may be analyzed on a variety of macro analytical instrumentation. A minimum sample mass of 0.10 g is recommended for analysis. Refer to instrument manufacturer recommendations for nominal sample mass.

Traceability:
The following Certified Reference Material was used to validate the analytical data:
NIST SRM 915b Calcium Carbonate @ 12.0% Carbon

Preparation:
This reference material is suitable for use directly from the bottle without additional preparation.

Analysis:
LECO analytical instruments were used to characterize this material. This material was analyzed by high temperature combustion using a resistance furnace utilizing LECO infrared (IR) detection technology.

Category	Method/Detection	n
% Carbon	Combustion/IR	30

Certificate Number: 501-034-1043.0

Reference Material

Analysis Data:

Data Set	Number of Analyses	% Carbon	Carbon Standard Dev.	Method	Instrument
1	10	12.023	0.013	TSL-C007	LECO SC632
2	10	12.024	0.005	TSL-C007	LECO SC832
3	10	11.994	0.019	TSL-C007	LECO CHN628 Ar
Average		12.014			
Std Dev		0.019			

- Each Data Set value represents an average of the sample analyses.
- Underline indicates last significant digit.

Expiration:
ISO Guide 31 States that the certificate should contain an expiration date for all materials where instability has been demonstrated or considered possible, after which the certified value is no longer guaranteed by the certifying body. This reference material is valid within the stated deviation until **August 17th, 2020** provided the RM is stored in its original bottle at room temperature. This reference material is nullified if it is contaminated or otherwise altered.

Participating Laboratories:
Lab:
LECO Technical Services Laboratory

Accreditation:
A2LA Accredited to ISO 17025:2005 Cert. # 3285.01

Calculations:
In compliance with the requirements of ISO Guides 31, 34 and 35 for the production of Reference Materials, the values for this material were calculated using a mean and standard deviation of the overall data.

References:
LECO TSL-C007: In house method for the analysis of pure compound material

ISO Standard 17025:2005 General requirements for the competence of testing and calibration laboratories.
ISO Guide 30:1992 Terms and definitions used in connection with reference materials.
ISO Guide 31:2000 Reference Materials-Contents of certificates and labels.
ISO Guide 33:2000 Uses of certified reference materials.
ISO Guide 34:2009 General requirements for the competence of reference material producers.
ISO Guide 35:2006 Reference Materials-General and statistical principles for certification.

ASTM Documents available from ASTM, 1916 Race Street, Philadelphia, PA, 19103
ISO Guides and Standards available from Global Engineering – www.global.ihs.com

Dennis Lawrenz

Approved by: Dennis Lawrenz
Technical Services Laboratory Director
Date of release: August 17th, 2015

1821631
ID: CaCO3_00004_00007
Exp 08/17/20 Prpd:RSB Opn:11/09/16
CaCO3-12%TC Second Source

LECO Corporation • Technical Services Laboratory
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Phone: 800-292-6141 • Fax: 269-982-8977 • www.leco.com
info@leco.com • A2LA Accredited to ISO 17025:2005 Cert. # 3285.01
LECO is a registered trademark of LECO Corporation.

Certificate Number: 501-034-1043.0

Reagent

CaCO3_00008

Fisher Scientific

1 Reagent Lane
Fair Lawn, NJ 07410
201.796.7100 tel
201.796.1329 fax

Certificate of Analysis

Fisher Scientific's Quality System has been found to conform to Quality Management System Standard ISO9001:2008 standard by SAI Global Certificate Number CERT - 0090918

This is to certify that units of the lot number below were tested and found to comply with the specifications of the grade listed. Certain data have been supplied by third parties. Fisher Scientific expressly disclaims all warranties, expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose. Certain products (USP/FCC/NF/EP/BP/JP grades) are sold for use in food, drug, or medical device manufacturing. Fisher does not claim regulatory coverage under 21 CFR nor maintain DMF's with the FDA. The following are the actual analytical results obtained:

Catalog Number	**C64**	**Quality Test / Release Date**	**9/30/2016**
Lot Number	**165927**		
Description	**CALCIUM CARBONATE, A.C.S.**		
Country of Origin	**United States**	*** Suggested Retest Date**	**Sep-2021**

Result name	Units	Specifications	Test Value
APPEARANCE		REPORT	White powder
AMMONIUM	%	<= 0.003	<0.0030
ASSAY	%	>= 99.0	100.2
BARIUM (Ba)	%	<= 0.01	<0.010
CHLORIDE	%	<= 0.001	<0.0010
FLUORIDE	%	<= 0.0015	<0.0015
HEAVY METALS (as Pb)	%	<= 0.001	<0.0010
IDENTIFICATION	PASS/FAIL	= PASS TEST	PASS TEST
INSOLUBLE IN DILUTE HCL	%	<= 0.01	<0.010
IRON (Fe)	%	<= 0.003	<0.0030
MAGNESIUM	%	<= 0.02	<0.005
POTASSIUM (K)	%	<= 0.01	<0.005
SODIUM (Na)	%	<= 0.1	<0.01
STRONTIUM (Sr)	%	<= 0.1	<0.01
SULFATE (SO4)	%	<= 0.01	<0.010
WATER-SOLUBLE TITRABLE BASE	MEQ/G	<= 0.002	<0.0020

1947764
ID: CaCO3_00008
Exp: 06/02/27 Prpd: SPP
CaCO3-12%TC Second :

SDG 6/7/17

CERTIFIED BY

Teresa Bailey-Wyche

Quality Assurance Specialist - Certificate of Analysis Fair Lawn

Note: The data listed is valid for all package sizes of this lot of this product, expressed as a extension of this catalog number listed above. If there are any questions with this certificate, please call Chemical Services at (800) 227-6701.
*Based on suggested storage condition.

Reagent

TOCS_LCS_00008

ERA
A Waters Company

Reference Materials

▪ Certificate of Analysis ▪

Product:	Nutrients in Soil
Catalog Number:	542
Lot No.	D096-542
Certificate Issue Date:	October 19, 2017
Expiration Date:	June 30, 2020
Revision Number:	Original

2186025
ID: TOCS_LCS_00008
Exp: 06/30/20 Prpd: Z1T
2440-6790 mg/kg TOC

Product use instructions are included as part of the certification packet and are paginated separately from this Certificate of Analysis. Please reference the product use instructions for catalog #542 revision 030512.

CERTIFICATION

Parameter	Certified Value[1]	Reference Value[6]	Uncertainty[2]	QC Performance Acceptance Limits[3]	PT Performance Acceptance Limits[4]
	mg/kg	mg/kg	%	mg/kg	mg/kg
Ammonia as N	781	819	3.76	569 - 1070	473 - 1170
Total Kjeldahl Nitrogen	1330	1300	8.01	831 - 1760	704 - 1890
Total Organic Carbon (TOC)	3890	4270	0.442	1540 - 7000	1960 - 6590
Total Phosphorus	1170	1060	7.45	558 - 1570	269 - 1860

ANALYTICAL VERIFICATION

Parameter	Certified Value[1]	Proficiency Testing Study			NIST Traceability	
		Mean	Recovery[5]	n	SRM Number	Recovery
	mg/kg	mg/kg	%			%
Ammonia as N	781	819	105	34	-	-
Total Kjeldahl Nitrogen	1330	1300	97.8	28	-	-
Total Organic Carbon (TOC)	3890	4270	110	28	-	-
Total Phosphorus	1170	1060	90.7	51	-	-

16341 Table Mountain Pkwy ▪ Golden, CO 80403 ▪ T: 800.372.0122 ▪ 303.431.8454 ▪ www.eraqc.com

METALS

COVER PAGE
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job Number: 140-15390-1

SDG No.:

Project: RDMorrow (19117989)

Client Sample ID	Lab Sample ID
MW-2 (14-19)	140-15390-1
MW-5 (12-17)	140-15390-2
MW-106 (10-15)	140-15390-3
MW-107 (19-24)	140-15390-4

Comments:

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 1

Client Sample ID: MW-2 (14-19)

Lab Sample ID: 140-15390-1

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 10:15

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 86.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	ND	46	7.4	mg/Kg			4	6010B SEP
7440-48-4	Cobalt	ND	12	0.21	mg/Kg			4	6010B SEP
7439-89-6	Iron	ND	23	13	mg/Kg			4	6010B SEP
7439-93-2	Li	ND	12	0.70	mg/Kg			4	6010B SEP
7439-96-5	Manganese	1.1	3.5	0.14	mg/Kg	J		4	6010B SEP
7439-98-7	Mo	ND	9.3	0.38	mg/Kg			4	6010B SEP
7440-28-0	Thallium	ND	8.1	0.98	mg/Kg			4	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 2

Client Sample ID: MW-2 (14-19)

Lab Sample ID: 140-15390-1

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 10:15

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 86.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	ND	35	5.6	mg/Kg		*	3	6010B SEP
7440-48-4	Cobalt	ND	8.7	0.22	mg/Kg			3	6010B SEP
7439-89-6	Iron	ND	17	10	mg/Kg		*	3	6010B SEP
7439-93-2	Li	ND	8.7	0.52	mg/Kg			3	6010B SEP
7439-96-5	Manganese	ND	2.6	0.98	mg/Kg			3	6010B SEP
7439-98-7	Mo	ND	7.0	0.29	mg/Kg			3	6010B SEP
7440-28-0	Thallium	ND	6.1	0.73	mg/Kg			3	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 3

Client Sample ID: MW-2 (14-19)

Lab Sample ID: 140-15390-1

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 10:15

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 86.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	11	12	2.4	mg/Kg	J		1	6010B SEP
7440-48-4	Cobalt	ND	2.9	0.052	mg/Kg			1	6010B SEP
7439-89-6	Iron	13	5.8	3.4	mg/Kg			1	6010B SEP
7439-93-2	Li	ND	2.9	0.17	mg/Kg			1	6010B SEP
7439-96-5	Manganese	0.16	0.87	0.031	mg/Kg	J	B	1	6010B SEP
7439-98-7	Mo	ND	2.3	0.095	mg/Kg			1	6010B SEP
7440-28-0	Thallium	ND	2.0	0.24	mg/Kg			1	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 4

Client Sample ID: MW-2 (14-19)

Lab Sample ID: 140-15390-1

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 10:15

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 86.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	250	12	1.9	mg/Kg			1	6010B SEP
7440-48-4	Cobalt	0.14	2.9	0.062	mg/Kg	J		1	6010B SEP
7439-89-6	Iron	340	5.8	3.4	mg/Kg			1	6010B SEP
7439-93-2	Li	ND	2.9	0.17	mg/Kg			1	6010B SEP
7439-96-5	Manganese	0.58	0.87	0.15	mg/Kg	J		1	6010B SEP
7439-98-7	Mo	ND	2.3	0.095	mg/Kg			1	6010B SEP
7440-28-0	Thallium	ND	2.0	0.34	mg/Kg			1	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 5

Client Sample ID: MW-2 (14-19)　　Lab Sample ID: 140-15390-1

Lab Name: Eurofins TestAmerica, Knoxville　　Job No.: 140-15390-1

SDG ID.:

Matrix: Solid　　Date Sampled: 05/23/2019 10:15

Reporting Basis: DRY　　Date Received: 05/25/2019 10:30

% Solids: 86.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	130	170	27	mg/Kg	J	*	5	6010B SEP
7440-48-4	Cobalt	ND	44	0.70	mg/Kg		*	5	6010B SEP
7439-89-6	Iron	ND	87	51	mg/Kg		*	5	6010B SEP
7439-93-2	Li	ND	44	2.6	mg/Kg			5	6010B SEP
7439-96-5	Manganese	ND	13	2.1	mg/Kg		*	5	6010B SEP
7439-98-7	Mo	ND	35	1.5	mg/Kg			5	6010B SEP
7440-28-0	Thallium	ND	30	4.1	mg/Kg		*	5	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 6

Client Sample ID: MW-2 (14-19)

Lab Sample ID: 140-15390-1

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 10:15

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 86.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	370	12	1.9	mg/Kg			1	6010B SEP
7440-48-4	Cobalt	0.089	2.9	0.053	mg/Kg	J		1	6010B SEP
7439-89-6	Iron	480	5.8	3.4	mg/Kg			1	6010B SEP
7439-93-2	Li	0.21	2.9	0.17	mg/Kg	J		1	6010B SEP
7439-96-5	Manganese	0.74	0.87	0.29	mg/Kg	J		1	6010B SEP
7439-98-7	Mo	ND	2.3	0.12	mg/Kg			1	6010B SEP
7440-28-0	Thallium	ND	2.0	0.24	mg/Kg			1	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 7

Client Sample ID: MW-2 (14-19)

Lab Sample ID: 140-15390-1

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 10:15

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 86.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	1500	120	19	mg/Kg			10	6010B SEP
7440-48-4	Cobalt	ND	5.8	0.35	mg/Kg			2	6010B SEP
7439-89-6	Iron	620	5.8	4.8	mg/Kg			1	6010B SEP
7439-93-2	Li	1.6	2.9	0.17	mg/Kg	J		1	6010B SEP
7439-96-5	Manganese	4.1	0.87	0.060	mg/Kg		B	1	6010B SEP
7439-98-7	Mo	ND	2.3	0.095	mg/Kg			1	6010B SEP
7440-28-0	Thallium	ND	4.1	0.42	mg/Kg			2	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - SUM OF STEPS 1-7

Client Sample ID: MW-2 (14-19)

Lab Sample ID: 140-15390-1

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 10:15

Reporting Basis: WET

Date Received: 05/25/2019 10:30

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	2200	10	1.6	mg/Kg			1	6010B SEP
7440-48-4	Cobalt	0.23	2.5	0.023	mg/Kg	J		1	6010B SEP
7439-89-6	Iron	1500	5.0	4.1	mg/Kg			1	6010B SEP
7439-93-2	Li	1.8	2.5	0.15	mg/Kg	J		1	6010B SEP
7439-96-5	Manganese	6.6	0.75	0.052	mg/Kg			1	6010B SEP
7439-98-7	Mo	ND	2.0	0.082	mg/Kg			1	6010B SEP
7440-28-0	Thallium	ND	1.8	0.18	mg/Kg			1	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: MW-2 (14-19)

Lab Sample ID: 140-15390-1

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 10:15

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 86.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	2800	120	19	mg/Kg			10	6010B
7440-48-4	Cobalt	0.43	5.8	0.35	mg/Kg	J		2	6010B
7439-89-6	Iron	710	5.8	4.8	mg/Kg			1	6010B
7439-93-2	Lithium	2.2	2.9	0.17	mg/Kg	J		1	6010B
7439-96-5	Manganese	11	0.87	0.060	mg/Kg			1	6010B
7439-98-7	Molybdenum	0.24	2.3	0.095	mg/Kg	J		1	6010B
7440-28-0	Thallium	ND	4.1	0.42	mg/Kg			2	6010B

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 1

Client Sample ID: MW-5 (12-17)

Lab Sample ID: 140-15390-2

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 12:50

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 87.3

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	ND	46	7.3	mg/Kg			4	6010B SEP
7440-48-4	Cobalt	ND	11	0.21	mg/Kg			4	6010B SEP
7439-89-6	Iron	ND	23	13	mg/Kg			4	6010B SEP
7439-93-2	Li	1.1	11	0.69	mg/Kg	J		4	6010B SEP
7439-96-5	Manganese	0.53	3.4	0.14	mg/Kg	J		4	6010B SEP
7439-98-7	Mo	3.1	9.2	0.38	mg/Kg	J		4	6010B SEP
7440-28-0	Thallium	ND	8.0	0.96	mg/Kg			4	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 2

Client Sample ID: MW-5 (12-17)

Lab Sample ID: 140-15390-2

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 12:50

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 87.3

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	ND	34	5.5	mg/Kg		*	3	6010B SEP
7440-48-4	Cobalt	ND	8.6	0.22	mg/Kg			3	6010B SEP
7439-89-6	Iron	ND	17	10	mg/Kg		*	3	6010B SEP
7439-93-2	Li	ND	8.6	0.52	mg/Kg			3	6010B SEP
7439-96-5	Manganese	ND	2.6	0.96	mg/Kg			3	6010B SEP
7439-98-7	Mo	ND	6.9	0.28	mg/Kg			3	6010B SEP
7440-28-0	Thallium	ND	6.0	0.72	mg/Kg			3	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 3

Client Sample ID: MW-5 (12-17)

Lab Sample ID: 140-15390-2

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 12:50

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 87.3

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	20	11	2.4	mg/Kg			1	6010B SEP
7440-48-4	Cobalt	ND	2.9	0.052	mg/Kg			1	6010B SEP
7439-89-6	Iron	59	5.7	3.3	mg/Kg			1	6010B SEP
7439-93-2	Li	ND	2.9	0.17	mg/Kg			1	6010B SEP
7439-96-5	Manganese	0.98	0.86	0.031	mg/Kg		B	1	6010B SEP
7439-98-7	Mo	0.92	2.3	0.094	mg/Kg	J		1	6010B SEP
7440-28-0	Thallium	ND	2.0	0.24	mg/Kg			1	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 4

Client Sample ID: MW-5 (12-17)

Lab Sample ID: 140-15390-2

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 12:50

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 87.3

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	320	11	1.8	mg/Kg			1	6010B SEP
7440-48-4	Cobalt	ND	2.9	0.061	mg/Kg			1	6010B SEP
7439-89-6	Iron	500	5.7	3.3	mg/Kg			1	6010B SEP
7439-93-2	Li	0.82	2.9	0.17	mg/Kg	J		1	6010B SEP
7439-96-5	Manganese	1.3	0.86	0.15	mg/Kg			1	6010B SEP
7439-98-7	Mo	0.49	2.3	0.094	mg/Kg	J		1	6010B SEP
7440-28-0	Thallium	ND	2.0	0.33	mg/Kg			1	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 5

Client Sample ID: MW-5 (12-17)

Lab Sample ID: 140-15390-2

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 12:50

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 87.3

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	140	170	27	mg/Kg	J	*	5	6010B SEP
7440-48-4	Cobalt	ND	43	0.69	mg/Kg		*	5	6010B SEP
7439-89-6	Iron	ND	86	50	mg/Kg		*	5	6010B SEP
7439-93-2	Li	ND	43	2.5	mg/Kg			5	6010B SEP
7439-96-5	Manganese	ND	13	2.1	mg/Kg		*	5	6010B SEP
7439-98-7	Mo	ND	34	1.4	mg/Kg			5	6010B SEP
7440-28-0	Thallium	ND	30	4.0	mg/Kg		*	5	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 6

Client Sample ID: MW-5 (12-17)

Lab Sample ID: 140-15390-2

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 12:50

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 87.3

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	300	11	1.8	mg/Kg			1	6010B SEP
7440-48-4	Cobalt	ND	2.9	0.053	mg/Kg			1	6010B SEP
7439-89-6	Iron	120	5.7	3.3	mg/Kg			1	6010B SEP
7439-93-2	Li	0.43	2.9	0.17	mg/Kg	J		1	6010B SEP
7439-96-5	Manganese	0.60	0.86	0.29	mg/Kg	J		1	6010B SEP
7439-98-7	Mo	ND	2.3	0.11	mg/Kg			1	6010B SEP
7440-28-0	Thallium	ND	2.0	0.24	mg/Kg			1	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 7

Client Sample ID: MW-5 (12-17)

Lab Sample ID: 140-15390-2

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 12:50

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 87.3

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	1200	110	18	mg/Kg			10	6010B SEP
7440-48-4	Cobalt	ND	5.7	0.34	mg/Kg			2	6010B SEP
7439-89-6	Iron	250	5.7	4.7	mg/Kg			1	6010B SEP
7439-93-2	Li	1.4	2.9	0.17	mg/Kg	J		1	6010B SEP
7439-96-5	Manganese	2.4	0.86	0.060	mg/Kg		B	1	6010B SEP
7439-98-7	Mo	ND	2.3	0.094	mg/Kg			1	6010B SEP
7440-28-0	Thallium	ND	4.0	0.41	mg/Kg			2	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - SUM OF STEPS 1-7

Client Sample ID: MW-5 (12-17)

Lab Sample ID: 140-15390-2

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 12:50

Reporting Basis: WET

Date Received: 05/25/2019 10:30

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	2000	10	1.6	mg/Kg			1	6010B SEP
7440-48-4	Cobalt	ND	2.5	0.023	mg/Kg			1	6010B SEP
7439-89-6	Iron	930	5.0	4.1	mg/Kg			1	6010B SEP
7439-93-2	Li	3.8	2.5	0.15	mg/Kg			1	6010B SEP
7439-96-5	Manganese	5.7	0.75	0.052	mg/Kg			1	6010B SEP
7439-98-7	Mo	4.5	2.0	0.082	mg/Kg			1	6010B SEP
7440-28-0	Thallium	ND	1.8	0.18	mg/Kg			1	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: MW-5 (12-17)

Lab Sample ID: 140-15390-2

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 12:50

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 87.3

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	2900	110	18	mg/Kg			10	6010B
7440-48-4	Cobalt	0.38	5.7	0.34	mg/Kg	J		2	6010B
7439-89-6	Iron	1300	5.7	4.7	mg/Kg			1	6010B
7439-93-2	Lithium	5.3	2.9	0.17	mg/Kg			1	6010B
7439-96-5	Manganese	11	0.86	0.060	mg/Kg			1	6010B
7439-98-7	Molybdenum	6.0	2.3	0.094	mg/Kg			1	6010B
7440-28-0	Thallium	ND	4.0	0.41	mg/Kg			2	6010B

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 1

Client Sample ID: MW-106 (10-15)

Lab Sample ID: 140-15390-3

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 13:40

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 76.5

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	25	52	8.4	mg/Kg	J		4	6010B SEP
7440-48-4	Cobalt	0.32	13	0.24	mg/Kg	J		4	6010B SEP
7439-89-6	Iron	ND	26	15	mg/Kg			4	6010B SEP
7439-93-2	Li	ND	13	0.78	mg/Kg			4	6010B SEP
7439-96-5	Manganese	8.7	3.9	0.16	mg/Kg			4	6010B SEP
7439-98-7	Mo	ND	10	0.43	mg/Kg			4	6010B SEP
7440-28-0	Thallium	ND	9.1	1.1	mg/Kg			4	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 2

Client Sample ID: MW-106 (10-15)

Lab Sample ID: 140-15390-3

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 13:40

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 76.5

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	12	39	6.3	mg/Kg	J	*	3	6010B SEP
7440-48-4	Cobalt	ND	9.8	0.25	mg/Kg			3	6010B SEP
7439-89-6	Iron	ND	20	11	mg/Kg		*	3	6010B SEP
7439-93-2	Li	ND	9.8	0.59	mg/Kg			3	6010B SEP
7439-96-5	Manganese	ND	2.9	1.1	mg/Kg			3	6010B SEP
7439-98-7	Mo	ND	7.8	0.32	mg/Kg			3	6010B SEP
7440-28-0	Thallium	ND	6.9	0.82	mg/Kg			3	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 3

Client Sample ID: MW-106 (10-15)

Lab Sample ID: 140-15390-3

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 13:40

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 76.5

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	38	13	2.7	mg/Kg			1	6010B SEP
7440-48-4	Cobalt	0.093	3.3	0.059	mg/Kg	J		1	6010B SEP
7439-89-6	Iron	120	6.5	3.8	mg/Kg			1	6010B SEP
7439-93-2	Li	ND	3.3	0.20	mg/Kg			1	6010B SEP
7439-96-5	Manganese	4.7	0.98	0.035	mg/Kg		B	1	6010B SEP
7439-98-7	Mo	0.11	2.6	0.11	mg/Kg	J		1	6010B SEP
7440-28-0	Thallium	ND	2.3	0.27	mg/Kg			1	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 4

Client Sample ID: MW-106 (10-15)

Lab Sample ID: 140-15390-3

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 13:40

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 76.5

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	600	13	2.1	mg/Kg			1	6010B SEP
7440-48-4	Cobalt	0.21	3.3	0.069	mg/Kg	J		1	6010B SEP
7439-89-6	Iron	760	6.5	3.8	mg/Kg			1	6010B SEP
7439-93-2	Li	0.25	3.3	0.20	mg/Kg	J		1	6010B SEP
7439-96-5	Manganese	5.2	0.98	0.17	mg/Kg			1	6010B SEP
7439-98-7	Mo	ND	2.6	0.11	mg/Kg			1	6010B SEP
7440-28-0	Thallium	ND	2.3	0.38	mg/Kg			1	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 5

Client Sample ID: MW-106 (10-15)

Lab Sample ID: 140-15390-3

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 13:40

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 76.5

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	110	200	31	mg/Kg	J	*	5	6010B SEP
7440-48-4	Cobalt	ND	49	0.78	mg/Kg		*	5	6010B SEP
7439-89-6	Iron	ND	98	57	mg/Kg		*	5	6010B SEP
7439-93-2	Li	ND	49	2.9	mg/Kg			5	6010B SEP
7439-96-5	Manganese	ND	15	2.4	mg/Kg		*	5	6010B SEP
7439-98-7	Mo	ND	39	1.6	mg/Kg			5	6010B SEP
7440-28-0	Thallium	ND	34	4.6	mg/Kg		*	5	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 6

Client Sample ID: MW-106 (10-15)

Lab Sample ID: 140-15390-3

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 13:40

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 76.5

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	640	13	2.1	mg/Kg			1	6010B SEP
7440-48-4	Cobalt	0.16	3.3	0.060	mg/Kg	J		1	6010B SEP
7439-89-6	Iron	380	6.5	3.8	mg/Kg			1	6010B SEP
7439-93-2	Li	0.46	3.3	0.20	mg/Kg	J		1	6010B SEP
7439-96-5	Manganese	2.2	0.98	0.33	mg/Kg			1	6010B SEP
7439-98-7	Mo	ND	2.6	0.13	mg/Kg			1	6010B SEP
7440-28-0	Thallium	ND	2.3	0.27	mg/Kg			1	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 7

Client Sample ID: MW-106 (10-15)

Lab Sample ID: 140-15390-3

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 13:40

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 76.5

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	4900	130	21	mg/Kg			10	6010B SEP
7440-48-4	Cobalt	ND	6.5	0.39	mg/Kg			2	6010B SEP
7439-89-6	Iron	910	6.5	5.4	mg/Kg			1	6010B SEP
7439-93-2	Li	2.9	3.3	0.20	mg/Kg	J		1	6010B SEP
7439-96-5	Manganese	14	0.98	0.068	mg/Kg		B	1	6010B SEP
7439-98-7	Mo	ND	2.6	0.11	mg/Kg			1	6010B SEP
7440-28-0	Thallium	ND	4.6	0.47	mg/Kg			2	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - SUM OF STEPS 1-7

Client Sample ID: MW-106 (10-15)

Lab Sample ID: 140-15390-3

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 13:40

Reporting Basis: WET

Date Received: 05/25/2019 10:30

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	6400	10	1.6	mg/Kg			1	6010B SEP
7440-48-4	Cobalt	0.79	2.5	0.023	mg/Kg	J		1	6010B SEP
7439-89-6	Iron	2200	5.0	4.1	mg/Kg			1	6010B SEP
7439-93-2	Li	3.6	2.5	0.15	mg/Kg			1	6010B SEP
7439-96-5	Manganese	35	0.75	0.052	mg/Kg			1	6010B SEP
7439-98-7	Mo	0.11	2.0	0.082	mg/Kg	J		1	6010B SEP
7440-28-0	Thallium	ND	1.8	0.18	mg/Kg			1	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: MW-106 (10-15)

Lab Sample ID: 140-15390-3

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 13:40

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 76.5

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	7900	130	21	mg/Kg			10	6010B
7440-48-4	Cobalt	1.5	3.3	0.20	mg/Kg	J		1	6010B
7439-89-6	Iron	2400	6.5	5.4	mg/Kg			1	6010B
7439-93-2	Lithium	4.2	3.3	0.20	mg/Kg			1	6010B
7439-96-5	Manganese	54	0.98	0.068	mg/Kg			1	6010B
7439-98-7	Molybdenum	0.27	2.6	0.11	mg/Kg	J		1	6010B
7440-28-0	Thallium	ND	2.3	0.24	mg/Kg			1	6010B

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 1

Client Sample ID: MW-107 (19-24)

Lab Sample ID: 140-15390-4

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 14:50

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 86.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	37	46	7.4	mg/Kg	J		4	6010B SEP
7440-48-4	Cobalt	0.31	12	0.21	mg/Kg	J		4	6010B SEP
7439-89-6	Iron	ND	23	13	mg/Kg			4	6010B SEP
7439-93-2	Li	ND	12	0.70	mg/Kg			4	6010B SEP
7439-96-5	Manganese	10	3.5	0.14	mg/Kg			4	6010B SEP
7439-98-7	Mo	ND	9.3	0.38	mg/Kg			4	6010B SEP
7440-28-0	Thallium	ND	8.1	0.98	mg/Kg			4	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 2

Client Sample ID: MW-107 (19-24)

Lab Sample ID: 140-15390-4

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 14:50

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 86.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	18	35	5.6	mg/Kg	J	*	3	6010B SEP
7440-48-4	Cobalt	ND	8.7	0.22	mg/Kg			3	6010B SEP
7439-89-6	Iron	ND	17	10	mg/Kg		*	3	6010B SEP
7439-93-2	Li	ND	8.7	0.52	mg/Kg			3	6010B SEP
7439-96-5	Manganese	ND	2.6	0.98	mg/Kg			3	6010B SEP
7439-98-7	Mo	ND	7.0	0.29	mg/Kg			3	6010B SEP
7440-28-0	Thallium	ND	6.1	0.73	mg/Kg			3	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 3

Client Sample ID: MW-107 (19-24)

Lab Sample ID: 140-15390-4

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 14:50

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 86.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	47	12	2.4	mg/Kg			1	6010B SEP
7440-48-4	Cobalt	0.070	2.9	0.052	mg/Kg	J		1	6010B SEP
7439-89-6	Iron	160	5.8	3.4	mg/Kg			1	6010B SEP
7439-93-2	Li	ND	2.9	0.17	mg/Kg			1	6010B SEP
7439-96-5	Manganese	5.7	0.87	0.031	mg/Kg		B	1	6010B SEP
7439-98-7	Mo	0.29	2.3	0.095	mg/Kg	J		1	6010B SEP
7440-28-0	Thallium	ND	2.0	0.24	mg/Kg			1	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 4

Client Sample ID: MW-107 (19-24)

Lab Sample ID: 140-15390-4

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 14:50

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 86.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	600	12	1.9	mg/Kg			1	6010B SEP
7440-48-4	Cobalt	0.13	2.9	0.062	mg/Kg	J		1	6010B SEP
7439-89-6	Iron	620	5.8	3.4	mg/Kg			1	6010B SEP
7439-93-2	Li	0.32	2.9	0.17	mg/Kg	J		1	6010B SEP
7439-96-5	Manganese	4.1	0.87	0.15	mg/Kg			1	6010B SEP
7439-98-7	Mo	0.13	2.3	0.095	mg/Kg	J		1	6010B SEP
7440-28-0	Thallium	ND	2.0	0.34	mg/Kg			1	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 5

Client Sample ID: MW-107 (19-24)

Lab Sample ID: 140-15390-4

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 14:50

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 86.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	130	170	27	mg/Kg	J	*	5	6010B SEP
7440-48-4	Cobalt	ND	44	0.70	mg/Kg		*	5	6010B SEP
7439-89-6	Iron	ND	87	51	mg/Kg		*	5	6010B SEP
7439-93-2	Li	ND	44	2.6	mg/Kg			5	6010B SEP
7439-96-5	Manganese	ND	13	2.1	mg/Kg		*	5	6010B SEP
7439-98-7	Mo	ND	35	1.5	mg/Kg			5	6010B SEP
7440-28-0	Thallium	ND	30	4.1	mg/Kg		*	5	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 6

Client Sample ID: MW-107 (19-24)

Lab Sample ID: 140-15390-4

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 14:50

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 86.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	650	12	1.9	mg/Kg			1	6010B SEP
7440-48-4	Cobalt	0.11	2.9	0.053	mg/Kg	J		1	6010B SEP
7439-89-6	Iron	340	5.8	3.4	mg/Kg			1	6010B SEP
7439-93-2	Li	0.41	2.9	0.17	mg/Kg	J		1	6010B SEP
7439-96-5	Manganese	1.5	0.87	0.29	mg/Kg			1	6010B SEP
7439-98-7	Mo	ND	2.3	0.11	mg/Kg			1	6010B SEP
7440-28-0	Thallium	ND	2.0	0.24	mg/Kg			1	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - STEP 7

Client Sample ID: MW-107 (19-24)

Lab Sample ID: 140-15390-4

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 14:50

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 86.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	2000	120	19	mg/Kg			10	6010B SEP
7440-48-4	Cobalt	ND	5.8	0.35	mg/Kg			2	6010B SEP
7439-89-6	Iron	410	5.8	4.8	mg/Kg			1	6010B SEP
7439-93-2	Li	1.4	2.9	0.17	mg/Kg	J		1	6010B SEP
7439-96-5	Manganese	4.3	0.87	0.060	mg/Kg		B	1	6010B SEP
7439-98-7	Mo	ND	2.3	0.095	mg/Kg			1	6010B SEP
7440-28-0	Thallium	ND	4.1	0.42	mg/Kg			2	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS - SUM OF STEPS 1-7

Client Sample ID: MW-107 (19-24)

Lab Sample ID: 140-15390-4

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 14:50

Reporting Basis: WET

Date Received: 05/25/2019 10:30

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	3500	10	1.6	mg/Kg			1	6010B SEP
7440-48-4	Cobalt	0.62	2.5	0.023	mg/Kg	J		1	6010B SEP
7439-89-6	Iron	1500	5.0	4.1	mg/Kg			1	6010B SEP
7439-93-2	Li	2.1	2.5	0.15	mg/Kg	J		1	6010B SEP
7439-96-5	Manganese	26	0.75	0.052	mg/Kg			1	6010B SEP
7439-98-7	Mo	0.42	2.0	0.082	mg/Kg	J		1	6010B SEP
7440-28-0	Thallium	ND	1.8	0.18	mg/Kg			1	6010B SEP

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: MW-107 (19-24)

Lab Sample ID: 140-15390-4

Lab Name: Eurofins TestAmerica, Knoxville

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 14:50

Reporting Basis: DRY

Date Received: 05/25/2019 10:30

% Solids: 86.1

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	6000	120	19	mg/Kg			10	6010B
7440-48-4	Cobalt	1.0	5.8	0.35	mg/Kg	J		2	6010B
7439-89-6	Iron	2000	5.8	4.8	mg/Kg			1	6010B
7439-93-2	Lithium	3.5	2.9	0.17	mg/Kg			1	6010B
7439-96-5	Manganese	31	0.87	0.060	mg/Kg			1	6010B
7439-98-7	Molybdenum	0.72	2.3	0.095	mg/Kg	J		1	6010B
7440-28-0	Thallium	ND	4.1	0.42	mg/Kg			2	6010B

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

ICV Source: 90XXICVS_00095   Concentration Units: ug/L

CCV Source: 90CVCCVP_00393

Analyte	ICV 140-30900/4 06/17/2019 10:30				CCV 140-30900/41 06/17/2019 13:38				CCV 140-30900/53 06/17/2019 14:40			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Aluminum	12200		12500	98	24700		25000	99	24600		25000	98
Cobalt	1010		1000	101	2050		2000	103	2060		2000	103
Iron	12600		12500	101	26100		25000	104	25700		25000	103
Li	970		1000	97	1920		2000	96	1970		2000	99
Manganese	1020		1000	102	1990		2000	100	1940		2000	97
Mo	1010		1000	101	2050		2000	103	2090		2000	104
Thallium	515		500	103	970		1000	97	966		1000	97

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

ICV Source: 90XXICVS_00095   Concentration Units: ug/L

CCV Source: 90CVCCVP_00393

Analyte	CCV 140-30900/65 06/17/2019 15:43				CCV 140-30900/78 06/17/2019 17:02				CCV 140-30900/83 06/17/2019 17:30			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Aluminum	24600		25000	98	24500		25000	98	24600		25000	99
Cobalt	2040		2000	102	2050		2000	102	2050		2000	103
Iron	25600		25000	102	25300		25000	101	25700		25000	103
Li	2010		2000	100	1980		2000	99	1970		2000	98
Manganese	1970		2000	98	1990		2000	99	2020		2000	101
Mo	2060		2000	103	2060		2000	103	2050		2000	103
Thallium	976		1000	98	990		1000	99	997		1000	100

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

CALIBRATION VERIFICATIONS
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

ICV Source: 90XXICVS_00095   Concentration Units: ug/L

CCV Source: 90XXCCVLP_00360

Analyte	CCVL 140-30900/3 06/17/2019 10:25				ICV 140-30900/4 06/17/2019 10:30							
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Aluminum	12400		12500	99	12200		12500	98				
Cobalt	1020		1000	102	1010		1000	101				
Iron	12800		12500	102	12600		12500	101				
Li	989		1000	99	970		1000	97				
Manganese	1050		1000	105	1020		1000	102				
Mo	1020		1000	102	1010		1000	101				
Thallium	512		500	102	515		500	103				

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

ICV Source: 90XXICVS_00096 Concentration Units: ug/L

CCV Source: 90CVCCVP_00400

Analyte	ICV 140-31197/4 06/26/2019 16:28				CCV 140-31197/9 06/26/2019 16:54				CCV 140-31197/21 06/26/2019 17:56			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Aluminum	11900		12500	95	24400		25000	98	24300		25000	97
Cobalt	986		1000	99	1980		2000	99	1970		2000	99
Iron	12200		12500	97	25000		25000	100	24700		25000	99
Li	980		1000	98	1940		2000	97	1930		2000	97
Manganese	988		1000	99	2010		2000	101	1980		2000	99
Mo	1010		1000	101	1980		2000	99	1970		2000	99
Thallium	510		500	102	1000		1000	100	991		1000	99

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

ICV Source: 90XXICVS_00096   Concentration Units: ug/L

CCV Source: 90CVCCVP_00400

Analyte	CCV 140-31197/33 06/26/2019 18:57				CCV 140-31197/45 06/26/2019 19:59				CCV 140-31197/57 06/26/2019 21:02			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Aluminum	24700		25000	99	25100		25000	101	25700		25000	103
Cobalt	2000		2000	100	1990		2000	99	2000		2000	100
Iron	25300		25000	101	25600		25000	102	26100		25000	104
Li	1970		2000	98	1950		2000	97	1960		2000	98
Manganese	2010		2000	101	2020		2000	101	2050		2000	102
Mo	2010		2000	100	2000		2000	100	2010		2000	101
Thallium	1000		1000	100	993		1000	99	1000		1000	100

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

ICV Source: 90XXICVS_00096 Concentration Units: ug/L

CCV Source: 90CVCCVP_00400

Analyte	CCV 140-31197/69 06/26/2019 22:04				CCV 140-31197/78 06/26/2019 22:51							
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Aluminum	25800		25000	103	25800		25000	103				
Cobalt	2010		2000	100	2000		2000	100				
Iron	26300		25000	105	26300		25000	105				
Li	1960		2000	98	1950		2000	97				
Manganese	2050		2000	103	2050		2000	103				
Mo	2020		2000	101	2010		2000	101				
Thallium	1000		1000	100	996		1000	100				

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

ICV Source: 90XXICVS_00096 Concentration Units: ug/L

CCV Source: 90XXCCVLP_00367

Analyte	CCVL 140-31197/3 06/26/2019 16:11				ICV 140-31197/4 06/26/2019 16:28							
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Aluminum	12300		12500	98	11900		12500	95				
Cobalt	1010		1000	101	986		1000	99				
Iron	12500		12500	100	12200		12500	97				
Li	980		1000	98	980		1000	98				
Manganese	1020		1000	102	988		1000	99				
Mo	1010		1000	101	1010		1000	101				
Thallium	514		500	103	510		500	102				

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

ICV Source: 90XXICVS_00097   Concentration Units: ug/L

CCV Source: 90CVCCVP_00401

Analyte	ICV 140-31255/4 06/28/2019 10:17				CCV 140-31255/23 06/28/2019 12:01				CCV 140-31255/35 06/28/2019 13:03			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Aluminum	12200		12500	98	24300		25000	97	24000		25000	96
Cobalt	1000		1000	100	2050		2000	102	2040		2000	102
Iron	12500		12500	100	24600		25000	98	24400		25000	98
Li	985		1000	99	2030		2000	102	2020		2000	101
Manganese	1010		1000	101	2060		2000	103	2030		2000	101
Mo	1010		1000	101	2040		2000	102	2030		2000	101
Thallium	516		500	103	1040		1000	104	1030		1000	103

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

ICV Source: 90XXICVS_00097 Concentration Units: ug/L

CCV Source: 90CVCCVP_00401

Analyte	CCV 140-31255/47 06/28/2019 14:06				CCV 140-31255/58 06/28/2019 15:02				CCV 140-31255/70 06/28/2019 16:06			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Aluminum	24000		25000	96	24300		25000	97	24500		25000	98
Cobalt	2040		2000	102	2070		2000	103	2090		2000	104
Iron	24500		25000	98	24800		25000	99	25200		25000	101
Li	2010		2000	100	2020		2000	101	2050		2000	103
Manganese	2040		2000	102	2070		2000	103	2090		2000	104
Mo	2030		2000	101	2050		2000	103	2080		2000	104
Thallium	1040		1000	104	1050		1000	105	1060		1000	106

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

ICV Source: 90XXICVS_00097 Concentration Units: ug/L

CCV Source: 90CVCCVP_00401

Analyte	CCV 140-31255/82 06/28/2019 17:07				CCV 140-31255/87 06/28/2019 17:32				CCV 140-31255/98 06/28/2019 18:29			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Aluminum	24800		25000	99	24800		25000	99	24400		25000	98
Cobalt	2050		2000	103	2060		2000	103	1990		2000	99
Iron	25200		25000	101	25200		25000	101	25100		25000	100
Li	2020		2000	101	2020		2000	101	1990		2000	99
Manganese	2070		2000	103	2080		2000	104	2030		2000	102
Mo	2050		2000	103	2060		2000	103	2000		2000	100
Thallium	1040		1000	104	1040		1000	104	1000		1000	100

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

ICV Source: 90XXICVS_00097 Concentration Units: ug/L

CCV Source: 90CVCCVP_00401

Analyte	CCV 140-31255/107 06/28/2019 19:16											
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Aluminum	24700		25000	99								
Cobalt	2000		2000	100								
Iron	25400		25000	101								
Li	2000		2000	100								
Manganese	2050		2000	103								
Mo	2020		2000	101								
Thallium	1000		1000	100								

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

ICV Source: 90XXICVS_00097   Concentration Units: ug/L

CCV Source: 90XXCCVLP_00368

Analyte	CCVL 140-31255/3 06/28/2019 10:12				ICV 140-31255/4 06/28/2019 10:17							
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Aluminum	12500		12500	100	12200		12500	98				
Cobalt	1030		1000	103	1000		1000	100				
Iron	12700		12500	102	12500		12500	100				
Li	988		1000	99	985		1000	99				
Manganese	1050		1000	105	1010		1000	101				
Mo	1020		1000	102	1010		1000	101				
Thallium	520		500	104	516		500	103				

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2B-IN
CRQL CHECK STANDARD
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Method: 6010B SEP Instrument ID: DUO

Lab Sample ID: CRI 140-30900/40 Concentration Units: ug/L

CRQL Check Standard Source: 90XXCRDL100P_00408

Analyte	CRQL Check Standard				
	True	Found	Qualifiers	%R(1)	Limits
Aluminum	200	184	J	92	50-150
Cobalt	50.0	53.4		107	50-150
Iron	100	117		117	50-150
Li	50.0	50.3		101	50-150
Manganese	15.0	15.5		104	50-150
Mo	40.0	42.7		107	50-150
Thallium	10.0	10.6	J	106	50-150

Lab Sample ID: CRI 140-31197/8 Concentration Units: ug/L

CRQL Check Standard Source: 90XXCRDL100P_00415

Analyte	CRQL Check Standard				
	True	Found	Qualifiers	%R(1)	Limits
Aluminum	200	219		109	50-150
Cobalt	50.0	51.3		103	50-150
Iron	100	111		111	50-150
Li	50.0	50.2		100	50-150
Manganese	15.0	15.3		102	50-150
Mo	40.0	41.5		104	50-150
Thallium	10.0	12.5	J	125	50-150

Lab Sample ID: CRI 140-31197/77 Concentration Units: ug/L

CRQL Check Standard Source: 90XXCRDL100P_00415

Analyte	CRQL Check Standard				
	True	Found	Qualifiers	%R(1)	Limits
Aluminum	200	209		104	50-150
Cobalt	50.0	50.5		101	50-150
Iron	100	111		111	50-150
Li	50.0	48.2	J	96	50-150
Manganese	15.0	15.4		103	50-150
Mo	40.0	41.4		104	50-150
Thallium	10.0	11.1	J	111	50-150

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IIB-IN

2B-IN
CRQL CHECK STANDARD
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Method: 6010B SEP Instrument ID: DUO

Lab Sample ID: CRI 140-31255/22 Concentration Units: ug/L

CRQL Check Standard Source: 90XXCRDL100P_00416

Analyte	CRQL Check Standard				
	True	Found	Qualifiers	%R(1)	Limits
Aluminum	200	196	J	98	50-150
Cobalt	50.0	53.5		107	50-150
Iron	100	105		105	50-150
Li	50.0	54.3		109	50-150
Li	50.0	54.3		109	50-150
Manganese	15.0	16.0		107	50-150
Mo	40.0	42.5		106	50-150
Mo	40.0	42.5		106	50-150
Thallium	10.0	10.3	J	103	50-150

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IIB-IN

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Concentration Units: ug/L

Analyte	RL	ICB 140-30900/5 06/17/2019 10:35		CCB 140-30900/42 06/17/2019 13:43		CCB 140-30900/54 06/17/2019 14:45		CCB 140-30900/66 06/17/2019 15:48	
		Found	C	Found	C	Found	C	Found	C
Aluminum	200	ND		ND		ND		ND	
Cobalt	50	ND		ND		ND		ND	
Iron	100	ND		ND		ND		ND	
Li	50	ND		ND		ND		ND	
Manganese	15	ND		ND		ND		ND	
Mo	40	ND		ND		ND		ND	
Thallium	35	ND		ND		ND		ND	

Italicized analytes were not requested for this sequence.

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Concentration Units: ug/L

Analyte	RL	CCB 140-30900/79 06/17/2019 17:07 Found	C	CCB 140-30900/84 06/17/2019 17:39 Found	C	Found	C	Found	C
Aluminum	200	ND		ND					
Cobalt	50	ND		ND					
Iron	100	ND		ND					
Li	50	ND		ND					
Manganese	15	ND		ND					
Mo	40	ND		ND					
Thallium	35	ND		ND					

Italicized analytes were not requested for this sequence.

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Concentration Units: ug/L

Analyte	RL	ICB 140-31197/5 06/26/2019 16:33 Found	C	CCB 140-31197/10 06/26/2019 16:59 Found	C	CCB 140-31197/22 06/26/2019 18:01 Found	C	CCB 140-31197/34 06/26/2019 19:02 Found	C
Aluminum	200	ND		ND		ND		ND	
Cobalt	50	ND		ND		ND		ND	
Iron	100	ND		ND		ND		ND	
Li	50	ND		ND		ND		ND	
Manganese	15	ND		ND		ND		ND	
Mo	40	ND		ND		ND		ND	
Thallium	35	ND		ND		ND		ND	

Italicized analytes were not requested for this sequence.

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Concentration Units: ug/L

Analyte	RL	CCB 140-31197/46 06/26/2019 20:04		CCB 140-31197/58 06/26/2019 21:07		CCB 140-31197/70 06/26/2019 22:09		CCB 140-31197/79 06/26/2019 22:56	
		Found	C	Found	C	Found	C	Found	C
Aluminum	200	ND		ND		ND		ND	
Cobalt	50	ND		ND		ND		ND	
Iron	100	ND		ND		ND		ND	
Li	50	ND		ND		ND		ND	
Manganese	15	ND		ND		ND		ND	
Mo	40	ND		ND		ND		ND	
Thallium	35	ND		ND		ND		ND	

Italicized analytes were not requested for this sequence.

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Concentration Units: ug/L

Analyte	RL	ICB 140-31255/5 06/28/2019 10:22		CCB 140-31255/24 06/28/2019 12:06		CCB 140-31255/36 06/28/2019 13:08		CCB 140-31255/48 06/28/2019 14:11	
		Found	C	Found	C	Found	C	Found	C
Aluminum	200	ND		ND		ND		ND	
Cobalt	50	ND		ND		ND		ND	
Iron	100	ND		ND		ND		ND	
Li	50	ND		ND		ND		ND	
Manganese	15	ND		ND		ND		ND	
Mo	40	ND		ND		ND		ND	
Thallium	35	ND		ND		ND		ND	

Italicized analytes were not requested for this sequence.

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Concentration Units: ug/L

Analyte	RL	CCB 140-31255/59 06/28/2019 15:07		CCB 140-31255/71 06/28/2019 16:11		CCB 140-31255/83 06/28/2019 17:12		CCB 140-31255/88 06/28/2019 17:37	
		Found	C	Found	C	Found	C	Found	C
Aluminum	200	ND		ND		ND		ND	
Cobalt	50	ND		ND		ND		ND	
Iron	100	ND		ND		ND		ND	
Li	50	ND		ND		ND		ND	
Manganese	15	ND		ND		ND		ND	
Mo	40	ND		ND		ND		ND	
Thallium	35	ND		ND		ND		ND	

Italicized analytes were not requested for this sequence.

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Concentration Units: ug/L

Analyte	RL	CCB 140-31255/99 06/28/2019 18:34		CCB 140-31255/108 06/28/2019 19:21					
		Found	C	Found	C	Found	C	Found	C
Aluminum	200	ND		ND					
Cobalt	50	ND		ND					
Iron	100	ND		ND					
Li	50	ND		ND					
Manganese	15	ND		ND					
Mo	40	ND		ND					
Thallium	35	ND		ND					

Italicized analytes were not requested for this sequence.

3-IN
METHOD BLANK
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Concentration Units: mg/Kg   Lab Sample ID: MB 140-30373/11-A

Instrument Code: DUO   Batch No.: 31255

CAS No.	Analyte	Concentration	C	Q	Method
7429-90-5	Aluminum	ND			6010B
7440-48-4	Cobalt	ND			6010B
7439-89-6	Iron	ND			6010B
7439-93-2	Lithium	ND			6010B
7439-96-5	Manganese	ND			6010B
7439-98-7	Molybdenum	ND			6010B
7440-28-0	Thallium	ND			6010B

FORM III-IN

3-IN
METHOD BLANK
METALS - STEP 1

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Concentration Units: mg/Kg   Lab Sample ID: MB 140-30374/11-B ^4

Instrument Code: DUO   Batch No.: 30900

CAS No.	Analyte	Concentration	C	Q	Method
7429-90-5	Aluminum	ND			6010B_SEP
7440-48-4	Cobalt	ND			6010B_SEP
7439-89-6	Iron	ND			6010B_SEP
7439-93-2	Li	ND			6010B_SEP
7439-96-5	Manganese	ND			6010B_SEP
7439-98-7	Mo	ND			6010B_SEP
7440-28-0	Thallium	ND			6010B_SEP

FORM III-IN

3-IN
METHOD BLANK
METALS - STEP 2

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Concentration Units: mg/Kg   Lab Sample ID: MB 140-30423/11-B ^3

Instrument Code: DUO   Batch No.: 30900

CAS No.	Analyte	Concentration	C	Q	Method
7429-90-5	Aluminum	ND			6010B_SEP
7440-48-4	Cobalt	ND			6010B_SEP
7439-89-6	Iron	ND			6010B_SEP
7439-93-2	Li	ND			6010B_SEP
7439-96-5	Manganese	ND			6010B_SEP
7439-98-7	Mo	ND			6010B_SEP
7440-28-0	Thallium	ND			6010B_SEP

3-IN
METHOD BLANK
METALS - STEP 3

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Concentration Units: mg/Kg   Lab Sample ID: MB 140-30453/11-B

Instrument Code: DUO   Batch No.: 31197

CAS No.	Analyte	Concentration	C	Q	Method
7429-90-5	Aluminum	ND			6010B_SEP
7440-48-4	Cobalt	ND			6010B_SEP
7439-89-6	Iron	ND			6010B_SEP
7439-93-2	Li	ND			6010B_SEP
7439-96-5	Manganese	0.0625	J		6010B_SEP
7439-98-7	Mo	ND			6010B_SEP
7440-28-0	Thallium	ND			6010B_SEP

FORM III-IN

3-IN
METHOD BLANK
METALS - STEP 4

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Concentration Units: mg/Kg   Lab Sample ID: MB 140-30481/11-B

Instrument Code: DUO   Batch No.: 31197

CAS No.	Analyte	Concentration	C	Q	Method
7429-90-5	Aluminum	ND			6010B_SEP
7440-48-4	Cobalt	ND			6010B_SEP
7439-89-6	Iron	ND			6010B_SEP
7439-93-2	Li	ND			6010B_SEP
7439-96-5	Manganese	ND			6010B_SEP
7439-98-7	Mo	ND			6010B_SEP
7440-28-0	Thallium	ND			6010B_SEP

FORM III-IN

3-IN
METHOD BLANK
METALS - STEP 5

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Concentration Units: mg/Kg   Lab Sample ID: MB 140-30529/11-B ^5

Instrument Code: DUO   Batch No.: 31197

CAS No.	Analyte	Concentration	C	Q	Method
7429-90-5	Aluminum	ND			6010B_SEP
7440-48-4	Cobalt	ND			6010B_SEP
7439-89-6	Iron	ND			6010B_SEP
7439-93-2	Li	ND			6010B_SEP
7439-96-5	Manganese	ND			6010B_SEP
7439-98-7	Mo	ND			6010B_SEP
7440-28-0	Thallium	ND			6010B_SEP

3-IN
METHOD BLANK
METALS - STEP 6

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Concentration Units: mg/Kg   Lab Sample ID: MB 140-30781/11-A

Instrument Code: DUO   Batch No.: 31197

CAS No.	Analyte	Concentration	C	Q	Method
7429-90-5	Aluminum	ND			6010B_SEP
7440-48-4	Cobalt	ND			6010B_SEP
7439-89-6	Iron	ND			6010B_SEP
7439-93-2	Li	ND			6010B_SEP
7439-96-5	Manganese	ND			6010B_SEP
7439-98-7	Mo	ND			6010B_SEP
7440-28-0	Thallium	ND			6010B_SEP

FORM III-IN

3-IN
METHOD BLANK
METALS - STEP 7

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Concentration Units: mg/Kg   Lab Sample ID: MB 140-30852/11-A

Instrument Code: DUO   Batch No.: 31255

CAS No.	Analyte	Concentration	C	Q	Method
7429-90-5	Aluminum	ND			6010B_SEP
7440-48-4	Cobalt	ND			6010B_SEP
7439-89-6	Iron	ND			6010B_SEP
7439-93-2	Li	ND			6010B_SEP
7439-96-5	Manganese	0.0585	J		6010B_SEP
7439-98-7	Mo	ND			6010B_SEP
7440-28-0	Thallium	ND			6010B_SEP

FORM III-IN

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Lab Sample ID: ICSA 140-30900/6 Instrument ID: DUO

Lab File ID: F061719.asc ICS Source: 90XXICSAP_00026

Concentration Units: ug/L

Analyte	True Solution A	Found Solution A	Percent Recovery
Aluminum	**500000**	**501860**	**100**
Cobalt		**-1.07**	
Iron	**200000**	**188110**	**94**
Li		**17.9**	
Manganese		**-0.430**	
Mo		**-1.75**	
Thallium		**-1.61**	
Antimony		*3.32*	
Arsenic		*3.44*	
Barium		*0.180*	
Beryllium		*-0.360*	
Cadmium		*-3.82*	
Calcium	*500000*	*467390*	*93*
Chromium		*2.73*	
Copper		*0.340*	
Lead		*-8.44*	
Magnesium	*500000*	*517260*	*103*
Nickel		*1.74*	
Phosphorus		*1.39*	
Potassium		*64.8*	
Selenium		*-3.48*	
Silver		*-0.960*	
Sodium		*161*	
Vanadium		*2.74*	
Zinc		*-2.51*	

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IVA-IN

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Lab Sample ID: ICSAB 140-30900/7   Instrument ID: DUO

Lab File ID: F061719.asc   ICS Source: 90XXICSABP_00031

Concentration Units: ug/L

Analyte	True	Found	
	Solution AB	Solution AB	Percent Recovery
Aluminum	**250000**	**249070**	**100**
Cobalt	**500**	**475**	**95**
Iron	**100000**	**97430**	**97**
Li	**1000**	**1030**	**103**
Manganese	**500**	**486**	**97**
Mo	**1000**	**985**	**98**
Thallium	**100**	**91.1**	**91**
Antimony	*600*	*636*	*106*
Arsenic	*100*	*99.9*	*100*
Barium	*500*	*503*	*101*
Beryllium	*500*	*510*	*102*
Cadmium	*1000*	*947*	*95*
Calcium	*250000*	*237270*	*95*
Chromium	*500*	*479*	*96*
Copper	*500*	*513*	*103*
Lead	*50.0*	*43.3*	*87*
Magnesium	*250000*	*248470*	*99*
Nickel	*1000*	*939*	*94*
Phosphorus	*1000*	*949*	*95*
Potassium	*10000*	*10400*	*104*
Selenium	*50.0*	*46.2*	*92*
Silver	*200*	*202*	*101*
Sodium	*10000*	*10078*	*101*
Vanadium	*500*	*485*	*97*
Zinc	*1000*	*979*	*98*

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IVA-IN

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Lab Sample ID: ICSA 140-31197/6   Instrument ID: DUO

Lab File ID: F062619.asc   ICS Source: 90XXICSAP_00026

Concentration Units: ug/L

Analyte	True Solution A	Found Solution A	Percent Recovery
Aluminum	**500000**	**486720**	**97**
Cobalt		**-1.28**	
Iron	**200000**	**182480**	**91**
Li		**13.5**	
Manganese		**-0.680**	
Mo		**-1.50**	
Thallium		**6.05**	
Antimony		*-0.370*	
Arsenic		*-4.77*	
Barium		*-0.130*	
Beryllium		*-0.470*	
Cadmium		*0.530*	
Calcium	*500000*	*440310*	*88*
Chromium		*2.72*	
Copper		*-1.42*	
Lead		*-7.57*	
Magnesium	*500000*	*484070*	*97*
Nickel		*-3.31*	
Phosphorus		*-4.09*	
Potassium		*19.6*	
Selenium		*-5.70*	
Silver		*0.160*	
Sodium		*24.2*	
Vanadium		*6.12*	
Zinc		*-2.09*	

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IVA-IN

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Lab Sample ID: ICSAB 140-31197/7 Instrument ID: DUO

Lab File ID: F062619.asc ICS Source: 90XXICSABP_00032

Concentration Units: ug/L

Analyte	True Solution AB	Found Solution AB	Percent Recovery
Aluminum	**250000**	**248300**	**99**
Cobalt	**500**	**488**	**98**
Iron	**100000**	**98307**	**98**
Li	**1000**	**1042**	**104**
Manganese	**500**	**510**	**102**
Mo	**1000**	**1015**	**101**
Thallium	**100**	**103**	**103**
Antimony	*600*	*649*	*108*
Arsenic	*100*	*101*	*101*
Barium	*500*	*500*	*100*
Beryllium	*500*	*536*	*107*
Cadmium	*1000*	*1000*	*100*
Calcium	*250000*	*234630*	*94*
Chromium	*500*	*503*	*101*
Copper	*500*	*514*	*103*
Lead	*50.0*	*47.4*	*95*
Magnesium	*250000*	*251450*	*101*
Nickel	*1000*	*981*	*98*
Phosphorus	*1000*	*997*	*100*
Potassium	*10000*	*10297*	*103*
Selenium	*50.0*	*50.2*	*100*
Silver	*200*	*211*	*105*
Sodium	*10000*	*10025*	*100*
Vanadium	*500*	*503*	*101*
Zinc	*1000*	*998*	*100*

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IVA-IN

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Lab Sample ID: ICSA 140-31255/7   Instrument ID: DUO

Lab File ID: F062819.asc   ICS Source: 90XXICSASiP_00028

Concentration Units: ug/L

Analyte	True Solution A	Found Solution A	Percent Recovery
Aluminum	**500000**	**487340**	**97**
Cobalt		**1.58**	
Iron	**200000**	**186600**	**93**
Li		**13.2**	
Manganese		**-0.710**	
Mo		**-1.43**	
Thallium		**11.8**	
Antimony		*3.37*	
Arsenic		*-12.0*	
Barium		*0.220*	
Beryllium		*-0.310*	
Cadmium		*0.670*	
Calcium	*500000*	*475260*	*95*
Chromium		*3.54*	
Copper		*-1.12*	
Lead		*1.98*	
Magnesium	*500000*	*508910*	*102*
Nickel		*-2.13*	
Phosphorus		*-31.0*	
Potassium		*59.8*	
Selenium		*-3.19*	
Silver		*0.140*	
Sodium		*99.3*	
Vanadium		*7.02*	
Zinc		*-0.950*	

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IVA-IN

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Lab Sample ID: ICSAB 140-31255/8 Instrument ID: DUO

Lab File ID: F062819.asc ICS Source: 90XXICSABP_00032

Concentration Units: ug/L

Analyte	True Solution AB	Found Solution AB	Percent Recovery
Aluminum	**250000**	**245660**	**98**
Cobalt	**500**	**489**	**98**
Iron	**100000**	**95928**	**96**
Li	**1000**	**1044**	**104**
Manganese	**500**	**510**	**102**
Mo	**1000**	**1008**	**101**
Thallium	**100**	**103**	**103**
Antimony	*600*	*643*	*107*
Arsenic	*100*	*100*	*100*
Barium	*500*	*504*	*101*
Beryllium	*500*	*531*	*106*
Cadmium	*1000*	*987*	*99*
Calcium	*250000*	*238470*	*95*
Chromium	*500*	*503*	*101*
Copper	*500*	*518*	*104*
Lead	*50.0*	*43.1*	*86*
Magnesium	*250000*	*250010*	*100*
Nickel	*1000*	*970*	*97*
Phosphorus	*1000*	*971*	*97*
Potassium	*10000*	*10709*	*107*
Selenium	*50.0*	*47.9*	*96*
Silver	*200*	*211*	*106*
Sodium	*10000*	*10320*	*103*
Vanadium	*500*	*506*	*101*
Zinc	*1000*	*1004*	*100*

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IVA-IN

7A-IN
LAB CONTROL SAMPLE
METALS

Lab ID: LCS 140-30373/12-A

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

Sample Matrix: Solid   LCS Source: 90SPKNX10P_00002

Analyte	Solid(mg/Kg)							
	True	Found	C	%R	Limits		Q	Method
Aluminum	100	96.4		96	75	125		6010B
Cobalt	5.00	5.25		105	75	125		6010B
Iron	50.0	50.6		101	75	125		6010B
Lithium	5.00	5.37		107	75	125		6010B
Manganese	5.00	5.27		105	75	125		6010B
Molybdenum	25.0	26.5		106	75	125		6010B
Thallium	20.0	21.6		108	75	125		6010B

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA - IN

7D-IN
LAB CONTROL SAMPLE DUPLICATE
METALS

Lab ID: LCSD 140-30373/13-A

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

Sample Matrix: Solid   LCS Source: 90SPKNX10P_00002

Analyte	(SDR)	C	Spike Added	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Aluminum	95.8		100	96	75-125	1	30		6010B
Cobalt	5.22		5.00	104	75-125	0	30		6010B
Iron	50.6		50.0	101	75-125	0	30		6010B
Lithium	5.35		5.00	107	75-125	0	30		6010B
Manganese	5.25		5.00	105	75-125	0	30		6010B
Molybdenum	26.4		25.0	106	75-125	0	30		6010B
Thallium	21.4		20.0	107	75-125	1	30		6010B

SDR = Spike Duplicate Results

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIID - IN

7A-IN
LAB CONTROL SAMPLE
METALS - STEP 1

Lab ID: LCS 140-30374/12-B ^5

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

Sample Matrix: Solid   LCS Source: 90SPKNX10P_00002

Analyte	Solid(mg/Kg)							
	True	Found	C	%R	Limits		Q	Method
Aluminum	100	94.0		94	75	125		6010B SEP
Cobalt	5.00	5.06	J	101	75	125		6010B SEP
Iron	50.0	51.3		103	75	125		6010B SEP
Li	5.00	5.37	J	107	75	125		6010B SEP
Manganese	5.00	4.96		99	75	125		6010B SEP
Mo	25.0	25.8		103	75	125		6010B SEP
Thallium	20.0	19.6		98	75	125		6010B SEP

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA - IN

7D-IN
LAB CONTROL SAMPLE DUPLICATE
METALS - STEP 1

Lab ID: LCSD 140-30374/13-B ^5

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

Sample Matrix: Solid LCS Source: 90SPKNX10P_00002

Analyte	(SDR)	C	Spike Added	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Aluminum	96.4		100	96	75-125	3	30		6010B SEP
Cobalt	4.97	J	5.00	99	75-125	2	30		6010B SEP
Iron	50.4		50.0	101	75-125	2	30		6010B SEP
Li	5.04	J	5.00	101	75-125	6	30		6010B SEP
Manganese	4.92		5.00	98	75-125	1	30		6010B SEP
Mo	25.3		25.0	101	75-125	2	30		6010B SEP
Thallium	19.4		20.0	97	75-125	1	30		6010B SEP

SDR = Spike Duplicate Results
Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIID - IN

7A-IN
LAB CONTROL SAMPLE
METALS - STEP 2

Lab ID: LCS 140-30423/12-B ^5

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

Sample Matrix: Solid LCS Source: 90SPKNX10P_00002

Analyte	Solid(mg/Kg)							
	True	Found	C	%R	Limits		Q	Method
Aluminum	100	ND		-4	75	125	*	6010B SEP
Cobalt	5.00	4.75	J	95	75	125		6010B SEP
Iron	50.0	ND		2	75	125	*	6010B SEP
Li	5.00	4.71	J	94	75	125		6010B SEP
Manganese	5.00	4.63		93	75	125		6010B SEP
Mo	25.0	21.1		84	75	125		6010B SEP
Thallium	20.0	18.1		90	75	125		6010B SEP

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA - IN

7D-IN
LAB CONTROL SAMPLE DUPLICATE
METALS - STEP 2

Lab ID: LCSD 140-30423/13-B ^5

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

Sample Matrix: Solid LCS Source: 90SPKNX10P_00002

Analyte	(SDR)	C	Spike Added	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Aluminum	ND		100	-0.3	75-125	167	30	*	6010B SEP
Cobalt	4.76	J	5.00	95	75-125	0	30		6010B SEP
Iron	ND		50.0	4	75-125	57	30	*	6010B SEP
Li	5.06	J	5.00	101	75-125	7	30		6010B SEP
Manganese	4.64		5.00	93	75-125	0	30		6010B SEP
Mo	21.2		25.0	85	75-125	0	30		6010B SEP
Thallium	18.8		20.0	94	75-125	4	30		6010B SEP

SDR = Spike Duplicate Results

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIID - IN

7A-IN
LAB CONTROL SAMPLE
METALS - STEP 3

Lab ID: LCS 140-30453/12-B

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

Sample Matrix: Solid   LCS Source: 90SPKNX10P_00002

Analyte	Solid(mg/Kg)							
	True	Found	C	%R	Limits		Q	Method
Aluminum	100	95.1		95	75	125		6010B SEP
Cobalt	5.00	4.87		97	75	125		6010B SEP
Iron	50.0	49.3		99	75	125		6010B SEP
Li	5.00	4.84		97	75	125		6010B SEP
Manganese	5.00	4.86		97	75	125		6010B SEP
Mo	25.0	24.5		98	75	125		6010B SEP
Thallium	20.0	20.0		100	75	125		6010B SEP

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA - IN

7D-IN
LAB CONTROL SAMPLE DUPLICATE
METALS - STEP 3

Lab ID: LCSD 140-30453/13-B

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

Sample Matrix: Solid   LCS Source: 90SPKNX10P_00002

Analyte	(SDR)	C	Spike Added	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Aluminum	98.4		100	98	75-125	3	30		6010B SEP
Cobalt	4.99		5.00	100	75-125	2	30		6010B SEP
Iron	50.9		50.0	102	75-125	3	30		6010B SEP
Li	4.97		5.00	99	75-125	3	30		6010B SEP
Manganese	5.00		5.00	100	75-125	3	30		6010B SEP
Mo	25.2		25.0	101	75-125	3	30		6010B SEP
Thallium	20.7		20.0	104	75-125	3	30		6010B SEP

SDR = Spike Duplicate Results
Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIID - IN

7A-IN
LAB CONTROL SAMPLE
METALS - STEP 4

Lab ID: LCS 140-30481/12-B

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

Sample Matrix: Solid   LCS Source: 90SPKNX10P_00002

Analyte	Solid(mg/Kg)							
	True	Found	C	%R	Limits		Q	Method
Aluminum	100	96.7		97	75	125		6010B SEP
Cobalt	5.00	4.98		100	75	125		6010B SEP
Iron	50.0	50.1		100	75	125		6010B SEP
Li	5.00	5.01		100	75	125		6010B SEP
Manganese	5.00	4.99		100	75	125		6010B SEP
Mo	25.0	25.1		100	75	125		6010B SEP
Thallium	20.0	18.2		91	75	125		6010B SEP

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA - IN

7D-IN
LAB CONTROL SAMPLE DUPLICATE
METALS - STEP 4

Lab ID: LCSD 140-30481/13-B

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

Sample Matrix: Solid   LCS Source: 90SPKNX10P_00002

Analyte	(SDR)	C	Spike Added	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Aluminum	100		100	100	75-125	4	30		6010B SEP
Cobalt	5.15		5.00	103	75-125	3	30		6010B SEP
Iron	51.4		50.0	103	75-125	3	30		6010B SEP
Li	5.15		5.00	103	75-125	3	30		6010B SEP
Manganese	5.14		5.00	103	75-125	3	30		6010B SEP
Mo	26.7		25.0	107	75-125	6	30		6010B SEP
Thallium	18.7		20.0	94	75-125	3	30		6010B SEP

SDR = Spike Duplicate Results
Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIID - IN

7A-IN
LAB CONTROL SAMPLE
METALS - STEP 5

Lab ID: LCS 140-30529/12-B ^5

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

Sample Matrix: Solid   LCS Source: 90SPKNX10P_00002

Analyte	Solid(mg/Kg)							
	True	Found	C	%R	Limits		Q	Method
Aluminum	300	30.0	J	10	75	125	*	6010B SEP
Cobalt	15.0	5.06	J	34	75	125	*	6010B SEP
Iron	150	ND		0.4	75	125	*	6010B SEP
Li	15.0	16.5	J	110	75	125		6010B SEP
Manganese	15.0	3.17	J	21	75	125	*	6010B SEP
Mo	75.0	63.7		85	75	125		6010B SEP
Thallium	60.0	25.2	J	42	75	125	*	6010B SEP

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA - IN

7D-IN
LAB CONTROL SAMPLE DUPLICATE
METALS - STEP 5

Lab ID: LCSD 140-30529/13-B ^5

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

Sample Matrix: Solid   LCS Source: 90SPKNX10P_00002

Analyte	(SDR)	C	Spike Added	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Aluminum	ND		300	6	75-125	43	30	*	6010B SEP
Cobalt	4.94	J	15.0	33	75-125	2	30	*	6010B SEP
Iron	ND		150	1	75-125	103	30	*	6010B SEP
Li	17.4	J	15.0	116	75-125	5	30		6010B SEP
Manganese	4.43	J	15.0	30	75-125	33	30	*	6010B SEP
Mo	64.0		75.0	85	75-125	0	30		6010B SEP
Thallium	26.1		60.0	44	75-125	3	30	*	6010B SEP

SDR = Spike Duplicate Results
Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIID - IN

7A-IN
LAB CONTROL SAMPLE
METALS - STEP 6

Lab ID: LCS 140-30781/12-A

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

Sample Matrix: Solid   LCS Source: 90SPKNX10P_00002

Analyte	Solid(mg/Kg)							
	True	Found	C	%R	Limits		Q	Method
Aluminum	100	97.3		97	75	125		6010B SEP
Cobalt	5.00	4.78		96	75	125		6010B SEP
Iron	50.0	49.6		99	75	125		6010B SEP
Li	5.00	4.67		93	75	125		6010B SEP
Manganese	5.00	4.87		97	75	125		6010B SEP
Mo	25.0	24.3		97	75	125		6010B SEP
Thallium	20.0	19.7		99	75	125		6010B SEP

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA - IN

7D-IN
LAB CONTROL SAMPLE DUPLICATE
METALS - STEP 6

Lab ID: LCSD 140-30781/13-A

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

Sample Matrix: Solid LCS Source: 90SPKNX10P_00002

Analyte	(SDR)	C	Spike Added	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Aluminum	103		100	103	75-125	5	30		6010B SEP
Cobalt	5.04		5.00	101	75-125	5	30		6010B SEP
Iron	52.4		50.0	105	75-125	5	30		6010B SEP
Li	4.93		5.00	99	75-125	5	30		6010B SEP
Manganese	5.14		5.00	103	75-125	5	30		6010B SEP
Mo	25.7		25.0	103	75-125	6	30		6010B SEP
Thallium	20.7		20.0	104	75-125	5	30		6010B SEP

SDR = Spike Duplicate Results
Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIID - IN

7A-IN
LAB CONTROL SAMPLE
METALS - STEP 7

Lab ID: LCS 140-30852/12-A

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

Sample Matrix: Solid   LCS Source: 90SPKNX10P_00002

Analyte	Solid(mg/Kg)							
	True	Found	C	%R	Limits		Q	Method
Aluminum	100	96.0		96	75	125		6010B SEP
Cobalt	5.00	5.26		105	75	125		6010B SEP
Iron	50.0	51.1		102	75	125		6010B SEP
Li	5.00	5.34		107	75	125		6010B SEP
Manganese	5.00	5.28		106	75	125		6010B SEP
Mo	25.0	26.6		106	75	125		6010B SEP
Thallium	20.0	21.5		108	75	125		6010B SEP

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA - IN

7D-IN
LAB CONTROL SAMPLE DUPLICATE
METALS - STEP 7

Lab ID: LCSD 140-30852/13-A

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

Sample Matrix: Solid LCS Source: 90SPKNX10P_00002

Analyte	(SDR)	C	Spike Added	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Aluminum	95.8		100	96	75-125	0	30		6010B SEP
Cobalt	5.29		5.00	106	75-125	1	30		6010B SEP
Iron	51.1		50.0	102	75-125	0	30		6010B SEP
Li	5.47		5.00	109	75-125	2	30		6010B SEP
Manganese	5.42		5.00	108	75-125	3	30		6010B SEP
Mo	26.8		25.0	107	75-125	1	30		6010B SEP
Thallium	21.6		20.0	108	75-125	0	30		6010B SEP

SDR = Spike Duplicate Results
Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIID - IN

9-IN
DETECTION LIMITS
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job Number: 140-15390-1

SDG Number:

Matrix: Solid   Instrument ID: DUO

Method: 6010B   MDL Date: 05/27/2015 16:03

Preparation Method: Total

Analyte	Wavelength/ Mass	RL (mg/Kg)	MDL (mg/Kg)
Aluminum		10	1.6
Cobalt		2.5	0.15
Iron		5	4.1
Lithium		2.5	0.15
Manganese		0.75	0.052
Molybdenum		2	0.082
Thallium		1.75	0.18

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job Number: 140-15390-1

SDG Number:

Matrix: Solid   Instrument ID: DUO

Method: 6010B   XMDL Date: 01/01/2015 11:28

Analyte	Wavelength/ Mass	XRL (ug/L)	XMDL (ug/L)
Aluminum		200	96
Cobalt		50	1.5
Iron		100	58.4
Lithium		50	2.9
Manganese		15	1.3
Molybdenum		40	6.5
Thallium		35	6.4

FORM IX - IN

9-IN
DETECTION LIMITS
METALS - STEP 1

Lab Name: Eurofins TestAmerica, Knoxville   Job Number: 140-15390-1

SDG Number:

Matrix: Solid   Instrument ID: DUO

Method: 6010B SEP   MDL Date: 05/27/2015 15:56

Prep Method: 3010A

SEP Method: Exchangeable

Analyte	Wavelength/ Mass	RL (mg/Kg)	MDL (mg/Kg)
Aluminum		10	1.6
Cobalt		2.5	0.045
Iron		5	2.9
Li		2.5	0.15
Manganese		0.75	0.031
Mo		2	0.082
Thallium		1.75	0.21

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
METALS - STEP 1

Lab Name: Eurofins TestAmerica, Knoxville Job Number: 140-15390-1

SDG Number:

Matrix: Solid Instrument ID: DUO

Method: 6010B SEP XMDL Date: 01/01/2015 11:28

Analyte	Wavelength/ Mass	XRL (ug/L)	XMDL (ug/L)
Aluminum		200	96
Cobalt		50	1.5
Iron		100	58.4
Li		50	2.9
Manganese		15	1.3
Mo		40	6.5
Thallium		35	6.4

FORM IX - IN

9-IN
DETECTION LIMITS
METALS - STEP 2

Lab Name: Eurofins TestAmerica, Knoxville   Job Number: 140-15390-1

SDG Number:

Matrix: Solid   Instrument ID: DUO

Method: 6010B SEP   MDL Date: 05/27/2015 15:57

Prep Method: 3010A

SEP Method: Carbonate

Analyte	Wavelength/ Mass	RL (mg/Kg)	MDL (mg/Kg)
Aluminum		10	1.6
Cobalt		2.5	0.063
Iron		5	2.9
Li		2.5	0.15
Manganese		0.75	0.28
Mo		2	0.082
Thallium		1.75	0.21

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
METALS - STEP 2

Lab Name: Eurofins TestAmerica, Knoxville   Job Number: 140-15390-1

SDG Number:

Matrix: Solid   Instrument ID: DUO

Method: 6010B SEP   XMDL Date: 01/01/2015 11:28

Analyte	Wavelength/ Mass	XRL (ug/L)	XMDL (ug/L)
Aluminum		200	96
Cobalt		50	1.5
Iron		100	58.4
Li		50	2.9
Manganese		15	1.3
Mo		40	6.5
Thallium		35	6.4

9-IN
DETECTION LIMITS
METALS - STEP 3

Lab Name: Eurofins TestAmerica, Knoxville   Job Number: 140-15390-1

SDG Number:

Matrix: Solid   Instrument ID: DUO

Method: 6010B SEP   MDL Date: 05/27/2015 15:57

Prep Method: 3010A

SEP Method: Non-Crystalline

Analyte	Wavelength/ Mass	RL (mg/Kg)	MDL (mg/Kg)
Aluminum		10	2.1
Cobalt		2.5	0.045
Iron		5	2.9
Li		2.5	0.15
Manganese		0.75	0.027
Mo		2	0.082
Thallium		1.75	0.21

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
METALS - STEP 3

Lab Name: Eurofins TestAmerica, Knoxville   Job Number: 140-15390-1

SDG Number:

Matrix: Solid   Instrument ID: DUO

Method: 6010B SEP   XMDL Date: 01/01/2015 11:28

Analyte	Wavelength/ Mass	XRL (ug/L)	XMDL (ug/L)
Aluminum		200	96
Cobalt		50	1.5
Iron		100	58.4
Li		50	2.9
Manganese		15	1.3
Mo		40	6.5
Thallium		35	6.4

FORM IX - IN

9-IN
DETECTION LIMITS
METALS - STEP 4

Lab Name: Eurofins TestAmerica, Knoxville Job Number: 140-15390-1

SDG Number:

Matrix: Solid Instrument ID: DUO

Method: 6010B SEP MDL Date: 05/27/2015 15:59

Prep Method: 3010A

SEP Method: Metal Hydroxide

Analyte	Wavelength/ Mass	RL (mg/Kg)	MDL (mg/Kg)
Aluminum		10	1.6
Cobalt		2.5	0.053
Iron		5	2.9
Li		2.5	0.15
Manganese		0.75	0.13
Mo		2	0.082
Thallium		1.75	0.29

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
METALS - STEP 4

Lab Name: Eurofins TestAmerica, Knoxville Job Number: 140-15390-1

SDG Number:

Matrix: Solid Instrument ID: DUO

Method: 6010B SEP XMDL Date: 01/01/2015 11:28

Analyte	Wavelength/ Mass	XRL (ug/L)	XMDL (ug/L)
Aluminum		200	96
Cobalt		50	1.5
Iron		100	58.4
Li		50	2.9
Manganese		15	1.3
Mo		40	6.5
Thallium		35	6.4

FORM IX - IN

9-IN
DETECTION LIMITS
METALS - STEP 5

Lab Name: Eurofins TestAmerica, Knoxville   Job Number: 140-15390-1

SDG Number:

Matrix: Solid   Instrument ID: DUO

Method: 6010B SEP   MDL Date: 05/27/2015 16:00

Prep Method: 3010A

SEP Method: Organic-Bound

Analyte	Wavelength/ Mass	RL (mg/Kg)	MDL (mg/Kg)
Aluminum		30	4.7
Cobalt		7.5	0.12
Iron		15	8.8
Li		7.5	0.44
Manganese		2.25	0.37
Mo		6	0.25
Thallium		5.25	0.7

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
METALS - STEP 5

Lab Name: Eurofins TestAmerica, Knoxville   Job Number: 140-15390-1

SDG Number:

Matrix: Solid   Instrument ID: DUO

Method: 6010B SEP   XMDL Date: 01/01/2015 11:28

Analyte	Wavelength/ Mass	XRL (ug/L)	XMDL (ug/L)
Aluminum		200	96
Cobalt		50	1.5
Iron		100	58.4
Li		50	2.9
Manganese		15	1.3
Mo		40	6.5
Thallium		35	6.4

FORM IX - IN

9-IN
DETECTION LIMITS
METALS - STEP 6

Lab Name: Eurofins TestAmerica, Knoxville   Job Number: 140-15390-1

SDG Number:

Matrix: Solid   Instrument ID: DUO

Method: 6010B SEP   MDL Date: 05/27/2015 16:01

SEP Method: Acid/Sulfide

Analyte	Wavelength/ Mass	RL (mg/Kg)	MDL (mg/Kg)
Aluminum		10	1.6
Cobalt		2.5	0.046
Iron		5	2.9
Li		2.5	0.15
Manganese		0.75	0.25
Mo		2	0.099
Thallium		1.75	0.21

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
METALS - STEP 6

Lab Name: Eurofins TestAmerica, Knoxville   Job Number: 140-15390-1

SDG Number:

Matrix: Solid   Instrument ID: DUO

Method: 6010B SEP   XMDL Date: 01/01/2015 11:28

Analyte	Wavelength/ Mass	XRL (ug/L)	XMDL (ug/L)
Aluminum		200	96
Cobalt		50	1.5
Iron		100	58.4
Li		50	2.9
Manganese		15	1.3
Mo		40	6.5
Thallium		35	6.4

FORM IX - IN

9-IN
DETECTION LIMITS
METALS - STEP 7

Lab Name: Eurofins TestAmerica, Knoxville Job Number: 140-15390-1

SDG Number:

Matrix: Solid Instrument ID: DUO

Method: 6010B SEP MDL Date: 05/27/2015 16:03

Preparation Method: Residual

Analyte	Wavelength/ Mass	RL (mg/Kg)	MDL (mg/Kg)
Aluminum		10	1.6
Cobalt		2.5	0.15
Iron		5	4.1
Li		2.5	0.15
Manganese		0.75	0.052
Mo		2	0.082
Thallium		1.75	0.18

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
METALS - STEP 7

Lab Name: Eurofins TestAmerica, Knoxville   Job Number: 140-15390-1

SDG Number:

Matrix: Solid   Instrument ID: DUO

Method: 6010B SEP   XMDL Date: 01/01/2015 11:28

Analyte	Wavelength/ Mass	XRL (ug/L)	XMDL (ug/L)
Aluminum		200	96
Cobalt		50	1.5
Iron		100	58.4
Li		50	2.9
Manganese		15	1.3
Mo		40	6.5
Thallium		35	6.4

FORM IX - IN

9-IN
DETECTION LIMITS
METALS - SUM OF STEPS 1-7

Lab Name: Eurofins TestAmerica, Knoxville   Job Number: 140-15390-1

SDG Number:

Matrix: Solid   Instrument ID: NOEQUIP

Method: 6010B SEP   MDL Date: 01/01/2015 18:02

Analyte	Wavelength/ Mass	RL (mg/Kg)	MDL (mg/Kg)
Aluminum		10	1.6
Cobalt		2.5	0.023
Iron		5	4.1
Li		2.5	0.15
Manganese		0.75	0.052
Mo		2	0.082
Thallium		1.75	0.18

FORM IX - IN

10-IN
ICP-AES INTERELEMENT CORRECTION FACTORS
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job Number: 140-15390-1

SDG No.:

ICP-AES Instrument ID: DUO   Date: 02/28/2019

Analyte	Wave Length	Al	As	B	Ba	Be	Ca	Cd	Co	Cr	Cu	Fe	K	Li	Mg
Aluminum	308.215														
Antimony	206.833									0.016786					
Arsenic	189.042									-0.001475		-0.000039			
Beryllium	313.042														
Boron	249.678								0			-0.000482			
Cadmium	226.502											0.000088			
Chromium	267.716														
Cobalt	228.616														
Copper	324.754											-0.000067			
Lead	220.353	-0.000027									-0.000581	0.000039			
Manganese	257.610											0			0
Nickel	231.604											-0.000028			
Selenium	196.090											-0.000080			
Silicon	250.690								0.010347						
Silver	328.068														
Sodium	589.592														
Strontium	421.552						0.000037								
Thallium	190.856								0.004445	0.000243					
Titanium	334.941														
Tungsten	207.911														
Vanadium	292.402									-0.000960		-0.000029			
Zinc	213.856										0.000865	0.000105			

X-IN

10-IN
ICP-AES INTERELEMENT CORRECTION FACTORS
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job Number: 140-15390-1

SDG No.:

ICP-AES Instrument ID: DUO   Date: 02/28/2019

Analyte	Wave Length	Mn	Mo	Na	Ni	P	Pb	Sb	Se	Si	Sn	Sr	Ti	Tl	V
Aluminum	308.215		0.018768												0.035724
Antimony	206.833										-0.002261				-0.002078
Arsenic	189.042		0.000758							-0.000020					
Beryllium	313.042														0.000200
Boron	249.678														
Cadmium	226.502				-0.000082										
Chromium	267.716														
Cobalt	228.616		-0.001242							-0.000011			0.001637		
Copper	324.754														
Lead	220.353		-0.002287							0.000056			-0.000575		
Manganese	257.610														
Nickel	231.604									-0.000016					
Selenium	196.090	0.000687								0.000023					
Silicon	250.690														
Silver	328.068														-0.000534
Sodium	589.592														
Strontium	421.552														
Thallium	190.856									-0.000014			-0.000522		0.002114
Titanium	334.941														
Tungsten	207.911														
Vanadium	292.402		-0.000643												
Zinc	213.856				0.005263										

X-IN

10-IN
ICP-AES INTERELEMENT CORRECTION FACTORS
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job Number: 140-15390-1

SDG No.:

ICP-AES Instrument ID: DUO   Date: 02/28/2019

Analyte	Wave Length	W	Zn												
Aluminum	308.215														
Antimony	206.833														
Arsenic	189.042														
Beryllium	313.042														
Boron	249.678														
Cadmium	226.502														
Chromium	267.716														
Cobalt	228.616														
Copper	324.754														
Lead	220.353														
Manganese	257.610														
Nickel	231.604														
Selenium	196.090														
Silicon	250.690														
Silver	328.068														
Sodium	589.592														
Strontium	421.552														
Thallium	190.856														
Titanium	334.941														
Tungsten	207.911														
Vanadium	292.402														
Zinc	213.856														

X-IN

11-IN
LINEAR RANGES
METALS

Lab Name: Eurofins TestAmerica, Knoxvill   Job No: 140-15390-1

SDG No.:

Instrument ID: DUO   Date: 03/05/2019 11:36

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	Method
Aluminum		700000	6010B
Aluminum		700000	6010B SEP
Cobalt		40000	6010B
Cobalt		40000	6010B SEP
Iron		600000	6010B
Iron		600000	6010B SEP
Li		7000	6010B SEP
Lithium		7000	6010B
Manganese		20000	6010B
Manganese		20000	6010B SEP
Mo		20000	6010B SEP
Molybdenum		20000	6010B
Thallium		80000	6010B
Thallium		80000	6010B SEP

FORM XI - IN

12-IN
PREPARATION LOG
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Preparation Method: Total

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight (g)	Initial Volume	Final Volume (mL)
140-15390-1	05/30/2019 08:00	30373	1.000		50
140-15390-2	05/30/2019 08:00	30373	1.000		50
140-15390-3	05/30/2019 08:00	30373	1.000		50
140-15390-4	05/30/2019 08:00	30373	1.000		50
MB 140-30373/11-A	05/30/2019 08:00	30373	1.000		50
LCS 140-30373/12-A	05/30/2019 08:00	30373	1.000		50
LCSD 140-30373/13-A	05/30/2019 08:00	30373	1.000		50

FORM XII-IN

12-IN
PREPARATION LOG
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Prep Method: 3010A

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight	Initial Volume (mL)	Final Volume (mL)
140-15390-1	05/31/2019 08:00	30422		5	50
140-15390-2	05/31/2019 08:00	30422		5	50
140-15390-3	05/31/2019 08:00	30422		5	50
140-15390-4	05/31/2019 08:00	30422		5	50
MB 140-30374/11-B ^4	05/31/2019 08:00	30422		5	50
LCS 140-30374/12-B ^5	05/31/2019 08:00	30422		5	50
LCSD 140-30374/13-B ^5	05/31/2019 08:00	30422		5	50

FORM XII-IN

12-IN
PREPARATION LOG
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Prep Method: 3010A

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight	Initial Volume (mL)	Final Volume (mL)
140-15390-1	06/03/2019 08:00	30452		5	50
140-15390-2	06/03/2019 08:00	30452		5	50
140-15390-3	06/03/2019 08:00	30452		5	50
140-15390-4	06/03/2019 08:00	30452		5	50
MB 140-30423/11-B ^3	06/03/2019 08:00	30452		5	50
LCS 140-30423/12-B ^5	06/03/2019 08:00	30452		5	50
LCSD 140-30423/13-B ^5	06/03/2019 08:00	30452		5	50

FORM XII-IN

12-IN
PREPARATION LOG
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Prep Method: 3010A

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight	Initial Volume (mL)	Final Volume (mL)
140-15390-1	06/04/2019 08:00	30480		5	50
140-15390-2	06/04/2019 08:00	30480		5	50
140-15390-3	06/04/2019 08:00	30480		5	50
140-15390-4	06/04/2019 08:00	30480		5	50
MB 140-30453/11-B	06/04/2019 08:00	30480		5	50
LCS 140-30453/12-B	06/04/2019 08:00	30480		5	50
LCSD 140-30453/13-B	06/04/2019 08:00	30480		5	50

FORM XII-IN

12-IN
PREPARATION LOG
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Prep Method: 3010A

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight	Initial Volume (mL)	Final Volume (mL)
140-15390-1	06/10/2019 08:00	30528		5	50
140-15390-2	06/10/2019 08:00	30528		5	50
140-15390-3	06/10/2019 08:00	30528		5	50
140-15390-4	06/10/2019 08:00	30528		5	50
MB 140-30481/11-B	06/10/2019 08:00	30528		5	50
LCS 140-30481/12-B	06/10/2019 08:00	30528		5	50
LCSD 140-30481/13-B	06/10/2019 08:00	30528		5	50

FORM XII-IN

12-IN
PREPARATION LOG
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Prep Method: 3010A

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight	Initial Volume (mL)	Final Volume (mL)
140-15390-1	06/12/2019 08:00	30726		5	50
140-15390-2	06/12/2019 08:00	30726		5	50
140-15390-3	06/12/2019 08:00	30726		5	50
140-15390-4	06/12/2019 08:00	30726		5	50
MB 140-30529/11-B ^5	06/12/2019 08:00	30726		5	50
LCS 140-30529/12-B ^5	06/12/2019 08:00	30726		5	50
LCSD 140-30529/13-B ^5	06/12/2019 08:00	30726		5	50

FORM XII-IN

12-IN
PREPARATION LOG
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

SEP Method: Acid/Sulfide

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight (g)	Initial Volume	Final Volume (mL)
140-15390-1	06/15/2019 08:00	30781	5.000		250
140-15390-2	06/15/2019 08:00	30781	5.000		250
140-15390-3	06/15/2019 08:00	30781	5.000		250
140-15390-4	06/15/2019 08:00	30781	5.000		250
MB 140-30781/11-A	06/15/2019 08:00	30781	5.000		250
LCS 140-30781/12-A	06/15/2019 08:00	30781	5.000		250
LCSD 140-30781/13-A	06/15/2019 08:00	30781	5.000		250

FORM XII-IN

12-IN
PREPARATION LOG
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Preparation Method: Residual

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight (g)	Initial Volume	Final Volume (mL)
140-15390-1	06/16/2019 08:00	30852	1.000		50
140-15390-2	06/16/2019 08:00	30852	1.000		50
140-15390-3	06/16/2019 08:00	30852	1.000		50
140-15390-4	06/16/2019 08:00	30852	1.000		50
MB 140-30852/11-A	06/16/2019 08:00	30852	1.000		50
LCS 140-30852/12-A	06/16/2019 08:00	30852	1.000		50
LCSD 140-30852/13-A	06/16/2019 08:00	30852	1.000		50

FORM XII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Instrument ID: DUO   Analysis Method: 6010B

Start Date: 06/28/2019 10:02   End Date: 06/28/2019 19:31

Lab Sample Id	D/F	Type	Time	Al	Co	Fe	Li	Mn	Mo	Tl
ZZZZZZ			10:07							
ICV 140-31255/4	1		10:17	X	X	X	X	X	X	X
ZZZZZZ			10:27							
ICSAB 140-31255/8	1		10:45	X	X	X	X	X	X	X
CCV 140-31255/10			10:55							
ZZZZZZ			11:05							
ZZZZZZ			11:15							
ZZZZZZ			11:26							
ZZZZZZ			11:36							
ZZZZZZ			11:46							
CRI 140-31255/22	1		11:56	X	X	X	X	X	X	X
CCB 140-31255/24	1		12:06	X	X	X	X	X	X	X
LCS 140-30852/12-A	1	0	12:17	X	X	X	X	X	X	X
MB 140-30373/11-A	1	T	12:27	X	X	X	X	X	X	X
LCSD 140-30373/13-A	1	T	12:37	X	X	X	X	X	X	X
ZZZZZZ			12:47							
ZZZZZZ			12:58							
CCB 140-31255/36	1		13:08	X	X	X	X	X	X	X
ZZZZZZ			13:19							
140-15390-1	1	0	13:30			X	X	X	X	
140-15390-3	1	0	13:40			X	X	X	X	
ZZZZZZ			13:51							
ZZZZZZ			14:01							
CCB 140-31255/48	1		14:11	X	X	X	X	X	X	X
ZZZZZZ			14:22							
ZZZZZZ			14:32							
140-15390-2	10	0	14:42	X						
140-15390-4	10	0	14:52	X						
CCV 140-31255/58	1		15:02	X	X	X	X	X	X	X
ZZZZZZ			15:13							
ZZZZZZ			15:23							
ZZZZZZ			15:34							
140-15390-1	1	T	15:45			X	X	X	X	
140-15390-3	1	T	15:55		X	X	X	X	X	X
CCV 140-31255/70	1		16:06	X	X	X	X	X	X	X
140-15390-4	1	T	16:16			X	X	X	X	
ZZZZZZ			16:26							
ZZZZZZ			16:37							
ZZZZZZ			16:47							
140-15390-1	10	T	16:57	X						
CCV 140-31255/82	1		17:07	X	X	X	X	X	X	X
140-15390-2	10	T	17:17	X						

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: Eurofins TestAmerica, Knoxville　　Job No.: 140-15390-1

SDG No.:

Instrument ID: DUO　　Analysis Method: 6010B

Start Date: 06/28/2019 10:02　　End Date: 06/28/2019 19:31

Lab Sample Id	D/F	Type	Time	Analytes: Al	Co	Fe	Li	Mn	Mo	Tl
140-15390-4	10	T	17:27	X						
CCB 140-31255/88	1		17:37	X	X	X	X	X	X	X
ZZZZZZ			17:48							
ZZZZZZ			17:58							
140-15390-2	2	0	18:09		X					X
140-15390-4	2	0	18:19		X					X
CCV 140-31255/98	1		18:29	X	X	X	X	X	X	X
ZZZZZZ			18:40							
ZZZZZZ			18:50							
140-15390-2	2	T	19:00		X					X
ZZZZZZ			19:11							
CCB 140-31255/108	1		19:21	X	X	X	X	X	X	X
ZZZZZZ			19:31							

Prep Types:
0 = Step 7
T = Total/NA

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Instrument ID: DUO Analysis Method: 6010B SEP

Start Date: 06/17/2019 10:14 End Date: 06/17/2019 17:39

Lab Sample Id	D/F	Type	Time	Al	Co	Fe	Li	Mn	Mo	Tl
ICIS 140-30900/1	1		10:14	X	X	X	X	X	X	X
ZZZZZZ			10:20							
CCVL 140-30900/3	1		10:25	X	X	X	X	X	X	X
ICV 140-30900/4	1		10:30	X	X	X	X	X	X	X
ICB 140-30900/5	1		10:35	X	X	X	X	X	X	X
ICSA 140-30900/6	1		10:40	X	X	X	X	X	X	X
ICSAB 140-30900/7	1		10:46	X	X	X	X	X	X	X
CRI 140-30900/8			10:51							
CCV 140-30900/9			10:56							
CCB 140-30900/10			11:01							
ZZZZZZ			11:06							
ZZZZZZ			11:11							
ZZZZZZ			11:16							
ZZZZZZ			11:22							
ZZZZZZ			11:27							
ZZZZZZ			11:32							
ZZZZZZ			11:37							
ZZZZZZ			11:41							
ZZZZZZ			11:47							
ZZZZZZ			11:52							
CCV 140-30900/21			11:57							
CCB 140-30900/22			12:02							
ZZZZZZ			12:07							
ZZZZZZ			12:12							
ZZZZZZ			12:17							
ZZZZZZ			12:23							
ZZZZZZ			12:28							
ZZZZZZ			12:32							
ZZZZZZ			12:37							
ZZZZZZ			12:43							
ZZZZZZ			12:47							
ZZZZZZ			12:52							
CCV 140-30900/33			12:58							
CCB 140-30900/34			13:03							
ZZZZZZ			13:08							
ZZZZZZ			13:13							
ZZZZZZ			13:18							
ZZZZZZ			13:23							
ZZZZZZ			13:28							
CRI 140-30900/40	1		13:33	X	X	X	X	X	X	X
CCV 140-30900/41	1		13:38	X	X	X	X	X	X	X
CCB 140-30900/42	1		13:43	X	X	X	X	X	X	X

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Instrument ID: DUO   Analysis Method: 6010B SEP

Start Date: 06/17/2019 10:14   End Date: 06/17/2019 17:39

Lab Sample Id	D/F	Type	Time	Analytes: Al	Co	Fe	Li	Mn	Mo	Tl
MB 140-30374/11-B ^4	4	O	13:48	X	X	X	X	X	X	X
LCS 140-30374/12-B ^5	5	O	13:53	X	X	X	X	X	X	X
LCSD 140-30374/13-B ^5	5	O	13:58	X	X	X	X	X	X	X
ZZZZZZ			14:03							
ZZZZZZ			14:09							
ZZZZZZ			14:14							
ZZZZZZ			14:19							
ZZZZZZ			14:24							
ZZZZZZ			14:29							
ZZZZZZ			14:35							
CCV 140-30900/53	1		14:40	X	X	X	X	X	X	X
CCB 140-30900/54	1		14:45	X	X	X	X	X	X	X
140-15390-1	4	O	14:50	X	X	X	X	X	X	X
140-15390-2	4	O	14:55	X	X	X	X	X	X	X
140-15390-3	4	O	15:00	X	X	X	X	X	X	X
140-15390-4	4	O	15:06	X	X	X	X	X	X	X
MB 140-30423/11-B ^3	3	$	15:11	X	X	X	X	X	X	X
LCS 140-30423/12-B ^5	5	$	15:16	X	X	X	X	X	X	X
LCSD 140-30423/13-B ^5	5	$	15:21	X	X	X	X	X	X	X
ZZZZZZ			15:27							
ZZZZZZ			15:32							
ZZZZZZ			15:37							
CCV 140-30900/65	1		15:43	X	X	X	X	X	X	X
CCB 140-30900/66	1		15:48	X	X	X	X	X	X	X
ZZZZZZ			15:53							
ZZZZZZ			15:58							
ZZZZZZ			16:03							
ZZZZZZ			16:09							
140-15390-2	3	$	16:14	X	X	X	X	X	X	X
140-15390-3	3	$	16:19	X	X	X	X	X	X	X
ZZZZZZ			16:25							
ZZZZZZ			16:30							
ZZZZZZ			16:40							
ZZZZZZ			16:45							
ZZZZZZ			16:51							
CCV 140-30900/78	1		17:02	X	X	X	X	X	X	X
CCB 140-30900/79	1		17:07	X	X	X	X	X	X	X
140-15390-1	3	$	17:12	X	X	X	X	X	X	X
140-15390-4	3	$	17:18	X	X	X	X	X	X	X
ZZZZZZ			17:23							
CCV 140-30900/83	1		17:30	X	X	X	X	X	X	X
CCB 140-30900/84	1		17:39	X	X	X	X	X	X	X

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Instrument ID: DUO Analysis Method: 6010B SEP

Start Date: 06/17/2019 10:14 End Date: 06/17/2019 17:39

Lab Sample Id	D/F	Type	Time	Analytes																									
				Al	Co	Fe	Li	Mn	Mo	Tl																			

Prep Types:
$ = Step 2
O = Step 1

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Instrument ID: DUO Analysis Method: 6010B SEP

Start Date: 06/26/2019 16:00 End Date: 06/27/2019 01:03

Lab Sample Id	D/F	Type	Time	Analytes						
				Al	Co	Fe	Li	Mn	Mo	Tl
ICIS 140-31197/1	1		16:00	X	X	X	X	X	X	X
ZZZZZZ			16:05							
CCVL 140-31197/3	1		16:11	X	X	X	X	X	X	X
ICV 140-31197/4	1		16:28	X	X	X	X	X	X	X
ICB 140-31197/5	1		16:33	X	X	X	X	X	X	X
ICSA 140-31197/6	1		16:38	X	X	X	X	X	X	X
ICSAB 140-31197/7	1		16:44	X	X	X	X	X	X	X
CRI 140-31197/8	1		16:49	X	X	X	X	X	X	X
CCV 140-31197/9	1		16:54	X	X	X	X	X	X	X
CCB 140-31197/10	1		16:59	X	X	X	X	X	X	X
MB 140-30453/11-B	1	!	17:04	X	X	X	X	X	X	X
LCS 140-30453/12-B	1	!	17:09	X	X	X	X	X	X	X
LCSD 140-30453/13-B	1	!	17:14	X	X	X	X	X	X	X
ZZZZZZ			17:19							
ZZZZZZ			17:24							
ZZZZZZ			17:30							
ZZZZZZ			17:35							
ZZZZZZ			17:40							
ZZZZZZ			17:45							
ZZZZZZ			17:51							
CCV 140-31197/21	1		17:56	X	X	X	X	X	X	X
CCB 140-31197/22	1		18:01	X	X	X	X	X	X	X
140-15390-1	1	!	18:06	X	X	X	X	X	X	X
140-15390-2	1	!	18:11	X	X	X	X	X	X	X
140-15390-3	1	!	18:16	X	X	X	X	X	X	X
140-15390-4	1	!	18:22	X	X	X	X	X	X	X
MB 140-30481/11-B	1	#	18:27	X	X	X	X	X	X	X
LCS 140-30481/12-B	1	#	18:32	X	X	X	X	X	X	X
LCSD 140-30481/13-B	1	#	18:37	X	X	X	X	X	X	X
ZZZZZZ			18:42							
ZZZZZZ			18:47							
ZZZZZZ			18:52							
CCV 140-31197/33	1		18:57	X	X	X	X	X	X	X
CCB 140-31197/34	1		19:02	X	X	X	X	X	X	X
ZZZZZZ			19:08							
ZZZZZZ			19:13							
ZZZZZZ			19:18							
140-15390-1	1	#	19:23	X	X	X	X	X	X	X
140-15390-2	1	#	19:28	X	X	X	X	X	X	X
140-15390-3	1	#	19:33	X	X	X	X	X	X	X
140-15390-4	1	#	19:38	X	X	X	X	X	X	X
ZZZZZZ			19:43							

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Instrument ID: DUO   Analysis Method: 6010B SEP

Start Date: 06/26/2019 16:00   End Date: 06/27/2019 01:03

Lab Sample Id	D/F	Type	Time	Analytes						
				Al	Co	Fe	Li	Mn	Mo	Tl
MB 140-30529/11-B ^5	5	?	19:48	X	X	X	X	X	X	X
LCS 140-30529/12-B ^5	5	?	19:54	X	X	X	X	X	X	X
CCV 140-31197/45	1		19:59	X	X	X	X	X	X	X
CCB 140-31197/46	1		20:04	X	X	X	X	X	X	X
LCSD 140-30529/13-B ^5	5	?	20:09	X	X	X	X	X	X	X
ZZZZZZ			20:14							
ZZZZZZ			20:19							
ZZZZZZ			20:25							
ZZZZZZ			20:30							
ZZZZZZ			20:35							
ZZZZZZ			20:41							
140-15390-1	5	?	20:46	X	X	X	X	X	X	X
140-15390-2	5	?	20:51	X	X	X	X	X	X	X
ZZZZZZ			20:57							
CCV 140-31197/57	1		21:02	X	X	X	X	X	X	X
CCB 140-31197/58	1		21:07	X	X	X	X	X	X	X
140-15390-3	5	?	21:12	X	X	X	X	X	X	X
140-15390-4	5	?	21:18	X	X	X	X	X	X	X
MB 140-30781/11-A	1	@	21:23	X	X	X	X	X	X	X
LCS 140-30781/12-A	1	@	21:28	X	X	X	X	X	X	X
LCSD 140-30781/13-A	1	@	21:33	X	X	X	X	X	X	X
ZZZZZZ			21:38							
ZZZZZZ			21:43							
ZZZZZZ			21:48							
ZZZZZZ			21:54							
ZZZZZZ			21:59							
CCV 140-31197/69	1		22:04	X	X	X	X	X	X	X
CCB 140-31197/70	1		22:09	X	X	X	X	X	X	X
ZZZZZZ			22:14							
ZZZZZZ			22:20							
140-15390-1	1	@	22:25	X	X	X	X	X	X	X
140-15390-2	1	@	22:30	X	X	X	X	X	X	X
140-15390-3	1	@	22:35	X	X	X	X	X	X	X
140-15390-4	1	@	22:40	X	X	X	X	X	X	X
CRI 140-31197/77	1		22:46	X	X	X	X	X	X	X
CCV 140-31197/78	1		22:51	X	X	X	X	X	X	X
CCB 140-31197/79	1		22:56	X	X	X	X	X	X	X
ZZZZZZ			23:01							
ZZZZZZ			23:06							
ZZZZZZ			23:11							
ZZZZZZ			23:16							
ZZZZZZ			23:21							

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Instrument ID: DUO   Analysis Method: 6010B SEP

Start Date: 06/26/2019 16:00   End Date: 06/27/2019 01:03

Lab Sample Id	D/F	Type	Time	Analytes																									
				Al	Co	Fe	Li	Mn	Mo	Tl																			
ZZZZZZ			23:26																										
ZZZZZZ			23:31																										
ZZZZZZ			23:36																										
ZZZZZZ			23:42																										
ZZZZZZ			23:47																										
CCV 140-31197/90			23:52																										
CCB 140-31197/91			23:57																										
ZZZZZZ			00:02																										
ZZZZZZ			00:07																										
ZZZZZZ			00:12																										
ZZZZZZ			00:18																										
ZZZZZZ			00:23																										
ZZZZZZ			00:28																										
ZZZZZZ			00:32																										
CRI 140-31197/99			00:38																										
CCV 140-31197/100			00:43																										
CCB 140-31197/101			00:48																										
ZZZZZZ			00:53																										
ZZZZZZ			00:58																										
ZZZZZZ			01:03																										

Prep Types:
! = Step 3
= Step 4
? = Step 5
@ = Step 6

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Instrument ID: DUO Analysis Method: 6010B SEP

Start Date: 06/28/2019 10:02 End Date: 06/28/2019 19:31

Lab Sample Id	D/F	Type	Time	Al	Co	Fe	Li	Mn	Mo	Tl
ICIS 140-31255/1	1		10:02	X	X	X	X	X	X	X
CCVL 140-31255/3	1		10:12	X	X	X	X	X	X	X
ICB 140-31255/5	1		10:22	X	X	X	X	X	X	X
ICSA 140-31255/7	1		10:39	X	X	X	X	X	X	X
CRI 140-31255/9			10:50							
CCB 140-31255/11			11:00							
ZZZZZZ			11:10							
ZZZZZZ			11:20							
ZZZZZZ			11:31							
ZZZZZZ			11:40							
ZZZZZZ			11:51							
CCV 140-31255/23	1		12:01	X	X	X	X	X	X	X
MB 140-30852/11-A	1	0	12:11	X	X	X	X	X	X	X
LCSD 140-30852/13-A	1	0	12:22	X	X	X	X	X	X	X
LCS 140-30373/12-A	1	T	12:32	X	X	X	X	X	X	X
ZZZZZZ			12:42							
ZZZZZZ			12:53							
CCV 140-31255/35	1		13:03	X	X	X	X	X	X	X
ZZZZZZ			13:13							
ZZZZZZ			13:24							
140-15390-2	1	0	13:35			X	X	X	X	
140-15390-4	1	0	13:46			X	X	X	X	
ZZZZZZ			13:56							
CCV 140-31255/47	1		14:06	X	X	X	X	X	X	X
ZZZZZZ			14:17							
ZZZZZZ			14:27							
140-15390-1	10	0	14:37	X						
140-15390-3	10	0	14:47	X						
ZZZZZZ			14:57							
CCB 140-31255/59	1		15:07	X	X	X	X	X	X	X
ZZZZZZ			15:18							
ZZZZZZ			15:29							
ZZZZZZ			15:40							
140-15390-2	1	T	15:50			X	X	X	X	
ZZZZZZ			16:01							
CCB 140-31255/71	1		16:11	X	X	X	X	X	X	X
ZZZZZZ			16:21							
ZZZZZZ			16:31							
ZZZZZZ			16:42							
ZZZZZZ			16:52							
ZZZZZZ			17:02							
CCB 140-31255/83	1		17:12	X	X	X	X	X	X	X

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

Instrument ID: DUO Analysis Method: 6010B SEP

Start Date: 06/28/2019 10:02 End Date: 06/28/2019 19:31

Lab Sample Id	D/F	Type	Time	Analytes: Al	Co	Fe	Li	Mn	Mo	Tl
140-15390-3	10	T	17:22	X						
CCV 140-31255/87	1		17:32	X	X	X	X	X	X	X
ZZZZZZ			17:43							
ZZZZZZ			17:53							
140-15390-1	2	0	18:04		X					X
140-15390-3	2	0	18:14		X					X
ZZZZZZ			18:24							
CCB 140-31255/99	1		18:34	X	X	X	X	X	X	X
ZZZZZZ			18:45							
140-15390-1	2	T	18:55		X					X
140-15390-4	2	T	19:06		X					X
CCV 140-31255/107	1		19:16	X	X	X	X	X	X	X
ZZZZZZ			19:26							

Prep Types:
0 = Step 7
T = Total/NA

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Instrument ID: NOEQUIP   Analysis Method: 6010B SEP

Start Date: 07/11/2019 10:59   End Date: 07/11/2019 10:59

Lab Sample Id	D/F	Type	Time	Analytes																									
				Al	Co	Fe	Li	Mn	Mo	Tl																			
ZZZZZZ			10:59																										
ZZZZZZ			10:59																										
ZZZZZZ			10:59																										
ZZZZZZ			10:59																										
ZZZZZZ			10:59																										
140-15390-1	1	&	10:59	X	X	X	X	X	X	X																			
140-15390-2	1	&	10:59	X	X	X	X	X	X	X																			
140-15390-3	1	&	10:59	X	X	X	X	X	X	X																			
140-15390-4	1	&	10:59	X	X	X	X	X	X	X																			
ZZZZZZ			10:59																										
ZZZZZZ			10:59																										
ZZZZZZ			10:59																										
ZZZZZZ			10:59																										
ZZZZZZ			10:59																										
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ZZZZZZ			10:59																										
ZZZZZZ			10:59																										
ZZZZZZ			10:59																										
ZZZZZZ			10:59																										

Prep Types:
& = Sum of Steps 1-7

FORM XIII-IN

15-IN
ICP INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

ICP Instrument ID: DUO Start Date: 06/17/2019 End Date: 06/17/2019

Lab Sample ID	Time	Internal Standards %RI For:									
		Element Y 224.306	Q	Element Y 371.030	Q	Element	Q	Element	Q	Element	Q
ICIS 140-30900/1	10:14										
CCVL 140-30900/3	10:25	101		101							
ICV 140-30900/4	10:30	101		101							
ICB 140-30900/5	10:35	103		103							
ICSA 140-30900/6	10:40	95		93							
ICSAB 140-30900/7	10:46	99		99							
CRI 140-30900/40	13:33	102		100							
CCV 140-30900/41	13:38	100		99							
CCB 140-30900/42	13:43	103		101							
MB 140-30374/11-B ^4	13:48	97		97							
LCS 140-30374/12-B ^5	13:53	99		101							
LCSD 140-30374/13-B ^5	13:58	100		99							
CCV 140-30900/53	14:40	98		101							
CCB 140-30900/54	14:45	101		103							
140-15390-1	14:50	97		100							
140-15390-2	14:55	97		99							
140-15390-3	15:00	98		100							
140-15390-4	15:06	98		100							
MB 140-30423/11-B ^3	15:11	96		96							
LCS 140-30423/12-B ^5	15:16	99		100							
LCSD 140-30423/13-B ^5	15:21	98		100							
CCV 140-30900/65	15:43	99		102							
CCB 140-30900/66	15:48	101		103							
140-15390-1	16:09	96		97							
140-15390-2	16:14	96		96							
140-15390-3	16:19	97		97							
140-15390-4	16:25			73							
140-15390-1	16:40			72							
140-15390-4	16:45	98									
CCV 140-30900/78	17:02	98		100							
CCB 140-30900/79	17:07	101		103							
140-15390-1	17:12	82		97							
140-15390-4	17:18	97		97							
CCV 140-30900/83	17:30	98		99							
CCB 140-30900/84	17:39	100		100							

FORM XV - IN

15-IN
ICP INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

ICP Instrument ID: DUO Start Date: 06/26/2019 End Date: 06/26/2019

Lab Sample ID	Time	Internal Standards %RI For:									
		Element Y 224.306	Q	Element Y 371.030	Q	Element	Q	Element	Q	Element	Q
ICIS 140-31197/1	16:00										
CCVL 140-31197/3	16:11	99		99							
ICV 140-31197/4	16:28	99		99							
ICB 140-31197/5	16:33	98		97							
ICSA 140-31197/6	16:38	93		93							
ICSAB 140-31197/7	16:44	93		91							
CRI 140-31197/8	16:49	99		99							
CCV 140-31197/9	16:54	97		96							
CCB 140-31197/10	16:59	100		100							
MB 140-30453/11-B	17:04	100		100							
LCS 140-30453/12-B	17:09	100		100							
LCSD 140-30453/13-B	17:14	99		98							
CCV 140-31197/21	17:56	98		99							
CCB 140-31197/22	18:01	100		99							
140-15390-1	18:06	100		100							
140-15390-2	18:11	100		100							
140-15390-3	18:16	99		99							
140-15390-4	18:22	100		100							
MB 140-30481/11-B	18:27	99		101							
LCS 140-30481/12-B	18:32	98		100							
LCSD 140-30481/13-B	18:37	99		101							
CCV 140-31197/33	18:57	97		98							
CCB 140-31197/34	19:02	100		100							
140-15390-1	19:23	102		103							
140-15390-2	19:28	101		104							
140-15390-3	19:33	101		103							
140-15390-4	19:38	102		105							
MB 140-30529/11-B ^5	19:48	92		91							
LCS 140-30529/12-B ^5	19:54	93		92							
CCV 140-31197/45	19:59	96		98							
CCB 140-31197/46	20:04	99		100							
LCSD 140-30529/13-B ^5	20:09	93		93							
140-15390-1	20:46	92		91							
140-15390-2	20:51	91		91							
CCV 140-31197/57	21:02	95		98							
CCB 140-31197/58	21:07	98		100							
140-15390-3	21:12	91		91							
140-15390-4	21:18	90		90							

FORM XV - IN

15-IN
ICP INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY
METALS

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

ICP Instrument ID: DUO   Start Date: 06/26/2019 End Date: 06/26/2019

Lab Sample ID	Time	Internal Standards %RI For:									
		Element Y 224.306	Q	Element Y 371.030	Q	Element	Q	Element	Q	Element	Q
MB 140-30781/11-A	21:23	100		101							
LCS 140-30781/12-A	21:28	98		100							
LCSD 140-30781/13-A	21:33	97		99							
CCV 140-31197/69	22:04	94		97							
CCB 140-31197/70	22:09	96		99							
140-15390-1	22:25	98		99							
140-15390-2	22:30	97		98							
140-15390-3	22:35	99		99							
140-15390-4	22:40	99		100							
CRI 140-31197/77	22:46	96		99							
CCV 140-31197/78	22:51	94		97							
CCB 140-31197/79	22:56	96		98							

FORM XV - IN

15-IN
ICP INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

ICP Instrument ID: DUO Start Date: 06/28/2019 End Date: 06/28/2019

Lab Sample ID	Time	Internal Standards %RI For:									
		Element Y 224.306	Q	Element Y 371.030	Q	Element	Q	Element	Q	Element	Q
ICIS 140-31255/1	10:02										
CCVL 140-31255/3	10:12	98		98							
ICV 140-31255/4	10:17	99		99							
ICB 140-31255/5	10:22	99		99							
ICSA 140-31255/7	10:39	90		91							
ICSAB 140-31255/8	10:45	95		94							
CRI 140-31255/22	11:56	99		97							
CCV 140-31255/23	12:01	97		96							
CCB 140-31255/24	12:06	100		98							
MB 140-30852/11-A	12:11	100		100							
LCS 140-30852/12-A	12:17	98		98							
LCSD 140-30852/13-A	12:22	98		97							
MB 140-30373/11-A	12:27	101		100							
LCS 140-30373/12-A	12:32	99		98							
LCSD 140-30373/13-A	12:37	99		98							
CCV 140-31255/35	13:03	99		98							
CCB 140-31255/36	13:08	100		98							
140-15390-1	13:30	101		99							
140-15390-2	13:35	100		98							
140-15390-3	13:40	103		100							
140-15390-4	13:46	101		99							
MB 140-30852/11-A ^10	13:51	100		98							
CCV 140-31255/47	14:06	99		97							
CCB 140-31255/48	14:11	100		97							
140-15390-1	14:37	100		99							
140-15390-2	14:42	101		99							
140-15390-3	14:47	101		99							
140-15390-4	14:52	102		100							
CCV 140-31255/58	15:02	97		96							
CCB 140-31255/59	15:07	100		97							
140-15390-1	15:45	102		100							
140-15390-2	15:50	101		100							
140-15390-3	15:55	108		106							
CCV 140-31255/70	16:06	95		95							
CCB 140-31255/71	16:11	97		96							
140-15390-4	16:16	103		102							
MB 140-30373/11-A ^10	16:21	98		97							
140-15390-1	16:57	99		99							
CCV 140-31255/82	17:07	95		96							

FORM XV - IN

15-IN
ICP INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY
METALS

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-15390-1

SDG No.:

ICP Instrument ID: DUO Start Date: 06/28/2019 End Date: 06/28/2019

Lab Sample ID	Time	Internal Standards %RI For: Element Y 224.306	Q	Element Y 371.030	Q	Element	Q	Element	Q	Element	Q
CCB 140-31255/83	17:12	98		97							
140-15390-2	17:17	99		99							
140-15390-3	17:22	100		100							
140-15390-4	17:27	100		99							
CCV 140-31255/87	17:32	95		96							
CCB 140-31255/88	17:37	99		99							
140-15390-1	18:04	98		99							
140-15390-2	18:09	98		99							
140-15390-3	18:14	99		100							
140-15390-4	18:19	98		99							
CCV 140-31255/98	18:29	94		96							
CCB 140-31255/99	18:34	96		97							
140-15390-1	18:55	98		100							
140-15390-2	19:00	97		100							
140-15390-4	19:06	99		101							
CCV 140-31255/107	19:16	93		96							
CCB 140-31255/108	19:21	96		98							

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-15390-1

SDG No.:

Batch Number: 30373 Batch Start Date: 05/30/19 08:00 Batch Analyst: Collins, Kerry N

Batch Method: Total Batch End Date: 05/30/19 15:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	CalcMsg	90L1HgCA1000P 00038	90SPKNX10P 00002	90SPKNX8P 00001
140-15390-A-1	MW-2 (14-19)	Total, 6010B	T	1.000 g	50 mL	NO NOMINAL AMOUNT			
140-15390-A-2	MW-5 (12-17)	Total, 6010B	T	1.000 g	50 mL	NO NOMINAL AMOUNT			
140-15390-A-3	MW-106 (10-15)	Total, 6010B	T	1.000 g	50 mL	NO NOMINAL AMOUNT			
140-15390-A-4	MW-107 (19-24)	Total, 6010B	T	1.000 g	50 mL	NO NOMINAL AMOUNT			
MB 140-30373/11		Total, 6010B		1.000 g	50 mL	NO NOMINAL AMOUNT			
LCS 140-30373/12		Total, 6010B		1.000 g	50 mL	NO NOMINAL AMOUNT	0.25 mL	0.5 mL	0.5 mL
LCSD 140-30373/13		Total, 6010B		1.000 g	50 mL	NO NOMINAL AMOUNT	0.25 mL	0.5 mL	0.5 mL

Lab Sample ID	Client Sample ID	Method Chain	Basis	90SPKNX9P 00002					
140-15390-A-1	MW-2 (14-19)	Total, 6010B	T						
140-15390-A-2	MW-5 (12-17)	Total, 6010B	T						
140-15390-A-3	MW-106 (10-15)	Total, 6010B	T						
140-15390-A-4	MW-107 (19-24)	Total, 6010B	T						
MB 140-30373/11		Total, 6010B							
LCS 140-30373/12		Total, 6010B		0.5 mL					
LCSD 140-30373/13		Total, 6010B		0.5 mL					

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-15390-1

SDG No.:

Batch Number: 30373 Batch Start Date: 05/30/19 08:00 Batch Analyst: Collins, Kerry N

Batch Method: Total Batch End Date: 05/30/19 15:00

Batch Notes	
Balance ID	mt2
Boric Acid ID	218606 1ml
Digestion Tubes ID	274661-5420
Hydrochloric Acid ID	229508 3ml
Hydrofluoric Acid ID	202662 1ml
Nitric Acid ID	228724 10ml
Hot Block ID	B
Pipette/Syringe/Dispenser ID	met-016
Perform Calculation (0=No, 1=Yes)	1
Temperature	91 Degrees C
Thermometer ID	metals 16

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-15390-1

SDG No.:

Batch Number: 30374 Batch Start Date: 05/30/19 08:00 Batch Analyst: Collins, Kerry N

Batch Method: Exchangeable Batch End Date: 05/30/19 15:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	90L1HgCA1000P 00038	90SPKNX10P 00002	90SPKNX8P 00001	90SPKNX9P 00002
140-15390-A-1	MW-2 (14-19)	Exchangeable , 3010A, 6010B SEP	O	5.000 g	25 mL				
140-15390-A-2	MW-5 (12-17)	Exchangeable , 3010A, 6010B SEP	O	5.000 g	25 mL				
140-15390-A-3	MW-106 (10-15)	Exchangeable , 3010A, 6010B SEP	O	5.000 g	25 mL				
140-15390-A-4	MW-107 (19-24)	Exchangeable , 3010A, 6010B SEP	O	5.000 g	25 mL				
MB 140-30374/11		Exchangeable , 3010A, 6010B SEP		5.000 g	25 mL				
LCS 140-30374/12		Exchangeable , 3010A, 6010B SEP		5.000 g	25 mL	0.125 mL	2.5 mL	2.5 mL	2.5 mL
LCSD 140-30374/13		Exchangeable , 3010A, 6010B SEP		5.000 g	25 mL	0.125 mL	2.5 mL	2.5 mL	2.5 mL

Batch Notes	
Balance ID	mt2
Centrifuge End Date Time	5-30 12:55
Centrifuge Start Date Time	5-30 12:25
Extraction End Date	5-30 10:45
Extraction Solution ID	221985 25ml
Extraction Start Date	5-30 9:45
Pipette/Syringe/Dispenser ID	met-014, met-016 18L15C0
Syringe Filter Lot #	R7EA01040

Basis	Basis Description
O	Step 1

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-15390-1

SDG No.:

Batch Number: 30422 Batch Start Date: 05/31/19 08:00 Batch Analyst: Collins, Kerry N

Batch Method: 3010A Batch End Date: 05/31/19 17:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount				
140-15390-A-1-B	MW-2 (14-19)	3010A, 6010B SEP	O	5 mL	50 mL				
140-15390-A-2-B	MW-5 (12-17)	3010A, 6010B SEP	O	5 mL	50 mL				
140-15390-A-3-B	MW-106 (10-15)	3010A, 6010B SEP	O	5 mL	50 mL				
140-15390-A-4-B	MW-107 (19-24)	3010A, 6010B SEP	O	5 mL	50 mL				
MB 140-30374/11-A		3010A, 6010B SEP		5 mL	50 mL				
LCS 140-30374/12-A		3010A, 6010B SEP		5 mL	50 mL				
LCSD 140-30374/13-A		3010A, 6010B SEP		5 mL	50 mL				

Batch Notes	
Digestion Unit ID	E
Hydrochloric Acid ID	229508 2.5ml
Nitric Acid ID	229502 3ml
Pipette/Syringe/Dispenser ID	P200
Thermometer ID	metals 10
Digestion Tube/Cup ID	091418
Temperature - Uncorrected - End	93 Degrees C
Temperature - Uncorrected - Start	93 Degrees C

Basis	Basis Description
O	Step 1

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-15390-1

SDG No.:

Batch Number: 30423 Batch Start Date: 05/31/19 08:00 Batch Analyst: Collins, Kerry N

Batch Method: Carbonate Batch End Date: 05/31/19 15:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	90L1HgCA1000P 00038	90SPKNX10P 00002	90SPKNX8P 00001	90SPKNX9P 00002
140-15390-A-1	MW-2 (14-19)	Carbonate, 3010A, 6010B SEP	$	5.000 g	25 mL				
140-15390-A-2	MW-5 (12-17)	Carbonate, 3010A, 6010B SEP	$	5.000 g	25 mL				
140-15390-A-3	MW-106 (10-15)	Carbonate, 3010A, 6010B SEP	$	5.000 g	25 mL				
140-15390-A-4	MW-107 (19-24)	Carbonate, 3010A, 6010B SEP	$	5.000 g	25 mL				
MB 140-30423/11		Carbonate, 3010A, 6010B SEP		5.000 g	25 mL				
LCS 140-30423/12		Carbonate, 3010A, 6010B SEP		5.000 g	25 mL	0.125 mL	2.5 mL	2.5 mL	2.5 mL
LCSD 140-30423/13		Carbonate, 3010A, 6010B SEP		5.000 g	25 mL	0.125 mL	2.5 mL	2.5 mL	2.5 mL

Lab Sample ID	Client Sample ID	Method Chain	Basis	AnalysisComment					
140-15390-A-1	MW-2 (14-19)	Carbonate, 3010A, 6010B SEP	$						
140-15390-A-2	MW-5 (12-17)	Carbonate, 3010A, 6010B SEP	$						
140-15390-A-3	MW-106 (10-15)	Carbonate, 3010A, 6010B SEP	$						
140-15390-A-4	MW-107 (19-24)	Carbonate, 3010A, 6010B SEP	$						
MB 140-30423/11		Carbonate, 3010A, 6010B SEP							

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-15390-1

SDG No.:

Batch Number: 30423 Batch Start Date: 05/31/19 08:00 Batch Analyst: Collins, Kerry N

Batch Method: Carbonate Batch End Date: 05/31/19 15:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	AnalysisComment					
LCS 140-30423/12		Carbonate, 3010A, 6010B SEP		white precipitate bottom LCS/LCSD after centrifuging					
LCSD 140-30423/13		Carbonate, 3010A, 6010B SEP		white precipitate bottom LCS/LCSD after centrifuging					

Batch Notes	
Centrifuge End Date Time	5-31 13:40
Centrifuge Start Date Time	5-31 13:10
Extraction End Date	5-31 12:40
Extraction Solution ID	222472 25ml
Extraction Start Date	5-31 9:40
Pipette/Syringe/Dispenser ID	met-014, met-016 18L15C0
Syringe Filter Lot #	R7EA01040

Basis	Basis Description
$	Step 2

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-15390-1

SDG No.:

Batch Number: 30452 Batch Start Date: 06/03/19 08:00 Batch Analyst: Collins, Kerry N

Batch Method: 3010A Batch End Date: 06/03/19 17:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount				
140-15390-A-1-D	MW-2 (14-19)	3010A, 6010B SEP	$	5 mL	50 mL				
140-15390-A-2-D	MW-5 (12-17)	3010A, 6010B SEP	$	5 mL	50 mL				
140-15390-A-3-D	MW-106 (10-15)	3010A, 6010B SEP	$	5 mL	50 mL				
140-15390-A-4-D	MW-107 (19-24)	3010A, 6010B SEP	$	5 mL	50 mL				
MB 140-30423/11-A		3010A, 6010B SEP		5 mL	50 mL				
LCS 140-30423/12-A		3010A, 6010B SEP		5 mL	50 mL				
LCSD 140-30423/13-A		3010A, 6010B SEP		5 mL	50 mL				

Batch Notes	
Digestion Unit ID	E
Hydrochloric Acid ID	229508 2.5ml
Nitric Acid ID	229502 3ml
Pipette/Syringe/Dispenser ID	P200
Thermometer ID	metals 10
Digestion Tube/Cup ID	091418
Temperature - Uncorrected - End	94 Degrees C
Temperature - Uncorrected - Start	94 Degrees C

Basis	Basis Description
$	Step 2

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill   Job No.: 140-15390-1

SDG No.:

Batch Number: 30453   Batch Start Date: 06/03/19 08:00   Batch Analyst: Collins, Kerry N

Batch Method: Non-Crystalline   Batch End Date: 06/03/19 16:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	90L1HgCA1000P 00039	90SPKNX10P 00002	90SPKNX8P 00001	90SPKNX9P 00002
140-15390-A-1	MW-2 (14-19)	Non-Crystalline, 3010A, 6010B SEP	!	5.000 g	25 mL				
140-15390-A-2	MW-5 (12-17)	Non-Crystalline, 3010A, 6010B SEP	!	5.000 g	25 mL				
140-15390-A-3	MW-106 (10-15)	Non-Crystalline, 3010A, 6010B SEP	!	5.000 g	25 mL				
140-15390-A-4	MW-107 (19-24)	Non-Crystalline, 3010A, 6010B SEP	!	5.000 g	25 mL				
MB 140-30453/11		Non-Crystalline, 3010A, 6010B SEP		5.000 g	25 mL				
LCS 140-30453/12		Non-Crystalline, 3010A, 6010B SEP		5.000 g	25 mL	0.125 mL	2.5 mL	2.5 mL	2.5 mL
LCSD 140-30453/13		Non-Crystalline, 3010A, 6010B SEP		5.000 g	25 mL	0.125 mL	2.5 mL	2.5 mL	2.5 mL

Lab Sample ID	Client Sample ID	Method Chain	Basis	AnalysisComment					
140-15390-A-1	MW-2 (14-19)	Non-Crystalline, 3010A, 6010B SEP	!						
140-15390-A-2	MW-5 (12-17)	Non-Crystalline, 3010A, 6010B SEP	!						
140-15390-A-3	MW-106 (10-15)	Non-Crystalline, 3010A, 6010B SEP	!						
140-15390-A-4	MW-107 (19-24)	Non-Crystalline, 3010A, 6010B SEP	!						
MB 140-30453/11		Non-Crystalline, 3010A, 6010B SEP							

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-15390-1

SDG No.:

Batch Number: 30453 Batch Start Date: 06/03/19 08:00 Batch Analyst: Collins, Kerry N

Batch Method: Non-Crystalline Batch End Date: 06/03/19 16:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	AnalysisComment					
LCS 140-30453/12		Non-Crystalline, 3010A, 6010B SEP		white precipitate bottom LCS/LCSD after centrifuging					
LCSD 140-30453/13		Non-Crystalline, 3010A, 6010B SEP		white precipitate bottom LCS/LCSD after centrifuging					

Batch Notes	
Centrifuge End Date Time	6-3 14:10
Centrifuge Start Date Time	6-3 13:40
Extraction End Date	6-3 12:15
Extraction Solution ID	232082 25ml
Extraction Start Date	6-3 8:15
Pipette/Syringe/Dispenser ID	met-014, met-016 18L15C0
Syringe Filter Lot #	R7EA01040

Basis	Basis Description
!	Step 3

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-15390-1

SDG No.:

Batch Number: 30480 Batch Start Date: 06/04/19 08:00 Batch Analyst: Collins, Kerry N

Batch Method: 3010A Batch End Date: 06/04/19 17:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount				
140-15390-A-1-F	MW-2 (14-19)	3010A, 6010B SEP	!	5 mL	50 mL				
140-15390-A-2-F	MW-5 (12-17)	3010A, 6010B SEP	!	5 mL	50 mL				
140-15390-A-3-F	MW-106 (10-15)	3010A, 6010B SEP	!	5 mL	50 mL				
140-15390-A-4-F	MW-107 (19-24)	3010A, 6010B SEP	!	5 mL	50 mL				
MB 140-30453/11-A		3010A, 6010B SEP		5 mL	50 mL				
LCS 140-30453/12-A		3010A, 6010B SEP		5 mL	50 mL				
LCSD 140-30453/13-A		3010A, 6010B SEP		5 mL	50 mL				

Batch Notes	
Digestion Unit ID	E
Hydrochloric Acid ID	229508 2.5ml
Nitric Acid ID	229502 3ml
Pipette/Syringe/Dispenser ID	P200
Thermometer ID	metals 10
Digestion Tube/Cup ID	051519
Temperature - Uncorrected - End	94 Degrees C
Temperature - Uncorrected - Start	94 Degrees C

Basis	Basis Description
!	Step 3

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-15390-1

SDG No.:

Batch Number: 30481 Batch Start Date: 06/04/19 08:00 Batch Analyst: Collins, Kerry N

Batch Method: Metal Hydroxide Batch End Date: 06/04/19 16:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	90L1HgCA1000P 00039	90SPKNX10P 00002	90SPKNX8P 00001	90SPKNX9P 00002
140-15390-A-1	MW-2 (14-19)	Metal Hydroxide, 3010A, 6010B SEP	#	5.000 g	25 mL				
140-15390-A-2	MW-5 (12-17)	Metal Hydroxide, 3010A, 6010B SEP	#	5.000 g	25 mL				
140-15390-A-3	MW-106 (10-15)	Metal Hydroxide, 3010A, 6010B SEP	#	5.000 g	25 mL				
140-15390-A-4	MW-107 (19-24)	Metal Hydroxide, 3010A, 6010B SEP	#	5.000 g	25 mL				
MB 140-30481/11		Metal Hydroxide, 3010A, 6010B SEP		5.000 g	25 mL				
LCS 140-30481/12		Metal Hydroxide, 3010A, 6010B SEP		5.000 g	25 mL	0.125 mL	2.5 mL	2.5 mL	2.5 mL
LCSD 140-30481/13		Metal Hydroxide, 3010A, 6010B SEP		5.000 g	25 mL	0.125 mL	2.5 mL	2.5 mL	2.5 mL

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-15390-1

SDG No.:

Batch Number: 30481 Batch Start Date: 06/04/19 08:00 Batch Analyst: Collins, Kerry N

Batch Method: Metal Hydroxide Batch End Date: 06/04/19 16:00

Batch Notes	
Centrifuge End Date Time	6-4 15:25
Centrifuge Start Date Time	6-4 14:55
Extraction End Date	6-4 14:00
Extraction Solution ID	232090 25ml
Extraction Start Date	6-4 8:00
Hot Block ID	B
Pipette/Syringe/Dispenser ID	met-014, met-016 18L15C0
Syringe Filter Lot #	R7EA01040
Temperature	91 Degrees C
Thermometer ID	metals 16

Basis	Basis Description
#	Step 4

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-15390-1

SDG No.:

Batch Number: 30528 Batch Start Date: 06/10/19 08:00 Batch Analyst: Collins, Kerry N

Batch Method: 3010A Batch End Date: 06/10/19 17:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount				
140-15390-A-1-H	MW-2 (14-19)	3010A, 6010B SEP	#	5 mL	50 mL				
140-15390-A-2-H	MW-5 (12-17)	3010A, 6010B SEP	#	5 mL	50 mL				
140-15390-A-3-H	MW-106 (10-15)	3010A, 6010B SEP	#	5 mL	50 mL				
140-15390-A-4-H	MW-107 (19-24)	3010A, 6010B SEP	#	5 mL	50 mL				
MB 140-30481/11-A		3010A, 6010B SEP		5 mL	50 mL				
LCS 140-30481/12-A		3010A, 6010B SEP		5 mL	50 mL				
LCSD 140-30481/13-A		3010A, 6010B SEP		5 mL	50 mL				

Batch Notes	
Digestion Unit ID	E
Hydrochloric Acid ID	229508 2.5ml
Nitric Acid ID	229502 3ml
Pipette/Syringe/Dispenser ID	P200
Thermometer ID	metals 10
Digestion Tube/Cup ID	051519
Temperature - Uncorrected - End	92 Degrees C
Temperature - Uncorrected - Start	92 Degrees C

Basis	Basis Description
#	Step 4

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-15390-1

SDG No.:

Batch Number: 30529 Batch Start Date: 06/10/19 08:00 Batch Analyst: Collins, Kerry N

Batch Method: Organic-Bound Batch End Date: 06/11/19 14:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	90L1HgCA1000P 00039	90SPKNX10P 00002	90SPKNX8P 00001	90SPKNX9P 00002
140-15390-A-1	MW-2 (14-19)	Organic-Bound, 3010A, 6010B SEP	?	5.000 g	75 mL				
140-15390-A-2	MW-5 (12-17)	Organic-Bound, 3010A, 6010B SEP	?	5.000 g	75 mL				
140-15390-A-3	MW-106 (10-15)	Organic-Bound, 3010A, 6010B SEP	?	5.000 g	75 mL				
140-15390-A-4	MW-107 (19-24)	Organic-Bound, 3010A, 6010B SEP	?	5.000 g	75 mL				
MB 140-30529/11		Organic-Bound, 3010A, 6010B SEP		5.000 g	75 mL				
LCS 140-30529/12		Organic-Bound, 3010A, 6010B SEP		5.000 g	75 mL	0.375 mL	7.5 mL	7.5 mL	7.5 mL
LCSD 140-30529/13		Organic-Bound, 3010A, 6010B SEP		5.000 g	75 mL	0.375 mL	7.5 mL	7.5 mL	7.5 mL

Lab Sample ID	Client Sample ID	Method Chain	Basis	AnalysisComment					
140-15390-A-1	MW-2 (14-19)	Organic-Bound, 3010A, 6010B SEP	?						
140-15390-A-2	MW-5 (12-17)	Organic-Bound, 3010A, 6010B SEP	?						
140-15390-A-3	MW-106 (10-15)	Organic-Bound, 3010A, 6010B SEP	?						
140-15390-A-4	MW-107 (19-24)	Organic-Bound, 3010A, 6010B SEP	?						
MB 140-30529/11		Organic-Bound, 3010A, 6010B SEP							

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-15390-1

SDG No.:

Batch Number: 30529 Batch Start Date: 06/10/19 08:00 Batch Analyst: Collins, Kerry N

Batch Method: Organic-Bound Batch End Date: 06/11/19 14:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	AnalysisComment					
LCS 140-30529/12		Organic-Bound, 3010A, 6010B SEP		brown precipitate bottom LCS/LCSD after centrifuging					
LCSD 140-30529/13		Organic-Bound, 3010A, 6010B SEP		brown precipitate bottom LCS/LCSD after centrifuging					

Batch Notes	
Centrifuge End Date Time	6-10 12:05 6-10 15:45 6-11 12:05
Centrifuge Start Date Time	6-10 11:35 6-10 15:15 6-11 11:35
Extraction End Date	6-10 10:10 6-10 14:20 6-11 10:20
Extraction Solution ID	222446 75ml
Extraction Start Date	6-10 9:10 6-10 13:20 6-11 9:20
Hot Block ID	B
Pipette/Syringe/Dispenser ID	met-014, met-016 18L15C0
Syringe Filter Lot #	R7EA01040
Temperature	6-10 93 6-11 92 Degrees C
Thermometer ID	metals 16

Basis	Basis Description
?	Step 5

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-15390-1

SDG No.:

Batch Number: 30726 Batch Start Date: 06/12/19 08:00 Batch Analyst: Collins, Kerry N

Batch Method: 3010A Batch End Date: 06/12/19 16:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount				
140-15390-A-1-J	MW-2 (14-19)	3010A, 6010B SEP	?	5 mL	50 mL				
140-15390-A-2-J	MW-5 (12-17)	3010A, 6010B SEP	?	5 mL	50 mL				
140-15390-A-3-J	MW-106 (10-15)	3010A, 6010B SEP	?	5 mL	50 mL				
140-15390-A-4-J	MW-107 (19-24)	3010A, 6010B SEP	?	5 mL	50 mL				
MB 140-30529/11-A		3010A, 6010B SEP		5 mL	50 mL				
LCS 140-30529/12-A		3010A, 6010B SEP		5 mL	50 mL				
LCSD 140-30529/13-A		3010A, 6010B SEP		5 mL	50 mL				

Batch Notes	
Digestion Unit ID	E
Hydrochloric Acid ID	229508 2.5ml
Nitric Acid ID	229502 3ml
Pipette/Syringe/Dispenser ID	P200
Thermometer ID	metals 10
Digestion Tube/Cup ID	051519
Temperature - Uncorrected - End	93 Degrees C
Temperature - Uncorrected - Start	93 Degrees C

Basis	Basis Description
?	Step 5

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill   Job No.: 140-15390-1

SDG No.:

Batch Number: 30781   Batch Start Date: 06/15/19 08:00   Batch Analyst: Collins, Kerry N

Batch Method: Acid/Sulfide   Batch End Date: 06/15/19 15:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	90L1HgCA1000P 00039	90SPKNX10P 00002	90SPKNX8P 00001	90SPKNX9P 00002
140-15390-A-1	MW-2 (14-19)	Acid/Sulfide , 6010B SEP	@	5.000 g	250 mL				
140-15390-A-2	MW-5 (12-17)	Acid/Sulfide , 6010B SEP	@	5.000 g	250 mL				
140-15390-A-3	MW-106 (10-15)	Acid/Sulfide , 6010B SEP	@	5.000 g	250 mL				
140-15390-A-4	MW-107 (19-24)	Acid/Sulfide , 6010B SEP	@	5.000 g	250 mL				
MB 140-30781/11		Acid/Sulfide , 6010B SEP		5.000 g	250 mL				
LCS 140-30781/12		Acid/Sulfide , 6010B SEP		5.000 g	250 mL	0.125 mL	2.5 mL	2.5 mL	2.5 mL
LCSD 140-30781/13		Acid/Sulfide , 6010B SEP		5.000 g	250 mL	0.125 mL	2.5 mL	2.5 mL	2.5 mL

Batch Notes	
Centrifuge End Date Time	6-15 13:50
Centrifuge Start Date Time	6-15 13:20
Extraction End Date	6-15 10:20
Extraction Solution ID	224992 25ml
Extraction Start Date	6-15 9:20
Filter ID	MPSF182902
Hot Block ID	B
Pipette ID	met-014, met-016
Temperature	90 Degrees C
Thermometer ID	metals 16

Basis	Basis Description
@	Step 6

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-15390-1

SDG No.:

Batch Number: 30852 Batch Start Date: 06/16/19 08:00 Batch Analyst: Collins, Kerry N

Batch Method: Residual Batch End Date: 06/16/19 16:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	CalcMsg	90L1HgCA1000P 00039	90SPKNX10P 00002	90SPKNX8P 00001
140-15390-A-1	MW-2 (14-19)	Residual, 6010B SEP	0	1.000 g	50 mL	NO NOMINAL AMOUNT			
140-15390-A-2	MW-5 (12-17)	Residual, 6010B SEP	0	1.000 g	50 mL	NO NOMINAL AMOUNT			
140-15390-A-3	MW-106 (10-15)	Residual, 6010B SEP	0	1.000 g	50 mL	NO NOMINAL AMOUNT			
140-15390-A-4	MW-107 (19-24)	Residual, 6010B SEP	0	1.000 g	50 mL	NO NOMINAL AMOUNT			
MB 140-30852/11		Residual, 6010B SEP		1.000 g	50 mL	NO NOMINAL AMOUNT			
LCS 140-30852/12		Residual, 6010B SEP		1.000 g	50 mL	NO NOMINAL AMOUNT	0.25 mL	0.5 mL	0.5 mL
LCSD 140-30852/13		Residual, 6010B SEP		1.000 g	50 mL	NO NOMINAL AMOUNT	0.25 mL	0.5 mL	0.5 mL

Lab Sample ID	Client Sample ID	Method Chain	Basis	90SPKNX9P 00002					
140-15390-A-1	MW-2 (14-19)	Residual, 6010B SEP	0						
140-15390-A-2	MW-5 (12-17)	Residual, 6010B SEP	0						
140-15390-A-3	MW-106 (10-15)	Residual, 6010B SEP	0						
140-15390-A-4	MW-107 (19-24)	Residual, 6010B SEP	0						
MB 140-30852/11		Residual, 6010B SEP							
LCS 140-30852/12		Residual, 6010B SEP		0.5 mL					
LCSD 140-30852/13		Residual, 6010B SEP		0.5 mL					

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-15390-1

SDG No.:

Batch Number: 30852 Batch Start Date: 06/16/19 08:00 Batch Analyst: Collins, Kerry N

Batch Method: Residual Batch End Date: 06/16/19 16:00

Batch Notes	
Balance ID	mt2
Boric Acid ID	218606 1ml
Digestion Tubes ID	274661-5420
Hydrochloric Acid ID	229508 3ml
Hydrofluoric Acid ID	202662 1ml
Nitric Acid ID	231999 10ml
Hot Block ID	B
Pipette ID	met-016
Perform Calculation (0=No, 1=Yes)	1
Temperature	90 Degrees C
Thermometer ID	metals 16

Basis	Basis Description
0	Step 7

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

	Pos ID	Rack	Row	Col	Type	Samplename	Comment	Custom ID1	Custom ID2
1	1	1	1	1	QC	CCVL			
2	2	1	2	1	QC	ICV			
3	3	1	3	1	Unk	ICB			
4	4	1	4	1	Unk	ICSA			
5	5	1	5	1	Unk	ICSAB			
6	6	1	6	1	QC	CRI			
7	7	1	7	1	QC	CCV			
8	8	1	8	1	Unk	CCB			
9	9	1	9	1	Unk	mb 140-31034/13-a			
10	10	1	10	1	QC	lcs 140-31034/14-a			
11	11	1	11	1	Unk	140-15402-a-1-c @2	5ML TO 10ML		
12	12	1	12	1	Unk	140-15402-a-2-g @2	5ML TO 10ML (A)		
13	13	1	1	2	Unk	15402-a-2-h ms @2	5ML TO 10ML		
14	14	1	2	2	Unk	15402-a-2-i msd @2	5ML TO 10ML		
15	15	1	3	2	Unk	15402-a-2-g PDS@2	5ML TO 10ML		
16	16	1	4	2	Unk	140-15402-a-3-c @2	5ML TO 10ML		
17	17	1	5	2	Unk	140-15402-a-4-c @2	5ML TO 10ML		
18	18	1	6	2	Unk	15402-a-2-g SD@10	2ML (A) TO 10ML		
19	19	1	7	2	QC	CRI			
20	20	1	8	2	QC	CCV			
21	21	1	9	2	Unk	CCB			
22	22	1	10	2	Unk	mb 140-30852/11-a			
23	23	1	11	2	QC	lcs 140-30852/12-a			
24	24	1	12	2	QC	lcsd 140-30852/13-a			
25	25	1	1	3	Unk	mb 140-30373/11-a			
26	26	1	2	3	QC	lcs 140-30373/12-a			
27	27	1	3	3	QC	lcsd 140-30373/13-a			
28	28	1	4	3	Unk	140-15377-a-1-n			
29	29	1	5	3	Unk	140-15377-a-2-n			
30	30	1	6	3	Unk	140-15376-a-1-aa			
31	31	1	7	3	Unk	15376-a-1-aa SD@5	2ML TO 10ML		
32	32	1	8	3	QC	CCV			
33	33	1	9	3	Unk	CCB			
34	34	1	10	3	Unk	140-15376-a-1-ab du			
35	35	1	11	3	Unk	140-15376-a-2-n			
36	36	1	12	3	Unk	140-15376-a-3-n			
37	37	1	1	4	Unk	140-15390-a-1-m			
38	38	1	2	4	Unk	140-15390-a-2-m			
39	39	1	3	4	Unk	140-15390-a-3-m			
40	40	1	4	4	Unk	140-15390-a-4-m			
41	41	1	5	4	Unk	mb 30852/11-a @10	1ML TO 10ML		
42	42	1	6	4	Unk	140-15377-a-1-n @10	1ML TO 10ML		
43	43	1	7	4	Unk	140-15377-a-2-n @10	1ML TO 10ML		
44	44	1	8	4	QC	CCV			
45	45	1	9	4	Unk	CCB			
46	46	1	10	4	Unk	140-15376-a-1-aa @10	1ML TO 10ML (B)		
47	47	1	11	4	Unk	15376-a-1-ab du @10	1ML TO 10ML		
48	48	1	12	4	Unk	140-15376-a-2-n @10	1ML TO 10ML		
49	49	1	1	5	Unk	140-15376-a-3-n @10	1ML TO 10ML		
50	50	1	2	5	Unk	140-15390-a-1-m @10	1ML TO 10ML		
51	51	1	3	5	Unk	140-15390-a-2-m @10	1ML TO 10ML		
52	52	1	4	5	Unk	140-15390-a-3-m @10	1ML TO 10ML		
53	53	1	5	5	Unk	140-15390-a-4-m @10	1ML TO 10ML		
54	54	1	6	5	Unk	15376-a-1-aa SD@50	2ML (B) TO 10ML		
55	55	1	7	5	QC	CCV			
56	56	1	8	5	Unk	CCB			
57	57	1	9	5	Unk	140-15377-a-1-a			

	Pos ID	Rack	Row	Col	Type	Samplename	Comment	Custom ID1	Custom ID2
58	58	1	10	5	Unk	140-15377-a-2-a			
59	59	1	11	5	Unk	140-15376-a-1-a			
60	60	1	12	5	Unk	140-15376-a-1-b du			
61	61	2	1	1	Unk	140-15376-a-2-a			
62	62	2	2	1	Unk	140-15376-a-3-a			
63	63	2	3	1	Unk	140-15390-a-1-a			
64	64	2	4	1	Unk	140-15390-a-2-a			
65	65	2	5	1	Unk	140-15390-a-3-a			
66	66	2	6	1	Unk	140-15376-a-1-a SD@5	2ML TO 10ML		
67	67	2	7	1	QC	CCV			
68	68	2	8	1	Unk	CCB			
69	69	2	9	1	Unk	140-15390-a-4-a			
70	70	2	10	1	Unk	mb 30373/11-a @10	1ML TO 10ML		
71	71	2	11	1	Unk	140-15377-a-1-a @10	1ML TO 10ML		
72	72	2	12	1	Unk	140-15377-a-2-a @10	1ML TO 10ML		
73	73	2	1	2	Unk	140-15376-a-1-a @10	1ML TO 10ML (C)		
74	74	2	2	2	Unk	15376-a-1-b du @10	1ML TO 10ML		
75	75	2	3	2	Unk	140-15376-a-2-a @10	1ML TO 10ML		
76	76	2	4	2	Unk	140-15376-a-3-a @10	1ML TO 10ML		
77	77	2	5	2	Unk	140-15390-a-1-a @10	1ML TO 10ML		
78	78	2	6	2	Unk	15376-a-1-a SD@50	2ML (C) TO 10ML		
79	79	2	7	2	QC	CCV			
80	80	2	8	2	Unk	CCB			
81	81	2	9	2	Unk	140-15390-a-2-a @10	1ML TO 10ML		
82	82	2	10	2	Unk	140-15390-a-3-a @10	1ML TO 10ML		
83	83	2	11	2	Unk	140-15390-a-4-a @10	1ML TO 10ML		
84	84	2	12	2	QC	CCV			
85	85	2	1	3	Unk	CCB			
86	86	2	2	3	Unk	140-15376-a-1-aa @2	5ML TO 10ML (D)		
87	87	2	3	3	Unk	15376-a-1-ab du @2	5ML TO 10ML		
88	88	2	4	3	Unk	140-15376-a-2-n @2	5ML TO 10ML		
89	89	2	5	3	Unk	140-15376-a-3-n @2	5ML TO 10ML		
90	90	2	6	3	Unk	140-15390-a-1-m @2	5ML TO 10ML		
91	91	2	7	3	Unk	140-15390-a-2-m @2	5ML TO 10ML		
92	92	2	8	3	Unk	140-15390-a-3-m @2	5ML TO 10ML		
93	93	2	9	3	Unk	140-15390-a-4-m @2	5ML TO 10ML		
94	94	2	10	3	Unk	15376-a-1-aa SD@10	2ML (D) TO 10ML		
95	95	2	11	3	QC	CCV			
96	96	2	12	3	Unk	CCB			
97	97	2	1	4	Unk	140-15376-a-1-a @2	5ML TO 10ML (E)		
98	98	2	2	4	Unk	15376-a-1-b du @2	5ML TO 10ML		
99	99	2	3	4	Unk	140-15376-a-2-a @2	5ML TO 10ML		
100	100	2	4	4	Unk	140-15390-a-1-a @2	5ML TO 10ML		
101	101	2	5	4	Unk	140-15390-a-2-a @2	5ML TO 10ML		
102	102	2	6	4	Unk	140-15390-a-4-a @2	5ML TO 10ML		
103	103	2	7	4	Unk	15376-a-1-a SD@10	2ML (E) TO 10ML		
104	104	2	8	4	QC	CCV			
105	105	2	9	4	Unk	CCB			
106	106	2	10	4	Unk	Sample-100			
107	107	2	11	4	Unk	Sample-101			

	Pos ID	Rack	Row	Col	Type	Samplename	Comment	Custom ID1	Custom ID2
1	1	1	1	1	QC	CCVL			
2	2	1	2	1	QC	ICV			
3	3	1	3	1	Unk	ICB			
4	4	1	4	1	Unk	ICSA	Adj: Pb, Se	- ReAnalyze	
5	5	1	5	1	Unk	ICSAB			
6	6	1	6	1	QC	CRI			
7	7	1	7	1	QC	CCV			
8	8	1	8	1	Unk	CCB			
9	9	1	9	1	Unk	mb 140-31034/13-a			
10	10	1	10	1	QC	lcs 140-31034/14-a		18455	
11	11	1	11	1	Unk	140-15402-a-1-c @2	5ML TO 10ML		
12	12	1	12	1	Unk	140-15402-a-2-g @2	5ML TO 10ML (A)	74x	
13	13	1	1	2	Unk	15402-a-2-h ms @2	5ML TO 10ML -	Matrix-PDS	
14	14	1	2	2	Unk	15402-a-2-i msd @2	5ML TO 10ML		ms/msd
15	15	1	3	2	Unk	15402-a-2-g PDS@2	5ML TO 10ML	Ni, Pb 74x,	Se $\uparrow$
16	16	1	4	2	Unk	140-15402-a-3-c @2	5ML TO 10ML		
17	17	1	5	2	Unk	140-15402-a-4-c @2	5ML TO 10ML		18450
18	18	1	6	2	Unk	15402-a-2-g SD@10	2ML (A) TO 10ML		
19	19	1	7	2	QC	CRI			
20	20	1	8	2	QC	CCV			
21	21	1	9	2	Unk	CCB			
22	22	1	10	2	Unk	mb 140-30852/11-a			
23	23	1	11	2	QC	lcs 140-30852/12-a			
24	24	1	12	2	QC	lcsd 140-30852/13-a			
25	25	1	1	3	Unk	mb 140-30373/11-a			
26	26	1	2	3	QC	lcs 140-30373/12-a			Ti = Co, Tl
27	27	1	3	3	QC	lcsd 140-30373/13-a			Si = As, Co, Se, TL
28	28	1	4	3	Unk	140-15377-a-1-n	Co, Tl		
29	29	1	5	3	Unk	140-15377-a-2-n			
30	30	1	6	3	Unk	140-15376-a-1-aa 1	Ti $\uparrow$ @2		
31	31	1	7	3	Unk	15376-a-1-aa SD@5 9	2ML TO 10ML @10		
32	32	1	8	3	QC	CCV			
33	33	1	9	3	Unk	CCB			
34	34	1	10	3	Unk	140-15376-a-1-ab du 2	Si $\uparrow$ @2	Ti $\uparrow$ @2	
35	35	1	11	3	Unk	140-15376-a-2-n 3	Si $\uparrow$ @2		
36	36	1	12	3	Unk	140-15376-a-3-n 4	Ti $\uparrow$ @2		
37	37	1	1	4	Unk	140-15390-a-1-m 5	Si $\uparrow$ @2	18451,52	
38	38	1	2	4	Unk	140-15390-a-2-m 6	Si $\uparrow$ @2		
39	39	1	3	4	Unk	140-15390-a-3-m 7	Si $\uparrow$ @2		
40	40	1	4	4	Unk	140-15390-a-4-m 8	Si $\uparrow$ @2		
41	41	1	5	4	Unk	mb 30852/11-a @10	1ML TO 10ML		
42	42	1	6	4	Unk	140-15377-a-1-n @10	1ML TO 10ML		
43	43	1	7	4	Unk	140-15377-a-2-n @10	1ML TO 10ML		
44	44	1	8	4	QC	CCV			
45	45	1	9	4	Unk	CCB			
46	46	1	10	4	Unk	140-15376-a-1-aa @10	1ML TO 10ML (B)		
47	47	1	11	4	Unk	15376-a-1-ab du @10	1ML TO 10ML		
48	48	1	12	4	Unk	140-15376-a-2-n @10	1ML TO 10ML		
49	49	1	1	5	Unk	140-15376-a-3-n @10	1ML TO 10ML		
50	50	1	2	5	Unk	140-15390-a-1-m @10	1ML TO 10ML		
51	51	1	3	5	Unk	140-15390-a-2-m @10	1ML TO 10ML		
52	52	1	4	5	Unk	140-15390-a-3-m @10	1ML TO 10ML		
53	53	1	5	5	Unk	140-15390-a-4-m @10	1ML TO 10ML		
54	54	1	6	5	Unk	15376-a-1-aa SD@50	2ML (B) TO 10ML		
55	55	1	7	5	QC	CCV			
56	56	1	8	5	Unk	CCB			
57	57	1	9	5	Unk	140-15377-a-1-a			

SD - 376-1-AA - 57

18444,45,46 69

81

DU-376-90 - 18447,48,49

	Pos ID	Rack	Row	Col	Type	Samplename	Comment	Custom ID1	Custom ID2
58	58	1	10	5	Unk	140-15377-a-2-a			
59	59	1	11	5	Unk	140-15376-a-1-a 1	Ti↑@2		
60	60	1	12	5	Unk	140-15376-a-1-b du 2	@2		
61	61	2	1	1	Unk	140-15376-a-2-a 3	Si↑@2		
62	62	2	2	1	Unk	140-15376-a-3-a			
63	63	2	3	1	Unk	140-15390-a-1-a 4	Si↑@2		
64	64	2	4	1	Unk	140-15390-a-2-a 5	Si↑@2		
65	65	2	5	1	Unk	140-15390-a-3-a			
66	66	2	6	1	Unk	140-15376-a-1-a SD@5 7	2ML TO 10ML @10		
67	67	2	7	1	QC	CCV			
68	68	2	8	1	Unk	CCB			
69	69	2	9	1	Unk	140-15390-a-4-a 6	Si↑@2		
70	70	2	10	1	Unk	mb 30373/11-a @10	1ML TO 10ML		
71	71	2	11	1	Unk	140-15377-a-1-a @10	1ML TO 10ML		
72	72	2	12	1	Unk	140-15377-a-2-a @10	1ML TO 10ML		
73	73	2	1	2	Unk	140-15376-a-1-a @10	1ML TO 10ML (C)		
74	74	2	2	2	Unk	15376-a-1-b du @10	1ML TO 10ML		
75	75	2	3	2	Unk	140-15376-a-2-a @10	1ML TO 10ML		
76	76	2	4	2	Unk	140-15376-a-3-a @10	1ML TO 10ML		
77	77	2	5	2	Unk	140-15390-a-1-a @10	1ML TO 10ML		
78	78	2	6	2	Unk	15376-a-1-a SD@50	2ML (C) TO 10ML		
79	79	2	7	2	QC	CCV			
80	80	2	8	2	Unk	CCB			
81	81	2	9	2	Unk	140-15390-a-2-a @10	1ML TO 10ML		
82	82	2	10	2	Unk	140-15390-a-3-a @10	1ML TO 10ML		
83	83	2	11	2	Unk	140-15390-a-4-a @10	1ML TO 10ML		
84	84	2	12	2	QC	CCV			
85	85	2	1	3	Unk	CCB			
86	86	2	2	3	Unk	Sample-77			
87	87	2	3	3	Unk	Sample-78			
88	88	2	4	3	Unk	Sample-79			
89	89	2	5	3	Unk	Sample-80			

F062819

SI- 107

CCVL- 368

ICV- 97

ICSA (Si)- 28

ICSAB- 32

CRI- 416

CCV- 401

Y- 58

H2O- 19

IN= As, Be, Cd, Co, Cr, Mn, Ni, Pb, Sb, Se

77/76 = Al, As, Ba, Be, Co, Fe, Li, Mn, Mo, Sb, Se, Tl

390 = Al, Co, Fe, Li, Mn, Mo, Tl

TestAmerica Knoxville
Data Quality Checks

Sequence: F062819

Internal Standard

ICB Internal Standard	Area	LCL	UCL
Y_2243A	12564	8795	16333
Y_3710A	148834	104183	193484
Y_3710R	11569	8099	15040

29-Jun-19 07:19 AM 110 Samples were checked against the internal standard area limits

29-Jun-19 07:19 AM 2 Sample(s) failed the limits check

Date/Time	Lab ID	Problem
28-Jun-19 07:26 PM	Sample-100	Y_2243A - Response was 30782 (245% Recovery)! LCL = 8795 UCL = 16333
28-Jun-19 07:26 PM	Sample-100	Y_3710A - Response was 321884 (216% Recovery)! LCL = 104183 UCL = 193484
28-Jun-19 07:26 PM	Sample-100	Y_3710R - Response was 19908 (172% Recovery)! LCL = 8099 UCL = 15040
28-Jun-19 07:31 PM	Sample-101	Y_2243A - Response was 30613 (243% Recovery)! LCL = 8795 UCL = 16333
28-Jun-19 07:31 PM	Sample-101	Y_3710A - Response was 327711 (220% Recovery)! LCL = 104183 UCL = 193484
28-Jun-19 07:31 PM	Sample-101	Y_3710R - Response was 19525 (168% Recovery)! LCL = 8099 UCL = 15040

Relative Standard Deviation

29-Jun-19 7:19 AM 12 Standards were checked against the CCV/ICV %RSD limits

29-Jun-19 7:19 AM 3 Standard(s) failed the limits check

Date/Time	Lab ID	Problem
28-Jun-19 10:12:43 AM	CCVL	aN - RSD is 9.2% >= Limit of 5.0%
28-Jun-19 02:06:54 PM	CCV	aN - RSD is 6.8% >= Limit of 5.0%
28-Jun-19 04:06:13 PM	CCV	aN - RSD is 5.2% >= Limit of 5.0%

Waste_Prep_LL Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-31034

Analyst: Nedkova, Teodora S

Batch Open: 6/21/2019 1:01:00PM
Batch End: 6/25/2019 5:00:00PM

Preparation, Waste (Low level)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	140-15402-A-1 (6010C)	(140-15402-1)	Waste	25.04 g	100 mL	6/12/19	13_Days	4		140-15402-A-1-C
2	140-15402-A-2 (6010C)	(140-15402-1)	Waste	25.02 g	100 mL	6/12/19	13_Days	4		140-15402-A-2-G
3	140-15402-A-2~MS (6010C)	(140-15402-1)	Waste	25.04 g	100 mL	6/12/19	13_Days	4		140-15402-A-2-H MS
4	140-15402-A-2~MSD (6010C)	(140-15402-1)	Waste	25.03 g	100 mL	6/12/19	13_Days	4		140-15402-A-2-I MSD
5	140-15402-A-3 (6010C)	(140-15402-1)	Waste	25.02 g	100 mL	6/12/19	13_Days	4		140-15402-A-3-C
6	140-15402-A-4 (6010C)	(140-15402-1)	Waste	25.01 g	100 mL	6/12/19	13_Days	4		140-15402-A-4-C
7	140-15402-A-5 (6010C)	(140-15402-1)	Waste	25.03 g	100 mL	6/12/19	13_Days	4		140-15402-A-5-C
8	140-15402-A-6 (6010C)	(140-15402-1)	Waste	25.03 g	100 mL	6/12/19	13_Days	4		140-15402-A-6-C
9	140-15402-A-7 (6010C)	(140-15402-1)	Waste	25.03 g	100 mL	6/12/19	13_Days	4		140-15402-A-7-G
10	140-15402-A-7~MS (6010C)	(140-15402-1)	Waste	25.05 g	100 mL	6/12/19	13_Days	4		140-15402-A-7-H MS
11	140-15402-A-7~MSD (6010C)	(140-15402-1)	Waste	25.03 g	100 mL	6/12/19	13_Days	4		140-15402-A-7-I MSD
12	140-15402-A-8 (6010C)	(140-15402-1)	Waste	25.02 g	100 mL	6/12/19	13_Days	4		140-15402-A-8-C
13	MB~140-31034/13 N/A	N/A		25 g	100 mL	N/A	N/A	N/A		MB 140-31034/13-A
14	LCS~140-31034/14 N/A	N/A		25 g	100 mL	N/A	N/A	N/A		LCS 140-31034/14-A

Printed : 6/25/2019

Eurofins TestAmerica, Knoxville

SEP7_LM_Prep Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-30852

Analyst: Collins, Kerry N

Batch Open: 6/16/2019 8:00:00AM
Batch End: 6/16/2019 4:00:00PM

Sequential Extraction Procedure, Residual Fraction

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	140-15377-A-1 (6010B_SEP)	N/A (140-15377-1)	Solid	1.000 g	50 mL	6/20/19	18_Days	4		140-15377-A-1-N
2	140-15377-A-2 (6010B_SEP)	N/A (140-15377-1)	Solid	1.000 g	50 mL	6/20/19	18_Days	4		140-15377-A-2-N
3	140-15376-A-1 (6010B_SEP)	N/A (140-15376-1)	Solid	1.000 g	50 mL	6/20/19	18_Days	4		140-15376-A-1-AA
4	140-15376-A-1~DU (6010B_SEP)	N/A (140-15376-1)	Solid	1.000 g	50 mL	6/20/19	18_Days	4		140-15376-A-1-AB DU
5	140-15376-A-2 (6010B_SEP)	N/A (140-15376-1)	Solid	1.000 g	50 mL	6/20/19	18_Days	4		140-15376-A-2-N
6	140-15376-A-3 (6010B_SEP)	N/A (140-15376-1)	Solid	1.000 g	50 mL	6/20/19	18_Days	4		140-15376-A-3-N
7	140-15390-A-1 (6010B_SEP)	N/A (140-15390-1)	Solid	1.000 g	50 mL	6/21/19	18_Days	4		140-15390-A-1-M
8	140-15390-A-2 (6010B_SEP)	N/A (140-15390-1)	Solid	1.000 g	50 mL	6/21/19	18_Days	4		140-15390-A-2-M
9	140-15390-A-3 (6010B_SEP)	N/A (140-15390-1)	Solid	1.000 g	50 mL	6/21/19	18_Days	4		140-15390-A-3-M
10	140-15390-A-4 (6010B_SEP)	N/A (140-15390-1)	Solid	1.000 g	50 mL	6/21/19	18_Days	4		140-15390-A-4-M
11	MB~140-30852/11 N/A	N/A		1.000 g	50 mL	N/A	N/A	N/A		MB 140-30852/11-A
12	LCS~140-30852/12 N/A	N/A		1.000 g	50 mL	N/A	N/A	N/A		LCS 140-30852/12-A
13	LCSD~140-30852/13 N/A	N/A		1.000 g	50 mL	N/A	N/A	N/A		LCSD 140-30852/13-A

SEP_Tot_Prep Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-30373

Analyst: Collins, Kerry N

Batch Open: 5/30/2019 8:00:00AM

Batch End: 5/30/2019 3:00:00PM

Preparation, Total Material

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	140-15377-A-1 (6010B)	N/A (140-15377-1)	Solid	1.000 g	50 mL	6/20/19	18_Days	4		140-15377-A-1-A
1	140-15377-A-1 (7470A)	N/A (140-15377-1)	Solid	1.000 g	50 mL	6/20/19	18_Days	4		140-15377-A-1-A
2	140-15377-A-2 (6010B)	N/A (140-15377-1)	Solid	1.000 g	50 mL	6/20/19	18_Days	4		140-15377-A-2-A
2	140-15377-A-2 (7470A)	N/A (140-15377-1)	Solid	1.000 g	50 mL	6/20/19	18_Days	4		140-15377-A-2-A
3	140-15376-A-1 (6010B)	N/A (140-15376-1)	Solid	1.000 g	50 mL	6/20/19	18_Days	4		140-15376-A-1-A
3	140-15376-A-1 (7470A)	N/A (140-15376-1)	Solid	1.000 g	50 mL	6/20/19	18_Days	4		140-15376-A-1-A
4	140-15376-A-1~DU (6010B)	N/A (140-15376-1)	Solid	1.000 g	50 mL	6/20/19	18_Days	4		140-15376-A-1-B DU
4	140-15376-A-1~DU (7470A)	N/A (140-15376-1)	Solid	1.000 g	50 mL	6/20/19	18_Days	4		140-15376-A-1-B DU
5	140-15376-A-2 (6010B)	N/A (140-15376-1)	Solid	1.000 g	50 mL	6/20/19	18_Days	4		140-15376-A-2-A
5	140-15376-A-2 (7470A)	N/A (140-15376-1)	Solid	1.000 g	50 mL	6/20/19	18_Days	4		140-15376-A-2-A
6	140-15376-A-3 (6010B)	N/A (140-15376-1)	Solid	1.000 g	50 mL	6/20/19	18_Days	4		140-15376-A-3-A
6	140-15376-A-3 (7470A)	N/A (140-15376-1)	Solid	1.000 g	50 mL	6/20/19	18_Days	4		140-15376-A-3-A
7	140-15390-A-1 (6010B)	N/A (140-15390-1)	Solid	1.000 g	50 mL	6/21/19	18_Days	4		140-15390-A-1-A
8	140-15390-A-2 (6010B)	N/A (140-15390-1)	Solid	1.000 g	50 mL	6/21/19	18_Days	4		140-15390-A-2-A

SEP_Tot_Prep Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-30373

Analyst: Collins, Kerry N

Batch Open: 5/30/2019 8:00:00AM

Batch End: 5/30/2019 3:00:00PM

9	140-15390-A-3 (6010B)	N/A (140-15390-1)	Solid	1.000 g	50 mL	6/21/19	18_Days	4	140-15390-A-3-A
10	140-15390-A-4 (6010B)	N/A (140-15390-1)	Solid	1.000 g	50 mL	6/21/19	18_Days	4	140-15390-A-4-A
11	MB~140-30373/11 N/A	N/A		1.000 g	50 mL	N/A	N/A	N/A	MB 140-30373/11-A
12	LCS~140-30373/12 N/A	N/A		1.000 g	50 mL	N/A	N/A	N/A	LCS 140-30373/12-A
13	LCSD~140-30373/13 N/A	N/A		1.000 g	50 mL	N/A	N/A	N/A	LCSD 140-30373/13-A

Sample Name: ICIS Acquired: 6/28/2019 10:02:09 Type: Cal
Method: MT0007(v23) HF 022619(v11) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00029	.00031	-.00051	.00068	.00971	.00030
Stddev	.00006	.00060	.00006	.00001	.00059	.00002
%RSD	20.920	192.58	11.687	1.6616	6.0947	6.1930
#1	-.00022	.00099	-.00052	.00069	.00904	.00028
#2	-.00031	.00011	-.00045	.00067	.01016	.00030
#3	-.00033	-.00016	-.00057	.00068	.00993	.00032

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00780	-.00044	-.00116	.00013	.00119	.00042
Stddev	.00052	.00009	.00006	.00003	.00005	.00007
%RSD	6.6512	21.359	5.5178	20.123	4.2500	18.023
#1	.00721	-.00034	-.00122	.00010	.00113	.00033
#2	.00819	-.00046	-.00117	.00013	.00123	.00048
#3	.00800	-.00052	-.00109	.00015	.00120	.00044

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.01438	-.00473	-.00036	.00006	.00020	.00046
Stddev	.00041	.00079	.00010	.00002	.00001	.00046
%RSD	2.8811	16.621	27.522	25.803	6.2574	101.58
#1	.01478	-.00388	-.00029	.00005	.00018	.00008
#2	.01439	-.00544	-.00047	.00008	.00020	.00032
#3	.01395	-.00488	-.00031	.00006	.00021	.00098

Sample Name: ICIS   Acquired: 6/28/2019 10:02:09   Type: Cal
Method: MT0007(v23) HF 022619(v11)   Mode: IR   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.02191	-.00027	.00005	.00013	.00031	.00043
Stddev	.00201	.00007	.00004	.00001	.00015	.00001
%RSD	9.1861	25.777	91.226	6.6902	47.809	1.9024
#1	.02420	-.00027	-.00000	.00012	.00038	.00042
#2	.02111	-.00034	.00006	.00014	.00040	.00044
#3	.02041	-.00020	.00008	.00012	.00014	.00043

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00030	.00130	.00031	-.00410	-.00036	-.00008
Stddev	.00009	.00012	.00007	.00090	.00034	.00003
%RSD	30.471	9.1492	22.835	21.846	95.283	38.678
#1	.00026	.00122	.00024	-.00497	-.00034	-.00009
#2	.00024	.00144	.00031	-.00318	-.00071	-.00011
#3	.00041	.00126	.00039	-.00416	-.00003	-.00005

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	Cts/S	Cts/S
Avg	.00021	.00249
Stddev	.00003	.00011
%RSD	12.977	4.5903
#1	.00022	.00258
#2	.00022	.00236
#3	.00017	.00254

Sample Name: ICIS Acquired: 6/28/2019 10:02:09 Type: Cal
Method: MT0007(v23) HF 022619(v11) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12658.	150230.	11836.
Stddev	61.	727.	88.
%RSD	.48549	.48385	.74616
#1	12588.	150250.	11912.
#2	12696.	149490.	11739.
#3	12692.	150940.	11858.

Sample Name: S1 Acquired: 6/28/2019 10:07:20 Type: Cal
Method: MT0007(v23) HF 022619(v11) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.30104	1.2897	.06885	.20694	26.973	13.073
Stddev	.00119	.0040	.00020	.00051	.082	.029
%RSD	.39572	.31141	.28376	.24804	.30485	.22049
#1	.30235	1.2942	.06898	.20753	27.045	13.101
#2	.30072	1.2880	.06894	.20670	26.991	13.043
#3	.30003	1.2867	.06862	.20660	26.884	13.076

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	22.921	1.6597	4.0439	.51254	.86791	6.3645
Stddev	.070	.0058	.0121	.00113	.00236	.0212
%RSD	.30655	.34765	.30055	.22009	.27188	.33254
#1	22.994	1.6663	4.0568	.51363	.87062	6.3762
#2	22.915	1.6570	4.0422	.51261	.86630	6.3772
#3	22.854	1.6557	4.0327	.51138	.86682	6.3400

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5.8353	5.8212	1.8592	3.1579	1.4737	.02244
Stddev	.0150	.0139	.0065	.0184	.0046	.00051
%RSD	.25657	.23875	.35066	.58305	.31105	2.2837
#1	5.8521	5.8259	1.8650	3.1542	1.4786	.02303
#2	5.8305	5.8321	1.8605	3.1416	1.4730	.02217
#3	5.8233	5.8056	1.8521	3.1779	1.4695	.02212

Sample Name: S1 Acquired: 6/28/2019 10:07:20 Type: Cal
Method: MT0007(v23) HF 022619(v11) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	19.247	2.7973	.16473	.01027	.14786	.07453
Stddev	.167	.0091	.00043	.00005	.00046	.00005
%RSD	.86827	.32442	.25905	.52752	.30972	.06227
#1	19.440	2.8073	.16511	.01034	.14838	.07457
#2	19.143	2.7952	.16427	.01024	.14752	.07453
#3	19.158	2.7895	.16483	.01025	.14768	.07448

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.03995	.07547	.76597	30.433	1.9869	.08645
Stddev	.00014	.00029	.00193	.578	.0054	.00009
%RSD	.34570	.37821	.25247	1.9004	.27251	.10486
#1	.04010	.07580	.76805	30.543	1.9932	.08648
#2	.03985	.07530	.76565	30.948	1.9844	.08653
#3	.03989	.07531	.76422	29.807	1.9833	.08635

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	Cts/S	Cts/S
Avg	.87923	6.1179
Stddev	.00198	.0201
%RSD	.22528	.32828
#1	.88118	6.1391
#2	.87928	6.1156
#3	.87722	6.0991

Sample Name: S1 Acquired: 6/28/2019 10:07:20 Type: Cal
Method: MT0007(v23) HF 022619(v11) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12058.	144780.	11540.
Stddev	52.	408.	89.
%RSD	.42867	.28212	.76856
#1	12005.	144400.	11455.
#2	12061.	144720.	11532.
#3	12108.	145210.	11632.

Sample Name: CCVL   Acquired: 6/28/2019 10:12:43   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49576	12.525	.24988	1.0237	.99793	1.0768
Stddev	.00134	.138	.00138	.0012	.01069	.0041
%RSD	.27054	1.1041	.55354	.11576	1.0713	.38237
#1	.49715	12.367	.25074	1.0244	.98566	1.0750
#2	.49567	12.586	.25063	1.0244	1.0052	1.0738
#3	.49447	12.622	.24829	1.0223	1.0029	1.0815
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.378	.25885	1.0282	1.0384	1.0010	12.702
Stddev	.367	.00054	.0021	.0019	.0032	.194
%RSD	1.4461	.21020	.20722	.17926	.31648	1.5297
#1	24.954	.25937	1.0302	1.0393	1.0029	12.480
#2	25.576	.25888	1.0284	1.0362	1.0027	12.783
#3	25.603	.25829	1.0259	1.0396	.99731	12.843
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCVL Acquired: 6/28/2019 10:12:43 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.303	.98799	25.055	1.0450	1.0241	F 22.090
Stddev	.308	.01017	.482	.0010	.0034	2.022
%RSD	1.2181	1.0295	1.9220	.10068	.32748	9.1509
#1	24.965	.97631	24.507	1.0460	1.0277	21.120
#2	25.567	.99284	25.246	1.0449	1.0233	20.737
#3	25.378	.99483	25.412	1.0439	1.0212	24.414
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value						25.000
Range						-10.500%

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.450	1.0376	1.0063	.26505	.25880	.24868
Stddev	.272	.0015	.0028	.00258	.00081	.00073
%RSD	1.0673	.14480	.28227	.97180	.31322	.29357
#1	25.137	1.0390	1.0095	.26800	.25789	.24927
#2	25.633	1.0377	1.0042	.26388	.25942	.24786
#3	25.578	1.0360	1.0052	.26326	.25911	.24891
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCVL Acquired: 6/28/2019 10:12:43 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.24977	.99541	1.0378	1.0072	1.0119	.52028
Stddev	.00054	.01386	.0028	.0107	.0133	.00223
%RSD	.21748	1.3924	.27120	1.0602	1.3113	.42768
#1	.25034	.97999	1.0411	.99489	.99662	.51808
#2	.24926	.99940	1.0361	1.0139	1.0194	.52023
#3	.24971	1.0068	1.0363	1.0128	1.0198	.52253
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	1.0237	1.0110
Stddev	.0008	.0024
%RSD	.07607	.23363
#1	1.0242	1.0136
#2	1.0241	1.0105
#3	1.0228	1.0090
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCVL Acquired: 6/28/2019 10:12:43 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12445.	146970.	11676.
Stddev	47.	1002.	253.
%RSD	.38117	.68194	2.1657
#1	12394.	145930.	11957.
#2	12452.	147930.	11608.
#3	12488.	147060.	11465.

Sample Name: ICV Acquired: 6/28/2019 10:17:44 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.48451	12.221	.24926	1.0043	.97434	1.0402
Stddev	.00123	.024	.00106	.0059	.00163	.0044
%RSD	.25346	.20009	.42565	.58908	.16755	.42516
#1	.48321	12.195	.25012	.99768	.97541	1.0354
#2	.48564	12.226	.24959	1.0059	.97246	1.0441
#3	.48469	12.243	.24808	1.0092	.97514	1.0411
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.799	.25665	1.0021	.99552	.96738	12.518
Stddev	.066	.00031	.0009	.00159	.00255	.015
%RSD	.26656	.12117	.08959	.15964	.26331	.12299
#1	24.726	.25629	1.0010	.99433	.96503	12.503
#2	24.816	.25684	1.0028	.99489	.96702	12.518
#3	24.854	.25683	1.0024	.99732	.97009	12.534
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: ICV Acquired: 6/28/2019 10:17:44 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.549	.98544	24.775	1.0146	1.0121	F 20.677
Stddev	.055	.00206	.142	.0019	.0014	.867
%RSD	.22261	.20939	.57487	.18322	.13876	4.1952
#1	24.502	.98478	24.622	1.0126	1.0108	21.679
#2	24.537	.98378	24.798	1.0162	1.0136	20.205
#3	24.609	.98775	24.904	1.0151	1.0118	20.149
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value						25.000
Range						-10.500%

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.708	1.0064	.98213	.25642	.25230	.24547
Stddev	.022	.0012	.00383	.00106	.00055	.00150
%RSD	.08975	.11392	.39032	.41355	.21820	.61137
#1	24.725	1.0050	.98054	.25763	.25168	.24718
#2	24.683	1.0071	.98650	.25564	.25275	.24483
#3	24.716	1.0069	.97935	.25599	.25247	.24439
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: ICV   Acquired: 6/28/2019 10:17:44   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.24367	1.0280	1.0221	.98598	.99471	.51628
Stddev	.00309	.0157	.0008	.00032	.00199	.00258
%RSD	1.2695	1.5308	.07435	.03271	.19984	.50053
#1	.24709	1.0100	1.0214	.98584	.99631	.51381
#2	.24285	1.0388	1.0229	.98574	.99248	.51896
#3	.24107	1.0353	1.0220	.98634	.99533	.51607
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.98737	.98611
Stddev	.00047	.00106
%RSD	.04802	.10795
#1	.98686	.98489
#2	.98745	.98660
#3	.98780	.98684
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: ICV Acquired: 6/28/2019 10:17:44 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12551.	148980.	11553.
Stddev	25.	685.	48.
%RSD	.19912	.45975	.41167
#1	12532.	148280.	11608.
#2	12541.	149030.	11524.
#3	12579.	149650.	11528.

Sample Name: ICB   Acquired: 6/28/2019 10:22:47   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00003	.01089	.00008	.00359	.00015	.00004
Stddev	.00026	.01577	.00073	.00102	.00017	.00001
%RSD	1044.9	144.87	951.05	28.448	118.56	21.912
#1	.00000	-.00476	.00089	.00431	.00031	.00005
#2	-.00030	.01064	-.00015	.00404	-.00004	.00004
#3	.00022	.02678	-.00051	.00242	.00018	.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00046	.00000	.00006	-.00018	.00038	-.00036
Stddev	.00118	.00003	.00010	.00011	.00016	.00092
%RSD	254.41	657.03	158.63	59.944	42.443	252.37
#1	-.00080	-.00002	.00006	-.00019	.00057	-.00054
#2	.00153	.00004	.00017	-.00028	.00030	-.00119
#3	.00066	-.00001	-.00003	-.00007	.00028	.00063
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICB Acquired: 6/28/2019 10:22:47 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.06848	.00118	.00008	.00002	.00009	.26188
Stddev	.00938	.00036	.02274	.00004	.00010	2.3126
%RSD	13.700	30.857	28774.	166.29	114.27	883.09
#1	.07060	.00136	.00324	.00006	-.00003	1.4557
#2	.07662	.00142	.02108	.00003	.00016	-2.4037
#3	.05822	.00076	-.02408	-.00002	.00014	1.7336
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.04321	-.00013	.00066	.00007	-.00030	.00026
Stddev	.01017	.00011	.00037	.00208	.00120	.00038
%RSD	23.531	84.563	56.332	3023.5	400.76	148.22
#1	-.03223	-.00023	.00106	-.00222	.00084	-.00001
#2	-.05230	-.00001	.00059	.00057	-.00154	.00070
#3	-.04512	-.00015	.00033	.00186	-.00019	.00009
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICB Acquired: 6/28/2019 10:22:47 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00078	.00066	.00005	-.00005	.00068	-.00092
Stddev	.00242	.00881	.00020	.00008	.00021	.00082
%RSD	308.49	1340.5	412.02	152.75	30.050	88.771
#1	.00096	-.00812	.00017	.00004	.00060	-.00120
#2	-.00354	.00060	.00015	-.00010	.00053	-.00157
#3	.00023	.00950	-.00018	-.00009	.00092	-.00000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00004	-.00000
Stddev	.00016	.00011
%RSD	365.04	6087.3
#1	.00022	-.00010
#2	-.00005	.00012
#3	-.00005	-.00003
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: ICB Acquired: 6/28/2019 10:22:47 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12564.	148830.	11569.
Stddev	29.	446.	65.
%RSD	.23472	.29960	.56241
#1	12536.	148410.	11644.
#2	12595.	148790.	11526.
#3	12561.	149300.	11538.

Sample Name: ICSA Acquired: 6/28/2019 10:27:59 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00007	494.32	-.01233	.06233	.00014	-.00034
Stddev	.00060	2.12	.00098	.00202	.00007	.00000
%RSD	872.02	.42868	7.9280	3.2487	46.999	1.3285
#1	-.00056	496.46	-.01344	.06466	.00007	-.00034
#2	.00014	494.26	-.01159	.06105	.00014	-.00034
#3	.00063	492.23	-.01196	.06127	.00021	-.00035
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	472.57	.00073	.00134	.00351	-.00085	187.23
Stddev	6.10	.00021	.00020	.00003	.00026	1.68
%RSD	1.2906	29.038	14.806	.77192	30.936	.89681
#1	473.13	.00053	.00130	.00354	-.00070	189.07
#2	478.37	.00095	.00116	.00349	-.00070	185.78
#3	466.21	.00069	.00155	.00349	-.00115	186.84
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICSA   Acquired: 6/28/2019 10:27:59   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.08134	.01344	512.30	-.00073	-.00135	F -6.8997
Stddev	.02574	.00106	1.09	.00002	.00055	4.3905
%RSD	31.649	7.8813	.21229	2.1032	40.640	63.633
#1	.10745	.01397	513.54	-.00075	-.00171	-2.2438
#2	.08058	.01413	511.52	-.00072	-.00072	-7.4905
#3	.05598	.01222	511.82	-.00073	-.00163	-10.965
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit						5.0000
Low Limit						-5.0000

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.14075	-.00247	-.03106	F .03626	F .03327	.00362
Stddev	.01222	.00048	.00079	.00187	.00146	.00183
%RSD	8.6788	19.479	2.5451	5.1704	4.3954	50.465
#1	.15475	-.00270	-.03096	.03420	.03275	.00155
#2	.13526	-.00279	-.03033	.03787	.03214	.00431
#3	.13225	-.00192	-.03190	.03670	.03493	.00502
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Fail	Chk Pass
High Limit				.00800	.00800	
Low Limit				-.00800	-.00800	

Sample Name: ICSA Acquired: 6/28/2019 10:27:59 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F -.01242	959.14	-.00128	-.01295	.01612	.01020
Stddev	.00082	2.81	.00041	.00019	.00046	.00212
%RSD	6.6146	.29251	32.144	1.4943	2.8494	20.826
#1	-.01323	956.37	-.00089	-.01289	.01575	.00897
#2	-.01245	959.06	-.00124	-.01317	.01663	.00897
#3	-.01159	961.98	-.00171	-.01280	.01598	.01265
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	.01000					
Low Limit	-.01000					

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00742	-.00077
Stddev	.00021	.00020
%RSD	2.7966	25.703
#1	.00718	-.00084
#2	.00752	-.00055
#3	.00755	-.00093
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: ICSA   Acquired: 6/28/2019 10:27:59   Type: Unk

Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000

User: kerry   Custom ID1:   Custom ID2:   Custom ID3:

Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	11386.	136170.	11214.
Stddev	52.	853.	65.
%RSD	.45795	.62670	.58226
#1	11364.	135900.	11141.
#2	11348.	135480.	11233.
#3	11445.	137120.	11267.

Sample Name: ICSA   Acquired: 6/28/2019 10:39:47   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00014	487.34	-.01199	.06243	.00022	-.00031
Stddev	.00029	.76	.00093	.00098	.00014	.00000
%RSD	200.88	.15588	7.7185	1.5738	61.523	1.5388
#1	.00013	487.82	-.01212	.06163	.00032	-.00031
#2	-.00014	487.73	-.01284	.06353	.00007	-.00031
#3	.00044	486.46	-.01100	.06214	.00028	-.00032
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	475.26	.00067	.00158	.00354	-.00112	186.60
Stddev	6.98	.00032	.00019	.00017	.00036	3.33
%RSD	1.4679	47.962	11.896	4.7214	32.596	1.7865
#1	469.72	.00104	.00143	.00358	-.00152	182.96
#2	483.09	.00043	.00179	.00367	-.00100	189.51
#3	472.96	.00055	.00151	.00335	-.00083	187.33
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICSA   Acquired: 6/28/2019 10:39:47   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05984	.01317	508.91	-.00071	-.00143	F -9.8166
Stddev	.02570	.00091	.29	.00006	.00025	1.3137
%RSD	42.951	6.8724	.05644	8.0726	17.510	13.382
#1	.05253	.01241	509.15	-.00075	-.00122	-9.0286
#2	.08840	.01293	508.59	-.00064	-.00136	-9.0881
#3	.03858	.01417	508.99	-.00074	-.00171	-11.333
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit						5.0000
Low Limit						-5.0000

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.09934	-.00213	-.03102	F .03447	.00198	.00337
Stddev	.03582	.00021	.00220	.00198	.00116	.00323
%RSD	36.058	9.9749	7.0844	5.7487	58.389	95.692
#1	.14071	-.00213	-.03284	.03437	.00326	.00014
#2	.07849	-.00192	-.02858	.03650	.00101	.00338
#3	.07883	-.00235	-.03163	.03254	.00168	.00660
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				.00800		
Low Limit				-.00800		

Sample Name: ICSA Acquired: 6/28/2019 10:39:47 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00319	956.31	-.00130	-.01310	.01608	.01177
Stddev	.00200	2.05	.00019	.00028	.00022	.00249
%RSD	62.817	.21480	14.342	2.1366	1.3742	21.197
#1	-.00093	953.97	-.00109	-.01281	.01587	.01433
#2	-.00387	957.10	-.00144	-.01337	.01631	.01161
#3	-.00477	957.85	-.00138	-.01312	.01607	.00935
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00702	-.00095
Stddev	.00037	.00041
%RSD	5.2605	43.493
#1	.00702	-.00050
#2	.00739	-.00131
#3	.00666	-.00104
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: ICSA Acquired: 6/28/2019 10:39:47 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	11438.	136570.	11092.
Stddev	33.	775.	17.
%RSD	.28434	.56784	.14990
#1	11401.	135760.	11101.
#2	11462.	136640.	11073.
#3	11452.	137310.	11102.

Sample Name: ICSAB   Acquired: 6/28/2019 10:45:02   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.21117	245.66	.10012	1.0640	.50384	.53061
Stddev	.00080	.50	.00103	.0044	.00046	.00520
%RSD	.37853	.20288	1.0252	.40939	.09051	.97962
#1	.21182	246.22	.10026	1.0628	.50432	.53424
#2	.21028	245.27	.09904	1.0605	.50341	.53293
#3	.21141	245.49	.10108	1.0689	.50380	.52465
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	238.47	.98742	.48889	.50300	.51791	95.928
Stddev	4.07	.00087	.00038	.00130	.00067	.049
%RSD	1.7051	.08800	.07812	.25936	.13021	.05120
#1	243.15	.98816	.48927	.50410	.51859	95.980
#2	235.82	.98763	.48850	.50156	.51724	95.923
#3	236.44	.98646	.48890	.50334	.51789	95.882
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICSAB Acquired: 6/28/2019 10:45:02 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.709	1.0439	250.01	.50976	1.0084	9.3224
Stddev	.061	.0006	.52	.00149	.0008	3.1951
%RSD	.57411	.05788	.20749	.29317	.08200	34.273
#1	10.717	1.0432	250.20	.51126	1.0093	11.729
#2	10.767	1.0442	250.40	.50827	1.0079	5.6974
#3	10.644	1.0442	249.42	.50975	1.0079	10.541
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.320	.96970	.97086	.05661	.04314	.64290
Stddev	.032	.00061	.00191	.00503	.00068	.00214
%RSD	.30600	.06290	.19667	8.8859	1.5693	.33293
#1	10.355	.96999	.97205	.06227	.04279	.64117
#2	10.310	.97010	.97188	.05265	.04392	.64529
#3	10.294	.96899	.96866	.05492	.04270	.64223
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICSAB Acquired: 6/28/2019 10:45:02 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04789	F 2.4933	.99253	1.0133	1.0234	.10290
Stddev	.00228	.2453	.00101	.0010	.0028	.00135
%RSD	4.7621	9.8388	.10190	.09443	.27381	1.3136
#1	.05052	2.7599	.99286	1.0144	1.0261	.10158
#2	.04673	2.4432	.99334	1.0128	1.0205	.10428
#3	.04643	2.2770	.99140	1.0128	1.0237	.10285
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1.2049				
Low Limit		.79510				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.50553	1.0038
Stddev	.00094	.0003
%RSD	.18568	.03299
#1	.50629	1.0041
#2	.50448	1.0037
#3	.50583	1.0035
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: ICSAB   Acquired: 6/28/2019 10:45:02   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12069.	140720.	11433.
Stddev	19.	752.	47.
%RSD	.15334	.53427	.41541
#1	12061.	139850.	11383.
#2	12056.	141110.	11478.
#3	12091.	141200.	11438.

Sample Name: CRI   Acquired: 6/28/2019 10:50:11   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00988	.20287	.00900	.20581	.01009	.00537
Stddev	.00043	.01926	.00059	.00072	.00015	.00004
%RSD	4.3370	9.4943	6.5579	.35144	1.4632	.71701
#1	.01001	.22487	.00860	.20595	.00995	.00540
#2	.00940	.19466	.00967	.20645	.01008	.00533
#3	.01023	.18907	.00872	.20502	.01024	.00538
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.2736	.00542	.05263	.01022	.02539	.10701
Stddev	.0087	.00007	.00013	.00029	.00002	.00293
%RSD	.16444	1.2216	.25232	2.8121	.09650	2.7352
#1	5.2725	.00547	.05278	.01053	.02542	.10948
#2	5.2828	.00544	.05259	.01015	.02539	.10777
#3	5.2656	.00534	.05253	.00997	.02537	.10377
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI Acquired: 6/28/2019 10:50:11 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.1997	.05327	5.0412	.01582	.04215	F 2.0944
Stddev	.0152	.00097	.0336	.00006	.00009	.7268
%RSD	.29304	1.8152	.66565	.37138	.22134	34.703
#1	5.1968	.05413	5.0220	.01580	.04225	2.6279
#2	5.2162	.05223	5.0799	.01588	.04213	2.3888
#3	5.1861	.05346	5.0216	.01577	.04207	1.2666
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value						5.0000
Range						-50.000%

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.9229	.04161	.30085	.01188	.01049	.06382
Stddev	.0238	.00032	.00222	.00017	.00115	.00048
%RSD	.48417	.77823	.73930	1.4046	11.004	.74867
#1	4.9492	.04144	.30275	.01171	.01174	.06390
#2	4.9168	.04198	.29840	.01188	.00945	.06425
#3	4.9028	.04141	.30140	.01205	.01029	.06331
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI Acquired: 6/28/2019 10:50:11 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00975	F 1.0916	.10644	.05102	.05140	.00895
Stddev	.00172	.0482	.00024	.00013	.00049	.00153
%RSD	17.604	4.4115	.22200	.26309	.95667	17.058
#1	.00778	1.1411	.10670	.05091	.05085	.00743
#2	.01056	1.0889	.10641	.05117	.05154	.01048
#3	.01091	1.0449	.10623	.05098	.05181	.00894
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		.50000				
Range		50.000%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02577	.02199
Stddev	.00023	.00004
%RSD	.88955	.17227
#1	.02558	.02202
#2	.02569	.02195
#3	.02602	.02200
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CRI Acquired: 6/28/2019 10:50:11 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12677.	149120.	11673.
Stddev	72.	645.	98.
%RSD	.56456	.43257	.83957
#1	12604.	148570.	11659.
#2	12680.	148950.	11583.
#3	12747.	149830.	11777.

Sample Name: CCV Acquired: 6/28/2019 10:55:15 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.97116	24.134	.48429	1.9759	1.9535	2.0015
Stddev	.00088	.119	.00175	.0039	.0022	.0147
%RSD	.09112	.49327	.36157	.19492	.11083	.73415
#1	.97052	24.130	.48331	1.9727	1.9558	1.9865
#2	.97217	24.255	.48324	1.9750	1.9529	2.0019
#3	.97080	24.017	.48631	1.9802	1.9516	2.0159
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.571	.49613	1.9899	1.9679	1.9498	24.489
Stddev	.240	.00055	.0014	.0025	.0030	.081
%RSD	.48456	.11173	.07161	.12583	.15313	.32901
#1	49.605	.49563	1.9888	1.9668	1.9520	24.401
#2	49.793	.49604	1.9894	1.9707	1.9510	24.560
#3	49.316	.49672	1.9915	1.9661	1.9464	24.505
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/28/2019 10:55:15 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.331	1.9428	49.385	2.0083	1.9849	47.359
Stddev	.225	.0031	.284	.0033	.0002	2.342
%RSD	.45704	.15752	.57571	.16295	.00881	4.9461
#1	49.449	1.9396	49.253	2.0045	1.9848	47.975
#2	49.474	1.9431	49.711	2.0097	1.9848	49.332
#3	49.071	1.9457	49.190	2.0106	1.9851	44.770
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.282	1.9821	1.9476	.50479	.49626	.48237
Stddev	.159	.0021	.0029	.00334	.00163	.00168
%RSD	.32212	.10746	.15053	.66220	.32798	.34831
#1	49.383	1.9801	1.9495	.50156	.49476	.48428
#2	49.364	1.9819	1.9443	.50824	.49799	.48114
#3	49.099	1.9843	1.9492	.50458	.49603	.48168
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/28/2019 10:55:15 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.48688	F 2.3498	1.9892	1.9668	1.9541	1.0105
Stddev	.00064	.0257	.0016	.0015	.0021	.0008
%RSD	.13148	1.0929	.07914	.07464	.10686	.08290
#1	.48729	2.3685	1.9875	1.9660	1.9547	1.0096
#2	.48720	2.3605	1.9893	1.9660	1.9558	1.0105
#3	.48614	2.3205	1.9907	1.9685	1.9518	1.0112
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		2.0000				
Range		10.500%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	1.9676	1.9744
Stddev	.0035	.0018
%RSD	.17932	.09037
#1	1.9680	1.9741
#2	1.9709	1.9728
#3	1.9639	1.9763
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV   Acquired: 6/28/2019 10:55:15   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12448.	147470.	11590.
Stddev	33.	122.	138.
%RSD	.26721	.08297	1.1939
#1	12478.	147340.	11610.
#2	12412.	147470.	11442.
#3	12454.	147580.	11717.

Sample Name: CCB Acquired: 6/28/2019 11:00:17 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00003	.00029	-.00026	.00435	-.00014	.00008
Stddev	.00018	.02020	.00106	.00118	.00007	.00002
%RSD	711.07	7078.1	404.55	27.231	47.483	25.134
#1	-.00014	.02353	.00084	.00566	-.00016	.00010
#2	-.00001	-.00966	-.00035	.00403	-.00007	.00008
#3	.00022	-.01301	-.00127	.00335	-.00019	.00006
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00217	-.00004	.00008	-.00002	.00026	.00033
Stddev	.00111	.00005	.00010	.00049	.00016	.00113
%RSD	51.034	116.32	127.37	2949.1	61.856	343.94
#1	.00339	-.00008	.00006	-.00053	.00031	-.00040
#2	.00123	.00001	.00018	.00044	.00038	.00163
#3	.00189	-.00005	-.00001	.00004	.00008	-.00025
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/28/2019 11:00:17 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00933	.00183	.01045	.00001	.00005	-.26047
Stddev	.01698	.00089	.01215	.00004	.00019	2.1433
%RSD	181.86	48.539	116.25	435.67	388.57	822.87
#1	.01655	.00277	.01448	.00006	.00015	1.4030
#2	.02151	.00170	.02007	-.00002	-.00017	-2.6792
#3	-.01006	.00101	-.00320	-.00002	.00017	.49472
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.06058	-.00004	-.00029	-.00100	-.00159	-.00038
Stddev	.00565	.00020	.00050	.00035	.00080	.00053
%RSD	9.3227	481.08	174.35	35.228	49.959	138.45
#1	-.05408	.00003	.00007	-.00115	-.00073	-.00011
#2	-.06427	-.00027	-.00007	-.00125	-.00229	-.00099
#3	-.06338	.00011	-.00087	-.00060	-.00177	-.00005
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB   Acquired: 6/28/2019 11:00:17   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00091	.22639	.00001	-.00006	.00053	-.00156
Stddev	.00092	.01645	.00035	.00008	.00039	.00027
%RSD	100.56	7.2645	4453.9	142.38	74.858	17.474
#1	-.00176	.23477	.00005	-.00005	.00044	-.00127
#2	.00007	.23695	.00034	-.00014	.00018	-.00158
#3	-.00105	.20744	-.00037	.00002	.00095	-.00181
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00014	-.00012
Stddev	.00036	.00002
%RSD	254.81	16.584
#1	.00042	-.00013
#2	-.00027	-.00010
#3	.00028	-.00014
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/28/2019 11:00:17 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12683.	148510.	11701.
Stddev	46.	779.	23.
%RSD	.36495	.52443	.19606
#1	12631.	147610.	11717.
#2	12702.	148940.	11675.
#3	12717.	148980.	11710.

Sample Name: mb 140-31034/13-a   Acquired: 6/28/2019 11:05:29   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00014	.00974	-.00093	.01989	.00010	.00006
Stddev	.00030	.01968	.00094	.00080	.00013	.00001
%RSD	214.19	202.04	101.47	4.0050	122.34	18.908
#1	.00035	.02498	-.00031	.02080	.00025	.00007
#2	-.00020	.01672	-.00201	.01955	.00006	.00005
#3	.00027	-.01248	-.00046	.01931	.00000	.00007
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05217	-.00002	.00014	.00100	.00056	.02115
Stddev	.00249	.00004	.00008	.00016	.00018	.00069
%RSD	4.7757	204.73	60.922	15.591	32.184	3.2680
#1	.05502	-.00004	.00006	.00082	.00051	.02137
#2	.05111	.00003	.00022	.00109	.00076	.02171
#3	.05039	-.00005	.00013	.00110	.00042	.02038
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-31034/13-a Acquired: 6/28/2019 11:05:29 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.07967	.00211	.01706	.00072	.00014	.00750
Stddev	.02163	.00042	.00561	.00002	.00003	.96997
%RSD	27.154	19.762	32.913	3.0387	23.395	12939.
#1	.10435	.00176	.01062	.00073	.00018	-1.1095
#2	.06398	.00257	.01959	.00070	.00014	.49481
#3	.07069	.00199	.02095	.00074	.00011	.63718
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.01920	.00258	.08753	.00034	-.00086	.00077
Stddev	.00346	.00011	.00023	.00234	.00131	.00184
%RSD	18.033	4.3998	.26440	686.50	151.64	237.69
#1	-.01535	.00247	.08766	-.00151	-.00118	.00224
#2	-.02206	.00257	.08766	.00297	.00058	-.00128
#3	-.02018	.00269	.08726	-.00044	-.00199	.00136
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-31034/13-a   Acquired: 6/28/2019 11:05:29   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00062	F .25551	F .12138	-.00003	.00089	-.00102
Stddev	.00283	.00678	.00026	.00004	.00033	.00177
%RSD	453.33	2.6554	.21154	105.27	37.144	173.76
#1	-.00116	.25283	.12156	-.00005	.00104	.00092
#2	.00388	.26323	.12108	-.00006	.00112	-.00255
#3	-.00086	.25048	.12148	.00001	.00051	-.00142
Check ?	Chk Pass	Chk Fail	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit		.25000	.05000			
Low Limit		-.25000	-.05000			

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00015	.01144
Stddev	.00024	.00010
%RSD	162.20	.88686
#1	.00033	.01152
#2	-.00012	.01133
#3	.00023	.01149
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: mb 140-31034/13-a   Acquired: 6/28/2019 11:05:29   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12427.	146320.	11519.
Stddev	61.	838.	37.
%RSD	.48713	.57281	.32042
#1	12357.	145870.	11545.
#2	12460.	145800.	11535.
#3	12464.	147280.	11477.

Sample Name: lcs 140-31034/14-a   Acquired: 6/28/2019 11:10:41   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05062	1.9928	.10044	1.0340	.10128	.05392
Stddev	.00040	.0130	.00053	.0022	.00041	.00017
%RSD	.79736	.65089	.53217	.21734	.40139	.30608
#1	.05099	1.9782	.10042	1.0344	.10158	.05373
#2	.05068	1.9973	.09991	1.0316	.10145	.05403
#3	.05019	2.0030	.10098	1.0360	.10082	.05399
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.898	.05261	.10429	.20716	.25487	1.0432
Stddev	.215	.00011	.00014	.00038	.00013	.0033
%RSD	.41479	.20162	.13558	.18474	.04921	.31383
#1	51.797	.05268	.10445	.20675	.25473	1.0413
#2	51.751	.05249	.10417	.20723	.25492	1.0413
#3	52.145	.05266	.10426	.20750	.25497	1.0470
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcs 140-31034/14-a Acquired: 6/28/2019 11:10:41 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.028	.10510	10.138	.10502	.53183	F 32.016
Stddev	.068	.00037	.056	.00014	.00149	3.326
%RSD	.13383	.34757	.54755	.13500	.28065	10.389
#1	50.951	.10487	10.105	.10489	.53343	33.764
#2	51.054	.10491	10.107	.10517	.53048	28.180
#3	51.080	.10552	10.202	.10501	.53157	34.103
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value						50.000
Range						-20.000%

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.820	.51662	5.1605	.10417	.10208	.50447
Stddev	.046	.00025	.0089	.00195	.00135	.00282
%RSD	.09053	.04929	.17299	1.8747	1.3190	.55945
#1	50.785	.51687	5.1708	.10487	.10263	.50615
#2	50.803	.51636	5.1558	.10567	.10307	.50121
#3	50.872	.51663	5.1549	.10196	.10055	.50605
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcs 140-31034/14-a   Acquired: 6/28/2019 11:10:41   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.15001	5.2708	F .64373	.50494	.10758	.41638
Stddev	.00227	.0341	.00060	.00048	.00131	.00211
%RSD	1.5128	.64624	.09382	.09450	1.2211	.50599
#1	.14892	5.2579	.64366	.50439	.10633	.41857
#2	.14849	5.2451	.64437	.50519	.10895	.41619
#3	.15262	5.3094	.64316	.50524	.10746	.41437
Check ?	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
Value			.50000			
Range			20.000%			

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20780	.52397
Stddev	.00082	.00097
%RSD	.39244	.18559
#1	.20702	.52505
#2	.20775	.52315
#3	.20864	.52372
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: lcs 140-31034/14-a   Acquired: 6/28/2019 11:10:41   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12409.	146130.	11625.
Stddev	62.	427.	144.
%RSD	.50342	.29191	1.2386
#1	12354.	145670.	11628.
#2	12396.	146200.	11768.
#3	12477.	146510.	11480.

Sample Name: 140-15402-a-1-c @2 Acquired: 6/28/2019 11:15:37 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00013	.06520	-.00206	.03075	.00517	.00004
Stddev	.00017	.00510	.00059	.00047	.00011	.00002
%RSD	129.52	7.8285	28.785	1.5243	2.1978	52.288
#1	.00016	.06205	-.00259	.03103	.00514	.00005
#2	.00029	.07109	-.00142	.03102	.00508	.00006
#3	-.00005	.06245	-.00218	.03021	.00530	.00002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.6472	-.00003	.00011	.00172	.00373	.20497
Stddev	.0048	.00003	.00005	.00021	.00022	.00277
%RSD	.29368	108.91	47.380	12.420	5.8491	1.3510
#1	1.6426	-.00005	.00005	.00183	.00378	.20288
#2	1.6522	.00000	.00016	.00147	.00391	.20392
#3	1.6469	-.00003	.00012	.00185	.00349	.20811
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-1-c @2   Acquired: 6/28/2019 11:15:37   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.4179	.01624	.16382	.00588	.00291	F 6493.7
Stddev	.8655	.00099	.01108	.00013	.00038	9.9
%RSD	11.668	6.0784	6.7613	2.1527	13.153	.15233
#1	8.2006	.01550	.16883	.00592	.00331	6484.6
#2	7.5646	.01586	.15112	.00598	.00255	6492.1
#3	6.4884	.01737	.17150	.00574	.00286	6504.3
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit						1000.0
Low Limit						-1000.0

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	^ *****	2.9808	.38075	.68077	.63000	.00101
Stddev	-----	.0032	.00123	.00679	.00286	.00221
%RSD	-----	.10725	.32434	.99765	.45419	219.49
#1	^ -----	2.9836	.38213	.67745	.63124	.00085
#2	^ -----	2.9813	.37976	.68858	.63203	.00330
#3	^ -----	2.9773	.38036	.67627	.62672	-.00112
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-1-c @2 Acquired: 6/28/2019 11:15:37 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00186	1.4211	.04168	.00625	.00333	-.00072
Stddev	.00078	.0193	.00043	.00006	.00034	.00245
%RSD	42.000	1.3613	1.0209	1.0022	10.126	340.42
#1	.00159	1.4413	.04217	.00629	.00339	-.00355
#2	.00125	1.4193	.04139	.00629	.00297	.00057
#3	.00273	1.4028	.04149	.00618	.00364	.00082
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00039	.01376
Stddev	.00011	.00007
%RSD	26.822	.47627
#1	.00030	.01371
#2	.00051	.01373
#3	.00037	.01383
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15402-a-1-c @2   Acquired: 6/28/2019 11:15:37   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	9520.1	105990.	10468.
Stddev	19.0	830.	123.
%RSD	.19922	.78286	1.1774
#1	9509.2	105570.	10570.
#2	9509.0	105450.	10331.
#3	9542.0	106940.	10504.

Sample Name: 140-15402-a-2-g @2 Acquired: 6/28/2019 11:20:50 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML (A)

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00036	.06648	-.00198	.02465	.00434	.00004
Stddev	.00061	.02119	.00121	.00042	.00011	.00002
%RSD	169.36	31.880	60.997	1.6907	2.6370	42.255
#1	-.00006	.05420	-.00084	.02505	.00421	.00002
#2	-.00106	.05429	-.00325	.02422	.00438	.00006
#3	.00004	.09096	-.00186	.02467	.00443	.00004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.3341	-.00007	.00037	.00237	.00287	.28794
Stddev	.0081	.00010	.00008	.00026	.00015	.00353
%RSD	.60930	141.42	20.970	11.182	5.2256	1.2264
#1	1.3358	-.00015	.00036	.00209	.00285	.28869
#2	1.3413	.00004	.00046	.00262	.00303	.28410
#3	1.3253	-.00011	.00030	.00238	.00273	.29105
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-2-g @2 Acquired: 6/28/2019 11:20:50 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML (A)

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.4367	.01790	.13256	.00783	.00148	F 6674.8
Stddev	.1143	.00103	.00217	.00005	.00024	35.0
%RSD	2.5755	5.7497	1.6349	.63347	16.219	.52456
#1	4.4891	.01805	.13105	.00784	.00175	6701.7
#2	4.5154	.01884	.13504	.00778	.00129	6635.2
#3	4.3056	.01680	.13158	.00787	.00141	6687.5
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit						1000.0
Low Limit						-1000.0

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	^ *****	3.7906	.09502	.84759	.78462	.00032
Stddev	-----	.0104	.00193	.00449	.00166	.00034
%RSD	-----	.27385	2.0304	.52993	.21187	107.61
#1	^ -----	3.8016	.09466	.84524	.78633	.00006
#2	^ -----	3.7891	.09711	.85277	.78301	.00019
#3	^ -----	3.7810	.09330	.84475	.78452	.00071
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-2-g @2 Acquired: 6/28/2019 11:20:50 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML (A)

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00370	1.3711	.04320	.00454	.00292	-.00276
Stddev	.00140	.0047	.00045	.00008	.00076	.00119
%RSD	37.913	.34559	1.0455	1.6651	25.946	43.031
#1	.00472	1.3761	.04337	.00459	.00229	-.00139
#2	.00210	1.3706	.04353	.00457	.00376	-.00336
#3	.00428	1.3667	.04268	.00445	.00271	-.00354
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00040	.01534
Stddev	.00025	.00014
%RSD	62.757	.89523
#1	.00014	.01549
#2	.00041	.01523
#3	.00064	.01529
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15402-a-2-g @2 Acquired: 6/28/2019 11:20:50 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML (A)

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	9407.1	104760.	10400.
Stddev	54.4	444.	61.
%RSD	.57839	.42379	.58579
#1	9344.5	104340.	10424.
#2	9434.3	104730.	10330.
#3	9442.6	105220.	10444.

Sample Name: 15402-a-2-h ms @2 Acquired: 6/28/2019 11:26:02 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03495	1.1065	.06105	.61607	.05791	.02654
Stddev	.00031	.0215	.00035	.00140	.00021	.00008
%RSD	.90060	1.9434	.57134	.22773	.36738	.28547
#1	.03519	1.1308	.06130	.61766	.05813	.02656
#2	.03459	1.0988	.06119	.61500	.05770	.02660
#3	.03507	1.0900	.06065	.61557	.05789	.02645
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	27.430	.02581	.04942	.10513	.15467	.80451
Stddev	.167	.00016	.00018	.00044	.00097	.00474
%RSD	.60996	.62082	.36200	.41551	.62551	.58881
#1	27.607	.02599	.04962	.10553	.15560	.80922
#2	27.406	.02572	.04938	.10467	.15472	.80455
#3	27.275	.02571	.04927	.10520	.15367	.79975
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15402-a-2-h ms @2 Acquired: 6/28/2019 11:26:02 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	36.822	.07902	5.0606	.06076	.25967	F 7236.1
Stddev	.139	.00033	.0203	.00023	.00128	35.6
%RSD	.37834	.41931	.40112	.38349	.49167	.49217
#1	36.952	.07873	5.0837	.06097	.26082	7276.2
#2	36.839	.07938	5.0524	.06079	.25990	7224.3
#3	36.675	.07896	5.0457	.06051	.25829	7208.0
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit						1000.0
Low Limit						-1000.0

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	^ *****	3.7319	3.2882	.83539	.76955	.29507
Stddev	-----	.0119	.0160	.00372	.00150	.00408
%RSD	-----	.31777	.48774	.44482	.19540	1.3823
#1	^ -----	3.7414	3.3029	.83877	.77127	.29415
#2	^ -----	3.7356	3.2906	.83141	.76892	.29952
#3	^ -----	3.7186	3.2711	.83600	.76847	.29152
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15402-a-2-h ms @2 Acquired: 6/28/2019 11:26:02 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.12093	4.0801	.28503	.27334	.05875	.17757
Stddev	.00354	.0099	.00047	.00092	.00052	.00453
%RSD	2.9287	.24176	.16586	.33635	.88165	2.5509
#1	.12295	4.0914	.28555	.27432	.05824	.18219
#2	.12301	4.0733	.28490	.27321	.05928	.17738
#3	.11684	4.0755	.28464	.27250	.05873	.17314
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.10920	.33444
Stddev	.00050	.00186
%RSD	.45959	.55574
#1	.10951	.33588
#2	.10946	.33509
#3	.10862	.33234
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 15402-a-2-h ms @2 Acquired: 6/28/2019 11:26:02 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	9392.6	104770.	10413.
Stddev	61.2	577.	141.
%RSD	.65190	.55077	1.3588
#1	9334.0	104410.	10254.
#2	9387.7	104450.	10459.
#3	9456.1	105430.	10525.

Sample Name: 15402-a-2-i msd @2 Acquired: 6/28/2019 11:31:02 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03476	1.0308	.05904	.58389	.05545	.02511
Stddev	.00081	.0143	.00141	.00051	.00010	.00009
%RSD	2.3372	1.3911	2.3801	.08802	.17594	.36774
#1	.03563	1.0470	.05742	.58337	.05533	.02511
#2	.03402	1.0198	.05988	.58440	.05550	.02521
#3	.03464	1.0256	.05982	.58390	.05551	.02503
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	26.139	.02480	.04666	.09965	.14654	.67975
Stddev	.019	.00011	.00008	.00078	.00051	.00147
%RSD	.07095	.43763	.17302	.77969	.34862	.21630
#1	26.151	.02489	.04664	.09995	.14622	.68123
#2	26.118	.02468	.04659	.10023	.14627	.67974
#3	26.149	.02481	.04675	.09877	.14713	.67829
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15402-a-2-i msd @2   Acquired: 6/28/2019 11:31:02   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	35.489	.07231	4.8365	.05635	.24695	F 7283.4
Stddev	.115	.00197	.0150	.00024	.00067	49.0
%RSD	.32323	2.7220	.31090	.42345	.27184	.67317
#1	35.357	.07177	4.8531	.05622	.24761	7309.6
#2	35.561	.07449	4.8237	.05663	.24627	7313.7
#3	35.550	.07066	4.8328	.05621	.24697	7226.8
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit						1000.0
Low Limit						-1000.0

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	^ *****	3.1139	3.1171	.70745	.65922	.27899
Stddev	-----	.0052	.0042	.00728	.00249	.00193
%RSD	-----	.16781	.13564	1.0297	.37726	.69213
#1	^ -----	3.1187	3.1123	.71104	.66187	.28054
#2	^ -----	3.1083	3.1203	.71225	.65885	.27682
#3	^ -----	3.1147	3.1187	.69907	.65694	.27960
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15402-a-2-i msd @2 Acquired: 6/28/2019 11:31:02 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.11247	3.6906	.27148	.25929	.05570	.17435
Stddev	.00057	.0303	.00093	.00018	.00055	.00088
%RSD	.51089	.82095	.34275	.06836	.99063	.50326
#1	.11185	3.6591	.27247	.25909	.05611	.17534
#2	.11258	3.6931	.27063	.25942	.05507	.17368
#3	.11298	3.7195	.27133	.25937	.05591	.17402
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.10410	.32238
Stddev	.00017	.00032
%RSD	.16605	.10071
#1	.10430	.32201
#2	.10404	.32261
#3	.10397	.32251
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 15402-a-2-i msd @2 Acquired: 6/28/2019 11:31:02 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	9386.8	104590.	10292.
Stddev	33.2	477.	47.
%RSD	.35422	.45644	.45706
#1	9348.5	104290.	10260.
#2	9403.2	104340.	10270.
#3	9408.6	105140.	10346.

Sample Name: 15402-a-2-g PDS@2 Acquired: 6/28/2019 11:36:01 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.06678	2.0581	.11683	1.1491	.10692	.05057
Stddev	.00039	.0216	.00112	.0034	.00008	.00028
%RSD	.58823	1.0521	.96232	.30066	.07049	.56083
#1	.06676	2.0821	.11760	1.1455	.10695	.05046
#2	.06718	2.0401	.11736	1.1495	.10683	.05036
#3	.06639	2.0521	.11554	1.1524	.10698	.05089
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.959	.04903	.09395	.19848	.28820	1.2548
Stddev	.100	.00013	.00017	.00217	.00112	.0021
%RSD	.19704	.27386	.17732	1.0926	.38810	.16433
#1	51.072	.04915	.09405	.19747	.28852	1.2571
#2	50.927	.04889	.09376	.19700	.28912	1.2532
#3	50.879	.04905	.09405	.20097	.28695	1.2542
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15402-a-2-g PDS@2 Acquired: 6/28/2019 11:36:01 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	63.780	.13223	9.6378	.10984	.49801	F 6384.8
Stddev	.172	.00090	.0194	.00058	.00128	29.5
%RSD	.26958	.67803	.20172	.53199	.25775	.46249
#1	63.582	.13232	9.6594	.10959	.49811	6405.5
#2	63.870	.13308	9.6325	.10942	.49668	6397.9
#3	63.888	.13129	9.6216	.11051	.49924	6351.0
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit						1000.0
Low Limit						-1000.0

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	^ *****	4.0466	6.1351	.89968	.83322	.55608
Stddev	-----	.0053	.0074	.00651	.00236	.00002
%RSD	-----	.13031	.12127	.72376	.28322	.00270
#1	^ -----	4.0495	6.1359	.89721	.83328	.55608
#2	^ -----	4.0405	6.1421	.89477	.83083	.55609
#3	^ -----	4.0498	6.1273	.90707	.83555	.55606
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15402-a-2-g PDS@2 Acquired: 6/28/2019 11:36:01 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.22101	6.4579	.51715	.51467	.10848	.36531
Stddev	.00209	.0299	.00106	.00049	.00068	.00130
%RSD	.94520	.46250	.20591	.09494	.62925	.35519
#1	.21910	6.4259	.51783	.51497	.10790	.36676
#2	.22324	6.4627	.51592	.51494	.10923	.36492
#3	.22069	6.4850	.51770	.51411	.10830	.36426
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20764	.61715
Stddev	.00058	.00032
%RSD	.27964	.05168
#1	.20733	.61679
#2	.20727	.61742
#3	.20831	.61723
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 15402-a-2-g PDS@2 Acquired: 6/28/2019 11:36:01 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	9584.2	107130.	10381.
Stddev	25.6	599.	122.
%RSD	.26688	.55961	1.1719
#1	9554.7	106560.	10241.
#2	9600.1	107750.	10453.
#3	9597.7	107070.	10450.

Sample Name: 140-15402-a-3-c @2 Acquired: 6/28/2019 11:40:58 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00002	.06970	-.00316	.02428	.00515	.00006
Stddev	.00057	.01363	.00039	.00131	.00006	.00002
%RSD	2399.4	19.558	12.425	5.4154	1.0860	29.167
#1	.00037	.06960	-.00347	.02569	.00521	.00005
#2	.00024	.05611	-.00330	.02407	.00512	.00009
#3	-.00068	.08338	-.00272	.02308	.00511	.00005
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.5854	-.00001	.00018	.00119	.00210	.23471
Stddev	.0025	.00002	.00011	.00020	.00034	.00496
%RSD	.15804	178.79	60.970	16.451	16.053	2.1154
#1	1.5827	-.00004	.00012	.00116	.00175	.23935
#2	1.5859	.00001	.00031	.00140	.00213	.22947
#3	1.5876	-.00000	.00011	.00101	.00242	.23530
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-3-c @2 Acquired: 6/28/2019 11:40:58 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.7046	.01309	.11399	.00602	.00155	F 6898.4
Stddev	.0413	.00008	.01696	.00001	.00007	23.2
%RSD	.87714	.64547	14.883	.15503	4.7729	.33699
#1	4.6838	.01317	.12117	.00602	.00154	6902.0
#2	4.7521	.01300	.12618	.00601	.00163	6873.6
#3	4.6778	.01308	.09461	.00603	.00148	6919.6
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit						1000.0
Low Limit						-1000.0

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	^ *****	2.9818	.10014	.68641	.63951	.00116
Stddev	-----	.0066	.00050	.00907	.00129	.00080
%RSD	-----	.21999	.49634	1.3214	.20241	68.959
#1	^ -----	2.9755	.09971	.67794	.63857	.00058
#2	^ -----	2.9815	.10068	.69598	.63898	.00208
#3	^ -----	2.9886	.10002	.68529	.64099	.00083
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-3-c @2 Acquired: 6/28/2019 11:40:58 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00442	1.1994	.04017	.00551	.00286	-.00182
Stddev	.00204	.0138	.00011	.00002	.00085	.00136
%RSD	46.067	1.1510	.27336	.35755	29.581	74.900
#1	.00232	1.1873	.04005	.00552	.00351	-.00208
#2	.00639	1.1964	.04018	.00553	.00316	-.00304
#3	.00455	1.2144	.04027	.00549	.00190	-.00035
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00063	.01362
Stddev	.00041	.00009
%RSD	64.091	.67217
#1	.00060	.01372
#2	.00105	.01354
#3	.00024	.01360
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15402-a-3-c @2 Acquired: 6/28/2019 11:40:58 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	9382.0	104690.	10417.
Stddev	16.2	776.	116.
%RSD	.17290	.74122	1.1110
#1	9374.6	104200.	10298.
#2	9370.9	104280.	10530.
#3	9400.6	105580.	10424.

Sample Name: 140-15402-a-4-c @2 Acquired: 6/28/2019 11:46:08 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00013	.11709	-.00218	.01769	.01228	.00004
Stddev	.00011	.01231	.00008	.00067	.00010	.00001
%RSD	88.365	10.516	3.4607	3.7642	.81936	22.046
#1	.00002	.10397	-.00209	.01833	.01231	.00003
#2	.00012	.11890	-.00224	.01700	.01237	.00005
#3	.00025	.12839	-.00221	.01775	.01217	.00004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.3964	-.00004	.00031	.01301	.00566	1.2216
Stddev	.0063	.00004	.00004	.00045	.00020	.0011
%RSD	.14360	113.35	13.531	3.4643	3.5238	.09319
#1	4.4027	-.00007	.00031	.01304	.00585	1.2203
#2	4.3963	-.00006	.00034	.01345	.00546	1.2220
#3	4.3901	.00001	.00026	.01255	.00566	1.2224
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-4-c @2 Acquired: 6/28/2019 11:46:08 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.8813	.01285	.87518	.02557	.00402	F 6879.2
Stddev	.0867	.00153	.00432	.00017	.00014	25.4
%RSD	1.7753	11.919	.49373	.64591	3.4883	.36863
#1	4.7847	.01430	.87763	.02540	.00418	6908.0
#2	4.9521	.01125	.87019	.02573	.00391	6860.2
#3	4.9071	.01300	.87772	.02558	.00399	6869.3
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit						1000.0
Low Limit						-1000.0

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	^ *****	2.7042	.89179	.68915	.63966	.00086
Stddev	-----	.0030	.00287	.00643	.00142	.00125
%RSD	-----	.11164	.32193	.93294	.22170	146.56
#1	^ -----	2.7075	.89417	.68514	.64077	.00227
#2	^ -----	2.7037	.88860	.69656	.64015	-.00013
#3	^ -----	2.7015	.89261	.68574	.63806	.00043
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-4-c @2 Acquired: 6/28/2019 11:46:08 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00354	1.0028	.03897	.00968	.00764	-.00490
Stddev	.00220	.0105	.00032	.00014	.00014	.00209
%RSD	62.116	1.0451	.81427	1.4942	1.8662	42.654
#1	.00522	.99205	.03910	.00976	.00779	-.00469
#2	.00434	1.0032	.03861	.00951	.00761	-.00292
#3	.00105	1.0130	.03921	.00976	.00751	-.00708
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00082	.04826
Stddev	.00014	.00009
%RSD	17.181	.18220
#1	.00066	.04832
#2	.00085	.04830
#3	.00094	.04816
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15402-a-4-c @2 Acquired: 6/28/2019 11:46:08 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	9364.4	104460.	10321.
Stddev	47.7	884.	92.
%RSD	.50920	.84640	.88954
#1	9311.9	103670.	10259.
#2	9376.4	104290.	10278.
#3	9405.0	105420.	10427.

Sample Name: 15402-a-2-g SD@10 Acquired: 6/28/2019 11:51:18 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (A) TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00033	.02285	-.00145	.00402	.00088	.00006
Stddev	.00028	.01359	.00091	.00027	.00016	.00003
%RSD	84.956	59.470	62.892	6.6115	18.689	42.335
#1	-.00047	.03819	-.00225	.00425	.00071	.00007
#2	-.00051	.01231	-.00046	.00373	.00104	.00008
#3	-.00001	.01805	-.00164	.00409	.00089	.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.27893	.00001	-.00024	.00018	.00151	.05825
Stddev	.00286	.00004	.00005	.00015	.00006	.00162
%RSD	1.0237	514.73	22.123	81.305	4.0326	2.7812
#1	.27973	.00003	-.00018	.00007	.00154	.05646
#2	.28130	-.00003	-.00028	.00035	.00144	.05864
#3	.27576	.00003	-.00026	.00012	.00156	.05963
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15402-a-2-g SD@10 Acquired: 6/28/2019 11:51:18 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (A) TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.52797	.00269	.01310	.00151	.00029	F 1245.9
Stddev	.04601	.00062	.02117	.00001	.00015	7.2
%RSD	8.7144	22.900	161.59	.71960	50.852	.58183
#1	.57981	.00213	-.01039	.00152	.00016	1238.3
#2	.49200	.00258	.03070	.00150	.00045	1246.7
#3	.51210	.00335	.01899	.00151	.00026	1252.7
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit						1000.0
Low Limit						-1000.0

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1643.5	.79370	.01649	.17664	.16330	.00015
Stddev	14.0	.00088	.00055	.00156	.00097	.00142
%RSD	.85341	.11046	3.3069	.88284	.59386	981.28
#1	1629.2	.79458	.01593	.17750	.16262	.00179
#2	1657.2	.79283	.01653	.17758	.16287	-.00071
#3	1644.2	.79370	.01702	.17484	.16441	-.00064
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 15402-a-2-g SD@10   Acquired: 6/28/2019 11:51:18   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 2ML (A) TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00077	.26275	.00925	.00073	.00103	-.00044
Stddev	.00254	.00615	.00066	.00006	.00081	.00154
%RSD	331.13	2.3392	7.1678	7.9680	78.670	349.19
#1	.00193	.25904	.00987	.00070	.00194	-.00098
#2	.00252	.26984	.00855	.00080	.00074	.00130
#3	-.00215	.25936	.00932	.00070	.00040	-.00164
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00029	.00507
Stddev	.00010	.00005
%RSD	35.342	1.0307
#1	.00017	.00508
#2	.00034	.00512
#3	.00035	.00502
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 15402-a-2-g SD@10 Acquired: 6/28/2019 11:51:18 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (A) TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	11392.	128730.	11052.
Stddev	38.	533.	27.
%RSD	.33275	.41374	.24301
#1	11349.	128130.	11037.
#2	11415.	129160.	11036.
#3	11414.	128890.	11083.

Sample Name: CRI Acquired: 6/28/2019 11:56:37 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01034	.19603	.00912	.20727	.01022	.00547
Stddev	.00043	.00457	.00101	.00200	.00014	.00002
%RSD	4.1247	2.3299	11.081	.96314	1.3895	.29734
#1	.01059	.19956	.00859	.20857	.01035	.00549
#2	.01060	.19087	.00848	.20826	.01024	.00546
#3	.00985	.19767	.01029	.20497	.01007	.00546
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.3358	.00544	.05350	.01024	.02613	.10472
Stddev	.0118	.00006	.00048	.00069	.00031	.00114
%RSD	.22078	1.0494	.90039	6.7780	1.1841	1.0921
#1	5.3424	.00545	.05372	.01067	.02637	.10555
#2	5.3428	.00550	.05384	.01062	.02624	.10519
#3	5.3222	.00538	.05295	.00944	.02578	.10341
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI Acquired: 6/28/2019 11:56:37 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.4055	.05434	5.1093	.01603	.04245	F 2.2926
Stddev	.0350	.00032	.0340	.00004	.00037	1.8939
%RSD	.64835	.59794	.66514	.25787	.86630	82.608
#1	5.4044	.05419	5.0859	.01601	.04261	.23802
#2	5.4411	.05471	5.1483	.01608	.04270	3.9686
#3	5.3710	.05412	5.0937	.01601	.04202	2.6712
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value						5.0000
Range						-50.000%

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 8.6965	.04198	.29977	.01301	.00847	.06245
Stddev	.4724	.00025	.00232	.00258	.00056	.00114
%RSD	5.4325	.59008	.77533	19.830	6.6356	1.8271
#1	9.2045	.04210	.30171	.01495	.00907	.06367
#2	8.6145	.04215	.30042	.01008	.00796	.06141
#3	8.2704	.04170	.29720	.01400	.00836	.06228
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value	5.0000					
Range	50.000%					

Sample Name: CRI Acquired: 6/28/2019 11:56:37 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01151	.50684	.10668	.05154	.05182	.01030
Stddev	.00169	.01639	.00054	.00010	.00052	.00124
%RSD	14.697	3.2343	.51031	.19529	1.0127	12.027
#1	.01323	.52577	.10709	.05153	.05175	.00995
#2	.01144	.49733	.10688	.05164	.05133	.00927
#3	.00985	.49742	.10606	.05144	.05237	.01167
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02597	.02227
Stddev	.00026	.00020
%RSD	.99448	.89488
#1	.02616	.02242
#2	.02567	.02233
#3	.02606	.02204
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CRI Acquired: 6/28/2019 11:56:37 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12553.	146190.	11198.
Stddev	81.	426.	46.
%RSD	.64404	.29141	.41386
#1	12478.	145710.	11205.
#2	12543.	146340.	11240.
#3	12639.	146520.	11148.

Sample Name: CCV Acquired: 6/28/2019 12:01:43 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.99470	24.313	.49018	2.0223	2.0107	2.0414
Stddev	.00398	.040	.00181	.0026	.0011	.0150
%RSD	.40049	.16414	.36823	.12877	.05358	.73685
#1	.99743	24.276	.49080	2.0219	2.0114	2.0340
#2	.99655	24.306	.48815	2.0200	2.0113	2.0315
#3	.99013	24.355	.49159	2.0251	2.0095	2.0587
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.006	.50727	2.0474	2.0026	1.9844	24.587
Stddev	.067	.00180	.0071	.0040	.0070	.034
%RSD	.13108	.35410	.34701	.19818	.35497	.13816
#1	50.947	.50827	2.0524	2.0017	1.9897	24.620
#2	51.079	.50835	2.0505	1.9992	1.9871	24.589
#3	50.992	.50520	2.0392	2.0069	1.9764	24.552
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/28/2019 12:01:43 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.637	2.0328	50.628	2.0551	2.0354	45.886
Stddev	.065	.0042	.100	.0038	.0069	1.838
%RSD	.12554	.20711	.19829	.18392	.34156	4.0057
#1	51.592	2.0371	50.694	2.0554	2.0405	46.378
#2	51.711	2.0325	50.678	2.0512	2.0381	43.852
#3	51.608	2.0287	50.512	2.0587	2.0275	47.428
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.457	2.0127	1.9623	.52212	.50571	.48709
Stddev	.125	.0066	.0042	.00331	.00228	.00150
%RSD	.24297	.32712	.21155	.63459	.45113	.30889
#1	51.585	2.0160	1.9659	.52118	.50536	.48880
#2	51.451	2.0171	1.9631	.51938	.50815	.48651
#3	51.336	2.0052	1.9578	.52580	.50363	.48596
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV   Acquired: 6/28/2019 12:01:43   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49814	2.0184	2.0329	2.0089	1.9836	1.0379
Stddev	.00315	.0080	.0069	.0026	.0049	.0067
%RSD	.63330	.39728	.33760	.12715	.24637	.64245
#1	.49760	2.0253	2.0362	2.0115	1.9782	1.0442
#2	.50153	2.0202	2.0375	2.0090	1.9877	1.0386
#3	.49529	2.0096	2.0250	2.0064	1.9849	1.0309
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.0177	2.0270
Stddev	.0024	.0065
%RSD	.12144	.32221
#1	2.0191	2.0323
#2	2.0149	2.0291
#3	2.0191	2.0197
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 6/28/2019 12:01:43 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12310.	143570.	11226.
Stddev	68.	662.	77.
%RSD	.55072	.46084	.68685
#1	12259.	143110.	11141.
#2	12285.	144330.	11247.
#3	12387.	143270.	11291.

Sample Name: CCB Acquired: 6/28/2019 12:06:43 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00026	-.00818	-.00015	.00381	-.00012	.00011
Stddev	.00028	.00341	.00023	.00180	.00006	.00004
%RSD	108.85	41.614	154.42	47.353	48.916	35.346
#1	.00001	-.00583	-.00032	.00572	-.00014	.00016
#2	.00056	-.01209	.00011	.00355	-.00017	.00010
#3	.00019	-.00663	-.00024	.00215	-.00005	.00008
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00238	.00001	.00008	-.00009	.00049	.00025
Stddev	.00102	.00006	.00003	.00024	.00010	.00252
%RSD	42.906	1107.4	40.503	264.14	20.918	991.64
#1	.00329	.00005	.00005	-.00036	.00042	-.00080
#2	.00128	.00003	.00011	-.00000	.00045	-.00157
#3	.00256	-.00006	.00007	.00009	.00061	.00313
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/28/2019 12:06:43 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05881	.00179	.01687	.00001	-.00012	-.05963
Stddev	.01915	.00093	.00877	.00006	.00006	1.4889
%RSD	32.562	51.967	51.997	574.31	53.579	2497.0
#1	.07227	.00077	.00919	.00007	-.00011	-.39181
#2	.06727	.00199	.02642	.00000	-.00006	1.5673
#3	.03689	.00260	.01499	-.00004	-.00018	-1.3544
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.7895	-.00000	-.00104	.00083	-.00159	-.00171
Stddev	.1094	.00003	.00050	.00166	.00093	.00017
%RSD	6.1126	1558.6	48.670	199.34	58.551	10.143
#1	1.9086	-.00000	-.00141	-.00081	-.00188	-.00151
#2	1.7664	.00002	-.00124	.00080	-.00234	-.00180
#3	1.6936	-.00003	-.00046	.00250	-.00055	-.00183
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/28/2019 12:06:43 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00151	.00491	.00004	-.00015	.00057	.00050
Stddev	.00127	.00695	.00023	.00022	.00067	.00138
%RSD	84.099	141.61	521.26	153.87	116.98	273.64
#1	-.00183	.01286	.00026	.00011	.00124	.00144
#2	-.00259	.00191	.00007	-.00027	-.00009	.00115
#3	-.00011	-.00004	-.00019	-.00028	.00056	-.00108
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00007	-.00011
Stddev	.00022	.00005
%RSD	341.53	48.903
#1	-.00006	-.00007
#2	.00033	-.00017
#3	-.00007	-.00009
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/28/2019 12:06:43 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12658.	147250.	11430.
Stddev	42.	1043.	134.
%RSD	.33481	.70833	1.1710
#1	12609.	146070.	11325.
#2	12680.	147620.	11385.
#3	12684.	148050.	11581.

Sample Name: mb 140-30852/11-a Acquired: 6/28/2019 12:11:55 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00074	.00146	.00251	F 141.21	.00009	.00011
Stddev	.00031	.01828	.00027	.81	.00009	.00001
%RSD	41.908	1255.7	10.792	.57170	97.511	6.4852
#1	-.00046	-.01964	.00242	141.76	-.00001	.00011
#2	-.00107	.01136	.00281	141.60	.00013	.00010
#3	-.00069	.01265	.00229	140.29	.00016	.00011
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				.10000		
Low Limit				-.10000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02913	-.00008	-.00019	.00082	.00125	.01678
Stddev	.00063	.00006	.00014	.00016	.00006	.00037
%RSD	2.1476	68.984	69.507	18.998	5.0136	2.2279
#1	.02860	-.00015	-.00035	.00076	.00132	.01640
#2	.02982	-.00004	-.00012	.00070	.00119	.01715
#3	.02896	-.00005	-.00011	.00100	.00125	.01681
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-30852/11-a   Acquired: 6/28/2019 12:11:55   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05188	.00002	.00854	.00117	.00068	-.17343
Stddev	.02761	.00056	.00444	.00003	.00017	1.7418
%RSD	53.209	2563.4	52.013	2.6270	25.540	1004.3
#1	.05148	.00029	.00540	.00119	.00087	-2.1642
#2	.07969	-.00062	.01363	.00117	.00052	.57336
#3	.02448	.00039	.00660	.00113	.00066	1.0705
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.2643	.00000	.00592	-.00104	-.00085	-.00415
Stddev	.0601	.00005	.00133	.00130	.00040	.00042
%RSD	2.6555	2439.5	22.436	124.14	46.840	10.051
#1	2.2396	-.00006	.00439	-.00006	-.00064	-.00442
#2	2.3329	.00004	.00675	-.00055	-.00059	-.00436
#3	2.2205	.00002	.00662	-.00251	-.00131	-.00367
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-30852/11-a Acquired: 6/28/2019 12:11:55 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00421	F 21.570	.00160	-.00013	.00154	-.00209
Stddev	.00046	1.469	.00033	.00007	.00019	.00173
%RSD	10.974	6.8110	20.649	50.316	12.554	82.935
#1	-.00376	20.314	.00134	-.00021	.00143	-.00368
#2	-.00419	23.186	.00149	-.00008	.00142	-.00233
#3	-.00468	21.211	.00197	-.00012	.00176	-.00025
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		.25000				
Low Limit		-.25000				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00006	.00074
Stddev	.00023	.00003
%RSD	351.37	4.3805
#1	-.00008	.00071
#2	-.00005	.00077
#3	.00033	.00076
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: mb 140-30852/11-a   Acquired: 6/28/2019 12:11:55   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12719.	149930.	11724.
Stddev	61.	1054.	65.
%RSD	.48173	.70318	.55406
#1	12648.	148770.	11665.
#2	12746.	150190.	11714.
#3	12761.	150830.	11793.

Sample Name: lcs 140-30852/12-a Acquired: 6/28/2019 12:17:15 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05110	1.9198	.10469	F 140.46	.10138	.04993
Stddev	.00027	.0198	.00064	.37	.00027	.00021
%RSD	.53747	1.0317	.61195	.26156	.26536	.42819
#1	.05140	1.8979	.10458	140.88	.10116	.04970
#2	.05105	1.9250	.10411	140.24	.10129	.05013
#3	.05086	1.9364	.10538	140.24	.10168	.04995
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
Value				1.0000		
Range				20.000%		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.029	.05237	.10520	.20464	.25836	1.0222
Stddev	.155	.00009	.00043	.00059	.00081	.0032
%RSD	.30339	.17771	.41210	.28657	.31334	.31764
#1	50.889	.05233	.10475	.20401	.25786	1.0232
#2	51.002	.05248	.10562	.20517	.25793	1.0186
#3	51.195	.05230	.10523	.20473	.25929	1.0248
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcs 140-30852/12-a Acquired: 6/28/2019 12:17:15 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.892	.10680	9.9565	.10564	.53166	F 29.724
Stddev	.130	.00078	.0422	.00031	.00093	1.781
%RSD	.25064	.73063	.42376	.29574	.17581	5.9908
#1	51.772	.10592	9.9084	.10529	.53083	30.033
#2	51.873	.10708	9.9871	.10589	.53147	31.330
#3	52.030	.10740	9.9741	.10575	.53267	27.809
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value						50.000
Range						-20.000%

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.063	.51698	5.0776	.10293	.10056	.51003
Stddev	.232	.00116	.0070	.00316	.00070	.00243
%RSD	.45513	.22431	.13751	3.0682	.69675	.47568
#1	50.859	.51605	5.0704	.10128	.09990	.51098
#2	51.015	.51661	5.0843	.10095	.10049	.50728
#3	51.316	.51828	5.0782	.10658	.10129	.51185
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcs 140-30852/12-a   Acquired: 6/28/2019 12:17:15   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.14773	F 25.246	.52231	.50446	.10697	.43027
Stddev	.00074	.834	.00110	.00069	.00013	.00215
%RSD	.50294	3.3016	.20967	.13686	.12543	.49943
#1	.14822	24.554	.52110	.50367	.10682	.43269
#2	.14687	26.171	.52260	.50473	.10709	.42859
#3	.14809	25.013	.52323	.50497	.10698	.42954
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		5.0000				
Range		20.000%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20535	.52141
Stddev	.00081	.00071
%RSD	.39387	.13645
#1	.20458	.52093
#2	.20526	.52108
#3	.20619	.52223
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: lcs 140-30852/12-a Acquired: 6/28/2019 12:17:15 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12419.	146990.	11680.
Stddev	10.	241.	35.
%RSD	.08407	.16407	.29830
#1	12429.	146900.	11708.
#2	12408.	146800.	11691.
#3	12419.	147260.	11641.

Sample Name: lcsd 140-30852/13-a Acquired: 6/28/2019 12:22:20 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05162	1.9162	.10489	F 140.15	.10252	.05017
Stddev	.00041	.0108	.00058	1.06	.00040	.00008
%RSD	.78883	.56449	.55234	.75457	.39122	.16617
#1	.05187	1.9287	.10454	139.21	.10231	.05010
#2	.05185	1.9101	.10456	141.29	.10228	.05014
#3	.05115	1.9099	.10555	139.96	.10299	.05026
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
Value				1.0000		
Range				20.000%		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.806	.05270	.10584	.20705	.26073	1.0227
Stddev	.118	.00011	.00031	.00062	.00122	.0074
%RSD	.22790	.21230	.29368	.29907	.46916	.71953
#1	51.917	.05259	.10620	.20763	.26168	1.0237
#2	51.682	.05271	.10566	.20712	.26116	1.0149
#3	51.820	.05281	.10567	.20639	.25935	1.0296
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcsd 140-30852/13-a   Acquired: 6/28/2019 12:22:20   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	52.592	.10933	10.082	.10837	.53589	F 28.484
Stddev	.201	.00089	.030	.00014	.00117	.492
%RSD	.38236	.81309	.29750	.12522	.21823	1.7274
#1	52.735	.10982	10.095	.10827	.53707	27.917
#2	52.362	.10830	10.047	.10831	.53473	28.798
#3	52.680	.10987	10.102	.10852	.53586	28.737
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value						50.000
Range						-20.000%

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.789	.52314	5.1313	.10263	.10111	.51180
Stddev	.200	.00048	.0083	.00199	.00118	.00086
%RSD	.38651	.09165	.16257	1.9392	1.1695	.16810
#1	51.899	.52304	5.1383	.10453	.10019	.51176
#2	51.558	.52272	5.1220	.10056	.10244	.51097
#3	51.910	.52366	5.1335	.10280	.10069	.51269
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcsd 140-30852/13-a Acquired: 6/28/2019 12:22:20 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.14978	F 14.722	.52734	.50910	.10716	.43211
Stddev	.00060	.267	.00148	.00290	.00124	.00189
%RSD	.40164	1.8150	.27998	.57039	1.1591	.43625
#1	.14908	14.695	.52905	.50758	.10647	.43016
#2	.15009	15.001	.52645	.50728	.10641	.43392
#3	.15016	14.469	.52654	.51245	.10859	.43226
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		5.0000				
Range		20.000%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20764	.52400
Stddev	.00087	.00103
%RSD	.42031	.19674
#1	.20856	.52499
#2	.20752	.52294
#3	.20682	.52407
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: lcsd 140-30852/13-a Acquired: 6/28/2019 12:22:20 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12368.	146370.	11539.
Stddev	26.	375.	110.
%RSD	.20774	.25610	.95651
#1	12341.	146180.	11413.
#2	12392.	146120.	11584.
#3	12370.	146800.	11619.

Sample Name: mb 140-30373/11-a Acquired: 6/28/2019 12:27:24 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00073	-.00045	.00216	F 139.32	-.00003	.00011
Stddev	.00012	.00762	.00176	1.20	.00023	.00001
%RSD	16.717	1681.8	81.436	.86125	911.31	11.631
#1	-.00062	.00021	.00124	139.57	.00020	.00010
#2	-.00072	-.00838	.00419	140.37	-.00002	.00012
#3	-.00086	.00681	.00105	138.01	-.00026	.00009
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				.10000		
Low Limit				-.10000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01146	-.00014	-.00017	.00057	.00140	.01539
Stddev	.00171	.00003	.00014	.00021	.00014	.00133
%RSD	14.917	20.225	81.521	36.266	9.6714	8.6462
#1	.01324	-.00014	-.00019	.00033	.00126	.01679
#2	.00983	-.00011	-.00002	.00067	.00141	.01414
#3	.01132	-.00017	-.00031	.00070	.00153	.01523
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-30373/11-a Acquired: 6/28/2019 12:27:24 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.06432	.00133	.00442	.00077	.00048	-.79884
Stddev	.02214	.00040	.00550	.00002	.00007	.59935
%RSD	34.422	29.890	124.32	2.7206	15.165	75.028
#1	.07302	.00144	.00701	.00079	.00056	-.22644
#2	.08080	.00089	.00815	.00075	.00044	-.74815
#3	.03915	.00167	-.00189	.00078	.00043	-1.4219
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.5153	-.00009	.00829	-.00020	-.00190	-.00435
Stddev	.0438	.00019	.00016	.00167	.00023	.00103
%RSD	2.8880	214.97	1.9472	816.73	11.926	23.716
#1	1.5540	-.00011	.00842	.00135	-.00164	-.00474
#2	1.5241	.00011	.00811	.00001	-.00206	-.00318
#3	1.4678	-.00026	.00833	-.00197	-.00200	-.00514
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-30373/11-a   Acquired: 6/28/2019 12:27:24   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00241	F 4.3496	.00148	-.00011	.00170	-.00085
Stddev	.00234	.1735	.00023	.00009	.00010	.00132
%RSD	96.957	3.9893	15.638	81.986	6.1671	156.01
#1	.00022	4.3711	.00174	-.00021	.00176	-.00223
#2	-.00322	4.5113	.00143	-.00011	.00176	-.00072
#3	-.00424	4.1663	.00129	-.00002	.00158	.00041
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		.25000				
Low Limit		-.25000				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00036	.00104
Stddev	.00012	.00005
%RSD	32.561	4.5709
#1	.00027	.00100
#2	.00032	.00109
#3	.00049	.00102
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: mb 140-30373/11-a Acquired: 6/28/2019 12:27:24 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12766.	150290.	11899.
Stddev	24.	554.	78.
%RSD	.18546	.36880	.65501
#1	12746.	150630.	11939.
#2	12792.	149650.	11809.
#3	12761.	150600.	11948.

Sample Name: lcs 140-30373/12-a Acquired: 6/28/2019 12:32:42 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05105	1.9285	.10465	F 140.21	.10146	.04949
Stddev	.00007	.0066	.00144	.26	.00022	.00010
%RSD	.14253	.34124	1.3777	.18207	.21492	.21122
#1	.05108	1.9361	.10539	139.96	.10157	.04941
#2	.05097	1.9246	.10557	140.21	.10160	.04946
#3	.05111	1.9247	.10299	140.47	.10121	.04961
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
Value				1.0000		
Range				20.000%		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.020	.05230	.10493	.20589	.25722	1.0127
Stddev	.073	.00004	.00021	.00073	.00085	.0016
%RSD	.14364	.06730	.19846	.35476	.32892	.15464
#1	51.095	.05227	.10499	.20505	.25813	1.0115
#2	50.949	.05229	.10470	.20640	.25708	1.0122
#3	51.015	.05233	.10510	.20622	.25646	1.0145
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcs 140-30373/12-a   Acquired: 6/28/2019 12:32:42   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	52.032	.10731	9.9524	.10547	.52943	F 28.629
Stddev	.105	.00032	.0301	.00009	.00073	1.071
%RSD	.20130	.29610	.30245	.08359	.13727	3.7397
#1	52.149	.10765	9.9237	.10537	.52977	29.704
#2	51.998	.10728	9.9497	.10552	.52860	27.563
#3	51.948	.10702	9.9837	.10552	.52993	28.620
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value						50.000
Range						-20.000%

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.076	.51552	5.0773	.10310	.10096	.50581
Stddev	.124	.00048	.0030	.00061	.00040	.00039
%RSD	.24272	.09373	.05874	.59484	.39641	.07784
#1	51.197	.51562	5.0806	.10364	.10093	.50612
#2	51.082	.51500	5.0750	.10322	.10137	.50537
#3	50.949	.51595	5.0761	.10243	.10057	.50595
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcs 140-30373/12-a   Acquired: 6/28/2019 12:32:42   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.14721	F 8.5288	.52375	.50321	.10640	.43136
Stddev	.00191	.0614	.00127	.00069	.00120	.00133
%RSD	1.2997	.72038	.24169	.13681	1.1278	.30893
#1	.14500	8.5996	.52445	.50399	.10521	.43251
#2	.14821	8.4981	.52229	.50293	.10761	.43166
#3	.14841	8.4888	.52451	.50270	.10638	.42990
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		5.0000				
Range		20.000%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20570	.52025
Stddev	.00037	.00117
%RSD	.17908	.22395
#1	.20612	.52147
#2	.20552	.51915
#3	.20546	.52012
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: lcs 140-30373/12-a Acquired: 6/28/2019 12:32:42 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12540.	147800.	11830.
Stddev	14.	193.	65.
%RSD	.11479	.13089	.55118
#1	12540.	147590.	11786.
#2	12555.	147970.	11905.
#3	12526.	147840.	11800.

Sample Name: lcsd 140-30373/13-a   Acquired: 6/28/2019 12:37:44   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05081	1.9158	.10459	F 140.05	.10119	.04947
Stddev	.00064	.0073	.00058	.10	.00065	.00006
%RSD	1.2552	.37936	.55250	.07248	.64042	.12957
#1	.05141	1.9224	.10392	139.97	.10174	.04948
#2	.05087	1.9170	.10498	140.17	.10135	.04953
#3	.05014	1.9080	.10485	140.02	.10047	.04940
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
Value				1.0000		
Range				20.000%		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.024	.05199	.10442	.20345	.25696	1.0121
Stddev	.181	.00016	.00038	.00077	.00148	.0049
%RSD	.35439	.31151	.36251	.37761	.57533	.48762
#1	51.210	.05216	.10448	.20313	.25839	1.0145
#2	50.849	.05197	.10476	.20433	.25703	1.0153
#3	51.011	.05184	.10401	.20289	.25544	1.0064
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcsd 140-30373/13-a   Acquired: 6/28/2019 12:37:44   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.939	.10692	9.9777	.10498	.52878	F 30.329
Stddev	.063	.00095	.0535	.00036	.00203	1.970
%RSD	.12145	.88903	.53664	.34173	.38342	6.4944
#1	52.008	.10703	9.9797	.10527	.53095	30.737
#2	51.927	.10781	9.9231	.10510	.52846	28.187
#3	51.883	.10592	10.030	.10458	.52693	32.063
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value						50.000
Range						-20.000%

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.921	.51331	5.0799	.10548	.10113	.50580
Stddev	.164	.00175	.0321	.00152	.00160	.00286
%RSD	.32259	.34086	.63203	1.4376	1.5780	.56571
#1	51.102	.51441	5.1123	.10668	.10014	.50773
#2	50.880	.51423	5.0795	.10599	.10297	.50715
#3	50.781	.51129	5.0481	.10378	.10027	.50251
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcsd 140-30373/13-a Acquired: 6/28/2019 12:37:44 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.14745	F 6.6005	.52122	.50322	.10547	.42749
Stddev	.00136	.0178	.00158	.00304	.00110	.00252
%RSD	.91939	.27013	.30230	.60328	1.0398	.58994
#1	.14756	6.6082	.52155	.50571	.10647	.42933
#2	.14875	6.5801	.52261	.50411	.10565	.42853
#3	.14605	6.6132	.51951	.49984	.10430	.42462
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		5.0000				
Range		20.000%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20476	.51823
Stddev	.00053	.00268
%RSD	.25859	.51625
#1	.20531	.52065
#2	.20470	.51868
#3	.20426	.51535
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: lcsd 140-30373/13-a Acquired: 6/28/2019 12:37:44 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12544.	147810.	11885.
Stddev	36.	327.	99.
%RSD	.29080	.22098	.83625
#1	12520.	147440.	11891.
#2	12525.	148040.	11981.
#3	12586.	147960.	11782.

Sample Name: 140-15377-a-1-n   Acquired: 6/28/2019 12:42:47   Type: Unk

Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000

User: kerry   Custom ID1:   Custom ID2:   Custom ID3:

Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00099	44.295	.00720	F 135.16	4.4258	.00121
Stddev	.00033	.171	.00150	1.25	.0345	.00001
%RSD	33.634	.38651	20.798	.92130	.78025	.63912
#1	.00078	44.451	.00555	136.56	4.3878	.00121
#2	.00082	44.322	.00848	134.74	4.4552	.00121
#3	.00138	44.112	.00758	134.17	4.4343	.00120
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	12.385	-.00013	.00562	.03138	.01412	14.653
Stddev	.039	.00006	.00015	.00061	.00014	.052
%RSD	.31480	49.314	2.7267	1.9341	.99225	.35173
#1	12.416	-.00008	.00554	.03163	.01411	14.685
#2	12.398	-.00020	.00552	.03183	.01399	14.681
#3	12.341	-.00010	.00579	.03069	.01427	14.594
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-1-n   Acquired: 6/28/2019 12:42:47   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	14.006	.04828	2.4418	.09692	.00098	5.7559
Stddev	.014	.00082	.0200	.00058	.00019	.6254
%RSD	.10348	1.6915	.81945	.59872	19.858	10.866
#1	13.997	.04844	2.4397	.09745	.00119	5.3907
#2	13.998	.04900	2.4628	.09700	.00094	6.4781
#3	14.022	.04739	2.4229	.09630	.00081	5.3990
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	16.027	.00934	.21267	.04706	.03747	.00117
Stddev	.053	.00017	.00057	.00145	.00134	.00149
%RSD	.33212	1.8373	.26739	3.0763	3.5822	127.54
#1	16.082	.00953	.21306	.04799	.03789	.00178
#2	16.024	.00926	.21202	.04778	.03854	.00225
#3	15.976	.00922	.21294	.04539	.03596	-.00053
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-1-n   Acquired: 6/28/2019 12:42:47   Type: Unk

Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000

User: kerry   Custom ID1:   Custom ID2:   Custom ID3:

Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00033	623.08	.00061	.39322	2.4485	.00162
Stddev	.00083	1.55	.00057	.00092	.0097	.00197
%RSD	251.74	.24902	93.192	.23371	.39673	121.67
#1	.00062	623.09	.00038	.39406	2.4578	.00370
#2	-.00072	624.63	.00126	.39338	2.4493	.00138
#3	-.00089	621.52	.00020	.39224	2.4384	-.00022
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.06855	.03326
Stddev	.00046	.00010
%RSD	.67603	.28939
#1	.06902	.03327
#2	.06855	.03316
#3	.06809	.03335
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-1-n Acquired: 6/28/2019 12:42:47 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12771.	149930.	11968.
Stddev	60.	1396.	74.
%RSD	.46629	.93086	.62151
#1	12716.	148970.	11959.
#2	12762.	149280.	11898.
#3	12834.	151530.	12046.

Sample Name: 140-15377-a-2-n Acquired: 6/28/2019 12:47:59 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00102	28.181	.01121	F 133.77	9.0756	.00089
Stddev	.00059	.090	.00016	.59	.1021	.00002
%RSD	57.607	.31990	1.4706	.44240	1.1246	1.9885
#1	.00044	28.213	.01118	134.26	9.0748	.00087
#2	.00161	28.251	.01106	133.94	9.1781	.00089
#3	.00101	28.079	.01139	133.11	8.9739	.00090
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.7519	-.00003	.00531	.01756	.01210	9.3806
Stddev	.0048	.00003	.00006	.00026	.00018	.0399
%RSD	.27189	102.86	1.2082	1.4808	1.4693	.42566
#1	1.7508	-.00002	.00537	.01726	.01193	9.3348
#2	1.7571	-.00006	.00525	.01769	.01228	9.3996
#3	1.7477	-.00000	.00532	.01773	.01209	9.4076
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-2-n Acquired: 6/28/2019 12:47:59 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	19.469	.05538	.90007	.12212	.00274	5.9154
Stddev	.050	.00051	.00331	.00037	.00024	1.0345
%RSD	.25916	.92765	.36827	.29969	8.7385	17.488
#1	19.445	.05483	.90328	.12197	.00262	7.0876
#2	19.527	.05545	.89666	.12185	.00259	5.1302
#3	19.435	.05585	.90026	.12253	.00302	5.5284
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	15.294	.00765	.22780	.04037	.03163	.00025
Stddev	.040	.00018	.00337	.00273	.00086	.00150
%RSD	.26425	2.3577	1.4779	6.7515	2.7192	592.46
#1	15.301	.00756	.22854	.04049	.03097	-.00143
#2	15.331	.00786	.22412	.03759	.03260	.00074
#3	15.251	.00753	.23073	.04304	.03132	.00145
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-2-n Acquired: 6/28/2019 12:47:59 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00203	538.44	.00038	.33202	1.8677	.00045
Stddev	.00141	1.41	.00070	.00134	.0028	.00097
%RSD	69.701	.26202	182.88	.40354	.15020	214.01
#1	-.00304	536.87	.00081	.33050	1.8659	-.00052
#2	-.00041	538.83	-.00042	.33251	1.8710	.00141
#3	-.00263	539.62	.00075	.33304	1.8663	.00046
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.05633	.01941
Stddev	.00013	.00005
%RSD	.22833	.27963
#1	.05645	.01935
#2	.05620	.01942
#3	.05634	.01946
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-2-n Acquired: 6/28/2019 12:47:59 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12825.	151560.	12039.
Stddev	17.	153.	59.
%RSD	.13263	.10071	.48919
#1	12818.	151420.	12018.
#2	12844.	151540.	11994.
#3	12812.	151720.	12106.

Sample Name: 140-15376-a-1-aa   Acquired: 6/28/2019 12:53:16   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00204	378.14	.00669	F 129.84	7.6392	.00731
Stddev	.00026	.58	.00020	1.57	.0701	.00001
%RSD	12.689	.15229	2.9716	1.2057	.91709	.18223
#1	.00228	377.54	.00658	129.86	7.5592	.00732
#2	.00207	378.18	.00692	131.40	7.6897	.00729
#3	.00177	378.69	.00657	128.27	7.6687	.00731
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	13.729	.00021	.00703	.13671	.01725	44.871
Stddev	.023	.00006	.00010	.00064	.00014	.054
%RSD	.16552	30.476	1.3767	.47000	.80726	.12131
#1	13.703	.00022	.00707	.13728	.01739	44.815
#2	13.738	.00026	.00692	.13683	.01723	44.874
#3	13.745	.00014	.00710	.13601	.01712	44.924
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-aa   Acquired: 6/28/2019 12:53:16   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 252.28	.10722	5.8711	.83399	.00176	66.740
Stddev	.39	.00041	.0333	.00067	.00026	1.359
%RSD	.15578	.37920	.56631	.08069	14.561	2.0360
#1	251.85	.10768	5.8992	.83454	.00205	67.170
#2	252.37	.10702	5.8798	.83418	.00158	67.832
#3	252.62	.10694	5.8344	.83324	.00165	65.218
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.00					
Low Limit	-100.00					

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	122.90	.02333	.47355	.12461	.09894	-.00679
Stddev	2.20	.00004	.00411	.00242	.00213	.00146
%RSD	1.7876	.18287	.86737	1.9418	2.1573	21.423
#1	120.85	.02338	.47200	.12555	.10095	-.00685
#2	122.63	.02330	.47045	.12642	.09916	-.00822
#3	125.22	.02331	.47821	.12186	.09670	-.00531
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-aa   Acquired: 6/28/2019 12:53:16   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00211	687.37	.00490	.92912	F 20.830	.00980
Stddev	.00287	.72	.00020	.00203	.038	.00127
%RSD	135.69	.10439	4.0530	.21889	.18054	12.965
#1	.00062	686.72	.00471	.92727	20.792	.01125
#2	-.00187	687.25	.00487	.92879	20.831	.00893
#3	-.00510	688.14	.00511	.93130	20.867	.00921
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass
High Limit					20.000	
Low Limit					-20.000	

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.24424	.07812
Stddev	.00101	.00019
%RSD	.41397	.24746
#1	.24437	.07795
#2	.24518	.07809
#3	.24317	.07833
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-aa   Acquired: 6/28/2019 12:53:16   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12917.	149320.	12075.
Stddev	6.	922.	25.
%RSD	.04357	.61745	.21014
#1	12918.	148710.	12056.
#2	12911.	148870.	12066.
#3	12923.	150380.	12104.

Sample Name: 15376-a-1-aa SD@5 Acquired: 6/28/2019 12:58:38 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00045	108.40	.00191	28.541	1.6639	.00162
Stddev	.00026	.21	.00056	.008	.0024	.00001
%RSD	57.320	.19505	29.368	.02710	.14180	.39087
#1	.00023	108.43	.00128	28.532	1.6648	.00162
#2	.00038	108.17	.00209	28.548	1.6612	.00162
#3	.00073	108.59	.00236	28.543	1.6656	.00161
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.1431	-.00003	.00206	.02755	.00432	9.1415
Stddev	.0136	.00003	.00004	.00013	.00025	.0068
%RSD	.32784	112.83	1.9317	.46038	5.8109	.07408
#1	4.1314	-.00003	.00204	.02747	.00432	9.1435
#2	4.1399	-.00006	.00211	.02769	.00458	9.1339
#3	4.1580	.00001	.00205	.02748	.00408	9.1470
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-aa SD@5 Acquired: 6/28/2019 12:58:38 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	52.319	.02371	2.7287	.17096	.00026	9.2121
Stddev	.204	.00085	.0071	.00013	.00011	.8592
%RSD	.38980	3.5687	.26073	.07380	43.460	9.3271
#1	52.286	.02275	2.7212	.17095	.00023	9.8852
#2	52.133	.02403	2.7353	.17109	.00039	9.5067
#3	52.537	.02434	2.7296	.17083	.00017	8.2443
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	26.579	.00514	.09782	.02627	.01731	-.00092
Stddev	.060	.00011	.00059	.00074	.00041	.00023
%RSD	.22722	2.2122	.60257	2.8237	2.3506	25.409
#1	26.635	.00523	.09752	.02689	.01730	-.00118
#2	26.515	.00501	.09745	.02545	.01690	-.00086
#3	26.586	.00517	.09850	.02648	.01772	-.00073
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-aa SD@5 Acquired: 6/28/2019 12:58:38 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00138	143.56	.00084	.23833	4.1795	.00207
Stddev	.00119	.14	.00035	.00033	.0114	.00162
%RSD	86.315	.09503	42.031	.13994	.27307	78.181
#1	-.00271	143.52	.00118	.23846	4.1863	.00033
#2	-.00039	143.44	.00047	.23796	4.1663	.00354
#3	-.00105	143.71	.00088	.23859	4.1859	.00235
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.04969	.02212
Stddev	.00047	.00012
%RSD	.95233	.53678
#1	.04933	.02206
#2	.04952	.02226
#3	.05023	.02205
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 15376-a-1-aa SD@5 Acquired: 6/28/2019 12:58:38 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13042.	151900.	12121.
Stddev	59.	489.	23.
%RSD	.45433	.32210	.19040
#1	12973.	151450.	12099.
#2	13074.	151810.	12119.
#3	13078.	152420.	12145.

Sample Name: CCV Acquired: 6/28/2019 13:03:40 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.99127	24.006	.49052	F 2.2225	1.9965	1.9974
Stddev	.00360	.008	.00156	.0129	.0024	.0131
%RSD	.36269	.03157	.31891	.57884	.12195	.65474
#1	.98714	23.997	.49040	2.2076	1.9952	1.9843
#2	.99291	24.008	.49215	2.2301	1.9994	2.0104
#3	.99375	24.012	.48903	2.2297	1.9951	1.9975
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
Value				2.0000		
Range				10.500%		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.306	.50254	2.0364	1.9558	1.9836	24.382
Stddev	.089	.00088	.0046	.0051	.0037	.076
%RSD	.17680	.17438	.22457	.26055	.18517	.31214
#1	50.203	.50163	2.0316	1.9516	1.9795	24.300
#2	50.361	.50338	2.0407	1.9615	1.9867	24.396
#3	50.353	.50261	2.0369	1.9542	1.9845	24.450
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV   Acquired: 6/28/2019 13:03:40   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.818	2.0168	49.646	2.0252	2.0269	48.352
Stddev	.045	.0079	.224	.0078	.0037	1.551
%RSD	.08912	.39270	.45054	.38370	.18325	3.2085
#1	50.868	2.0079	49.401	2.0164	2.0238	50.139
#2	50.779	2.0194	49.697	2.0313	2.0310	47.562
#3	50.807	2.0231	49.840	2.0278	2.0260	47.354
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.612	1.9954	1.9736	.50803	.50030	.48828
Stddev	.086	.0040	.0060	.00529	.00098	.00195
%RSD	.17298	.20179	.30215	1.0410	.19551	.39861
#1	49.639	1.9915	1.9682	.50345	.49951	.48763
#2	49.682	1.9996	1.9800	.51382	.50139	.48674
#3	49.517	1.9952	1.9725	.50682	.49999	.49046
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/28/2019 13:03:40 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50158	F 8.3517	2.0139	2.0036	1.9613	1.0333
Stddev	.00390	.0628	.0040	.0031	.0014	.0026
%RSD	.77748	.75177	.19636	.15215	.07108	.24897
#1	.49740	8.4199	2.0093	2.0001	1.9610	1.0308
#2	.50222	8.3387	2.0165	2.0059	1.9628	1.0360
#3	.50512	8.2964	2.0158	2.0047	1.9601	1.0331
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		2.0000				
Range		10.500%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	1.9834	2.0263
Stddev	.0033	.0031
%RSD	.16686	.15087
#1	1.9801	2.0236
#2	1.9868	2.0296
#3	1.9834	2.0257
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV   Acquired: 6/28/2019 13:03:40   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12473.	147570.	11729.
Stddev	25.	489.	55.
%RSD	.19738	.33160	.46939
#1	12473.	147530.	11685.
#2	12449.	147100.	11791.
#3	12498.	148070.	11712.

Sample Name: CCB   Acquired: 6/28/2019 13:08:40   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00028	.00349	-.00035	F .22556	-.00001	.00014
Stddev	.00047	.01723	.00102	.00443	.00018	.00002
%RSD	168.44	493.60	292.18	1.9645	1429.7	15.694
#1	.00003	.00998	.00006	.22127	.00019	.00017
#2	.00082	.01654	-.00151	.22530	-.00008	.00013
#3	-.00001	-.01604	.00040	.23012	-.00015	.00014
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				.10100		
Low Limit				-.10100		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00250	-.00002	.00019	-.00018	.00095	-.00104
Stddev	.00126	.00001	.00005	.00022	.00025	.00170
%RSD	50.315	68.531	26.757	121.66	26.172	163.97
#1	.00134	-.00001	.00017	-.00042	.00122	-.00067
#2	.00384	-.00003	.00025	.00001	.00087	.00045
#3	.00232	-.00001	.00016	-.00013	.00075	-.00289
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/28/2019 13:08:40 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.13705	.00118	.01323	.00001	.00016	-.90535
Stddev	.01167	.00057	.00952	.00006	.00009	2.4648
%RSD	8.5155	47.767	71.964	560.68	56.276	272.25
#1	.14209	.00118	.00978	.00006	.00015	-2.4189
#2	.12370	.00175	.00591	.00002	.00008	-2.2359
#3	.14534	.00062	.02399	-.00005	.00026	1.9388
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.79570	-.00006	-.00012	.00002	-.00109	.00015
Stddev	.00393	.00020	.00032	.00007	.00006	.00214
%RSD	.49422	343.24	272.73	293.07	5.0439	1461.7
#1	.79947	.00013	-.00024	-.00005	-.00115	-.00160
#2	.79602	-.00026	-.00036	.00009	-.00108	-.00049
#3	.79162	-.00004	.00025	.00003	-.00105	.00253
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/28/2019 13:08:40 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00174	F 5.2180	-.00012	-.00006	.00042	-.00119
Stddev	.00084	.0369	.00022	.00009	.00037	.00201
%RSD	47.970	.70641	178.18	155.99	87.553	168.79
#1	-.00157	5.2533	.00012	-.00005	.00085	.00032
#2	-.00101	5.2208	-.00018	.00003	.00020	-.00348
#3	-.00265	5.1798	-.00030	-.00015	.00022	-.00042
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		.48200				
Low Limit		-.48200				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00001	-.00013
Stddev	.00036	.00005
%RSD	3905.5	37.381
#1	-.00041	-.00012
#2	.00022	-.00009
#3	.00021	-.00018
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/28/2019 13:08:40 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12686.	147550.	11552.
Stddev	40.	320.	64.
%RSD	.31453	.21721	.55048
#1	12650.	147200.	11596.
#2	12680.	147610.	11581.
#3	12729.	147840.	11479.

Sample Name: 140-15376-a-1-ab du   Acquired: 6/28/2019 13:13:51   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00160	505.96	.00644	F 127.28	8.0199	.00769
Stddev	.00005	1.80	.00093	.09	.0866	.00004
%RSD	3.2826	.35479	14.354	.06711	1.0800	.49290
#1	.00154	507.83	.00726	127.18	7.9414	.00766
#2	.00160	505.81	.00544	127.31	8.0056	.00773
#3	.00165	504.25	.00663	127.34	8.1128	.00769
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	17.362	-.00004	.00797	.15120	.01739	47.375
Stddev	.100	.00004	.00020	.00102	.00020	.046
%RSD	.57454	95.356	2.5333	.67377	1.1455	.09780
#1	17.474	-.00000	.00815	.15237	.01761	47.428
#2	17.329	-.00004	.00775	.15072	.01722	47.354
#3	17.283	-.00009	.00802	.15052	.01734	47.342
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-ab du Acquired: 6/28/2019 13:13:51 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 253.84	.12265	11.657	.78718	.00157	63.897
Stddev	1.05	.00199	.100	.00156	.00036	3.739
%RSD	.41174	1.6226	.85759	.19881	22.671	5.8522
#1	254.84	.12063	11.769	.78543	.00198	60.063
#2	253.92	.12272	11.577	.78844	.00135	64.093
#3	252.75	.12461	11.624	.78766	.00138	67.534
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.00					
Low Limit	-100.00					

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	122.72	.02515	.46851	.13028	.10299	-.00510
Stddev	.34	.00043	.00148	.00028	.00063	.00523
%RSD	.27616	1.7072	.31596	.21856	.61632	102.55
#1	122.97	.02564	.46885	.13029	.10226	-.00125
#2	122.87	.02485	.46979	.12999	.10330	-.00299
#3	122.34	.02496	.46689	.13055	.10341	-.01105
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-ab du Acquired: 6/28/2019 13:13:51 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00320	F 1001.2	.00496	1.0914	F 20.585	.00951
Stddev	.00386	7.8	.00057	.0024	.041	.00270
%RSD	120.41	.77910	11.569	.22292	.19775	28.368
#1	-.00348	1009.1	.00558	1.0886	20.623	.01259
#2	.00079	993.55	.00486	1.0926	20.592	.00758
#3	-.00692	1000.9	.00445	1.0931	20.542	.00836
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Fail	Chk Pass
High Limit		1000.0			20.000	
Low Limit		-1000.0			-20.000	

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.26052	.08263
Stddev	.00036	.00012
%RSD	.13927	.14040
#1	.26010	.08253
#2	.26072	.08276
#3	.26073	.08261
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-ab du   Acquired: 6/28/2019 13:13:51   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13143.	151210.	12235.
Stddev	40.	357.	188.
%RSD	.30456	.23627	1.5347
#1	13098.	150810.	12018.
#2	13156.	151500.	12342.
#3	13175.	151310.	12344.

Sample Name: 140-15376-a-2-n Acquired: 6/28/2019 13:19:23 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00142	579.34	.00385	F 126.02	7.8969	.00929
Stddev	.00019	2.43	.00100	.88	.1191	.00002
%RSD	13.521	.41987	25.902	.69937	1.5076	.25198
#1	.00145	579.22	.00270	125.94	7.9200	.00931
#2	.00159	576.96	.00432	125.18	7.7680	.00926
#3	.00121	581.82	.00452	126.94	8.0028	.00928
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	15.958	-.00035	.01036	.14829	.01937	49.780
Stddev	.075	.00004	.00033	.00031	.00062	.277
%RSD	.47000	11.758	3.1965	.20898	3.1855	.55570
#1	15.925	-.00039	.01000	.14858	.02001	49.574
#2	15.905	-.00031	.01040	.14796	.01878	49.670
#3	16.044	-.00036	.01066	.14834	.01932	50.094
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-n   Acquired: 6/28/2019 13:19:23   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 247.38	.12471	11.488	.29296	.00156	64.717
Stddev	.52	.00112	.076	.00035	.00013	1.210
%RSD	.21171	.89571	.66214	.11953	8.0872	1.8691
#1	247.58	.12585	11.452	.29257	.00141	64.899
#2	246.79	.12362	11.437	.29307	.00163	65.825
#3	247.78	.12465	11.576	.29324	.00164	63.426
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.00					
Low Limit	-100.00					

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	122.73	.05739	.47567	.14645	.12483	.00157
Stddev	2.24	.00058	.00200	.00489	.00220	.00234
%RSD	1.8221	1.0096	.42081	3.3358	1.7587	149.39
#1	122.54	.05676	.47698	.14287	.12710	-.00105
#2	120.60	.05752	.47667	.15202	.12466	.00348
#3	125.06	.05790	.47337	.14446	.12272	.00227
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-n Acquired: 6/28/2019 13:19:23 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00253	F 1308.3	.00597	1.0546	15.299	.01209
Stddev	.00053	24.4	.00109	.0014	.034	.00380
%RSD	21.097	1.8628	18.231	.13620	.22424	31.422
#1	-.00192	1285.4	.00526	1.0542	15.299	.00779
#2	-.00292	1305.7	.00542	1.0534	15.265	.01347
#3	-.00275	1333.9	.00722	1.0562	15.333	.01501
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.24045	.12232
Stddev	.00046	.00024
%RSD	.19056	.19932
#1	.24074	.12229
#2	.23992	.12257
#3	.24069	.12208
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-2-n Acquired: 6/28/2019 13:19:23 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13069.	150810.	12203.
Stddev	14.	367.	111.
%RSD	.11043	.24302	.91085
#1	13059.	150400.	12241.
#2	13061.	151090.	12291.
#3	13085.	150940.	12078.

Sample Name: 140-15376-a-3-n   Acquired: 6/28/2019 13:24:55   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00247	374.52	.01836	F 132.44	5.8223	.00596
Stddev	.00029	.82	.00062	.13	.1197	.00004
%RSD	11.648	.21996	3.3724	.09510	2.0554	.67677
#1	.00239	374.48	.01769	132.30	5.9355	.00597
#2	.00223	373.72	.01850	132.52	5.6971	.00592
#3	.00279	375.36	.01890	132.51	5.8343	.00600
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.8454	.00048	.01197	.17771	.01881	68.295
Stddev	.0127	.00006	.00012	.00043	.00007	.097
%RSD	.26104	11.824	1.0069	.23920	.37234	.14206
#1	4.8598	.00054	.01203	.17751	.01888	68.293
#2	4.8401	.00044	.01205	.17741	.01880	68.199
#3	4.8361	.00044	.01183	.17819	.01874	68.393
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-3-n Acquired: 6/28/2019 13:24:55 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 197.79	.21029	9.2291	.28626	.01228	46.368
Stddev	.34	.00057	.0325	.00048	.00030	2.702
%RSD	.17322	.27287	.35201	.16762	2.4828	5.8266
#1	198.03	.21038	9.2612	.28573	.01261	44.361
#2	197.40	.20968	9.2296	.28666	.01223	45.302
#3	197.94	.21082	9.1963	.28638	.01201	49.440
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.00					
Low Limit	-100.00					

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	93.176	.05767	.59965	.11378	.08344	-.00462
Stddev	.191	.00008	.00353	.00091	.00254	.00081
%RSD	.20526	.13441	.58828	.79765	3.0485	17.433
#1	93.161	.05766	.59651	.11482	.08290	-.00472
#2	93.374	.05775	.59898	.11339	.08121	-.00377
#3	92.993	.05760	.60347	.11313	.08621	-.00537
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-3-n Acquired: 6/28/2019 13:24:55 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00383	799.77	.00855	.62915	F 24.413	.00892
Stddev	.00185	.91	.00046	.00032	.019	.00075
%RSD	48.325	.11327	5.4129	.05150	.07958	8.3531
#1	-.00179	800.56	.00880	.62949	24.428	.00806
#2	-.00430	798.78	.00802	.62913	24.391	.00932
#3	-.00540	799.96	.00884	.62884	24.421	.00938
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass
High Limit					20.000	
Low Limit					-20.000	

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.38189	.13967
Stddev	.00037	.00027
%RSD	.09775	.19211
#1	.38195	.13946
#2	.38223	.13997
#3	.38149	.13958
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-3-n   Acquired: 6/28/2019 13:24:55   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12771.	146920.	11825.
Stddev	31.	370.	75.
%RSD	.23940	.25157	.63704
#1	12801.	146640.	11762.
#2	12772.	147340.	11908.
#3	12740.	146770.	11803.

Sample Name: 140-15390-a-1-m   Acquired: 6/28/2019 13:30:18   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00564	23.947	.01118	F 130.03	4.6799	.00074
Stddev	.00026	.086	.00087	1.21	.1060	.00002
%RSD	4.5913	.35946	7.7942	.92927	2.2659	2.5910
#1	.00541	23.904	.01110	131.38	4.5671	.00073
#2	.00592	24.047	.01208	129.07	4.7775	.00076
#3	.00560	23.892	.01034	129.63	4.6950	.00073
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.5316	.00005	.00621	.03084	.03730	10.610
Stddev	.0017	.00008	.00018	.00031	.00031	.025
%RSD	.11238	163.80	2.9484	1.0097	.82259	.23288
#1	1.5297	.00003	.00629	.03107	.03714	10.611
#2	1.5331	.00013	.00635	.03097	.03710	10.634
#3	1.5319	-.00002	.00601	.03049	.03765	10.585
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-m   Acquired: 6/28/2019 13:30:18   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.9160	.02775	.70581	.06997	.00063	3.3792
Stddev	.0461	.00017	.01381	.00010	.00024	1.8797
%RSD	1.1780	.59653	1.9572	.13756	38.241	55.625
#1	3.9144	.02794	.70283	.07005	.00041	1.3217
#2	3.9629	.02764	.72087	.06999	.00089	3.8094
#3	3.8707	.02766	.69373	.06986	.00058	5.0064
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	13.074	.00751	.24635	.29573	.30636	.00667
Stddev	.056	.00015	.00089	.00413	.00219	.00285
%RSD	.42882	2.0564	.35986	1.3958	.71568	42.754
#1	13.072	.00735	.24716	.29178	.30828	.00449
#2	13.131	.00766	.24648	.29538	.30397	.00990
#3	13.019	.00751	.24540	.30002	.30681	.00562
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-m Acquired: 6/28/2019 13:30:18 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00100	F 1595.7	-.00269	.22342	3.4607	.00668
Stddev	.00079	15.7	.00023	.00080	.0049	.00021
%RSD	79.643	.98545	8.6646	.35764	.14025	3.0963
#1	.00034	1588.0	-.00244	.22393	3.4554	.00692
#2	.00188	1613.8	-.00271	.22383	3.4620	.00654
#3	.00077	1585.4	-.00291	.22250	3.4648	.00659
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.05044	.02072
Stddev	.00014	.00010
%RSD	.26986	.47633
#1	.05029	.02075
#2	.05055	.02081
#3	.05049	.02062
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-1-m Acquired: 6/28/2019 13:30:18 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12766.	148810.	11842.
Stddev	56.	961.	82.
%RSD	.44241	.64558	.69162
#1	12705.	147750.	11830.
#2	12778.	149050.	11767.
#3	12816.	149620.	11930.

Sample Name: 140-15390-a-2-m   Acquired: 6/28/2019 13:35:43   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00000	20.028	.00203	F 132.62	.87389	.00066
Stddev	.00018	.034	.00173	.39	.00138	.00001
%RSD	14984.	.16881	85.337	.29720	.15734	1.1092
#1	-.00020	19.989	.00248	132.29	.87317	.00066
#2	.00008	20.043	.00012	133.06	.87547	.00065
#3	.00012	20.052	.00349	132.50	.87302	.00067
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.60889	-.00008	.00507	.02104	.00951	4.3807
Stddev	.00057	.00013	.00006	.00021	.00029	.0020
%RSD	.09436	167.06	1.1022	.98287	3.0680	.04599
#1	.60936	-.00016	.00513	.02085	.00973	4.3785
#2	.60906	.00007	.00501	.02100	.00918	4.3825
#3	.60825	-.00014	.00507	.02126	.00962	4.3810
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-2-m Acquired: 6/28/2019 13:35:43 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.1762	.02480	.67418	.04128	.00063	4.4899
Stddev	.0099	.00050	.00836	.00009	.00035	.8363
%RSD	.31081	2.0253	1.2399	.21323	56.364	18.627
#1	3.1811	.02427	.66464	.04127	.00062	5.3782
#2	3.1827	.02526	.67768	.04119	.00028	3.7178
#3	3.1648	.02487	.68021	.04137	.00099	4.3736
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	11.432	.00658	.28480	.10501	.10475	.00496
Stddev	.011	.00022	.00284	.00272	.00212	.00205
%RSD	.09788	3.2763	.99760	2.5860	2.0247	41.432
#1	11.442	.00682	.28766	.10661	.10271	.00663
#2	11.420	.00647	.28476	.10188	.10694	.00267
#3	11.435	.00643	.28198	.10655	.10459	.00557
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-2-m Acquired: 6/28/2019 13:35:43 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00106	F 1324.7	-.00205	.15570	1.8987	.00444
Stddev	.00050	9.1	.00051	.00047	.0026	.00165
%RSD	46.870	.68683	24.717	.29976	.13872	37.290
#1	.00162	1333.7	-.00174	.15516	1.8963	.00382
#2	.00086	1315.5	-.00264	.15594	1.8983	.00318
#3	.00069	1324.9	-.00177	.15599	1.9015	.00631
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02628	.01689
Stddev	.00015	.00006
%RSD	.56419	.35694
#1	.02629	.01689
#2	.02613	.01695
#3	.02642	.01683
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-2-m Acquired: 6/28/2019 13:35:43 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12721.	147930.	11872.
Stddev	19.	381.	65.
%RSD	.14811	.25777	.54968
#1	12700.	147510.	11800.
#2	12736.	148020.	11928.
#3	12728.	148260.	11886.

Sample Name: 140-15390-a-3-m   Acquired: 6/28/2019 13:40:59   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00117	71.624	.00222	F 128.70	1.4522	.00079
Stddev	.00018	.127	.00118	.81	.0026	.00001
%RSD	15.765	.17787	53.053	.62599	.18117	1.7149
#1	.00109	71.766	.00166	127.98	1.4551	.00080
#2	.00103	71.584	.00143	129.57	1.4517	.00078
#3	.00138	71.521	.00358	128.56	1.4499	.00079
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.84755	.00011	.00655	.05188	.01610	13.870
Stddev	.00314	.00005	.00019	.00012	.00022	.038
%RSD	.37088	47.197	2.9734	.22528	1.3629	.27076
#1	.84393	.00005	.00659	.05184	.01632	13.913
#2	.84932	.00014	.00673	.05201	.01588	13.848
#3	.84942	.00015	.00634	.05179	.01609	13.848
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-3-m Acquired: 6/28/2019 13:40:59 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	33.093	.04496	2.6471	.21594	.00077	5.5106
Stddev	.052	.00104	.0142	.00018	.00017	3.2751
%RSD	.15816	2.3107	.53809	.08164	21.969	59.432
#1	33.126	.04464	2.6597	.21601	.00080	1.7881
#2	33.121	.04412	2.6316	.21608	.00092	7.9493
#3	33.033	.04613	2.6501	.21574	.00058	6.7944
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	22.216	.01429	.19726	.07652	.06990	.00110
Stddev	.045	.00043	.00120	.00307	.00216	.00059
%RSD	.20350	3.0202	.60837	4.0143	3.0834	53.522
#1	22.257	.01419	.19864	.07757	.06862	.00114
#2	22.223	.01476	.19675	.07892	.06868	.00168
#3	22.168	.01392	.19641	.07306	.07239	.00050
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-3-m Acquired: 6/28/2019 13:40:59 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00053	F 1244.1	-.00045	.15595	11.022	.00475
Stddev	.00049	12.3	.00005	.00048	.007	.00146
%RSD	93.168	.98705	11.149	.30749	.06006	30.859
#1	.00001	1252.2	-.00050	.15650	11.021	.00425
#2	-.00095	1250.1	-.00045	.15560	11.030	.00359
#3	-.00064	1229.9	-.00040	.15576	11.017	.00639
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.09277	.03371
Stddev	.00024	.00012
%RSD	.26278	.36632
#1	.09300	.03385
#2	.09251	.03366
#3	.09278	.03362
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-3-m   Acquired: 6/28/2019 13:40:59   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12991.	150570.	12061.
Stddev	32.	472.	39.
%RSD	.25010	.31361	.32088
#1	12954.	150030.	12019.
#2	13007.	150760.	12095.
#3	13013.	150910.	12069.

Sample Name: 140-15390-a-4-m   Acquired: 6/28/2019 13:46:14   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00080	33.360	-.00136	F 129.03	.75429	.00066
Stddev	.00018	.121	.00053	.63	.00247	.00000
%RSD	22.254	.36191	39.116	.48627	.32701	.57522
#1	.00060	33.473	-.00174	128.71	.75676	.00066
#2	.00093	33.373	-.00159	128.63	.75428	.00066
#3	.00087	33.233	-.00075	129.75	.75182	.00067
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.87081	-.00010	.00546	.02991	.01158	7.1086
Stddev	.00264	.00003	.00022	.00026	.00022	.0184
%RSD	.30309	33.425	3.9534	.87632	1.8675	.25928
#1	.87386	-.00009	.00533	.03022	.01156	7.1197
#2	.86944	-.00007	.00571	.02976	.01137	7.1187
#3	.86914	-.00013	.00535	.02977	.01180	7.0873
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-m Acquired: 6/28/2019 13:46:14 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.2698	.02426	1.2183	.07327	.00068	3.9121
Stddev	.0537	.00135	.0401	.00007	.00017	2.6823
%RSD	.73827	5.5734	3.2959	.09293	25.038	68.563
#1	7.3316	.02504	1.2613	.07319	.00088	5.3911
#2	7.2426	.02270	1.1818	.07329	.00058	5.5294
#3	7.2351	.02504	1.2118	.07332	.00058	.81595
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	15.389	.00895	.11881	.06127	.07007	.00668
Stddev	.049	.00018	.00126	.00170	.00278	.00083
%RSD	.31693	2.0466	1.0596	2.7691	3.9657	12.484
#1	15.445	.00875	.12007	.06034	.07074	.00739
#2	15.358	.00910	.11882	.06025	.07245	.00688
#3	15.364	.00901	.11755	.06323	.06702	.00576
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-m   Acquired: 6/28/2019 13:46:14   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00188	F 1486.0	-.00194	.07339	3.8380	.00768
Stddev	.00046	12.1	.00038	.00009	.0108	.00290
%RSD	24.305	.81719	19.784	.12886	.28225	37.752
#1	.00230	1473.5	-.00222	.07334	3.8505	.00639
#2	.00196	1497.8	-.00211	.07350	3.8325	.00565
#3	.00139	1486.7	-.00150	.07333	3.8310	.01101
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.04065	.02183
Stddev	.00015	.00009
%RSD	.37171	.41638
#1	.04082	.02193
#2	.04053	.02176
#3	.04060	.02181
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-4-m Acquired: 6/28/2019 13:46:14 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12843.	149170.	11914.
Stddev	54.	810.	19.
%RSD	.42248	.54309	.15734
#1	12781.	148280.	11896.
#2	12879.	149380.	11913.
#3	12870.	149860.	11933.

Sample Name: mb 30852/11-a @10 Acquired: 6/28/2019 13:51:30 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00023	-.00758	-.00031	15.411	-.00020	.00008
Stddev	.00042	.01369	.00067	.021	.00009	.00001
%RSD	183.23	180.58	213.48	.13840	44.910	12.430
#1	.00017	-.01108	-.00010	15.420	-.00013	.00008
#2	-.00019	-.01918	-.00107	15.427	-.00018	.00007
#3	-.00066	.00752	.00023	15.387	-.00031	.00009
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02035	-.00000	.00013	-.00004	.00068	.00054
Stddev	.00052	.00001	.00009	.00032	.00018	.00103
%RSD	2.5348	744.68	68.115	849.25	26.816	190.09
#1	.02041	-.00001	.00022	.00026	.00079	.00082
#2	.01981	.00001	.00009	-.00037	.00079	-.00060
#3	.02084	-.00001	.00006	.00000	.00047	.00141
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 30852/11-a @10　Acquired: 6/28/2019 13:51:30　Type: Unk
Method: MT0007(v23) HF 022619(v12)　Mode: CONC　Corr. Factor: 1.000000
User: kerry　Custom ID1:　Custom ID2:　Custom ID3:
Comment: 1ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20618	.00193	.01016	.00011	-.00005	-2.0365
Stddev	.02224	.00030	.00563	.00001	.00004	2.1180
%RSD	10.789	15.392	55.347	13.538	80.612	104.00
#1	.22828	.00214	.01569	.00012	-.00009	-.72454
#2	.20645	.00206	.01035	.00011	-.00007	-4.4800
#3	.18380	.00159	.00445	.00009	-.00000	-.90513
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.45767	.00005	-.00054	-.00043	-.00160	-.00055
Stddev	.02436	.00011	.00055	.00138	.00136	.00115
%RSD	5.3228	218.48	102.51	325.24	84.852	206.98
#1	.48397	-.00004	-.00114	.00070	-.00292	-.00114
#2	.45317	.00017	-.00006	-.00000	-.00168	.00077
#3	.43588	.00002	-.00041	-.00197	-.00021	-.00130
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 30852/11-a @10 Acquired: 6/28/2019 13:51:30 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00104	5.7641	-.00004	-.00020	.00101	-.00010
Stddev	.00105	.6489	.00045	.00020	.00115	.00187
%RSD	101.36	11.258	1270.4	103.97	113.84	1867.8
#1	-.00114	6.4661	.00011	-.00004	.00048	-.00041
#2	.00006	5.6401	-.00054	-.00043	.00023	-.00180
#3	-.00203	5.1862	.00032	-.00012	.00234	.00191
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00011	.00353
Stddev	.00033	.00007
%RSD	312.51	2.0064
#1	-.00011	.00346
#2	-.00006	.00353
#3	.00048	.00360
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: mb 30852/11-a @10 Acquired: 6/28/2019 13:51:30 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12625.	147670.	11495.
Stddev	20.	1100.	32.
%RSD	.16057	.74476	.28045
#1	12602.	146630.	11507.
#2	12637.	147550.	11459.
#3	12637.	148820.	11520.

Sample Name: 140-15377-a-1-n @10 Acquired: 6/28/2019 13:56:40 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00023	4.5017	.00146	14.936	.44393	.00020
Stddev	.00025	.0062	.00061	.110	.00052	.00002
%RSD	108.10	.13852	41.524	.73805	.11765	7.7578
#1	.00015	4.5036	.00156	14.858	.44333	.00019
#2	.00003	4.5068	.00081	14.889	.44420	.00019
#3	.00051	4.4948	.00201	15.062	.44426	.00021
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2731	-.00002	.00076	.00286	.00198	1.4880
Stddev	.0094	.00003	.00007	.00013	.00034	.0034
%RSD	.73847	176.44	9.4148	4.4224	16.945	.22893
#1	1.2625	-.00002	.00084	.00297	.00198	1.4871
#2	1.2767	.00001	.00072	.00289	.00165	1.4852
#3	1.2802	-.00005	.00071	.00272	.00232	1.4918
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-1-n @10 Acquired: 6/28/2019 13:56:40 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.5743	.00663	.25813	.00976	.00003	-.29401
Stddev	.0291	.00056	.00982	.00005	.00011	.96287
%RSD	1.8460	8.5006	3.8055	.51553	428.47	327.49
#1	1.5929	.00661	.24985	.00977	-.00010	.53928
#2	1.5892	.00607	.26898	.00971	.00012	-1.3481
#3	1.5408	.00720	.25555	.00981	.00007	-.07322
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.8420	.00114	.01969	.00333	.00237	-.00094
Stddev	.0172	.00026	.00223	.00071	.00026	.00095
%RSD	.93220	22.319	11.344	21.255	11.044	101.18
#1	1.8598	.00100	.02172	.00289	.00208	-.00149
#2	1.8256	.00100	.02007	.00415	.00245	.00016
#3	1.8406	.00144	.01729	.00296	.00258	-.00150
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-1-n @10 Acquired: 6/28/2019 13:56:40 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00007	69.920	-.00004	.03930	.24664	-.00131
Stddev	.00089	.370	.00013	.00004	.00219	.00184
%RSD	1189.8	.52900	360.10	.10456	.88789	140.22
#1	.00095	69.517	-.00018	.03925	.24595	.00077
#2	-.00051	69.998	.00009	.03932	.24487	-.00198
#3	-.00066	70.244	-.00002	.03933	.24909	-.00273
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00686	.00473
Stddev	.00020	.00003
%RSD	2.9848	.70007
#1	.00709	.00473
#2	.00668	.00477
#3	.00682	.00470
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-1-n @10 Acquired: 6/28/2019 13:56:40 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12953.	150380.	11677.
Stddev	47.	1004.	48.
%RSD	.36530	.66785	.40686
#1	12902.	149330.	11705.
#2	12961.	151320.	11703.
#3	12996.	150500.	11622.

Sample Name: 140-15377-a-2-n @10 Acquired: 6/28/2019 14:01:47 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00014	2.9255	.00074	15.146	.92445	.00019
Stddev	.00028	.0088	.00090	.024	.00153	.00001
%RSD	203.00	.30044	122.55	.15706	.16599	6.3870
#1	-.00014	2.9234	.00058	15.126	.92590	.00020
#2	.00041	2.9351	-.00008	15.139	.92462	.00018
#3	.00014	2.9179	.00170	15.172	.92284	.00020
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.18944	.00004	.00073	.00153	.00227	.97744
Stddev	.00072	.00000	.00009	.00018	.00022	.00382
%RSD	.38048	12.993	12.288	11.807	9.6758	.39035
#1	.19016	.00004	.00083	.00133	.00251	.97311
#2	.18945	.00003	.00066	.00162	.00224	.98032
#3	.18872	.00004	.00070	.00166	.00207	.97889
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-2-n @10 Acquired: 6/28/2019 14:01:47 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.1196	.00700	.09368	.01267	.00025	.17663
Stddev	.0059	.00024	.00929	.00008	.00025	.60540
%RSD	.28025	3.4432	9.9178	.59781	101.93	342.75
#1	2.1160	.00698	.10132	.01262	.00045	.19257
#2	2.1265	.00677	.08334	.01263	.00033	.77390
#3	2.1164	.00725	.09637	.01275	-.00004	-.43658
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.7627	.00078	.02374	.00515	.00158	-.00099
Stddev	.0213	.00018	.00008	.00012	.00119	.00087
%RSD	1.2054	22.619	.34303	2.3016	75.095	87.362
#1	1.7872	.00058	.02374	.00527	.00026	-.00087
#2	1.7489	.00089	.02382	.00514	.00193	-.00192
#3	1.7519	.00088	.02366	.00504	.00255	-.00019
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-2-n @10 Acquired: 6/28/2019 14:01:47 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00012	61.824	.00019	.03374	.19053	.00075
Stddev	.00185	.056	.00019	.00021	.00030	.00169
%RSD	1576.3	.09064	98.523	.62973	.15879	224.58
#1	-.00037	61.830	-.00000	.03376	.19022	.00151
#2	.00185	61.765	.00021	.03394	.19053	-.00118
#3	-.00183	61.876	.00038	.03352	.19083	.00194
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00587	.00368
Stddev	.00018	.00004
%RSD	3.1203	1.1523
#1	.00594	.00368
#2	.00601	.00364
#3	.00567	.00372
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-2-n @10 Acquired: 6/28/2019 14:01:47 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12824.	148260.	11523.
Stddev	29.	793.	70.
%RSD	.22851	.53502	.60668
#1	12790.	147360.	11452.
#2	12839.	148570.	11591.
#3	12843.	148860.	11528.

Sample Name: CCV Acquired: 6/28/2019 14:06:54 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.99617	23.961	.48724	F 2.2914	1.9899	2.0005
Stddev	.00128	.057	.00056	.0102	.0037	.0103
%RSD	.12877	.23690	.11576	.44690	.18799	.51478
#1	.99615	23.924	.48683	2.2859	1.9934	1.9907
#2	.99490	24.027	.48701	2.2851	1.9860	2.0112
#3	.99747	23.934	.48788	2.3032	1.9904	1.9996
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
Value				2.0000		
Range				10.500%		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.024	.50369	2.0443	1.9659	1.9792	24.470
Stddev	.093	.00040	.0004	.0036	.0032	.046
%RSD	.18156	.07954	.01981	.18400	.15932	.18955
#1	50.957	.50324	2.0438	1.9617	1.9809	24.423
#2	51.129	.50380	2.0446	1.9685	1.9812	24.472
#3	50.984	.50402	2.0444	1.9673	1.9756	24.516
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV   Acquired: 6/28/2019 14:06:54   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.515	2.0069	50.741	2.0405	2.0287	46.219
Stddev	.032	.0039	.211	.0058	.0022	3.126
%RSD	.06346	.19292	.41551	.28568	.11098	6.7641
#1	50.490	2.0070	50.526	2.0371	2.0277	49.828
#2	50.552	2.0030	50.749	2.0372	2.0271	44.479
#3	50.505	2.0107	50.947	2.0473	2.0313	44.350
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.992	1.9950	1.9645	.51546	.50117	.48612
Stddev	.015	.0015	.0018	.00262	.00126	.00079
%RSD	.03142	.07686	.09062	.50834	.25078	.16223
#1	49.006	1.9935	1.9641	.51306	.50253	.48626
#2	48.976	1.9948	1.9630	.51825	.50092	.48683
#3	48.996	1.9966	1.9665	.51506	.50005	.48527
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV   Acquired: 6/28/2019 14:06:54   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50392	F 7.9046	2.0174	1.9982	1.9587	1.0413
Stddev	.00116	.0510	.0011	.0041	.0039	.0025
%RSD	.23060	.64450	.05464	.20355	.19756	.23586
#1	.50448	7.9196	2.0162	2.0009	1.9615	1.0387
#2	.50469	7.9464	2.0177	1.9935	1.9604	1.0435
#3	.50258	7.8478	2.0183	2.0001	1.9543	1.0418
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		2.0000				
Range		10.500%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	1.9911	2.0328
Stddev	.0047	.0012
%RSD	.23418	.05691
#1	1.9865	2.0330
#2	1.9958	2.0316
#3	1.9909	2.0339
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 6/28/2019 14:06:54 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12493.	146180.	11416.
Stddev	21.	510.	113.
%RSD	.16480	.34879	.99408
#1	12469.	145610.	11426.
#2	12508.	146590.	11297.
#3	12502.	146360.	11524.

Sample Name: CCB   Acquired: 6/28/2019 14:11:54   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00017	-.00005	-.00094	F .26917	-.00013	.00016
Stddev	.00029	.02990	.00048	.00650	.00013	.00003
%RSD	171.05	55915.	50.509	2.4164	101.09	18.216
#1	-.00017	.02382	-.00041	.26209	-.00000	.00019
#2	.00033	.00962	-.00134	.27056	-.00027	.00014
#3	.00035	-.03359	-.00108	.27487	-.00012	.00014
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				.10100		
Low Limit				-.10100		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00153	.00001	.00025	-.00019	.00082	-.00074
Stddev	.00320	.00003	.00024	.00017	.00012	.00209
%RSD	210.03	236.93	96.496	89.515	14.918	283.39
#1	.00332	.00001	.00021	-.00033	.00069	.00139
#2	.00343	.00004	.00051	-.00025	.00084	-.00083
#3	-.00217	-.00002	.00004	.00000	.00093	-.00278
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/28/2019 14:11:54 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.15897	.00169	.00130	.00001	-.00009	-.84630
Stddev	.00787	.00068	.01015	.00008	.00010	1.2122
%RSD	4.9476	40.334	779.92	875.83	117.81	143.24
#1	.16771	.00171	-.01004	.00010	.00002	.49188
#2	.15672	.00235	.00438	-.00006	-.00009	-1.1598
#3	.15247	.00099	.00956	-.00001	-.00018	-1.8710
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.39128	.00018	-.00049	-.00059	-.00075	.00028
Stddev	.01521	.00021	.00059	.00105	.00149	.00093
%RSD	3.8869	117.23	120.82	177.33	197.22	336.03
#1	.40882	.00030	-.00095	-.00123	-.00234	.00125
#2	.38186	.00031	.00018	.00062	.00060	-.00061
#3	.38315	-.00006	-.00069	-.00116	-.00052	.00019
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/28/2019 14:11:54 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00054	F 4.8082	-.00019	-.00007	.00069	-.00138
Stddev	.00206	.0792	.00044	.00010	.00077	.00133
%RSD	378.04	1.6476	230.63	140.76	110.97	96.103
#1	-.00277	4.8967	.00026	-.00011	.00094	-.00132
#2	-.00014	4.7839	-.00061	.00004	-.00017	-.00009
#3	.00128	4.7439	-.00022	-.00015	.00130	-.00274
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		.48200				
Low Limit		-.48200				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00015	-.00014
Stddev	.00006	.00006
%RSD	41.995	42.721
#1	.00012	-.00010
#2	.00023	-.00010
#3	.00011	-.00020
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/28/2019 14:11:54 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12609.	146390.	11394.
Stddev	28.	82.	62.
%RSD	.22073	.05587	.54072
#1	12579.	146300.	11338.
#2	12632.	146450.	11460.
#3	12618.	146430.	11385.

Sample Name: 140-15376-a-1-aa @10 Acquired: 6/28/2019 14:17:05 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML (B)

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00026	42.947	.00063	14.714	.78686	.00088
Stddev	.00050	.126	.00153	.044	.00167	.00002
%RSD	191.46	.29374	243.28	.29807	.21164	1.9980
#1	-.00003	42.950	.00060	14.676	.78686	.00087
#2	.00083	43.072	.00218	14.705	.78852	.00086
#3	-.00002	42.819	-.00089	14.762	.78519	.00090
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.6010	-.00002	.00115	.01409	.00253	4.6624
Stddev	.0038	.00004	.00002	.00050	.00018	.0083
%RSD	.23742	203.26	2.1518	3.5157	7.2169	.17786
#1	1.5967	-.00006	.00114	.01370	.00274	4.6534
#2	1.6039	.00001	.00114	.01391	.00242	4.6640
#3	1.6023	-.00000	.00118	.01464	.00242	4.6697
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-aa @10 Acquired: 6/28/2019 14:17:05 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML (B)

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	26.190	.01246	.82829	.08692	.00013	3.6120
Stddev	.083	.00075	.02011	.00014	.00009	2.1307
%RSD	.31564	5.9833	2.4277	.15981	71.034	58.989
#1	26.283	.01231	.84742	.08676	.00015	1.4920
#2	26.125	.01328	.80733	.08700	.00021	5.7531
#3	26.162	.01181	.83012	.08701	.00003	3.5909
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	12.929	.00266	.04808	.01399	.00812	-.00112
Stddev	.067	.00005	.00162	.00201	.00067	.00147
%RSD	.51462	1.9441	3.3638	14.367	8.2692	131.16
#1	12.976	.00271	.04752	.01197	.00860	-.00014
#2	12.958	.00267	.04991	.01599	.00735	-.00041
#3	12.853	.00261	.04682	.01400	.00841	-.00282
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-aa @10 Acquired: 6/28/2019 14:17:05 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML (B)

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00012	74.737	.00046	.10034	2.1125	-.00150
Stddev	.00070	.202	.00006	.00018	.0064	.00146
%RSD	602.13	.27083	12.339	.18285	.30101	97.464
#1	.00062	74.504	.00052	.10027	2.1185	-.00309
#2	-.00069	74.867	.00042	.10055	2.1130	-.00116
#3	.00042	74.841	.00043	.10021	2.1059	-.00023
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02505	.00905
Stddev	.00014	.00014
%RSD	.56353	1.4951
#1	.02510	.00914
#2	.02515	.00890
#3	.02489	.00913
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-aa @10 Acquired: 6/28/2019 14:17:05 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML (B)

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12900.	149400.	11557.
Stddev	25.	503.	66.
%RSD	.19341	.33655	.56695
#1	12872.	148960.	11493.
#2	12919.	149310.	11624.
#3	12910.	149950.	11555.

Sample Name: 15376-a-1-ab du @10 Acquired: 6/28/2019 14:22:10 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00026	53.892	.00062	14.900	.83474	.00096
Stddev	.00038	.160	.00085	.039	.00064	.00002
%RSD	147.85	.29640	136.99	.26313	.07656	1.8177
#1	.00066	53.725	.00029	14.856	.83404	.00097
#2	-.00009	53.909	.00158	14.914	.83490	.00094
#3	.00020	54.043	-.00001	14.930	.83529	.00095
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.8598	-.00002	.00131	.01593	.00275	5.0621
Stddev	.0072	.00006	.00014	.00028	.00018	.0141
%RSD	.38637	322.30	10.936	1.7406	6.6297	.27768
#1	1.8527	-.00009	.00138	.01613	.00291	5.0460
#2	1.8597	.00003	.00141	.01561	.00279	5.0719
#3	1.8670	-.00000	.00115	.01604	.00255	5.0683
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-ab du @10 Acquired: 6/28/2019 14:22:10 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	27.180	.01291	1.2478	.08469	.00022	5.0202
Stddev	.085	.00104	.0063	.00033	.00007	.8551
%RSD	.31232	8.0281	.50730	.38873	31.079	17.033
#1	27.111	.01406	1.2536	.08432	.00023	5.1162
#2	27.153	.01204	1.2488	.08480	.00028	5.8232
#3	27.275	.01263	1.2411	.08495	.00014	4.1212
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	13.335	.00279	.04933	.01309	.00878	-.00079
Stddev	.023	.00013	.00079	.00139	.00144	.00051
%RSD	.17178	4.7532	1.6062	10.597	16.440	65.161
#1	13.309	.00287	.04923	.01368	.00878	-.00052
#2	13.349	.00264	.04860	.01410	.00733	-.00047
#3	13.348	.00286	.05017	.01151	.01022	-.00138
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-ab du @10 Acquired: 6/28/2019 14:22:10 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00013	108.15	-.00012	.11427	2.1654	.00016
Stddev	.00183	.46	.00002	.00015	.0046	.00018
%RSD	1404.3	.42627	19.828	.13469	.21133	111.37
#1	.00158	107.66	-.00013	.11428	2.1611	.00019
#2	.00009	108.21	-.00014	.11411	2.1648	.00032
#3	-.00206	108.58	-.00010	.11442	2.1702	-.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02786	.00999
Stddev	.00013	.00006
%RSD	.47373	.57847
#1	.02776	.01004
#2	.02801	.00993
#3	.02782	.01000
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 15376-a-1-ab du @10 Acquired: 6/28/2019 14:22:10 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12806.	148960.	11682.
Stddev	15.	971.	33.
%RSD	.11852	.65152	.28634
#1	12798.	147840.	11719.
#2	12796.	149540.	11654.
#3	12823.	149510.	11673.

Sample Name: 140-15376-a-2-n @10 Acquired: 6/28/2019 14:27:15 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00040	61.830	.00058	14.865	.81634	.00111
Stddev	.00024	.141	.00037	.014	.00092	.00001
%RSD	59.759	.22750	62.709	.09297	.11308	1.3428
#1	.00066	61.807	.00041	14.857	.81587	.00110
#2	.00018	61.980	.00100	14.881	.81741	.00110
#3	.00036	61.702	.00034	14.857	.81575	.00112
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.7099	-.00009	.00141	.01580	.00279	5.3112
Stddev	.0056	.00004	.00006	.00024	.00019	.0142
%RSD	.32888	46.144	4.4354	1.5184	6.7466	.26774
#1	1.7038	-.00011	.00139	.01556	.00294	5.2949
#2	1.7149	-.00004	.00149	.01578	.00285	5.3206
#3	1.7110	-.00010	.00137	.01604	.00258	5.3183
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-n @10 Acquired: 6/28/2019 14:27:15 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	26.533	.01396	1.2498	.03157	.00020	5.3462
Stddev	.068	.00050	.0183	.00006	.00008	1.7723
%RSD	.25633	3.6174	1.4625	.19278	39.415	33.150
#1	26.462	.01430	1.2290	.03151	.00011	3.3905
#2	26.598	.01338	1.2634	.03163	.00026	5.8021
#3	26.540	.01419	1.2570	.03156	.00024	6.8459
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	13.155	.00637	.04972	.01430	.00892	-.00044
Stddev	.031	.00012	.00050	.00197	.00005	.00083
%RSD	.23912	1.8090	1.0026	13.793	.58832	189.73
#1	13.158	.00625	.04979	.01235	.00894	-.00016
#2	13.184	.00647	.05017	.01630	.00896	.00022
#3	13.122	.00639	.04919	.01425	.00886	-.00137
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-n @10   Acquired: 6/28/2019 14:27:15   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 1ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00025	141.93	.00032	.10944	1.6090	.00081
Stddev	.00110	.48	.00013	.00020	.0019	.00221
%RSD	438.36	.33664	40.332	.18121	.11515	272.44
#1	-.00100	141.47	.00033	.10926	1.6077	-.00160
#2	-.00077	142.42	.00019	.10965	1.6111	.00274
#3	.00101	141.90	.00045	.10940	1.6082	.00130
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02588	.01437
Stddev	.00010	.00008
%RSD	.37706	.53409
#1	.02598	.01434
#2	.02588	.01446
#3	.02578	.01432
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-2-n @10 Acquired: 6/28/2019 14:27:15 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12808.	148030.	11598.
Stddev	50.	331.	68.
%RSD	.39158	.22379	.58363
#1	12787.	147710.	11556.
#2	12772.	148010.	11562.
#3	12865.	148380.	11676.

Sample Name: 140-15376-a-3-n @10 Acquired: 6/28/2019 14:32:18 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00025	51.475	.00193	14.814	.62863	.00072
Stddev	.00038	.169	.00055	.068	.00185	.00002
%RSD	154.38	.32767	28.756	.46051	.29377	2.0987
#1	.00038	51.409	.00229	14.735	.62663	.00074
#2	-.00018	51.349	.00221	14.853	.62897	.00071
#3	.00054	51.667	.00129	14.853	.63028	.00072
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.76563	-.00003	.00161	.01781	.00270	7.0870
Stddev	.00206	.00004	.00025	.00030	.00012	.0356
%RSD	.26906	146.45	15.238	1.6662	4.5433	.50237
#1	.76345	-.00006	.00148	.01766	.00263	7.0591
#2	.76754	-.00005	.00190	.01815	.00284	7.0747
#3	.76590	.00002	.00146	.01761	.00263	7.1271
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-3-n @10   Acquired: 6/28/2019 14:32:18   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 1ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	20.726	.02318	1.6599	.02963	.00137	1.1323
Stddev	.042	.00063	.0161	.00016	.00040	1.6741
%RSD	.20159	2.7298	.96791	.53313	29.461	147.85
#1	20.717	.02309	1.6462	.02945	.00102	.32030
#2	20.689	.02259	1.6560	.02971	.00128	.01906
#3	20.771	.02385	1.6776	.02973	.00181	3.0576
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.8678	.00636	.06024	.01110	.00715	-.00140
Stddev	.0195	.00016	.00082	.00102	.00102	.00112
%RSD	.19753	2.5330	1.3597	9.2227	14.267	79.823
#1	9.8699	.00643	.05971	.01076	.00645	-.00115
#2	9.8474	.00618	.05982	.01029	.00668	-.00263
#3	9.8862	.00648	.06118	.01225	.00832	-.00043
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-3-n @10 Acquired: 6/28/2019 14:32:18 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00114	85.643	.00056	.08307	2.4754	.00187
Stddev	.00141	.252	.00019	.00016	.0057	.00080
%RSD	124.27	.29451	34.947	.19135	.23173	42.415
#1	-.00089	85.506	.00054	.08289	2.4695	.00279
#2	.00014	85.488	.00076	.08319	2.4757	.00136
#3	-.00266	85.934	.00037	.08314	2.4810	.00147
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.03904	.01532
Stddev	.00041	.00010
%RSD	1.0622	.64240
#1	.03856	.01522
#2	.03926	.01533
#3	.03931	.01541
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-3-n @10 Acquired: 6/28/2019 14:32:18 Type: Unk

Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000

User: kerry Custom ID1: Custom ID2: Custom ID3:

Comment: 1ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12816.	149220.	11552.
Stddev	27.	363.	110.
%RSD	.21335	.24356	.95479
#1	12787.	149600.	11435.
#2	12821.	148880.	11653.
#3	12841.	149190.	11568.

Sample Name: 140-15390-a-1-m @10 Acquired: 6/28/2019 14:37:19 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00072	2.5052	.00104	14.959	.47597	.00017
Stddev	.00037	.0322	.00069	.019	.00092	.00001
%RSD	51.369	1.2854	66.923	.12971	.19295	6.4161
#1	.00040	2.4855	.00163	14.979	.47702	.00018
#2	.00112	2.5423	.00027	14.941	.47533	.00017
#3	.00063	2.4877	.00122	14.956	.47556	.00016
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.17269	.00002	.00094	.00294	.00579	1.1110
Stddev	.00069	.00006	.00009	.00035	.00019	.0028
%RSD	.39989	301.65	9.6585	11.850	3.3305	.25364
#1	.17334	.00002	.00093	.00334	.00590	1.1127
#2	.17196	-.00004	.00103	.00268	.00557	1.1125
#3	.17276	.00008	.00085	.00281	.00590	1.1078
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-m @10 Acquired: 6/28/2019 14:37:19 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.46527	.00484	.09439	.00720	-.00005	-1.0612
Stddev	.01531	.00117	.00701	.00004	.00013	.6004
%RSD	3.2902	24.136	7.4290	.53336	258.03	56.576
#1	.47982	.00598	.09965	.00725	.00010	-1.6420
#2	.46669	.00364	.09711	.00718	-.00012	-.44296
#3	.44931	.00490	.08643	.00718	-.00012	-1.0987
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.4761	.00109	.02478	.03220	.02507	.00045
Stddev	.0044	.00010	.00078	.00254	.00024	.00075
%RSD	.30091	9.5360	3.1584	7.8842	.96996	164.44
#1	1.4733	.00099	.02426	.03483	.02512	.00076
#2	1.4813	.00108	.02440	.03200	.02528	-.00040
#3	1.4739	.00120	.02568	.02976	.02480	.00100
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-m @10 Acquired: 6/28/2019 14:37:19 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00005	169.37	-.00041	.02265	.35501	.00054
Stddev	.00077	.31	.00015	.00015	.00133	.00069
%RSD	1523.9	.18593	36.555	.68315	.37500	128.10
#1	.00087	169.01	-.00025	.02282	.35476	.00068
#2	-.00067	169.60	-.00044	.02261	.35381	.00114
#3	-.00005	169.50	-.00055	.02251	.35644	-.00021
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00512	.00593
Stddev	.00021	.00001
%RSD	4.0982	.24520
#1	.00536	.00592
#2	.00503	.00595
#3	.00498	.00593
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-1-m @10 Acquired: 6/28/2019 14:37:19 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12690.	148100.	11544.
Stddev	56.	1191.	40.
%RSD	.43870	.80420	.34679
#1	12628.	146750.	11560.
#2	12704.	148570.	11499.
#3	12737.	148990.	11574.

Sample Name: 140-15390-a-2-m @10 Acquired: 6/28/2019 14:42:26 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00004	2.0605	.00066	14.824	.08729	.00017
Stddev	.00044	.0271	.00050	.005	.00002	.00001
%RSD	1141.4	1.3150	76.069	.03596	.02855	8.7568
#1	-.00018	2.0293	.00008	14.830	.08732	.00018
#2	.00054	2.0759	.00092	14.819	.08727	.00017
#3	-.00025	2.0764	.00098	14.823	.08729	.00015
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.06761	-.00000	.00061	.00194	.00169	.43668
Stddev	.00017	.00005	.00004	.00022	.00014	.00109
%RSD	.24453	1170.5	6.6678	11.100	8.4539	.24916
#1	.06753	-.00005	.00059	.00202	.00153	.43568
#2	.06780	-.00001	.00066	.00170	.00171	.43654
#3	.06749	.00005	.00059	.00212	.00182	.43784
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-2-m @10 Acquired: 6/28/2019 14:42:26 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.38249	.00273	.07894	.00411	.00004	-1.3669
Stddev	.01644	.00097	.00332	.00002	.00004	1.4085
%RSD	4.2979	35.676	4.2077	.37981	96.029	103.04
#1	.37161	.00322	.08130	.00411	.00008	-.71189
#2	.37446	.00161	.08038	.00409	-.00000	-.40517
#3	.40140	.00337	.07514	.00412	.00005	-2.9837
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.3109	.00089	.02768	.01016	.00573	.00105
Stddev	.0007	.00010	.00067	.00159	.00064	.00083
%RSD	.05114	11.722	2.4333	15.683	11.231	79.313
#1	1.3116	.00099	.02845	.01136	.00628	.00094
#2	1.3103	.00090	.02724	.00835	.00588	.00193
#3	1.3107	.00078	.02735	.01076	.00502	.00028
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-2-m @10 Acquired: 6/28/2019 14:42:26 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00022	139.07	-.00043	.01544	.19058	.00102
Stddev	.00173	.28	.00029	.00009	.00098	.00126
%RSD	790.77	.19847	65.711	.57349	.51393	124.19
#1	-.00175	138.75	-.00064	.01554	.18945	.00187
#2	.00148	139.19	-.00011	.01538	.19121	.00162
#3	.00093	139.26	-.00056	.01541	.19107	-.00043
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00262	.00297
Stddev	.00021	.00002
%RSD	7.8908	.80492
#1	.00240	.00299
#2	.00281	.00298
#3	.00265	.00295
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-2-m @10 Acquired: 6/28/2019 14:42:26 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12830.	148580.	11599.
Stddev	30.	736.	43.
%RSD	.23359	.49508	.37077
#1	12858.	147730.	11621.
#2	12834.	149010.	11627.
#3	12799.	149000.	11550.

Sample Name: 140-15390-a-3-m @10 Acquired: 6/28/2019 14:47:34 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00016	7.5427	.00050	14.683	.14880	.00016
Stddev	.00019	.0278	.00042	.043	.00060	.00001
%RSD	121.88	.36875	84.196	.29257	.40363	4.7039
#1	-.00003	7.5109	.00032	14.732	.14863	.00016
#2	-.00038	7.5624	.00020	14.655	.14947	.00017
#3	-.00006	7.5549	.00099	14.662	.14830	.00016
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.16647	-.00002	.00101	.00521	.00338	1.4567
Stddev	.00269	.00006	.00013	.00034	.00024	.0054
%RSD	1.6138	386.59	12.702	6.5463	7.2357	.37334
#1	.16475	-.00008	.00113	.00501	.00310	1.4519
#2	.16510	.00004	.00105	.00501	.00348	1.4626
#3	.16957	-.00001	.00087	.00560	.00356	1.4555
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-3-m @10   Acquired: 6/28/2019 14:47:34   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 1ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.5150	.00646	.30431	.02249	-.00001	.57559
Stddev	.0228	.00150	.00738	.00002	.00017	2.6958
%RSD	.64974	23.181	2.4268	.09429	1640.1	468.35
#1	3.5386	.00625	.29782	.02250	.00016	.48871
#2	3.4930	.00508	.31234	.02251	-.00002	3.3138
#3	3.5135	.00805	.30276	.02247	-.00017	-2.0757
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.4396	.00180	.02094	.00689	.00376	-.00133
Stddev	.0150	.00011	.00031	.00079	.00048	.00052
%RSD	.61362	6.1333	1.4649	11.513	12.840	39.038
#1	2.4516	.00186	.02112	.00601	.00338	-.00119
#2	2.4443	.00188	.02111	.00755	.00430	-.00089
#3	2.4228	.00168	.02058	.00711	.00360	-.00190
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-3-m @10 Acquired: 6/28/2019 14:47:34 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00050	132.90	-.00015	.01601	1.1348	-.00003
Stddev	.00081	.40	.00022	.00012	.0012	.00092
%RSD	161.87	.29896	145.97	.72420	.10841	2910.7
#1	.00044	132.47	-.00011	.01591	1.1335	-.00100
#2	-.00098	132.99	.00005	.01614	1.1359	.00006
#3	-.00097	133.24	-.00038	.01598	1.1350	.00084
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00977	.01635
Stddev	.00024	.00011
%RSD	2.4283	.67696
#1	.00952	.01647
#2	.00999	.01625
#3	.00980	.01634
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-3-m @10 Acquired: 6/28/2019 14:47:34 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12790.	148410.	11587.
Stddev	54.	1420.	77.
%RSD	.42465	.95696	.66565
#1	12730.	147130.	11601.
#2	12803.	148160.	11504.
#3	12837.	149940.	11656.

Sample Name: 140-15390-a-4-m @10 Acquired: 6/28/2019 14:52:39 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00009	3.4520	-.00036	14.560	.07632	.00015
Stddev	.00020	.0130	.00144	.036	.00021	.00000
%RSD	214.85	.37759	398.85	.24784	.27915	2.9129
#1	.00033	3.4418	.00080	14.599	.07654	.00015
#2	-.00004	3.4667	-.00198	14.528	.07611	.00015
#3	-.00000	3.4477	.00009	14.554	.07631	.00014
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.09397	.00001	.00081	.00251	.00192	.72395
Stddev	.00079	.00005	.00009	.00027	.00007	.00440
%RSD	.83602	411.72	10.912	10.649	3.6696	.60828
#1	.09436	-.00004	.00087	.00246	.00193	.72652
#2	.09449	.00006	.00086	.00280	.00184	.71886
#3	.09307	.00002	.00071	.00227	.00198	.72646
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-m @10　Acquired: 6/28/2019 14:52:39　Type: Unk
Method: MT0007(v23) HF 022619(v12)　Mode: CONC　Corr. Factor: 1.000000
User: kerry　Custom ID1:　Custom ID2:　Custom ID3:
Comment: 1ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.80093	.00396	.13898	.00740	-.00009	.41440
Stddev	.00813	.00063	.00362	.00002	.00014	.81323
%RSD	1.0150	15.926	2.6067	.26176	160.68	196.24
#1	.80784	.00334	.13482	.00740	-.00002	.65026
#2	.79197	.00394	.14143	.00738	.00001	-.49069
#3	.80298	.00460	.14069	.00742	-.00025	1.0836
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.7124	.00116	.01137	.00673	.00305	.00081
Stddev	.0176	.00008	.00029	.00209	.00134	.00075
%RSD	1.0248	6.7857	2.5785	31.032	43.962	92.088
#1	1.7326	.00113	.01150	.00914	.00153	.00105
#2	1.7028	.00110	.01158	.00556	.00405	-.00003
#3	1.7016	.00125	.01103	.00549	.00357	.00141
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-m @10 Acquired: 6/28/2019 14:52:39 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00240	157.06	-.00069	.00733	.39084	-.00022
Stddev	.00038	.10	.00013	.00004	.00052	.00081
%RSD	15.818	.06116	18.467	.50065	.13226	370.83
#1	-.00199	157.12	-.00083	.00731	.39084	.00047
#2	-.00274	156.95	-.00058	.00737	.39032	-.00111
#3	-.00248	157.11	-.00066	.00730	.39136	-.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00411	.00367
Stddev	.00019	.00003
%RSD	4.7360	.95169
#1	.00431	.00370
#2	.00410	.00363
#3	.00393	.00367
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-4-m @10 Acquired: 6/28/2019 14:52:39 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12903.	149900.	11707.
Stddev	15.	967.	16.
%RSD	.11636	.64480	.13474
#1	12886.	148840.	11688.
#2	12908.	150740.	11717.
#3	12915.	150110.	11715.

Sample Name: 15376-a-1-aa SD@50 Acquired: 6/28/2019 14:57:46 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (B) TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00013	8.5227	.00024	3.0704	.15742	.00024
Stddev	.00050	.0307	.00066	.0064	.00026	.00002
%RSD	400.02	.36020	271.05	.20764	.16499	7.6974
#1	.00067	8.5581	-.00013	3.0633	.15717	.00025
#2	.00001	8.5062	-.00014	3.0757	.15740	.00022
#3	-.00031	8.5037	.00101	3.0720	.15769	.00025
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.32106	-.00000	.00037	.00258	.00149	.93186
Stddev	.00170	.00005	.00007	.00015	.00004	.00310
%RSD	.52956	1651.9	17.733	5.7872	2.6188	.33286
#1	.32293	-.00003	.00033	.00262	.00152	.92839
#2	.31962	-.00004	.00045	.00242	.00150	.93283
#3	.32061	.00006	.00034	.00271	.00145	.93437
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-aa SD@50 Acquired: 6/28/2019 14:57:46 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (B) TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.3695	.00348	.15576	.01746	.00013	-.92491
Stddev	.0205	.00085	.01065	.00006	.00007	1.3168
%RSD	.38153	24.356	6.8398	.35200	56.682	142.37
#1	5.3585	.00254	.15704	.01740	.00015	-1.6296
#2	5.3932	.00372	.14452	.01752	.00005	.59428
#3	5.3569	.00419	.16572	.01744	.00019	-1.7394
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.7103	.00058	.00901	.00339	.00108	-.00107
Stddev	.0023	.00011	.00161	.00096	.00098	.00145
%RSD	.08333	19.457	17.854	28.209	91.474	135.45
#1	2.7128	.00047	.00726	.00370	.00101	-.00123
#2	2.7086	.00058	.01042	.00231	.00013	-.00243
#3	2.7094	.00069	.00935	.00415	.00209	.00045
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-aa SD@50 Acquired: 6/28/2019 14:57:46 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (B) TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00143	18.343	-.00010	.02004	.42426	-.00146
Stddev	.00129	.050	.00020	.00011	.00078	.00081
%RSD	90.056	.27198	204.42	.53134	.18376	55.617
#1	.00048	18.286	.00011	.01992	.42516	-.00182
#2	.00289	18.368	-.00012	.02013	.42380	-.00053
#3	.00092	18.375	-.00029	.02007	.42383	-.00204
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00499	.00398
Stddev	.00029	.00006
%RSD	5.7588	1.5636
#1	.00523	.00401
#2	.00467	.00391
#3	.00506	.00403
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 15376-a-1-aa SD@50 Acquired: 6/28/2019 14:57:46 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (B) TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12929.	150640.	11804.
Stddev	38.	1059.	57.
%RSD	.29102	.70295	.48111
#1	12894.	149630.	11739.
#2	12925.	150560.	11845.
#3	12969.	151740.	11828.

Sample Name: CCV Acquired: 6/28/2019 15:02:53 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0094	24.265	.49346	F 2.2361	2.0179	2.0280
Stddev	.0030	.102	.00170	.0083	.0035	.0097
%RSD	.29323	.42079	.34544	.37069	.17208	.47855
#1	1.0125	24.276	.49264	2.2433	2.0194	2.0392
#2	1.0091	24.360	.49542	2.2381	2.0205	2.0221
#3	1.0066	24.157	.49232	2.2271	2.0140	2.0227
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
Value				2.0000		
Range				10.500%		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.267	.50943	2.0653	1.9980	2.0196	24.787
Stddev	.158	.00146	.0064	.0054	.0056	.073
%RSD	.30867	.28570	.31011	.26919	.27558	.29496
#1	51.324	.51093	2.0716	1.9990	2.0260	24.819
#2	51.390	.50931	2.0655	2.0028	2.0162	24.839
#3	51.089	.50803	2.0588	1.9922	2.0165	24.703
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV   Acquired: 6/28/2019 15:02:53   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.781	2.0182	50.713	2.0678	2.0537	46.921
Stddev	.143	.0033	.200	.0081	.0060	1.380
%RSD	.28150	.16502	.39346	.39104	.29385	2.9411
#1	50.763	2.0191	50.660	2.0747	2.0593	47.954
#2	50.932	2.0210	50.933	2.0697	2.0545	45.354
#3	50.647	2.0146	50.545	2.0589	2.0473	47.455
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.602	2.0214	1.9916	.52067	.50858	.49283
Stddev	.113	.0064	.0103	.00444	.00230	.00372
%RSD	.22787	.31698	.51817	.85219	.45196	.75406
#1	49.657	2.0281	2.0030	.52373	.51012	.49672
#2	49.677	2.0209	1.9892	.52270	.50969	.49244
#3	49.472	2.0153	1.9828	.51558	.50594	.48932
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/28/2019 15:02:53 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50528	F 5.7451	2.0414	2.0252	1.9891	1.0524
Stddev	.00227	.0740	.0051	.0050	.0056	.0040
%RSD	.44944	1.2888	.25123	.24928	.28091	.37892
#1	.50629	5.8161	2.0465	2.0286	1.9891	1.0537
#2	.50688	5.7507	2.0415	2.0276	1.9947	1.0556
#3	.50268	5.6683	2.0362	2.0194	1.9836	1.0479
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		2.0000				
Range		10.500%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.0209	2.0561
Stddev	.0044	.0073
%RSD	.21692	.35755
#1	2.0228	2.0626
#2	2.0241	2.0575
#3	2.0159	2.0481
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 6/28/2019 15:02:53 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12300.	143920.	11439.
Stddev	70.	745.	84.
%RSD	.56808	.51738	.73256
#1	12219.	143150.	11356.
#2	12345.	143960.	11437.
#3	12335.	144640.	11523.

Sample Name: CCB Acquired: 6/28/2019 15:07:53 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00004	.00602	-.00074	F .18116	-.00003	.00014
Stddev	.00052	.01081	.00057	.00116	.00013	.00003
%RSD	1208.0	179.61	76.840	.63901	503.62	22.429
#1	-.00026	-.00026	-.00020	.18136	-.00009	.00018
#2	.00055	-.00018	-.00132	.17992	-.00011	.00013
#3	-.00042	.01850	-.00069	.18220	.00012	.00012
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				.10100		
Low Limit				-.10100		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00315	-.00000	.00022	-.00022	.00099	-.00029
Stddev	.00255	.00003	.00001	.00004	.00044	.00156
%RSD	80.707	5595.7	5.6774	18.646	44.397	542.22
#1	.00570	-.00003	.00023	-.00025	.00150	-.00055
#2	.00316	.00003	.00023	-.00017	.00066	.00139
#3	.00061	-.00000	.00021	-.00024	.00083	-.00170
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/28/2019 15:07:53 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.10305	.00110	.01389	.00001	.00004	-1.4522
Stddev	.03117	.00022	.01296	.00006	.00018	2.2461
%RSD	30.246	20.174	93.301	536.83	412.39	154.67
#1	.13703	.00136	.02839	.00006	.00022	.68100
#2	.09634	.00099	.00347	.00003	.00005	-3.7963
#3	.07578	.00096	.00979	-.00005	-.00014	-1.2412
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20832	.00006	-.00097	.00048	-.00007	-.00048
Stddev	.00443	.00006	.00119	.00082	.00041	.00097
%RSD	2.1289	92.724	123.33	171.22	622.01	202.51
#1	.21155	.00013	-.00226	.00028	-.00041	-.00096
#2	.21015	.00003	.00009	-.00022	.00039	-.00112
#3	.20327	.00002	-.00073	.00137	-.00018	.00064
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/28/2019 15:07:53 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00028	F 3.4058	-.00016	-.00008	.00118	-.00048
Stddev	.00061	.0274	.00027	.00016	.00066	.00188
%RSD	215.32	.80397	170.69	187.07	55.841	390.57
#1	-.00094	3.4355	-.00028	.00009	.00193	.00070
#2	-.00016	3.4003	.00015	-.00012	.00072	.00050
#3	.00026	3.3816	-.00035	-.00022	.00088	-.00264
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		.48200				
Low Limit		-.48200				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00012	-.00007
Stddev	.00035	.00003
%RSD	287.72	45.020
#1	.00049	-.00007
#2	-.00021	-.00004
#3	.00008	-.00011
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/28/2019 15:07:53 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12616.	146070.	11476.
Stddev	60.	1529.	71.
%RSD	.47456	1.0465	.62297
#1	12550.	144310.	11398.
#2	12631.	146960.	11492.
#3	12667.	146960.	11538.

Sample Name: 140-15377-a-1-a Acquired: 6/28/2019 15:13:05 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00007	87.804	.01951	F 119.61	1.4354	.00337
Stddev	.00012	.081	.00024	.24	.0009	.00001
%RSD	163.32	.09277	1.2371	.20149	.06480	.33793
#1	-.00001	87.895	.01946	119.56	1.4353	.00338
#2	.00021	87.737	.01978	119.87	1.4364	.00336
#3	.00002	87.781	.01930	119.39	1.4346	.00337
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	78.773	.00035	.01526	.08360	.02231	37.454
Stddev	.122	.00005	.00020	.00022	.00034	.017
%RSD	.15459	13.731	1.3402	.26440	1.5373	.04531
#1	78.845	.00035	.01514	.08339	.02198	37.454
#2	78.633	.00030	.01549	.08359	.02229	37.471
#3	78.842	.00040	.01513	.08383	.02267	37.437
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-1-a Acquired: 6/28/2019 15:13:05 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.033	.06598	7.5419	.34462	.00371	-2.4711
Stddev	.059	.00138	.0348	.00073	.00020	.4616
%RSD	.24643	2.0926	.46207	.21083	5.3528	18.679
#1	23.977	.06499	7.5051	.34379	.00382	-2.4799
#2	24.095	.06539	7.5462	.34512	.00384	-2.9282
#3	24.027	.06755	7.5744	.34496	.00349	-2.0052
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.6919	.03062	.46163	.07389	.06188	-.00056
Stddev	.0216	.00027	.00064	.00104	.00110	.00254
%RSD	.58462	.87057	.13789	1.4116	1.7768	450.08
#1	3.7150	.03088	.46139	.07364	.06079	.00223
#2	3.6883	.03063	.46114	.07299	.06186	-.00118
#3	3.6723	.03035	.46235	.07503	.06299	-.00274
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-1-a Acquired: 6/28/2019 15:13:05 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00195	722.23	.00192	.16942	3.6396	.00592
Stddev	.00156	.71	.00032	.00011	.0091	.00147
%RSD	80.145	.09782	16.833	.06676	.25034	24.759
#1	-.00303	721.47	.00157	.16954	3.6489	.00428
#2	-.00016	722.35	.00200	.16932	3.6307	.00637
#3	-.00265	722.87	.00220	.16940	3.6390	.00711
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.14793	.08124
Stddev	.00066	.00005
%RSD	.44321	.06522
#1	.14722	.08118
#2	.14852	.08127
#3	.14803	.08127
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-1-a   Acquired: 6/28/2019 15:13:05   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	14234.	166010.	13330.
Stddev	25.	447.	52.
%RSD	.17521	.26927	.39257
#1	14206.	165500.	13276.
#2	14254.	166280.	13381.
#3	14241.	166260.	13332.

Sample Name: 140-15377-a-2-a Acquired: 6/28/2019 15:18:20 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00052	40.910	.01111	F 132.09	1.5042	.00137
Stddev	.00031	.064	.00129	.45	.0038	.00001
%RSD	60.540	.15738	11.651	.34173	.25346	.76468
#1	.00086	40.838	.01228	132.50	1.5078	.00138
#2	.00024	40.933	.01135	132.15	1.5046	.00137
#3	.00046	40.960	.00972	131.61	1.5002	.00136
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.8398	.00002	.00878	.03952	.01434	16.636
Stddev	.0085	.00008	.00021	.00038	.00008	.025
%RSD	.12454	330.14	2.3684	.97143	.56643	.15099
#1	6.8302	-.00006	.00900	.03996	.01442	16.665
#2	6.8464	.00003	.00876	.03932	.01426	16.621
#3	6.8430	.00009	.00859	.03927	.01432	16.621
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-2-a Acquired: 6/28/2019 15:18:20 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	19.172	.04254	2.8992	.30322	.00347	-2.1644
Stddev	.026	.00060	.0268	.00185	.00003	.8606
%RSD	.13469	1.4124	.92562	.61028	.92580	39.761
#1	19.176	.04312	2.9208	.30514	.00345	-2.3582
#2	19.144	.04192	2.9077	.30307	.00351	-1.2234
#3	19.195	.04259	2.8692	.30145	.00345	-2.9115
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.0879	.01306	.30368	.05369	.04463	-.00041
Stddev	.0096	.00013	.00046	.00440	.00122	.00017
%RSD	.23547	.98131	.15209	8.1873	2.7236	42.303
#1	4.0944	.01307	.30361	.05825	.04459	-.00040
#2	4.0924	.01293	.30326	.04948	.04587	-.00024
#3	4.0768	.01319	.30418	.05334	.04344	-.00058
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-2-a   Acquired: 6/28/2019 15:18:20   Type: Unk

Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000

User: kerry   Custom ID1:   Custom ID2:   Custom ID3:

Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00343	631.80	.00090	.15116	2.1283	.00261
Stddev	.00127	.24	.00049	.00056	.0044	.00151
%RSD	36.926	.03737	53.882	.37338	.20792	57.859
#1	-.00244	631.75	.00121	.15170	2.1251	.00186
#2	-.00299	632.06	.00034	.15119	2.1334	.00434
#3	-.00486	631.59	.00115	.15058	2.1265	.00162
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.07752	.03684
Stddev	.00075	.00002
%RSD	.96464	.04711
#1	.07834	.03685
#2	.07734	.03682
#3	.07688	.03685
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-2-a Acquired: 6/28/2019 15:18:20 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13235.	154190.	12427.
Stddev	16.	1425.	112.
%RSD	.12287	.92435	.89820
#1	13217.	152860.	12538.
#2	13241.	154020.	12429.
#3	13247.	155700.	12314.

Sample Name: 140-15376-a-1-a   Acquired: 6/28/2019 15:23:33   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00054	600.72	.02398	F 119.98	9.0907	.01092
Stddev	.00003	.88	.00130	.59	.1141	.00006
%RSD	4.7783	.14661	5.4202	.48896	1.2551	.55109
#1	.00053	600.49	.02536	119.93	8.9598	.01094
#2	.00057	601.70	.02277	119.42	9.1694	.01085
#3	.00053	599.98	.02381	120.59	9.1428	.01097
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	37.559	.00082	.02792	.20632	.05263	87.057
Stddev	.023	.00004	.00019	.00101	.00047	.052
%RSD	.06142	4.9371	.69841	.48759	.88852	.06012
#1	37.547	.00086	.02801	.20698	.05312	87.061
#2	37.585	.00083	.02805	.20516	.05218	87.107
#3	37.544	.00078	.02769	.20682	.05258	87.003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-a Acquired: 6/28/2019 15:23:33 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 278.11	.16033	24.809	1.4177	.00320	58.112
Stddev	.59	.00039	.010	.0075	.00020	2.511
%RSD	.21169	.24107	.04012	.52788	6.3450	4.3211
#1	278.20	.15996	24.808	1.4224	.00297	58.571
#2	278.65	.16073	24.819	1.4091	.00329	60.362
#3	277.49	.16030	24.800	1.4216	.00335	55.403
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.00					
Low Limit	-100.00					

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	108.30	.05900	1.4961	.17558	.14049	-.01316
Stddev	1.49	.00025	.0022	.00337	.00124	.00110
%RSD	1.3720	.42847	.15040	1.9214	.88446	8.3416
#1	109.65	.05874	1.4935	.17282	.14012	-.01434
#2	108.55	.05902	1.4973	.17458	.14187	-.01217
#3	106.71	.05925	1.4975	.17934	.13947	-.01296
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-a   Acquired: 6/28/2019 15:23:33   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00445	563.08	.00838	1.3889	F 26.035	.00891
Stddev	.00199	.46	.00093	.0020	.045	.00306
%RSD	44.797	.08195	11.105	.14710	.17360	34.351
#1	-.00663	563.61	.00928	1.3904	26.033	.00973
#2	-.00399	562.84	.00844	1.3898	26.082	.01148
#3	-.00273	562.78	.00742	1.3866	25.992	.00553
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass
High Limit					20.000	
Low Limit					-20.000	

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.36283	.30791
Stddev	.00228	.00007
%RSD	.62968	.02205
#1	.36472	.30786
#2	.36029	.30788
#3	.36348	.30799
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-a   Acquired: 6/28/2019 15:23:33   Type: Unk

Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000

User: kerry   Custom ID1:   Custom ID2:   Custom ID3:

Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13957.	159870.	13288.
Stddev	36.	833.	35.
%RSD	.25832	.52119	.26250
#1	13924.	158910.	13294.
#2	13952.	160450.	13251.
#3	13995.	160240.	13320.

Sample Name: 140-15376-a-1-b du   Acquired: 6/28/2019 15:29:05   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00004	599.21	.02645	F 116.46	9.1539	.01086
Stddev	.00015	2.85	.00185	1.32	.0995	.00003
%RSD	343.60	.47606	7.0116	1.1346	1.0875	.23675
#1	-.00004	601.73	.02747	114.93	9.1353	.01084
#2	-.00020	599.79	.02431	117.21	9.2615	.01086
#3	.00011	596.11	.02757	117.24	9.0650	.01089
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	38.579	.00088	.02654	.20879	.04181	88.545
Stddev	.130	.00006	.00013	.00019	.00028	.325
%RSD	.33722	6.3789	.48488	.09053	.66379	.36715
#1	38.613	.00083	.02640	.20862	.04204	88.638
#2	38.689	.00087	.02665	.20875	.04188	88.812
#3	38.435	.00094	.02658	.20899	.04150	88.183
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-b du   Acquired: 6/28/2019 15:29:05   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 277.34	.15888	25.409	1.3259	.00269	59.890
Stddev	.82	.00040	.132	.0034	.00019	.821
%RSD	.29475	.24976	.51908	.25389	6.9043	1.3711
#1	278.15	.15902	25.362	1.3221	.00290	60.584
#2	277.36	.15843	25.558	1.3268	.00261	58.984
#3	276.51	.15919	25.307	1.3287	.00256	60.103
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.00					
Low Limit	-100.00					

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	107.27	.05711	1.5597	.17499	.14231	-.00737
Stddev	1.81	.00002	.0052	.00078	.00200	.00146
%RSD	1.6899	.04054	.33079	.44602	1.4038	19.868
#1	106.98	.05712	1.5629	.17416	.14418	-.00750
#2	109.21	.05713	1.5623	.17571	.14020	-.00584
#3	105.62	.05709	1.5537	.17509	.14255	-.00876
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-b du   Acquired: 6/28/2019 15:29:05   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00763	694.99	.00922	1.3988	F 26.715	.00790
Stddev	.00153	1.50	.00038	.0039	.117	.00080
%RSD	20.063	.21513	4.1624	.28004	.43721	10.097
#1	-.00860	695.15	.00960	1.4033	26.827	.00714
#2	-.00843	696.40	.00883	1.3971	26.725	.00873
#3	-.00587	693.42	.00925	1.3961	26.594	.00782
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass
High Limit					20.000	
Low Limit					-20.000	

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.36723	.30096
Stddev	.00047	.00061
%RSD	.12816	.20229
#1	.36759	.30137
#2	.36741	.30026
#3	.36670	.30125
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-b du   Acquired: 6/28/2019 15:29:05   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	14168.	161520.	13399.
Stddev	58.	89.	166.
%RSD	.40928	.05525	1.2375
#1	14104.	161430.	13346.
#2	14183.	161510.	13265.
#3	14217.	161610.	13584.

Sample Name: 140-15376-a-2-a   Acquired: 6/28/2019 15:34:33   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00027	602.84	.03521	F 116.48	10.620	.01343
Stddev	.00018	.58	.00237	1.24	.148	.00008
%RSD	66.071	.09622	6.7186	1.0658	1.3962	.56663
#1	-.00044	603.47	.03398	116.94	10.754	.01343
#2	-.00009	602.33	.03371	117.43	10.461	.01350
#3	-.00028	602.72	.03793	115.08	10.644	.01335
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	28.367	.00035	.02560	.16881	.06559	93.658
Stddev	.033	.00007	.00018	.00089	.00022	.114
%RSD	.11797	19.698	.71026	.52916	.33266	.12171
#1	28.400	.00043	.02540	.16935	.06567	93.764
#2	28.367	.00030	.02567	.16929	.06575	93.538
#3	28.333	.00031	.02574	.16777	.06534	93.671
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-a Acquired: 6/28/2019 15:34:33 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 306.20	.11976	16.568	.53995	.00249	46.010
Stddev	.27	.00047	.016	.00445	.00011	.464
%RSD	.08866	.39356	.09661	.82455	4.5416	1.0090
#1	306.23	.12014	16.577	.54134	.00237	45.606
#2	305.92	.11991	16.550	.54355	.00251	45.905
#3	306.46	.11923	16.578	.53497	.00259	46.517
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.00					
Low Limit	-100.00					

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	90.587	.08162	1.0910	.21246	.19208	.00043
Stddev	.493	.00028	.0032	.00179	.00359	.00062
%RSD	.54379	.33969	.29817	.84169	1.8674	146.49
#1	90.165	.08140	1.0881	.21288	.19543	-.00012
#2	91.128	.08193	1.0945	.21400	.18830	.00111
#3	90.468	.08153	1.0905	.21050	.19250	.00029
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-a Acquired: 6/28/2019 15:34:33 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00502	F 1217.3	.00776	1.3976	13.442	.01242
Stddev	.00178	12.2	.00061	.0016	.012	.00240
%RSD	35.497	1.0013	7.8399	.11182	.08733	19.359
#1	-.00663	1207.4	.00836	1.3973	13.453	.01451
#2	-.00533	1230.9	.00715	1.3962	13.430	.00979
#3	-.00311	1213.7	.00777	1.3993	13.443	.01294
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.27055	.34301
Stddev	.00211	.00042
%RSD	.78111	.12235
#1	.27094	.34348
#2	.27244	.34285
#3	.26827	.34269
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-2-a Acquired: 6/28/2019 15:34:33 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	14063.	159850.	13085.
Stddev	57.	1635.	87.
%RSD	.40638	1.0227	.66527
#1	14001.	158880.	12986.
#2	14072.	158920.	13148.
#3	14114.	161730.	13121.

Sample Name: 140-15376-a-3-a   Acquired: 6/28/2019 15:40:10   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00044	540.62	.11778	F 112.49	9.5489	.01174
Stddev	.00050	.75	.00118	1.16	.1587	.00012
%RSD	112.47	.13802	1.0032	1.0281	1.6623	1.0558
#1	.00027	539.81	.11899	112.35	9.3724	.01164
#2	.00100	541.28	.11663	113.71	9.6798	.01188
#3	.00006	540.75	.11772	111.41	9.5946	.01170
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	21.835	.00126	.10690	.18738	.08434	129.78
Stddev	.039	.00008	.00016	.00223	.00121	.43
%RSD	.17653	6.0950	.14979	1.1893	1.4375	.32764
#1	21.826	.00135	.10680	.18721	.08427	129.29
#2	21.877	.00122	.10709	.18969	.08559	129.99
#3	21.801	.00122	.10683	.18525	.08317	130.05
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-3-a Acquired: 6/28/2019 15:40:10 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 251.73	.22047	17.239	.94258	.01646	37.437
Stddev	.36	.00128	.082	.01046	.00034	.222
%RSD	.14209	.58211	.47803	1.1092	2.0904	.59249
#1	251.34	.21913	17.151	.93767	.01685	37.536
#2	252.05	.22168	17.315	.95459	.01620	37.183
#3	251.78	.22060	17.251	.93548	.01634	37.593
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.00					
Low Limit	-100.00					

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	69.245	.10906	1.3873	.22550	.19142	-.00706
Stddev	.052	.00032	.0029	.00195	.00125	.00303
%RSD	.07458	.29190	.21011	.86428	.65487	42.957
#1	69.187	.10870	1.3840	.22775	.19132	-.01011
#2	69.262	.10923	1.3897	.22427	.19272	-.00404
#3	69.287	.10926	1.3880	.22448	.19022	-.00704
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-3-a   Acquired: 6/28/2019 15:40:10   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00285	651.08	.00992	1.5383	18.629	.01306
Stddev	.00222	1.92	.00034	.0036	.012	.00205
%RSD	77.935	.29460	3.4061	.23443	.06588	15.706
#1	-.00522	648.87	.00971	1.5342	18.633	.01069
#2	-.00082	652.24	.00975	1.5401	18.640	.01423
#3	-.00250	652.14	.01031	1.5407	18.616	.01426
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.36395	.23483
Stddev	.00405	.00048
%RSD	1.1131	.20294
#1	.36327	.23519
#2	.36830	.23501
#3	.36028	.23429
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-3-a Acquired: 6/28/2019 15:40:10 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	14824.	169500.	13793.
Stddev	18.	1773.	63.
%RSD	.12024	1.0459	.45540
#1	14826.	169000.	13863.
#2	14805.	168020.	13777.
#3	14840.	171460.	13741.

Sample Name: 140-15390-a-1-a Acquired: 6/28/2019 15:45:29 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00034	43.816	.00290	F 125.19	.74957	.00100
Stddev	.00033	.165	.00234	.26	.00145	.00001
%RSD	96.534	.37644	80.947	.21002	.19291	1.3918
#1	.00005	43.803	.00508	125.41	.74850	.00100
#2	.00028	43.986	.00042	125.28	.74898	.00102
#3	.00070	43.657	.00318	124.90	.75121	.00099
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.9053	-.00017	.00976	.05306	.01331	12.209
Stddev	.0120	.00004	.00026	.00024	.00025	.029
%RSD	.63088	21.881	2.6232	.44585	1.8850	.24110
#1	1.9126	-.00021	.00954	.05282	.01339	12.176
#2	1.9119	-.00013	.01004	.05308	.01303	12.220
#3	1.8915	-.00018	.00972	.05329	.01351	12.231
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-a Acquired: 6/28/2019 15:45:29 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.2253	.03771	2.2088	.18434	.00409	-2.7868
Stddev	.0521	.00119	.0200	.00018	.00024	2.8609
%RSD	.83752	3.1581	.90748	.09495	5.9609	102.66
#1	6.2680	.03839	2.2145	.18415	.00381	-1.6874
#2	6.2407	.03633	2.2255	.18449	.00421	-.63857
#3	6.1672	.03840	2.1866	.18439	.00424	-6.0343
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.73395	.01547	.22791	.08990	.10755	.00451
Stddev	.01749	.00035	.00131	.00188	.00299	.00080
%RSD	2.3829	2.2727	.57649	2.0939	2.7757	17.837
#1	.74748	.01512	.22724	.08800	.10567	.00521
#2	.74016	.01546	.22942	.09177	.10599	.00469
#3	.71420	.01582	.22706	.08993	.11099	.00363
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-a Acquired: 6/28/2019 15:45:29 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00215	F 1671.8	-.00191	.13534	6.4984	.00605
Stddev	.00062	11.9	.00062	.00048	.0045	.00297
%RSD	29.026	.71068	32.494	.35785	.06843	49.099
#1	.00150	1661.1	-.00172	.13507	6.4946	.00655
#2	.00221	1684.6	-.00260	.13506	6.5033	.00873
#3	.00274	1669.8	-.00140	.13590	6.4972	.00286
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.06224	.03102
Stddev	.00013	.00008
%RSD	.20150	.27267
#1	.06234	.03109
#2	.06228	.03093
#3	.06210	.03105
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-1-a Acquired: 6/28/2019 15:45:29 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12852.	150000.	11954.
Stddev	49.	778.	168.
%RSD	.38053	.51871	1.4039
#1	12798.	149430.	11818.
#2	12893.	149690.	11902.
#3	12865.	150880.	12141.

Sample Name: 140-15390-a-2-a Acquired: 6/28/2019 15:50:43 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00083	46.348	.01125	F 130.12	1.0331	.00095
Stddev	.00011	.141	.00041	.11	.0004	.00001
%RSD	13.529	.30484	3.6496	.08591	.04054	.87515
#1	.00096	46.409	.01164	130.09	1.0334	.00095
#2	.00081	46.187	.01130	130.02	1.0326	.00095
#3	.00074	46.449	.01082	130.24	1.0333	.00094
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.6919	-.00006	.00840	.05493	.02317	22.608
Stddev	.0119	.00007	.00022	.00026	.00011	.012
%RSD	.32222	128.84	2.5823	.47033	.46641	.05390
#1	3.6867	-.00003	.00816	.05521	.02323	22.621
#2	3.6836	-.00014	.00847	.05469	.02324	22.606
#3	3.7056	-.00000	.00858	.05490	.02305	22.597
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-2-a Acquired: 6/28/2019 15:50:43 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.5872	.09201	3.9323	.18703	.10502	-3.4668
Stddev	.0222	.00015	.0230	.00031	.00006	1.5186
%RSD	.33672	.16818	.58591	.16309	.05982	43.804
#1	6.5626	.09190	3.9343	.18725	.10505	-4.4127
#2	6.5932	.09219	3.9083	.18716	.10495	-1.7152
#3	6.6057	.09195	3.9542	.18668	.10507	-4.2726
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.93517	.01420	.38602	.08596	.09394	.00228
Stddev	.00899	.00052	.00297	.00141	.00346	.00053
%RSD	.96115	3.6789	.76847	1.6390	3.6781	23.334
#1	.94484	.01375	.38878	.08570	.09680	.00290
#2	.92707	.01408	.38639	.08469	.09491	.00204
#3	.93360	.01477	.38288	.08748	.09010	.00192
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-2-a   Acquired: 6/28/2019 15:50:43   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00155	F 1338.6	-.00016	.14811	6.2869	.00175
Stddev	.00149	17.6	.00063	.00054	.0073	.00202
%RSD	96.289	1.3153	398.88	.36191	.11644	115.26
#1	.00300	1324.3	.00039	.14837	6.2817	.00341
#2	.00001	1333.2	-.00001	.14847	6.2836	.00233
#3	.00164	1358.2	-.00085	.14750	6.2952	-.00049
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.09457	.04162
Stddev	.00033	.00006
%RSD	.34743	.13371
#1	.09432	.04156
#2	.09446	.04167
#3	.09494	.04162
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-2-a   Acquired: 6/28/2019 15:50:43   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12811.	149500.	12037.
Stddev	54.	217.	53.
%RSD	.42410	.14521	.43727
#1	12753.	149280.	12004.
#2	12817.	149720.	12098.
#3	12861.	149500.	12010.

Sample Name: 140-15390-a-3-a Acquired: 6/28/2019 15:55:58 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00154	106.54	.01326	F 123.41	1.7801	.00207
Stddev	.00016	.94	.00003	.40	.0191	.00002
%RSD	10.385	.88163	.26031	.32177	1.0704	.93830
#1	.00142	107.61	.01323	123.29	1.8021	.00206
#2	.00172	106.16	.01324	123.86	1.7695	.00209
#3	.00147	105.85	.01329	123.09	1.7688	.00207
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.8447	.00047	.02256	.09644	.03005	37.489
Stddev	.0283	.00004	.00014	.00065	.00020	.361
%RSD	.99344	8.4316	.63419	.67169	.66599	.96332
#1	2.8772	.00050	.02243	.09702	.03023	37.904
#2	2.8310	.00043	.02255	.09656	.03009	37.249
#3	2.8260	.00049	.02271	.09574	.02984	37.313
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-3-a   Acquired: 6/28/2019 15:55:58   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	38.276	.06453	5.8798	.82834	.00407	-1.0998
Stddev	.339	.00113	.0519	.00721	.00007	1.1151
%RSD	.88599	1.7536	.88249	.87041	1.6610	101.39
#1	38.665	.06582	5.9384	.83221	.00415	-1.9004
#2	38.124	.06369	5.8398	.83280	.00401	-1.5728
#3	38.039	.06409	5.8611	.82003	.00407	.17378
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.2417	.03530	.56489	.11207	.09748	-.00290
Stddev	.0506	.00014	.00394	.00257	.00179	.00150
%RSD	1.1935	.39929	.69796	2.2897	1.8370	51.693
#1	4.2984	.03516	.56691	.11113	.09544	-.00224
#2	4.2257	.03544	.56035	.11497	.09879	-.00461
#3	4.2011	.03530	.56742	.11011	.09822	-.00184
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-3-a   Acquired: 6/28/2019 15:55:58   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00284	782.52	.00287	.21622	16.243	.00193
Stddev	.00129	6.46	.00004	.00248	.163	.00367
%RSD	45.405	.82509	1.5636	1.1476	1.0042	190.00
#1	-.00211	789.97	.00282	.21908	16.431	.00038
#2	-.00433	778.77	.00291	.21474	16.164	.00612
#3	-.00208	778.82	.00289	.21483	16.134	-.00071
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.16539	.08752
Stddev	.00131	.00022
%RSD	.78909	.25123
#1	.16618	.08776
#2	.16611	.08747
#3	.16389	.08732
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-3-a Acquired: 6/28/2019 15:55:58 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13682.	158720.	12700.
Stddev	48.	1276.	90.
%RSD	.35090	.80358	.71121
#1	13628.	158010.	12597.
#2	13699.	157970.	12738.
#3	13719.	160190.	12765.

Sample Name: 140-15376-a-1-a SD@5 Acquired: 6/28/2019 16:01:13 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00014	137.08	.00578	28.265	2.0394	.00262
Stddev	.00015	.29	.00164	.103	.0033	.00001
%RSD	110.39	.20958	28.384	.36302	.16370	.46626
#1	.00007	136.96	.00768	28.146	2.0375	.00262
#2	.00031	137.40	.00482	28.330	2.0432	.00261
#3	.00004	136.87	.00486	28.317	2.0374	.00263
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	8.6023	.00011	.00726	.04595	.01291	19.745
Stddev	.0158	.00006	.00011	.00047	.00017	.046
%RSD	.18308	56.701	1.4929	1.0149	1.3265	.23475
#1	8.5937	.00005	.00737	.04641	.01310	19.696
#2	8.5927	.00017	.00724	.04594	.01279	19.749
#3	8.6205	.00010	.00716	.04548	.01283	19.789
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-a SD@5 Acquired: 6/28/2019 16:01:13 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	62.800	.03557	5.7455	.31781	.00064	9.5840
Stddev	.076	.00090	.0439	.00117	.00006	2.4051
%RSD	.12131	2.5297	.76431	.36709	9.5348	25.095
#1	62.850	.03545	5.7017	.31658	.00063	7.5642
#2	62.838	.03652	5.7895	.31891	.00058	8.9431
#3	62.713	.03473	5.7452	.31794	.00070	12.245
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.387	.01357	.33439	.04091	.03000	-.00149
Stddev	.082	.00017	.00093	.00398	.00035	.00066
%RSD	.33682	1.2592	.27864	9.7321	1.1784	44.562
#1	24.402	.01376	.33344	.04540	.03038	-.00188
#2	24.460	.01352	.33530	.03951	.02967	-.00072
#3	24.298	.01343	.33443	.03781	.02996	-.00186
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-a SD@5 Acquired: 6/28/2019 16:01:13 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00075	131.11	.00205	.31052	5.7510	.00080
Stddev	.00175	.38	.00057	.00069	.0068	.00076
%RSD	233.87	.29325	27.822	.22379	.11867	95.309
#1	-.00277	130.78	.00140	.30979	5.7485	-.00008
#2	.00035	131.02	.00244	.31118	5.7588	.00118
#3	.00018	131.53	.00232	.31059	5.7459	.00129
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.08108	.07156
Stddev	.00056	.00004
%RSD	.69629	.05894
#1	.08069	.07159
#2	.08173	.07158
#3	.08082	.07151
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-a SD@5 Acquired: 6/28/2019 16:01:13 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12918.	149840.	11723.
Stddev	50.	619.	46.
%RSD	.38712	.41296	.39207
#1	12862.	149280.	11735.
#2	12935.	149740.	11762.
#3	12958.	150500.	11672.

Sample Name: CCV Acquired: 6/28/2019 16:06:13 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0194	24.494	.50136	F 2.2654	2.0490	2.0752
Stddev	.0018	.072	.00104	.0040	.0046	.0179
%RSD	.17681	.29370	.20772	.17823	.22231	.86275
#1	1.0175	24.411	.50218	2.2642	2.0445	2.0595
#2	1.0195	24.534	.50019	2.2620	2.0488	2.0715
#3	1.0211	24.538	.50171	2.2698	2.0536	2.0947
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
Value				2.0000		
Range				10.500%		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.454	.51700	2.0861	2.0193	2.0347	25.200
Stddev	.183	.00151	.0020	.0139	.0024	.127
%RSD	.35577	.29228	.09727	.68755	.11619	.50443
#1	51.293	.51528	2.0838	2.0050	2.0370	25.055
#2	51.653	.51812	2.0871	2.0201	2.0348	25.255
#3	51.415	.51759	2.0874	2.0327	2.0322	25.290
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV   Acquired: 6/28/2019 16:06:13   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.157	2.0534	51.175	2.0887	2.0811	46.890
Stddev	.073	.0066	.261	.0093	.0015	2.417
%RSD	.14275	.32109	.50982	.44319	.07189	5.1556
#1	51.089	2.0461	50.926	2.0809	2.0796	44.125
#2	51.234	2.0553	51.446	2.0863	2.0826	47.938
#3	51.146	2.0588	51.151	2.0990	2.0810	48.606
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.504	2.0535	2.0420	.52378	.51427	.50138
Stddev	.105	.0051	.0017	.00351	.00288	.00321
%RSD	.20829	.24731	.08274	.67026	.55977	.64062
#1	50.382	2.0477	2.0401	.52153	.51110	.50508
#2	50.557	2.0559	2.0429	.52198	.51500	.49977
#3	50.571	2.0570	2.0432	.52783	.51671	.49930
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/28/2019 16:06:13 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.51121	F 9.4262	2.0670	2.0605	2.0005	1.0590
Stddev	.00094	.0959	.0032	.0075	.0043	.0032
%RSD	.18434	1.0169	.15276	.36400	.21358	.30644
#1	.51135	9.3813	2.0634	2.0533	1.9956	1.0558
#2	.51020	9.5362	2.0694	2.0600	2.0024	1.0588
#3	.51207	9.3610	2.0683	2.0682	2.0035	1.0623
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		2.0000				
Range		10.500%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.0371	2.0742
Stddev	.0077	.0007
%RSD	.37707	.03259
#1	2.0286	2.0736
#2	2.0393	2.0740
#3	2.0435	2.0749
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV   Acquired: 6/28/2019 16:06:13   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12072.	142400.	11179.
Stddev	8.	420.	56.
%RSD	.06830	.29482	.49792
#1	12079.	142830.	11202.
#2	12063.	142370.	11115.
#3	12075.	141990.	11219.

Sample Name: CCB   Acquired: 6/28/2019 16:11:13   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00033	-.01267	-.00131	F .17353	-.00019	.00010
Stddev	.00063	.00449	.00064	.00074	.00013	.00003
%RSD	191.50	35.416	49.148	.42832	67.424	25.928
#1	.00025	-.00750	-.00086	.17295	-.00029	.00013
#2	-.00026	-.01490	-.00204	.17437	-.00005	.00009
#3	.00099	-.01560	-.00101	.17327	-.00023	.00008
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				.10100		
Low Limit				-.10100		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00070	.00002	.00008	-.00020	.00058	-.00172
Stddev	.00195	.00004	.00014	.00013	.00010	.00119
%RSD	279.45	246.66	176.41	66.515	17.141	69.341
#1	.00056	.00001	.00023	-.00005	.00070	-.00059
#2	.00272	.00006	-.00001	-.00030	.00054	-.00297
#3	-.00118	-.00002	.00001	-.00024	.00051	-.00161
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/28/2019 16:11:13 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.24985	.00248	.00191	-.00000	-.00009	-1.2992
Stddev	.01924	.00009	.01112	.00003	.00009	.8686
%RSD	7.7004	3.7252	581.82	3566.8	91.730	66.856
#1	.26426	.00237	-.00649	.00003	.00000	-.57026
#2	.25729	.00253	.01453	-.00000	-.00016	-1.0670
#3	.22800	.00253	-.00230	-.00003	-.00012	-2.2603
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.06701	-.00015	-.00061	.00188	-.00121	-.00068
Stddev	.01018	.00016	.00209	.00232	.00093	.00084
%RSD	15.192	108.72	345.41	123.28	77.261	124.23
#1	.07867	-.00003	.00053	.00278	-.00053	-.00165
#2	.06251	-.00008	-.00302	-.00075	-.00082	-.00019
#3	.05986	-.00034	.00068	.00362	-.00227	-.00019
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/28/2019 16:11:13 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00139	F 5.2859	-.00019	-.00013	-.00044	-.00138
Stddev	.00091	.1313	.00009	.00015	.00044	.00051
%RSD	65.884	2.4843	44.252	112.48	101.93	37.093
#1	-.00073	5.3849	-.00012	.00004	-.00053	-.00139
#2	-.00101	5.3358	-.00029	-.00023	-.00082	-.00086
#3	-.00243	5.1369	-.00017	-.00019	.00005	-.00188
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		.48200				
Low Limit		-.48200				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00011	-.00007
Stddev	.00007	.00005
%RSD	63.206	79.815
#1	.00019	-.00002
#2	.00008	-.00006
#3	.00006	-.00013
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/28/2019 16:11:13 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12228.	143920.	11193.
Stddev	29.	246.	107.
%RSD	.23721	.17121	.96019
#1	12207.	143650.	11200.
#2	12217.	144130.	11082.
#3	12261.	143980.	11297.

Sample Name: 140-15390-a-4-a   Acquired: 6/28/2019 16:16:23   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00055	94.220	.01936	F 128.08	1.4045	.00198
Stddev	.00018	.047	.00160	.74	.0013	.00002
%RSD	32.262	.04988	8.2848	.57554	.09160	1.2311
#1	.00067	94.173	.01752	128.59	1.4043	.00198
#2	.00035	94.220	.02043	127.24	1.4059	.00197
#3	.00063	94.267	.02013	128.41	1.4033	.00201
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.5222	-.00022	.01840	.11177	.03160	34.396
Stddev	.0027	.00005	.00003	.00014	.00019	.068
%RSD	.17657	23.039	.17819	.12321	.61618	.19864
#1	1.5231	-.00023	.01841	.11170	.03182	34.319
#2	1.5192	-.00027	.01843	.11168	.03147	34.423
#3	1.5244	-.00017	.01836	.11193	.03150	34.447
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-a Acquired: 6/28/2019 16:16:23 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	12.984	.06002	4.3830	.53948	.01236	-4.6713
Stddev	.040	.00114	.0173	.00186	.00019	2.0042
%RSD	.30978	1.9044	.39433	.34439	1.5732	42.904
#1	13.026	.06084	4.3644	.53740	.01229	-5.7296
#2	12.980	.05872	4.3858	.54009	.01258	-5.9244
#3	12.946	.06052	4.3987	.54096	.01221	-2.3598
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.3819	.03325	.58991	.09361	.08858	.00214
Stddev	.0050	.00013	.00204	.00206	.00024	.00112
%RSD	.36294	.39619	.34533	2.2054	.26814	52.422
#1	1.3874	.03325	.59073	.09145	.08861	.00214
#2	1.3804	.03338	.59140	.09556	.08880	.00325
#3	1.3777	.03312	.58759	.09381	.08832	.00101
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-a   Acquired: 6/28/2019 16:16:23   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00237	F 1163.6	.00259	.14253	7.0289	.00339
Stddev	.00176	3.9	.00016	.00031	.0059	.00108
%RSD	74.225	.33183	6.1167	.21686	.08320	31.913
#1	-.00337	1162.8	.00251	.14264	7.0230	.00241
#2	-.00341	1160.2	.00248	.14277	7.0346	.00319
#3	-.00034	1167.8	.00277	.14218	7.0292	.00455
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		1000.0				
Low Limit		-1000.0				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.13083	.08202
Stddev	.00020	.00014
%RSD	.15615	.17301
#1	.13060	.08187
#2	.13095	.08202
#3	.13095	.08216
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-4-a Acquired: 6/28/2019 16:16:23 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13085.	153700.	12247.
Stddev	5.	114.	17.
%RSD	.03690	.07430	.13541
#1	13080.	153630.	12238.
#2	13087.	153840.	12266.
#3	13089.	153640.	12236.

Sample Name: mb 30373/11-a @10 Acquired: 6/28/2019 16:21:39 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00010	-.01440	-.00020	15.354	-.00019	.00006
Stddev	.00017	.01115	.00017	.053	.00008	.00002
%RSD	174.32	77.450	86.095	.34603	40.814	32.843
#1	-.00005	-.00663	-.00038	15.302	-.00025	.00008
#2	.00004	-.00939	-.00005	15.408	-.00010	.00005
#3	-.00029	-.02718	-.00016	15.351	-.00021	.00005
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00429	-.00004	.00002	-.00002	.00078	.00301
Stddev	.00053	.00002	.00014	.00020	.00006	.00094
%RSD	12.383	47.801	575.23	1295.0	7.9998	31.189
#1	.00405	-.00003	.00006	.00021	.00073	.00403
#2	.00392	-.00003	.00014	-.00018	.00085	.00280
#3	.00490	-.00006	-.00013	-.00009	.00075	.00219
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 30373/11-a @10 Acquired: 6/28/2019 16:21:39 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.23088	.00128	.00512	.00012	.00014	.40602
Stddev	.00898	.00149	.02032	.00003	.00021	.97705
%RSD	3.8897	116.29	396.82	25.814	150.67	240.64
#1	.24113	.00290	.02121	.00011	.00031	.29268
#2	.22440	.00097	-.01771	.00011	-.00010	1.4348
#3	.22711	-.00003	.01187	.00016	.00021	-.50940
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04913	.00001	.00085	-.00046	-.00013	-.00110
Stddev	.00671	.00017	.00121	.00345	.00123	.00157
%RSD	13.652	1774.3	143.46	757.03	973.87	143.05
#1	.05687	.00011	.00211	.00135	-.00147	.00005
#2	.04531	.00011	.00074	.00172	.00094	-.00046
#3	.04520	-.00019	-.00031	-.00444	.00015	-.00289
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 30373/11-a @10 Acquired: 6/28/2019 16:21:39 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00036	4.0452	-.00001	-.00021	.00081	-.00088
Stddev	.00150	.5126	.00021	.00006	.00039	.00114
%RSD	414.96	12.672	2023.0	28.491	47.311	129.00
#1	.00135	4.5914	.00001	-.00026	.00039	.00033
#2	-.00146	3.9698	-.00023	-.00015	.00114	-.00105
#3	-.00097	3.5745	.00020	-.00021	.00092	-.00192
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00016	.00161
Stddev	.00017	.00006
%RSD	108.73	3.5904
#1	.00003	.00167
#2	.00035	.00160
#3	.00008	.00155
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: mb 30373/11-a @10 Acquired: 6/28/2019 16:21:39 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12422.	146240.	11428.
Stddev	80.	578.	122.
%RSD	.64678	.39525	1.0698
#1	12330.	145710.	11376.
#2	12456.	146150.	11341.
#3	12480.	146860.	11568.

Sample Name: 140-15377-a-1-a @10 Acquired: 6/28/2019 16:26:51 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00011	10.255	.00291	14.775	.16460	.00045
Stddev	.00037	.058	.00059	.001	.00002	.00001
%RSD	345.98	.56213	20.112	.01010	.01450	2.5280
#1	-.00053	10.201	.00242	14.774	.16459	.00045
#2	.00012	10.316	.00356	14.777	.16462	.00046
#3	.00009	10.248	.00275	14.776	.16458	.00044
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	8.9517	-.00006	.00196	.00921	.00307	4.3869
Stddev	.0417	.00010	.00002	.00002	.00029	.0208
%RSD	.46600	173.92	1.0307	.26800	9.4224	.47345
#1	8.9217	-.00016	.00195	.00922	.00295	4.3661
#2	8.9993	.00005	.00198	.00919	.00340	4.4077
#3	8.9341	-.00007	.00195	.00924	.00286	4.3870
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-1-a @10 Acquired: 6/28/2019 16:26:51 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.9546	.00902	.87882	.03956	.00047	-.15405
Stddev	.0270	.00099	.00708	.00013	.00010	1.5002
%RSD	.91419	10.965	.80543	.31873	20.852	973.81
#1	2.9574	.00936	.88646	.03946	.00039	-.39629
#2	2.9801	.00791	.87754	.03970	.00058	-1.5183
#3	2.9263	.00980	.87247	.03952	.00043	1.4525
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.46216	.00351	.05265	.00821	.00587	.00121
Stddev	.00937	.00008	.00111	.00160	.00035	.00030
%RSD	2.0272	2.2502	2.1072	19.459	6.0151	24.959
#1	.46787	.00359	.05319	.00806	.00621	.00154
#2	.46727	.00349	.05338	.00669	.00589	.00117
#3	.45135	.00344	.05137	.00988	.00550	.00094
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-1-a @10 Acquired: 6/28/2019 16:26:51 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00052	85.478	-.00014	.01948	.41801	-.00061
Stddev	.00195	.417	.00030	.00003	.00049	.00075
%RSD	375.03	.48777	207.37	.16294	.11746	123.63
#1	.00163	85.137	-.00047	.01951	.41762	-.00081
#2	-.00173	85.943	.00011	.01945	.41786	.00022
#3	.00166	85.355	-.00007	.01947	.41856	-.00125
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.01679	.01109
Stddev	.00010	.00005
%RSD	.60801	.42178
#1	.01690	.01113
#2	.01669	.01110
#3	.01679	.01104
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-1-a @10 Acquired: 6/28/2019 16:26:51 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12777.	151410.	11683.
Stddev	17.	378.	130.
%RSD	.13366	.24983	1.1156
#1	12760.	151340.	11740.
#2	12777.	151080.	11533.
#3	12794.	151820.	11774.

Sample Name: 140-15377-a-2-a @10 Acquired: 6/28/2019 16:31:57 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00006	4.3719	.00119	14.876	.15844	.00019
Stddev	.00013	.0245	.00062	.016	.00040	.00001
%RSD	227.99	.55998	52.455	.10593	.25163	2.9720
#1	-.00009	4.3992	.00158	14.894	.15884	.00019
#2	.00014	4.3645	.00153	14.865	.15843	.00018
#3	.00012	4.3519	.00047	14.869	.15804	.00019
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.73518	-.00001	.00105	.00380	.00200	1.8003
Stddev	.00416	.00003	.00011	.00015	.00004	.0036
%RSD	.56576	316.98	10.675	3.8527	2.1906	.19724
#1	.73728	-.00004	.00100	.00391	.00204	1.7976
#2	.73787	.00001	.00117	.00386	.00199	1.7990
#3	.73039	.00001	.00097	.00364	.00196	1.8043
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-2-a @10 Acquired: 6/28/2019 16:31:57 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.2385	.00573	.31202	.03187	.00029	.37873
Stddev	.0088	.00053	.00766	.00003	.00009	.62095
%RSD	.39077	9.3094	2.4561	.10440	33.005	163.95
#1	2.2480	.00628	.30375	.03183	.00018	.07418
#2	2.2368	.00521	.31887	.03190	.00032	1.0932
#3	2.2308	.00571	.31344	.03189	.00036	-.03114
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.46978	.00140	.03105	.00731	.00291	.00016
Stddev	.01106	.00007	.00150	.00088	.00158	.00145
%RSD	2.3539	5.1030	4.8248	12.040	54.308	920.87
#1	.48102	.00145	.03076	.00658	.00438	.00032
#2	.45891	.00132	.03268	.00829	.00124	-.00137
#3	.46943	.00144	.02972	.00705	.00309	.00153
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-2-a @10 Acquired: 6/28/2019 16:31:57 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00090	69.746	-.00013	.01589	.22331	-.00111
Stddev	.00013	.178	.00023	.00004	.00103	.00100
%RSD	15.057	.25477	176.27	.26790	.46132	90.102
#1	.00104	69.639	-.00039	.01594	.22438	-.00221
#2	.00077	69.648	.00001	.01587	.22324	-.00083
#3	.00088	69.951	-.00001	.01585	.22232	-.00028
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00819	.00763
Stddev	.00014	.00005
%RSD	1.7071	.58981
#1	.00830	.00768
#2	.00803	.00760
#3	.00824	.00761
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-2-a @10 Acquired: 6/28/2019 16:31:57 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12718.	149480.	11560.
Stddev	68.	504.	28.
%RSD	.53557	.33713	.24374
#1	12640.	148980.	11539.
#2	12748.	149990.	11548.
#3	12766.	149460.	11592.

Sample Name: 140-15376-a-1-a @10 Acquired: 6/28/2019 16:37:04 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML (C)

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00004	70.153	.00342	14.345	1.0325	.00139
Stddev	.00048	.072	.00059	.061	.0036	.00001
%RSD	1107.0	.10313	17.142	.42626	.34934	.98316
#1	-.00027	70.227	.00344	14.408	1.0362	.00139
#2	.00051	70.149	.00399	14.339	1.0323	.00140
#3	-.00037	70.082	.00282	14.287	1.0290	.00137
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.3085	.00001	.00366	.02338	.00601	10.145
Stddev	.0065	.00004	.00006	.00006	.00018	.023
%RSD	.15024	657.01	1.6978	.26983	3.0767	.22974
#1	4.3141	.00003	.00359	.02345	.00618	10.169
#2	4.3099	-.00004	.00369	.02333	.00581	10.144
#3	4.3014	.00003	.00370	.02336	.00603	10.123
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-a @10 Acquired: 6/28/2019 16:37:04 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML (C)

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	31.846	.01944	2.8878	.16192	.00034	3.7463
Stddev	.066	.00146	.0008	.00041	.00016	.6661
%RSD	.20755	7.4869	.02681	.25166	47.917	17.779
#1	31.919	.02019	2.8878	.16235	.00037	4.5130
#2	31.829	.02037	2.8886	.16187	.00016	3.3094
#3	31.790	.01777	2.8870	.16154	.00048	3.4166
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	12.408	.00701	.17227	.02015	.01416	-.00138
Stddev	.018	.00009	.00111	.00074	.00084	.00050
%RSD	.14829	1.3038	.64419	3.6539	5.9352	36.027
#1	12.424	.00712	.17300	.01990	.01362	-.00110
#2	12.410	.00695	.17282	.02097	.01374	-.00196
#3	12.388	.00697	.17099	.01956	.01513	-.00109
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-a @10 Acquired: 6/28/2019 16:37:04 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML (C)

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00084	66.360	.00094	.15813	2.9348	-.00033
Stddev	.00207	.243	.00037	.00079	.0056	.00121
%RSD	245.95	.36575	39.204	.49651	.18947	361.07
#1	.00126	66.432	.00081	.15878	2.9374	-.00090
#2	-.00090	66.559	.00135	.15837	2.9386	.00105
#3	-.00288	66.090	.00065	.15726	2.9285	-.00115
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.04102	.03538
Stddev	.00021	.00011
%RSD	.50062	.31746
#1	.04123	.03551
#2	.04082	.03532
#3	.04100	.03531
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-a @10 Acquired: 6/28/2019 16:37:04 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML (C)

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12789.	150260.	11607.
Stddev	62.	713.	28.
%RSD	.48731	.47426	.23719
#1	12720.	149480.	11597.
#2	12841.	150410.	11586.
#3	12805.	150880.	11638.

Sample Name: 15376-a-1-b du @10 Acquired: 6/28/2019 16:42:07 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00003	70.985	.00287	14.388	1.0676	.00140
Stddev	.00034	.153	.00081	.014	.0018	.00002
%RSD	1120.6	.21550	28.326	.09792	.16366	1.3091
#1	.00021	70.881	.00234	14.384	1.0669	.00138
#2	-.00042	70.914	.00381	14.376	1.0663	.00141
#3	.00012	71.161	.00247	14.404	1.0696	.00141
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.4883	.00006	.00366	.02457	.00521	10.591
Stddev	.0127	.00004	.00014	.00010	.00017	.013
%RSD	.28220	71.352	3.9182	.40797	3.2850	.12126
#1	4.4944	.00009	.00355	.02462	.00506	10.577
#2	4.4738	.00007	.00382	.02463	.00518	10.600
#3	4.4968	.00001	.00362	.02445	.00539	10.598
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-b du @10   Acquired: 6/28/2019 16:42:07   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 1ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	32.782	.01941	2.9693	.15511	.00031	5.6162
Stddev	.071	.00044	.0037	.00020	.00005	.7067
%RSD	.21571	2.2528	.12426	.12901	16.100	12.584
#1	32.797	.01906	2.9694	.15489	.00031	4.8161
#2	32.705	.01990	2.9656	.15528	.00027	5.8768
#3	32.844	.01928	2.9729	.15516	.00037	6.1556
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	12.734	.00693	.18587	.02221	.01590	-.00082
Stddev	.025	.00026	.00145	.00024	.00070	.00025
%RSD	.19297	3.7526	.78149	1.0829	4.3774	31.009
#1	12.716	.00663	.18688	.02227	.01572	-.00054
#2	12.723	.00707	.18653	.02195	.01531	-.00103
#3	12.762	.00710	.18421	.02242	.01667	-.00088
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-b du @10   Acquired: 6/28/2019 16:42:07   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 1ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00151	81.172	.00101	.16194	3.1098	-.00011
Stddev	.00023	.216	.00030	.00037	.0050	.00215
%RSD	15.466	.26655	29.686	.22730	.15973	2048.0
#1	-.00125	81.006	.00111	.16174	3.1092	-.00224
#2	-.00156	81.093	.00124	.16171	3.1052	-.00013
#3	-.00171	81.416	.00067	.16237	3.1151	.00206
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.04304	.03586
Stddev	.00021	.00003
%RSD	.48131	.08727
#1	.04313	.03587
#2	.04318	.03582
#3	.04280	.03588
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 15376-a-1-b du @10 Acquired: 6/28/2019 16:42:07 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12669.	149490.	11575.
Stddev	44.	636.	89.
%RSD	.34893	.42551	.77146
#1	12618.	148760.	11548.
#2	12689.	149770.	11675.
#3	12699.	149930.	11503.

Sample Name: 140-15376-a-2-a @10 Acquired: 6/28/2019 16:47:09 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00024	70.358	.00412	14.335	1.2005	.00165
Stddev	.00038	.055	.00057	.021	.0011	.00002
%RSD	158.00	.07811	13.902	.14458	.09049	.92416
#1	.00014	70.391	.00477	14.358	1.2006	.00165
#2	-.00062	70.388	.00371	14.326	1.1994	.00166
#3	-.00024	70.295	.00387	14.320	1.2015	.00163
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.2304	-.00011	.00329	.01936	.00771	10.999
Stddev	.0029	.00004	.00006	.00013	.00010	.035
%RSD	.08842	33.630	1.6936	.64631	1.2523	.31593
#1	3.2333	-.00007	.00323	.01922	.00768	10.971
#2	3.2302	-.00014	.00330	.01944	.00782	10.988
#3	3.2276	-.00011	.00334	.01943	.00763	11.038
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-a @10   Acquired: 6/28/2019 16:47:09   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 1ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	35.766	.01377	1.8956	.06265	.00028	3.7411
Stddev	.061	.00076	.0163	.00018	.00008	1.2868
%RSD	.16923	5.5179	.86005	.29124	28.562	34.396
#1	35.836	.01402	1.8829	.06256	.00021	4.7761
#2	35.730	.01292	1.9140	.06286	.00036	2.3003
#3	35.732	.01438	1.8899	.06253	.00027	4.1468
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.532	.00966	.13012	.02454	.02003	.00046
Stddev	.009	.00023	.00078	.00134	.00097	.00118
%RSD	.08959	2.4309	.59960	5.4674	4.8229	256.79
#1	10.538	.00949	.12996	.02315	.01913	.00156
#2	10.538	.00992	.12944	.02464	.01991	-.00078
#3	10.521	.00955	.13097	.02583	.02105	.00059
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-a @10 Acquired: 6/28/2019 16:47:09 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00043	140.07	.00066	.15910	1.5377	.00246
Stddev	.00096	.19	.00034	.00011	.0004	.00024
%RSD	222.73	.13659	52.373	.06934	.02406	9.7462
#1	.00057	140.19	.00105	.15909	1.5379	.00260
#2	-.00052	139.85	.00051	.15921	1.5373	.00259
#3	-.00134	140.16	.00041	.15899	1.5380	.00218
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.03134	.04407
Stddev	.00018	.00021
%RSD	.57256	.46662
#1	.03154	.04430
#2	.03119	.04391
#3	.03128	.04400
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-2-a @10 Acquired: 6/28/2019 16:47:09 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12743.	150220.	11647.
Stddev	45.	815.	114.
%RSD	.35409	.54239	.98246
#1	12692.	149740.	11515.
#2	12777.	149750.	11706.
#3	12760.	151160.	11719.

Sample Name: 140-15376-a-3-a @10 Acquired: 6/28/2019 16:52:11 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00015	66.230	.01405	14.216	1.1195	.00151
Stddev	.00020	.150	.00149	.008	.0005	.00002
%RSD	133.60	.22646	10.589	.05474	.04113	1.2729
#1	-.00003	66.074	.01550	14.207	1.1194	.00149
#2	.00011	66.242	.01413	14.221	1.1201	.00153
#3	.00038	66.374	.01253	14.220	1.1192	.00150
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.6220	-.00002	.01354	.02248	.00959	15.944
Stddev	.0061	.00005	.00008	.00008	.00022	.038
%RSD	.23247	278.23	.56673	.34143	2.2858	.23598
#1	2.6150	.00002	.01352	.02240	.00983	15.901
#2	2.6247	-.00001	.01349	.02249	.00953	15.958
#3	2.6263	-.00007	.01363	.02255	.00940	15.972
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-3-a @10 Acquired: 6/28/2019 16:52:11 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	30.716	.02701	2.0610	.11251	.00188	2.7690
Stddev	.035	.00048	.0211	.00034	.00014	1.7366
%RSD	.11272	1.7721	1.0223	.30574	7.4871	62.715
#1	30.688	.02656	2.0467	.11213	.00202	3.8358
#2	30.755	.02696	2.0852	.11280	.00174	3.7061
#3	30.706	.02752	2.0510	.11261	.00189	.76518
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	8.3086	.01350	.16884	.02850	.02372	-.00101
Stddev	.0165	.00009	.00160	.00044	.00087	.00073
%RSD	.19892	.65352	.94529	1.5398	3.6476	72.539
#1	8.3156	.01360	.16988	.02801	.02453	-.00159
#2	8.3205	.01342	.16964	.02862	.02281	-.00019
#3	8.2898	.01349	.16700	.02886	.02381	-.00125
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-3-a @10 Acquired: 6/28/2019 16:52:11 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00085	78.373	.00114	.18276	2.2361	.00050
Stddev	.00039	.191	.00011	.00026	.0037	.00091
%RSD	45.391	.24363	9.2485	.14093	.16486	182.73
#1	-.00130	78.159	.00116	.18280	2.2321	-.00018
#2	-.00060	78.434	.00103	.18299	2.2394	.00154
#3	-.00066	78.526	.00124	.18248	2.2369	.00014
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.04367	.02871
Stddev	.00018	.00007
%RSD	.41338	.22703
#1	.04387	.02868
#2	.04353	.02878
#3	.04362	.02866
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-3-a @10 Acquired: 6/28/2019 16:52:11 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12806.	151340.	11599.
Stddev	36.	572.	11.
%RSD	.28089	.37814	.09865
#1	12766.	151280.	11606.
#2	12820.	150800.	11605.
#3	12834.	151940.	11586.

Sample Name: 140-15390-a-1-a @10 Acquired: 6/28/2019 16:57:13 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00001	4.8618	.00052	14.813	.08047	.00014
Stddev	.00039	.0230	.00146	.035	.00012	.00001
%RSD	7205.7	.47341	282.70	.23462	.15177	7.5183
#1	.00006	4.8412	-.00070	14.843	.08057	.00013
#2	.00035	4.8866	.00012	14.821	.08033	.00015
#3	-.00043	4.8575	.00214	14.775	.08050	.00014
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.21539	-.00008	.00118	.00574	.00162	1.3402
Stddev	.00075	.00006	.00002	.00023	.00027	.0004
%RSD	.34744	81.599	1.9433	4.0817	16.793	.02661
#1	.21516	-.00012	.00120	.00548	.00170	1.3406
#2	.21479	-.00011	.00117	.00593	.00185	1.3399
#3	.21623	-.00000	.00115	.00582	.00132	1.3403
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-a @10 Acquired: 6/28/2019 16:57:13 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.80328	.00538	.24600	.01992	.00042	1.5436
Stddev	.01034	.00105	.00476	.00005	.00008	1.5174
%RSD	1.2874	19.576	1.9359	.23330	18.841	98.301
#1	.80552	.00430	.24840	.01997	.00050	.74022
#2	.79200	.00640	.24909	.01988	.00041	3.2937
#3	.81232	.00546	.24052	.01992	.00034	.59681
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.07846	.00162	.02486	.00843	.00471	.00194
Stddev	.00513	.00018	.00053	.00041	.00015	.00070
%RSD	6.5426	10.842	2.1409	4.8567	3.2316	36.030
#1	.08161	.00163	.02455	.00796	.00457	.00274
#2	.07254	.00144	.02456	.00873	.00468	.00151
#3	.08124	.00179	.02548	.00859	.00487	.00155
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-a @10 Acquired: 6/28/2019 16:57:13 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00014	180.95	-.00032	.01449	.70299	.00110
Stddev	.00043	.41	.00017	.00011	.00240	.00173
%RSD	299.20	.22693	52.470	.78210	.34069	156.46
#1	.00040	180.73	-.00024	.01461	.70335	.00122
#2	.00039	181.43	-.00051	.01446	.70518	-.00068
#3	-.00035	180.70	-.00020	.01439	.70043	.00277
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00674	.00730
Stddev	.00008	.00010
%RSD	1.1173	1.3688
#1	.00683	.00740
#2	.00669	.00720
#3	.00670	.00729
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-1-a @10 Acquired: 6/28/2019 16:57:13 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12543.	148270.	11392.
Stddev	41.	1086.	90.
%RSD	.32949	.73228	.78950
#1	12495.	147020.	11404.
#2	12564.	148800.	11296.
#3	12569.	148990.	11475.

Sample Name: 15376-a-1-a SD@50   Acquired: 6/28/2019 17:02:18   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 2ML (C) TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00006	14.608	.00059	3.0429	.21196	.00030
Stddev	.00048	.029	.00035	.0040	.00031	.00001
%RSD	752.25	.20147	58.282	.13101	.14476	3.0293
#1	-.00047	14.628	.00041	3.0384	.21163	.00031
#2	.00020	14.574	.00099	3.0456	.21202	.00030
#3	.00046	14.623	.00038	3.0449	.21223	.00029
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.88365	-.00005	.00081	.00455	.00134	2.1029
Stddev	.00029	.00004	.00009	.00013	.00016	.0119
%RSD	.03228	89.964	11.476	2.7569	11.656	.56785
#1	.88387	-.00005	.00092	.00462	.00152	2.0911
#2	.88333	-.00000	.00075	.00462	.00126	2.1025
#3	.88375	-.00009	.00076	.00440	.00125	2.1150
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-a SD@50 Acquired: 6/28/2019 17:02:18 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (C) TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.7755	.00517	.60471	.03337	.00004	.33947
Stddev	.0331	.00123	.01326	.00011	.00006	1.9712
%RSD	.48903	23.792	2.1936	.34112	161.84	580.66
#1	6.8046	.00517	.61689	.03324	.00009	.70238
#2	6.7394	.00394	.59058	.03344	-.00003	-1.7879
#3	6.7826	.00640	.60667	.03344	.00005	2.1040
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.5537	.00124	.03605	.00232	.00228	-.00091
Stddev	.0097	.00011	.00070	.00097	.00091	.00057
%RSD	.37800	8.9090	1.9407	42.050	40.042	63.285
#1	2.5520	.00117	.03538	.00144	.00165	-.00135
#2	2.5641	.00119	.03598	.00214	.00333	-.00026
#3	2.5451	.00137	.03678	.00337	.00186	-.00111
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-a SD@50 Acquired: 6/28/2019 17:02:18 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (C) TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00068	16.458	-.00002	.03244	.60546	-.00119
Stddev	.00063	.126	.00017	.00013	.00138	.00182
%RSD	93.263	.76545	984.16	.40081	.22804	153.79
#1	.00068	16.401	-.00021	.03235	.60535	-.00016
#2	.00004	16.371	.00006	.03239	.60414	-.00329
#3	.00130	16.603	.00010	.03259	.60690	-.00010
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00849	.00877
Stddev	.00017	.00005
%RSD	1.9682	.59211
#1	.00831	.00871
#2	.00864	.00879
#3	.00853	.00880
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 15376-a-1-a SD@50 Acquired: 6/28/2019 17:02:18 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (C) TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12673.	149970.	11451.
Stddev	44.	661.	127.
%RSD	.34864	.44047	1.1132
#1	12623.	149250.	11316.
#2	12693.	150110.	11569.
#3	12704.	150550.	11469.

Sample Name: CCV Acquired: 6/28/2019 17:07:24 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0044	24.750	.50221	2.1865	2.0316	2.0845
Stddev	.0024	.009	.00139	.0075	.0063	.0045
%RSD	.23678	.03597	.27775	.34427	.31058	.21437
#1	1.0070	24.754	.50376	2.1927	2.0389	2.0884
#2	1.0039	24.740	.50106	2.1887	2.0280	2.0856
#3	1.0023	24.757	.50180	2.1782	2.0280	2.0796
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.418	.51324	2.0541	2.0229	2.0171	25.204
Stddev	.106	.00078	.0020	.0053	.0064	.013
%RSD	.21063	.15129	.09534	.26339	.31863	.04988
#1	50.346	.51403	2.0563	2.0231	2.0245	25.194
#2	50.367	.51248	2.0525	2.0281	2.0129	25.200
#3	50.540	.51322	2.0536	2.0174	2.0140	25.218
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/28/2019 17:07:24 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.474	2.0189	50.208	2.0695	2.0541	45.911
Stddev	.034	.0076	.167	.0045	.0030	1.058
%RSD	.06763	.37667	.33239	.21918	.14754	2.3047
#1	50.501	2.0274	50.065	2.0733	2.0573	46.193
#2	50.485	2.0129	50.167	2.0708	2.0513	46.799
#3	50.435	2.0164	50.391	2.0645	2.0538	44.740
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.137	2.0556	2.0685	.51370	.51367	.50338
Stddev	.030	.0019	.0050	.00558	.00116	.00144
%RSD	.05893	.09344	.24089	1.0867	.22629	.28568
#1	51.172	2.0571	2.0729	.51795	.51464	.50481
#2	51.118	2.0534	2.0696	.51578	.51399	.50194
#3	51.122	2.0562	2.0631	.50738	.51238	.50340
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/28/2019 17:07:24 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50540	F 5.3388	2.0597	2.0530	2.0049	1.0400
Stddev	.00125	.0233	.0033	.0058	.0050	.0019
%RSD	.24751	.43544	.15856	.28107	.25113	.18008
#1	.50684	5.3129	2.0608	2.0597	2.0079	1.0421
#2	.50474	5.3580	2.0560	2.0499	1.9991	1.0385
#3	.50461	5.3453	2.0622	2.0495	2.0077	1.0394
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		2.0000				
Range		10.500%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.0214	2.0401
Stddev	.0034	.0032
%RSD	.16727	.15460
#1	2.0250	2.0437
#2	2.0209	2.0384
#3	2.0183	2.0381
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 6/28/2019 17:07:24 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12035.	144250.	11131.
Stddev	51.	1434.	49.
%RSD	.41989	.99378	.44382
#1	11982.	143090.	11188.
#2	12041.	143810.	11111.
#3	12083.	145860.	11095.

Sample Name: CCB Acquired: 6/28/2019 17:12:24 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00013	-.01609	-.00030	F .15705	-.00026	.00006
Stddev	.00023	.01920	.00075	.00287	.00003	.00002
%RSD	175.13	119.30	249.02	1.8257	11.331	40.859
#1	-.00023	-.03069	.00036	.15876	-.00023	.00009
#2	.00013	-.02325	-.00015	.15374	-.00028	.00005
#3	-.00030	.00566	-.00112	.15866	-.00028	.00004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				.10100		
Low Limit				-.10100		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00013	-.00005	.00019	-.00028	.00025	-.00126
Stddev	.00257	.00005	.00008	.00024	.00015	.00091
%RSD	1953.4	105.32	42.386	86.209	57.997	72.154
#1	.00035	-.00006	.00027	-.00003	.00019	-.00030
#2	-.00291	.00001	.00012	-.00030	.00014	-.00136
#3	.00217	-.00010	.00016	-.00051	.00042	-.00212
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB   Acquired: 6/28/2019 17:12:24   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.15574	.00142	-.00104	-.00000	.00010	-1.6058
Stddev	.02756	.00110	.01648	.00005	.00020	2.3175
%RSD	17.693	77.688	1582.9	1530.2	197.80	144.32
#1	.18491	.00038	.01000	.00004	.00033	-.51083
#2	.13015	.00257	-.01998	.00000	-.00008	-4.2679
#3	.15215	.00129	.00686	-.00006	.00006	-.03864
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02510	-.00010	-.00121	-.00028	-.00119	.00124
Stddev	.00477	.00016	.00164	.00188	.00114	.00088
%RSD	19.023	160.74	136.44	672.66	95.914	70.806
#1	.02939	-.00015	.00011	-.00209	-.00003	.00026
#2	.02595	.00008	-.00305	.00166	-.00123	.00197
#3	.01996	-.00022	-.00067	-.00041	-.00232	.00150
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/28/2019 17:12:24 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00011	F 3.1619	-.00007	-.00017	.00092	-.00089
Stddev	.00090	.0208	.00061	.00010	.00097	.00199
%RSD	787.59	.65875	914.30	56.866	105.53	223.23
#1	.00027	3.1688	.00015	-.00006	.00048	-.00152
#2	.00053	3.1784	.00041	-.00023	.00203	.00134
#3	-.00115	3.1385	-.00076	-.00022	.00025	-.00249
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		.48200				
Low Limit		-.48200				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00006	-.00012
Stddev	.00035	.00004
%RSD	541.85	34.742
#1	.00010	-.00011
#2	-.00046	-.00017
#3	.00017	-.00009
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB   Acquired: 6/28/2019 17:12:24   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12344.	146180.	11263.
Stddev	84.	1271.	42.
%RSD	.67749	.86934	.37651
#1	12252.	144860.	11214.
#2	12364.	147400.	11286.
#3	12416.	146280.	11289.

Sample Name: 140-15390-a-2-a @10   Acquired: 6/28/2019 17:17:35   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 1ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00030	5.0191	.00119	14.632	.10697	.00012
Stddev	.00007	.0412	.00094	.042	.00004	.00001
%RSD	22.037	.82167	78.757	.28845	.04063	11.664
#1	.00023	4.9715	.00228	14.584	.10695	.00014
#2	.00036	5.0439	.00065	14.649	.10695	.00011
#3	.00031	5.0420	.00065	14.664	.10702	.00011
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.38794	-.00010	.00105	.00546	.00240	2.3879
Stddev	.00268	.00005	.00012	.00029	.00019	.0210
%RSD	.69002	51.404	11.725	5.3474	7.9555	.88040
#1	.38495	-.00009	.00120	.00566	.00226	2.3654
#2	.39012	-.00016	.00097	.00560	.00233	2.3912
#3	.38875	-.00006	.00099	.00512	.00262	2.4071
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-2-a @10 Acquired: 6/28/2019 17:17:35 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.80970	.00995	.41128	.01932	.01089	-2.0682
Stddev	.00646	.00066	.01001	.00009	.00024	1.9547
%RSD	.79758	6.6123	2.4346	.47349	2.1954	94.514
#1	.80756	.00926	.39991	.01929	.01064	-4.1737
#2	.80458	.00999	.41514	.01925	.01112	-.31114
#3	.81696	.01058	.41878	.01942	.01091	-1.7197
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.11917	.00150	.04092	.00980	.00441	.00027
Stddev	.00791	.00005	.00065	.00062	.00074	.00072
%RSD	6.6359	3.3696	1.5824	6.3571	16.858	264.68
#1	.12200	.00148	.04115	.00997	.00449	.00109
#2	.11024	.00146	.04142	.00911	.00511	-.00002
#3	.12528	.00156	.04018	.01033	.00363	-.00026
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-2-a @10 Acquired: 6/28/2019 17:17:35 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00221	141.41	-.00050	.01514	.66532	-.00144
Stddev	.00092	.70	.00018	.00016	.00492	.00044
%RSD	41.434	.49205	35.918	1.0711	.73916	30.648
#1	-.00154	140.63	-.00070	.01500	.65972	-.00117
#2	-.00326	141.63	-.00044	.01532	.66894	-.00121
#3	-.00184	141.97	-.00036	.01509	.66730	-.00196
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.01019	.00580
Stddev	.00037	.00007
%RSD	3.6436	1.2010
#1	.01002	.00574
#2	.00993	.00579
#3	.01061	.00587
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-2-a @10 Acquired: 6/28/2019 17:17:35 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12519.	148230.	11403.
Stddev	23.	662.	43.
%RSD	.18205	.44652	.37293
#1	12522.	148460.	11450.
#2	12540.	148760.	11391.
#3	12495.	147490.	11367.

Sample Name: 140-15390-a-3-a @10 Acquired: 6/28/2019 17:22:42 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00025	12.068	.00078	14.607	.19449	.00027
Stddev	.00043	.016	.00004	.007	.00055	.00000
%RSD	175.25	.13453	4.5099	.04545	.28426	.67607
#1	.00039	12.051	.00075	14.613	.19403	.00027
#2	.00058	12.082	.00077	14.600	.19510	.00027
#3	-.00024	12.072	.00082	14.608	.19433	.00027
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.31672	-.00003	.00273	.01024	.00339	4.2182
Stddev	.00126	.00004	.00014	.00013	.00015	.0042
%RSD	.39825	107.56	4.9708	1.2420	4.5032	.09869
#1	.31737	-.00001	.00275	.01035	.00348	4.2167
#2	.31752	-.00002	.00285	.01010	.00348	4.2229
#3	.31526	-.00008	.00258	.01027	.00321	4.2150
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-3-a @10   Acquired: 6/28/2019 17:22:42   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 1ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.3844	.00832	.66082	.09097	.00038	-.70957
Stddev	.0484	.00091	.00546	.00022	.00004	1.0916
%RSD	1.1030	10.879	.82589	.24224	10.077	153.84
#1	4.3891	.00930	.65730	.09072	.00038	-1.6142
#2	4.4302	.00814	.66710	.09110	.00042	-1.0174
#3	4.3338	.00752	.65805	.09110	.00034	.50291
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.48370	.00393	.06397	.01326	.00909	-.00016
Stddev	.00424	.00013	.00029	.00177	.00048	.00145
%RSD	.87586	3.2227	.46030	13.355	5.3264	888.52
#1	.48230	.00381	.06389	.01383	.00864	.00025
#2	.48845	.00407	.06372	.01128	.00902	.00104
#3	.48033	.00392	.06429	.01468	.00960	-.00178
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-3-a @10 Acquired: 6/28/2019 17:22:42 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00075	86.504	.00027	.02370	1.7877	.00060
Stddev	.00138	.089	.00020	.00013	.0033	.00240
%RSD	185.36	.10263	76.246	.54330	.18605	398.38
#1	-.00132	86.403	.00008	.02361	1.7841	.00000
#2	.00083	86.540	.00025	.02385	1.7884	.00325
#3	-.00175	86.569	.00048	.02365	1.7906	-.00144
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.01825	.01150
Stddev	.00007	.00002
%RSD	.37316	.19822
#1	.01821	.01151
#2	.01823	.01148
#3	.01833	.01152
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-3-a @10 Acquired: 6/28/2019 17:22:42 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12623.	149510.	11439.
Stddev	12.	397.	120.
%RSD	.09354	.26578	1.0456
#1	12609.	149260.	11302.
#2	12632.	149290.	11494.
#3	12627.	149970.	11521.

Sample Name: 140-15390-a-4-a @10   Acquired: 6/28/2019 17:27:48   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 1ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00010	10.305	.00219	14.756	.14853	.00024
Stddev	.00028	.053	.00037	.008	.00050	.00001
%RSD	279.14	.51811	16.957	.05495	.33847	2.3624
#1	.00023	10.267	.00262	14.750	.14845	.00024
#2	-.00022	10.366	.00197	14.753	.14906	.00023
#3	.00029	10.282	.00197	14.766	.14807	.00024
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.17317	-.00004	.00213	.01173	.00407	3.7299
Stddev	.00236	.00003	.00007	.00002	.00022	.0130
%RSD	1.3656	77.698	3.2328	.17366	5.3527	.34831
#1	.17454	-.00001	.00205	.01171	.00427	3.7177
#2	.17454	-.00004	.00216	.01175	.00410	3.7436
#3	.17044	-.00006	.00218	.01173	.00384	3.7284
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-a @10 Acquired: 6/28/2019 17:27:48 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.4949	.00777	.47311	.05746	.00115	.52725
Stddev	.0120	.00131	.00655	.00010	.00009	3.8323
%RSD	.80090	16.827	1.3840	.17107	8.0460	726.84
#1	1.4924	.00670	.46643	.05735	.00104	-3.2125
#2	1.5079	.00738	.47340	.05751	.00122	4.4459
#3	1.4843	.00922	.47951	.05752	.00117	.34837
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.16611	.00363	.06424	.01010	.00537	.00017
Stddev	.00715	.00008	.00213	.00107	.00098	.00173
%RSD	4.3043	2.2067	3.3103	10.618	18.229	986.78
#1	.16718	.00372	.06658	.01133	.00511	-.00179
#2	.17267	.00356	.06370	.00965	.00454	.00087
#3	.15849	.00361	.06243	.00933	.00645	.00144
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-a @10 Acquired: 6/28/2019 17:27:48 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00216	124.57	.00034	.01487	.75390	.00048
Stddev	.00022	.60	.00021	.00003	.00365	.00150
%RSD	10.370	.48222	62.092	.21659	.48359	309.66
#1	-.00217	124.03	.00013	.01485	.75104	.00126
#2	-.00193	125.22	.00055	.01490	.75800	.00143
#3	-.00237	124.45	.00035	.01484	.75264	-.00124
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.01418	.01300
Stddev	.00004	.00009
%RSD	.25068	.67637
#1	.01422	.01309
#2	.01418	.01299
#3	.01415	.01292
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-4-a @10 Acquired: 6/28/2019 17:27:48 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 1ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12615.	148910.	11559.
Stddev	51.	704.	115.
%RSD	.40229	.47258	.99093
#1	12565.	148110.	11609.
#2	12615.	149410.	11428.
#3	12666.	149220.	11640.

Sample Name: CCV Acquired: 6/28/2019 17:32:54 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0056	24.824	.50558	2.1980	2.0361	2.0914
Stddev	.0010	.048	.00115	.0030	.0032	.0140
%RSD	.09820	.19472	.22728	.13451	.15683	.66891
#1	1.0066	24.769	.50610	2.2004	2.0383	2.0757
#2	1.0057	24.858	.50637	2.1947	2.0375	2.1027
#3	1.0046	24.846	.50426	2.1990	2.0324	2.0957
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.569	.51507	2.0596	2.0420	2.0216	25.217
Stddev	.134	.00070	.0032	.0024	.0063	.070
%RSD	.26524	.13657	.15441	.11678	.31113	.27575
#1	50.424	.51587	2.0627	2.0398	2.0279	25.145
#2	50.689	.51456	2.0598	2.0415	2.0216	25.283
#3	50.593	.51478	2.0564	2.0445	2.0153	25.222
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV   Acquired: 6/28/2019 17:32:54   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.808	2.0197	50.141	2.0793	2.0590	47.403
Stddev	.021	.0053	.240	.0030	.0036	1.370
%RSD	.04121	.26471	.47809	.14417	.17642	2.8897
#1	50.831	2.0226	49.914	2.0775	2.0629	46.717
#2	50.805	2.0230	50.392	2.0777	2.0585	46.512
#3	50.789	2.0136	50.118	2.0828	2.0557	48.981
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.466	2.0618	2.0814	.52006	.51483	.50530
Stddev	.113	.0008	.0014	.00146	.00150	.00369
%RSD	.21979	.03720	.06652	.28115	.29229	.72985
#1	51.346	2.0624	2.0816	.51934	.51651	.50856
#2	51.482	2.0620	2.0800	.51909	.51438	.50604
#3	51.571	2.0610	2.0827	.52174	.51361	.50130
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV   Acquired: 6/28/2019 17:32:54   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50638	F 5.2448	2.0632	2.0541	2.0139	1.0415
Stddev	.00154	.0360	.0017	.0039	.0034	.0027
%RSD	.30421	.68574	.08226	.18790	.16802	.25443
#1	.50477	5.2515	2.0651	2.0555	2.0110	1.0427
#2	.50784	5.2770	2.0622	2.0571	2.0132	1.0385
#3	.50652	5.2060	2.0622	2.0498	2.0177	1.0433
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		2.0000				
Range		10.500%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.0354	2.0453
Stddev	.0008	.0046
%RSD	.03840	.22293
#1	2.0350	2.0505
#2	2.0363	2.0436
#3	2.0349	2.0419
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 6/28/2019 17:32:54 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12066.	143870.	11197.
Stddev	40.	511.	50.
%RSD	.32922	.35521	.44632
#1	12021.	143300.	11228.
#2	12096.	144060.	11139.
#3	12079.	144270.	11223.

Sample Name: CCB Acquired: 6/28/2019 17:37:56 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00011	-.00600	-.00067	F .15569	-.00005	.00005
Stddev	.00046	.02435	.00064	.00185	.00011	.00003
%RSD	408.59	405.74	95.275	1.1881	227.33	63.960
#1	-.00025	-.02148	-.00140	.15673	.00007	.00008
#2	-.00048	.02207	-.00037	.15679	-.00008	.00005
#3	.00040	-.01860	-.00023	.15356	-.00014	.00002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				.10100		
Low Limit				-.10100		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00135	-.00001	.00016	-.00015	-.00004	.00025
Stddev	.00127	.00010	.00001	.00033	.00028	.00009
%RSD	94.322	872.00	7.0089	224.68	740.68	37.713
#1	.00282	-.00008	.00015	.00019	.00028	.00028
#2	.00060	-.00005	.00017	-.00046	-.00013	.00032
#3	.00063	.00010	.00016	-.00017	-.00026	.00014
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/28/2019 17:37:56 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.15536	.00196	-.00716	.00001	-.00005	-1.5031
Stddev	.01178	.00073	.00501	.00006	.00009	1.7403
%RSD	7.5793	37.342	69.914	396.89	179.78	115.78
#1	.16463	.00146	-.00195	.00008	.00003	.41180
#2	.15935	.00162	-.01193	-.00004	-.00015	-2.9883
#3	.14211	.00280	-.00761	.00000	-.00003	-1.9329
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02147	.00003	.00012	.00110	-.00076	-.00005
Stddev	.00600	.00009	.00122	.00030	.00032	.00091
%RSD	27.938	290.23	981.99	27.478	41.844	1962.4
#1	.02771	.00007	.00137	.00080	-.00091	.00060
#2	.01574	.00009	-.00107	.00110	-.00097	-.00109
#3	.02095	-.00007	.00008	.00141	-.00039	.00035
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/28/2019 17:37:56 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00100	F 2.9764	-.00007	-.00010	.00001	.00097
Stddev	.00042	.0268	.00003	.00009	.00031	.00242
%RSD	41.961	.90224	41.568	87.037	2326.3	248.98
#1	.00089	2.9454	-.00006	-.00009	.00036	.00301
#2	.00146	2.9913	-.00011	-.00002	-.00021	.00161
#3	.00064	2.9925	-.00005	-.00019	-.00011	-.00171
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		.48200				
Low Limit		-.48200				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00013	.00009
Stddev	.00015	.00008
%RSD	121.82	90.085
#1	.00004	.00003
#2	-.00015	.00017
#3	-.00027	.00005
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/28/2019 17:37:56 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12483.	148230.	11427.
Stddev	45.	822.	16.
%RSD	.35765	.55428	.13755
#1	12448.	147990.	11437.
#2	12467.	147560.	11409.
#3	12533.	149150.	11436.

Sample Name: 140-15376-a-1-aa @2　Acquired: 6/28/2019 17:43:32　Type: Unk
Method: MT0007(v23) HF 022619(v12)　Mode: CONC　Corr. Factor: 1.000000
User: kerry　Custom ID1:　Custom ID2:　Custom ID3:
Comment: 5ML TO 10ML (D)

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00055	266.49	.00689	F 66.146	4.0355	.00387
Stddev	.00029	.77	.00047	.078	.0138	.00001
%RSD	52.778	.28738	6.7851	.11866	.34121	.35276
#1	.00075	265.90	.00681	66.191	4.0300	.00386
#2	.00068	266.22	.00739	66.193	4.0253	.00386
#3	.00022	267.35	.00646	66.056	4.0511	.00389
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.7009	-.00026	.00365	.06804	.00891	22.350
Stddev	.0221	.00009	.00010	.00031	.00005	.072
%RSD	.22735	33.182	2.8339	.44907	.57088	.32067
#1	9.6755	-.00019	.00366	.06777	.00897	22.296
#2	9.7120	-.00036	.00375	.06798	.00890	22.323
#3	9.7152	-.00025	.00354	.06837	.00887	22.431
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-aa @2 Acquired: 6/28/2019 17:43:32 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML (D)

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 122.79	.05482	6.4686	.41329	.00084	30.781
Stddev	.31	.00027	.0244	.00141	.00005	1.499
%RSD	.25175	.49488	.37784	.34072	5.7095	4.8684
#1	122.58	.05513	6.4847	.41176	.00080	32.282
#2	122.65	.05464	6.4405	.41357	.00082	29.285
#3	123.15	.05469	6.4806	.41453	.00089	30.776
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.00					
Low Limit	-100.00					

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	64.640	.01142	.24408	.06250	.04747	-.00453
Stddev	.192	.00010	.00115	.00311	.00050	.00036
%RSD	.29672	.84200	.47305	4.9753	1.0593	8.0358
#1	64.498	.01149	.24515	.06170	.04787	-.00483
#2	64.565	.01131	.24285	.05987	.04691	-.00464
#3	64.858	.01145	.24423	.06593	.04763	-.00412
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-aa @2 Acquired: 6/28/2019 17:43:32 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML (D)

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00381	332.47	.00296	.58026	10.196	.00448
Stddev	.00156	1.17	.00012	.00278	.028	.00019
%RSD	40.999	.35070	4.1552	.47890	.27645	4.1379
#1	-.00357	331.38	.00285	.57912	10.170	.00427
#2	-.00547	332.33	.00309	.57822	10.191	.00460
#3	-.00238	333.70	.00293	.58342	10.226	.00458
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.12032	.04326
Stddev	.00040	.00016
%RSD	.33621	.37273
#1	.11988	.04311
#2	.12039	.04343
#3	.12068	.04325
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-aa @2 Acquired: 6/28/2019 17:43:32 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML (D)

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12824.	151800.	11915.
Stddev	10.	186.	51.
%RSD	.08142	.12228	.42985
#1	12828.	151600.	11925.
#2	12812.	151830.	11961.
#3	12831.	151960.	11860.

Sample Name: 15376-a-1-ab du @2 Acquired: 6/28/2019 17:48:41 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00072	265.54	.00366	F 67.483	4.1002	.00425
Stddev	.00023	.55	.00119	.569	.0185	.00004
%RSD	32.328	.20566	32.404	.84337	.45142	.91090
#1	.00098	266.08	.00240	67.033	4.1159	.00429
#2	.00055	265.57	.00383	68.123	4.1048	.00423
#3	.00063	264.98	.00475	67.294	4.0798	.00422
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	8.7378	-.00036	.00390	.07848	.00912	24.634
Stddev	.0055	.00006	.00015	.00047	.00023	.074
%RSD	.06301	16.941	3.9176	.60386	2.5771	.30012
#1	8.7348	-.00031	.00381	.07890	.00938	24.710
#2	8.7442	-.00043	.00408	.07797	.00894	24.631
#3	8.7345	-.00034	.00381	.07857	.00903	24.562
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-ab du @2 Acquired: 6/28/2019 17:48:41 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 128.50	.06213	6.0290	.40693	.00097	30.565
Stddev	.29	.00085	.0065	.00272	.00027	.922
%RSD	.22341	1.3717	.10760	.66891	27.959	3.0167
#1	128.62	.06311	6.0216	.40998	.00074	30.166
#2	128.71	.06168	6.0339	.40606	.00090	31.620
#3	128.17	.06159	6.0315	.40475	.00126	29.910
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.00					
Low Limit	-100.00					

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	66.599	.01206	.25073	.06526	.05239	-.00485
Stddev	.125	.00014	.00275	.00341	.00105	.00102
%RSD	.18779	1.1845	1.0974	5.2315	2.0093	21.052
#1	66.719	.01222	.25307	.06910	.05267	-.00598
#2	66.607	.01193	.25142	.06256	.05327	-.00461
#3	66.469	.01203	.24770	.06412	.05122	-.00398
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-ab du @2 Acquired: 6/28/2019 17:48:41 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00082	492.37	.00271	.56401	10.571	.00634
Stddev	.00147	1.19	.00089	.00260	.034	.00134
%RSD	179.13	.24175	32.694	.46143	.32031	21.203
#1	-.00206	493.22	.00197	.56627	10.603	.00778
#2	-.00120	492.89	.00247	.56458	10.575	.00613
#3	.00080	491.01	.00370	.56116	10.535	.00512
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.13475	.04310
Stddev	.00068	.00021
%RSD	.50281	.49547
#1	.13549	.04328
#2	.13461	.04315
#3	.13415	.04286
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 15376-a-1-ab du @2 Acquired: 6/28/2019 17:48:41 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12782.	150490.	11818.
Stddev	67.	1487.	46.
%RSD	.52774	.98827	.38509
#1	12707.	149190.	11766.
#2	12802.	150170.	11840.
#3	12837.	152110.	11849.

Sample Name: 140-15376-a-2-n @2 Acquired: 6/28/2019 17:53:48 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00064	298.42	.00372	F 66.760	3.9772	.00504
Stddev	.00052	.87	.00123	.976	.0086	.00004
%RSD	81.737	.29231	33.088	1.4617	.21611	.75643
#1	.00049	297.65	.00274	65.652	3.9765	.00499
#2	.00122	298.26	.00332	67.139	3.9690	.00505
#3	.00021	299.37	.00510	67.490	3.9862	.00507
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.8617	-.00057	.00490	.07724	.01038	25.749
Stddev	.0326	.00001	.00007	.00071	.00006	.089
%RSD	.41464	2.3582	1.5261	.92222	.60430	.34703
#1	7.8341	-.00056	.00492	.07642	.01031	25.693
#2	7.8533	-.00058	.00481	.07763	.01040	25.701
#3	7.8977	-.00057	.00495	.07768	.01044	25.852
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-n @2 Acquired: 6/28/2019 17:53:48 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 123.34	.06182	5.6995	.15165	.00091	36.356
Stddev	.17	.00162	.0504	.00063	.00016	2.766
%RSD	.13436	2.6212	.88430	.41555	17.334	7.6072
#1	123.20	.06025	5.6433	.15093	.00080	35.716
#2	123.29	.06348	5.7407	.15210	.00109	33.966
#3	123.52	.06173	5.7145	.15191	.00083	39.385
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.00					
Low Limit	-100.00					

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	64.758	.02879	.25243	.07387	.05691	.00135
Stddev	.164	.00022	.00187	.00066	.00032	.00102
%RSD	.25256	.77695	.74251	.89450	.57036	75.295
#1	64.636	.02869	.25321	.07342	.05655	.00153
#2	64.694	.02905	.25029	.07463	.05698	.00227
#3	64.944	.02864	.25379	.07355	.05718	.00026
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-n @2 Acquired: 6/28/2019 17:53:48 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00346	646.52	.00340	.53801	7.7417	.00750
Stddev	.00236	2.62	.00034	.00133	.0159	.00218
%RSD	68.280	.40554	10.119	.24700	.20544	29.055
#1	-.00108	643.82	.00301	.53819	7.7342	.00866
#2	-.00581	646.69	.00366	.53660	7.7310	.00498
#3	-.00350	649.06	.00352	.53923	7.7600	.00884
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.12385	.06413
Stddev	.00027	.00008
%RSD	.21890	.12593
#1	.12354	.06418
#2	.12396	.06417
#3	.12405	.06404
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-2-n @2 Acquired: 6/28/2019 17:53:48 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12589.	148220.	11709.
Stddev	44.	510.	83.
%RSD	.35329	.34398	.70650
#1	12549.	148640.	11801.
#2	12583.	147650.	11641.
#3	12637.	148370.	11684.

Sample Name: 140-15376-a-3-n @2   Acquired: 6/28/2019 17:58:54   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00076	255.36	.01056	F 67.715	3.0973	.00326
Stddev	.00018	.46	.00048	.181	.0039	.00003
%RSD	23.768	.18086	4.5899	.26723	.12705	.91942
#1	.00066	254.99	.01097	67.517	3.0985	.00326
#2	.00065	255.88	.01069	67.757	3.1006	.00329
#3	.00097	255.21	.01002	67.872	3.0929	.00323
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.6259	-.00035	.00540	.08924	.01214	34.627
Stddev	.0141	.00002	.00005	.00029	.00028	.111
%RSD	.38909	5.4537	1.0047	.31955	2.2894	.32136
#1	3.6144	-.00033	.00534	.08921	.01244	34.551
#2	3.6416	-.00035	.00544	.08898	.01209	34.755
#3	3.6217	-.00037	.00542	.08954	.01189	34.575
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-3-n @2 Acquired: 6/28/2019 17:58:54 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	96.821	.10734	8.0564	.14353	.00636	23.534
Stddev	.293	.00017	.0316	.00017	.00020	.691
%RSD	.30286	.15679	.39204	.11594	3.0704	2.9354
#1	96.566	.10746	8.0356	.14372	.00648	22.806
#2	97.141	.10742	8.0928	.14345	.00646	24.181
#3	96.755	.10715	8.0410	.14342	.00613	23.615
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.338	.02851	.31580	.05399	.04147	-.00480
Stddev	.076	.00012	.00075	.00243	.00073	.00159
%RSD	.15385	.42874	.23663	4.5093	1.7637	33.181
#1	49.291	.02837	.31619	.05135	.04203	-.00513
#2	49.426	.02859	.31494	.05447	.04175	-.00307
#3	49.298	.02856	.31628	.05615	.04064	-.00620
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-3-n @2 Acquired: 6/28/2019 17:58:54 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00143	383.56	.00392	.41997	12.042	.00335
Stddev	.00116	1.28	.00044	.00070	.007	.00118
%RSD	81.090	.33487	11.158	.16761	.05464	35.163
#1	-.00116	382.29	.00400	.41999	12.035	.00318
#2	-.00269	384.86	.00430	.42067	12.048	.00461
#3	-.00043	383.52	.00344	.41926	12.044	.00227
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.18863	.07154
Stddev	.00028	.00015
%RSD	.14833	.21363
#1	.18890	.07158
#2	.18834	.07137
#3	.18863	.07167
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-3-n @2 Acquired: 6/28/2019 17:58:54 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12480.	147850.	11572.
Stddev	36.	970.	111.
%RSD	.28576	.65596	.96229
#1	12438.	146740.	11636.
#2	12501.	148540.	11443.
#3	12499.	148270.	11637.

Sample Name: 140-15390-a-1-m @2 Acquired: 6/28/2019 18:04:00 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00275	12.364	.00641	F 67.492	2.3494	.00033
Stddev	.00052	.084	.00047	.644	.0030	.00002
%RSD	18.920	.68170	7.3545	.95447	.12723	6.9719
#1	.00311	12.413	.00667	67.361	2.3524	.00035
#2	.00298	12.266	.00669	68.191	2.3495	.00031
#3	.00215	12.412	.00586	66.922	2.3464	.00033
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.74140	-.00048	.00242	.01549	.01845	5.4549
Stddev	.00086	.00007	.00010	.00022	.00018	.0047
%RSD	.11628	13.947	4.1707	1.4030	.97646	.08607
#1	.74214	-.00041	.00231	.01567	.01847	5.4526
#2	.74045	-.00048	.00251	.01525	.01862	5.4602
#3	.74160	-.00055	.00244	.01556	.01826	5.4517
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-m @2 Acquired: 6/28/2019 18:04:00 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.9070	.01436	.34072	.03501	.00056	.79093
Stddev	.0127	.00035	.01363	.00010	.00013	1.3417
%RSD	.66357	2.4292	4.0013	.29707	22.916	169.63
#1	1.9215	.01476	.33334	.03490	.00048	-.47649
#2	1.8980	.01419	.35645	.03510	.00071	.65309
#3	1.9016	.01413	.33237	.03502	.00049	2.1962
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.4570	.00219	.13224	.14863	.14226	.00428
Stddev	.0156	.00012	.00178	.00407	.00088	.00056
%RSD	.24213	5.5390	1.3493	2.7410	.61741	13.042
#1	6.4740	.00233	.13025	.14520	.14125	.00492
#2	6.4433	.00214	.13277	.14755	.14280	.00386
#3	6.4536	.00210	.13370	.15313	.14274	.00407
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-m @2 Acquired: 6/28/2019 18:04:00 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00262	781.35	-.00117	.11352	1.7460	.00223
Stddev	.00115	1.46	.00031	.00016	.0012	.00091
%RSD	44.014	.18732	26.589	.13994	.06942	40.681
#1	.00305	779.79	-.00126	.11349	1.7473	.00255
#2	.00131	781.57	-.00082	.11370	1.7456	.00120
#3	.00349	782.70	-.00142	.11339	1.7450	.00293
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02562	.01153
Stddev	.00036	.00008
%RSD	1.4141	.70804
#1	.02596	.01151
#2	.02567	.01162
#3	.02524	.01146
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-1-m @2 Acquired: 6/28/2019 18:04:00 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12396.	148830.	11553.
Stddev	35.	703.	42.
%RSD	.28024	.47202	.36662
#1	12356.	148030.	11522.
#2	12419.	149330.	11601.
#3	12414.	149130.	11536.

Sample Name: 140-15390-a-2-m @2 Acquired: 6/28/2019 18:09:10 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00018	10.134	.00027	F 67.586	.43169	.00028
Stddev	.00023	.040	.00048	.241	.00091	.00001
%RSD	129.18	.39456	177.47	.35692	.21127	2.8689
#1	.00044	10.091	.00023	67.363	.43067	.00029
#2	-.00001	10.140	.00078	67.842	.43200	.00028
#3	.00011	10.170	-.00019	67.554	.43242	.00027
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.29204	-.00050	.00178	.01062	.00452	2.2135
Stddev	.00141	.00003	.00009	.00023	.00006	.0092
%RSD	.48232	6.0546	5.0925	2.1479	1.4278	.41765
#1	.29287	-.00049	.00176	.01054	.00446	2.2043
#2	.29284	-.00054	.00187	.01088	.00459	2.2134
#3	.29042	-.00048	.00170	.01045	.00451	2.2228
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-2-m @2   Acquired: 6/28/2019 18:09:10   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.5428	.01262	.32743	.02029	.00035	1.7570
Stddev	.0200	.00042	.00592	.00008	.00019	1.5992
%RSD	1.2978	3.3671	1.8073	.39853	53.180	91.017
#1	1.5512	.01245	.33065	.02028	.00016	.66035
#2	1.5199	.01230	.32060	.02021	.00036	1.0188
#3	1.5572	.01310	.33104	.02038	.00053	3.5920
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.5257	.00198	.15015	.05066	.04695	.00473
Stddev	.0166	.00022	.00155	.00203	.00083	.00064
%RSD	.30021	11.373	1.0321	4.0069	1.7651	13.615
#1	5.5090	.00175	.14985	.05080	.04600	.00423
#2	5.5257	.00199	.14878	.04856	.04747	.00451
#3	5.5422	.00220	.15183	.05262	.04740	.00546
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-2-m @2 Acquired: 6/28/2019 18:09:10 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00200	640.03	-.00095	.07808	.94117	.00197
Stddev	.00175	.34	.00026	.00013	.00410	.00184
%RSD	87.178	.05258	27.012	.17028	.43608	93.618
#1	.00123	639.92	-.00123	.07793	.93735	.00376
#2	.00078	639.77	-.00072	.07813	.94064	.00008
#3	.00400	640.41	-.00091	.07818	.94551	.00207
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.01268	.01034
Stddev	.00018	.00003
%RSD	1.4018	.25179
#1	.01252	.01031
#2	.01265	.01035
#3	.01287	.01036
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-2-m @2 Acquired: 6/28/2019 18:09:10 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12390.	149140.	11605.
Stddev	31.	299.	28.
%RSD	.25118	.20040	.24103
#1	12356.	149070.	11594.
#2	12396.	148880.	11584.
#3	12417.	149460.	11637.

Sample Name: 140-15390-a-3-m @2 Acquired: 6/28/2019 18:14:22 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00064	37.082	.00133	F 66.637	.72916	.00043
Stddev	.00017	.072	.00081	.257	.00109	.00000
%RSD	26.233	.19317	61.204	.38513	.15003	.89467
#1	.00051	37.013	.00049	66.655	.73033	.00043
#2	.00083	37.156	.00211	66.371	.72897	.00043
#3	.00059	37.077	.00139	66.884	.72817	.00043
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40960	-.00041	.00227	.02590	.00803	7.1610
Stddev	.00067	.00004	.00004	.00003	.00005	.0166
%RSD	.16471	9.5081	1.6966	.09908	.57616	.23240
#1	.40883	-.00037	.00225	.02592	.00805	7.1428
#2	.41009	-.00041	.00232	.02587	.00798	7.1754
#3	.40989	-.00045	.00225	.02591	.00806	7.1648
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-3-m @2 Acquired: 6/28/2019 18:14:22 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	16.387	.02290	1.2930	.10846	.00050	6.1401
Stddev	.013	.00042	.0220	.00018	.00013	.2415
%RSD	.08197	1.8443	1.7019	.17049	26.978	3.9325
#1	16.395	.02338	1.2741	.10824	.00035	5.9362
#2	16.395	.02263	1.3171	.10854	.00061	6.4068
#3	16.372	.02267	1.2876	.10859	.00054	6.0773
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	11.406	.00583	.10643	.03805	.03189	-.00029
Stddev	.036	.00032	.00101	.00333	.00166	.00069
%RSD	.31266	5.4946	.94904	8.7422	5.1968	240.09
#1	11.436	.00583	.10527	.04186	.03351	-.00104
#2	11.417	.00615	.10712	.03654	.03197	-.00014
#3	11.367	.00551	.10690	.03575	.03020	.00032
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-3-m @2   Acquired: 6/28/2019 18:14:22   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00028	607.24	-.00029	.07952	5.5475	.00036
Stddev	.00083	2.64	.00014	.00016	.0079	.00213
%RSD	299.43	.43544	48.020	.19944	.14172	590.95
#1	.00029	604.22	-.00040	.07970	5.5533	.00052
#2	-.00124	609.14	-.00035	.07941	5.5505	.00240
#3	.00011	608.36	-.00013	.07945	5.5385	-.00185
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.04627	.01804
Stddev	.00016	.00007
%RSD	.33699	.41557
#1	.04612	.01812
#2	.04628	.01797
#3	.04643	.01803
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-3-m @2 Acquired: 6/28/2019 18:14:22 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12531.	150420.	11636.
Stddev	44.	393.	88.
%RSD	.35098	.26099	.75279
#1	12484.	149970.	11731.
#2	12536.	150700.	11619.
#3	12572.	150590.	11558.

Sample Name: 140-15390-a-4-m @2 Acquired: 6/28/2019 18:19:33 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00051	17.399	-.00174	F 66.934	.37986	.00028
Stddev	.00015	.082	.00094	.639	.00136	.00002
%RSD	30.264	.46891	53.829	.95420	.35719	6.6948
#1	.00047	17.350	-.00276	66.399	.37937	.00029
#2	.00038	17.353	-.00154	67.641	.37882	.00028
#3	.00068	17.493	-.00092	66.761	.38139	.00026
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.42216	-.00056	.00179	.01501	.00532	3.6736
Stddev	.00382	.00012	.00008	.00009	.00006	.0320
%RSD	.90387	21.662	4.3853	.58099	1.1168	.87112
#1	.41982	-.00056	.00180	.01510	.00534	3.6563
#2	.42010	-.00068	.00170	.01492	.00536	3.6539
#3	.42656	-.00044	.00186	.01500	.00525	3.7105
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-m @2 Acquired: 6/28/2019 18:19:33 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.6860	.01206	.59740	.03687	.00030	2.9494
Stddev	.0268	.00119	.00966	.00007	.00014	.6135
%RSD	.72747	9.8546	1.6165	.19964	46.899	20.802
#1	3.7169	.01068	.59313	.03680	.00025	2.4777
#2	3.6686	.01275	.59062	.03694	.00047	3.6430
#3	3.6724	.01274	.60846	.03688	.00020	2.7276
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.8961	.00249	.06256	.03051	.02486	.00318
Stddev	.0120	.00021	.00099	.00040	.00024	.00182
%RSD	.15175	8.4053	1.5873	1.3037	.97787	57.144
#1	7.8980	.00252	.06343	.03006	.02487	.00111
#2	7.8833	.00226	.06148	.03081	.02510	.00392
#3	7.9070	.00267	.06278	.03066	.02461	.00451
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-m @2 Acquired: 6/28/2019 18:19:33 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00088	729.73	-.00140	.03730	1.9529	.00157
Stddev	.00058	2.57	.00030	.00017	.0043	.00232
%RSD	66.293	.35182	21.306	.45540	.22174	148.08
#1	.00124	727.87	-.00168	.03714	1.9544	.00336
#2	.00021	728.65	-.00143	.03729	1.9480	.00241
#3	.00119	732.66	-.00108	.03748	1.9563	-.00106
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02073	.01243
Stddev	.00012	.00001
%RSD	.58712	.11121
#1	.02064	.01242
#2	.02069	.01244
#3	.02087	.01245
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-4-m @2　　Acquired: 6/28/2019 18:19:33　　Type: Unk
Method: MT0007(v23) HF 022619(v12)　　Mode: CONC　　Corr. Factor: 1.000000
User: kerry　　Custom ID1:　　Custom ID2:　　Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12351.	149180.	11462.
Stddev	29.	315.	35.
%RSD	.23462	.21115	.30233
#1	12320.	149430.	11423.
#2	12378.	148820.	11473.
#3	12356.	149280.	11489.

Sample Name: 15376-a-1-aa SD@10 Acquired: 6/28/2019 18:24:45 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (D) TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00011	59.401	.00245	14.397	.86054	.00079
Stddev	.00021	.764	.00032	.039	.01025	.00001
%RSD	201.40	1.2856	12.906	.27097	1.1915	1.5267
#1	.00021	60.280	.00209	14.420	.87237	.00078
#2	.00024	59.021	.00268	14.419	.85505	.00080
#3	-.00014	58.902	.00258	14.352	.85420	.00079
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.1207	-.00017	.00091	.01414	.00167	4.8480
Stddev	.0276	.00002	.00004	.00043	.00013	.0568
%RSD	1.3018	13.401	4.0464	3.0516	8.0720	1.1712
#1	2.1525	-.00019	.00095	.01401	.00182	4.9124
#2	2.1040	-.00015	.00091	.01378	.00158	4.8264
#3	2.1055	-.00016	.00088	.01462	.00160	4.8052
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-aa SD@10 Acquired: 6/28/2019 18:24:45 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (D) TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	26.288	.01299	1.4504	.08811	.00022	6.2038
Stddev	.294	.00071	.0163	.00017	.00016	1.2256
%RSD	1.1198	5.4609	1.1235	.19458	73.935	19.756
#1	26.627	.01217	1.4508	.08816	.00024	7.2089
#2	26.101	.01334	1.4664	.08825	.00005	4.8384
#3	26.136	.01346	1.4338	.08791	.00037	6.5641
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	13.786	.00221	.05268	.01454	.00986	.00023
Stddev	.174	.00015	.00162	.00240	.00035	.00017
%RSD	1.2635	6.9151	3.0814	16.534	3.5605	71.082
#1	13.987	.00223	.05379	.01184	.01026	.00006
#2	13.690	.00236	.05082	.01645	.00968	.00026
#3	13.681	.00205	.05343	.01533	.00963	.00039
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-aa SD@10 Acquired: 6/28/2019 18:24:45 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (D) TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00080	73.039	.00059	.12711	2.1722	-.00083
Stddev	.00234	.824	.00039	.00133	.0241	.00209
%RSD	294.19	1.1277	65.689	1.0439	1.1075	252.18
#1	.00259	73.988	.00098	.12856	2.1997	.00146
#2	-.00185	72.628	.00059	.12680	2.1619	-.00131
#3	.00165	72.502	.00021	.12596	2.1550	-.00264
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02578	.01001
Stddev	.00031	.00006
%RSD	1.2092	.61630
#1	.02550	.01000
#2	.02612	.00996
#3	.02571	.01008
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 15376-a-1-aa SD@10 Acquired: 6/28/2019 18:24:45 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (D) TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12379.	149260.	11397.
Stddev	58.	418.	122.
%RSD	.46885	.28026	1.0686
#1	12317.	148770.	11262.
#2	12432.	149490.	11498.
#3	12389.	149510.	11432.

Sample Name: CCV Acquired: 6/28/2019 18:29:49 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.97715	24.414	.49978	2.1038	1.9895	2.1066
Stddev	.00219	.012	.00085	.0022	.0062	.0102
%RSD	.22447	.05050	.16955	.10476	.31081	.48329
#1	.97485	24.408	.49887	2.1015	1.9962	2.1057
#2	.97922	24.406	.49990	2.1059	1.9881	2.1172
#3	.97739	24.429	.50056	2.1040	1.9841	2.0969
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.142	.50238	1.9883	1.9988	1.9683	25.088
Stddev	.043	.00061	.0023	.0057	.0026	.036
%RSD	.08834	.12187	.11599	.28393	.13208	.14309
#1	48.138	.50167	1.9856	1.9923	1.9653	25.124
#2	48.186	.50277	1.9897	2.0024	1.9691	25.086
#3	48.101	.50269	1.9895	2.0018	1.9704	25.052
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/28/2019 18:29:49 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.079	1.9863	48.090	2.0343	1.9976	46.069
Stddev	.085	.0066	.137	.0051	.0027	1.179
%RSD	.17325	.33154	.28407	.24885	.13277	2.5590
#1	49.176	1.9938	47.942	2.0286	1.9946	45.766
#2	49.044	1.9814	48.211	2.0380	1.9996	45.072
#3	49.016	1.9837	48.116	2.0365	1.9987	47.370
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.902	2.0315	2.0821	.49462	.50418	.50279
Stddev	.080	.0028	.0036	.00103	.00142	.00273
%RSD	.15702	.13630	.17327	.20921	.28181	.54314
#1	50.990	2.0286	2.0822	.49546	.50303	.49999
#2	50.883	2.0341	2.0856	.49347	.50375	.50545
#3	50.834	2.0318	2.0784	.49493	.50577	.50293
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV   Acquired: 6/28/2019 18:29:49   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49114	F 5.8866	2.0126	2.0316	1.9677	1.0003
Stddev	.00195	.0391	.0019	.0070	.0060	.0015
%RSD	.39676	.66342	.09249	.34439	.30418	.15182
#1	.49310	5.8814	2.0107	2.0395	1.9740	.99868
#2	.49114	5.9280	2.0144	2.0292	1.9668	1.0007
#3	.48920	5.8505	2.0128	2.0262	1.9621	1.0016
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		2.0000				
Range		10.500%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	1.9655	1.9769
Stddev	.0064	.0012
%RSD	.32726	.05911
#1	1.9583	1.9764
#2	1.9677	1.9783
#3	1.9706	1.9761
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 6/28/2019 18:29:49 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	11921.	144550.	11199.
Stddev	38.	734.	25.
%RSD	.31992	.50812	.22636
#1	11905.	143960.	11220.
#2	11894.	144320.	11171.
#3	11965.	145370.	11207.

Sample Name: CCB　Acquired: 6/28/2019 18:34:51　Type: Unk
Method: MT0007(v23) HF 022619(v12)　Mode: CONC　Corr. Factor: 1.000000
User: kerry　Custom ID1:　Custom ID2:　Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00007	-.01616	-.00071	F .11682	-.00011	-.00002
Stddev	.00018	.02527	.00043	.00207	.00006	.00004
%RSD	268.80	156.32	60.382	1.7678	52.746	174.34
#1	-.00003	-.01056	-.00107	.11913	-.00007	.00002
#2	-.00004	.00583	-.00024	.11516	-.00018	-.00005
#3	.00028	-.04376	-.00081	.11618	-.00009	-.00005
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				.10100		
Low Limit				-.10100		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00234	-.00003	.00008	-.00004	-.00034	-.00077
Stddev	.00132	.00006	.00010	.00031	.00012	.00214
%RSD	56.453	241.33	121.12	731.08	33.662	278.47
#1	-.00188	-.00009	-.00003	-.00036	-.00047	.00170
#2	-.00382	-.00003	.00015	.00025	-.00031	-.00184
#3	-.00130	.00004	.00013	-.00001	-.00025	-.00217
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/28/2019 18:34:51 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.19918	.00091	.01312	.00001	-.00007	-.93601
Stddev	.00847	.00073	.01183	.00002	.00014	1.3625
%RSD	4.2502	79.722	90.138	250.79	197.80	145.57
#1	.19770	.00171	.00097	.00003	.00007	-1.6163
#2	.20828	.00073	.02460	-.00001	-.00008	.63271
#3	.19155	.00029	.01379	-.00000	-.00020	-1.8245
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01936	-.00047	-.00050	.00001	-.00088	.00084
Stddev	.00157	.00025	.00104	.00135	.00127	.00096
%RSD	8.1209	53.078	206.28	21614.	144.26	113.91
#1	.02083	-.00019	-.00135	-.00107	-.00206	-.00023
#2	.01770	-.00066	.00066	.00152	.00047	.00114
#3	.01956	-.00056	-.00082	-.00042	-.00105	.00162
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/28/2019 18:34:51 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00059	F 3.1209	.00005	.00008	.00005	-.00006
Stddev	.00161	.0268	.00006	.00006	.00073	.00080
%RSD	271.66	.85918	111.68	69.521	1511.8	1363.7
#1	-.00118	3.1332	.00003	.00012	-.00008	-.00034
#2	.00123	3.1393	.00012	.00011	-.00061	.00085
#3	-.00182	3.0901	.00001	.00002	.00083	-.00068
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		.48200				
Low Limit		-.48200				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00021	.00001
Stddev	.00009	.00006
%RSD	40.358	1004.7
#1	.00014	.00002
#2	.00031	-.00006
#3	.00019	.00005
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/28/2019 18:34:51 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12142.	146400.	11296.
Stddev	40.	861.	85.
%RSD	.33163	.58843	.75253
#1	12097.	145560.	11357.
#2	12158.	146360.	11199.
#3	12173.	147290.	11332.

Sample Name: 140-15376-a-1-a @2 Acquired: 6/28/2019 18:40:03 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML (E)

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00001	331.76	.01387	F 63.114	4.7526	.00635
Stddev	.00052	.83	.00076	.286	.0859	.00002
%RSD	8666.0	.25001	5.4518	.45314	1.8080	.33029
#1	-.00046	331.37	.01397	63.387	4.8440	.00633
#2	.00056	332.71	.01307	62.817	4.6735	.00634
#3	-.00013	331.19	.01457	63.137	4.7403	.00637
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	19.271	-.00039	.01398	.11029	.02665	47.533
Stddev	.021	.00008	.00009	.00064	.00017	.045
%RSD	.10706	19.881	.63525	.58236	.63019	.09466
#1	19.281	-.00045	.01405	.11095	.02685	47.484
#2	19.284	-.00042	.01388	.10967	.02654	47.572
#3	19.247	-.00030	.01401	.11026	.02658	47.544
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-a @2 Acquired: 6/28/2019 18:40:03 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML (E)

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 144.12	.08349	12.932	.74742	.00164	35.407
Stddev	.38	.00122	.045	.00098	.00019	1.256
%RSD	.26410	1.4584	.34794	.13166	11.493	3.5467
#1	144.00	.08486	12.935	.74853	.00170	36.783
#2	144.55	.08311	12.885	.74705	.00179	35.115
#3	143.81	.08251	12.975	.74667	.00143	34.322
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.00					
Low Limit	-100.00					

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	60.067	.03175	.83265	.09277	.07508	-.01040
Stddev	.170	.00005	.00137	.00284	.00197	.00154
%RSD	.28371	.15441	.16407	3.0575	2.6259	14.839
#1	59.988	.03170	.83367	.09595	.07729	-.01198
#2	60.263	.03179	.83110	.09049	.07445	-.01032
#3	59.951	.03177	.83318	.09189	.07351	-.00890
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-a @2 Acquired: 6/28/2019 18:40:03 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML (E)

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00612	282.37	.00446	.74629	13.793	.00237
Stddev	.00141	.47	.00037	.00145	.036	.00125
%RSD	23.047	.16730	8.2000	.19364	.26243	52.709
#1	-.00622	282.26	.00407	.74540	13.769	.00227
#2	-.00747	282.88	.00479	.74796	13.835	.00117
#3	-.00466	281.95	.00454	.74552	13.776	.00366
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.18994	.16213
Stddev	.00091	.00080
%RSD	.47896	.49334
#1	.19094	.16298
#2	.18916	.16204
#3	.18972	.16138
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-a @2 Acquired: 6/28/2019 18:40:03 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML (E)

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13061.	155880.	12282.
Stddev	51.	572.	86.
%RSD	.38696	.36712	.70298
#1	13003.	155280.	12184.
#2	13086.	155930.	12316.
#3	13094.	156420.	12347.

Sample Name: 15376-a-1-b du @2 Acquired: 6/28/2019 18:45:18 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00049	329.06	.01525	F 61.910	4.8783	.00637
Stddev	.00016	.34	.00065	.345	.0410	.00001
%RSD	32.041	.10244	4.2601	.55670	.84041	.17298
#1	-.00066	328.74	.01470	62.068	4.8409	.00637
#2	-.00035	329.41	.01508	61.515	4.8719	.00637
#3	-.00047	329.04	.01597	62.148	4.9221	.00639
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	19.740	-.00041	.01334	.11368	.02142	48.928
Stddev	.055	.00003	.00010	.00052	.00020	.169
%RSD	.27623	8.2431	.76546	.45911	.95386	.34488
#1	19.677	-.00041	.01339	.11308	.02163	48.736
#2	19.767	-.00038	.01322	.11395	.02122	49.050
#3	19.776	-.00045	.01341	.11402	.02140	48.999
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-b du @2 Acquired: 6/28/2019 18:45:18 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 146.28	.08467	13.090	.70315	.00152	35.120
Stddev	.04	.00107	.085	.00103	.00000	.855
%RSD	.02600	1.2659	.65195	.14641	.12198	2.4333
#1	146.23	.08382	12.992	.70253	.00152	34.141
#2	146.30	.08587	13.133	.70258	.00152	35.506
#3	146.29	.08432	13.146	.70433	.00151	35.713
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.00					
Low Limit	-100.00					

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	60.630	.03116	.87862	.09338	.07683	-.00744
Stddev	.061	.00015	.00229	.00279	.00066	.00279
%RSD	.10070	.46865	.26009	2.9910	.86099	37.449
#1	60.699	.03123	.87684	.09055	.07662	-.00910
#2	60.612	.03099	.87782	.09346	.07630	-.00899
#3	60.581	.03126	.88120	.09614	.07757	-.00422
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-b du @2 Acquired: 6/28/2019 18:45:18 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00528	346.68	.00499	.75143	14.373	.00129
Stddev	.00101	1.05	.00036	.00087	.004	.00073
%RSD	19.053	.30321	7.2934	.11539	.02447	56.411
#1	-.00613	345.50	.00498	.75164	14.377	.00200
#2	-.00417	347.51	.00463	.75217	14.371	.00054
#3	-.00554	347.03	.00536	.75047	14.370	.00133
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.19470	.15672
Stddev	.00018	.00026
%RSD	.09460	.16831
#1	.19491	.15682
#2	.19459	.15692
#3	.19460	.15642
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 15376-a-1-b du @2 Acquired: 6/28/2019 18:45:18 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13042.	156070.	12131.
Stddev	55.	539.	116.
%RSD	.42054	.34538	.95261
#1	12979.	155450.	12251.
#2	13081.	156310.	12123.
#3	13066.	156440.	12020.

Sample Name: 140-15376-a-2-a @2 Acquired: 6/28/2019 18:50:32 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00047	331.74	.01972	F 62.272	5.6149	.00768
Stddev	.00007	.89	.00084	.897	.0936	.00004
%RSD	14.968	.26855	4.2388	1.4409	1.6668	.47612
#1	-.00042	330.71	.02005	61.383	5.5069	.00764
#2	-.00055	332.31	.02035	63.178	5.6685	.00770
#3	-.00044	332.20	.01877	62.255	5.6695	.00771
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	14.362	-.00090	.01315	.09234	.03330	51.560
Stddev	.049	.00005	.00007	.00019	.00042	.313
%RSD	.33940	5.9413	.55452	.20890	1.2571	.60768
#1	14.306	-.00085	.01322	.09255	.03313	51.222
#2	14.393	-.00089	.01308	.09218	.03299	51.615
#3	14.387	-.00095	.01314	.09228	.03377	51.841
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-a @2 Acquired: 6/28/2019 18:50:32 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 161.45	.06271	8.4522	.28892	.00117	26.739
Stddev	.45	.00067	.0825	.00099	.00030	2.155
%RSD	.27591	1.0709	.97627	.34192	25.519	8.0587
#1	160.94	.06210	8.3607	.28783	.00083	24.351
#2	161.60	.06260	8.4750	.28977	.00140	28.537
#3	161.79	.06343	8.5209	.28916	.00126	27.329
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.00					
Low Limit	-100.00					

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.114	.04420	.61870	.11655	.09620	-.00067
Stddev	.153	.00044	.00336	.00272	.00197	.00232
%RSD	.29939	1.0011	.54359	2.3346	2.0505	344.69
#1	50.937	.04439	.61605	.11514	.09540	.00158
#2	51.200	.04452	.61757	.11969	.09844	-.00306
#3	51.204	.04369	.62249	.11483	.09475	-.00054
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-a @2 Acquired: 6/28/2019 18:50:32 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00424	615.38	.00376	.75009	7.1947	.00542
Stddev	.00156	3.12	.00065	.00108	.0039	.00190
%RSD	36.880	.50654	17.339	.14437	.05411	35.034
#1	-.00401	611.80	.00338	.74891	7.1931	.00327
#2	-.00591	616.85	.00339	.75032	7.1991	.00685
#3	-.00280	617.48	.00451	.75104	7.1919	.00615
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.14437	.17985
Stddev	.00035	.00014
%RSD	.24519	.07599
#1	.14408	.17971
#2	.14477	.17987
#3	.14428	.17998
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-2-a @2 Acquired: 6/28/2019 18:50:32 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12886.	154140.	12042.
Stddev	69.	847.	96.
%RSD	.53267	.54921	.79532
#1	12807.	154330.	12150.
#2	12932.	153220.	12009.
#3	12919.	154880.	11968.

Sample Name: 140-15390-a-1-a @2 Acquired: 6/28/2019 18:55:46 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00024	23.070	.00134	F 65.476	.37818	.00047
Stddev	.00023	.160	.00033	.746	.00232	.00001
%RSD	92.582	.69341	24.867	1.1387	.61372	2.6673
#1	-.00002	23.254	.00097	66.117	.38081	.00049
#2	.00035	22.990	.00161	65.652	.37730	.00047
#3	.00039	22.965	.00144	64.658	.37642	.00046
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.92689	-.00064	.00369	.02714	.00604	6.4267
Stddev	.00772	.00001	.00011	.00019	.00028	.0292
%RSD	.83289	1.1875	3.0410	.70339	4.6284	.45375
#1	.93573	-.00065	.00371	.02722	.00590	6.4593
#2	.92346	-.00064	.00378	.02693	.00585	6.4031
#3	.92148	-.00064	.00356	.02728	.00636	6.4177
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-a @2 Acquired: 6/28/2019 18:55:46 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.1476	.02016	1.0881	.09420	.00218	-1.5361
Stddev	.0268	.00050	.0136	.00018	.00025	.7175
%RSD	.85122	2.4855	1.2522	.19553	11.428	46.711
#1	3.1745	.02041	1.1034	.09437	.00231	-1.6760
#2	3.1474	.01958	1.0834	.09422	.00233	-.75889
#3	3.1209	.02048	1.0774	.09400	.00189	-2.1733
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.31960	.00576	.12576	.04618	.04010	.00453
Stddev	.01461	.00010	.00092	.00072	.00126	.00051
%RSD	4.5727	1.8017	.73058	1.5687	3.1539	11.220
#1	.33437	.00584	.12598	.04557	.04141	.00414
#2	.31930	.00579	.12655	.04698	.04000	.00433
#3	.30514	.00564	.12476	.04598	.03889	.00510
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-a @2 Acquired: 6/28/2019 18:55:46 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00085	816.30	-.00080	.06948	3.3229	.00178
Stddev	.00062	4.61	.00033	.00035	.0185	.00128
%RSD	72.858	.56428	41.204	.50988	.55757	71.854
#1	.00118	821.61	-.00111	.06989	3.3438	.00326
#2	.00124	813.43	-.00081	.06929	3.3083	.00113
#3	.00014	813.86	-.00046	.06926	3.3166	.00096
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.03156	.01809
Stddev	.00040	.00011
%RSD	1.2567	.62124
#1	.03149	.01821
#2	.03199	.01799
#3	.03120	.01806
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-1-a @2 Acquired: 6/28/2019 18:55:46 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12423.	149750.	11521.
Stddev	33.	1207.	178.
%RSD	.26391	.80617	1.5438
#1	12392.	148820.	11316.
#2	12421.	149310.	11608.
#3	12457.	151110.	11638.

Sample Name: 140-15390-a-2-a @2 Acquired: 6/28/2019 19:00:56 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00034	24.234	.00578	F 66.864	.51476	.00042
Stddev	.00028	.084	.00015	.332	.00085	.00001
%RSD	82.289	.34714	2.6448	.49702	.16580	3.1960
#1	.00011	24.260	.00578	67.241	.51554	.00042
#2	.00066	24.302	.00593	66.611	.51489	.00040
#3	.00025	24.140	.00562	66.742	.51385	.00043
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.7827	-.00056	.00329	.02844	.01080	11.715
Stddev	.0061	.00009	.00022	.00012	.00016	.043
%RSD	.34248	16.900	6.6580	.43172	1.4467	.36721
#1	1.7789	-.00067	.00320	.02851	.01080	11.714
#2	1.7897	-.00052	.00354	.02830	.01064	11.759
#3	1.7795	-.00049	.00313	.02850	.01095	11.673
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-2-a @2 Acquired: 6/28/2019 19:00:56 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.3195	.04632	1.9115	.09357	.05215	-1.2748
Stddev	.0323	.00050	.0090	.00051	.00023	.4968
%RSD	.97158	1.0779	.46939	.54565	.44529	38.974
#1	3.3236	.04641	1.9035	.09389	.05237	-.75359
#2	3.3494	.04677	1.9097	.09384	.05191	-1.7430
#3	3.2853	.04578	1.9212	.09298	.05216	-1.3278
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.42271	.00582	.20786	.04508	.03780	.00300
Stddev	.00703	.00018	.00101	.00314	.00164	.00136
%RSD	1.6625	3.0292	.48730	6.9603	4.3343	45.260
#1	.42009	.00572	.20890	.04718	.03603	.00381
#2	.43067	.00603	.20781	.04147	.03926	.00143
#3	.41737	.00572	.20687	.04658	.03812	.00376
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-2-a @2 Acquired: 6/28/2019 19:00:56 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00097	652.04	-.00011	.07502	3.2012	.00122
Stddev	.00272	1.32	.00029	.00046	.0093	.00120
%RSD	279.64	.20270	271.08	.61047	.29038	98.095
#1	-.00397	651.50	.00010	.07552	3.2008	.00144
#2	.00133	653.55	-.00045	.07494	3.2106	-.00007
#3	-.00027	651.08	.00002	.07461	3.1921	.00230
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.04783	.02182
Stddev	.00013	.00005
%RSD	.26844	.24176
#1	.04779	.02185
#2	.04773	.02176
#3	.04797	.02186
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-2-a @2 Acquired: 6/28/2019 19:00:56 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12337.	149970.	11516.
Stddev	27.	1587.	100.
%RSD	.21929	1.0580	.87113
#1	12309.	148440.	11513.
#2	12341.	149860.	11418.
#3	12362.	151610.	11618.

Sample Name: 140-15390-a-4-a @2   Acquired: 6/28/2019 19:06:07   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 5ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00018	50.006	.00951	F 67.306	.71747	.00103
Stddev	.00009	.103	.00057	.245	.00028	.00001
%RSD	46.585	.20597	6.0230	.36430	.03913	1.1012
#1	.00025	49.912	.00925	67.385	.71734	.00104
#2	.00022	50.116	.01017	67.031	.71779	.00102
#3	.00009	49.989	.00912	67.502	.71727	.00102
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				40.000		
Low Limit				-40.000		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.75248	-.00059	.00876	.05832	.01519	18.095
Stddev	.00019	.00005	.00004	.00054	.00038	.030
%RSD	.02587	8.8164	.41149	.92858	2.5306	.16520
#1	.75262	-.00064	.00877	.05772	.01474	18.060
#2	.75256	-.00055	.00871	.05850	.01542	18.115
#3	.75225	-.00057	.00878	.05876	.01539	18.108
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-a @2 Acquired: 6/28/2019 19:06:07 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.7442	.03029	2.1904	.27699	.00606	-2.7556
Stddev	.0096	.00075	.0086	.00022	.00024	2.0871
%RSD	.14284	2.4928	.39358	.08077	3.9908	75.740
#1	6.7407	.03035	2.1893	.27715	.00579	-2.2723
#2	6.7368	.02950	2.1996	.27674	.00612	-5.0418
#3	6.7551	.03101	2.1825	.27709	.00626	-.95249
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.69186	.01644	.31841	.04902	.04180	.00146
Stddev	.01157	.00009	.00102	.00193	.00041	.00099
%RSD	1.6716	.53952	.32000	3.9324	.97336	68.001
#1	.69934	.01648	.31928	.04741	.04217	.00220
#2	.69770	.01634	.31729	.04850	.04186	.00033
#3	.67854	.01650	.31868	.05116	.04136	.00183
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-a @2   Acquired: 6/28/2019 19:06:07   Type: Unk
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 5ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00158	573.82	.00153	.07400	3.6460	.00184
Stddev	.00059	1.54	.00061	.00002	.0078	.00156
%RSD	37.640	.26887	39.909	.02666	.21455	84.828
#1	-.00089	572.05	.00130	.07399	3.6390	.00031
#2	-.00192	574.59	.00222	.07399	3.6545	.00177
#3	-.00192	574.84	.00107	.07402	3.6446	.00343
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.06721	.04290
Stddev	.00017	.00011
%RSD	.25842	.26182
#1	.06726	.04298
#2	.06702	.04278
#3	.06735	.04296
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-4-a @2 Acquired: 6/28/2019 19:06:07 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 5ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12473.	151840.	11738.
Stddev	55.	954.	19.
%RSD	.43756	.62837	.16419
#1	12420.	150740.	11760.
#2	12470.	152470.	11732.
#3	12529.	152300.	11723.

Sample Name: 15376-a-1-a SD@10 Acquired: 6/28/2019 19:11:14 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (E) TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00001	71.568	.00327	14.013	1.0253	.00133
Stddev	.00040	.084	.00077	.029	.0018	.00000
%RSD	3667.5	.11786	23.434	.21001	.17729	.37685
#1	.00047	71.645	.00300	14.046	1.0272	.00133
#2	-.00019	71.478	.00413	14.003	1.0252	.00132
#3	-.00024	71.580	.00267	13.989	1.0236	.00133
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.1435	-.00021	.00327	.02368	.00531	10.294
Stddev	.0189	.00001	.00016	.00004	.00019	.024
%RSD	.45526	3.3316	4.8935	.15416	3.6671	.23194
#1	4.1479	-.00022	.00337	.02371	.00547	10.290
#2	4.1229	-.00021	.00336	.02368	.00536	10.273
#3	4.1598	-.00021	.00309	.02364	.00509	10.320
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-a SD@10 Acquired: 6/28/2019 19:11:14 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (E) TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	31.472	.01848	2.7724	.16123	.00042	6.0366
Stddev	.059	.00128	.0171	.00022	.00013	.7021
%RSD	.18750	6.9371	.61563	.13811	31.048	11.630
#1	31.539	.01995	2.7527	.16136	.00047	6.7018
#2	31.433	.01757	2.7811	.16135	.00027	5.3027
#3	31.443	.01792	2.7834	.16097	.00052	6.1053
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	12.779	.00667	.18163	.02061	.01632	-.00098
Stddev	.007	.00006	.00149	.00067	.00046	.00142
%RSD	.05489	.83705	.82091	3.2456	2.8408	145.17
#1	12.774	.00662	.18293	.02077	.01584	.00063
#2	12.787	.00673	.18000	.02118	.01677	-.00207
#3	12.776	.00665	.18196	.01987	.01635	-.00149
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-a SD@10 Acquired: 6/28/2019 19:11:14 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (E) TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00287	63.555	.00066	.15935	2.9473	-.00112
Stddev	.00242	.190	.00035	.00030	.0032	.00189
%RSD	84.334	.29880	53.428	.19013	.10726	168.28
#1	-.00126	63.748	.00066	.15969	2.9487	-.00210
#2	-.00565	63.368	.00030	.15925	2.9496	.00105
#3	-.00169	63.548	.00101	.15910	2.9437	-.00231
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.04114	.03655
Stddev	.00025	.00003
%RSD	.60266	.07653
#1	.04095	.03658
#2	.04142	.03655
#3	.04105	.03652
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 15376-a-1-a SD@10 Acquired: 6/28/2019 19:11:14 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (E) TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12425.	150600.	11481.
Stddev	40.	304.	61.
%RSD	.32226	.20217	.53002
#1	12383.	150250.	11487.
#2	12431.	150770.	11538.
#3	12462.	150780.	11417.

Sample Name: CCV   Acquired: 6/28/2019 19:16:17   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.98563	24.680	.50840	2.1123	1.9985	2.1356
Stddev	.00279	.012	.00219	.0098	.0094	.0112
%RSD	.28339	.04925	.43062	.46476	.47076	.52572
#1	.98885	24.667	.51073	2.1234	2.0083	2.1281
#2	.98387	24.690	.50811	2.1086	1.9977	2.1485
#3	.98416	24.683	.50638	2.1049	1.9895	2.1303
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	47.993	.50869	2.0030	2.0261	1.9934	25.352
Stddev	.100	.00111	.0047	.0002	.0053	.105
%RSD	.20837	.21764	.23419	.01028	.26671	.41461
#1	47.878	.50997	2.0084	2.0263	1.9985	25.408
#2	48.061	.50808	2.0010	2.0259	1.9879	25.417
#3	48.039	.50802	1.9997	2.0262	1.9939	25.231
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/28/2019 19:16:17 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.358	2.0027	47.865	2.0529	2.0170	45.287
Stddev	.012	.0112	.224	.0055	.0020	1.051
%RSD	.02439	.56053	.46727	.26919	.09932	2.3212
#1	49.348	2.0137	47.613	2.0574	2.0192	46.455
#2	49.356	2.0031	48.041	2.0546	2.0165	44.987
#3	49.371	1.9913	47.940	2.0467	2.0153	44.418
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.706	2.0639	2.1343	.49292	.51335	.51376
Stddev	.083	.0043	.0076	.00116	.00188	.00223
%RSD	.16026	.20678	.35648	.23504	.36626	.43450
#1	51.783	2.0687	2.1418	.49353	.51539	.51308
#2	51.717	2.0606	2.1265	.49159	.51169	.51625
#3	51.618	2.0623	2.1346	.49366	.51296	.51195
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV   Acquired: 6/28/2019 19:16:17   Type: QC
Method: MT0007(v23) HF 022619(v12)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49677	F 5.8110	2.0416	2.0508	1.9849	1.0026
Stddev	.00233	.0700	.0032	.0113	.0039	.0023
%RSD	.46895	1.2046	.15660	.55251	.19545	.22774
#1	.49844	5.8464	2.0450	2.0619	1.9886	1.0052
#2	.49776	5.8562	2.0386	2.0513	1.9852	1.0014
#3	.49411	5.7304	2.0411	2.0392	1.9808	1.0011
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		2.0000				
Range		10.500%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	1.9827	1.9931
Stddev	.0009	.0052
%RSD	.04364	.25867
#1	1.9834	1.9987
#2	1.9830	1.9919
#3	1.9817	1.9886
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 6/28/2019 19:16:17 Type: QC
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	11825.	144570.	11170.
Stddev	55.	879.	41.
%RSD	.46285	.60804	.36509
#1	11763.	143640.	11217.
#2	11848.	144680.	11150.
#3	11864.	145390.	11143.

Sample Name: CCB Acquired: 6/28/2019 19:21:18 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00040	-.00898	-.00066	F .10971	-.00015	-.00005
Stddev	.00038	.00524	.00044	.00078	.00017	.00004
%RSD	93.569	58.312	66.250	.70657	111.09	69.873
#1	.00045	-.01481	-.00054	.11016	-.00014	-.00001
#2	.00000	-.00744	-.00114	.10882	.00001	-.00006
#3	.00076	-.00468	-.00029	.11016	-.00032	-.00009
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				.10100		
Low Limit				-.10100		

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00315	-.00006	-.00003	-.00013	-.00049	-.00138
Stddev	.00167	.00003	.00024	.00016	.00026	.00117
%RSD	52.972	57.001	951.23	120.45	52.373	84.775
#1	-.00147	-.00006	.00020	-.00027	-.00053	-.00256
#2	-.00317	-.00009	.00001	-.00018	-.00022	-.00022
#3	-.00481	-.00002	-.00029	.00004	-.00073	-.00137
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/28/2019 19:21:18 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.21728	.00128	.00282	-.00002	-.00000	-1.8318
Stddev	.00824	.00058	.00695	.00002	.00009	2.7077
%RSD	3.7916	45.438	246.59	113.86	3426.7	147.82
#1	.22675	.00077	-.00412	.00000	.00010	-3.6316
#2	.21334	.00115	.00978	-.00002	-.00009	1.2822
#3	.21175	.00191	.00279	-.00005	-.00002	-3.1459
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.01427	-.00027	-.00020	.00141	-.00151	.00068
Stddev	.00305	.00018	.00045	.00129	.00047	.00092
%RSD	21.379	67.181	225.12	91.540	31.064	135.41
#1	-.01114	-.00040	.00017	.00285	-.00205	.00066
#2	-.01723	-.00006	-.00070	.00036	-.00120	-.00023
#3	-.01446	-.00034	-.00007	.00101	-.00128	.00161
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/28/2019 19:21:18 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00174	F 3.0953	.00018	-.00003	.00038	-.00066
Stddev	.00164	.0547	.00023	.00004	.00060	.00042
%RSD	94.479	1.7680	127.72	129.71	156.58	63.560
#1	.00000	3.1519	-.00005	-.00001	.00084	-.00020
#2	-.00326	3.0913	.00041	-.00008	-.00030	-.00077
#3	-.00196	3.0427	.00017	-.00000	.00062	-.00102
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		.48200				
Low Limit		-.48200				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00025	.00004
Stddev	.00015	.00003
%RSD	61.272	65.275
#1	.00042	.00006
#2	.00023	.00004
#3	.00011	.00001
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/28/2019 19:21:18 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12104.	147960.	11178.
Stddev	69.	504.	31.
%RSD	.56984	.34086	.27811
#1	12036.	147470.	11157.
#2	12101.	147920.	11164.
#3	12174.	148480.	11214.

Sample Name: Sample-100 Acquired: 6/28/2019 19:26:30 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00052	-.00912	.00456	.04285	-.00045	-.00014
Stddev	.00014	.00774	.00033	.00373	.00008	.00000
%RSD	26.838	84.861	7.2070	8.7101	18.463	3.2913
#1	.00041	-.00851	.00471	.04647	-.00038	-.00015
#2	.00048	-.01715	.00478	.04308	-.00054	-.00014
#3	.00068	-.00170	.00418	.03901	-.00043	-.00014
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.01458	.00023	.00076	-.00070	-.00238	-.00248
Stddev	.00068	.00002	.00004	.00008	.00012	.00103
%RSD	4.6487	10.471	5.4491	10.950	4.9381	41.687
#1	-.01488	.00025	.00078	-.00079	-.00241	-.00359
#2	-.01380	.00020	.00078	-.00067	-.00225	-.00156
#3	-.01505	.00024	.00071	-.00065	-.00247	-.00227
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: Sample-100 Acquired: 6/28/2019 19:26:30 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.22019	.00182	.00030	-.00009	-.00038	.64662
Stddev	.02185	.00078	.00189	.00002	.00004	.81242
%RSD	9.9246	42.740	638.91	24.034	10.332	125.64
#1	.19643	.00220	.00239	-.00011	-.00034	.13689
#2	.22470	.00233	-.00128	-.00007	-.00042	1.5835
#3	.23943	.00092	-.00022	-.00008	-.00038	.21947
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.02692	-.00007	-.00117	-.00287	-.00139	-.00402
Stddev	.00973	.00002	.00008	.00088	.00075	.00062
%RSD	36.146	30.338	7.1327	30.580	54.083	15.511
#1	-.03609	-.00010	-.00126	-.00186	-.00147	-.00391
#2	-.02797	-.00006	-.00114	-.00338	-.00060	-.00346
#3	-.01671	-.00005	-.00110	-.00338	-.00210	-.00469
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: Sample-100 Acquired: 6/28/2019 19:26:30 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00558	1.1491	-.00108	-.00012	.00026	.00193
Stddev	.00009	.0141	.00010	.00014	.00054	.00061
%RSD	1.5708	1.2313	9.6300	114.13	209.74	31.723
#1	-.00561	1.1348	-.00097	-.00025	.00049	.00255
#2	-.00548	1.1493	-.00117	.00002	.00064	.00191
#3	-.00565	1.1631	-.00109	-.00012	-.00036	.00132
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00029	-.00124
Stddev	.00005	.00001
%RSD	17.188	.74282
#1	-.00030	-.00125
#2	-.00033	-.00124
#3	-.00023	-.00123
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: Sample-100 Acquired: 6/28/2019 19:26:30 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	30782.	321880.	19908.
Stddev	273.	5472.	280.
%RSD	.88802	1.7000	1.4056
#1	30541.	318710.	19598.
#2	31079.	318740.	19987.
#3	30725.	328200.	20141.

Sample Name: Sample-101 Acquired: 6/28/2019 19:31:45 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00048	-.01613	.00494	.03767	-.00049	-.00014
Stddev	.00013	.00199	.00004	.00400	.00003	.00001
%RSD	26.311	12.357	.76034	10.630	5.7900	4.2951
#1	.00039	-.01777	.00492	.04210	-.00048	-.00014
#2	.00062	-.01391	.00498	.03658	-.00047	-.00014
#3	.00042	-.01672	.00492	.03432	-.00052	-.00015
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.01345	.00019	.00076	-.00054	-.00255	-.00353
Stddev	.00057	.00001	.00001	.00011	.00008	.00057
%RSD	4.2731	3.5735	1.0573	21.098	3.2416	16.087
#1	-.01346	.00018	.00075	-.00052	-.00256	-.00419
#2	-.01287	.00019	.00076	-.00044	-.00263	-.00321
#3	-.01402	.00019	.00076	-.00066	-.00246	-.00321
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: Sample-101 Acquired: 6/28/2019 19:31:45 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.24387	.00158	-.00169	-.00007	-.00041	-1.7339
Stddev	.00620	.00054	.00117	.00001	.00003	1.0615
%RSD	2.5414	34.115	68.895	10.106	8.2811	61.218
#1	.24793	.00147	-.00039	-.00007	-.00043	-2.3992
#2	.23674	.00111	-.00263	-.00008	-.00044	-.50978
#3	.24695	.00217	-.00207	-.00007	-.00038	-2.2927
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.02721	.00009	-.00120	-.00298	-.00183	-.00385
Stddev	.00463	.00012	.00034	.00026	.00013	.00051
%RSD	17.026	132.26	28.430	8.6900	7.1113	13.327
#1	-.03174	-.00001	-.00156	-.00294	-.00190	-.00327
#2	-.02742	.00022	-.00115	-.00274	-.00192	-.00426
#3	-.02248	.00006	-.00088	-.00325	-.00168	-.00401
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: Sample-101 Acquired: 6/28/2019 19:31:45 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00595	1.1526	-.00077	-.00000	.00077	.00205
Stddev	.00046	.0247	.00014	.00013	.00030	.00042
%RSD	7.6551	2.1414	17.699	11081.	39.584	20.304
#1	-.00559	1.1344	-.00088	-.00010	.00105	.00227
#2	-.00579	1.1427	-.00062	.00015	.00080	.00232
#3	-.00646	1.1807	-.00082	-.00005	.00045	.00157
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00041	-.00121
Stddev	.00003	.00001
%RSD	7.8107	.64657
#1	-.00037	-.00121
#2	-.00042	-.00122
#3	-.00042	-.00121
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: Sample-101 Acquired: 6/28/2019 19:31:45 Type: Unk
Method: MT0007(v23) HF 022619(v12) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	30613.	327710.	19525.
Stddev	504.	15408.	279.
%RSD	1.6466	4.7018	1.4299
#1	30042.	310490.	19295.
#2	30804.	332440.	19444.
#3	30994.	340200.	19836.

TestAmerica Knoxville ICP Batch Review Checklist – SOPs: KNOX-MT-0007r15, KNOX-MT-0008r7

Chart Name:	F062819	Analysis Batch #:	31255	Analyst:	KNC	Instrument:	DUO

A. Calibration/Instrument Run QC	1st	2nd	Why is data reportable?
1. Instrument calibrated per SOP?	Y	Y	
2. Was CCVL within limits? (90-110%R)	Y	Y	
3. ICV analyzed within limits? (90-110%R and <5.0% RSD)	Y	Y	
4. CCV analyzed at required frequency & within limits? (90 - 110%R and <5.0% RSD)	Y	Y	☐ CCV reanalyzed one time; reanalysis within limits ☐ **CCV - %D, High, Sample ND** (NCM#__________)
5. ICB/CCB analyzed at required frequency & within limits? (Water/Soil/Waste <MDL; Air/SEP/PM10/JN Waste <RL)	Y	Y	☐ CCB reanalyzed one time; reanalysis within limits ☐ **CCB-Out, Samples ND or 10x** (NCM#__________)
6. ICSA/ICSAB run before samples?	Y	Y	
7. ICSAB interferents and analytes within limits? (80 - 120%R)	Y	Y	
8. ICSA criteria for non-interfering elements met? (Water/Soil/Waste ±1x RL) (Air/SEP/PM10/JN ±2x RL if RL ≤10 µg/L; ±1x RL if RL >10 µg/L)	Y	Y	☐ **ICSA->2X MDL; Stock Impurities** (NCM#__________) ICSA 1027 Adjust Pb, Se Reanalyze 1039
9. Reporting Limit Check Standard (CRI) within limits? (Water/Soil/Waste=70-130%R; Air/SEP/PM10/JN Waste=50-150%)	Y	Y	
10. 6010C samples bracketed by RL Check Standards?	Y	Y	
B. Client Sample and QC Sample Results			
1. Were samples with target element concentrations > the linear range (LR) diluted and reanalyzed?	NA	NA	Comments: Dilutions per SEP SOP High Si, Ti (IEC)
2. Were all hits reported from a run with interfering elements < LR?	Y	Y	
3. Elements with F, k or ^ flags reported from a dilution if necessary?	Y	Y	
4. Were sample results reported as ND with elevated RLs?	Y	Y	☒ **RL-Dilution, Matrix** (NCM# 18455) ☒ **RL-Dilution, Interferents** (NCM# 18451, 452) ☐ **RL-Dilution, Matrix, Neg. Analyte** (NCM#__________)
5. Internal standard (IS) response ±30% of ICB IS? *If no, list details:*	Y	Y	☐ **ISTD – Matrix, DL Required** (NCM#__________) ☐ Low IS response. Reanalyzed.
6. Report flag turned to No for Mg-SEP Step1 and Na-Steps 2 & 5?	NA	NA	
7. Calculations checked for error? (Document manual calc in comments.)	Y	Y	
C. Preparation/Matrix QC			
1. Method blank done per prep batch and within limits? (Waters/Soils/Waste < ½ RL; Zn <RL; Air/SEP/PM10/JN Waste <RL)	Y	Y	☐ **Method Blank–Report, ND** (NCM#__________) ☐ **Method Blank – Report, 10X** (NCM#__________) ☐ **Method Blank–Insufficient Sample** (NCM#__________) ☐ See narrative-common analyte in SEP leachate.
2. LCS done per prep batch & within QC limits?	Y	Y	☐ **LCS/LCSD –Insufficient Sample** (NCM#__________) ☐ **LCS/LCSD - %R High** (NCM#__________) ☐ See narrative-SEP LCS within historical limits.
3. MS/MSD or MS/DUP run at required frequency?	Y	Y	☐ **MS/MSD/DUP-Insufficient Volume** (NCM#__________)
4. MS/MSD %R and RPD within QC limits?	N	N	☒ LCS acceptable-matrix effects ☒ Native analyte > 4x spike level
5. DUP RPD within limits?	N	N	☒ **MS/MSD/DUP - %RPD** (NCM# 18447, 48, 49
6. PDS/PDSD run at required frequency & within QC limits? (75-125%R)	N	N	☒ **Post Digestion Spike - %R** (NCM# 18450 ☐ **MS/MSD; High Bias; PDS Acceptable** (NCM#__________)
7. Serial dilution per prep batch & ≤ 10% D for analytes >50X MDL?	N	N	☒ **Serial Dilution - %D** (NCM# 18444, 45, 46

D. TALS Review		1st
TALS Run Log Tab	Date and time match raw data *(to verify TALS import worked properly)*	Y
	Dilutions are correct *(instrument sample ID vs. Dilution column)*	Y
TALS Worksheet Tab	Complete and correct *(Final amount and notes populated where needed)*	Y
TALS Reagents Tab	Complete and correct	Y
TALS QC Links Tab	All samples, standards and QC linked correctly	Y
TALS Sample Results Tab	All unused data are marked Rejected or Accepted	Y
	All reported analytes are marked Primary or Secondary	Y
TALS Batch Information Screen	Documentation is complete	Y
TALS Sample List Tab	TALS Status set to appropriate review level	Y

1st Level Review by: KNC 7-1-19	2nd Level Review by: DKW 7/9/19

Calculation: Ni at 1/20

$$3.7906\ mg/L \times \frac{0.100L}{0.02502\ kg} \times \frac{0.050L}{0.050L} \times \frac{10ml}{5ml} = 30.301\ mg/kg$$

	Pos ID	Rack	Row	Col	Type	Samplename	Comment	Custom ID1	Custom ID2
1	1	1	1	1	QC	CCVL			
2	2	1	2	1	QC	ICV			
3	3	1	3	1	Unk	ICB			
4	4	1	4	1	Unk	ICSA			
5	5	1	5	1	Unk	ICSAB			
6	6	1	6	1	QC	CRI			
7	7	1	7	1	QC	CCV			
8	8	1	8	1	Unk	CCB			
9	9	1	9	1	Unk	mb 140-30853/8-a			
10	10	1	10	1	QC	lcs 140-30853/9-a			
11	11	1	11	1	Unk	mb 140-30763/10-a			
12	12	1	12	1	QC	lcs 140-30763/11-a			
13	13	1	1	2	Unk	140-15376-a-1-ac			
14	14	1	2	2	Unk	140-15376-a-1-ad ms			
15	15	1	3	2	Unk	140-15376-a-1-ae msd			
16	16	1	4	2	Unk	140-15376-a-2-o			
17	17	1	5	2	Unk	140-15376-a-3-o			
18	18	1	6	2	Unk	15376-a-1-ac SD@5	2ML TO 10ML		
19	19	1	7	2	QC	CCV			
20	20	1	8	2	Unk	CCB			
21	21	1	9	2	Unk	140-15377-a-1-o			
22	22	1	10	2	Unk	140-15377-a-2-o			
23	23	1	11	2	Unk	140-15440-a-5-d			
24	24	1	12	2	Unk	140-15440-a-5-e ms			
25	25	1	1	3	Unk	140-15440-a-5-f msd			
26	26	1	2	3	Unk	140-15440-a-5-d PDS			
27	27	1	3	3	Unk	140-15440-a-10-d			
28	28	1	4	3	Unk	140-15440-a-10-e ms			
29	29	1	5	3	Unk	140-15440-a-10-f msd			
30	30	1	6	3	Unk	15440-a-10-d SD@5	2ML TO 10ML		
31	31	1	7	3	QC	CCV			
32	32	1	8	3	Unk	CCB			
33	33	1	9	3	Unk	140-15440-a-10-d PDS			
34	34	1	10	3	Unk	140-15440-a-15-d			
35	35	1	11	3	Unk	140-15440-a-15-e ms			
36	36	1	12	3	Unk	140-15440-a-15-f msd			
37	37	1	1	4	Unk	140-15440-a-15-d PDS			
38	38	1	2	4	QC	CRI			
39	39	1	3	4	QC	CCV			
40	40	1	4	4	Unk	CCB			
41	41	1	5	4	Unk	mb 140-30374/11-b @4	3ML TO 12ML		
42	42	1	6	4	Unk	lcs 30374/12-b @5	2ML TO 10ML		
43	43	1	7	4	Unk	lcsd 30374/13-b @5	2ML TO 10ML		
44	44	1	8	4	Unk	140-15377-a-1-c @4	3ML TO 12ML		
45	45	1	9	4	Unk	140-15377-a-2-c @4	3ML TO 12ML		
46	46	1	10	4	Unk	140-15376-a-1-e @4	3ML TO 12ML (A)		
47	47	1	11	4	Unk	15376-a-1-f du @4	3ML TO 12ML		
48	48	1	12	4	Unk	140-15376-a-2-c @4	3ML TO 12ML		
49	49	1	1	5	Unk	140-15376-a-3-c @4	3ML TO 12ML		
50	50	1	2	5	Unk	15376-a-1-e SD@20	2ML (A) TO 10ML		
51	51	1	3	5	QC	CCV			
52	52	1	4	5	Unk	CCB			
53	53	1	5	5	Unk	140-15390-a-1-c @4	3ML TO 12ML		
54	54	1	6	5	Unk	140-15390-a-2-c @4	3ML TO 12ML		
55	55	1	7	5	Unk	140-15390-a-3-c @4	3ML TO 12ML		
56	56	1	8	5	Unk	140-15390-a-4-c @4	3ML TO 12ML		
57	57	1	9	5	Unk	mb 140-30423/11-b @3	4ML TO 12ML		

	Pos ID	Rack	Row	Col	Type	Samplename	Comment	Custom ID1	Custom ID2
58	58	1	10	5	Unk	lcs 30423/12-b @5	2ML TO 10ML		
59	59	1	11	5	Unk	lcsd 30423/13-b @5	2ML TO 10ML		
60	60	1	12	5	Unk	140-15377-a-1-f @3	4ML TO 12ML		
61	61	2	1	1	Unk	140-15377-a-2-f @3	4ML TO 12ML		
62	62	2	2	1	Unk	140-15376-a-1-k @3	4ML TO 12ML (B)		
63	63	2	3	1	QC	CCV			
64	64	2	4	1	Unk	CCB			
65	65	2	5	1	Unk	15376-a-1-l du @3	4ML TO 12ML		
66	66	2	6	1	Unk	140-15376-a-2-f @3	4ML TO 12ML		
67	67	2	7	1	Unk	140-15376-a-3-f @3	4ML TO 12ML		
68	68	2	8	1	Unk	140-15390-a-1-e @3	4ML TO 12ML		
69	69	2	9	1	Unk	140-15390-a-2-e @3	4ML TO 12ML		
70	70	2	10	1	Unk	140-15390-a-3-e @3	4ML TO 12ML		
71	71	2	11	1	Unk	140-15390-a-4-e @3	4ML TO 12ML		
72	72	2	12	1	Unk	15376-a-1-k SD@15	2ML (B) TO 10ML		
73	73	2	1	2	Unk	140-15390-a-1-e @3	4ML TO 12ML		
74	74	2	2	2	Unk	140-15390-a-4-e @3	4ML TO 12ML		
75	75	2	3	2	QC	CCV			
76	76	2	4	2	Unk	CCB			
77	77	2	5	2	Unk	140-15390-a-1-e @3	4ML TO 12ML		
78	78	2	6	2	Unk	140-15390-a-4-e @3	4ML TO 12ML		
79	79	2	7	2	QC	CCV			
80	80	2	8	2	Unk	CCB			

	Pos ID	Rack	Row	Col	Type	Samplename	Comment	Custom ID1	Custom ID2
1	1	1	1	1	QC	CCVL			
2	2	1	2	1	QC	ICV			
3	3	1	3	1	Unk	ICB			
4	4	1	4	1	Unk	ICSA			
5	5	1	5	1	Unk	ICSAB			
6	6	1	6	1	QC	CRI			
7	7	1	7	1	QC	CCV			
8	8	1	8	1	Unk	CCB			
9	9	1	9	1	Unk	mb 140-30853/8-a			
10	10	1	10	1	QC	lcs 140-30853/9-a			
11	11	1	11	1	Unk	mb 140-30763/10-a			
12	12	1	12	1	QC	lcs 140-30763/11-a			
13	13	1	1	2	Unk	140-15376-a-1-ac			
14	14	1	2	2	Unk	140-15376-a-1-ad ms			
15	15	1	3	2	Unk	140-15376-a-1-ae msd			
16	16	1	4	2	Unk	140-15376-a-2-o			
17	17	1	5	2	Unk	140-15376-a-3-o			
18	18	1	6	2	Unk	15376-a-1-ac SD@5	2ML TO 10ML		
19	19	1	7	2	QC	CCV			
20	20	1	8	2	Unk	CCB			
21	21	1	9	2	Unk	140-15377-a-1-o			
22	22	1	10	2	Unk	140-15377-a-2-o			
23	23	1	11	2	Unk	140-15440-a-5-d			
24	24	1	12	2	Unk	140-15440-a-5-e ms	As ↑ Matrix-PDS		
25	25	1	1	3	Unk	140-15440-a-5-f msd			
26	26	1	2	3	Unk	140-15440-a-5-d PDS			
27	27	1	3	3	Unk	140-15440-a-10-d			
28	28	1	4	3	Unk	140-15440-a-10-e ms			
29	29	1	5	3	Unk	140-15440-a-10-f msd	As-Matrix-PDS		
30	30	1	6	3	Unk	15440-a-10-d SD@5	2ML TO 10ML		
31	31	1	7	3	QC	CCV			
32	32	1	8	3	Unk	CCB			
33	33	1	9	3	Unk	140-15440-a-10-d PDS			
34	34	1	10	3	Unk	140-15440-a-15-d			
35	35	1	11	3	Unk	140-15440-a-15-e ms	Matrix, >4x-PDS		
36	36	1	12	3	Unk	140-15440-a-15-f msd	MS ↑		
37	37	1	1	4	Unk	140-15440-a-15-d PDS	As, Be, Tl ↓ 18256		
38	38	1	2	4	QC	CRI			
39	39	1	3	4	QC	CCV			
40	40	1	4	4	Unk	CCB			
41	41	1	5	4	Unk	mb 140-30374/11-b @4	3ML TO 12ML		
42	42	1	6	4	Unk	lcs 30374/12-b @5	2ML TO 10ML		
43	43	1	7	4	Unk	lcsd 30374/13-b @5	2ML TO 10ML		
44	44	1	8	4	Unk	140-15377-a-1-c @4	3ML TO 12ML		
45	45	1	9	4	Unk	140-15377-a-2-c @4	3ML TO 12ML		
46	46	1	10	4	Unk	140-15376-a-1-e @4	3ML TO 12ML (A)		
47	47	1	11	4	Unk	15376-a-1-f du @4	3ML TO 12ML		
48	48	1	12	4	Unk	140-15376-a-2-c @4	3ML TO 12ML		
49	49	1	1	5	Unk	140-15376-a-3-c @4	3ML TO 12ML		
50	50	1	2	5	Unk	15376-a-1-e SD@20	2ML (A) TO 10ML		
51	51	1	3	5	QC	CCV			
52	52	1	4	5	Unk	CCB			
53	53	1	5	5	Unk	140-15390-a-1-c @4	3ML TO 12ML		
54	54	1	6	5	Unk	140-15390-a-2-c @4	3ML TO 12ML		
55	55	1	7	5	Unk	140-15390-a-3-c @4	3ML TO 12ML		
56	56	1	8	5	Unk	140-15390-a-4-c @4	3ML TO 12ML		
57	57	1	9	5	Unk	mb 140-30423/11-b @3	4ML TO 12ML		

	Pos ID	Rack	Row	Col	Type	Samplename	Comment	Custom ID1	Custom ID2
58	58	1	10	5	Unk	lcs 30423/12-b @5	2ML TO 10ML	9866	
59	59	1	11	5	Unk	lcsd 30423/13-b @5	2ML TO 10ML		
60	60	1	12	5	Unk	140-15377-a-1-f @3	4ML TO 12ML		
61	61	2	1	1	Unk	140-15377-a-2-f @3	4ML TO 12ML		
62	62	2	2	1	Unk	140-15376-a-1-k @3	4ML TO 12ML (B)		
63	63	2	3	1	QC	CCV			
64	64	2	4	1	Unk	CCB			
65	65	2	5	1	Unk	15376-a-1-l du @3	4ML TO 12ML		
66	66	2	6	1	Unk	140-15376-a-2-f @3	4ML TO 12ML		
67	67	2	7	1	Unk	140-15376-a-3-f @3	4ML TO 12ML		
68	68	2	8	1	Unk	140-15390-a-1-e @3 0	4ML TO 12ML	IS 3710R-Rev✓	Rev✓
69	69	2	9	1	Unk	140-15390-a-2-e @3	4ML TO 12ML		
70	70	2	10	1	Unk	140-15390-a-3-e @3	4ML TO 12ML		
71	71	2	11	1	Unk	140-15390-a-4-e @3 0	4ML TO 12ML	IS 2243, 3710A,	3710R-Rev✓
72	72	2	12	1	Unk	15376-a-1-k SD@15	2ML (B) TO 10ML		
73	73	2	1	2	QC	CCV	IS. Rev✓		
74	74	2	2	2	Unk	CCB			
75	75	2	3	2	Unk	Sample-70			
76	76	2	4	2	Unk	Sample-71			
77	77	2	5	2	Unk	Sample-72			

F061719
SI- 104
CCVL- 360
ICV- 95
ICSA- 26
ICSAB-31
CRI- 408
CCV- 393
Y- 57
H_2O- 18

3050B = B, Cr, P, Pb
JN = Ag, As, Ba, Be, Cd, Cr, Pb, Sb, Tl
SEP = Al, As, Ba, Be, Co, Fe, Li, Mn, Mo,
377 376 Sb, Se, Tl
390 Al, Co, Fe, Li, Mn, Mo, Tl

TestAmerica Knoxville
Data Quality Checks

Sequence: F061719

Internal Standard

ICB Internal Standard	Area	LCL	UCL
Y_2243A	6799	4759	8839
Y_3710A	222368	155658	289079
Y_3710R	18031	12622	23440

17-Jun-19 05:44 PM 83 Samples were checked against the internal standard area limits

17-Jun-19 05:44 PM 5 Sample(s) failed the limits check

Date/Time	Lab ID	Problem
17-Jun-19 04:09 PM	140-15390-a-1-e @3	Y_3710R - Response was 12592 (69% Recovery)! LCL = 12622 UCL = 23440
17-Jun-19 04:25 PM	140-15390-a-4-e @3	Y_2243A - Response was 0 (0% Recovery)! LCL = 4759 UCL = 8839
17-Jun-19 04:25 PM	140-15390-a-4-e @3	Y_3710A - Response was 0 (0% Recovery)! LCL = 155658 UCL = 289079
17-Jun-19 04:40 PM	140-15390-a-1-e @3	Y_2243A - Response was 0 (0% Recovery)! LCL = 4759 UCL = 8839
17-Jun-19 04:40 PM	140-15390-a-1-e @3	Y_3710A - Response was 70259 (31% Recovery)! LCL = 155658 UCL = 289079
17-Jun-19 04:40 PM	140-15390-a-1-e @3	Y_3710R - Response was 12503 (69% Recovery)! LCL = 12622 UCL = 23440
17-Jun-19 04:45 PM	140-15390-a-4-e @3	Y_3710A - Response was 0 (0% Recovery)! LCL = 155658 UCL = 289079
17-Jun-19 04:45 PM	140-15390-a-4-e @3	Y_3710R - Response was 0 (0% Recovery)! LCL = 12622 UCL = 23440
17-Jun-19 04:51 PM	CCV	Y_3710A - Response was 123618 (55% Recovery)! LCL = 155658 UCL = 289079
17-Jun-19 04:51 PM	CCV	Y_3710R - Response was 0 (0% Recovery)! LCL = 12622 UCL = 23440

ReAnalyzed KWC 6-17-19

Relative Standard Deviation

17-Jun-19 5:44 PM 11 Standards were checked against the CCV/ICV %RSD limits

17-Jun-19 5:44 PM 2 Standard(s) failed the limits check

Date/Time	Lab ID	Problem
17-Jun-19 04:51:09 PM	CCV	Ag3280A - RSD is 171.9% >= Limit of 5.0%
17-Jun-19 04:51:09 PM	CCV	Al3082R - RSD is 69.6% >= Limit of 5.0%
17-Jun-19 04:51:09 PM	CCV	As1890A - RSD is 26.8% >= Limit of 5.0%
17-Jun-19 04:51:09 PM	CCV	B_2496A - RSD is 174.4% >= Limit of 5.0%
17-Jun-19 04:51:09 PM	CCV	Be3130A - RSD is 173.2% >= Limit of 5.0%
17-Jun-19 04:51:09 PM	CCV	bP - RSD is 165.6% >= Limit of 5.0%
17-Jun-19 04:51:09 PM	CCV	Cr2677A - RSD is 181.6% >= Limit of 5.0%
17-Jun-19 04:51:09 PM	CCV	Cu3247A - RSD is 296.1% >= Limit of 5.0%
17-Jun-19 04:51:09 PM	CCV	Mn2576A - RSD is 153.0% >= Limit of 5.0%
17-Jun-19 04:51:09 PM	CCV	Mo2020A - RSD is 10.0% >= Limit of 5.0%
17-Jun-19 04:51:09 PM	CCV	Ni2316A - RSD is 12.4% >= Limit of 5.0%
17-Jun-19 04:51:09 PM	CCV	P 1782A - RSD is 5.0% >= Limit of 5.0%
17-Jun-19 04:51:09 PM	CCV	Sb2068A - RSD is 311.8% >= Limit of 5.0%
17-Jun-19 04:51:09 PM	CCV	Si2506R - RSD is 6.7% >= Limit of 5.0%
17-Jun-19 04:51:09 PM	CCV	Sn1899A - RSD is 5.3% >= Limit of 5.0%
17-Jun-19 04:51:09 PM	CCV	Tl1908A - RSD is 88.4% >= Limit of 5.0%
17-Jun-19 04:51:09 PM	CCV	V 2924A - RSD is 173.9% >= Limit of 5.0%
17-Jun-19 04:51:09 PM	CCV	Y 2243A - RSD is 61.2% >= Limit of 5.0%
17-Jun-19 04:51:09 PM	CCV	Y_3710A - RSD is 91.1% >= Limit of 5.0%
17-Jun-19 05:30:44 PM	CCV	Be3130A - RSD is 36.8% >= Limit of 5.0%

ReAnalyzed KWC 6-17-19

3050B Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-30853

Analyst: Collins, Kerry N

Batch Open: 6/16/2019 8:00:00AM
Batch End: 6/16/2019 4:00:00PM

Preparation, Metals

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	140-15376-A-1 (6010B)	N/A (140-15376-1)	Solid	0.542 g	50 mL	6/20/19	18_Days	4		140-15376-A-1-AC
2	140-15376-A-1~MS (6010B)	N/A (140-15376-1)	Solid	0.512 g	50 mL	6/20/19	18_Days	4		140-15376-A-1-AD MS
3	140-15376-A-1~MSD (6010B)	N/A (140-15376-1)	Solid	0.514 g	50 mL	6/20/19	18_Days	4		140-15376-A-1-AE MSD
4	140-15376-A-2 (6010B)	N/A (140-15376-1)	Solid	0.535 g	50 mL	6/20/19	18_Days	4		140-15376-A-2-O
5	140-15376-A-3 (6010B)	N/A (140-15376-1)	Solid	0.534 g	50 mL	6/20/19	18_Days	4		140-15376-A-3-O
6	140-15377-A-1 (6010B)	N/A (140-15377-1)	Solid	0.529 g	50 mL	6/20/19	18_Days	4		140-15377-A-1-O
7	140-15377-A-2 (6010B)	N/A (140-15377-1)	Solid	0.542 g	50 mL	6/20/19	18_Days	4		140-15377-A-2-O
8	MB~140-30853/8 N/A	N/A		0.500 g	50 mL	N/A	N/A	N/A		MB 140-30853/8-A
9	LCS~140-30853/9 N/A	N/A		0.500 g	50 mL	N/A	N/A	N/A		LCS 140-30853/9-A
10	N/A	N/A				N/A	N/A	N/A		

Waste_Prep_LL Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-30763

Analyst: Nedkova, Teodora S

Batch Open: 6/12/2019 10:22:00AM

Batch End: 6/16/2019 4:00:00PM

Preparation, Waste (Low level)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	140-15440-A-5 (6010C)	N/A (140-15440-1)	Waste	25.07 g	100 mL	6/17/19	12_Days	4		140-15440-A-5-D
1	140-15440-A-5 (7470A)	N/A (140-15440-1)	Waste	25.07 g	100 mL	6/17/19	12_Days	4		140-15440-A-5-D
2	140-15440-A-5~MS (6010C)	N/A (140-15440-1)	Waste	25.03 g	100 mL	6/17/19	12_Days	4		140-15440-A-5-E MS
2	140-15440-A-5~MS (7470A)	N/A (140-15440-1)	Waste	25.03 g	100 mL	6/17/19	12_Days	4		140-15440-A-5-E MS
3	140-15440-A-5~MSD (6010C)	N/A (140-15440-1)	Waste	25.02 g	100 mL	6/17/19	12_Days	4		140-15440-A-5-F MSD
3	140-15440-A-5~MSD (7470A)	N/A (140-15440-1)	Waste	25.02 g	100 mL	6/17/19	12_Days	4		140-15440-A-5-F MSD
4	140-15440-A-10 (6010C)	N/A (140-15440-1)	Waste	25.05 g	100 mL	6/17/19	12_Days	4		140-15440-A-10-D
4	140-15440-A-10 (7470A)	N/A (140-15440-1)	Waste	25.05 g	100 mL	6/17/19	12_Days	4		140-15440-A-10-D
5	140-15440-A-10~MS (6010C)	N/A (140-15440-1)	Waste	25.04 g	100 mL	6/17/19	12_Days	4		140-15440-A-10-E MS
5	140-15440-A-10~MS (7470A)	N/A (140-15440-1)	Waste	25.04 g	100 mL	6/17/19	12_Days	4		140-15440-A-10-E MS
6	140-15440-A-10~MSD (6010C)	N/A (140-15440-1)	Waste	25.03 g	100 mL	6/17/19	12_Days	4		140-15440-A-10-F MSD
6	140-15440-A-10~MSD (7470A)	N/A (140-15440-1)	Waste	25.03 g	100 mL	6/17/19	12_Days	4		140-15440-A-10-F MSD
7	140-15440-A-15 (6010C)	N/A (140-15440-1)	Waste	25.04 g	100 mL	6/17/19	12_Days	4		140-15440-A-15-D
7	140-15440-A-15 (7470A)	N/A (140-15440-1)	Waste	25.04 g	100 mL	6/17/19	12_Days	4		140-15440-A-15-D

Waste_Prep_LL Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-30763

Analyst: Nedkova, Teodora S

Batch Open: 6/12/2019 10:22:00AM

Batch End: 6/16/2019 4:00:00PM

8	140-15440-A-15~MS (6010C)	N/A (140-15440-1)	Waste	25.04 g	100 mL	6/17/19	12_Days	4	140-15440-A-15-E MS
8	140-15440-A-15~MS (7470A)	N/A (140-15440-1)	Waste	25.04 g	100 mL	6/17/19	12_Days	4	140-15440-A-15-E MS
9	140-15440-A-15~MSD (6010C)	N/A (140-15440-1)	Waste	25.01 g	100 mL	6/17/19	12_Days	4	140-15440-A-15-F MSD
9	140-15440-A-15~MSD (7470A)	N/A (140-15440-1)	Waste	25.01 g	100 mL	6/17/19	12_Days	4	140-15440-A-15-F MSD
10	MB~140-30763/10 N/A	N/A		25 g	100 mL	N/A	N/A	N/A	MB 140-30763/10-A
11	LCS~140-30763/11 N/A	N/A		25 g	100 mL	N/A	N/A	N/A	LCS 140-30763/11-A

3010A Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-30422

Analyst: Collins, Kerry N

Batch Open: 5/31/2019 8:00:00AM

Batch End: 5/31/2019 5:00:00PM

Preparation, Total Metals

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	140-15377-A-1-B (6010B_SEP)	N/A (140-15377-1)	MgSO4 Lea	5 mL	50 mL	6/20/19	18_Days	4		140-15377-A-1-C
2	140-15377-A-2-B (6010B_SEP)	N/A (140-15377-1)	MgSO4 Lea	5 mL	50 mL	6/20/19	18_Days	4		140-15377-A-2-C
3	140-15376-A-1-C (6010B_SEP)	N/A (140-15376-1)	MgSO4 Lea	5 mL	50 mL	6/20/19	18_Days	4		140-15376-A-1-E
4	140-15376-A-1-D~DU (6010B_SEP)	N/A (140-15376-1)	MgSO4 Lea	5 mL	50 mL	6/20/19	18_Days	4		140-15376-A-1-F DU
5	140-15376-A-2-B (6010B_SEP)	N/A (140-15376-1)	MgSO4 Lea	5 mL	50 mL	6/20/19	18_Days	4		140-15376-A-2-C
6	140-15376-A-3-B (6010B_SEP)	N/A (140-15376-1)	MgSO4 Lea	5 mL	50 mL	6/20/19	18_Days	4		140-15376-A-3-C
7	140-15390-A-1-B (6010B_SEP)	N/A (140-15390-1)	MgSO4 Lea	5 mL	50 mL	6/21/19	18_Days	4		140-15390-A-1-C
8	140-15390-A-2-B (6010B_SEP)	N/A (140-15390-1)	MgSO4 Lea	5 mL	50 mL	6/21/19	18_Days	4		140-15390-A-2-C
9	140-15390-A-3-B (6010B_SEP)	N/A (140-15390-1)	MgSO4 Lea	5 mL	50 mL	6/21/19	18_Days	4		140-15390-A-3-C
10	140-15390-A-4-B (6010B_SEP)	N/A (140-15390-1)	MgSO4 Lea	5 mL	50 mL	6/21/19	18_Days	4		140-15390-A-4-C
11	MB~140-30374/11-A N/A	N/A		5 mL	50 mL	N/A	N/A	N/A		MB 140-30374/11-B
12	LCS~140-30374/12-A N/A	N/A		5 mL	50 mL	N/A	N/A	N/A		LCS 140-30374/12-B
13	LCSD~140-30374/13-A N/A	N/A		5 mL	50 mL	N/A	N/A	N/A		LCSD 140-30374/13-B

Printed : 5/31/2019

Eurofins TestAmerica, Knoxville

3010A Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-30452

Analyst: Collins, Kerry N

Batch Open: 6/3/2019 8:00:00AM
Batch End: 6/3/2019 5:00:00PM

Preparation, Total Metals

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	140-15377-A-1-D (6010B_SEP)	N/A (140-15377-1)	NaOAc Lea	5 mL	50 mL	6/20/19	18_Days	4		140-15377-A-1-F
2	140-15377-A-2-D (6010B_SEP)	N/A (140-15377-1)	NaOAc Lea	5 mL	50 mL	6/20/19	18_Days	4		140-15377-A-2-F
3	140-15376-A-1-G (6010B_SEP)	N/A (140-15376-1)	NaOAc Lea	5 mL	50 mL	6/20/19	18_Days	4		140-15376-A-1-K
4	140-15376-A-1-H~DU (6010B_SEP)	N/A (140-15376-1)	NaOAc Lea	5 mL	50 mL	6/20/19	18_Days	4		140-15376-A-1-L DU
5	140-15376-A-2-D (6010B_SEP)	N/A (140-15376-1)	NaOAc Lea	5 mL	50 mL	6/20/19	18_Days	4		140-15376-A-2-F
6	140-15376-A-3-D (6010B_SEP)	N/A (140-15376-1)	NaOAc Lea	5 mL	50 mL	6/20/19	18_Days	4		140-15376-A-3-F
7	140-15390-A-1-D (6010B_SEP)	N/A (140-15390-1)	NaOAc Lea	5 mL	50 mL	6/21/19	18_Days	4		140-15390-A-1-E
8	140-15390-A-2-D (6010B_SEP)	N/A (140-15390-1)	NaOAc Lea	5 mL	50 mL	6/21/19	18_Days	4		140-15390-A-2-E
9	140-15390-A-3-D (6010B_SEP)	N/A (140-15390-1)	NaOAc Lea	5 mL	50 mL	6/21/19	18_Days	4		140-15390-A-3-E
10	140-15390-A-4-D (6010B_SEP)	N/A (140-15390-1)	NaOAc Lea	5 mL	50 mL	6/21/19	18_Days	4		140-15390-A-4-E
11	MB~140-30423/11-A N/A	N/A		5 mL	50 mL	N/A	N/A	N/A		MB 140-30423/11-B
12	LCS~140-30423/12-A N/A	N/A		5 mL	50 mL	N/A	N/A	N/A		LCS 140-30423/12-B
13	LCSD~140-30423/13-A N/A	N/A		5 mL	50 mL	N/A	N/A	N/A		LCSD 140-30423/13-B

Sample Name: ICIS Acquired: 6/17/2019 10:14:58 Type: Cal
Method: MT0007(v23) HF 022619(v4) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00015	.00063	-.00050	.00044	.00320	-.00020
Stddev	.00002	.00019	.00001	.00001	.00045	.00001
%RSD	14.285	30.353	2.8616	1.5604	13.955	5.9034
#1	-.00018	.00049	-.00050	.00044	.00317	-.00019
#2	-.00014	.00055	-.00049	.00045	.00277	-.00021
#3	-.00014	.00085	-.00052	.00043	.00366	-.00019

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00601	-.00083	-.00062	.00003	.00030	.00008
Stddev	.00008	.00010	.00016	.00002	.00002	.00006
%RSD	1.4113	12.599	25.373	65.066	5.9747	78.372
#1	.00600	-.00071	-.00075	.00001	.00028	.00012
#2	.00610	-.00088	-.00044	.00004	.00029	.00001
#3	.00593	-.00090	-.00066	.00003	.00032	.00012

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00357	-.00269	-.00012	.00003	.00012	-.00065
Stddev	.00066	.00088	.00011	.00001	.00004	.00023
%RSD	18.401	32.579	86.768	52.667	31.882	34.787
#1	.00325	-.00346	-.00010	.00004	.00015	-.00042
#2	.00432	-.00173	-.00003	.00001	.00008	-.00088
#3	.00313	-.00287	-.00024	.00003	.00014	-.00066

Sample Name: ICIS   Acquired: 6/17/2019 10:14:58   Type: Cal
Method: MT0007(v23) HF 022619(v4)   Mode: IR   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.01179	-.00151	.00021	.00002	-.00023	.00049
Stddev	.00137	.00007	.00000	.00001	.00005	.00009
%RSD	11.642	4.5374	1.6542	25.631	19.909	17.718
#1	.01294	-.00151	.00020	.00003	-.00027	.00040
#2	.01218	-.00157	.00021	.00002	-.00018	.00050
#3	.01027	-.00143	.00021	.00002	-.00023	.00057

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00036	.00032	.00027	-.00250	-.00017	-.00034
Stddev	.00005	.00010	.00005	.00024	.00018	.00010
%RSD	13.599	30.671	18.093	9.7064	109.58	30.642
#1	.00035	.00043	.00026	-.00278	-.00037	-.00044
#2	.00041	.00024	.00022	-.00232	-.00001	-.00023
#3	.00032	.00029	.00032	-.00241	-.00012	-.00035

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	Cts/S	Cts/S
Avg	.00003	.00250
Stddev	.00001	.00003
%RSD	29.960	1.3378
#1	.00003	.00247
#2	.00002	.00250
#3	.00004	.00254

Sample Name: ICIS Acquired: 6/17/2019 10:14:58 Type: Cal
Method: MT0007(v23) HF 022619(v4) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6623.8	216450.	17378.
Stddev	19.6	873.	166.
%RSD	.29651	.40349	.95443
#1	6645.3	217350.	17316.
#2	6619.2	215610.	17565.
#3	6606.8	216380.	17251.

Sample Name: S1 Acquired: 6/17/2019 10:20:09 Type: Cal
Method: MT0007(v23) HF 022619(v4) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.16432	.82602	.07871	.10953	14.673	8.4526
Stddev	.00027	.00211	.00015	.00035	.297	.0203
%RSD	.16139	.25592	.18942	.32122	2.0275	.24020
#1	.16407	.82589	.07880	.10924	14.974	8.4703
#2	.16430	.82820	.07853	.10942	14.666	8.4304
#3	.16460	.82398	.07879	.10992	14.379	8.4571

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	13.161	1.6602	4.1989	.29811	.51938	3.0841
Stddev	.047	.0014	.0028	.00115	.00190	.0117
%RSD	.35735	.08162	.06741	.38507	.36591	.37961
#1	13.108	1.6587	4.2015	.29843	.52029	3.0727
#2	13.198	1.6603	4.1959	.29684	.52065	3.0961
#3	13.177	1.6614	4.1994	.29907	.51719	3.0834

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	3.1736	3.0501	1.0371	1.4779	1.5695	.03241
Stddev	.0041	.0083	.0081	.0127	.0017	.00007
%RSD	.13034	.27205	.78213	.85659	.10660	.21237
#1	3.1691	3.0558	1.0285	1.4732	1.5713	.03248
#2	3.1771	3.0406	1.0446	1.4683	1.5691	.03240
#3	3.1747	3.0539	1.0383	1.4923	1.5680	.03235

Sample Name: S1 Acquired: 6/17/2019 10:20:09 Type: Cal
Method: MT0007(v23) HF 022619(v4) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	13.030	2.7921	.19196	.00559	.15770	.08176
Stddev	.002	.0028	.00029	.00003	.00024	.00018
%RSD	.01568	.10114	.14908	.61799	.15142	.22478
#1	13.030	2.7910	.19224	.00561	.15751	.08157
#2	13.033	2.7899	.19167	.00555	.15796	.08177
#3	13.029	2.7953	.19198	.00561	.15762	.08194

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.04459	.04266	.80261	17.251	1.1540	.09580
Stddev	.00030	.00022	.00096	.174	.0026	.00015
%RSD	.67896	.51283	.11952	1.0100	.22074	.15930
#1	.04490	.04241	.80170	17.282	1.1518	.09576
#2	.04458	.04276	.80251	17.408	1.1568	.09567
#3	.04430	.04281	.80361	17.063	1.1533	.09597

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	Cts/S	Cts/S
Avg	.45689	6.4970
Stddev	.00082	.0064
%RSD	.17976	.09789
#1	.45751	6.5015
#2	.45596	6.4898
#3	.45720	6.4998

Sample Name: S1 Acquired: 6/17/2019 10:20:09 Type: Cal
Method: MT0007(v23) HF 022619(v4) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6429.5	211210.	17536.
Stddev	14.6	849.	153.
%RSD	.22761	.40219	.87341
#1	6413.3	210860.	17662.
#2	6441.6	212180.	17366.
#3	6433.7	210590.	17581.

Sample Name: CCVL   Acquired: 6/17/2019 10:25:33   Type: QC
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49013	12.377	.24600	1.0154	1.0116	1.0390
Stddev	.00106	.078	.00064	.0021	.0003	.0138
%RSD	.21635	.62863	.26214	.20627	.02813	1.3331
#1	.49135	12.374	.24589	1.0178	1.0119	1.0516
#2	.48938	12.456	.24543	1.0144	1.0114	1.0413
#3	.48968	12.300	.24670	1.0140	1.0114	1.0242
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.404	.25688	1.0226	1.0200	.98736	12.788
Stddev	.102	.00040	.0011	.0025	.00172	.029
%RSD	.40322	.15655	.10511	.24129	.17402	.22968
#1	25.451	.25694	1.0231	1.0228	.98713	12.760
#2	25.476	.25724	1.0233	1.0184	.98577	12.819
#3	25.287	.25645	1.0214	1.0186	.98919	12.785
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCVL Acquired: 6/17/2019 10:25:33 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.091	.98900	25.038	1.0463	1.0175	24.907
Stddev	.032	.00505	.121	.0036	.0015	.744
%RSD	.12938	.51064	.48274	.34411	.14781	2.9890
#1	25.088	.98363	24.994	1.0499	1.0190	25.007
#2	25.125	.98972	25.174	1.0461	1.0176	25.596
#3	25.060	.99365	24.944	1.0427	1.0160	24.117
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.650	1.0281	.99865	.25650	.25681	.24415
Stddev	.007	.0017	.00229	.00424	.00150	.00216
%RSD	.02900	.16953	.22921	1.6526	.58468	.88528
#1	24.658	1.0285	1.0012	.26051	.25507	.24651
#2	24.646	1.0296	.99672	.25693	.25769	.24226
#3	24.646	1.0262	.99804	.25206	.25766	.24367
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCVL Acquired: 6/17/2019 10:25:33 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.24943	1.0003	1.0214	1.0126	1.0038	.51234
Stddev	.00203	.0065	.0014	.0004	.0010	.00374
%RSD	.81480	.64563	.14235	.03799	.09801	.73033
#1	.25124	.99999	1.0230	1.0125	1.0040	.51521
#2	.24723	.99405	1.0208	1.0130	1.0046	.50811
#3	.24983	1.0070	1.0203	1.0122	1.0027	.51370
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	1.0108	1.0104
Stddev	.0029	.0017
%RSD	.29067	.17135
#1	1.0141	1.0113
#2	1.0101	1.0116
#3	1.0083	1.0085
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCVL   Acquired: 6/17/2019 10:25:33   Type: QC
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6665.2	217970.	17611.
Stddev	28.8	1443.	127.
%RSD	.43212	.66191	.72226
#1	6634.1	216650.	17527.
#2	6670.7	217760.	17550.
#3	6690.9	219510.	17758.

Sample Name: ICV   Acquired: 6/17/2019 10:30:38   Type: QC
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.48083	12.217	.24795	.99572	.99780	1.0233
Stddev	.00046	.056	.00066	.00117	.00171	.0064
%RSD	.09470	.45443	.26788	.11738	.17165	.62281
#1	.48133	12.204	.24849	.99668	.99706	1.0281
#2	.48044	12.278	.24814	.99442	.99976	1.0161
#3	.48072	12.169	.24721	.99606	.99658	1.0257
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	25.077	.25738	1.0112	1.0048	.97518	12.617
Stddev	.069	.00051	.0015	.0029	.00169	.015
%RSD	.27395	.19991	.14692	.29326	.17299	.11738
#1	25.073	.25765	1.0113	1.0058	.97554	12.600
#2	25.147	.25771	1.0126	1.0015	.97335	12.627
#3	25.009	.25679	1.0096	1.0071	.97666	12.625
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: ICV Acquired: 6/17/2019 10:30:38 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.674	.97005	24.736	1.0224	1.0095	23.894
Stddev	.063	.00299	.057	.0015	.0005	.678
%RSD	.25465	.30862	.23196	.14955	.05160	2.8367
#1	24.636	.96833	24.754	1.0241	1.0098	23.233
#2	24.746	.97351	24.783	1.0212	1.0099	23.861
#3	24.639	.96832	24.672	1.0218	1.0089	24.588
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.318	1.0099	.98103	.25345	.25250	.24250
Stddev	.061	.0015	.00337	.00065	.00152	.00034
%RSD	.25265	.15137	.34382	.25541	.60295	.13966
#1	24.323	1.0101	.97714	.25271	.25089	.24250
#2	24.376	1.0113	.98286	.25371	.25392	.24216
#3	24.254	1.0082	.98309	.25392	.25270	.24283
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: ICV Acquired: 6/17/2019 10:30:38 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.24314	1.0065	1.0111	.99544	.99135	.51508
Stddev	.00277	.0201	.0010	.00184	.00269	.00164
%RSD	1.1398	1.9997	.10342	.18490	.27140	.31857
#1	.24622	.99077	1.0118	.99412	.99203	.51466
#2	.24085	.99953	1.0116	.99754	.99363	.51690
#3	.24235	1.0292	1.0099	.99465	.98838	.51370
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.99750	.99782
Stddev	.00133	.00154
%RSD	.13340	.15388
#1	.99772	.99796
#2	.99608	.99928
#3	.99871	.99622
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: ICV Acquired: 6/17/2019 10:30:38 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6693.6	218990.	17536.
Stddev	26.4	953.	69.
%RSD	.39398	.43520	.39392
#1	6680.3	217910.	17465.
#2	6676.6	219370.	17539.
#3	6724.0	219700.	17603.

Sample Name: ICB Acquired: 6/17/2019 10:35:41 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00001	-.01370	.00039	.00150	-.00001	-.00001
Stddev	.00024	.01329	.00080	.00067	.00006	.00000
%RSD	2831.8	97.069	206.62	45.011	579.81	62.027
#1	.00022	.00160	-.00010	.00202	-.00003	-.00001
#2	.00001	-.02018	.00130	.00074	-.00005	-.00001
#3	-.00025	-.02251	-.00004	.00173	.00005	-.00000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00176	.00007	.00017	-.00006	.00001	.00122
Stddev	.00140	.00004	.00016	.00009	.00012	.00218
%RSD	79.777	59.074	95.249	149.16	1171.6	178.66
#1	-.00217	.00004	.00025	-.00010	-.00013	.00291
#2	-.00291	.00004	-.00002	-.00012	.00006	.00198
#3	-.00020	.00011	.00027	.00004	.00010	-.00124
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICB Acquired: 6/17/2019 10:35:41 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00815	.00099	.00722	.00004	.00002	.13670
Stddev	.02636	.00069	.00509	.00002	.00013	.44076
%RSD	323.33	70.006	70.565	41.507	777.21	322.43
#1	-.01927	.00145	.01154	.00004	.00002	.40092
#2	.01043	.00133	.00852	.00003	.00014	-.37212
#3	.03330	.00019	.00160	.00007	-.00011	.38130
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00826	.00016	.00059	-.00231	-.00014	.00055
Stddev	.00449	.00003	.00101	.00057	.00112	.00217
%RSD	54.345	17.094	171.95	24.512	779.41	397.48
#1	-.00440	.00019	.00173	-.00290	.00064	.00276
#2	-.00720	.00013	-.00020	-.00228	-.00142	-.00158
#3	-.01318	.00017	.00024	-.00176	.00035	.00046
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICB Acquired: 6/17/2019 10:35:41 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00217	.01100	-.00040	.00003	-.00056	.00073
Stddev	.00104	.00460	.00023	.00008	.00064	.00104
%RSD	47.822	41.832	56.026	319.68	114.58	142.05
#1	-.00293	.01174	-.00064	.00004	.00013	.00140
#2	-.00260	.01518	-.00019	.00010	-.00068	.00126
#3	-.00099	.00607	-.00038	-.00006	-.00114	-.00047
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00012	.00001
Stddev	.00011	.00004
%RSD	98.186	383.15
#1	.00003	-.00002
#2	.00025	.00005
#3	.00007	.00000
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: ICB   Acquired: 6/17/2019 10:35:41   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6799.0	222370.	18031.
Stddev	17.3	2285.	360.
%RSD	.25414	1.0274	1.9986
#1	6802.9	221030.	17889.
#2	6780.1	225010.	18441.
#3	6814.0	221070.	17763.

Sample Name: ICSA Acquired: 6/17/2019 10:40:53 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00096	501.86	.00344	.03084	.00018	-.00036
Stddev	.00040	.60	.00231	.00035	.00003	.00001
%RSD	41.000	.11914	67.046	1.1410	16.017	3.2694
#1	-.00057	502.38	.00508	.03052	.00016	-.00037
#2	-.00096	502.00	.00443	.03121	.00022	-.00035
#3	-.00136	501.21	.00080	.03078	.00018	-.00037
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	467.39	-.00382	-.00107	.00273	.00034	188.11
Stddev	5.62	.00030	.00013	.00016	.00034	2.05
%RSD	1.2030	7.9230	12.269	5.8256	99.347	1.0887
#1	466.07	-.00402	-.00101	.00255	.00030	189.94
#2	473.56	-.00398	-.00097	.00286	.00002	188.50
#3	462.55	-.00347	-.00121	.00279	.00070	185.90
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICSA Acquired: 6/17/2019 10:40:53 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.06482	.01789	517.26	-.00043	-.00175	-.60474
Stddev	.01021	.00008	.31	.00007	.00040	.14560
%RSD	15.745	.44996	.05949	15.427	22.916	24.077
#1	.05413	.01779	517.61	-.00038	-.00130	-.56386
#2	.07446	.01793	517.16	-.00042	-.00207	-.76642
#3	.06588	.01793	517.02	-.00051	-.00189	-.48395
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.16057	.00174	.00139	.00185	F -.00844	.00332
Stddev	.00597	.00022	.00173	.00272	.00118	.00238
%RSD	3.7198	12.770	124.53	147.13	14.002	71.820
#1	.15971	.00174	.00042	.00155	-.00710	.00135
#2	.16692	.00196	.00036	.00471	-.00935	.00597
#3	.15507	.00152	.00338	-.00071	-.00886	.00264
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass
High Limit					.00800	
Low Limit					-.00800	

Sample Name: ICSA   Acquired: 6/17/2019 10:40:53   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00348	.01847	.00038	-.01272	.00306	-.00161
Stddev	.00790	.02266	.00054	.00028	.00086	.00316
%RSD	227.27	122.71	141.55	2.1810	27.977	196.29
#1	.00530	.01757	-.00024	-.01260	.00212	-.00051
#2	-.00570	.04156	.00066	-.01304	.00379	-.00517
#3	-.01003	-.00373	.00071	-.01253	.00328	.00085
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00274	-.00251
Stddev	.00005	.00030
%RSD	1.7217	11.980
#1	.00269	-.00270
#2	.00279	-.00268
#3	.00275	-.00217
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: ICSA Acquired: 6/17/2019 10:40:53 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6315.2	202240.	16790.
Stddev	5.0	420.	41.
%RSD	.07840	.20781	.24449
#1	6310.2	202230.	16772.
#2	6315.3	201830.	16760.
#3	6320.1	202670.	16837.

Sample Name: ICSAB Acquired: 6/17/2019 10:46:19 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20244	249.07	.09986	1.0097	.50342	.51001
Stddev	.00154	.51	.00213	.0030	.00218	.00461
%RSD	.76104	.20599	2.1331	.29268	.43226	.90294
#1	.20421	249.28	.10232	1.0125	.50583	.50621
#2	.20164	249.44	.09869	1.0099	.50281	.51513
#3	.20146	248.48	.09857	1.0066	.50161	.50869
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	237.27	.94688	.47528	.47888	.51296	97.430
Stddev	1.90	.00359	.00328	.00473	.00369	.248
%RSD	.79954	.37949	.69084	.98819	.71857	.25493
#1	236.62	.95001	.47881	.47445	.51719	97.372
#2	239.41	.94768	.47470	.48387	.51125	97.702
#3	235.80	.94296	.47232	.47832	.51044	97.215
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICSAB Acquired: 6/17/2019 10:46:19 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.400	1.0303	248.47	.48575	.98462	10.678
Stddev	.036	.0086	1.49	.00326	.00629	.359
%RSD	.34975	.83101	.60039	.67174	.63870	3.3587
#1	10.426	1.0402	247.38	.48388	.99143	10.819
#2	10.416	1.0252	250.17	.48952	.98338	10.945
#3	10.359	1.0256	247.85	.48385	.97904	10.270
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.078	.93888	.94939	.04748	.04331	.63559
Stddev	.036	.00639	.00890	.00165	.00007	.01056
%RSD	.35460	.68029	.93746	3.4835	.16475	1.6615
#1	10.116	.94493	.95763	.04912	.04335	.64688
#2	10.074	.93952	.95059	.04751	.04323	.63394
#3	10.045	.93220	.93995	.04581	.04336	.62595
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICSAB   Acquired: 6/17/2019 10:46:19   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04619	1.0177	.95526	1.0119	.99534	.09108
Stddev	.00224	.0127	.00458	.0046	.00329	.00099
%RSD	4.8559	1.2533	.47984	.45556	.33034	1.0826
#1	.04379	1.0167	.95989	1.0168	.99595	.09033
#2	.04823	1.0309	.95515	1.0112	.99828	.09220
#3	.04654	1.0054	.95073	1.0076	.99179	.09072
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.48473	.97949
Stddev	.00253	.00779
%RSD	.52234	.79520
#1	.48316	.98798
#2	.48765	.97779
#3	.48338	.97268
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: ICSAB Acquired: 6/17/2019 10:46:19 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6569.6	214270.	17897.
Stddev	47.9	2050.	220.
%RSD	.72866	.95671	1.2297
#1	6525.5	216140.	18137.
#2	6562.9	212080.	17704.
#3	6620.5	214590.	17851.

Sample Name: CRI Acquired: 6/17/2019 10:51:22 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00998	.18734	.00991	.20409	.01044	.00538
Stddev	.00055	.00779	.00158	.00051	.00013	.00004
%RSD	5.4763	4.1598	15.969	.24895	1.2278	.81866
#1	.00998	.18383	.00957	.20421	.01044	.00541
#2	.00944	.19627	.01163	.20453	.01057	.00539
#3	.01053	.18191	.00852	.20353	.01032	.00533
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.2279	.00552	.05233	.01099	.02531	.10739
Stddev	.0717	.00008	.00012	.00010	.00010	.00234
%RSD	1.3719	1.4746	.22290	.94439	.40761	2.1812
#1	5.2839	.00560	.05238	.01110	.02538	.11000
#2	5.2528	.00552	.05219	.01098	.02536	.10671
#3	5.1471	.00544	.05241	.01089	.02519	.10547
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI Acquired: 6/17/2019 10:51:22 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.0487	.04999	4.9284	.01584	.04191	5.6596
Stddev	.0333	.00021	.0770	.00004	.00006	.2025
%RSD	.65959	.42416	1.5632	.22103	.14045	3.5786
#1	5.0688	.04987	4.9574	.01581	.04192	5.6096
#2	5.0670	.04988	4.9867	.01588	.04185	5.4868
#3	5.0103	.05024	4.8411	.01582	.04197	5.8825
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.9157	.04151	.29807	.00874	.01147	.06085
Stddev	.0381	.00032	.00083	.00171	.00163	.00170
%RSD	.77438	.76750	.27808	19.604	14.204	2.7994
#1	4.9558	.04140	.29810	.00706	.01279	.05889
#2	4.9112	.04187	.29888	.01048	.01197	.06201
#3	4.8800	.04126	.29722	.00868	.00965	.06163
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI Acquired: 6/17/2019 10:51:22 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00865	.47895	.10459	.05156	.04958	.01223
Stddev	.00147	.01128	.00035	.00005	.00089	.00121
%RSD	16.969	2.3552	.33390	.10325	1.7876	9.8704
#1	.01016	.47160	.10489	.05157	.05045	.01309
#2	.00855	.49193	.10466	.05150	.04960	.01275
#3	.00723	.47330	.10420	.05160	.04868	.01085
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02581	.02207
Stddev	.00035	.00010
%RSD	1.3414	.43120
#1	.02605	.02215
#2	.02596	.02211
#3	.02541	.02197
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CRI Acquired: 6/17/2019 10:51:22 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6761.3	218120.	17449.
Stddev	27.3	1550.	428.
%RSD	.40367	.71068	2.4504
#1	6730.2	216780.	17089.
#2	6772.4	217770.	17338.
#3	6781.3	219820.	17922.

Sample Name: CCV Acquired: 6/17/2019 10:56:30 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.96404	24.557	.48260	1.9801	2.0141	2.0137
Stddev	.00127	.104	.00191	.0037	.0038	.0055
%RSD	.13159	.42200	.39547	.18675	.18940	.27482
#1	.96534	24.449	.48414	1.9841	2.0108	2.0084
#2	.96396	24.568	.48046	1.9769	2.0133	2.0194
#3	.96281	24.655	.48321	1.9792	2.0183	2.0134
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.613	.49980	2.0054	2.0007	1.9804	25.250
Stddev	.181	.00036	.0017	.0084	.0053	.092
%RSD	.36540	.07156	.08251	.42061	.26790	.36255
#1	49.449	.50016	2.0071	1.9970	1.9763	25.241
#2	49.807	.49945	2.0054	2.0103	1.9784	25.346
#3	49.582	.49979	2.0038	1.9947	1.9864	25.164
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/17/2019 10:56:30 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.818	1.9389	49.523	2.0140	2.0051	49.019
Stddev	.058	.0036	.257	.0075	.0017	1.401
%RSD	.11881	.18643	.51886	.37023	.08302	2.8577
#1	48.753	1.9419	49.467	2.0183	2.0070	47.447
#2	48.834	1.9399	49.803	2.0183	2.0038	50.134
#3	48.866	1.9349	49.298	2.0054	2.0046	49.477
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.006	1.9851	1.9387	.49704	.49661	.48285
Stddev	.214	.0013	.0033	.00356	.00185	.00106
%RSD	.43624	.06749	.16899	.71680	.37185	.21997
#1	48.787	1.9859	1.9418	.50041	.49461	.48399
#2	49.018	1.9836	1.9353	.49331	.49825	.48190
#3	49.214	1.9860	1.9392	.49739	.49697	.48264
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/17/2019 10:56:30 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49566	1.9646	1.9981	2.0128	1.9888	.98891
Stddev	.00046	.0207	.0016	.0002	.0081	.00199
%RSD	.09377	1.0530	.08142	.01074	.40735	.20074
#1	.49513	1.9754	1.9964	2.0131	1.9798	.98711
#2	.49597	1.9776	1.9984	2.0128	1.9910	.98858
#3	.49588	1.9407	1.9996	2.0126	1.9956	.99104
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	1.9987	1.9897
Stddev	.0040	.0016
%RSD	.19968	.07881
#1	1.9960	1.9915
#2	2.0033	1.9892
#3	1.9968	1.9885
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV   Acquired: 6/17/2019 10:56:30   Type: QC
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6617.4	215520.	17238.
Stddev	10.9	742.	83.
%RSD	.16470	.34430	.48253
#1	6605.5	214910.	17284.
#2	6619.9	215320.	17142.
#3	6626.9	216350.	17289.

Sample Name: CCB Acquired: 6/17/2019 11:01:34 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00059	.00365	-.00082	.00113	-.00004	.00001
Stddev	.00021	.00591	.00005	.00099	.00012	.00001
%RSD	36.329	162.04	5.9593	87.493	279.00	46.744
#1	.00048	-.00205	-.00079	.00197	-.00007	.00002
#2	.00045	.00976	-.00088	.00136	-.00014	.00001
#3	.00084	.00323	-.00080	.00005	.00009	.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00110	-.00000	-.00004	.00011	.00028	.00054
Stddev	.00230	.00002	.00012	.00015	.00002	.00188
%RSD	209.85	1790.9	330.66	129.48	7.7644	349.89
#1	.00131	-.00001	.00008	.00016	.00026	.00235
#2	-.00327	-.00002	-.00017	.00023	.00029	.00065
#3	-.00133	.00002	-.00002	-.00005	.00029	-.00139
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/17/2019 11:01:34 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02549	.00193	.01466	.00006	.00040	.32032
Stddev	.02159	.00053	.00352	.00007	.00008	.76822
%RSD	84.705	27.536	24.008	115.70	20.954	239.83
#1	.01193	.00165	.01368	.00014	.00048	-.56653
#2	.05039	.00160	.01173	.00003	.00031	.74677
#3	.01415	.00254	.01856	.00001	.00042	.78071
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00526	.00028	.00077	-.00172	-.00024	.00049
Stddev	.00326	.00027	.00132	.00072	.00067	.00120
%RSD	61.954	93.481	170.83	41.739	273.63	245.36
#1	.00886	.00023	-.00004	-.00106	-.00093	-.00083
#2	.00443	.00057	.00006	-.00248	-.00020	.00151
#3	.00250	.00005	.00229	-.00161	.00040	.00079
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/17/2019 11:01:34 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00095	.00860	.00021	.00011	-.00065	.00355
Stddev	.00145	.01491	.00020	.00008	.00065	.00201
%RSD	152.11	173.45	95.536	75.869	98.982	56.756
#1	-.00143	.00917	.00005	.00018	.00009	.00448
#2	.00068	.02322	.00044	.00012	-.00111	.00492
#3	-.00210	-.00659	.00015	.00002	-.00093	.00124
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00041	.00003
Stddev	.00008	.00007
%RSD	20.268	224.25
#1	.00048	.00000
#2	.00044	-.00002
#3	.00032	.00011
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/17/2019 11:01:34 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6777.9	221400.	18372.
Stddev	11.1	1854.	382.
%RSD	.16437	.83719	2.0783
#1	6765.4	219290.	18271.
#2	6786.7	222770.	18050.
#3	6781.7	222150.	18794.

Sample Name: mb 140-30853/8-a Acquired: 6/17/2019 11:06:47 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00021	.00119	.00024	.00550	-.00004	-.00002
Stddev	.00026	.01094	.00091	.00100	.00012	.00001
%RSD	126.24	921.06	374.76	18.241	317.53	67.570
#1	.00043	.01033	.00126	.00634	-.00018	-.00003
#2	-.00009	-.01094	-.00050	.00576	.00003	-.00001
#3	.00029	.00417	-.00004	.00439	.00003	-.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02978	.00009	.00004	.00163	.00030	.01879
Stddev	.00083	.00007	.00011	.00017	.00008	.00146
%RSD	2.7833	76.649	267.95	10.171	26.869	7.7844
#1	.03015	.00002	-.00004	.00145	.00024	.01775
#2	.02883	.00015	.00016	.00177	.00027	.02046
#3	.03037	.00009	-.00001	.00169	.00039	.01815
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-30853/8-a   Acquired: 6/17/2019 11:06:47   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01289	-.00000	.01915	.00067	.00018	.95810
Stddev	.02109	.00122	.00880	.00005	.00006	.52889
%RSD	163.66	88607.	45.922	6.8619	35.418	55.202
#1	.02193	-.00082	.02687	.00062	.00012	1.3369
#2	.02794	-.00058	.00958	.00071	.00018	1.1835
#3	-.01122	.00140	.02101	.00067	.00025	.35384
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00626	.00034	.01162	-.00215	.00034	.00071
Stddev	.00344	.00023	.00076	.00119	.00051	.00086
%RSD	54.946	66.598	6.5218	55.326	149.40	121.01
#1	.01012	.00046	.01136	-.00348	-.00007	.00115
#2	.00516	.00048	.01248	-.00118	.00092	.00127
#3	.00351	.00008	.01103	-.00180	.00018	-.00028
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-30853/8-a Acquired: 6/17/2019 11:06:47 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00036	F .69309	.01134	.00003	-.00061	-.00033
Stddev	.00070	.01501	.00022	.00004	.00018	.00140
%RSD	191.26	2.1659	1.9154	104.21	29.151	423.98
#1	.00045	.68380	.01144	.00002	-.00080	.00042
#2	-.00037	.71041	.01109	.00008	-.00045	.00054
#3	.00101	.68506	.01148	.00000	-.00058	-.00194
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit		.25000				
Low Limit		-.25000				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00002	.00102
Stddev	.00018	.00001
%RSD	1158.5	1.1247
#1	-.00012	.00103
#2	-.00012	.00102
#3	.00020	.00101
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: mb 140-30853/8-a Acquired: 6/17/2019 11:06:47 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6714.7	220820.	18209.
Stddev	15.3	287.	164.
%RSD	.22782	.13009	.90294
#1	6717.4	221030.	18333.
#2	6728.4	220490.	18023.
#3	6698.2	220930.	18273.

Sample Name: lcs 140-30853/9-a Acquired: 6/17/2019 11:11:59 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04975	1.9659	.09996	.99060	.10205	.05250
Stddev	.00056	.0057	.00092	.00269	.00060	.00032
%RSD	1.1354	.29093	.92431	.27184	.59205	.60391
#1	.05034	1.9633	.10032	.98820	.10206	.05213
#2	.04970	1.9620	.10066	.99010	.10264	.05267
#3	.04921	1.9725	.09892	.99351	.10143	.05269
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.640	.05178	.10262	.20496	.25494	1.0308
Stddev	.482	.00019	.00009	.00211	.00208	.0070
%RSD	.97070	.36289	.08318	1.0298	.81586	.68336
#1	49.809	.05160	.10264	.20258	.25700	1.0306
#2	49.096	.05176	.10253	.20663	.25499	1.0239
#3	50.014	.05198	.10270	.20566	.25284	1.0380
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcs 140-30853/9-a Acquired: 6/17/2019 11:11:59 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.238	.10183	9.6493	.10317	.51849	50.671
Stddev	.142	.00186	.1579	.00065	.00287	.937
%RSD	.28768	1.8278	1.6368	.62833	.55312	1.8488
#1	49.258	.10256	9.6902	.10250	.52147	50.659
#2	49.370	.10321	9.4749	.10324	.51826	51.614
#3	49.088	.09971	9.7827	.10379	.51575	49.740
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.492	.51039	5.0724	.10021	.10249	.50141
Stddev	.231	.00131	.0286	.00252	.00116	.00306
%RSD	.46698	.25651	.56337	2.5108	1.1341	.61090
#1	49.455	.51153	5.1052	.09755	.10350	.50463
#2	49.740	.51068	5.0594	.10255	.10276	.50107
#3	49.282	.50896	5.0527	.10052	.10122	.49853
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcs 140-30853/9-a Acquired: 6/17/2019 11:11:59 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.14938	F .24160	.52184	.50503	.10222	.41459
Stddev	.00091	.01935	.00087	.00235	.00118	.00076
%RSD	.60629	8.0107	.16706	.46536	1.1546	.18262
#1	.15042	.25826	.52278	.50609	.10348	.41398
#2	.14876	.22037	.52169	.50666	.10205	.41544
#3	.14897	.24617	.52106	.50234	.10114	.41435
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value		5.0000				
Range		-10.000%				

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20491	.51264
Stddev	.00065	.00223
%RSD	.31548	.43513
#1	.20416	.51482
#2	.20530	.51273
#3	.20527	.51036
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: lcs 140-30853/9-a Acquired: 6/17/2019 11:11:59 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6663.6	218720.	18052.
Stddev	42.2	1565.	426.
%RSD	.63343	.71533	2.3606
#1	6628.0	220470.	17946.
#2	6652.7	218250.	18522.
#3	6710.3	217450.	17689.

Sample Name: mb 140-30763/10-a   Acquired: 6/17/2019 11:16:56   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00005	.00982	-.00112	.03515	.00020	-.00001
Stddev	.00016	.02435	.00064	.00049	.00006	.00001
%RSD	320.04	247.99	56.932	1.3884	31.082	113.72
#1	.00015	.01165	-.00048	.03471	.00027	-.00002
#2	.00014	.03321	-.00112	.03568	.00020	-.00000
#3	-.00014	-.01540	-.00175	.03507	.00014	-.00000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03309	.00001	.00009	.00163	.00024	.01838
Stddev	.00253	.00007	.00012	.00024	.00011	.00105
%RSD	7.6553	484.72	127.68	14.627	48.035	5.7011
#1	.03020	.00002	.00009	.00144	.00031	.01945
#2	.03415	-.00006	-.00002	.00189	.00029	.01835
#3	.03492	.00008	.00021	.00155	.00011	.01736
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-30763/10-a Acquired: 6/17/2019 11:16:56 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.10566	.00015	.01803	.00037	.00028	.62126
Stddev	.01265	.00044	.00847	.00003	.00015	.67537
%RSD	11.976	303.77	46.973	7.5655	52.056	108.71
#1	.09248	-.00037	.00979	.00035	.00037	.18128
#2	.10678	.00040	.01759	.00040	.00036	.28362
#3	.11771	.00041	.02672	.00035	.00011	1.3989
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02804	.00082	.09010	-.00208	.00088	.00047
Stddev	.00312	.00032	.00101	.00149	.00109	.00055
%RSD	11.119	38.723	1.1233	71.559	124.37	115.35
#1	.03122	.00091	.08919	-.00314	.00189	.00018
#2	.02793	.00108	.08992	-.00038	.00102	.00110
#3	.02499	.00047	.09119	-.00272	-.00028	.00013
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-30763/10-a Acquired: 6/17/2019 11:16:56 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00041	.03479	F .12348	.00001	-.00060	-.00003
Stddev	.00254	.00734	.00075	.00005	.00074	.00102
%RSD	614.85	21.105	.60963	437.66	122.45	3873.9
#1	-.00158	.02635	.12269	.00006	.00025	.00095
#2	.00328	.03975	.12419	.00002	-.00099	.00006
#3	-.00045	.03826	.12356	-.00005	-.00107	-.00108
Check ?	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit			.05000			
Low Limit			-.05000			

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00021	.01420
Stddev	.00015	.00012
%RSD	73.678	.87363
#1	.00010	.01418
#2	.00014	.01433
#3	.00038	.01408
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: mb 140-30763/10-a Acquired: 6/17/2019 11:16:56 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6571.9	215860.	17514.
Stddev	12.3	2175.	447.
%RSD	.18778	1.0076	2.5513
#1	6558.1	218310.	18027.
#2	6582.0	214160.	17208.
#3	6575.7	215100.	17308.

Sample Name: lcs 140-30763/11-a Acquired: 6/17/2019 11:22:11 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05070	2.0142	.10260	1.0302	.10491	.05497
Stddev	.00080	.0382	.00098	.0119	.00095	.00108
%RSD	1.5753	1.8958	.95889	1.1528	.90972	1.9668
#1	.05065	1.9906	.10166	1.0241	.10432	.05424
#2	.04992	1.9937	.10251	1.0225	.10440	.05446
#3	.05152	2.0582	.10362	1.0438	.10602	.05621
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.601	.05307	.10568	.21602	.26296	1.0898
Stddev	1.065	.00084	.00174	.00538	.00268	.0228
%RSD	2.1056	1.5904	1.6433	2.4924	1.0208	2.0922
#1	49.651	.05259	.10463	.21311	.26266	1.0690
#2	50.398	.05257	.10472	.21271	.26043	1.0862
#3	51.753	.05404	.10768	.22223	.26578	1.1142
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcs 140-30763/11-a Acquired: 6/17/2019 11:22:11 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.025	.10549	9.8671	.10643	.59135	50.412
Stddev	.431	.00033	.2453	.00177	.01100	.156
%RSD	.86183	.30852	2.4859	1.6591	1.8602	.30907
#1	49.712	.10586	9.6389	.10560	.58530	50.440
#2	49.846	.10534	9.8358	.10523	.58470	50.551
#3	50.517	.10527	10.126	.10846	.60405	50.244
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.517	.52272	5.2032	.09974	.10365	.51141
Stddev	.442	.00792	.0737	.00437	.00108	.00907
%RSD	.87450	1.5144	1.4166	4.3827	1.0421	1.7741
#1	50.210	.51850	5.1723	.09637	.10262	.51369
#2	50.318	.51780	5.1500	.09816	.10357	.50142
#3	51.023	.53185	5.2873	.10468	.10477	.51913
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcs 140-30763/11-a Acquired: 6/17/2019 11:22:11 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.15185	4.9550	F .64071	.52076	.10445	.41958
Stddev	.00392	.0818	.01157	.00329	.00190	.00663
%RSD	2.5787	1.6517	1.8056	.63115	1.8150	1.5797
#1	.14980	4.8876	.63345	.51894	.10302	.41458
#2	.14939	4.9313	.63463	.51878	.10373	.41707
#3	.15637	5.0461	.65405	.52455	.10660	.42710
Check ?	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
Value			.50000			
Range			20.000%			

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.21177	.53708
Stddev	.00362	.00799
%RSD	1.7073	1.4871
#1	.20938	.53322
#2	.21000	.53176
#3	.21593	.54627
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: lcs 140-30763/11-a Acquired: 6/17/2019 11:22:11 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6524.4	214650.	17857.
Stddev	77.1	2680.	567.
%RSD	1.1824	1.2483	3.1727
#1	6534.8	215270.	18368.
#2	6595.8	216970.	17954.
#3	6442.5	211710.	17248.

Sample Name: 140-15376-a-1-ac Acquired: 6/17/2019 11:27:08 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00066	24.262	.00894	.01773	.19664	.00198
Stddev	.00018	.151	.00117	.00023	.00121	.00002
%RSD	26.804	.62429	13.081	1.2991	.61544	1.0465
#1	-.00056	24.119	.01026	.01797	.19729	.00195
#2	-.00056	24.421	.00855	.01751	.19738	.00199
#3	-.00086	24.247	.00802	.01771	.19524	.00198
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.302	-.00025	.01128	.03447	.01474	21.756
Stddev	.143	.00012	.00015	.00056	.00029	.144
%RSD	1.3898	48.923	1.2931	1.6196	1.9435	.66241
#1	10.137	-.00028	.01135	.03384	.01457	21.592
#2	10.376	-.00012	.01137	.03488	.01458	21.860
#3	10.393	-.00036	.01111	.03470	.01507	21.817
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-ac Acquired: 6/17/2019 11:27:08 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.1813	.02302	6.5477	.22260	.00042	2.4510
Stddev	.0121	.00071	.1495	.00161	.00021	.0395
%RSD	.29016	3.0765	2.2833	.72379	50.225	1.6113
#1	4.1778	.02378	6.3793	.22085	.00063	2.4687
#2	4.1947	.02238	6.5988	.22403	.00021	2.4784
#3	4.1712	.02289	6.6649	.22293	.00042	2.4057
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.0729	.02176	.57146	.02374	.02657	-.00148
Stddev	.0107	.00016	.00229	.00254	.00140	.00139
%RSD	.51505	.72709	.40054	10.681	5.2659	94.136
#1	2.0810	.02162	.56894	.02331	.02497	-.00009
#2	2.0770	.02174	.57341	.02145	.02717	-.00148
#3	2.0608	.02193	.57203	.02647	.02756	-.00288
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-ac Acquired: 6/17/2019 11:27:08 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00041	3.4471	.01246	.08553	.70811	-.00064
Stddev	.00228	.0478	.00019	.00047	.00241	.00052
%RSD	553.87	1.3869	1.5104	.54471	.34082	80.697
#1	.00222	3.3973	.01231	.08591	.70768	-.00005
#2	-.00180	3.4926	.01240	.08567	.71071	-.00098
#3	-.00166	3.4515	.01267	.08501	.70594	-.00090
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.04478	.12562
Stddev	.00006	.00021
%RSD	.13900	.17017
#1	.04476	.12544
#2	.04484	.12586
#3	.04472	.12557
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-ac   Acquired: 6/17/2019 11:27:08   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	7232.6	236390.	19321.
Stddev	8.4	1595.	608.
%RSD	.11643	.67478	3.1460
#1	7236.4	238210.	20011.
#2	7222.9	235270.	19086.
#3	7238.4	235670.	18866.

Sample Name: 140-15376-a-1-ad ms   Acquired: 6/17/2019 11:32:12   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04761	111.83	.10325	.94951	.32657	.05198
Stddev	.00025	.42	.00162	.00111	.00069	.00025
%RSD	.52574	.37329	1.5665	.11664	.21114	.48876
#1	.04788	111.78	.10493	.94953	.32733	.05227
#2	.04756	112.26	.10312	.94839	.32598	.05179
#3	.04738	111.43	.10171	.95061	.32642	.05188
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	56.426	.04807	.10934	.26617	.26136	32.642
Stddev	.673	.00011	.00034	.00177	.00123	.234
%RSD	1.1936	.23704	.30728	.66557	.47107	.71827
#1	56.191	.04796	.10963	.26786	.26224	32.611
#2	57.185	.04807	.10943	.26433	.26188	32.890
#3	55.901	.04819	.10897	.26631	.25995	32.424
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-ad ms   Acquired: 6/17/2019 11:32:12   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	54.902	.14780	18.609	.32424	.46858	50.127
Stddev	.056	.00154	.387	.00117	.00078	.548
%RSD	.10241	1.0444	2.0789	.36162	.16715	1.0930
#1	54.843	.14913	18.466	.32474	.46918	50.489
#2	54.908	.14611	19.047	.32289	.46885	50.395
#3	54.955	.14817	18.314	.32507	.46769	49.497
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.293	.50565	5.3307	.12058	.12110	.22240
Stddev	.083	.00110	.0117	.00134	.00081	.00270
%RSD	.16496	.21656	.21950	1.1115	.66941	1.2124
#1	50.362	.50585	5.3286	.12112	.12045	.22420
#2	50.201	.50664	5.3433	.12157	.12085	.22370
#3	50.316	.50447	5.3202	.11905	.12201	.21930
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-ad ms Acquired: 6/17/2019 11:32:12 Type: Unk

Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000

User: kerry Custom ID1: Custom ID2: Custom ID3:

Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.13847	8.7929	.47624	.58612	1.3713	.38580
Stddev	.00085	.0874	.00076	.00211	.0078	.00047
%RSD	.61334	.99431	.16059	.36057	.56940	.12288
#1	.13894	8.7457	.47709	.58831	1.3725	.38634
#2	.13898	8.8937	.47562	.58409	1.3785	.38548
#3	.13749	8.7391	.47600	.58597	1.3630	.38557
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.29172	.61850
Stddev	.00140	.00071
%RSD	.47948	.11437
#1	.29333	.61828
#2	.29090	.61929
#3	.29093	.61793
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-ad ms Acquired: 6/17/2019 11:32:12 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6965.0	225760.	19078.
Stddev	17.9	1087.	438.
%RSD	.25746	.48162	2.2954
#1	6953.1	224510.	19215.
#2	6956.3	226290.	18589.
#3	6985.6	226480.	19432.

Sample Name: 140-15376-a-1-ae msd   Acquired: 6/17/2019 11:37:05   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04813	110.05	.10426	.96096	.37665	.05141
Stddev	.00033	.31	.00097	.00319	.00066	.00018
%RSD	.67712	.28258	.93111	.33195	.17403	.35554
#1	.04807	109.76	.10436	.95877	.37589	.05142
#2	.04783	110.00	.10324	.95948	.37698	.05123
#3	.04848	110.38	.10517	.96462	.37707	.05159
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	56.730	.04815	.11073	.26403	.26192	32.476
Stddev	.363	.00016	.00005	.00215	.00136	.108
%RSD	.63990	.32197	.04692	.81405	.51786	.33161
#1	56.845	.04817	.11076	.26403	.26050	32.537
#2	56.323	.04798	.11075	.26189	.26204	32.352
#3	57.021	.04829	.11067	.26619	.26320	32.540
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-ae msd Acquired: 6/17/2019 11:37:05 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	54.765	.14831	18.608	.31774	.47359	49.982
Stddev	.216	.00074	.146	.00129	.00228	.679
%RSD	.39366	.49862	.78303	.40595	.48176	1.3582
#1	54.553	.14754	18.654	.31772	.47172	50.634
#2	54.758	.14836	18.445	.31646	.47292	50.033
#3	54.984	.14902	18.725	.31904	.47613	49.279
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.053	.50773	5.2877	.12137	.12082	.24035
Stddev	.166	.00065	.0170	.00307	.00009	.00282
%RSD	.33079	.12849	.32171	2.5302	.07140	1.1722
#1	49.878	.50809	5.2831	.12157	.12090	.23814
#2	50.073	.50698	5.2735	.11820	.12073	.23939
#3	50.208	.50813	5.3066	.12433	.12082	.24352
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-ae msd   Acquired: 6/17/2019 11:37:05   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.13909	8.9543	.47577	.58545	1.3936	.39054
Stddev	.00448	.0231	.00169	.00058	.0044	.00252
%RSD	3.2242	.25809	.35507	.09845	.31822	.64645
#1	.13471	8.9801	.47568	.58520	1.3906	.38823
#2	.14367	8.9356	.47413	.58610	1.3916	.39014
#3	.13890	8.9472	.47750	.58504	1.3987	.39323
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.29038	.62093
Stddev	.00140	.00212
%RSD	.48246	.34191
#1	.29008	.62026
#2	.28915	.61922
#3	.29191	.62330
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-ae msd Acquired: 6/17/2019 11:37:05 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6920.0	227380.	18929.
Stddev	5.1	1722.	219.
%RSD	.07299	.75731	1.1587
#1	6915.6	226410.	18789.
#2	6925.5	229370.	19182.
#3	6918.9	226360.	18816.

Sample Name: 140-15376-a-2-o   Acquired: 6/17/2019 11:41:58   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00012	32.682	.01640	.01666	.20922	.00281
Stddev	.00012	.209	.00061	.00116	.00193	.00002
%RSD	99.169	.63819	3.7157	6.9379	.92331	.68280
#1	.00000	32.917	.01705	.01791	.21145	.00283
#2	-.00024	32.613	.01584	.01563	.20812	.00280
#3	-.00013	32.517	.01632	.01644	.20808	.00280
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.3181	-.00060	.01731	.02821	.02335	32.094
Stddev	.0348	.00013	.00018	.00033	.00021	.184
%RSD	.65455	22.363	1.0270	1.1855	.90228	.57424
#1	5.3412	-.00072	.01751	.02851	.02349	32.286
#2	5.3350	-.00062	.01724	.02785	.02344	32.077
#3	5.2780	-.00045	.01718	.02827	.02311	31.918
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-o   Acquired: 6/17/2019 11:41:58   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.2970	.01176	3.4956	.14267	.00038	.83293
Stddev	.0445	.00083	.0152	.00178	.00013	.75349
%RSD	1.3491	7.0416	.43543	1.2474	33.727	90.462
#1	3.3484	.01229	3.4828	.14466	.00040	.26677
#2	3.2701	.01218	3.5124	.14123	.00049	1.6881
#3	3.2726	.01080	3.4914	.14211	.00024	.54388
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.48011	.02338	.36657	.02694	.02916	-.00034
Stddev	.01041	.00051	.00171	.00388	.00120	.00168
%RSD	2.1679	2.1826	.46712	14.386	4.1264	499.60
#1	.49182	.02395	.36777	.02883	.02805	-.00215
#2	.47191	.02325	.36461	.02248	.02899	.00115
#3	.47660	.02295	.36734	.02951	.03044	-.00000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-o Acquired: 6/17/2019 11:41:58 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00089	3.4132	.01144	.06857	.33805	-.00024
Stddev	.00190	.0524	.00003	.00058	.00222	.00107
%RSD	212.15	1.5357	.29956	.84745	.65682	448.45
#1	-.00180	3.4632	.01144	.06919	.34027	.00087
#2	-.00217	3.4176	.01148	.06804	.33805	-.00033
#3	.00128	3.3586	.01141	.06847	.33582	-.00127
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.04233	.13412
Stddev	.00053	.00040
%RSD	1.2482	.29615
#1	.04282	.13447
#2	.04241	.13421
#3	.04177	.13369
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-2-o   Acquired: 6/17/2019 11:41:58   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	7290.9	238880.	19466.
Stddev	25.8	2321.	245.
%RSD	.35442	.97166	1.2569
#1	7265.7	236310.	19464.
#2	7317.3	240830.	19223.
#3	7289.9	239520.	19712.

Sample Name: 140-15376-a-3-o Acquired: 6/17/2019 11:47:02 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00068	39.207	.05065	.02906	.71444	.00327
Stddev	.00013	.044	.00071	.00057	.00077	.00003
%RSD	19.638	.11111	1.3922	1.9702	.10747	.87854
#1	.00079	39.224	.04983	.02841	.71463	.00329
#2	.00053	39.239	.05109	.02949	.71359	.00324
#3	.00071	39.157	.05102	.02927	.71509	.00328
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.4611	-.00078	.13092	.03977	.03357	52.764
Stddev	.0070	.00005	.00018	.00038	.00038	.085
%RSD	.12842	6.2505	.13825	.94369	1.1261	.16168
#1	5.4535	-.00083	.13112	.04013	.03389	52.811
#2	5.4624	-.00076	.13088	.03938	.03366	52.665
#3	5.4674	-.00074	.13076	.03981	.03315	52.814
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-3-o   Acquired: 6/17/2019 11:47:02   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.1447	.04137	2.3862	.68587	.00495	2.6237
Stddev	.0143	.00096	.0051	.00195	.00009	.7199
%RSD	.19943	2.3108	.21450	.28453	1.7945	27.437
#1	7.1390	.04175	2.3839	.68555	.00494	2.8711
#2	7.1341	.04028	2.3827	.68409	.00486	1.8127
#3	7.1609	.04208	2.3921	.68795	.00504	3.1872
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.7684	.04862	.53201	.05005	.04970	-.00061
Stddev	.0124	.00029	.00150	.00113	.00044	.00197
%RSD	.44980	.59704	.28285	2.2583	.89488	322.10
#1	2.7576	.04880	.53314	.05135	.04924	-.00091
#2	2.7820	.04877	.53259	.04933	.05012	.00149
#3	2.7656	.04828	.53030	.04947	.04975	-.00242
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-3-o Acquired: 6/17/2019 11:47:02 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00258	3.6309	.01222	.25714	1.4854	.00153
Stddev	.00168	.0227	.00049	.00056	.0036	.00156
%RSD	65.193	.62636	4.0347	.21794	.23937	101.79
#1	.00106	3.6046	.01277	.25723	1.4882	.00014
#2	.00229	3.6428	.01206	.25654	1.4814	.00123
#3	.00438	3.6451	.01182	.25765	1.4867	.00323
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.08015	.08930
Stddev	.00046	.00014
%RSD	.57080	.15645
#1	.08045	.08944
#2	.07962	.08931
#3	.08037	.08916
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-3-o Acquired: 6/17/2019 11:47:02 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	7275.6	237720.	19335.
Stddev	26.4	875.	96.
%RSD	.36344	.36798	.49617
#1	7256.7	236720.	19227.
#2	7264.3	238360.	19368.
#3	7305.8	238090.	19410.

Sample Name: 15376-a-1-ac SD@5 Acquired: 6/17/2019 11:52:06 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00035	5.0371	.00089	.00050	.04051	.00039
Stddev	.00007	.0481	.00009	.00015	.00016	.00000
%RSD	20.921	.95435	9.8875	30.496	.39633	1.1264
#1	.00034	4.9832	.00080	.00049	.04038	.00039
#2	.00043	5.0524	.00090	.00065	.04069	.00039
#3	.00029	5.0756	.00097	.00035	.04046	.00040
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.1512	-.00005	.00245	.00721	.00340	4.5542
Stddev	.0183	.00013	.00014	.00032	.00011	.0175
%RSD	.84915	247.86	5.7161	4.5096	3.3185	.38468
#1	2.1339	.00008	.00229	.00688	.00349	4.5455
#2	2.1703	-.00019	.00253	.00722	.00327	4.5743
#3	2.1493	-.00006	.00253	.00753	.00343	4.5427
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-ac SD@5 Acquired: 6/17/2019 11:52:06 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.88610	.00540	1.3687	.04585	.00013	1.0046
Stddev	.02373	.00074	.0149	.00047	.00016	.3592
%RSD	2.6779	13.770	1.0874	1.0351	118.18	35.758
#1	.86508	.00626	1.3763	.04536	.00006	1.0445
#2	.88140	.00502	1.3782	.04590	.00031	.62713
#3	.91183	.00493	1.3515	.04630	.00003	1.3423
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.39781	.00489	.12010	.00326	.00468	-.00056
Stddev	.00424	.00016	.00144	.00121	.00143	.00112
%RSD	1.0657	3.2903	1.2024	37.262	30.668	199.66
#1	.40233	.00481	.12064	.00188	.00432	-.00124
#2	.39718	.00507	.11846	.00370	.00625	-.00117
#3	.39393	.00478	.12119	.00419	.00345	.00073
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-ac SD@5 Acquired: 6/17/2019 11:52:06 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00066	.73706	.00247	.01755	.14547	.00091
Stddev	.00239	.02210	.00042	.00025	.00076	.00050
%RSD	361.34	2.9981	16.933	1.4047	.52075	55.233
#1	-.00150	.71323	.00227	.01783	.14610	.00049
#2	-.00251	.75688	.00219	.01736	.14569	.00147
#3	.00203	.74106	.00295	.01746	.14463	.00078
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00925	.02763
Stddev	.00012	.00010
%RSD	1.2707	.34448
#1	.00914	.02773
#2	.00924	.02762
#3	.00937	.02754
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 15376-a-1-ac SD@5   Acquired: 6/17/2019 11:52:06   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6861.8	225910.	17925.
Stddev	34.2	2594.	212.
%RSD	.49811	1.1481	1.1831
#1	6823.9	228380.	18116.
#2	6871.5	226150.	17697.
#3	6890.1	223210.	17962.

Sample Name: CCV Acquired: 6/17/2019 11:57:14 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.96744	24.371	.49007	1.9684	2.0446	1.9736
Stddev	.00356	.021	.00067	.0065	.0035	.0032
%RSD	.36779	.08416	.13670	.33244	.17154	.16003
#1	.96401	24.348	.49028	1.9618	2.0471	1.9712
#2	.96720	24.386	.49061	1.9684	2.0406	1.9725
#3	.97112	24.381	.48932	1.9749	2.0460	1.9772
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	47.893	.49644	2.0112	1.9436	2.0306	24.824
Stddev	.219	.00051	.0025	.0060	.0088	.134
%RSD	.45801	.10286	.12543	.30756	.43206	.54089
#1	47.653	.49585	2.0084	1.9466	2.0208	24.706
#2	47.941	.49668	2.0120	1.9367	2.0333	24.795
#3	48.084	.49679	2.0132	1.9474	2.0377	24.970
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/17/2019 11:57:14 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.995	1.9930	47.154	1.9628	2.0288	49.004
Stddev	.074	.0095	.457	.0056	.0027	.657
%RSD	.15178	.47627	.96919	.28458	.13113	1.3399
#1	49.077	1.9948	46.664	1.9627	2.0258	49.285
#2	48.932	1.9827	47.229	1.9572	2.0295	48.253
#3	48.974	2.0014	47.569	1.9684	2.0310	49.473
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.454	1.9804	1.9673	.47428	.49484	.49717
Stddev	.080	.0017	.0023	.00315	.00221	.00038
%RSD	.16252	.08447	.11781	.66398	.44586	.07572
#1	49.547	1.9785	1.9671	.47724	.49510	.49714
#2	49.413	1.9818	1.9697	.47097	.49691	.49680
#3	49.403	1.9809	1.9650	.47461	.49252	.49756
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/17/2019 11:57:14 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50321	1.9522	1.9836	2.0395	1.9859	.99070
Stddev	.00094	.0055	.0043	.0042	.0020	.00137
%RSD	.18597	.27992	.21639	.20358	.09993	.13828
#1	.50221	1.9573	1.9802	2.0402	1.9839	.99006
#2	.50335	1.9465	1.9884	2.0351	1.9859	.99227
#3	.50407	1.9529	1.9820	2.0433	1.9878	.98976
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	1.9695	2.0104
Stddev	.0032	.0014
%RSD	.16249	.06740
#1	1.9691	2.0090
#2	1.9665	2.0105
#3	1.9729	2.0117
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV   Acquired: 6/17/2019 11:57:14   Type: QC
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6630.5	222690.	18719.
Stddev	6.3	536.	87.
%RSD	.09576	.24066	.46289
#1	6623.2	222100.	18819.
#2	6634.9	223150.	18678.
#3	6633.3	222810.	18661.

Sample Name: CCB   Acquired: 6/17/2019 12:02:17   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00034	.00070	-.00068	.00065	-.00005	-.00002
Stddev	.00024	.01262	.00028	.00073	.00003	.00001
%RSD	69.722	1812.9	41.383	112.37	56.191	58.987
#1	.00022	-.00484	-.00038	.00149	-.00002	-.00001
#2	.00062	.01514	-.00073	.00025	-.00005	-.00002
#3	.00019	-.00821	-.00094	.00020	-.00007	-.00002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00253	.00007	-.00004	.00007	.00021	.00010
Stddev	.00029	.00005	.00010	.00023	.00011	.00169
%RSD	11.494	78.784	254.74	341.66	54.540	1674.2
#1	-.00261	.00001	.00003	.00003	.00013	-.00169
#2	-.00278	.00009	-.00015	.00031	.00034	.00168
#3	-.00221	.00011	.00000	-.00014	.00015	.00031
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/17/2019 12:02:17 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01369	.00099	.00288	.00004	.00008	.14188
Stddev	.00915	.00031	.00362	.00002	.00032	.37911
%RSD	66.844	30.869	125.79	48.747	418.20	267.20
#1	.01480	.00069	.00685	.00003	-.00019	.57946
#2	.02223	.00131	-.00022	.00006	-.00001	-.06584
#3	.00403	.00098	.00199	.00002	.00043	-.08797
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.02413	.00045	-.00046	-.00251	-.00027	-.00007
Stddev	.01113	.00030	.00053	.00228	.00104	.00092
%RSD	46.120	65.639	116.18	90.783	392.02	1412.5
#1	-.01986	.00016	-.00027	-.00384	.00043	-.00104
#2	-.01577	.00075	-.00106	.00012	-.00146	.00080
#3	-.03676	.00046	-.00005	-.00382	.00024	.00005
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB   Acquired: 6/17/2019 12:02:17   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00062	-.00499	-.00024	.00001	.00002	.00113
Stddev	.00178	.00450	.00018	.00006	.00067	.00092
%RSD	287.65	90.193	72.195	472.05	3369.8	81.089
#1	.00129	-.00253	-.00011	-.00004	.00064	.00102
#2	-.00092	-.01018	-.00018	-.00000	-.00068	.00210
#3	-.00222	-.00225	-.00044	.00008	.00010	.00027
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00010	-.00006
Stddev	.00014	.00004
%RSD	131.87	64.654
#1	.00025	-.00008
#2	.00009	-.00009
#3	-.00002	-.00002
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB   Acquired: 6/17/2019 12:02:17   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6796.9	220860.	18002.
Stddev	24.9	3114.	632.
%RSD	.36654	1.4100	3.5133
#1	6775.5	224340.	18630.
#2	6791.0	219900.	18013.
#3	6824.3	218330.	17365.

Sample Name: 140-15377-a-1-o Acquired: 6/17/2019 12:07:29 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00004	15.091	.00961	.01600	.07577	.00142
Stddev	.00017	.082	.00086	.00066	.00005	.00001
%RSD	452.82	.54392	8.9592	4.1425	.06671	.78867
#1	.00022	15.174	.01060	.01658	.07573	.00142
#2	-.00011	15.087	.00918	.01615	.07582	.00143
#3	.00001	15.010	.00905	.01528	.07575	.00141
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	34.208	-.00019	.00488	.02583	.00656	11.602
Stddev	.165	.00003	.00012	.00027	.00039	.046
%RSD	.48151	13.867	2.5321	1.0638	5.9261	.39261
#1	34.368	-.00018	.00475	.02610	.00619	11.643
#2	34.217	-.00022	.00489	.02555	.00697	11.609
#3	34.039	-.00017	.00500	.02584	.00653	11.553
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-1-o Acquired: 6/17/2019 12:07:29 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2820	.00682	2.4819	.09195	.00096	.95596
Stddev	.0388	.00061	.0073	.00050	.00017	.73670
%RSD	3.0264	9.0065	.29276	.54031	18.028	77.064
#1	1.2556	.00677	2.4754	.09234	.00092	1.0802
#2	1.3266	.00747	2.4897	.09212	.00115	.16503
#3	1.2640	.00624	2.4805	.09139	.00081	1.6226
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.63452	.01134	.15126	.01385	.01678	-.00177
Stddev	.00240	.00017	.00225	.00202	.00067	.00098
%RSD	.37828	1.4966	1.4894	14.605	3.9844	55.313
#1	.63435	.01136	.15168	.01428	.01619	-.00175
#2	.63700	.01150	.14883	.01563	.01664	-.00276
#3	.63220	.01116	.15327	.01165	.01751	-.00080
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-1-o Acquired: 6/17/2019 12:07:29 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00105	4.9919	.01042	.02887	.08773	.00122
Stddev	.00104	.0745	.00016	.00006	.00078	.00170
%RSD	99.314	1.4921	1.5272	.22513	.88469	139.68
#1	-.00149	5.0767	.01060	.02891	.08771	.00210
#2	-.00179	4.9621	.01034	.02879	.08852	.00230
#3	.00014	4.9370	.01032	.02890	.08697	-.00074
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.03857	.02067
Stddev	.00017	.00008
%RSD	.42870	.36295
#1	.03868	.02072
#2	.03865	.02071
#3	.03838	.02059
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-1-o Acquired: 6/17/2019 12:07:29 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	7442.1	240150.	19071.
Stddev	12.6	1242.	204.
%RSD	.16995	.51726	1.0713
#1	7427.7	239060.	18847.
#2	7447.1	239880.	19120.
#3	7451.4	241500.	19247.

Sample Name: 140-15377-a-2-o   Acquired: 6/17/2019 12:12:38   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00007	7.2957	.00449	.02326	.04267	.00031
Stddev	.00027	.0200	.00036	.00074	.00018	.00000
%RSD	361.86	.27456	8.0336	3.1816	.43294	.87830
#1	.00015	7.3181	.00434	.02347	.04280	.00032
#2	-.00037	7.2796	.00490	.02243	.04246	.00031
#3	-.00001	7.2892	.00423	.02387	.04275	.00031
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.6019	-.00005	.00261	.01458	.00333	6.3525
Stddev	.0030	.00003	.00012	.00015	.00038	.0270
%RSD	.11471	56.561	4.4946	1.0128	11.387	.42462
#1	2.5995	-.00006	.00249	.01460	.00302	6.3810
#2	2.6009	-.00002	.00272	.01472	.00320	6.3489
#3	2.6052	-.00008	.00262	.01443	.00375	6.3274
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-2-o Acquired: 6/17/2019 12:12:38 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.71656	.00295	1.1204	.10125	.00113	1.2275
Stddev	.01560	.00147	.0128	.00044	.00021	1.0013
%RSD	2.1769	49.778	1.1442	.43664	18.652	81.572
#1	.72998	.00167	1.1059	.10176	.00126	.08582
#2	.69944	.00455	1.1254	.10093	.00123	1.6402
#3	.72026	.00262	1.1300	.10107	.00088	1.9566
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.28467	.00522	.10132	.00497	.00693	-.00003
Stddev	.00823	.00028	.00208	.00141	.00112	.00232
%RSD	2.8903	5.3319	2.0536	28.389	16.218	7417.2
#1	.27533	.00554	.10243	.00658	.00584	.00025
#2	.28779	.00504	.10262	.00396	.00686	-.00248
#3	.29087	.00507	.09892	.00436	.00808	.00213
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-2-o   Acquired: 6/17/2019 12:12:38   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00187	3.3429	.01138	.01204	.08553	.00209
Stddev	.00046	.0263	.00061	.00014	.00058	.00136
%RSD	24.656	.78586	5.4042	1.1550	.67836	64.843
#1	-.00178	3.3725	.01070	.01207	.08540	.00287
#2	-.00146	3.3224	.01155	.01216	.08617	.00288
#3	-.00237	3.3337	.01189	.01189	.08503	.00053
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02750	.01094
Stddev	.00014	.00013
%RSD	.52560	1.1655
#1	.02756	.01108
#2	.02761	.01085
#3	.02734	.01089
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-2-o Acquired: 6/17/2019 12:12:38 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6920.9	227110.	18049.
Stddev	2.6	1108.	46.
%RSD	.03735	.48799	.25330
#1	6918.5	225960.	18063.
#2	6920.5	227200.	18087.
#3	6923.7	228180.	17998.

Sample Name: 140-15440-a-5-d   Acquired: 6/17/2019 12:17:49   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00029	.01254	.04388	.02307	.00449	-.00001
Stddev	.00028	.01321	.00252	.00022	.00005	.00001
%RSD	94.651	105.32	5.7520	.96651	1.0039	170.56
#1	.00009	.02084	.04188	.02327	.00447	-.00002
#2	.00061	-.00269	.04671	.02310	.00446	.00000
#3	.00018	.01947	.04303	.02283	.00455	-.00000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.12974	-.00005	.00030	.00235	.00417	.03977
Stddev	.00110	.00002	.00011	.00020	.00013	.00072
%RSD	.84584	46.814	37.686	8.3257	3.0230	1.8200
#1	.12852	-.00005	.00043	.00236	.00415	.04049
#2	.13004	-.00002	.00020	.00254	.00431	.03904
#3	.13065	-.00006	.00028	.00215	.00406	.03978
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-5-d   Acquired: 6/17/2019 12:17:49   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.08943	.00055	.02396	.00063	-.00249	.97892
Stddev	.01445	.00044	.00349	.00003	.00023	.17017
%RSD	16.153	80.986	14.567	3.9954	9.0545	17.384
#1	.08304	.00101	.02714	.00066	-.00252	1.0128
#2	.07928	.00050	.02452	.00062	-.00270	1.1296
#3	.10597	.00013	.02022	.00062	-.00225	.79437
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.23630	.00018	.22319	.00199	.00308	-.00847
Stddev	.00556	.00029	.00682	.00118	.00154	.00209
%RSD	2.3548	160.88	3.0558	59.136	50.042	24.691
#1	.22989	.00051	.22037	.00099	.00133	-.00663
#2	.23994	-.00003	.23097	.00329	.00366	-.00804
#3	.23906	.00006	.21823	.00169	.00425	-.01075
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-5-d   Acquired: 6/17/2019 12:17:49   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.06985	.06150	.13380	.00053	.00046	-.04291
Stddev	.00444	.01676	.00242	.00013	.00073	.00367
%RSD	6.3553	27.250	1.8084	23.794	157.89	8.5620
#1	.06564	.07675	.13197	.00039	-.00020	-.03869
#2	.07449	.06420	.13655	.00064	.00124	-.04467
#3	.06942	.04356	.13289	.00054	.00035	-.04538
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00018	.02430
Stddev	.00029	.00042
%RSD	163.98	1.7155
#1	.00048	.02409
#2	.00016	.02478
#3	-.00011	.02404
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15440-a-5-d Acquired: 6/17/2019 12:17:49 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6068.7	209490.	18658.
Stddev	96.5	273.	12.
%RSD	1.5896	.13024	.06192
#1	6112.9	209520.	18667.
#2	5958.1	209200.	18661.
#3	6135.2	209740.	18645.

Sample Name: 140-15440-a-5-e ms Acquired: 6/17/2019 12:23:03 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04641	1.8591	.19626	.94868	.10833	.05837
Stddev	.00019	.0156	.00090	.00218	.00044	.00053
%RSD	.41298	.84052	.45607	.23015	.41025	.90993
#1	.04663	1.8771	.19701	.95081	.10882	.05898
#2	.04627	1.8498	.19649	.94645	.10794	.05811
#3	.04633	1.8503	.19527	.94880	.10824	.05801
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	46.716	.05094	.10361	.20431	.25589	1.0317
Stddev	1.128	.00015	.00016	.00225	.00056	.0173
%RSD	2.4145	.29964	.15159	1.1010	.22070	1.6810
#1	48.018	.05077	.10367	.20691	.25642	1.0509
#2	46.036	.05106	.10372	.20309	.25530	1.0171
#3	46.093	.05100	.10343	.20294	.25595	1.0272
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-5-e ms   Acquired: 6/17/2019 12:23:03   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	46.298	.10133	8.6166	.10063	.54860	48.522
Stddev	.455	.00092	.2737	.00108	.00011	1.145
%RSD	.98305	.91142	3.1765	1.0718	.02023	2.3604
#1	46.823	.10155	8.9293	.10181	.54871	49.804
#2	46.035	.10032	8.4204	.09971	.54859	47.601
#3	46.035	.10212	8.5002	.10036	.54849	48.161
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	47.517	.50660	6.3065	.08382	.09149	.49598
Stddev	.263	.00062	.0229	.00273	.00178	.00532
%RSD	.55351	.12285	.36343	3.2548	1.9466	1.0722
#1	47.814	.50590	6.3298	.08611	.08949	.50131
#2	47.315	.50683	6.3055	.08453	.09209	.49595
#3	47.421	.50708	6.2840	.08080	.09289	.49068
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-5-e ms Acquired: 6/17/2019 12:23:03 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.33448	4.5695	.60453	.51616	.10227	.33308
Stddev	.00079	.0777	.00141	.00100	.00078	.00558
%RSD	.23564	1.6995	.23251	.19409	.76442	1.6747
#1	.33393	4.6592	.60335	.51543	.10317	.32665
#2	.33413	4.5235	.60415	.51575	.10171	.33651
#3	.33538	4.5258	.60609	.51730	.10194	.33610
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20701	.51795
Stddev	.00157	.00104
%RSD	.76081	.20115
#1	.20882	.51817
#2	.20605	.51886
#3	.20615	.51681
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15440-a-5-e ms Acquired: 6/17/2019 12:23:03 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	5909.9	207740.	19429.
Stddev	33.7	1472.	618.
%RSD	.57004	.70872	3.1815
#1	5886.1	206050.	18719.
#2	5895.2	208440.	19723.
#3	5948.5	208740.	19846.

Sample Name: 140-15440-a-5-f msd Acquired: 6/17/2019 12:28:00 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04529	1.8473	.17281	.92651	.10513	.05698
Stddev	.00011	.0117	.00136	.00346	.00029	.00022
%RSD	.24869	.63424	.78644	.37316	.27963	.38531
#1	.04519	1.8590	.17169	.92295	.10480	.05674
#2	.04528	1.8356	.17432	.92672	.10536	.05702
#3	.04541	1.8473	.17243	.92985	.10522	.05718
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	46.201	.05041	.10169	.20375	.24726	1.0109
Stddev	1.033	.00009	.00036	.00088	.00174	.0127
%RSD	2.2365	.17745	.35407	.43054	.70443	1.2560
#1	46.687	.05032	.10152	.20285	.24554	1.0126
#2	45.014	.05042	.10211	.20381	.24722	.99741
#3	46.901	.05050	.10145	.20460	.24902	1.0226
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-5-f msd Acquired: 6/17/2019 12:28:00 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	45.307	.09775	8.6352	.09939	.53342	47.120
Stddev	.372	.00177	.2746	.00026	.00054	.294
%RSD	.82113	1.8155	3.1796	.25856	.10140	.62357
#1	45.369	.09593	8.8306	.09959	.53290	47.159
#2	44.907	.09948	8.3212	.09947	.53398	46.808
#3	45.644	.09784	8.7536	.09910	.53338	47.392
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	46.524	.49877	5.8752	.08768	.09256	.47378
Stddev	.218	.00083	.0070	.00089	.00225	.00201
%RSD	.46754	.16711	.11967	1.0195	2.4284	.42456
#1	46.443	.49784	5.8790	.08728	.09504	.47205
#2	46.359	.49945	5.8670	.08871	.09200	.47599
#3	46.771	.49902	5.8794	.08706	.09065	.47330
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-5-f msd   Acquired: 6/17/2019 12:28:00   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.29202	4.5230	.59533	.50397	.09894	.33870
Stddev	.00319	.0709	.00154	.00024	.00142	.00532
%RSD	1.0914	1.5675	.25843	.04744	1.4362	1.5712
#1	.29448	4.5699	.59433	.50402	.09878	.34426
#2	.29317	4.4414	.59710	.50418	.09760	.33365
#3	.28842	4.5576	.59456	.50371	.10043	.33819
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20494	.50732
Stddev	.00081	.00021
%RSD	.39498	.04051
#1	.20419	.50747
#2	.20483	.50709
#3	.20580	.50741
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15440-a-5-f msd Acquired: 6/17/2019 12:28:00 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6034.5	206190.	18811.
Stddev	14.4	458.	669.
%RSD	.23820	.22212	3.5588
#1	6017.9	206650.	18422.
#2	6043.1	206210.	19584.
#3	6042.4	205730.	18428.

Sample Name: 140-15440-a-5-d PDS Acquired: 6/17/2019 12:32:55 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04749	1.9430	.16497	.98623	.11158	.05869
Stddev	.00008	.0119	.00180	.00106	.00030	.00033
%RSD	.15808	.61453	1.0941	.10776	.26500	.55481
#1	.04743	1.9305	.16689	.98524	.11125	.05832
#2	.04747	1.9543	.16472	.98735	.11170	.05891
#3	.04757	1.9444	.16330	.98611	.11181	.05884
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.798	.05283	.10684	.21375	.26220	1.4397
Stddev	.067	.00028	.00042	.00124	.00138	.0581
%RSD	.13679	.52221	.38886	.58028	.52458	4.0380
#1	48.791	.05254	.10693	.21234	.26378	1.4825
#2	48.868	.05309	.10719	.21469	.26123	1.4631
#3	48.735	.05287	.10638	.21420	.26160	1.3735
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-5-d PDS Acquired: 6/17/2019 12:32:55 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	47.831	.10350	9.2149	.10738	.56125	49.713
Stddev	.074	.00097	.0250	.00066	.00235	.569
%RSD	.15398	.93432	.27177	.61586	.41811	1.1453
#1	47.758	.10249	9.1943	.10730	.56370	49.366
#2	47.829	.10442	9.2428	.10808	.56103	50.370
#3	47.905	.10359	9.2076	.10676	.55902	49.402
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.922	.52213	5.9641	.09229	.09652	.49843
Stddev	.084	.00207	.0273	.00055	.00246	.00083
%RSD	.17257	.39605	.45849	.59562	2.5456	.16557
#1	48.914	.52213	5.9931	.09168	.09421	.49888
#2	48.841	.52419	5.9605	.09274	.09910	.49748
#3	49.010	.52006	5.9388	.09245	.09626	.49893
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-5-d PDS Acquired: 6/17/2019 12:32:55 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.28671	4.8482	.61864	.53085	.10597	.37144
Stddev	.00248	.0377	.00364	.00198	.00045	.00044
%RSD	.86554	.77714	.58776	.37345	.42668	.11798
#1	.28935	4.8049	.61634	.52861	.10558	.37093
#2	.28442	4.8668	.62283	.53158	.10646	.37172
#3	.28637	4.8730	.61674	.53237	.10586	.37167
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.21455	.53236
Stddev	.00097	.00157
%RSD	.45326	.29462
#1	.21349	.53311
#2	.21540	.53342
#3	.21476	.53056
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15440-a-5-d PDS Acquired: 6/17/2019 12:32:55 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6288.2	214060.	19013.
Stddev	47.0	570.	82.
%RSD	.74686	.26612	.42992
#1	6235.5	214690.	19031.
#2	6303.5	213580.	18924.
#3	6325.6	213910.	19084.

Sample Name: 140-15440-a-10-d Acquired: 6/17/2019 12:37:50 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00015	.00650	.01074	.02048	.00002	-.00001
Stddev	.00027	.00296	.00125	.00104	.00016	.00000
%RSD	174.00	45.601	11.661	5.0817	785.23	28.832
#1	.00043	.00488	.01015	.02167	-.00015	-.00001
#2	.00014	.00469	.01218	.02004	.00018	-.00002
#3	-.00011	.00992	.00989	.01974	.00003	-.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04338	.00002	.00007	.00170	.00120	.01486
Stddev	.00052	.00006	.00018	.00027	.00027	.00159
%RSD	1.2076	294.21	276.86	15.581	22.295	10.672
#1	.04351	.00003	.00027	.00200	.00104	.01651
#2	.04281	-.00004	-.00004	.00151	.00106	.01471
#3	.04383	.00007	-.00003	.00159	.00151	.01335
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-10-d Acquired: 6/17/2019 12:37:50 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.14732	.00062	.02642	.00035	-.00079	.40027
Stddev	.02339	.00162	.01262	.00003	.00007	.76120
%RSD	15.874	259.07	47.790	9.6353	8.8062	190.17
#1	.16872	.00060	.01760	.00038	-.00086	-.41962
#2	.15090	-.00098	.04088	.00031	-.00072	1.0846
#3	.12236	.00225	.02077	.00037	-.00080	.53587
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03068	.00072	.12406	-.00236	-.00040	-.00339
Stddev	.00872	.00031	.00175	.00077	.00036	.00051
%RSD	28.420	43.086	1.4066	32.502	88.443	15.120
#1	.03729	.00039	.12498	-.00148	-.00029	-.00398
#2	.02080	.00076	.12516	-.00269	-.00080	-.00314
#3	.03395	.00100	.12205	-.00291	-.00012	-.00305
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-10-d Acquired: 6/17/2019 12:37:50 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01893	.04278	.12303	.00002	-.00040	-.01037
Stddev	.00175	.00855	.00029	.00010	.00006	.00131
%RSD	9.2375	19.997	.23396	411.35	14.947	12.604
#1	.01697	.05235	.12289	.00013	-.00034	-.00995
#2	.01951	.03588	.12336	-.00005	-.00041	-.00933
#3	.02032	.04011	.12284	-.00001	-.00045	-.01184
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00013	.00929
Stddev	.00019	.00009
%RSD	152.56	.93984
#1	.00027	.00934
#2	-.00009	.00935
#3	.00021	.00919
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15440-a-10-d Acquired: 6/17/2019 12:37:50 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6496.6	214390.	17555.
Stddev	43.5	1910.	36.
%RSD	.66977	.89107	.20683
#1	6454.4	212200.	17550.
#2	6494.2	215710.	17522.
#3	6541.3	215270.	17594.

Sample Name: 140-15440-a-10-e ms Acquired: 6/17/2019 12:43:01 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04849	2.0334	.13447	.98591	.10818	.05767
Stddev	.00047	.0296	.00055	.00314	.00048	.00044
%RSD	.97223	1.4546	.40891	.31867	.44277	.77012
#1	.04850	2.0207	.13458	.98230	.10766	.05717
#2	.04801	2.0123	.13387	.98748	.10860	.05801
#3	.04895	2.0672	.13496	.98797	.10829	.05783
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.712	.05362	.10808	.21467	.26498	1.0890
Stddev	.193	.00009	.00017	.00199	.00046	.0051
%RSD	.38073	.15982	.15529	.92577	.17529	.47148
#1	50.677	.05361	.10788	.21239	.26543	1.0928
#2	50.538	.05355	.10819	.21601	.26451	1.0831
#3	50.920	.05372	.10815	.21562	.26499	1.0909
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-10-e ms   Acquired: 6/17/2019 12:43:01   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.300	.10400	9.7205	.10523	.55699	51.426
Stddev	.038	.00027	.0503	.00044	.00054	.339
%RSD	.07650	.25823	.51782	.41737	.09668	.65972
#1	49.264	.10372	9.7009	.10472	.55638	51.507
#2	49.339	.10400	9.6829	.10545	.55721	51.054
#3	49.298	.10426	9.7777	.10551	.55739	51.718
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.263	.52852	5.5601	.09484	.09956	.50411
Stddev	.063	.00099	.0071	.00394	.00062	.00134
%RSD	.12441	.18646	.12715	4.1523	.62177	.26670
#1	50.192	.52912	5.5525	.09441	.09975	.50256
#2	50.309	.52738	5.5664	.09898	.09887	.50485
#3	50.289	.52906	5.5615	.09113	.10007	.50492
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-10-e ms   Acquired: 6/17/2019 12:43:01   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.22913	4.9101	.63340	.53404	.10752	.32439
Stddev	.00095	.0241	.00133	.00144	.00039	.00461
%RSD	.41641	.49127	.21017	.26896	.36156	1.4212
#1	.22831	4.9017	.63195	.53250	.10718	.32941
#2	.22890	4.8913	.63370	.53426	.10744	.32035
#3	.23018	4.9373	.63456	.53535	.10794	.32341
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.21737	.52721
Stddev	.00165	.00027
%RSD	.75834	.05094
#1	.21550	.52693
#2	.21862	.52746
#3	.21799	.52723
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15440-a-10-e ms   Acquired: 6/17/2019 12:43:01   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6287.2	211890.	17760.
Stddev	10.1	576.	125.
%RSD	.16002	.27184	.70244
#1	6295.6	212450.	17717.
#2	6276.1	211920.	17900.
#3	6290.0	211300.	17662.

Sample Name: 140-15440-a-10-f msd   Acquired: 6/17/2019 12:47:58   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04826	2.0058	.14396	.98097	.10844	.05827
Stddev	.00064	.0130	.00126	.00357	.00017	.00013
%RSD	1.3270	.64551	.87357	.36376	.15603	.22601
#1	.04866	1.9956	.14498	.98502	.10852	.05836
#2	.04860	2.0014	.14255	.97828	.10824	.05811
#3	.04752	2.0203	.14435	.97962	.10855	.05833
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.009	.05407	.10901	.21600	.26360	1.0876
Stddev	.288	.00044	.00111	.00051	.00194	.0040
%RSD	.57589	.81564	1.0158	.23678	.73608	.36734
#1	49.780	.05458	.11022	.21649	.26556	1.0857
#2	49.915	.05381	.10805	.21547	.26168	1.0922
#3	50.332	.05383	.10877	.21605	.26357	1.0849
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-10-f msd   Acquired: 6/17/2019 12:47:58   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.834	.10459	9.5770	.10556	.56555	50.878
Stddev	.118	.00061	.0863	.00052	.00570	.321
%RSD	.24249	.58704	.90094	.49080	1.0072	.63123
#1	48.807	.10426	9.4981	.10614	.57195	50.741
#2	48.731	.10530	9.5636	.10516	.56104	50.649
#3	48.963	.10421	9.6692	.10537	.56366	51.245
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.853	.53263	5.7361	.09209	.09953	.50707
Stddev	.135	.00432	.0478	.00139	.00043	.00314
%RSD	.27054	.81167	.83359	1.5049	.43525	.61902
#1	49.912	.53762	5.7912	.09285	.09939	.51039
#2	49.698	.53001	5.7058	.09293	.09918	.50415
#3	49.948	.53027	5.7113	.09049	.10001	.50667
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-10-f msd   Acquired: 6/17/2019 12:47:58   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.24837	4.8822	.63522	.53565	.10694	.31912
Stddev	.00136	.0237	.00688	.00063	.00150	.00470
%RSD	.54640	.48582	1.0831	.11811	1.4067	1.4739
#1	.24688	4.8627	.64279	.53594	.10533	.32455
#2	.24953	4.8754	.62936	.53492	.10717	.31653
#3	.24871	4.9086	.63351	.53608	.10831	.31628
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.21710	.53173
Stddev	.00104	.00516
%RSD	.47837	.97020
#1	.21827	.53765
#2	.21628	.52814
#3	.21674	.52942
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15440-a-10-f msd   Acquired: 6/17/2019 12:47:58   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6226.9	212530.	18197.
Stddev	47.2	584.	91.
%RSD	.75825	.27470	.50146
#1	6173.4	211860.	18241.
#2	6262.8	212840.	18257.
#3	6244.6	212900.	18092.

Sample Name: 15440-a-10-d SD@5 Acquired: 6/17/2019 12:52:54 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00022	-.00561	.00291	.00285	.00000	-.00001
Stddev	.00013	.00424	.00165	.00032	.00023	.00001
%RSD	60.899	75.565	56.653	11.223	16291.	104.47
#1	.00009	-.01046	.00468	.00302	.00023	-.00001
#2	.00020	-.00372	.00264	.00248	-.00022	-.00000
#3	.00035	-.00264	.00142	.00306	-.00000	-.00002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01486	.00008	.00002	.00025	.00064	.00315
Stddev	.00026	.00006	.00013	.00013	.00011	.00192
%RSD	1.7804	74.728	743.87	51.620	17.878	60.911
#1	.01485	.00006	.00006	.00035	.00052	.00402
#2	.01513	.00003	-.00013	.00028	.00064	.00095
#3	.01460	.00015	.00012	.00011	.00074	.00449
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15440-a-10-d SD@5 Acquired: 6/17/2019 12:52:54 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05212	.00008	.01376	.00011	-.00009	.50029
Stddev	.02664	.00107	.02111	.00004	.00023	.33253
%RSD	51.125	1359.3	153.35	38.855	265.56	66.467
#1	.03535	-.00107	.03330	.00007	-.00019	.15584
#2	.08284	.00026	-.00862	.00015	.00018	.81946
#3	.03816	.00105	.01661	.00010	-.00024	.52557
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.01703	.00063	.02564	-.00233	.00004	-.00158
Stddev	.00728	.00008	.00136	.00252	.00055	.00136
%RSD	42.771	12.824	5.3091	107.97	1397.0	86.340
#1	-.00863	.00063	.02604	.00054	-.00060	-.00248
#2	-.02159	.00055	.02675	-.00337	.00029	-.00001
#3	-.02088	.00071	.02412	-.00416	.00042	-.00223
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15440-a-10-d SD@5 Acquired: 6/17/2019 12:52:54 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00275	.01892	.02524	-.00003	-.00023	-.00228
Stddev	.00152	.00899	.00018	.00011	.00062	.00218
%RSD	55.270	47.536	.71640	439.65	262.25	95.464
#1	.00355	.02029	.02505	-.00003	-.00094	-.00123
#2	.00100	.02715	.02541	-.00013	.00017	-.00479
#3	.00371	.00932	.02525	.00009	.00007	-.00083
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00014	.00377
Stddev	.00012	.00001
%RSD	81.405	.38252
#1	.00020	.00376
#2	.00022	.00379
#3	.00001	.00377
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 15440-a-10-d SD@5 Acquired: 6/17/2019 12:52:54 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6704.8	217950.	17374.
Stddev	8.4	904.	66.
%RSD	.12468	.41456	.37773
#1	6709.4	218680.	17299.
#2	6695.1	218230.	17397.
#3	6709.8	216940.	17424.

Sample Name: CCV   Acquired: 6/17/2019 12:58:05   Type: QC
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.94832	24.465	.47983	1.9522	2.0327	2.0153
Stddev	.00284	.077	.00165	.0058	.0022	.0026
%RSD	.29950	.31647	.34323	.29530	.11001	.12767
#1	.94689	24.384	.48034	1.9496	2.0327	2.0174
#2	.94647	24.539	.47798	1.9482	2.0350	2.0161
#3	.95159	24.470	.48115	1.9588	2.0305	2.0125
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.286	.50214	2.0204	2.0099	1.9889	25.632
Stddev	.036	.00034	.0021	.0021	.0029	.024
%RSD	.07288	.06703	.10400	.10492	.14793	.09363
#1	49.249	.50188	2.0180	2.0080	1.9923	25.623
#2	49.321	.50201	2.0209	2.0094	1.9870	25.659
#3	49.289	.50252	2.0221	2.0122	1.9875	25.614
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/17/2019 12:58:05 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	47.873	1.9058	49.712	1.9871	2.0223	48.106
Stddev	.122	.0024	.153	.0013	.0019	1.336
%RSD	.25431	.12483	.30794	.06369	.09374	2.7772
#1	47.733	1.9043	49.581	1.9874	2.0210	47.030
#2	47.956	1.9086	49.880	1.9856	2.0214	49.602
#3	47.928	1.9046	49.674	1.9881	2.0244	47.686
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.554	1.9708	1.9246	.49456	.49601	.47604
Stddev	.039	.0020	.0022	.00304	.00146	.00104
%RSD	.08105	.10269	.11182	.61484	.29409	.21950
#1	48.525	1.9701	1.9268	.49794	.49501	.47499
#2	48.598	1.9691	1.9225	.49368	.49768	.47708
#3	48.538	1.9730	1.9244	.49206	.49534	.47603
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/17/2019 12:58:05 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49869	1.9755	1.9997	2.0270	2.0057	.96752
Stddev	.00287	.0114	.0012	.0021	.0078	.00185
%RSD	.57583	.57506	.05907	.10332	.39137	.19075
#1	.50128	1.9643	1.9983	2.0266	2.0104	.96562
#2	.49919	1.9870	2.0003	2.0293	2.0099	.96930
#3	.49560	1.9750	2.0004	2.0251	1.9966	.96763
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.0181	2.0081
Stddev	.0034	.0030
%RSD	.16751	.15075
#1	2.0143	2.0053
#2	2.0197	2.0077
#3	2.0205	2.0113
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV   Acquired: 6/17/2019 12:58:05   Type: QC
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6658.0	216000.	17240.
Stddev	8.1	384.	31.
%RSD	.12191	.17769	.17723
#1	6649.3	215680.	17244.
#2	6659.3	215900.	17207.
#3	6665.4	216420.	17268.

Sample Name: CCB Acquired: 6/17/2019 13:03:09 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00034	-.00024	.00063	.00038	.00006	-.00002
Stddev	.00031	.01115	.00031	.00047	.00011	.00001
%RSD	89.698	4729.8	48.503	125.42	181.42	24.120
#1	.00003	.00792	.00098	.00063	.00001	-.00002
#2	.00064	.00431	.00054	-.00017	-.00002	-.00002
#3	.00036	-.01295	.00039	.00068	.00019	-.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00049	.00007	.00002	.00015	.00038	.00109
Stddev	.00113	.00007	.00009	.00017	.00019	.00015
%RSD	230.55	105.49	497.68	109.34	51.119	14.112
#1	.00177	.00013	-.00007	.00017	.00021	.00116
#2	.00005	.00008	.00010	-.00002	.00033	.00120
#3	-.00035	-.00001	.00001	.00031	.00059	.00091
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/17/2019 13:03:09 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03371	.00010	.00885	.00005	-.00002	-.11135
Stddev	.00721	.00099	.01044	.00003	.00012	.74069
%RSD	21.389	943.86	117.97	70.561	719.21	665.18
#1	.03473	.00099	.00830	.00007	.00004	.31363
#2	.04036	.00028	-.00131	.00001	.00006	-.96662
#3	.02604	-.00096	.01955	.00007	-.00016	.31894
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.04125	.00008	.00030	-.00237	-.00032	.00037
Stddev	.00394	.00013	.00144	.00096	.00033	.00204
%RSD	9.5541	170.67	477.02	40.600	103.08	546.89
#1	-.04461	.00002	.00005	-.00223	.00006	.00244
#2	-.03691	-.00001	-.00100	-.00339	-.00050	-.00165
#3	-.04224	.00022	.00185	-.00148	-.00052	.00032
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/17/2019 13:03:09 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00024	.00109	-.00011	-.00003	.00015	.00135
Stddev	.00054	.00825	.00076	.00005	.00034	.00226
%RSD	224.73	757.66	673.38	156.16	221.84	167.76
#1	.00059	-.00372	.00065	.00002	.00052	.00256
#2	-.00038	.01061	-.00011	-.00008	-.00014	.00275
#3	.00053	-.00363	-.00087	-.00004	.00007	-.00126
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00003	-.00006
Stddev	.00032	.00005
%RSD	927.08	77.476
#1	-.00003	-.00012
#2	.00038	-.00002
#3	-.00024	-.00005
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/17/2019 13:03:09 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6727.6	216740.	17273.
Stddev	21.3	253.	13.
%RSD	.31721	.11669	.07441
#1	6712.3	216790.	17273.
#2	6718.5	216470.	17260.
#3	6752.0	216970.	17286.

Sample Name: 140-15440-a-10-d PDS Acquired: 6/17/2019 13:08:21 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04847	2.0316	.11958	.99195	.10743	.05592
Stddev	.00022	.0117	.00088	.00765	.00056	.00057
%RSD	.45569	.57543	.73193	.77168	.52525	1.0205
#1	.04824	2.0205	.11942	.98964	.10695	.05614
#2	.04849	2.0438	.12052	.98573	.10729	.05527
#3	.04868	2.0303	.11880	1.0005	.10805	.05634
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.470	.05329	.10728	.21187	.26597	1.0832
Stddev	.652	.00019	.00036	.00287	.00163	.0107
%RSD	1.2924	.35012	.33475	1.3555	.61131	.98870
#1	50.562	.05308	.10702	.21309	.26410	1.0831
#2	49.776	.05338	.10712	.20859	.26704	1.0725
#3	51.071	.05341	.10769	.21393	.26677	1.0940
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-10-d PDS Acquired: 6/17/2019 13:08:21 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.280	.10478	9.8043	.10407	.55563	51.226
Stddev	.251	.00127	.1507	.00117	.00120	.233
%RSD	.50852	1.2123	1.5368	1.1265	.21670	.45477
#1	49.197	.10337	9.8319	.10435	.55496	51.402
#2	49.082	.10514	9.6417	.10279	.55492	50.962
#3	49.562	.10583	9.9393	.10508	.55703	51.314
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.292	.52219	5.4152	.09487	.09999	.50605
Stddev	.277	.00095	.0262	.00113	.00090	.00249
%RSD	.55122	.18174	.48359	1.1923	.89639	.49246
#1	50.113	.52110	5.3850	.09535	.09898	.50740
#2	50.153	.52282	5.4307	.09358	.10030	.50318
#3	50.612	.52266	5.4299	.09568	.10069	.50758
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-10-d PDS   Acquired: 6/17/2019 13:08:21   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20434	5.0477	.63725	.53101	.10725	.40310
Stddev	.00087	.0431	.00060	.00243	.00104	.00270
%RSD	.42497	.85377	.09393	.45757	.97353	.67059
#1	.20404	5.0400	.63714	.52918	.10721	.40593
#2	.20531	5.0090	.63672	.53007	.10623	.40283
#3	.20366	5.0942	.63790	.53376	.10831	.40055
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.21507	.53296
Stddev	.00152	.00092
%RSD	.70531	.17295
#1	.21579	.53202
#2	.21333	.53300
#3	.21610	.53386
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15440-a-10-d PDS Acquired: 6/17/2019 13:08:21 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6410.4	214930.	17772.
Stddev	9.3	2280.	359.
%RSD	.14485	1.0609	2.0174
#1	6420.9	213350.	17597.
#2	6406.8	217540.	18185.
#3	6403.4	213890.	17535.

Sample Name: 140-15440-a-15-d   Acquired: 6/17/2019 13:13:18   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00045	.10754	.14344	.01458	.00114	-.00003
Stddev	.00038	.00610	.00399	.00094	.00014	.00000
%RSD	84.178	5.6713	2.7833	6.4377	12.302	14.534
#1	.00080	.10913	.14252	.01444	.00126	-.00002
#2	.00052	.10081	.13999	.01559	.00118	-.00002
#3	.00004	.11269	.14782	.01373	.00099	-.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.31485	-.00060	.05300	2.9425	.02843	13.480
Stddev	.00435	.00005	.00025	.0335	.00014	.112
%RSD	1.3831	9.1502	.47480	1.1382	.50422	.83236
#1	.31199	-.00066	.05271	2.9039	.02849	13.416
#2	.31270	-.00056	.05313	2.9621	.02827	13.414
#3	.31987	-.00058	.05316	2.9616	.02854	13.609
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-15-d   Acquired: 6/17/2019 13:13:18   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 178.16	.00218	.06420	.28457	.54602	2.0920
Stddev	1.25	.00044	.00782	.00355	.00249	.2349
%RSD	.70113	20.078	12.177	1.2467	.45598	11.231
#1	177.18	.00236	.07321	.28053	.54357	2.3566
#2	177.74	.00250	.06007	.28602	.54595	2.0114
#3	179.57	.00168	.05931	.28717	.54855	1.9080
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.00					
Low Limit	-100.00					

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.1081	2.5604	.54758	.00764	.01063	-.02096
Stddev	.0066	.0102	.00721	.00161	.00134	.00079
%RSD	.59386	.39875	1.3174	21.069	12.649	3.7861
#1	1.1005	2.5488	.54662	.00800	.00933	-.02050
#2	1.1120	2.5645	.54090	.00905	.01055	-.02051
#3	1.1118	2.5680	.55523	.00589	.01201	-.02188
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-15-d   Acquired: 6/17/2019 13:13:18   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.21823	.10110	.18354	.00120	.00221	-.12861
Stddev	.00228	.00533	.00257	.00003	.00063	.00423
%RSD	1.0444	5.2716	1.3987	2.7915	28.565	3.2855
#1	.22084	.09763	.18070	.00124	.00268	-.12636
#2	.21663	.09844	.18422	.00119	.00149	-.12599
#3	.21721	.10724	.18570	.00118	.00244	-.13349
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.01331	.02954
Stddev	.00007	.00030
%RSD	.52647	1.0128
#1	.01332	.02959
#2	.01323	.02922
#3	.01337	.02981
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15440-a-15-d   Acquired: 6/17/2019 13:13:18   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	5590.6	191100.	19112.
Stddev	16.3	462.	270.
%RSD	.29211	.24193	1.4135
#1	5601.0	191270.	19172.
#2	5599.0	191450.	19347.
#3	5571.8	190580.	18817.

Sample Name: 140-15440-a-15-e ms Acquired: 6/17/2019 13:18:26 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05542	2.3727	.30103	1.1360	.12773	.07554
Stddev	.00042	.0262	.00706	.0074	.00137	.00077
%RSD	.76107	1.1022	2.3458	.65182	1.0696	1.0220
#1	.05548	2.3560	.29566	1.1288	.12633	.07522
#2	.05581	2.3593	.29841	1.1436	.12782	.07642
#3	.05498	2.4029	.30903	1.1357	.12905	.07497
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	56.395	.06222	.18693	3.3937	.33991	15.991
Stddev	.627	.00013	.00017	.0377	.00295	.174
%RSD	1.1122	.20334	.09108	1.1116	.86681	1.0893
#1	56.012	.06235	.18701	3.3894	.33664	15.835
#2	56.054	.06209	.18673	3.4334	.34236	15.959
#3	57.119	.06223	.18704	3.3583	.34073	16.179
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-15-e ms   Acquired: 6/17/2019 13:18:26   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 240.94	.11939	10.394	.43840	1.2187	56.160
Stddev	2.16	.00080	.133	.00421	.0034	.687
%RSD	.89608	.67177	1.2758	.95925	.28018	1.2224
#1	239.44	.11963	10.328	.43623	1.2184	56.164
#2	239.96	.11849	10.306	.44325	1.2154	55.472
#3	243.41	.12004	10.546	.43573	1.2222	56.845
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.00					
Low Limit	-100.00					

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	55.960	3.4488	8.2364	.10757	.11505	.57417
Stddev	.479	.0061	.0440	.00082	.00078	.00151
%RSD	.85564	.17734	.53430	.76332	.67926	.26351
#1	55.546	3.4510	8.2117	.10710	.11472	.57347
#2	55.849	3.4419	8.2102	.10852	.11448	.57314
#3	56.485	3.4536	8.2872	.10710	.11594	.57591
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-15-e ms Acquired: 6/17/2019 13:18:26 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50689	5.2421	.64684	.62974	.12608	.16533
Stddev	.00426	.0770	.00137	.00676	.00135	.00709
%RSD	.83980	1.4695	.21205	1.0729	1.0674	4.2899
#1	.50284	5.1776	.64714	.62263	.12523	.17253
#2	.50652	5.2214	.64534	.63052	.12539	.16513
#3	.51132	5.3274	.64804	.63607	.12763	.15835
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.26479	.64231
Stddev	.00248	.00178
%RSD	.93514	.27774
#1	.26374	.64201
#2	.26761	.64069
#3	.26300	.64422
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15440-a-15-e ms   Acquired: 6/17/2019 13:18:26   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	5442.7	188040.	18768.
Stddev	34.3	1785.	246.
%RSD	.63023	.94897	1.3113
#1	5452.6	188910.	18872.
#2	5470.9	185990.	18945.
#3	5404.5	189230.	18487.

Sample Name: 140-15440-a-15-f msd   Acquired: 6/17/2019 13:23:23   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05226	2.1547	.30224	1.0899	.11654	.06852
Stddev	.00035	.0362	.00475	.0013	.00076	.00050
%RSD	.67255	1.6793	1.5731	.12085	.64905	.72959
#1	.05186	2.1953	.30591	1.0915	.11702	.06857
#2	.05250	2.1427	.30393	1.0892	.11567	.06900
#3	.05243	2.1260	.29687	1.0892	.11694	.06801
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.092	.05655	.16904	3.1004	.30949	14.575
Stddev	.693	.00008	.00046	.0314	.00132	.145
%RSD	1.3562	.14554	.27474	1.0138	.42527	.99813
#1	51.735	.05647	.16936	3.1133	.30894	14.736
#2	51.183	.05664	.16926	3.1233	.30854	14.534
#3	50.358	.05655	.16851	3.0646	.31100	14.454
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-15-f msd Acquired: 6/17/2019 13:23:23 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 223.53	.10937	9.3946	.39387	1.1388	51.776
Stddev	1.71	.00105	.1877	.00381	.0067	.236
%RSD	.76276	.96043	1.9982	.96630	.58624	.45552
#1	225.49	.11052	9.5377	.39598	1.1447	51.610
#2	222.65	.10846	9.4642	.39615	1.1400	52.046
#3	222.44	.10912	9.1821	.38948	1.1315	51.673
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.00					
Low Limit	-100.00					

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.529	3.1121	7.8172	.10066	.10696	.51800
Stddev	.269	.0095	.0687	.00132	.00123	.00419
%RSD	.52242	.30624	.87886	1.3130	1.1525	.80832
#1	51.797	3.1130	7.8740	.10113	.10756	.52240
#2	51.258	3.1211	7.8367	.10168	.10554	.51755
#3	51.531	3.1021	7.7408	.09917	.10778	.51406
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-15-f msd   Acquired: 6/17/2019 13:23:23   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50688	5.0099	.61239	.57297	.11383	.15938
Stddev	.00313	.0569	.00126	.00403	.00157	.00218
%RSD	.61677	1.1363	.20573	.70338	1.3758	1.3674
#1	.50820	5.0738	.61253	.57621	.11550	.15698
#2	.50914	4.9912	.61358	.56846	.11359	.16123
#3	.50332	4.9646	.61107	.57423	.11239	.15993
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.24194	.59094
Stddev	.00112	.00228
%RSD	.46243	.38620
#1	.24202	.59236
#2	.24302	.59215
#3	.24079	.58831
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15440-a-15-f msd Acquired: 6/17/2019 13:23:23 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	5663.1	195290.	19478.
Stddev	63.1	124.	357.
%RSD	1.1140	.06368	1.8336
#1	5602.0	195150.	19176.
#2	5659.5	195330.	19386.
#3	5728.0	195380.	19873.

Sample Name: 140-15440-a-15-d PDS Acquired: 6/17/2019 13:28:21 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04999	2.0175	.28217	1.0498	.11116	.06454
Stddev	.00048	.0053	.00485	.0043	.00010	.00057
%RSD	.96116	.26370	1.7192	.41172	.09183	.87696
#1	.05043	2.0155	.28541	1.0510	.11104	.06484
#2	.05006	2.0236	.28450	1.0533	.11124	.06490
#3	.04948	2.0135	.27659	1.0449	.11118	.06389
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	47.745	.05364	.15816	2.9491	.29518	13.726
Stddev	.472	.00061	.00136	.0311	.00090	.108
%RSD	.98941	1.1351	.86130	1.0531	.30409	.78896
#1	48.171	.05381	.15900	2.9668	.29562	13.812
#2	47.827	.05416	.15888	2.9672	.29577	13.762
#3	47.237	.05297	.15658	2.9132	.29415	13.604
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-15-d PDS Acquired: 6/17/2019 13:28:21 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 212.37	.10540	8.7768	.36753	1.0959	49.741
Stddev	1.20	.00065	.1240	.00320	.0112	.469
%RSD	.56573	.61713	1.4131	.87194	1.0178	.94250
#1	213.48	.10593	8.8921	.36924	1.1040	50.053
#2	212.54	.10467	8.7925	.36951	1.1007	49.969
#3	211.10	.10560	8.6456	.36383	1.0832	49.202
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	100.00					
Low Limit	-100.00					

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.904	2.8998	7.4439	.09425	.10032	.51987
Stddev	.196	.0292	.0901	.00212	.00065	.00695
%RSD	.40031	1.0070	1.2107	2.2514	.64901	1.3377
#1	49.091	2.9169	7.5088	.09304	.09968	.52128
#2	48.921	2.9164	7.4820	.09670	.10098	.52600
#3	48.700	2.8661	7.3410	.09301	.10029	.51231
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15440-a-15-d PDS   Acquired: 6/17/2019 13:28:21   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.47849	4.8819	.65981	.54329	.10944	.28091
Stddev	.01238	.0537	.00675	.00140	.00264	.00466
%RSD	2.5874	1.0992	1.0224	.25817	2.4139	1.6591
#1	.48833	4.9310	.66314	.54405	.11150	.28620
#2	.48256	4.8900	.66424	.54415	.11036	.27913
#3	.46459	4.8246	.65204	.54167	.10646	.27740
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.23186	.56010
Stddev	.00177	.00504
%RSD	.76241	.90026
#1	.23280	.56340
#2	.23296	.56260
#3	.22982	.55429
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15440-a-15-d PDS   Acquired: 6/17/2019 13:28:21   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	5651.4	194080.	19426.
Stddev	61.9	1292.	255.
%RSD	1.0945	.66593	1.3108
#1	5602.0	193220.	19180.
#2	5631.5	193460.	19408.
#3	5720.8	195570.	19688.

Sample Name: CRI Acquired: 6/17/2019 13:33:17 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00930	.18352	.01358	.19301	.01062	.00549
Stddev	.00011	.00658	.00247	.00207	.00016	.00002
%RSD	1.1603	3.5839	18.222	1.0720	1.5372	.29268
#1	.00921	.17981	.01622	.19091	.01080	.00547
#2	.00942	.17963	.01322	.19308	.01058	.00548
#3	.00927	.19111	.01131	.19504	.01048	.00550
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.3008	.00548	.05344	.01090	.02568	.11663
Stddev	.1231	.00002	.00015	.00028	.00049	.00364
%RSD	2.3215	.45561	.27217	2.6099	1.9266	3.1180
#1	5.4428	.00551	.05347	.01063	.02515	.12030
#2	5.2338	.00548	.05358	.01120	.02613	.11303
#3	5.2258	.00546	.05329	.01087	.02577	.11658
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI Acquired: 6/17/2019 13:33:17 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.2652	.05032	5.0727	.01554	.04265	5.3882
Stddev	.1186	.00053	.0982	.00014	.00020	.2933
%RSD	2.2521	1.0455	1.9353	.87862	.46021	5.4424
#1	5.4021	.05072	5.1859	.01539	.04283	5.4353
#2	5.2015	.05052	5.0220	.01567	.04244	5.0743
#3	5.1921	.04973	5.0103	.01556	.04267	5.6551
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.9073	.04137	.30516	.00918	.01062	.06012
Stddev	.1008	.00013	.00526	.00059	.00016	.00209
%RSD	2.0546	.30588	1.7251	6.4614	1.5461	3.4760
#1	5.0236	.04152	.31000	.00854	.01080	.05779
#2	4.8536	.04133	.30592	.00971	.01059	.06184
#3	4.8446	.04127	.29955	.00928	.01047	.06073
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI Acquired: 6/17/2019 13:33:17 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01491	.49441	.10655	.05321	.05212	.01059
Stddev	.00259	.01897	.00045	.00125	.00126	.00085
%RSD	17.371	3.8368	.42416	2.3573	2.4116	8.0323
#1	.01743	.51513	.10707	.05465	.05354	.01070
#2	.01506	.47790	.10629	.05236	.05168	.00969
#3	.01225	.49020	.10629	.05262	.05115	.01137
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02661	.02211
Stddev	.00033	.00018
%RSD	1.2302	.79861
#1	.02636	.02193
#2	.02650	.02211
#3	.02698	.02229
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CRI Acquired: 6/17/2019 13:33:17 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6737.6	217130.	16973.
Stddev	6.6	1110.	350.
%RSD	.09858	.51114	2.0600
#1	6745.2	218330.	16570.
#2	6734.7	216920.	17189.
#3	6733.0	216140.	17161.

Sample Name: CCV Acquired: 6/17/2019 13:38:24 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.95021	24.729	.48480	1.9573	2.0668	2.0421
Stddev	.00156	.048	.00171	.0060	.0011	.0128
%RSD	.16429	.19542	.35374	.30393	.05386	.62523
#1	.94848	24.687	.48473	1.9505	2.0679	2.0533
#2	.95064	24.782	.48312	1.9595	2.0669	2.0448
#3	.95151	24.718	.48654	1.9618	2.0657	2.0282
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.565	.50834	2.0538	2.0374	2.0225	26.070
Stddev	.194	.00125	.0041	.0062	.0027	.025
%RSD	.39206	.24518	.19776	.30225	.13097	.09635
#1	49.344	.50755	2.0499	2.0409	2.0237	26.041
#2	49.709	.50769	2.0533	2.0303	2.0194	26.086
#3	49.642	.50978	2.0580	2.0410	2.0243	26.084
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV   Acquired: 6/17/2019 13:38:24   Type: QC
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.098	1.9169	50.011	1.9944	2.0538	48.290
Stddev	.065	.0033	.143	.0032	.0038	1.208
%RSD	.13530	.17434	.28534	.16258	.18343	2.5026
#1	48.031	1.9155	49.848	1.9967	2.0504	47.022
#2	48.161	1.9207	50.113	1.9907	2.0531	48.422
#3	48.103	1.9145	50.072	1.9959	2.0579	49.428
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.843	1.9883	1.9408	.49511	.50040	.47722
Stddev	.135	.0048	.0075	.00230	.00218	.00175
%RSD	.27688	.24178	.38435	.46476	.43604	.36707
#1	48.696	1.9851	1.9352	.49777	.50200	.47739
#2	48.962	1.9860	1.9380	.49390	.49792	.47539
#3	48.872	1.9938	1.9493	.49367	.50130	.47888
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV   Acquired: 6/17/2019 13:38:24   Type: QC

Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000

User: kerry   Custom ID1:   Custom ID2:   Custom ID3:

Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.51312	2.0046	2.0273	2.0583	2.0329	.96986
Stddev	.00310	.0216	.0050	.0020	.0052	.00398
%RSD	.60336	1.0763	.24819	.09900	.25375	.41010
#1	.51083	1.9819	2.0229	2.0606	2.0272	.96603
#2	.51664	2.0249	2.0263	2.0568	2.0373	.96958
#3	.51189	2.0070	2.0328	2.0574	2.0342	.97397
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.0501	2.0382
Stddev	.0047	.0055
%RSD	.23007	.27196
#1	2.0518	2.0335
#2	2.0448	2.0368
#3	2.0538	2.0444
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 6/17/2019 13:38:24 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6590.8	213960.	17207.
Stddev	13.7	822.	16.
%RSD	.20762	.38401	.09121
#1	6587.4	213080.	17221.
#2	6605.8	214700.	17211.
#3	6579.1	214100.	17190.

Sample Name: CCB Acquired: 6/17/2019 13:43:27 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00008	-.01932	-.00041	-.00171	-.00002	-.00002
Stddev	.00018	.00855	.00057	.00106	.00003	.00001
%RSD	220.98	44.261	138.08	61.801	147.13	54.492
#1	-.00029	-.02849	-.00033	-.00062	-.00006	-.00002
#2	.00005	-.01793	-.00102	-.00177	.00000	-.00001
#3	-.00001	-.01156	.00011	-.00273	-.00001	-.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00032	.00008	.00013	-.00010	.00061	.00072
Stddev	.00179	.00004	.00004	.00011	.00012	.00053
%RSD	556.05	47.453	28.598	108.20	20.163	74.206
#1	-.00174	.00007	.00011	-.00003	.00051	.00014
#2	.00145	.00005	.00010	-.00023	.00074	.00082
#3	.00125	.00013	.00017	-.00005	.00056	.00119
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB   Acquired: 6/17/2019 13:43:27   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.13365	-.00047	.00737	.00003	.00013	.09201
Stddev	.00607	.00155	.02481	.00001	.00021	.71902
%RSD	4.5441	327.15	336.45	49.691	155.51	781.42
#1	.13799	-.00012	.00730	.00003	-.00010	-.70154
#2	.13624	-.00216	.03223	.00001	.00029	.27738
#3	.12671	.00087	-.01740	.00004	.00021	.70020
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.04707	.00027	.00126	-.00132	.00033	-.00127
Stddev	.00361	.00016	.00051	.00261	.00087	.00202
%RSD	7.6632	61.428	40.422	196.92	261.02	159.89
#1	-.05121	.00018	.00101	-.00108	.00084	.00104
#2	-.04542	.00017	.00092	-.00404	-.00067	-.00276
#3	-.04459	.00046	.00184	.00115	.00083	-.00207
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/17/2019 13:43:27 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00042	.00249	-.00012	-.00001	.00001	.00146
Stddev	.00153	.00587	.00029	.00005	.00063	.00212
%RSD	368.07	235.84	253.61	564.84	5917.3	145.47
#1	.00002	-.00322	-.00044	-.00002	.00071	.00135
#2	.00211	.00218	-.00005	-.00005	-.00016	-.00061
#3	-.00088	.00851	.00014	.00005	-.00052	.00363
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00004	-.00008
Stddev	.00010	.00003
%RSD	276.01	37.316
#1	.00005	-.00006
#2	-.00014	-.00011
#3	-.00001	-.00007
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/17/2019 13:43:27 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6796.3	219120.	17579.
Stddev	53.6	1579.	163.
%RSD	.78890	.72049	.92990
#1	6741.7	217840.	17392.
#2	6798.5	218630.	17692.
#3	6848.8	220890.	17653.

Sample Name: mb 140-30374/11-b @4 Acquired: 6/17/2019 13:48:38 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00021	-.00568	.00034	-.00053	.00027	-.00003
Stddev	.00038	.02165	.00039	.00042	.00007	.00000
%RSD	181.26	381.38	113.33	79.350	25.897	8.2066
#1	.00035	.01932	.00078	-.00084	.00023	-.00003
#2	-.00022	-.01785	.00003	-.00005	.00022	-.00002
#3	.00050	-.01850	.00022	-.00068	.00034	-.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01229	-.00000	.00007	.00055	.00034	.00234
Stddev	.00186	.00010	.00013	.00002	.00028	.00083
%RSD	15.149	12396.	178.56	3.6456	81.236	35.320
#1	.01443	.00011	.00005	.00057	.00055	.00273
#2	.01146	-.00008	.00021	.00053	.00046	.00290
#3	.01100	-.00003	-.00005	.00054	.00003	.00139
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-30374/11-b @4 Acquired: 6/17/2019 13:48:38 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.14161	-.00067	640.54	.00009	.00003	.00109
Stddev	.01397	.00011	2.41	.00005	.00013	1.0792
%RSD	9.8677	17.125	.37667	54.733	381.80	98700.
#1	.15048	-.00058	639.94	.00010	.00016	1.2458
#2	.14884	-.00080	643.20	.00004	-.00010	-.67292
#3	.12550	-.00062	638.49	.00014	.00005	-.56958
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.02851	.00065	.01018	-.00134	-.00012	.00054
Stddev	.00691	.00011	.00001	.00235	.00129	.00281
%RSD	24.231	17.478	.10969	175.23	1108.2	521.70
#1	-.02537	.00077	.01018	-.00139	-.00121	.00300
#2	-.03643	.00054	.01017	.00103	.00130	.00114
#3	-.02373	.00064	.01019	-.00366	-.00045	-.00252
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-30374/11-b @4 Acquired: 6/17/2019 13:48:38 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00031	-.00498	-.00070	.00004	-.00083	.00300
Stddev	.00283	.00825	.00019	.00008	.00019	.00330
%RSD	914.28	165.73	27.146	199.63	23.425	109.97
#1	.00265	.00453	-.00092	-.00001	-.00093	.00670
#2	-.00299	-.01022	-.00063	-.00000	-.00061	.00036
#3	-.00058	-.00925	-.00056	.00013	-.00096	.00194
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00037	.00185
Stddev	.00034	.00008
%RSD	91.909	4.0781
#1	.00030	.00178
#2	.00073	.00193
#3	.00007	.00184
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: mb 140-30374/11-b @4 Acquired: 6/17/2019 13:48:38 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6443.9	209340.	17120.
Stddev	12.6	1774.	135.
%RSD	.19623	.84762	.79135
#1	6430.6	208360.	17040.
#2	6445.3	208270.	17044.
#3	6455.8	211390.	17277.

Sample Name: lcs 30374/12-b @5 Acquired: 6/17/2019 13:53:50 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00985	.37618	.01916	.19239	.02062	.01029
Stddev	.00026	.00349	.00106	.00217	.00014	.00011
%RSD	2.6307	.92753	5.5195	1.1286	.66652	1.0990
#1	.01008	.37389	.01907	.19477	.02058	.01035
#2	.00957	.38020	.01815	.19187	.02077	.01035
#3	.00991	.37446	.02026	.19052	.02050	.01015
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.6553	.01002	.02024	.03985	.05222	.20520
Stddev	.2077	.00018	.00019	.00067	.00016	.00367
%RSD	2.1510	1.7517	.93706	1.6936	.30935	1.7898
#1	9.8917	.01020	.02029	.04022	.05234	.20939
#2	9.5022	.01002	.02040	.04025	.05204	.20369
#3	9.5721	.00985	.02003	.03907	.05229	.20252
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: lcs 30374/12-b @5 Acquired: 6/17/2019 13:53:50 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.150	.02146	351.39	.01984	.10320	10.295
Stddev	.069	.00035	9.28	.00019	.00059	.818
%RSD	.67968	1.6467	2.6415	.94704	.57395	7.9478
#1	10.179	.02111	361.96	.01994	.10252	9.4270
#2	10.199	.02182	344.55	.01996	.10362	10.405
#3	10.071	.02145	347.66	.01962	.10346	11.052
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.036	.09777	.99102	.01698	.01909	.09894
Stddev	.043	.00054	.00619	.00233	.00106	.00244
%RSD	.42410	.55586	.62445	13.748	5.5704	2.4635
#1	10.031	.09837	.98679	.01593	.01901	.09613
#2	10.081	.09762	.99812	.01965	.01807	.10041
#3	9.9964	.09732	.98814	.01536	.02019	.10029
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: lcs 30374/12-b @5 Acquired: 6/17/2019 13:53:50 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03144	.95609	.10049	.10272	.02005	.07847
Stddev	.00088	.00334	.00139	.00059	.00072	.00164
%RSD	2.8030	.34918	1.3861	.57356	3.5661	2.0893
#1	.03062	.95511	.10149	.10234	.01961	.08019
#2	.03237	.95981	.10109	.10339	.02088	.07829
#3	.03132	.95336	.09890	.10241	.01967	.07693
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.04101	.10496
Stddev	.00038	.00038
%RSD	.92456	.36223
#1	.04143	.10526
#2	.04088	.10508
#3	.04071	.10453
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: lcs 30374/12-b @5 Acquired: 6/17/2019 13:53:50 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6579.6	218130.	18190.
Stddev	21.0	2860.	757.
%RSD	.31930	1.3110	4.1613
#1	6568.4	216180.	17335.
#2	6566.6	216800.	18773.
#3	6603.9	221410.	18462.

Sample Name: Icsd 30374/13-b @5 Acquired: 6/17/2019 13:58:55 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01002	.38572	.01865	.19081	.02000	.01021
Stddev	.00033	.00950	.00055	.00015	.00004	.00003
%RSD	3.3367	2.4631	2.9325	.07745	.19495	.30992
#1	.01028	.39658	.01919	.19064	.02003	.01021
#2	.00964	.38170	.01865	.19089	.02001	.01024
#3	.01013	.37890	.01810	.19090	.01996	.01018
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.7035	.00991	.01988	.03975	.05057	.20170
Stddev	.0229	.00008	.00007	.00028	.00057	.00276
%RSD	.23623	.83891	.36735	.69818	1.1224	1.3659
#1	9.7282	.00986	.01982	.03995	.05106	.20368
#2	9.6829	.01001	.01996	.03986	.05070	.19856
#3	9.6993	.00987	.01985	.03943	.04995	.20288
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: lcsd 30374/13-b @5 Acquired: 6/17/2019 13:58:55 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.9836	.02016	362.13	.01969	.10103	10.142
Stddev	.0376	.00062	.57	.00017	.00036	.899
%RSD	.37627	3.0846	.15826	.86207	.35484	8.8656
#1	10.019	.02069	362.50	.01964	.10144	10.672
#2	9.9442	.02031	361.47	.01988	.10091	9.1042
#3	9.9877	.01947	362.41	.01955	.10076	10.651
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.8527	.09605	.96721	.01555	.01974	.09540
Stddev	.0505	.00042	.00310	.00321	.00110	.00002
%RSD	.51220	.43478	.32095	20.662	5.5629	.01636
#1	9.9103	.09632	.97075	.01217	.01992	.09539
#2	9.8313	.09557	.96595	.01594	.01856	.09541
#3	9.8164	.09627	.96493	.01856	.02073	.09539
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: Icsd 30374/13-b @5 Acquired: 6/17/2019 13:58:55 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03192	.97064	.09815	.09965	.01927	.07764
Stddev	.00110	.00632	.00084	.00020	.00010	.00080
%RSD	3.4552	.65092	.85254	.20097	.50419	1.0252
#1	.03164	.96648	.09903	.09985	.01919	.07796
#2	.03098	.97791	.09806	.09945	.01924	.07822
#3	.03314	.96753	.09737	.09964	.01938	.07673
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.04000	.10224
Stddev	.00016	.00039
%RSD	.38769	.38044
#1	.03993	.10266
#2	.04018	.10218
#3	.03989	.10189
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: lcsd 30374/13-b @5 Acquired: 6/17/2019 13:58:55 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6627.1	214960.	17538.
Stddev	30.8	1355.	137.
%RSD	.46403	.63026	.78236
#1	6593.3	214030.	17384.
#2	6634.5	214340.	17647.
#3	6653.4	216510.	17583.

Sample Name: 140-15377-a-1-c @4 Acquired: 6/17/2019 14:03:59 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00001	-.00408	-.00009	.00240	.00233	-.00005
Stddev	.00017	.00851	.00084	.00125	.00009	.00002
%RSD	1152.7	208.39	928.49	52.010	3.6760	30.088
#1	.00008	-.01253	.00032	.00115	.00236	-.00003
#2	-.00018	.00448	.00047	.00365	.00224	-.00006
#3	.00014	-.00419	-.00106	.00241	.00240	-.00006
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.6130	.00002	.00007	.00033	.00069	.00135
Stddev	.0258	.00008	.00006	.00007	.00013	.00260
%RSD	.98616	360.02	75.077	21.611	19.012	192.89
#1	2.6262	-.00006	.00008	.00041	.00066	.00197
#2	2.5833	.00002	.00013	.00031	.00084	-.00151
#3	2.6296	.00010	.00002	.00027	.00059	.00358
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-1-c @4 Acquired: 6/17/2019 14:03:59 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.12056	.00016	606.68	.00274	.00000	.68630
Stddev	.02303	.00056	6.10	.00002	.00018	.22095
%RSD	19.099	338.79	1.0058	.73422	66104.	32.195
#1	.10519	-.00019	610.61	.00276	-.00014	.89140
#2	.14703	-.00012	599.65	.00272	.00020	.71516
#3	.10946	.00081	609.79	.00273	-.00006	.45233
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.24413	.00079	.01017	-.00248	-.00023	-.00078
Stddev	.00623	.00020	.00054	.00139	.00019	.00112
%RSD	2.5530	25.984	5.2617	55.991	82.546	144.26
#1	.24764	.00062	.01079	-.00128	-.00001	-.00150
#2	.24781	.00102	.00991	-.00216	-.00032	.00051
#3	.23693	.00073	.00982	-.00400	-.00037	-.00134
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-1-c @4 Acquired: 6/17/2019 14:03:59 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00014	.04269	-.00001	.00806	-.00109	.00085
Stddev	.00030	.00634	.00053	.00013	.00035	.00213
%RSD	215.26	14.841	3828.7	1.6708	32.263	251.70
#1	.00008	.03615	-.00037	.00819	-.00082	.00288
#2	-.00001	.04310	-.00026	.00807	-.00096	-.00137
#3	-.00048	.04881	.00059	.00792	-.00148	.00103
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00017	.00165
Stddev	.00021	.00009
%RSD	122.97	5.5172
#1	-.00002	.00158
#2	.00040	.00163
#3	.00013	.00176
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-1-c @4 Acquired: 6/17/2019 14:03:59 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6461.5	209180.	17417.
Stddev	21.8	818.	335.
%RSD	.33662	.39094	1.9225
#1	6438.7	208260.	17153.
#2	6463.5	209810.	17793.
#3	6482.1	209480.	17303.

Sample Name: 140-15377-a-2-c @4 Acquired: 6/17/2019 14:09:11 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00048	-.00074	.00026	.00617	.00161	-.00003
Stddev	.00032	.00893	.00077	.00095	.00015	.00001
%RSD	66.316	1214.7	300.80	15.409	9.6225	46.040
#1	.00013	.00911	-.00060	.00708	.00158	-.00003
#2	.00055	-.00833	.00087	.00626	.00177	-.00001
#3	.00076	-.00299	.00050	.00518	.00146	-.00004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.75065	-.00002	.00007	.00029	.00047	.08769
Stddev	.01450	.00008	.00010	.00015	.00014	.00333
%RSD	1.9320	461.82	137.18	52.846	29.746	3.7981
#1	.76388	-.00010	-.00004	.00012	.00042	.08827
#2	.75292	.00005	.00011	.00035	.00063	.09069
#3	.73514	-.00000	.00015	.00041	.00036	.08411
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-2-c @4 Acquired: 6/17/2019 14:09:11 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.08111	.00128	603.73	.00446	.00021	.46834
Stddev	.02845	.00068	11.63	.00007	.00016	.28308
%RSD	35.074	52.768	1.9256	1.6484	75.832	60.443
#1	.11328	.00202	614.42	.00449	.00029	.78920
#2	.05927	.00112	605.41	.00451	.00033	.36197
#3	.07077	.00070	591.35	.00438	.00003	.25386
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.10092	.00053	.00880	-.00298	-.00023	-.00112
Stddev	.00865	.00023	.00140	.00078	.00097	.00133
%RSD	8.5667	43.794	15.946	26.233	423.65	118.55
#1	.11079	.00027	.00798	-.00387	.00061	-.00246
#2	.09472	.00072	.01042	-.00268	.00000	.00020
#3	.09724	.00059	.00800	-.00240	-.00130	-.00110
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-2-c @4 Acquired: 6/17/2019 14:09:11 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00057	.03670	-.00006	.00197	-.00071	-.00044
Stddev	.00157	.00760	.00039	.00009	.00067	.00120
%RSD	274.12	20.712	647.27	4.6516	94.160	273.27
#1	-.00107	.03212	.00033	.00205	-.00114	-.00175
#2	-.00183	.04548	-.00045	.00187	.00006	.00061
#3	.00118	.03251	-.00006	.00200	-.00104	-.00018
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00049	.00183
Stddev	.00023	.00014
%RSD	46.234	7.5996
#1	.00037	.00193
#2	.00035	.00189
#3	.00075	.00167
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-2-c @4 Acquired: 6/17/2019 14:09:11 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6453.1	211670.	17466.
Stddev	45.1	3033.	566.
%RSD	.69958	1.4328	3.2411
#1	6401.8	208730.	17041.
#2	6470.5	211490.	17248.
#3	6486.9	214790.	18108.

Sample Name: 140-15376-a-1-e @4 Acquired: 6/17/2019 14:14:22 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML (A)

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00011	-.00445	-.00045	-.00214	.00082	-.00003
Stddev	.00025	.00711	.00042	.00037	.00010	.00000
%RSD	229.45	159.74	94.067	17.426	12.249	5.2497
#1	.00039	.00193	-.00057	-.00171	.00071	-.00003
#2	.00001	-.01211	-.00079	-.00234	.00090	-.00004
#3	-.00008	-.00317	.00002	-.00237	.00084	-.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.1627	.00005	.00012	.00040	.00061	.00121
Stddev	.0110	.00002	.00006	.00031	.00028	.00289
%RSD	.34686	30.587	53.038	79.529	46.309	238.90
#1	3.1694	.00004	.00013	.00073	.00087	.00392
#2	3.1688	.00007	.00005	.00011	.00066	-.00183
#3	3.1501	.00005	.00018	.00034	.00031	.00153
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-e @4 Acquired: 6/17/2019 14:14:22 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML (A)

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.12886	.00132	603.36	.00180	.00013	.91535
Stddev	.02229	.00069	2.22	.00005	.00024	.24723
%RSD	17.299	51.992	.36754	2.6914	174.43	27.010
#1	.10854	.00125	605.32	.00185	-.00009	.69893
#2	.12534	.00067	603.81	.00175	.00038	.86233
#3	.15270	.00205	600.96	.00180	.00012	1.1848
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.81205	.00078	.01237	-.00095	-.00060	.00001
Stddev	.00070	.00032	.00062	.00138	.00092	.00027
%RSD	.08671	40.315	5.0146	145.07	153.53	2488.6
#1	.81145	.00059	.01184	.00055	-.00130	.00022
#2	.81282	.00062	.01222	-.00123	.00044	.00011
#3	.81188	.00115	.01305	-.00217	-.00094	-.00030
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-e @4 Acquired: 6/17/2019 14:14:22 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML (A)

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00125	.03756	-.00066	.02213	-.00101	.00088
Stddev	.00251	.01038	.00043	.00009	.00031	.00255
%RSD	200.38	27.650	64.729	.38634	30.319	290.97
#1	-.00044	.02583	-.00017	.02215	-.00116	.00113
#2	.00006	.04558	-.00086	.02204	-.00066	-.00179
#3	.00413	.04127	-.00095	.02220	-.00120	.00330
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00034	.00217
Stddev	.00022	.00006
%RSD	66.620	2.8361
#1	.00050	.00213
#2	.00008	.00213
#3	.00043	.00224
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-e @4 Acquired: 6/17/2019 14:14:22 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML (A)

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6427.3	211270.	17120.
Stddev	24.1	2390.	160.
%RSD	.37443	1.1314	.93294
#1	6399.6	208690.	16946.
#2	6442.0	213410.	17151.
#3	6440.5	211700.	17261.

Sample Name: 15376-a-1-f du @4 Acquired: 6/17/2019 14:19:34 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00027	-.00288	-.00061	-.00255	.00104	-.00004
Stddev	.00032	.00561	.00026	.00006	.00010	.00000
%RSD	119.09	194.70	42.541	2.1972	9.7536	5.0829
#1	.00010	-.00729	-.00057	-.00261	.00113	-.00004
#2	.00007	.00343	-.00089	-.00255	.00093	-.00004
#3	.00064	-.00479	-.00037	-.00250	.00105	-.00004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.1845	.00001	.00006	.00021	.00041	.00070
Stddev	.0124	.00009	.00015	.00011	.00011	.00049
%RSD	.38859	1325.6	250.94	52.256	25.568	69.862
#1	3.1738	-.00006	.00023	.00033	.00029	.00106
#2	3.1817	.00010	-.00001	.00012	.00047	.00090
#3	3.1980	-.00002	-.00004	.00018	.00048	.00014
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-f du @4 Acquired: 6/17/2019 14:19:34 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.10875	.00033	574.41	.00400	.00014	1.5420
Stddev	.03505	.00118	2.98	.00005	.00029	.4017
%RSD	32.233	358.95	.51931	1.3744	209.81	26.050
#1	.13140	-.00012	572.33	.00394	-.00014	1.6674
#2	.06837	-.00056	573.08	.00405	.00011	1.8661
#3	.12647	.00166	577.83	.00400	.00045	1.0926
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.84553	.00059	.01059	-.00124	-.00081	.00085
Stddev	.00619	.00014	.00177	.00095	.00014	.00096
%RSD	.73265	24.246	16.722	76.662	17.439	113.39
#1	.85157	.00072	.01089	-.00234	-.00075	.00096
#2	.84582	.00043	.00869	-.00064	-.00070	-.00017
#3	.83919	.00061	.01219	-.00075	-.00096	.00174
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-f du @4 Acquired: 6/17/2019 14:19:34 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00178	.04848	-.00075	.02366	-.00086	.00104
Stddev	.00215	.00372	.00057	.00006	.00052	.00035
%RSD	120.85	7.6752	76.035	.27210	60.597	33.331
#1	-.00068	.05253	-.00033	.02359	-.00116	.00142
#2	.00332	.04770	-.00140	.02368	-.00115	.00073
#3	.00271	.04522	-.00052	.02372	-.00026	.00097
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00022	.00162
Stddev	.00008	.00004
%RSD	36.929	2.2083
#1	.00026	.00165
#2	.00013	.00158
#3	.00028	.00163
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 15376-a-1-f du @4   Acquired: 6/17/2019 14:19:34   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 3ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6377.1	214060.	18574.
Stddev	16.8	783.	75.
%RSD	.26306	.36559	.40565
#1	6358.6	213470.	18598.
#2	6381.4	213760.	18635.
#3	6391.2	214950.	18490.

Sample Name: 140-15376-a-2-c @4 Acquired: 6/17/2019 14:24:46 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00037	-.00439	.00004	-.00213	.00264	-.00003
Stddev	.00021	.00980	.00031	.00115	.00003	.00000
%RSD	55.490	223.41	861.28	53.851	1.0652	15.605
#1	.00022	-.01330	-.00022	-.00310	.00267	-.00002
#2	.00060	.00611	-.00006	-.00243	.00261	-.00003
#3	.00028	-.00597	.00039	-.00086	.00264	-.00002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.2422	.00005	.00006	.00057	.00056	.00376
Stddev	.0138	.00004	.00020	.00014	.00013	.00134
%RSD	.61452	87.719	352.47	25.462	23.757	35.578
#1	2.2279	.00009	-.00017	.00060	.00043	.00471
#2	2.2554	.00006	.00021	.00041	.00070	.00434
#3	2.2434	.00000	.00013	.00069	.00055	.00223
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-c @4 Acquired: 6/17/2019 14:24:46 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.14473	.00125	568.78	.00078	-.00006	1.0679
Stddev	.01033	.00106	3.51	.00004	.00019	.2484
%RSD	7.1393	84.959	.61788	4.5849	340.46	23.260
#1	.15662	.00016	565.59	.00074	.00011	.89052
#2	.13965	.00131	572.55	.00080	-.00026	1.3517
#3	.13792	.00228	568.21	.00081	-.00002	.96131
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.13281	.00063	.00403	-.00291	-.00112	-.00053
Stddev	.00384	.00028	.00170	.00117	.00130	.00073
%RSD	2.8949	45.248	42.186	40.270	115.71	139.84
#1	.13715	.00030	.00381	-.00419	-.00261	.00031
#2	.12983	.00077	.00582	-.00188	-.00017	-.00108
#3	.13144	.00081	.00245	-.00266	-.00059	-.00080
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-c @4 Acquired: 6/17/2019 14:24:46 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00035	.03623	-.00028	.01914	-.00074	.00123
Stddev	.00134	.00550	.00064	.00007	.00048	.00110
%RSD	380.47	15.183	231.52	.36545	64.747	89.035
#1	-.00189	.03665	-.00080	.01922	-.00098	.00235
#2	.00025	.03054	.00044	.01910	-.00105	.00016
#3	.00058	.04152	-.00047	.01911	-.00019	.00118
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00016	.00217
Stddev	.00018	.00005
%RSD	114.55	2.1694
#1	.00007	.00213
#2	.00037	.00215
#3	.00004	.00222
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-2-c @4 Acquired: 6/17/2019 14:24:46 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6481.2	215120.	18777.
Stddev	120.0	430.	131.
%RSD	1.8513	.20000	.69573
#1	6389.3	214620.	18866.
#2	6616.9	215350.	18627.
#3	6437.4	215380.	18837.

Sample Name: 140-15376-a-3-c @4 Acquired: 6/17/2019 14:29:58 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00027	-.00671	-.00019	-.00360	.00330	-.00002
Stddev	.00026	.00502	.00148	.00039	.00013	.00001
%RSD	97.673	74.740	800.79	10.756	3.8133	55.384
#1	.00056	-.00683	-.00076	-.00315	.00326	-.00003
#2	.00016	-.00164	.00150	-.00383	.00319	-.00001
#3	.00008	-.01167	-.00130	-.00381	.00344	-.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.3438	.00006	.00010	.00028	.00073	.00183
Stddev	.0159	.00005	.00002	.00012	.00017	.00186
%RSD	.47587	93.961	16.926	44.494	23.447	101.64
#1	3.3267	.00002	.00009	.00037	.00054	.00046
#2	3.3581	.00003	.00012	.00014	.00080	.00394
#3	3.3466	.00012	.00011	.00033	.00086	.00109
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-3-c @4 Acquired: 6/17/2019 14:29:58 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.08244	.00215	567.60	.00383	-.00004	1.2750
Stddev	.00997	.00030	3.14	.00002	.00031	.3899
%RSD	12.100	13.802	.55300	.42040	860.85	30.581
#1	.09243	.00242	564.29	.00382	-.00038	.82817
#2	.08241	.00221	570.53	.00383	.00008	1.5462
#3	.07248	.00183	567.99	.00385	.00020	1.4507
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.66856	.00159	.00611	-.00232	.00018	-.00140
Stddev	.00117	.00025	.00188	.00059	.00156	.00133
%RSD	.17522	16.004	30.739	25.366	868.95	95.151
#1	.66991	.00137	.00396	-.00286	-.00097	-.00065
#2	.66795	.00152	.00744	-.00169	.00195	-.00061
#3	.66781	.00187	.00694	-.00239	-.00045	-.00293
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-3-c @4 Acquired: 6/17/2019 14:29:58 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00163	.03502	-.00057	.03082	-.00073	-.00070
Stddev	.00093	.00428	.00030	.00026	.00042	.00094
%RSD	57.295	12.225	52.818	.82849	58.028	134.36
#1	.00073	.03032	-.00023	.03111	-.00070	-.00064
#2	.00259	.03869	-.00069	.03070	-.00032	-.00168
#3	.00156	.03607	-.00078	.03065	-.00117	.00021
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00029	.00351
Stddev	.00017	.00007
%RSD	59.124	1.9973
#1	.00019	.00348
#2	.00019	.00359
#3	.00049	.00346
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-3-c @4 Acquired: 6/17/2019 14:29:58 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6403.4	215290.	18723.
Stddev	15.6	1126.	96.
%RSD	.24305	.52316	.51486
#1	6388.7	214040.	18814.
#2	6402.0	215620.	18622.
#3	6419.7	216220.	18731.

Sample Name: 15376-a-1-e SD@20 Acquired: 6/17/2019 14:35:07 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (A) TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00034	-.00924	.00041	-.00435	.00001	-.00002
Stddev	.00050	.01830	.00061	.00039	.00007	.00002
%RSD	147.92	197.99	150.04	8.9989	830.28	82.537
#1	-.00016	.01018	.00109	-.00476	.00009	-.00001
#2	.00032	-.01174	-.00010	-.00398	-.00004	-.00001
#3	.00085	-.02616	.00023	-.00430	-.00003	-.00004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.61858	.00005	.00003	.00038	.00061	.00027
Stddev	.00150	.00005	.00017	.00019	.00006	.00149
%RSD	.24177	108.16	588.73	49.970	10.662	546.46
#1	.61785	.00003	-.00015	.00031	.00065	.00004
#2	.61758	.00010	.00006	.00060	.00053	-.00109
#3	.62030	.00001	.00018	.00023	.00064	.00186
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-e SD@20 Acquired: 6/17/2019 14:35:07 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (A) TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04182	.00096	109.05	.00039	-.00003	1.4876
Stddev	.01574	.00084	.43	.00006	.00028	.4706
%RSD	37.623	87.395	.39645	16.808	882.66	31.633
#1	.05224	.00161	108.55	.00044	.00008	1.8602
#2	.04950	.00125	109.25	.00040	.00017	1.6438
#3	.02372	.00001	109.34	.00032	-.00035	.95877
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.11723	.00031	.00312	-.00259	.00004	-.00058
Stddev	.00448	.00013	.00081	.00182	.00023	.00067
%RSD	3.8193	40.933	25.777	70.095	565.48	115.29
#1	.11656	.00041	.00294	-.00466	-.00009	-.00007
#2	.12200	.00035	.00401	-.00188	.00031	-.00135
#3	.11312	.00017	.00243	-.00124	-.00010	-.00034
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-e SD@20 Acquired: 6/17/2019 14:35:07 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (A) TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00027	.00485	-.00057	.00455	-.00005	.00177
Stddev	.00106	.01100	.00040	.00012	.00035	.00295
%RSD	392.30	226.57	69.659	2.6972	660.02	166.43
#1	-.00006	.00182	-.00012	.00456	.00005	-.00040
#2	.00145	-.00430	-.00088	.00442	.00024	.00059
#3	-.00059	.01705	-.00070	.00467	-.00045	.00513
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00035	.00187
Stddev	.00017	.00006
%RSD	49.847	3.2656
#1	.00055	.00190
#2	.00023	.00180
#3	.00027	.00190
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 15376-a-1-e SD@20 Acquired: 6/17/2019 14:35:07 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (A) TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6638.2	221960.	18893.
Stddev	28.9	676.	60.
%RSD	.43539	.30454	.31724
#1	6609.2	221220.	18871.
#2	6638.5	222100.	18847.
#3	6667.0	222550.	18960.

Sample Name: CCV Acquired: 6/17/2019 14:40:17 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.95000	24.597	.48826	1.9612	2.1120	2.0026
Stddev	.00065	.042	.00094	.0076	.0077	.0029
%RSD	.06792	.17195	.19180	.38751	.36598	.14436
#1	.94927	24.627	.48882	1.9543	2.1055	2.0048
#2	.95051	24.549	.48718	1.9694	2.1100	1.9993
#3	.95021	24.616	.48877	1.9601	2.1206	2.0037
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	47.578	.50484	2.0636	1.9846	2.0801	25.680
Stddev	.099	.00067	.0027	.0103	.0021	.079
%RSD	.20772	.13229	.12918	.51923	.09923	.30625
#1	47.558	.50408	2.0618	1.9736	2.0810	25.609
#2	47.685	.50516	2.0624	1.9940	2.0815	25.764
#3	47.490	.50530	2.0667	1.9862	2.0777	25.667
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/17/2019 14:40:17 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	47.912	1.9719	47.374	1.9379	2.0850	49.041
Stddev	.045	.0104	.270	.0095	.0023	.036
%RSD	.09376	.52685	.56958	.49148	.11086	.07398
#1	47.874	1.9606	47.258	1.9270	2.0834	49.042
#2	47.902	1.9740	47.682	1.9444	2.0841	49.077
#3	47.962	1.9810	47.181	1.9424	2.0877	49.004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.270	1.9803	1.9587	.47242	.49709	.49414
Stddev	.069	.0037	.0075	.00159	.00067	.00082
%RSD	.14059	.18820	.38397	.33648	.13576	.16572
#1	49.220	1.9774	1.9505	.47173	.49773	.49342
#2	49.240	1.9791	1.9653	.47130	.49715	.49398
#3	49.349	1.9845	1.9602	.47424	.49639	.49503
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV   Acquired: 6/17/2019 14:40:17   Type: QC
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.52029	1.9630	2.0037	2.0977	2.0390	.96588
Stddev	.00253	.0216	.0031	.0090	.0054	.00211
%RSD	.48660	1.1019	.15696	.43094	.26396	.21826
#1	.52319	1.9408	2.0007	2.0882	2.0333	.96381
#2	.51913	1.9840	2.0033	2.0987	2.0398	.96580
#3	.51854	1.9643	2.0070	2.1062	2.0440	.96802
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.0344	2.0680
Stddev	.0065	.0025
%RSD	.32141	.11986
#1	2.0269	2.0654
#2	2.0389	2.0681
#3	2.0374	2.0704
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 6/17/2019 14:40:17 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6523.3	218050.	18516.
Stddev	17.6	388.	115.
%RSD	.26933	.17811	.62223
#1	6507.9	217660.	18453.
#2	6519.6	218430.	18447.
#3	6542.5	218060.	18649.

Sample Name: CCB Acquired: 6/17/2019 14:45:20 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00010	-.00990	-.00139	-.00289	-.00016	-.00001
Stddev	.00007	.01210	.00133	.00136	.00013	.00002
%RSD	69.203	122.20	95.783	46.960	83.161	248.32
#1	.00015	.00145	-.00210	-.00138	-.00016	.00001
#2	.00014	-.00851	.00015	-.00329	-.00029	-.00002
#3	.00002	-.02263	-.00221	-.00401	-.00002	-.00002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00028	.00004	.00011	.00018	.00054	.00237
Stddev	.00123	.00009	.00010	.00006	.00006	.00025
%RSD	434.17	227.20	86.476	35.366	11.048	10.514
#1	.00113	.00002	.00016	.00011	.00047	.00237
#2	.00085	-.00004	.00000	.00021	.00056	.00263
#3	-.00113	.00014	.00018	.00022	.00059	.00213
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/17/2019 14:45:20 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03156	.00033	.01152	.00005	.00018	.79467
Stddev	.00364	.00078	.00476	.00004	.00027	.05275
%RSD	11.540	238.95	41.311	70.394	150.19	6.6385
#1	.03573	.00120	.01551	.00008	.00049	.74107
#2	.03002	-.00029	.00625	.00006	.00007	.79640
#3	.02895	.00007	.01279	.00001	-.00001	.84654
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.06046	.00031	.00017	F -.00297	-.00120	-.00092
Stddev	.00126	.00021	.00086	.00185	.00117	.00079
%RSD	2.0776	69.977	494.10	62.294	97.565	85.873
#1	-.05919	.00056	-.00064	-.00505	-.00254	-.00184
#2	-.06048	.00018	.00108	-.00151	-.00040	-.00045
#3	-.06171	.00018	.00008	-.00234	-.00066	-.00048
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				.00260		
Low Limit				-.00260		

Sample Name: CCB Acquired: 6/17/2019 14:45:20 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00143	-.01382	-.00032	.00009	-.00056	.00203
Stddev	.00158	.00405	.00039	.00008	.00033	.00211
%RSD	110.77	29.292	123.21	89.094	59.617	104.06
#1	-.00325	-.00932	-.00073	.00009	-.00091	.00430
#2	-.00056	-.01497	-.00029	.00001	-.00024	.00166
#3	-.00047	-.01716	.00006	.00017	-.00053	.00012
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00010	-.00001
Stddev	.00025	.00012
%RSD	264.25	868.73
#1	.00037	.00006
#2	-.00011	.00005
#3	.00002	-.00015
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/17/2019 14:45:20 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6663.2	222290.	18777.
Stddev	25.1	807.	189.
%RSD	.37712	.36281	1.0084
#1	6636.9	221460.	18965.
#2	6665.8	222350.	18586.
#3	6687.0	223070.	18778.

Sample Name: 140-15390-a-1-c @4 Acquired: 6/17/2019 14:50:31 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00020	.01534	-.00107	-.00110	.00035	-.00001
Stddev	.00016	.00881	.00153	.00079	.00009	.00001
%RSD	81.224	57.474	143.27	71.529	24.341	108.05
#1	.00003	.01254	-.00056	-.00048	.00028	-.00000
#2	.00036	.02521	.00014	-.00084	.00045	-.00000
#3	.00022	.00826	-.00280	-.00199	.00034	-.00002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.26113	.00005	.00038	.00046	.00078	.00906
Stddev	.00152	.00004	.00002	.00018	.00024	.00025
%RSD	.58365	84.861	6.3181	38.504	30.842	2.7050
#1	.26012	.00001	.00038	.00040	.00100	.00908
#2	.26039	.00010	.00041	.00066	.00082	.00930
#3	.26288	.00004	.00036	.00033	.00052	.00881
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-c @4 Acquired: 6/17/2019 14:50:31 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03183	.00124	580.08	.00465	.00025	1.2661
Stddev	.01720	.00042	2.49	.00006	.00026	.9206
%RSD	54.032	34.134	.43007	1.2490	100.70	72.712
#1	.04403	.00144	577.38	.00459	.00035	.22201
#2	.01216	.00153	580.59	.00471	-.00004	1.6151
#3	.03931	.00075	582.29	.00465	.00044	1.9611
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.02645	.00071	.00505	-.00438	-.00168	-.00207
Stddev	.00153	.00023	.00045	.00316	.00069	.00139
%RSD	5.7691	32.542	8.8713	72.013	40.858	67.206
#1	-.02731	.00063	.00457	-.00339	-.00228	-.00228
#2	-.02469	.00053	.00546	-.00792	-.00183	-.00059
#3	-.02735	.00097	.00513	-.00185	-.00093	-.00335
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-c @4 Acquired: 6/17/2019 14:50:31 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00187	.00827	-.00045	.00164	-.00078	.00118
Stddev	.00310	.00480	.00042	.00009	.00027	.00151
%RSD	165.88	58.047	93.262	5.5682	34.404	128.36
#1	.00028	.00891	-.00077	.00172	-.00059	.00253
#2	-.00012	.01271	-.00061	.00154	-.00066	.00146
#3	.00544	.00318	.00003	.00166	-.00109	-.00045
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00022	.00200
Stddev	.00026	.00008
%RSD	120.14	3.8048
#1	.00007	.00198
#2	.00006	.00209
#3	.00052	.00194
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-1-c @4 Acquired: 6/17/2019 14:50:31 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6446.4	216010.	18755.
Stddev	15.4	1504.	69.
%RSD	.23939	.69644	.36856
#1	6428.8	214340.	18833.
#2	6453.1	216440.	18703.
#3	6457.4	217260.	18728.

Sample Name: 140-15390-a-2-c @4 Acquired: 6/17/2019 14:55:43 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00025	-.01790	-.00112	.01726	.00046	-.00004
Stddev	.00009	.01183	.00024	.00032	.00013	.00001
%RSD	33.721	66.090	21.190	1.8816	27.497	23.946
#1	.00035	-.01497	-.00134	.01730	.00061	-.00003
#2	.00023	-.03093	-.00087	.01757	.00036	-.00003
#3	.00018	-.00782	-.00114	.01692	.00042	-.00005
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.54211	.00005	-.00003	.00054	.00081	.04650
Stddev	.00063	.00003	.00016	.00003	.00013	.00048
%RSD	.11584	64.218	511.59	5.7878	16.569	1.0316
#1	.54139	.00001	-.00012	.00053	.00096	.04626
#2	.54249	.00006	-.00013	.00058	.00078	.04619
#3	.54245	.00008	.00015	.00052	.00070	.04706
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-2-c @4 Acquired: 6/17/2019 14:55:43 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.29210	.00469	586.69	.00231	.01350	.83784
Stddev	.00756	.00004	3.11	.00004	.00003	.12480
%RSD	2.5877	.76341	.52939	1.8117	.20895	14.896
#1	.28997	.00467	583.16	.00234	.01349	.95986
#2	.28584	.00473	587.88	.00234	.01353	.71043
#3	.30050	.00466	589.02	.00226	.01349	.84324
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03912	.00061	.00650	-.00407	-.00031	-.00058
Stddev	.00148	.00013	.00070	.00069	.00103	.00031
%RSD	3.7785	20.551	10.722	16.954	334.42	52.866
#1	.04049	.00069	.00709	-.00360	.00038	-.00027
#2	.03755	.00067	.00573	-.00486	.00020	-.00058
#3	.03933	.00046	.00667	-.00374	-.00150	-.00089
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-2-c @4 Acquired: 6/17/2019 14:55:43 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00146	.00694	-.00102	.00415	-.00099	.00200
Stddev	.00061	.00535	.00042	.00003	.00040	.00204
%RSD	42.192	77.131	41.278	.69420	40.789	101.72
#1	.00110	.00588	-.00130	.00418	-.00123	.00381
#2	.00217	.01274	-.00124	.00413	-.00052	-.00020
#3	.00110	.00220	-.00054	.00415	-.00121	.00239
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00033	.00192
Stddev	.00034	.00005
%RSD	100.50	2.4829
#1	.00058	.00197
#2	.00047	.00187
#3	-.00005	.00191
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-2-c @4 Acquired: 6/17/2019 14:55:43 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6402.9	213810.	18647.
Stddev	17.8	1238.	80.
%RSD	.27756	.57889	.43080
#1	6384.0	212810.	18595.
#2	6405.2	213410.	18606.
#3	6419.3	215190.	18739.

Sample Name: 140-15390-a-3-c @4   Acquired: 6/17/2019 15:00:54   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 3ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00024	.09661	-.00035	.00309	.00021	.00003
Stddev	.00014	.00622	.00161	.00020	.00012	.00001
%RSD	59.623	6.4389	455.46	6.4015	56.917	38.689
#1	.00023	.08943	.00138	.00323	.00035	.00003
#2	.00039	.10013	-.00180	.00317	.00018	.00005
#3	.00010	.10027	-.00065	.00286	.00011	.00002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.42724	.00012	.00124	.00041	.00061	.00281
Stddev	.00317	.00005	.00017	.00022	.00023	.00117
%RSD	.74150	44.486	13.481	54.374	38.515	41.749
#1	.42602	.00017	.00108	.00029	.00043	.00406
#2	.43084	.00006	.00142	.00027	.00052	.00172
#3	.42487	.00013	.00123	.00067	.00087	.00265
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-3-c @4 Acquired: 6/17/2019 15:00:54 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05520	.00117	573.93	.03314	.00027	.84822
Stddev	.01146	.00043	1.23	.00026	.00020	.82973
%RSD	20.753	36.552	.21449	.77478	76.429	97.820
#1	.05712	.00114	572.69	.03331	.00050	-.10588
#2	.04291	.00162	573.93	.03285	.00015	1.4009
#3	.06558	.00076	575.15	.03327	.00015	1.2497
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05817	.00161	.00516	-.00323	.00086	-.00065
Stddev	.00202	.00021	.00161	.00320	.00135	.00120
%RSD	3.4660	13.134	31.209	99.200	156.33	185.13
#1	.06050	.00184	.00504	-.00495	.00218	-.00190
#2	.05688	.00142	.00361	-.00520	.00092	.00049
#3	.05714	.00159	.00682	.00047	-.00052	-.00053
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-3-c @4 Acquired: 6/17/2019 15:00:54 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00090	.01544	-.00030	.00490	-.00046	.00029
Stddev	.00153	.01554	.00037	.00005	.00102	.00087
%RSD	169.51	100.66	122.12	.95804	222.06	302.29
#1	.00004	.03333	-.00019	.00485	-.00162	-.00061
#2	-.00000	.00527	.00000	.00489	-.00007	.00113
#3	.00266	.00772	-.00071	.00494	.00031	.00035
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00026	.00325
Stddev	.00014	.00006
%RSD	55.795	1.7356
#1	.00021	.00322
#2	.00042	.00321
#3	.00014	.00331
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-3-c @4 Acquired: 6/17/2019 15:00:54 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6470.2	215950.	18893.
Stddev	34.9	1276.	22.
%RSD	.53877	.59100	.11680
#1	6431.2	214500.	18913.
#2	6480.9	216900.	18897.
#3	6498.5	216460.	18870.

Sample Name: 140-15390-a-4-c @4 Acquired: 6/17/2019 15:06:05 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00007	.15794	-.00023	-.00203	.00045	-.00000
Stddev	.00017	.01650	.00069	.00026	.00011	.00001
%RSD	241.57	10.449	295.33	12.697	25.289	193.50
#1	.00025	.14874	-.00027	-.00228	.00032	.00000
#2	-.00010	.17699	.00047	-.00206	.00054	-.00000
#3	.00006	.14809	-.00090	-.00176	.00050	-.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.16692	.00003	.00132	.00061	.00075	.03310
Stddev	.00071	.00010	.00022	.00025	.00020	.00104
%RSD	.42460	338.82	16.470	41.317	26.708	3.1279
#1	.16688	-.00008	.00109	.00090	.00099	.03265
#2	.16623	.00005	.00135	.00044	.00065	.03428
#3	.16764	.00012	.00151	.00049	.00062	.03236
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-c @4 Acquired: 6/17/2019 15:06:05 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04208	.00129	579.44	.04372	.00037	.16949
Stddev	.01830	.00042	1.51	.00041	.00006	.15063
%RSD	43.479	32.812	.26114	.94076	15.106	88.876
#1	.06265	.00178	580.58	.04412	.00041	.34343
#2	.02762	.00103	580.03	.04375	.00039	.08264
#3	.03597	.00106	577.73	.04329	.00031	.08240
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.02891	.00102	.00714	-.00263	-.00014	-.00061
Stddev	.00391	.00015	.00115	.00181	.00163	.00099
%RSD	13.519	14.327	16.048	68.829	1126.6	163.14
#1	-.02911	.00086	.00815	-.00235	-.00201	-.00105
#2	-.02491	.00107	.00589	-.00457	.00096	.00053
#3	-.03272	.00114	.00737	-.00098	.00062	-.00130
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-c @4 Acquired: 6/17/2019 15:06:05 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00059	.00186	-.00012	.00125	-.00014	.00050
Stddev	.00069	.00182	.00024	.00002	.00075	.00231
%RSD	116.35	97.866	211.71	1.9703	546.10	463.70
#1	-.00012	.00061	-.00030	.00123	-.00024	.00244
#2	.00065	.00395	-.00021	.00125	.00066	-.00206
#3	.00125	.00103	.00016	.00128	-.00083	.00111
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00025	.00222
Stddev	.00017	.00003
%RSD	68.041	1.1952
#1	.00043	.00225
#2	.00022	.00220
#3	.00010	.00221
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-4-c @4 Acquired: 6/17/2019 15:06:05 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 3ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6475.8	215930.	18824.
Stddev	66.1	2039.	50.
%RSD	1.0211	.94407	.26500
#1	6404.8	213670.	18766.
#2	6487.0	216470.	18857.
#3	6535.6	217640.	18847.

Sample Name: mb 140-30423/11-b @3 Acquired: 6/17/2019 15:11:17 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00014	.00118	.00073	-.00482	.00002	-.00003
Stddev	.00004	.00468	.00010	.00037	.00008	.00001
%RSD	31.768	395.63	13.037	7.6053	460.74	38.934
#1	.00016	-.00422	.00084	-.00515	.00007	-.00002
#2	.00017	.00368	.00070	-.00489	-.00007	-.00004
#3	.00009	.00409	.00066	-.00442	.00005	-.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01281	.00012	-.00026	.00015	.00117	.00288
Stddev	.00044	.00005	.00005	.00015	.00024	.00122
%RSD	3.4111	45.724	19.084	100.75	21.009	42.376
#1	.01327	.00008	-.00031	-.00001	.00126	.00313
#2	.01240	.00018	-.00025	.00017	.00135	.00155
#3	.01278	.00009	-.00022	.00028	.00089	.00395
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-30423/11-b @3 Acquired: 6/17/2019 15:11:17 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.23656	.00104	.01321	.00022	.00000	686.51
Stddev	.02772	.00142	.01123	.00004	.00018	1.25
%RSD	11.719	136.02	85.030	16.077	8758.4	.18200
#1	.20552	.00144	.01838	.00021	.00013	685.07
#2	.24530	.00222	.02091	.00026	.00008	687.08
#3	.25885	-.00053	.00032	.00019	-.00021	687.36
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 614.33	.00043	.00618	-.00285	.00012	-.00184
Stddev	8.90	.00013	.00105	.00248	.00086	.00038
%RSD	1.4488	29.652	16.969	87.097	711.88	20.590
#1	620.56	.00032	.00592	-.00346	-.00087	-.00199
#2	604.13	.00057	.00734	-.00012	.00056	-.00141
#3	618.29	.00041	.00529	-.00498	.00067	-.00212
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: mb 140-30423/11-b @3   Acquired: 6/17/2019 15:11:17   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 4ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00429	-.00106	.00091	.00000	-.00121	.00013
Stddev	.00222	.00691	.00018	.00002	.00056	.00123
%RSD	51.703	653.69	20.018	399.49	46.521	912.61
#1	.00493	.00623	.00100	.00001	-.00176	-.00015
#2	.00611	-.00750	.00070	-.00001	-.00124	.00148
#3	.00182	-.00190	.00102	.00001	-.00063	-.00093
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00042	.00293
Stddev	.00016	.00004
%RSD	38.100	1.2554
#1	.00024	.00297
#2	.00054	.00290
#3	.00048	.00291
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: mb 140-30423/11-b @3 Acquired: 6/17/2019 15:11:17 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6355.3	207250.	18661.
Stddev	35.2	1119.	144.
%RSD	.55389	.53979	.76960
#1	6319.1	206140.	18550.
#2	6357.4	207220.	18823.
#3	6389.4	208380.	18608.

Sample Name: lcs 30423/12-b @5 Acquired: 6/17/2019 15:16:38 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00935	-.01550	.01570	.18127	.00952	.00510
Stddev	.00030	.00638	.00058	.00052	.00005	.00000
%RSD	3.1741	41.172	3.6752	.28467	.51394	.08722
#1	.00919	-.01527	.01536	.18072	.00951	.00510
#2	.00970	-.02199	.01637	.18135	.00948	.00510
#3	.00917	-.00923	.01538	.18175	.00958	.00510
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.6247	.00966	.01900	.03079	.04900	.00417
Stddev	.0095	.00007	.00013	.00019	.00014	.00196
%RSD	.36096	.70361	.69720	.62441	.27971	47.006
#1	2.6178	.00969	.01911	.03065	.04915	.00307
#2	2.6208	.00958	.01905	.03071	.04896	.00644
#3	2.6355	.00971	.01885	.03101	.04888	.00301
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: lcs 30423/12-b @5 Acquired: 6/17/2019 15:16:38 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.3825	.01885	1.4077	.01850	.08448	299.95
Stddev	.0291	.00089	.0063	.00005	.00011	.60
%RSD	.30981	4.7467	.44451	.27898	.12702	.19917
#1	9.4024	.01787	1.4006	.01849	.08459	300.11
#2	9.3960	.01903	1.4121	.01856	.08446	299.29
#3	9.3492	.01963	1.4106	.01845	.08438	300.45
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 283.64	.09232	.45368	.01460	.01707	.08494
Stddev	6.10	.00020	.00266	.00103	.00160	.00076
%RSD	2.1502	.21446	.58662	7.0829	9.3672	.89440
#1	276.61	.09244	.45548	.01382	.01849	.08497
#2	287.48	.09209	.45063	.01577	.01737	.08568
#3	286.84	.09243	.45495	.01419	.01534	.08416
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: lcs 30423/12-b @5 Acquired: 6/17/2019 15:16:38 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02763	.87139	.00100	.06463	-.00012	.07228
Stddev	.00158	.01619	.00016	.00007	.00038	.00280
%RSD	5.7354	1.8583	16.149	.11419	307.14	3.8789
#1	.02943	.88904	.00106	.06471	-.00026	.07180
#2	.02700	.85722	.00082	.06457	-.00041	.07529
#3	.02646	.86791	.00112	.06459	.00030	.06975
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.03111	.09814
Stddev	.00027	.00002
%RSD	.85641	.02260
#1	.03107	.09814
#2	.03140	.09816
#3	.03087	.09812
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: lcs 30423/12-b @5   Acquired: 6/17/2019 15:16:38   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6583.5	215850.	18895.
Stddev	28.6	425.	68.
%RSD	.43479	.19672	.35945
#1	6551.1	215360.	18905.
#2	6605.3	216090.	18957.
#3	6594.3	216100.	18823.

Sample Name: lcsd 30423/13-b @5 Acquired: 6/17/2019 15:21:53 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00943	-.00139	.01627	.18054	.00961	.00508
Stddev	.00021	.01295	.00041	.00069	.00051	.00004
%RSD	2.2556	931.65	2.5114	.38201	5.2621	.70057
#1	.00936	.01153	.01614	.18102	.01019	.00505
#2	.00926	-.00133	.01594	.17975	.00935	.00508
#3	.00967	-.01437	.01673	.18086	.00928	.00512
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.5643	.00962	.01902	.03083	.04912	.00752
Stddev	.1314	.00009	.00007	.00024	.00024	.00163
%RSD	5.1249	.96014	.38127	.79434	.48138	21.668
#1	2.7160	.00966	.01896	.03065	.04939	.00934
#2	2.4852	.00952	.01910	.03074	.04896	.00622
#3	2.4917	.00969	.01899	.03111	.04901	.00699
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: lcsd 30423/13-b @5 Acquired: 6/17/2019 15:21:53 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.4681	.02024	1.3812	.01855	.08479	304.54
Stddev	.4462	.00090	.0586	.00009	.00023	15.35
%RSD	4.7129	4.4312	4.2414	.50427	.27144	5.0386
#1	9.9827	.02087	1.4479	.01844	.08489	322.25
#2	9.1884	.01922	1.3577	.01861	.08496	295.12
#3	9.2332	.02065	1.3380	.01859	.08453	296.26
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 289.58	.09288	.46394	.01445	.01705	.08522
Stddev	12.02	.00009	.00115	.00229	.00043	.00056
%RSD	4.1517	.09916	.24759	15.824	2.5198	.66244
#1	303.41	.09280	.46526	.01196	.01697	.08484
#2	281.66	.09298	.46325	.01494	.01752	.08587
#3	283.66	.09285	.46330	.01646	.01667	.08496
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: lcsd 30423/13-b @5 Acquired: 6/17/2019 15:21:53 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02705	.90135	.00068	.06560	-.00042	.07501
Stddev	.00161	.04634	.00034	.00301	.00036	.00187
%RSD	5.9646	5.1408	50.194	4.5945	87.296	2.4980
#1	.02684	.95423	.00031	.06907	-.00031	.07322
#2	.02876	.88202	.00075	.06415	-.00082	.07484
#3	.02556	.86781	.00098	.06359	-.00012	.07696
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.03123	.09849
Stddev	.00036	.00027
%RSD	1.1612	.27016
#1	.03134	.09819
#2	.03153	.09870
#3	.03083	.09858
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: lcsd 30423/13-b @5 Acquired: 6/17/2019 15:21:53 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6509.6	215830.	18550.
Stddev	17.1	576.	896.
%RSD	.26319	.26681	4.8287
#1	6494.4	216150.	17516.
#2	6506.1	216170.	19074.
#3	6528.2	215160.	19060.

Sample Name: 140-15377-a-1-f @3 Acquired: 6/17/2019 15:27:09 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00018	.01634	.00084	-.00205	.00326	.00007
Stddev	.00011	.00990	.00141	.00079	.00016	.00000
%RSD	62.689	60.589	166.43	38.443	4.8365	5.6899
#1	-.00028	.02776	.00194	-.00217	.00344	.00007
#2	-.00020	.01104	.00133	-.00121	.00322	.00007
#3	-.00006	.01021	-.00074	-.00277	.00313	.00007
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	15.231	.00009	-.00017	.00107	.00228	.03095
Stddev	.063	.00003	.00013	.00021	.00015	.00097
%RSD	.41138	32.285	75.030	20.179	6.4826	3.1195
#1	15.191	.00008	-.00010	.00099	.00211	.03203
#2	15.304	.00008	-.00032	.00131	.00238	.03018
#3	15.200	.00013	-.00009	.00090	.00234	.03063
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-1-f @3 Acquired: 6/17/2019 15:27:09 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.23957	.00168	34.432	.00951	.00016	650.10
Stddev	.01390	.00096	.076	.00008	.00018	.49
%RSD	5.8010	57.133	.21990	.84810	110.02	.07511
#1	.23002	.00261	34.367	.00945	-.00000	650.35
#2	.23317	.00069	34.516	.00947	.00035	650.41
#3	.25551	.00174	34.415	.00960	.00014	649.54
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 583.78	.00044	.01813	-.00033	.00218	-.00100
Stddev	11.56	.00006	.00030	.00129	.00074	.00044
%RSD	1.9798	14.113	1.6523	390.72	33.953	43.644
#1	570.50	.00050	.01831	-.00041	.00233	-.00058
#2	591.54	.00038	.01830	.00100	.00138	-.00097
#3	589.31	.00043	.01778	-.00158	.00284	-.00145
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15377-a-1-f @3 Acquired: 6/17/2019 15:27:09 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00248	.06775	.00100	.00243	.00025	-.00025
Stddev	.00123	.01276	.00043	.00011	.00075	.00157
%RSD	49.525	18.831	42.584	4.5479	294.90	617.94
#1	.00257	.05962	.00061	.00230	.00075	-.00187
#2	.00366	.06117	.00094	.00250	-.00061	.00126
#3	.00121	.08245	.00145	.00249	.00062	-.00015
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00017	.00393
Stddev	.00029	.00010
%RSD	175.03	2.4830
#1	-.00017	.00395
#2	.00035	.00401
#3	.00032	.00382
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-1-f @3 Acquired: 6/17/2019 15:27:09 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6361.2	209450.	19002.
Stddev	9.8	249.	84.
%RSD	.15389	.11888	.43960
#1	6355.8	209210.	18975.
#2	6355.2	209430.	18936.
#3	6372.5	209710.	19096.

Sample Name: 140-15377-a-2-f @3 Acquired: 6/17/2019 15:32:28 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00029	.00900	.00010	-.00408	.00184	-.00002
Stddev	.00046	.00495	.00079	.00043	.00003	.00002
%RSD	157.58	54.980	807.40	10.600	1.7487	119.54
#1	-.00019	.00930	.00051	-.00446	.00188	-.00000
#2	.00011	.01379	.00060	-.00418	.00182	-.00005
#3	-.00079	.00391	-.00081	-.00361	.00182	-.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.45056	.00007	-.00021	.00059	.00105	.03126
Stddev	.00279	.00006	.00013	.00053	.00006	.00082
%RSD	.61936	94.079	63.395	90.015	6.1175	2.6258
#1	.45202	.00011	-.00037	.00116	.00107	.03163
#2	.45232	-.00001	-.00013	.00012	.00109	.03183
#3	.44734	.00010	-.00014	.00048	.00097	.03032
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-2-f @3 Acquired: 6/17/2019 15:32:28 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.24060	.00129	34.922	.00822	.00004	642.81
Stddev	.01732	.00027	.031	.00001	.00007	1.77
%RSD	7.1987	20.626	.08880	.12646	180.45	.27593
#1	.22067	.00159	34.956	.00821	.00009	642.84
#2	.25195	.00108	34.895	.00823	.00007	644.57
#3	.24919	.00121	34.916	.00822	-.00004	641.03
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 587.59	.00046	.01796	-.00256	.00066	-.00096
Stddev	4.28	.00010	.00142	.00046	.00126	.00175
%RSD	.72823	21.351	7.9065	18.058	190.49	182.65
#1	590.49	.00036	.01958	-.00260	.00151	-.00204
#2	582.67	.00047	.01692	-.00299	-.00079	.00106
#3	589.60	.00055	.01738	-.00207	.00127	-.00190
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15377-a-2-f @3 Acquired: 6/17/2019 15:32:28 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00326	.02846	.00094	.00043	.00035	-.00140
Stddev	.00130	.01282	.00022	.00011	.00022	.00098
%RSD	39.838	45.043	23.956	24.589	63.709	69.426
#1	.00292	.03989	.00093	.00040	.00042	-.00211
#2	.00217	.01460	.00116	.00055	.00010	-.00029
#3	.00470	.03090	.00071	.00034	.00053	-.00181
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00048	.00255
Stddev	.00010	.00003
%RSD	20.603	1.1624
#1	.00059	.00258
#2	.00043	.00252
#3	.00041	.00255
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-2-f @3 Acquired: 6/17/2019 15:32:28 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6384.0	209370.	19060.
Stddev	39.4	1360.	117.
%RSD	.61780	.64963	.61159
#1	6354.7	208160.	18927.
#2	6368.6	209120.	19113.
#3	6428.9	210840.	19142.

Sample Name: 140-15376-a-1-k @3 Acquired: 6/17/2019 15:37:48 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML (B)

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00019	.01786	-.00097	-.00470	.00127	.00007
Stddev	.00025	.01008	.00085	.00025	.00012	.00000
%RSD	129.77	56.478	87.791	5.2313	9.1817	5.5609
#1	.00047	.02086	-.00126	-.00493	.00117	.00007
#2	-.00003	.00661	-.00164	-.00444	.00140	.00008
#3	.00014	.02610	-.00001	-.00473	.00124	.00008
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.80138	.00012	.00038	.00069	.00145	.02885
Stddev	.00192	.00003	.00018	.00031	.00024	.00101
%RSD	.23900	22.605	47.797	44.856	16.611	3.5055
#1	.79989	.00010	.00059	.00102	.00167	.03001
#2	.80071	.00010	.00028	.00042	.00150	.02817
#3	.80354	.00015	.00027	.00061	.00119	.02838
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-k @3 Acquired: 6/17/2019 15:37:48 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML (B)

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.27957	.00148	49.068	.00704	.00004	635.65
Stddev	.01422	.00041	.255	.00005	.00017	1.69
%RSD	5.0868	27.708	.51984	.64789	384.51	.26601
#1	.27549	.00107	48.844	.00710	-.00013	637.40
#2	.29538	.00190	49.014	.00702	.00006	635.50
#3	.26783	.00148	49.345	.00702	.00021	634.03
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 576.40	.00075	.01275	-.00250	.00016	-.00016
Stddev	4.65	.00019	.00083	.00144	.00058	.00202
%RSD	.80717	25.549	6.5350	57.858	366.85	1283.0
#1	580.52	.00097	.01182	-.00250	.00059	.00043
#2	577.32	.00059	.01344	-.00105	.00039	.00151
#3	571.35	.00071	.01299	-.00394	-.00050	-.00241
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15376-a-1-k @3 Acquired: 6/17/2019 15:37:48 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML (B)

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00321	.05831	.00067	.00324	.00018	-.00071
Stddev	.00286	.00656	.00033	.00001	.00015	.00196
%RSD	88.956	11.256	50.114	.20068	83.470	274.91
#1	.00028	.06103	.00050	.00325	.00034	-.00267
#2	.00600	.06308	.00105	.00323	.00004	-.00073
#3	.00336	.05083	.00044	.00324	.00017	.00126
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00049	.00536
Stddev	.00025	.00003
%RSD	51.357	.59124
#1	.00021	.00539
#2	.00071	.00533
#3	.00056	.00535
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-k @3 Acquired: 6/17/2019 15:37:48 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML (B)

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6351.1	208500.	18838.
Stddev	25.7	805.	72.
%RSD	.40539	.38629	.38383
#1	6339.6	207580.	18804.
#2	6333.1	208880.	18921.
#3	6380.6	209050.	18788.

Sample Name: CCV Acquired: 6/17/2019 15:43:06 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.96753	24.571	.48850	1.9842	2.0977	1.9946
Stddev	.00242	.378	.00188	.0078	.0332	.0444
%RSD	.24999	1.5399	.38384	.39197	1.5823	2.2235
#1	.97030	25.007	.49052	1.9931	2.1358	2.0442
#2	.96646	24.347	.48681	1.9786	2.0822	1.9807
#3	.96583	24.357	.48818	1.9810	2.0752	1.9589
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.112	.50209	2.0411	1.9657	2.0588	25.574
Stddev	.737	.00030	.0006	.0128	.0090	.349
%RSD	1.5320	.05937	.03190	.65113	.43837	1.3632
#1	48.963	.50235	2.0418	1.9803	2.0692	25.976
#2	47.697	.50216	2.0410	1.9609	2.0527	25.394
#3	47.677	.50176	2.0405	1.9561	2.0546	25.352
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/17/2019 15:43:06 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.605	2.0071	47.963	1.9695	2.0572	49.427
Stddev	.703	.0276	.609	.0086	.0022	.181
%RSD	1.4460	1.3771	1.2691	.43466	.10843	.36541
#1	49.410	2.0389	48.665	1.9790	2.0595	49.420
#2	48.291	1.9931	47.636	1.9672	2.0551	49.250
#3	48.114	1.9892	47.587	1.9623	2.0571	49.611
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.581	1.9858	1.9697	.47909	.49663	.49411
Stddev	.815	.0024	.0040	.00304	.00145	.00072
%RSD	1.6436	.11982	.20536	.63400	.29149	.14641
#1	50.520	1.9882	1.9724	.48101	.49572	.49346
#2	49.168	1.9858	1.9651	.48067	.49588	.49399
#3	49.056	1.9835	1.9717	.47559	.49830	.49489
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/17/2019 15:43:06 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.51287	1.9672	1.9958	2.0978	2.0190	.97643
Stddev	.00179	.0338	.0045	.0309	.0279	.00293
%RSD	.34856	1.7190	.22642	1.4713	1.3820	.29998
#1	.51094	2.0062	2.0007	2.1332	2.0511	.97315
#2	.51447	1.9496	1.9947	2.0837	2.0011	.97736
#3	.51319	1.9459	1.9919	2.0765	2.0047	.97878
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.0043	2.0434
Stddev	.0105	.0015
%RSD	.52564	.07384
#1	2.0162	2.0450
#2	2.0008	2.0421
#3	1.9960	2.0432
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV   Acquired: 6/17/2019 15:43:06   Type: QC
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6569.1	219780.	18496.
Stddev	24.9	1933.	241.
%RSD	.37864	.87936	1.3021
#1	6540.4	217640.	18218.
#2	6581.9	220320.	18628.
#3	6584.9	221390.	18642.

Sample Name: CCB Acquired: 6/17/2019 15:48:10 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00033	-.00119	-.00061	-.00380	-.00013	-.00002
Stddev	.00038	.00492	.00083	.00094	.00016	.00000
%RSD	114.69	414.79	136.09	24.700	128.51	15.721
#1	.00028	.00448	-.00107	-.00274	.00003	-.00002
#2	.00074	-.00369	.00035	-.00411	-.00029	-.00002
#3	-.00002	-.00434	-.00111	-.00454	-.00011	-.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00104	.00005	.00011	-.00002	.00030	-.00016
Stddev	.00099	.00006	.00020	.00045	.00011	.00036
%RSD	95.224	110.17	181.84	1865.6	37.590	225.49
#1	-.00212	-.00001	.00013	.00049	.00043	.00019
#2	-.00017	.00007	.00030	-.00026	.00025	-.00015
#3	-.00083	.00010	-.00010	-.00030	.00023	-.00052
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/17/2019 15:48:10 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01646	.00094	.00856	.00003	.00023	.47517
Stddev	.01867	.00043	.01163	.00003	.00006	.43675
%RSD	113.40	45.901	135.76	78.338	26.278	91.916
#1	.03686	.00144	-.00160	.00000	.00019	-.00791
#2	.00023	.00076	.00605	.00004	.00020	.59128
#3	.01229	.00063	.02125	.00006	.00030	.84213
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00234	.00022	.00050	-.00096	.00031	.00074
Stddev	.00711	.00010	.00214	.00084	.00023	.00013
%RSD	303.52	46.172	428.18	88.215	74.806	17.295
#1	.00584	.00033	.00294	.00000	.00057	.00088
#2	-.00694	.00013	-.00036	-.00127	.00023	.00062
#3	-.00592	.00021	-.00107	-.00159	.00013	.00072
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/17/2019 15:48:10 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00050	-.00777	.00003	.00005	-.00051	.00014
Stddev	.00079	.00888	.00051	.00002	.00044	.00131
%RSD	159.22	114.25	1999.5	35.701	86.443	950.12
#1	-.00016	-.01431	.00058	.00005	-.00005	.00143
#2	.00137	.00234	-.00043	.00006	-.00055	.00017
#3	.00028	-.01134	-.00007	.00003	-.00093	-.00119
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00012	-.00002
Stddev	.00003	.00001
%RSD	24.340	31.768
#1	.00015	-.00003
#2	.00011	-.00003
#3	.00009	-.00002
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/17/2019 15:48:10 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6682.9	222100.	18863.
Stddev	8.2	418.	118.
%RSD	.12198	.18822	.62727
#1	6673.5	221940.	18960.
#2	6688.3	221780.	18731.
#3	6686.7	222570.	18897.

Sample Name: 15376-a-1-l du @3   Acquired: 6/17/2019 15:53:23   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 4ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00006	.00751	-.00056	-.00385	.00137	.00008
Stddev	.00037	.00348	.00057	.00042	.00008	.00001
%RSD	595.25	46.366	102.17	10.979	5.5060	10.586
#1	.00044	.00578	-.00056	-.00353	.00131	.00009
#2	.00005	.00523	-.00112	-.00433	.00134	.00007
#3	-.00030	.01152	.00001	-.00369	.00145	.00008
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.78915	.00008	.00049	.00084	.00802	.03042
Stddev	.00559	.00010	.00014	.00009	.00018	.00167
%RSD	.70841	133.90	28.940	11.133	2.2821	5.4980
#1	.79502	-.00004	.00058	.00074	.00782	.03156
#2	.78855	.00010	.00057	.00092	.00805	.03121
#3	.78389	.00016	.00033	.00087	.00818	.02850
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-l du @3 Acquired: 6/17/2019 15:53:23 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.25971	.00112	48.019	.00762	-.00002	631.10
Stddev	.00259	.00052	.164	.00001	.00010	2.78
%RSD	.99672	46.820	.34092	.09283	521.42	.44009
#1	.26022	.00058	48.201	.00763	.00003	634.02
#2	.25690	.00116	47.975	.00761	.00005	628.49
#3	.26201	.00162	47.882	.00762	-.00014	630.77
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 573.29	.00058	.01303	-.00255	.00093	.00029
Stddev	2.28	.00003	.00092	.00108	.00072	.00108
%RSD	.39818	5.8423	7.0677	42.580	77.316	373.26
#1	575.86	.00055	.01200	-.00270	.00027	-.00093
#2	571.51	.00061	.01379	-.00139	.00082	.00113
#3	572.49	.00057	.01330	-.00354	.00170	.00067
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 15376-a-1-l du @3 Acquired: 6/17/2019 15:53:23 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00337	.06921	.00077	.00329	-.00032	-.00026
Stddev	.00122	.01332	.00022	.00007	.00066	.00084
%RSD	36.180	19.247	28.880	2.0110	206.75	326.92
#1	.00396	.05695	.00059	.00332	-.00092	-.00120
#2	.00197	.08339	.00102	.00333	.00039	.00005
#3	.00419	.06730	.00070	.00321	-.00043	.00038
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00046	.01117
Stddev	.00005	.00010
%RSD	11.325	.89539
#1	.00044	.01107
#2	.00052	.01117
#3	.00043	.01127
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 15376-a-1-l du @3　　Acquired: 6/17/2019 15:53:23　　Type: Unk
Method: MT0007(v23) HF 022619(v4)　　Mode: CONC　　Corr. Factor: 1.000000
User: kerry　　Custom ID1:　　Custom ID2:　　Custom ID3:
Comment: 4ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6372.1	209980.	18931.
Stddev	34.1	1281.	102.
%RSD	.53559	.60988	.54115
#1	6333.6	208550.	18827.
#2	6383.8	211020.	18934.
#3	6398.7	210370.	19032.

Sample Name: 140-15376-a-2-f @3 Acquired: 6/17/2019 15:58:41 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00009	.02776	.00034	-.00383	.00292	.00019
Stddev	.00022	.00068	.00127	.00091	.00006	.00001
%RSD	252.66	2.4508	369.88	23.710	2.1163	2.7350
#1	.00002	.02705	.00180	-.00422	.00285	.00019
#2	-.00009	.02840	-.00054	-.00447	.00294	.00018
#3	.00033	.02784	-.00023	-.00279	.00296	.00019
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.28052	.00001	-.00011	.00040	.00081	.00506
Stddev	.00131	.00007	.00009	.00050	.00013	.00029
%RSD	.46779	566.45	84.715	126.09	16.581	5.7784
#1	.28048	-.00002	-.00007	-.00012	.00084	.00494
#2	.28185	-.00003	-.00022	.00044	.00093	.00485
#3	.27923	.00010	-.00005	.00089	.00067	.00539
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-f @3 Acquired: 6/17/2019 15:58:41 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.26561	.00168	46.518	.00118	.00013	633.36
Stddev	.04059	.00021	.427	.00001	.00009	.87
%RSD	15.283	12.456	.91768	.87549	68.981	.13667
#1	.22238	.00144	46.059	.00117	.00017	633.05
#2	.27154	.00182	46.592	.00119	.00003	632.69
#3	.30291	.00178	46.903	.00119	.00018	634.34
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 579.78	.00035	.00956	-.00161	.00053	-.00085
Stddev	11.28	.00028	.00068	.00099	.00045	.00050
%RSD	1.9462	79.750	7.1472	61.893	85.511	58.537
#1	566.75	.00048	.01019	-.00143	.00027	-.00095
#2	586.53	.00054	.00967	-.00268	.00026	-.00031
#3	586.06	.00003	.00883	-.00071	.00106	-.00129
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15376-a-2-f @3 Acquired: 6/17/2019 15:58:41 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00223	.05923	.00064	.00244	-.00019	-.00186
Stddev	.00267	.01193	.00025	.00005	.00004	.00152
%RSD	119.60	20.148	39.415	2.2196	21.720	81.514
#1	-.00040	.06058	.00084	.00247	-.00016	-.00217
#2	.00216	.07043	.00072	.00237	-.00017	-.00021
#3	.00494	.04667	.00036	.00247	-.00023	-.00320
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00024	.00260
Stddev	.00013	.00005
%RSD	53.048	1.8021
#1	.00016	.00255
#2	.00039	.00262
#3	.00018	.00264
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-2-f @3 Acquired: 6/17/2019 15:58:41 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6421.1	211220.	19147.
Stddev	12.8	682.	193.
%RSD	.19939	.32268	1.0095
#1	6410.4	210510.	19365.
#2	6417.5	211290.	19077.
#3	6435.3	211860.	18998.

Sample Name: 140-15376-a-3-f @3   Acquired: 6/17/2019 16:03:59   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 4ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00013	.01625	.00093	-.00511	.00991	.00023
Stddev	.00018	.00229	.00035	.00039	.00017	.00001
%RSD	140.65	14.073	37.826	7.5940	1.7476	4.0459
#1	.00014	.01507	.00057	-.00534	.01005	.00024
#2	.00031	.01889	.00127	-.00466	.00971	.00022
#3	-.00006	.01479	.00094	-.00533	.00996	.00024
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40886	.00018	.00011	.00045	.00053	.00535
Stddev	.00100	.00004	.00025	.00001	.00009	.00129
%RSD	.24503	20.118	218.76	3.2017	16.881	24.161
#1	.40995	.00017	-.00012	.00047	.00053	.00455
#2	.40797	.00014	.00009	.00045	.00044	.00466
#3	.40866	.00021	.00038	.00044	.00062	.00684
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-3-f @3 Acquired: 6/17/2019 16:03:59 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.24474	.00256	50.974	.00454	-.00003	615.15
Stddev	.00874	.00129	.263	.00003	.00021	1.27
%RSD	3.5717	50.528	.51626	.58397	721.22	.20607
#1	.23568	.00108	50.679	.00456	.00021	616.09
#2	.24543	.00349	51.184	.00451	-.00019	615.64
#3	.25312	.00311	51.058	.00455	-.00011	613.71
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 556.85	.00091	.01032	-.00157	.00107	-.00073
Stddev	5.83	.00026	.00089	.00144	.00048	.00133
%RSD	1.0463	28.673	8.6643	91.472	44.698	180.91
#1	550.76	.00076	.01068	.00003	.00155	.00053
#2	557.43	.00077	.01097	-.00200	.00059	-.00211
#3	562.37	.00122	.00930	-.00274	.00108	-.00061
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15376-a-3-f @3 Acquired: 6/17/2019 16:03:59 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00452	.05788	.00102	.00587	-.00009	-.00287
Stddev	.00321	.00900	.00036	.00005	.00020	.00138
%RSD	71.042	15.556	35.456	.89354	232.24	47.955
#1	.00092	.06593	.00102	.00581	-.00004	-.00348
#2	.00708	.05956	.00066	.00589	.00009	-.00130
#3	.00556	.04816	.00139	.00590	-.00031	-.00384
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00030	.00483
Stddev	.00005	.00003
%RSD	16.879	.57638
#1	.00026	.00480
#2	.00029	.00484
#3	.00035	.00485
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-3-f @3   Acquired: 6/17/2019 16:03:59   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 4ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6442.9	212050.	19346.
Stddev	12.9	1223.	6.
%RSD	.19974	.57691	.03194
#1	6433.1	210710.	19349.
#2	6438.2	212360.	19350.
#3	6457.5	213090.	19339.

Sample Name: 140-15390-a-1-e @3 Acquired: 6/17/2019 16:09:18 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00002	-.42007	.00057	-.00550	-.02453	-.00002
Stddev	.00019	.74161	.00094	.00019	.04391	.00002
%RSD	1230.5	176.55	164.39	3.4967	178.98	101.33
#1	-.00001	.00567	.00157	-.00572	.00081	-.00000
#2	.00017	-1.2764	-.00030	-.00539	-.07524	-.00004
#3	-.00021	.01053	.00044	-.00539	.00083	-.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.14121	.00000	-.00058	.00094	.00056	-.09326
Stddev	.28945	.00010	.00075	.00009	.00020	.19925
%RSD	204.98	5972.3	129.20	9.1624	36.010	213.65
#1	.02567	-.00010	-.00017	.00103	.00059	.02230
#2	-.47543	.00010	-.00145	.00095	.00075	-.32334
#3	.02615	.00001	-.00013	.00086	.00034	.02125
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-e @3 Acquired: 6/17/2019 16:09:18 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.56227	-.28484	7.8581	.00061	.00018	843.60
Stddev	1.3220	.49578	35.307	.00006	.00031	327.67
%RSD	235.12	174.06	449.31	9.4412	173.40	38.842
#1	.21600	.00225	28.043	.00067	-.00017	654.00
#2	-2.0887	-.85732	-32.910	.00055	.00030	1222.0
#3	.18587	.00055	28.441	.00059	.00040	654.83
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F -627270.	.00016	.00993	-.00392	.00029	.00044
Stddev	1087500.	.00015	.00093	.00154	.00125	.00109
%RSD	173.37	93.715	9.3864	39.147	436.09	248.11
#1	588.	.00032	.00964	-.00223	.00013	.00170
#2	-1883e3	.00005	.00919	-.00431	.00161	-.00023
#3	597.	.00010	.01098	-.00523	-.00088	-.00015
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15390-a-1-e @3   Acquired: 6/17/2019 16:09:18   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 4ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00427	-4.1740	.00136	.00797	.24503	-.00028
Stddev	.00102	7.2744	.00026	.01342	.42184	.00187
%RSD	23.924	174.28	19.105	168.44	172.16	661.96
#1	.00475	.02314	.00109	.00027	.00178	-.00193
#2	.00310	-12.574	.00161	.02347	.73212	-.00066
#3	.00497	.0286	.00140	.00017	.00118	.00175
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00044	.00218
Stddev	.00018	.00009
%RSD	40.366	4.1388
#1	.00044	.00214
#2	.00061	.00228
#3	.00026	.00211
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-1-e @3 Acquired: 6/17/2019 16:09:18 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6363.4	208880.	12592.
Stddev	19.6	634.	10911.
%RSD	.30747	.30354	86.650
#1	6344.3	208170.	19022.
#2	6362.5	209090.	-5.95
#3	6383.4	209390.	18759.

Sample Name: 140-15390-a-2-e @3 Acquired: 6/17/2019 16:14:40 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00029	.03016	.00101	-.00085	.00121	-.00001
Stddev	.00028	.00534	.00090	.00084	.00007	.00001
%RSD	96.238	17.712	89.649	98.278	5.7431	247.54
#1	.00008	.02408	.00058	-.00101	.00117	-.00002
#2	.00061	.03411	.00040	-.00161	.00116	.00000
#3	.00019	.03228	.00205	.00005	.00129	.00000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04848	.00009	-.00016	.00119	.00062	.03477
Stddev	.00134	.00006	.00009	.00022	.00008	.00206
%RSD	2.7638	62.483	57.782	18.141	13.334	5.9115
#1	.04925	.00006	-.00019	.00130	.00067	.03242
#2	.04693	.00005	-.00022	.00094	.00066	.03563
#3	.04924	.00015	-.00005	.00133	.00052	.03625
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-2-e @3 Acquired: 6/17/2019 16:14:40 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.24366	.00294	27.033	.00169	.00078	666.39
Stddev	.00376	.00100	.054	.00002	.00019	2.04
%RSD	1.5435	33.940	.19941	1.1167	24.071	.30676
#1	.24572	.00228	27.004	.00172	.00096	668.60
#2	.23932	.00245	26.999	.00168	.00058	665.98
#3	.24594	.00409	27.095	.00168	.00080	664.58
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 611.98	.00034	.01144	-.00088	-.00003	-.00047
Stddev	2.68	.00010	.00058	.00130	.00045	.00137
%RSD	.43804	27.806	5.0852	148.52	1468.0	293.51
#1	609.15	.00029	.01191	.00038	-.00021	-.00186
#2	614.48	.00028	.01162	-.00080	-.00036	-.00042
#3	612.30	.00045	.01079	-.00222	.00048	.00088
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15390-a-2-e @3 Acquired: 6/17/2019 16:14:40 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00374	.04416	.00058	.00048	.00043	-.00111
Stddev	.00090	.00398	.00014	.00008	.00046	.00133
%RSD	23.940	9.0054	24.555	15.992	106.82	119.17
#1	.00333	.04180	.00065	.00049	-.00004	-.00258
#2	.00313	.04193	.00042	.00040	.00089	.00000
#3	.00477	.04875	.00068	.00055	.00045	-.00076
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00058	.00247
Stddev	.00028	.00006
%RSD	47.804	2.5874
#1	.00028	.00244
#2	.00084	.00254
#3	.00064	.00243
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-2-e @3 Acquired: 6/17/2019 16:14:40 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6382.1	208210.	18684.
Stddev	22.9	553.	79.
%RSD	.35884	.26572	.42352
#1	6356.2	207640.	18593.
#2	6390.3	208740.	18736.
#3	6399.8	208270.	18724.

Sample Name: 140-15390-a-3-e @3 Acquired: 6/17/2019 16:19:59 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00023	.06065	.00035	-.00315	.00064	.00002
Stddev	.00037	.00172	.00056	.00053	.00012	.00001
%RSD	159.75	2.8406	159.02	16.843	19.134	31.934
#1	.00020	.05867	-.00028	-.00254	.00056	.00002
#2	-.00012	.06157	.00076	-.00342	.00058	.00003
#3	.00061	.06173	.00058	-.00349	.00078	.00002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03862	.00006	-.00015	.00117	.00155	.03193
Stddev	.00130	.00004	.00014	.00007	.00027	.00107
%RSD	3.3550	60.541	95.231	5.8964	17.311	3.3428
#1	.03725	.00009	-.00007	.00114	.00181	.03149
#2	.03983	.00002	-.00006	.00125	.00128	.03115
#3	.03877	.00008	-.00031	.00112	.00154	.03314
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-3-e @3 Acquired: 6/17/2019 16:19:59 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.19449	.00175	35.952	.00365	.00023	645.87
Stddev	.01043	.00080	.325	.00005	.00027	2.51
%RSD	5.3653	45.590	.90396	1.2711	117.11	.38878
#1	.19659	.00176	35.588	.00367	-.00006	645.37
#2	.18316	.00255	36.212	.00360	.00047	648.59
#3	.20371	.00095	36.057	.00369	.00029	643.64
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 584.17	.00054	.01243	-.00129	.00103	-.00039
Stddev	9.71	.00019	.00219	.00028	.00151	.00179
%RSD	1.6628	35.637	17.629	21.592	146.50	455.81
#1	583.84	.00072	.01332	-.00126	.00092	-.00077
#2	594.05	.00034	.00994	-.00103	.00259	.00155
#3	574.63	.00058	.01404	-.00158	-.00042	-.00196
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15390-a-3-e @3 Acquired: 6/17/2019 16:19:59 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00198	.01136	.00052	.00052	-.00011	-.00026
Stddev	.00197	.00975	.00022	.00009	.00048	.00128
%RSD	99.155	85.847	42.527	16.777	418.62	492.87
#1	.00105	.01318	.00072	.00056	-.00065	-.00142
#2	.00066	.00082	.00028	.00058	.00027	-.00046
#3	.00425	.02006	.00056	.00042	.00004	.00111
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00040	.00258
Stddev	.00019	.00006
%RSD	47.487	2.4222
#1	.00059	.00265
#2	.00020	.00257
#3	.00042	.00252
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-3-e @3 Acquired: 6/17/2019 16:19:59 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6446.0	209740.	19010.
Stddev	20.6	515.	72.
%RSD	.31964	.24540	.38036
#1	6426.0	209200.	19078.
#2	6444.7	209810.	18934.
#3	6467.2	210220.	19017.

Sample Name: 140-15390-a-4-e @3 Acquired: 6/17/2019 16:25:21 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	s .05926	k -.14540	s .00072	s -.37684	-.00465	s .00359
Stddev	.10298	.40321	.00139	.64718	.01061	.00625
%RSD	173.79	277.31	193.19	171.74	228.08	174.00
#1	-.00016	.09926	.00227	-.00274	.00140	-.00001
#2	s .17817	k -.61078	s -.00044	s -1.1241	-.01690	s .01082
#3	-.00024	.07532	.00034	-.00364	.00155	-.00002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.05348	s -.00002	s .00005	s -.09049	s -.10232	.08951
Stddev	.13191	.00005	.00013	.16116	.17919	.06214
%RSD	246.67	222.48	284.96	178.11	175.13	69.428
#1	.02224	.00002	-.00005	.00256	.00112	.05418
#2	-.20579	s -.00008	s .00019	s -.27658	s -.30923	.16126
#3	.02312	-.00001	-.00000	.00256	.00115	.05308
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-e @3 Acquired: 6/17/2019 16:25:21 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.57385	-.05129	31.231	s -.13742	s .00037	839.66
Stddev	1.3155	.08931	2.805	.24602	.00024	319.44
%RSD	229.25	174.12	8.9800	179.03	65.169	38.044
#1	.17726	.00017	29.546	.00458	.00032	655.99
#2	-2.0929	-.15442	34.469	s -.42149	s .00016	1208.5
#3	.19407	.00037	29.680	.00467	.00063	654.47
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 131670.	s .00014	s .01081	s -.05368	s -.00031	s -.00078
Stddev	227020.	.00006	.00090	.08954	.00104	.00066
%RSD	172.42	40.713	8.3681	166.82	329.44	85.449
#1	596.3	.00008	.00998	-.00137	-.00148	-.00037
#2	393810.	s .00018	s .01178	s -.15707	s .00050	s -.00154
#3	590.3	.00017	.01068	-.00259	.00004	-.00042
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15390-a-4-e @3 Acquired: 6/17/2019 16:25:21 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	s .00205	k -.26594	s .00077	.00121	-.06916	s -.00043
Stddev	.00123	.47613	.00051	.00168	.11918	.00317
%RSD	59.689	179.04	66.623	139.57	172.33	734.98
#1	.00256	.01637	.00042	.00022	.00001	.00311
#2	s .00066	k -.81567	s .00052	.00315	-.20677	s -.00302
#3	.00294	.00147	.00136	.00025	-.00071	-.00138
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	s -.01282	s .00242
Stddev	.02261	.00014
%RSD	176.45	5.6352
#1	.00032	.00237
#2	s -.03893	s .00257
#3	.00016	.00232
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-4-e @3 Acquired: 6/17/2019 16:25:21 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	^ *****	^ *****	12630.
Stddev	-----	-----	10918.
%RSD	-----	-----	86.448
#1	6442.1	209220.	18964.
#2	^ -----	^ -----	22.61
#3	5870.7	210100.	18902.

Sample Name: 15376-a-1-k SD@15 Acquired: 6/17/2019 16:30:42 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (B) TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00014	-.00732	-.00017	-.00634	.00015	-.00001
Stddev	.00013	.00782	.00158	.00069	.00004	.00001
%RSD	91.342	106.74	924.26	10.946	26.697	174.26
#1	-.00000	.00169	-.00129	-.00625	.00011	-.00002
#2	.00018	-.01145	-.00086	-.00707	.00018	.00001
#3	.00025	-.01221	.00164	-.00569	.00015	-.00002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.16425	.00002	.00012	.00007	.00053	.00800
Stddev	.00039	.00006	.00009	.00033	.00004	.00103
%RSD	.23468	232.03	73.666	496.34	8.4264	12.930
#1	.16404	.00004	.00006	.00029	.00056	.00740
#2	.16469	-.00004	.00008	-.00031	.00048	.00741
#3	.16401	.00007	.00021	.00022	.00055	.00920
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-k SD@15 Acquired: 6/17/2019 16:30:42 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (B) TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05976	.00105	9.8905	.00144	.00002	128.13
Stddev	.00930	.00073	.0122	.00004	.00002	1.24
%RSD	15.555	69.120	.12324	2.8268	92.687	.96778
#1	.05858	.00050	9.8880	.00147	.00001	126.70
#2	.05112	.00188	9.8798	.00139	.00001	128.83
#3	.06960	.00078	9.9037	.00145	.00004	128.86
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	124.46	.00033	.00250	-.00221	-.00037	-.00071
Stddev	1.68	.00016	.00085	.00162	.00112	.00104
%RSD	1.3516	48.579	34.116	73.658	302.42	146.50
#1	124.01	.00015	.00238	-.00072	-.00102	-.00019
#2	126.32	.00043	.00171	-.00196	.00092	-.00003
#3	123.05	.00042	.00341	-.00394	-.00101	-.00190
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-k SD@15 Acquired: 6/17/2019 16:30:42 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (B) TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00132	-.00151	.00006	.00075	.00045	.00097
Stddev	.00112	.01449	.00008	.00005	.00048	.00311
%RSD	84.854	958.40	131.66	6.4283	106.22	322.34
#1	.00004	-.01823	.00015	.00069	.00063	-.00184
#2	.00183	.00723	.00000	.00075	.00082	.00042
#3	.00210	.00647	.00003	.00079	-.00009	.00431
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00023	.00272
Stddev	.00027	.00010
%RSD	116.38	3.6738
#1	.00044	.00283
#2	-.00007	.00268
#3	.00033	.00264
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 15376-a-1-k SD@15 Acquired: 6/17/2019 16:30:42 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (B) TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6652.4	218610.	18603.
Stddev	22.8	662.	96.
%RSD	.34205	.30274	.51518
#1	6626.1	217850.	18539.
#2	6666.7	219090.	18558.
#3	6664.2	218880.	18714.

Sample Name: 140-15390-a-1-e @3   Acquired: 6/17/2019 16:40:33   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 4ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	k .50176	k 13.257	s .00149	2.2686	.01861	k -.03601
Stddev	.87471	22.451	.00173	3.9397	.03078	.06307
%RSD	174.33	169.35	116.03	173.66	165.37	175.14
#1	-.00008	.02759	.00015	-.00430	.00078	-.00002
#2	k -.00642	k 39.179	s .00088	-.00764	.05415	k .00082
#3	1.5118	.56380	.00344	6.8178	.00091	-.10884
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.11044	s .00030	s -.00070	.44624	.02462	-1.7501
Stddev	.24249	.00028	.00104	.76682	.04251	3.0702
%RSD	219.57	93.930	149.63	171.84	172.69	175.43
#1	.02973	.00018	-.00002	.00058	.00078	.02090
#2	-.39045	s .00063	s -.00189	.00647	-.00063	-5.2952
#3	.02940	.00010	-.00018	1.3317	.07370	.02406
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-e @3 Acquired: 6/17/2019 16:40:33 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0024	.09800	7.0190	.20197	s .00036	233.45
Stddev	1.4503	.16776	35.604	.34932	.00009	699.38
%RSD	144.68	171.18	507.25	172.96	25.801	299.59
#1	.15643	.00161	27.409	.00056	.00030	638.83
#2	2.6771	.29172	-34.092	.00001	s .00047	-574.12
#3	.17373	.00068	27.741	.60534	.00032	635.63
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 277.71	s .00015	s .01150	k 14.226	s .00043	s -.02040
Stddev	290.18	.00029	.00273	24.648	.00075	.03109
%RSD	104.49	191.35	23.774	173.26	175.84	152.45
#1	582.68	.00027	.00937	-.00052	-.00039	-.00293
#2	5.0303	s -.00018	s .01459	k -.00769	s .00109	s -.00196
#3	245.41	.00035	.01055	42.687	.00058	-.05630
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15390-a-1-e @3 Acquired: 6/17/2019 16:40:33 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	s .00478	k 4.1094	s .00180	.01225	.31271	s .00950
Stddev	.00126	7.0998	.00054	.02089	.54002	.01850
%RSD	26.415	172.77	30.099	170.50	172.69	194.68
#1	.00333	.02835	.00138	.00027	.00105	-.00167
#2	s .00539	k 12.307	s .00241	.03638	.93627	s -.00068
#3	.00563	-.00756	.00161	.00011	.00081	.03085
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	k -5.2783	s .00289
Stddev	9.1441	.00081
%RSD	173.24	28.098
#1	.00050	.00248
#2	k .00148	s .00383
#3	-15.837	.00237
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-1-e @3 Acquired: 6/17/2019 16:40:33 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	^ *****	70259.	12503.
Stddev	-----	120e3	10830.
%RSD	-----	170.95	86.616
#1	6388.7	208940.	18746.
#2	^ -----	1835.8	-2.00
#3	6433.8	-.8	18765.

Sample Name: 140-15390-a-4-e @3   Acquired: 6/17/2019 16:45:52   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 4ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	s .01813	s .10279	k .00098	s -.14728	s .00137	s .00145
Stddev	.03150	.01016	.00052	.24511	.00013	.00251
%RSD	173.73	9.8810	53.459	166.42	9.5440	172.46
#1	-.00030	.10656	.00152	-.00439	.00129	-.00001
#2	.00019	.09129	.00048	-.00715	.00131	.00003
#3	s .05450	s .11052	k .00093	s -.43031	s .00152	s .00435
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	s .02707	k .00006	k -.00019	s -.03370	s -.03924	s .05293
Stddev	.00431	.00007	.00001	.06306	.06947	.00440
%RSD	15.933	116.47	3.5462	187.15	177.03	8.3097
#1	.02461	-.00001	-.00018	.00244	.00098	.04856
#2	.02454	.00012	-.00019	.00299	.00076	.05288
#3	s .03204	k .00005	k -.00019	s -.10652	s -.11945	s .05736
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-e @3 Acquired: 6/17/2019 16:45:52 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	s .19062	s .00211	s 30.621	s -.05168	.00038	s 667.26
Stddev	.01540	.00094	1.624	.09746	.00015	39.61
%RSD	8.0764	44.621	5.3047	188.58	39.852	5.9362
#1	.18299	.00274	29.719	.00454	.00023	644.39
#2	.18053	.00255	29.647	.00463	.00037	644.39
#3	s .20834	s .00103	s 32.496	s -.16422	.00054	s 713.00
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	^ *****	k .00026	.00907	s .00066	k .00025	k -.00012
Stddev	-----	.00010	.00178	.00739	.00112	.00061
%RSD	-----	37.602	19.624	1120.9	450.04	492.79
#1	588.35	.00036	.00990	-.00109	-.00090	-.00083
#2	590.90	.00016	.00703	-.00570	.00134	.00022
#3	^ -----	k .00027	.01029	s .00877	k .00031	k .00023
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-e @3 Acquired: 6/17/2019 16:45:52 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	k .00284	s .02713	.00086	s .00030	s .00007	k .00067
Stddev	.00115	.00843	.00037	.00008	.00066	.00185
%RSD	40.396	31.060	42.611	28.389	953.58	275.89
#1	.00393	.03131	.00075	.00023	.00077	.00232
#2	.00164	.01743	.00056	.00039	-.00053	.00102
#3	k .00295	s .03265	.00127	s .00028	s -.00004	k -.00133
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	s -.00777	k .00336
Stddev	.01385	.00001
%RSD	178.29	.27901
#1	.00034	.00336
#2	.00011	.00336
#3	s -.02376	k .00334
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-4-e @3 Acquired: 6/17/2019 16:45:52 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6460.7	^ *****	^ *****
Stddev	14.1	-----	-----
%RSD	.21788	-----	-----
#1	6444.5	208250.	18426.
#2	6469.9	76950.	18581.
#3	6467.6	^ -----	^ -----

Sample Name: CCV Acquired: 6/17/2019 16:51:09 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm
Avg	kF 126.32	sF 42.350	kF .42278	kF<.00000	^F *****
Stddev	217.13	29.484	.11316	480.04	-----
%RSD	171.88	69.621	26.765	174.45	-----
#1	.9636	24.372	.48943	1.9727	2.0869
#2	377.04	76.378	.29212	-829.48	2.0828
#3	k .9656	s 26.301	k .48677	k 1.973	^ -----
Check ?	Chk Fail	Chk Fail	Chk Fail	Chk Fail	Chk Fail
Value	1.0000	25.000	.50000	2.0000	2.0000
Range	10.500%	10.500%	-10.500%	-10.500%	-10.500%

Elem	Be3130A	Ca3179R	Cd2265A	Co2286A	Cr2677A
Line	313.042 {108}	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm
Avg	kF 1097300.	^F *****	k .49727	k 2.0556	F<.00000
Stddev	1900500.	-----	.00531	.0368	71.983
%RSD	173.20	-----	1.0688	1.7883	181.59
#1	2.	47.397	.49959	2.0349	1.9590
#2	3291800.	47.243	.49119	2.0980	-122.76
#3	k .	^ -----	k .50103	k 2.0338	1.881
Check ?	Chk Fail	Chk Fail	Chk Pass	Chk Pass	Chk Fail
Value	2.0000	50.000			2.0000
Range	10.500%	-10.500%			-10.500%

Sample Name: CCV Acquired: 6/17/2019 16:51:09 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Cu3247A	Fe2599R	K_7664R	Li6707R	Mg2790R
Line	324.754 {104}	259.940 {130}	766.490 { 44}	670.784 { 50}	279.079 {121}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm
Avg	kF<.00000	^F *****	^F *****	^F *****	s 47.827
Stddev	8.4459	-----	-----	-----	2.288
%RSD	296.10	-----	-----	-----	4.7848
#1	2.0649	25.007	48.577	1.9909	46.562
#2	-12.605	24.985	48.430	1.9940	46.451
#3	k 1.9826	^ -----	^ -----	^ -----	s 50.469
Check ?	Chk Fail	Chk Fail	Chk Fail	Chk Fail	Chk Pass
Value	2.0000	25.000	50.000	2.0000	
Range	-10.500%	-10.500%	-10.500%	-10.500%	

Elem	Mn2576A	Mo2020A	aN	Na5895R	Ni2316A
Line	257.610 {131}	202.030 {467}	330.237 {102}	589.592 { 57}	231.604 {445}
IS Ref	(Y_3710A)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm
Avg	F 16.793	2.1807	s 50.825	^F *****	k 1.8457
Stddev	25.699	.2184	2.311	-----	.2286
%RSD	153.04	10.016	4.5471	-----	12.386
#1	1.9509	2.0568	49.209	49.665	1.9800
#2	46.468	2.4329	49.794	49.545	1.5817
#3	1.9592	2.0524	s 53.472	^ -----	k 1.9753
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Fail	Chk Pass
Value	2.0000			50.000	
Range	10.500%			-10.500%	

Sample Name: CCV Acquired: 6/17/2019 16:51:09 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	P_1782A	bP	Pb2203A	Sb2068A	Se1960A
Line	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}	196.090 {472}
IS Ref	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm
Avg	1.9178	kF 10.591	k .49234	kF .17668	k .51623
Stddev	.0951	17.539	.00335	.55092	.01201
%RSD	4.9591	165.60	.67992	311.82	2.3266
#1	1.9752	.47443	.49589	.49539	.51033
#2	1.8081	30.842	.49189	-.45947	.53004
#3	1.9703	k .45510	k .48924	k .49410	k .50831
Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Fail	Chk Pass
Value		.50000		.50000	
Range		10.500%		-10.500%	

Elem	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm
Avg	s 1.9997	2.0481	^F *****	s 2.0583	kF 2.0131
Stddev	.1343	.1081	-----	.0895	1.7802
%RSD	6.7165	5.2777	-----	4.3468	88.433
#1	1.9359	1.9860	2.0779	2.0079	.97630
#2	1.9092	2.1729	2.0768	2.0055	4.0687
#3	s 2.1541	1.9854	^ -----	s 2.1617	k .99423
Check ?	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Fail
Value			2.0000		1.0000
Range			-10.500%		10.500%

Sample Name: CCV Acquired: 6/17/2019 16:51:09 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	kF<.00000	k 2.0481
Stddev	841.27	.0100
%RSD	173.90	.48872
#1	1.9996	2.0374
#2	-1455.2	2.0573
#3	k 1.89	k 2.0495
Check ?	Chk Fail	Chk Pass
Value	2.0000	
Range	-10.500%	

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	4865.3	123620.	^ *****
Stddev	2978.6	112600.	-----
%RSD	61.222	91.085	-----
#1	6555.6	220310.	18883.
#2	1426.1	.1	19021.
#3	6614.3	150540.	^ -----

Sample Name: CCV　　Acquired: 6/17/2019 17:02:31　　Type: QC
Method: MT0007(v23) HF 022619(v4)　　Mode: CONC　　Corr. Factor: 1.000000
User: kerry　　Custom ID1:　　Custom ID2:　　Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.97330	24.483	.49332	1.9914	2.0779	1.9911
Stddev	.00154	.009	.00188	.0015	.0054	.0021
%RSD	.15798	.03749	.38085	.07799	.25880	.10381
#1	.97507	24.486	.49545	1.9907	2.0842	1.9889
#2	.97243	24.472	.49192	1.9932	2.0750	1.9911
#3	.97239	24.490	.49259	1.9904	2.0747	1.9931
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.384	.50566	2.0475	1.9842	2.0525	25.309
Stddev	.064	.00070	.0035	.0050	.0055	.044
%RSD	.13182	.13867	.16914	.25196	.26945	.17308
#1	48.322	.50637	2.0492	1.9841	2.0578	25.337
#2	48.380	.50564	2.0499	1.9893	2.0468	25.332
#3	48.449	.50496	2.0436	1.9793	2.0531	25.259
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/17/2019 17:02:31 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.758	1.9751	47.967	1.9899	2.0595	49.195
Stddev	.104	.0094	.151	.0030	.0036	.377
%RSD	.21414	.47453	.31565	.15209	.17636	.76653
#1	48.783	1.9832	47.804	1.9893	2.0627	48.877
#2	48.643	1.9773	47.992	1.9932	2.0602	49.612
#3	48.847	1.9649	48.104	1.9872	2.0556	49.098
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.509	2.0027	1.9958	.48825	.50069	.49770
Stddev	.129	.0031	.0104	.00138	.00074	.00236
%RSD	.26028	.15510	.51846	.28278	.14815	.47483
#1	49.643	2.0053	2.0000	.48746	.50140	.49850
#2	49.386	2.0036	2.0035	.48744	.50075	.49956
#3	49.499	1.9993	1.9841	.48984	.49992	.49504
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV   Acquired: 6/17/2019 17:02:31   Type: QC
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50951	1.9553	2.0140	2.0708	2.0085	.99005
Stddev	.00320	.0085	.0013	.0063	.0031	.00194
%RSD	.62715	.43508	.06435	.30679	.15298	.19594
#1	.50930	1.9650	2.0141	2.0769	2.0120	.99189
#2	.51280	1.9520	2.0127	2.0711	2.0064	.99024
#3	.50642	1.9490	2.0153	2.0642	2.0070	.98802
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.0128	2.0523
Stddev	.0043	.0046
%RSD	.21480	.22425
#1	2.0138	2.0537
#2	2.0165	2.0560
#3	2.0080	2.0471
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV   Acquired: 6/17/2019 17:02:31   Type: QC
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6501.5	216610.	17957.
Stddev	36.0	813.	39.
%RSD	.55329	.37542	.21476
#1	6471.8	215770.	17957.
#2	6491.1	216670.	17996.
#3	6541.5	217390.	17919.

Sample Name: CCB Acquired: 6/17/2019 17:07:34 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00030	-.00124	-.00008	-.00185	-.00017	.00000
Stddev	.00018	.02419	.00022	.00079	.00014	.00001
%RSD	58.505	1943.0	268.36	42.437	80.895	263.00
#1	-.00042	-.02131	.00014	-.00094	-.00006	.00001
#2	-.00039	.02561	-.00030	-.00230	-.00033	-.00000
#3	-.00010	-.00803	-.00008	-.00231	-.00012	.00000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00150	.00005	.00004	.00020	.00054	.00056
Stddev	.00198	.00003	.00010	.00009	.00003	.00194
%RSD	132.26	65.736	263.66	48.476	4.8658	349.25
#1	-.00024	.00006	-.00005	.00030	.00051	-.00054
#2	.00108	.00007	.00002	.00014	.00057	-.00060
#3	.00366	.00001	.00014	.00014	.00054	.00280
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/17/2019 17:07:34 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01724	.00116	.00690	.00000	.00028	.57712
Stddev	.00901	.00078	.00908	.00002	.00013	.67820
%RSD	52.270	67.361	131.63	459.57	47.948	117.52
#1	.02664	.00173	.00976	.00001	.00014	1.1531
#2	.00868	.00147	-.00327	.00002	.00041	-.17036
#3	.01641	.00027	.01420	-.00002	.00029	.74859
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03498	.00024	.00058	-.00233	.00104	-.00085
Stddev	.00714	.00011	.00167	.00031	.00106	.00095
%RSD	20.403	45.208	290.87	13.139	101.55	111.53
#1	.04303	.00011	.00072	-.00203	.00224	-.00056
#2	.03252	.00031	-.00116	-.00231	.00024	-.00191
#3	.02940	.00030	.00217	-.00264	.00065	-.00008
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/17/2019 17:07:34 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00184	-.00789	.00007	.00003	-.00040	.00073
Stddev	.00077	.00196	.00036	.00010	.00013	.00182
%RSD	41.886	24.872	510.69	296.83	32.474	250.44
#1	-.00110	-.00886	.00039	.00011	-.00025	.00282
#2	-.00264	-.00919	-.00032	-.00008	-.00044	-.00048
#3	-.00178	-.00563	.00014	.00007	-.00050	-.00016
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00004	-.00003
Stddev	.00015	.00004
%RSD	405.90	127.62
#1	.00012	-.00003
#2	-.00014	-.00008
#3	.00013	.00000
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/17/2019 17:07:34 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6701.7	222030.	18358.
Stddev	10.1	1019.	133.
%RSD	.15107	.45895	.72613
#1	6690.2	220880.	18409.
#2	6705.8	222790.	18207.
#3	6709.1	222430.	18459.

Sample Name: 140-15390-a-1-e @3 Acquired: 6/17/2019 17:12:47 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00029	.02914	.00145	-.00254	.00085	-.00001
Stddev	.00014	.00966	.00067	.00005	.00007	.00001
%RSD	47.977	33.152	45.838	1.9928	7.6538	91.506
#1	.00044	.03579	.00168	-.00248	.00087	-.00002
#2	.00016	.03358	.00198	-.00256	.00091	-.00000
#3	.00029	.01806	.00071	-.00257	.00078	-.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.08919	.00005	-.00013	.00100	.00135	.02742
Stddev	.00622	.00013	.00021	.00046	.00005	.00063
%RSD	6.9756	262.66	155.08	45.999	3.8199	2.2831
#1	.08664	-.00000	-.00031	.00135	.00139	.02811
#2	.08464	.00020	-.00019	.00116	.00129	.02688
#3	.09628	-.00005	.00009	.00048	.00136	.02727
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-e @3 Acquired: 6/17/2019 17:12:47 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.15729	.00204	27.475	.00060	.00020	640.67
Stddev	.01985	.00072	.278	.00003	.00012	.48
%RSD	12.619	35.193	1.0125	5.4371	62.243	.07473
#1	.13873	.00121	27.157	.00057	.00032	640.54
#2	.15493	.00245	27.670	.00064	.00021	641.20
#3	.17822	.00246	27.600	.00060	.00007	640.27
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 578.60	.00033	.01000	-.00077	.00112	-.00168
Stddev	1.83	.00019	.00081	.00121	.00051	.00259
%RSD	.31641	57.803	8.0968	156.59	45.791	154.82
#1	577.07	.00018	.01093	.00038	.00056	.00026
#2	578.11	.00054	.00948	-.00066	.00157	-.00462
#3	580.63	.00026	.00959	-.00203	.00124	-.00067
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15390-a-1-e @3 Acquired: 6/17/2019 17:12:47 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00316	-.00009	.00167	.00035	.00026	.00095
Stddev	.00096	.00245	.00030	.00006	.00033	.00360
%RSD	30.240	2736.1	17.848	18.070	124.91	380.23
#1	.00391	.00142	.00136	.00043	.00064	-.00318
#2	.00208	-.00292	.00196	.00032	.00006	.00342
#3	.00348	.00123	.00170	.00032	.00008	.00260
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00040	.00284
Stddev	.00011	.00020
%RSD	26.719	7.1237
#1	.00039	.00297
#2	.00030	.00261
#3	.00052	.00294
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-1-e @3 Acquired: 6/17/2019 17:12:47 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	5464.6	210030.	18998.
Stddev	1574.7	193.	179.
%RSD	28.817	.09172	.94333
#1	6338.9	209840.	19198.
#2	3646.7	210010.	18851.
#3	6408.3	210230.	18945.

Sample Name: 140-15390-a-4-e @3 Acquired: 6/17/2019 17:18:07 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00009	.10202	.00016	-.00153	.00134	-.00001
Stddev	.00007	.00574	.00036	.00022	.00002	.00001
%RSD	72.275	5.6265	232.70	14.395	1.3914	68.118
#1	.00016	.10655	-.00026	-.00169	.00133	-.00001
#2	.00007	.10395	.00037	-.00128	.00136	-.00002
#3	.00003	.09557	.00036	-.00161	.00134	-.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01821	.00008	-.00010	.00255	.00101	.05132
Stddev	.00104	.00005	.00013	.00012	.00010	.00041
%RSD	5.6935	54.632	127.38	4.8964	9.5131	.80788
#1	.01839	.00011	-.00003	.00255	.00105	.05106
#2	.01915	.00011	-.00003	.00268	.00090	.05180
#3	.01710	.00003	-.00026	.00243	.00108	.05109
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-e @3 Acquired: 6/17/2019 17:18:07 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.18186	.00171	29.225	.00457	.00042	641.38
Stddev	.01316	.00072	.388	.00003	.00023	1.90
%RSD	7.2346	42.090	1.3292	.60993	54.352	.29672
#1	.16855	.00232	28.852	.00460	.00039	642.15
#2	.18216	.00189	29.197	.00456	.00067	642.78
#3	.19486	.00092	29.627	.00454	.00021	639.21
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 606.97	.00013	.01108	-.00248	.00086	-.00174
Stddev	42.20	.00030	.00157	.00114	.00037	.00085
%RSD	6.9528	230.20	14.127	45.880	43.089	48.970
#1	576.92	-.00005	.01160	-.00354	.00110	-.00125
#2	588.77	.00048	.01231	-.00263	.00106	-.00125
#3	655.21	-.00003	.00932	-.00128	.00043	-.00273
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15390-a-4-e @3 Acquired: 6/17/2019 17:18:07 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00191	.01250	.00095	.00022	-.00012	-.00225
Stddev	.00079	.00569	.00012	.00008	.00076	.00353
%RSD	41.463	45.516	12.289	36.221	608.95	156.93
#1	.00100	.00896	.00107	.00028	-.00099	.00005
#2	.00230	.01906	.00094	.00024	.00044	-.00049
#3	.00243	.00947	.00084	.00013	.00017	-.00631
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00046	.00228
Stddev	.00004	.00004
%RSD	9.6823	1.8783
#1	.00050	.00228
#2	.00048	.00223
#3	.00041	.00232
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-4-e @3 Acquired: 6/17/2019 17:18:07 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 4ML TO 12ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6403.6	209500.	18081.
Stddev	42.2	1040.	1192.
%RSD	.65883	.49616	6.5907
#1	6358.6	208390.	18858.
#2	6409.7	209670.	18677.
#3	6442.3	210450.	16709.

Sample Name: CCV Acquired: 6/17/2019 17:30:44 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.97338	24.630	.49213	2.0036	2.0706	F 1.6666
Stddev	.00423	.135	.00181	.0073	.0083	.6133
%RSD	.43507	.54695	.36704	.36520	.39898	36.798
#1	.97825	24.780	.49373	2.0114	2.0799	2.0217
#2	.97050	24.520	.49017	2.0027	2.0675	2.0198
#3	.97141	24.590	.49248	1.9968	2.0643	.95847
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value						2.0000
Range						-10.500%

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.294	.51084	2.0539	2.0111	2.0220	25.679
Stddev	.214	.00053	.0011	.0114	.0089	.132
%RSD	.43490	.10301	.05217	.56823	.44031	.51348
#1	49.493	.51026	2.0543	2.0199	2.0240	25.827
#2	49.067	.51130	2.0526	2.0151	2.0123	25.572
#3	49.323	.51096	2.0546	1.9982	2.0297	25.640
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/17/2019 17:30:44 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.847	1.9672	49.377	2.0238	2.0520	48.497
Stddev	.167	.0131	.289	.0143	.0024	.719
%RSD	.34237	.66364	.58437	.70779	.11783	1.4825
#1	49.001	1.9795	49.666	2.0370	2.0543	49.225
#2	48.872	1.9685	49.089	2.0258	2.0521	47.787
#3	48.669	1.9535	49.378	2.0086	2.0495	48.478
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.364	2.0173	2.0013	.49939	.50358	.49234
Stddev	.164	.0013	.0108	.00560	.00033	.00220
%RSD	.33317	.06418	.53804	1.1219	.06496	.44719
#1	49.552	2.0184	2.0119	.50325	.50351	.49453
#2	49.290	2.0176	1.9904	.50196	.50394	.49012
#3	49.250	2.0159	2.0016	.49296	.50330	.49236
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV   Acquired: 6/17/2019 17:30:44   Type: QC
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50821	1.9919	2.0301	2.0717	2.0121	.99678
Stddev	.00318	.0303	.0043	.0111	.0091	.00211
%RSD	.62503	1.5190	.21261	.53627	.45039	.21132
#1	.51164	1.9587	2.0259	2.0836	2.0226	.99814
#2	.50537	2.0180	2.0297	2.0696	2.0064	.99785
#3	.50762	1.9990	2.0346	2.0617	2.0073	.99435
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.0218	2.0567
Stddev	.0070	.0039
%RSD	.34559	.18727
#1	2.0283	2.0611
#2	2.0225	2.0540
#3	2.0144	2.0549
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 6/17/2019 17:30:44 Type: QC
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6483.6	214010.	17348.
Stddev	33.5	2061.	105.
%RSD	.51689	.96317	.60412
#1	6445.8	212000.	17238.
#2	6495.0	213910.	17446.
#3	6509.8	216120.	17361.

Sample Name: CCB   Acquired: 6/17/2019 17:39:08   Type: Unk
Method: MT0007(v23) HF 022619(v4)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00007	-.00743	.00068	-.00233	-.00007	-.00000
Stddev	.00006	.01038	.00156	.00032	.00011	.00002
%RSD	79.075	139.68	228.95	13.607	152.71	323.51
#1	.00009	.00068	.00220	-.00205	.00004	.00001
#2	.00001	-.01913	-.00091	-.00267	-.00019	-.00001
#3	.00012	-.00384	.00074	-.00226	-.00007	-.00002
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00034	.00010	.00006	.00019	.00011	.00122
Stddev	.00099	.00002	.00010	.00046	.00010	.00083
%RSD	286.28	23.444	175.85	246.44	94.198	67.743
#1	.00062	.00012	.00010	.00019	-.00000	.00036
#2	-.00135	.00009	-.00006	.00064	.00020	.00130
#3	-.00031	.00008	.00014	-.00027	.00013	.00201
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/17/2019 17:39:08 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.01619	.00079	.00569	.00001	.00021	-.09196
Stddev	.01625	.00105	.01411	.00004	.00015	.44177
%RSD	100.34	134.26	247.87	270.54	71.916	480.39
#1	-.00512	.00013	-.00753	.00006	.00006	.18724
#2	-.00861	.00200	.02054	-.00001	.00021	-.60128
#3	-.03485	.00022	.00406	-.00001	.00037	.13816
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02609	.00033	.00160	-.00088	-.00065	-.00008
Stddev	.00719	.00006	.00051	.00155	.00045	.00045
%RSD	27.576	18.101	32.036	176.04	69.612	591.19
#1	.02994	.00035	.00210	-.00256	-.00083	-.00036
#2	.03053	.00037	.00107	-.00058	-.00013	-.00032
#3	.01779	.00026	.00163	.00050	-.00098	.00044
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/17/2019 17:39:08 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00091	-.01594	-.00009	.00010	-.00020	.00089
Stddev	.00134	.00696	.00020	.00004	.00028	.00120
%RSD	146.49	43.657	214.29	35.218	137.43	133.95
#1	-.00151	-.02140	-.00032	.00008	-.00024	.00046
#2	-.00185	-.01830	.00003	.00008	.00009	.00225
#3	.00062	-.00811	.00002	.00014	-.00046	-.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00025	-.00000
Stddev	.00039	.00006
%RSD	159.84	3319.6
#1	-.00020	.00006
#2	.00053	-.00003
#3	.00042	-.00004
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/17/2019 17:39:08 Type: Unk
Method: MT0007(v23) HF 022619(v4) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	6632.3	216550.	17399.
Stddev	7.7	713.	60.
%RSD	.11569	.32945	.34250
#1	6624.5	216320.	17331.
#2	6632.6	215980.	17434.
#3	6639.8	217350.	17434.

TestAmerica Knoxville ICP Batch Review Checklist – SOPs: KNOX-MT-0007r15, KNOX-MT-0008r7

Chart Name:	F061719	Analysis Batch #:	30900	Analyst:	KNC	Instrument:	DUO

A. Calibration/Instrument Run QC	1st	2nd	Why is data reportable?
1. Instrument calibrated per SOP?	Y	Y	
2. Was CCVL within limits? (90-110%R)	Y	Y	
3. ICV analyzed within limits? (90-110%R and <5.0% RSD)	Y	Y	
4. CCV analyzed at required frequency & within limits? (90 - 110%R and <5.0% RSD) CCV 1651, CCV 1723	Y	Y	☒ CCV reanalyzed one time; reanalysis within limits ☐ **CCV - %D, High, Sample ND** (NCM#__________)
5. ICB/CCB analyzed at required frequency & within limits? (Water/Soil/Waste <MDL; Air/SEP/PM10/JN Waste <RL)	Y	Y	☐ CCB reanalyzed one time; reanalysis within limits ☐ **CCB-Out, Samples ND or 10x** (NCM#__________)
6. ICSA/ICSAB run before samples?	Y	Y	
7. ICSAB interferents and analytes within limits? (80 - 120%R)	Y	Y	
8. ICSA criteria for non-interfering elements met? (Water/Soil/Waste ±1x RL) (Air/SEP/PM10/JN ±2x RL if RL ≤10 µg/L; ±1x RL if RL >10 µg/L)	Y	Y	☐ **ICSA->2X MDL; Stock Impurities** (NCM#__________)
9. Reporting Limit Check Standard (CRI) within limits? (Water/Soil/Waste=70-130%R; Air/SEP/PM10/JN Waste=50-150%)	Y	Y	
10. 6010C samples bracketed by RL Check Standards?	Y	Y	
B. Client Sample and QC Sample Results			
1. Were samples with target element concentrations > the linear range (LR) diluted and reanalyzed?	NA	NA	Comments: Dilutions per SEP SOP
2. Were all hits reported from a run with interfering elements < LR?	Y	Y	
3. Elements with F, k or ^ flags reported from a dilution if necessary?	NA	NA	
4. Were sample results reported as ND with elevated RLs?	NA	⊥	☐ **RL-Dilution, Matrix** (NCM#__________) ☐ **RL-Dilution, Interferents** (NCM#__________) ☐ **RL-Dilution, Matrix, Neg. Analyte** (NCM#__________)
5. Internal standard (IS) response ±30% of ICB IS? *If no, list details:* 15390-1,4 Reanalyzed	Y	Y	☐ **ISTD – Matrix, DL Required** (NCM#__________) ☐ Low IS response. Reanalyzed.
6. Report flag turned to No for Mg-SEP Step1 and Na-Steps 2 & 5?	NA	NA	
7. Calculations checked for error? (Document manual calc in comments.)	Y	Y	
C. Preparation/Matrix QC			
1. Method blank done per prep batch and within limits? (Waters/Soils/Waste < ½ RL; Zn <RL; Air/SEP/PM10/JN Waste <RL)	Y	Y	☐ **Method Blank–Report, ND** (NCM#__________) ☐ **Method Blank – Report, 10X** (NCM#__________) ☐ **Method Blank–Insufficient Sample** (NCM#__________) ☐ See narrative-common analyte in SEP leachate.
2. LCS done per prep batch & within QC limits?	N	N	☐ **LCS/LCSD –Insufficient Sample** (NCM#__________) ☐ **LCS/LCSD - %R High** (NCM#__________) ☒ See narrative-SEP LCS within historical limits. 9866
3. MS/MSD or MS/DUP run at required frequency?	Y	Y	☐ **MS/MSD/DUP-Insufficient Volume** (NCM#__________)
4. MS/MSD %R and RPD within QC limits?	N	N	☒ LCS acceptable-matrix effects ☒ Native analyte > 4x spike level
5. DUP RPD within limits?	N	N	☐ **MS/MSD/DUP - %RPD** (NCM#__________) SEP-Matrix
6. PDS/PDSD run at required frequency & within QC limits? (75-125%R)	N	N	☒ **Post Digestion Spike - %R** (NCM# 18256) ☐ **MS/MSD; High Bias; PDS Acceptable** (NCM#__________)
7. Serial dilution per prep batch & ≤ 10% D for analytes >50X MDL?	Y	Y	☐ **Serial Dilution - %D** (NCM#__________)

D. TALS Review		1st
TALS Run Log Tab	Date and time match raw data *(to verify TALS import worked properly)*	Y
	Dilutions are correct *(instrument sample ID vs. Dilution column)*	Y
TALS Worksheet Tab	Complete and correct *(Final amount and notes populated where needed)*	Y
TALS Reagents Tab	Complete and correct	Y
TALS QC Links Tab	All samples, standards and QC linked correctly	Y
TALS Sample Results Tab	All unused data are marked Rejected or Accepted	Y
	All reported analytes are marked Primary or Secondary	Y
TALS Batch Information Screen	Documentation is complete	Y
TALS Sample List Tab	TALS Status set to appropriate review level	Y

1st Level Review by: KNC 6-20-19 **2nd Level Review by:** DJW 6/20/19

Calculation: As at

$$0.04388\,mg/L \times \frac{0.100L}{0.02507kg} \times \frac{50ml}{50ml} = 0.17503\,mg/kg$$

	Pos ID	Rack	Row	Col	Type	Samplename	Comment	Custom ID1	Custom ID2
1	1	1	1	1	QC	CCVL			
2	2	1	2	1	QC	ICV			
3	3	1	3	1	Unk	ICB			
4	4	1	4	1	Unk	ICSA			
5	5	1	5	1	Unk	ICSAB			
6	6	1	6	1	QC	CRI			
7	7	1	7	1	QC	CCV			
8	8	1	8	1	Unk	CCB			
9	9	1	9	1	Unk	mb 140-30453/11-b			
10	10	1	10	1	QC	lcs 140-30453/12-b			
11	11	1	11	1	QC	lcsd 140-30453/13-b			
12	12	1	12	1	Unk	140-15377-a-1-h			
13	13	1	1	2	Unk	140-15377-a-2-h			
14	14	1	2	2	Unk	140-15376-a-1-o			
15	15	1	3	2	Unk	140-15376-a-1-p du			
16	16	1	4	2	Unk	140-15376-a-2-h			
17	17	1	5	2	Unk	140-15376-a-3-h			
18	18	1	6	2	Unk	140-15376-a-1-o SD@5	2ML TO 10ML		
19	19	1	7	2	QC	CCV			
20	20	1	8	2	Unk	CCB			
21	21	1	9	2	Unk	140-15390-a-1-t			
22	22	1	10	2	Unk	140-15390-a-2-g			
23	23	1	11	2	Unk	140-15390-a-3-g			
24	24	1	12	2	Unk	140-15390-a-4-g			
25	25	1	1	3	Unk	mb 140-30481/11-b			
26	26	1	2	3	QC	lcs 140-30481/12-b			
27	27	1	3	3	QC	lcsd 140-30481/13-b			
28	28	1	4	3	Unk	140-15377-a-1-j			
29	29	1	5	3	Unk	140-15377-a-2-j			
30	30	1	6	3	Unk	140-15376-a-1-s			
31	31	1	7	3	QC	CCV			
32	32	1	8	3	Unk	CCB			
33	33	1	9	3	Unk	140-15376-a-1-t du			
34	34	1	10	3	Unk	140-15376-a-2-j			
35	35	1	11	3	Unk	140-15376-a-3-j			
36	36	1	12	3	Unk	140-15390-a-1-i			
37	37	1	1	4	Unk	140-15390-a-2-i			
38	38	1	2	4	Unk	140-15390-a-3-i			
39	39	1	3	4	Unk	140-15390-a-4-i			
40	40	1	4	4	Unk	140-15376-a-1-s SD@5	2ML TO 10ML		
41	41	1	5	4	Unk	mb 140-30529/11-b @5	2ML TO 10ML		
42	42	1	6	4	Unk	lcs 30529/12-b @5	2ML TO 10ML		
43	43	1	7	4	QC	CCV			
44	44	1	8	4	Unk	CCB			
45	45	1	9	4	Unk	lcsd 30529/13-b @5	2ML TO 10ML		
46	46	1	10	4	Unk	140-15377-a-1-l @5	2ML TO 10ML		
47	47	1	11	4	Unk	140-15377-a-2-l @5	2ML TO 10ML		
48	48	1	12	4	Unk	140-15376-a-1-w @5	2ML TO 10ML (A)		
49	49	1	1	5	Unk	15376-a-1-x du @5	2ML TO 10ML		
50	50	1	2	5	Unk	140-15376-a-2-l @5	2ML TO 10ML		
51	51	1	3	5	Unk	140-15376-a-3-l @5	2ML TO 10ML		
52	52	1	4	5	Unk	140-15390-a-1-k @5	2ML TO 10ML		
53	53	1	5	5	Unk	140-15390-a-2-k @5	2ML TO 10ML		
54	54	1	6	5	Unk	15376-a-1-w SD@25	2ML (A) TO 10ML		
55	55	1	7	5	QC	CCV			
56	56	1	8	5	Unk	CCB			
57	57	1	9	5	Unk	140-15390-a-3-k @5	2ML TO 10ML		

	Pos ID	Rack	Row	Col	Type	Samplename	Comment	Custom ID1	Custom ID2
58	58	1	10	5	Unk	140-15390-a-4-k @5	2ML TO 10ML		
59	59	1	11	5	Unk	mb 140-30781/11-a			
60	60	1	12	5	QC	lcs 140-30781/12-a			
61	61	2	1	1	QC	lcsd 140-30781/13-a			
62	62	2	2	1	Unk	140-15377-a-1-m			
63	63	2	3	1	Unk	140-15377-a-2-m			
64	64	2	4	1	Unk	140-15376-a-1-y			
65	65	2	5	1	Unk	140-15376-a-1-z du			
66	66	2	6	1	Unk	140-15376-a-1-y SD@5	2ML TO 10ML		
67	67	2	7	1	QC	CCV			
68	68	2	8	1	Unk	CCB			
69	69	2	9	1	Unk	140-15376-a-2-m			
70	70	2	10	1	Unk	140-15376-a-3-m			
71	71	2	11	1	Unk	140-15390-a-1-l			
72	72	2	12	1	Unk	140-15390-a-2-l			
73	73	2	1	2	Unk	140-15390-a-3-l			
74	74	2	2	2	Unk	140-15390-a-4-l			
75	75	2	3	2	QC	CRI			
76	76	2	4	2	QC	CCV			
77	77	2	5	2	Unk	CCB			
78	78	2	6	2	Unk	mb 140-31034/13-a			
79	79	2	7	2	QC	lcs 140-31034/14-a			
80	80	2	8	2	Unk	140-15402-a-1-c			
81	81	2	9	2	Unk	140-15402-a-2-g			
82	82	2	10	2	Unk	140-15402-a-2-h ms			
83	83	2	11	2	Unk	140-15402-a-2-i msd			
84	84	2	12	2	Unk	140-15402-a-2-g PDS			
85	85	2	1	3	Unk	140-15402-a-3-c			
86	86	2	2	3	Unk	140-15402-a-4-c			
87	87	2	3	3	Unk	140-15402-a-2-g SD@5	2ML TO 10ML		
88	88	2	4	3	QC	CCV			
89	89	2	5	3	Unk	CCB			
90	90	2	6	3	Unk	140-15402-a-5-c			
91	91	2	7	3	Unk	140-15402-a-6-c			
92	92	2	8	3	Unk	140-15402-a-7-g			
93	93	2	9	3	Unk	140-15402-a-7-h ms			
94	94	2	10	3	Unk	140-15402-a-7-i msd			
95	95	2	11	3	Unk	140-15402-a-7-g PDS			
96	96	2	12	3	Unk	140-15402-a-8-c			
97	97	2	1	4	QC	CRI			
98	98	2	2	4	QC	CCV			
99	99	2	3	4	Unk	CCB			
100	100	2	4	4	Unk	Sample-86			
101	101	2	5	4	Unk	Sample-87			
102	102	2	6	4	Unk	Sample-88			

	Pos ID	Rack	Row	Col	Type	Samplename	Comment	Custom ID1	Custom ID2
1	1	1	1	1	QC	CCVL			
2	2	1	2	1	QC	ICV			
3	3	1	3	1	Unk	ICB			
4	4	1	4	1	Unk	ICSA			
5	5	1	5	1	Unk	ICSAB			
6	6	1	6	1	QC	CRI			
7	7	1	7	1	QC	CCV			
8	8	1	8	1	Unk	CCB			
9	9	1	9	1	Unk	mb 140-30453/11-b			
10	10	1	10	1	QC	lcs 140-30453/12-b			
11	11	1	11	1	QC	lcsd 140-30453/13-b			
12	12	1	12	1	Unk	140-15377-a-1-h			
13	13	1	1	2	Unk	140-15377-a-2-h			
14	14	1	2	2	Unk	140-15376-a-1-o			
15	15	1	3	2	Unk	140-15376-a-1-p du	Mn 18439		
16	16	1	4	2	Unk	140-15376-a-2-h			
17	17	1	5	2	Unk	140-15376-a-3-h			
18	18	1	6	2	Unk	140-15376-a-1-o SD@5	2ML TO 10ML		
19	19	1	7	2	QC	CCV			
20	20	1	8	2	Unk	CCB			
21	21	1	9	2	Unk	140-15390-a-1-g			
22	22	1	10	2	Unk	140-15390-a-2-g			
23	23	1	11	2	Unk	140-15390-a-3-g			
24	24	1	12	2	Unk	140-15390-a-4-g			
25	25	1	1	3	Unk	mb 140-30481/11-b			
26	26	1	2	3	QC	lcs 140-30481/12-b	9866		
27	27	1	3	3	QC	lcsd 140-30481/13-b			
28	28	1	4	3	Unk	140-15377-a-1-j			
29	29	1	5	3	Unk	140-15377-a-2-j			
30	30	1	6	3	Unk	140-15376-a-1-s			
31	31	1	7	3	QC	CCV			
32	32	1	8	3	Unk	CCB			
33	33	1	9	3	Unk	140-15376-a-1-t du			
34	34	1	10	3	Unk	140-15376-a-2-j			
35	35	1	11	3	Unk	140-15376-a-3-j			
36	36	1	12	3	Unk	140-15390-a-1-i			
37	37	1	1	4	Unk	140-15390-a-2-i			
38	38	1	2	4	Unk	140-15390-a-3-i			
39	39	1	3	4	Unk	140-15390-a-4-i			
40	40	1	4	4	Unk	140-15376-a-1-s SD@5	2ML TO 10ML		
41	41	1	5	4	Unk	mb 140-30529/11-b @5	2ML TO 10ML		
42	42	1	6	4	Unk	lcs 30529/12-b @5	2ML TO 10ML	9866	
43	43	1	7	4	QC	CCV			
44	44	1	8	4	Unk	CCB			
45	45	1	9	4	Unk	lcsd 30529/13-b @5	2ML TO 10ML		
46	46	1	10	4	Unk	140-15377-a-1-l @5	2ML TO 10ML		
47	47	1	11	4	Unk	140-15377-a-2-l @5	2ML TO 10ML		
48	48	1	12	4	Unk	140-15376-a-1-w @5	2ML TO 10ML (A)		
49	49	1	1	5	Unk	15376-a-1-x du @5	2ML TO 10ML		
50	50	1	2	5	Unk	140-15376-a-2-l @5	2ML TO 10ML		
51	51	1	3	5	Unk	140-15376-a-3-l @5	2ML TO 10ML		
52	52	1	4	5	Unk	140-15390-a-1-k @5	2ML TO 10ML		
53	53	1	5	5	Unk	140-15390-a-2-k @5	2ML TO 10ML		
54	54	1	6	5	Unk	15376-a-1-w SD@25	2ML (A) TO 10ML		
55	55	1	7	5	QC	CCV			
56	56	1	8	5	Unk	CCB			
57	57	1	9	5	Unk	140-15390-a-3-k @5	2ML TO 10ML		

	Pos ID	Rack	Row	Col	Type	Samplename	Comment	Custom ID1	Custom ID2
58	58	1	10	5	Unk	140-15390-a-4-k @5	2ML TO 10ML		
59	59	1	11	5	Unk	mb 140-30781/11-a			
60	60	1	12	5	QC	lcs 140-30781/12-a			
61	61	2	1	1	QC	lcsd 140-30781/13-a			
62	62	2	2	1	Unk	140-15377-a-1-m			
63	63	2	3	1	Unk	140-15377-a-2-m			
64	64	2	4	1	Unk	140-15376-a-1-y			
65	65	2	5	1	Unk	140-15376-a-1-z du			
66	66	2	6	1	Unk	140-15376-a-1-y SD@5	2ML TO 10ML		
67	67	2	7	1	QC	CCV			
68	68	2	8	1	Unk	CCB			
69	69	2	9	1	Unk	140-15376-a-2-m			
70	70	2	10	1	Unk	140-15376-a-3-m			
71	71	2	11	1	Unk	140-15390-a-1-l			
72	72	2	12	1	Unk	140-15390-a-2-l			
73	73	2	1	2	Unk	140-15390-a-3-l			
74	74	2	2	2	Unk	140-15390-a-4-l			
75	75	2	3	2	QC ●	CRI			
76	76	2	4	2	QC	CCV			
77	77	2	5	2	Unk	CCB			
78	78	2	6	2	Unk	mb 140-31034/13-a			
79	79	2	7	2	QC	lcs 140-31034/14-a			
80	80	2	8	2	Unk	140-15402-a-1-c	↑Na IS @2		
81	81	2	9	2	Unk	140-15402-a-2-g	↑Na IS @2		
82	82	2	10	2	Unk	140-15402-a-2-h ms	@2		
83	83	2	11	2	Unk	140-15402-a-2-i msd	@2		Re-Analyze
84	84	2	12	2	Unk	140-15402-a-2-g PDS	@2		kwc
85	85	2	1	3	Unk	140-15402-a-3-c	Na↑ @2		6-27-19
86	86	2	2	3	Unk	140-15402-a-4-c	Na↑@2		
87	87	2	3	3	Unk	140-15402-a-2-g SD@5	2ML TO 10ML @ 10		
88	88	2	4	3	QC	CCV			
89	89	2	5	3	Unk	CCB			
90	90	2	6	3	Unk	140-15402-a-5-c			
91	91	2	7	3	Unk	140-15402-a-6-c			
92	92	2	8	3	Unk	140-15402-a-7-g			
93	93	2	9	3	Unk	140-15402-a-7-h ms			
94	94	2	10	3	Unk	140-15402-a-7-i msd			
95	95	2	11	3	Unk	140-15402-a-7-g PDS			
96	96	2	12	3	Unk	140-15402-a-8-c			
97	97	2	1	4	QC	CRI			
98	98	2	2	4	QC	CCV			
99	99	2	3	4	Unk	CCB			
100	100	2	4	4	Unk	Sample-88			
101	101	2	5	4	Unk	Sample-89			
102	102	2	6	4	Unk	Sample-90			

F062619
SI-106
CCVL-367
ICV-96
ICSA-26
ICSAB-32
CRI-415
CCV-400

Y-58
H2O-19

377, 376 = Al, As, Ba, Be, Co, Fe, Li, Mn, Mo, Sb, Se, Tl

390 = Al, Co, Fe, Li, Mn, Mo, Tl

JN = As, Be, Cd, Co, Cr, Mn, Ni, Pb, Sb, Se

TestAmerica Knoxville
Data Quality Checks

Sequence: F062619

Internal Standard

ICB Internal Standard	Area	LCL	UCL
Y_2243A	12716	8901	16531
Y_3710A	142053	99437	184668
Y_3710R	12938	9056	16819

27-Jun-19 10:04 AM 111 Samples were checked against the internal standard area limits
27-Jun-19 10:04 AM 17 Sample(s) failed the limits check

Date/Time	Lab ID	Problem
26-Jun-19 12:00 PM	ICIS	Y_3710A - Response was 72835 (51% Recovery)! LCL = 99437 UCL = 184668
26-Jun-19 12:00 PM	ICIS	Y_3710R - Response was 6829 (52% Recovery)! LCL = 9056 UCL = 16819
26-Jun-19 12:05 PM	S1	Y_3710A - Response was 67533 (47% Recovery)! LCL = 99437 UCL = 184668
26-Jun-19 12:05 PM	S1	Y_3710R - Response was 6423 (49% Recovery)! LCL = 9056 UCL = 16819
26-Jun-19 12:10 PM	CCVL	Y_3710A - Response was 70110 (49% Recovery)! LCL = 99437 UCL = 184668
26-Jun-19 12:10 PM	CCVL	Y_3710R - Response was 6506 (50% Recovery)! LCL = 9056 UCL = 16819
26-Jun-19 01:53 PM	Sample-88	Y_3710A - Response was 63368 (44% Recovery)! LCL = 99437 UCL = 184668
26-Jun-19 01:53 PM	Sample-88	Y_3710R - Response was 6004 (46% Recovery)! LCL = 9056 UCL = 16819
26-Jun-19 02:07 PM	140-15402-a-8-c	Y_3710A - Response was 197911 (139% Recovery)! LCL = 99437 UCL = 184668
26-Jun-19 02:07 PM	140-15402-a-8-c	Y_3710R - Response was 18664 (144% Recovery)! LCL = 9056 UCL = 16819
26-Jun-19 02:37 PM	Sample-88	Y_3710A - Response was 191713 (135% Recovery)! LCL = 99437 UCL = 184668
26-Jun-19 02:37 PM	Sample-88	Y_3710R - Response was 18270 (141% Recovery)! LCL = 9056 UCL = 16819
26-Jun-19 02:59 PM	Sample-88	Y_3710A - Response was 189242 (133% Recovery)! LCL = 99437 UCL = 184668
26-Jun-19 02:59 PM	Sample-88	Y_3710R - Response was 18258 (141% Recovery)! LCL = 9056 UCL = 16819
26-Jun-19 11:11 PM	140-15402-a-1-c	Y_2243A - Response was 7810 (61% Recovery)! LCL = 8901 UCL = 16531
26-Jun-19 11:11 PM	140-15402-a-1-c	Y_3710A - Response was 89147 (62% Recovery)! LCL = 99437 UCL = 184668
26-Jun-19 11:16 PM	140-15402-a-2-g	Y_2243A - Response was 7824 (61% Recovery)! LCL = 8901 UCL = 16531
26-Jun-19 11:16 PM	140-15402-a-2-g	Y_3710A - Response was 89796 (63% Recovery)! LCL = 99437 UCL = 184668
26-Jun-19 11:21 PM	140-15402-a-2-h ms	Y_2243A - Response was 7329 (57% Recovery)! LCL = 8901 UCL = 16531
26-Jun-19 11:21 PM	140-15402-a-2-h ms	Y_3710A - Response was 85181 (60% Recovery)! LCL = 99437 UCL = 184668
26-Jun-19 11:26 PM	140-15402-a-2-i msd	Y_2243A - Response was 7404 (58% Recovery)! LCL = 8901 UCL = 16531
26-Jun-19 11:26 PM	140-15402-a-2-i msd	Y_3710A - Response was 85627 (60% Recovery)! LCL = 99437 UCL = 184668
26-Jun-19 11:31 PM	140-15402-a-2-g PD	Y_2243A - Response was 7947 (62% Recovery)! LCL = 8901 UCL = 16531
26-Jun-19 11:31 PM	140-15402-a-2-g PD	Y_3710A - Response was 91043 (64% Recovery)! LCL = 99437 UCL = 184668
26-Jun-19 11:36 PM	140-15402-a-3-c	Y_2243A - Response was 7553 (59% Recovery)! LCL = 8901 UCL = 16531
26-Jun-19 11:36 PM	140-15402-a-3-c	Y_3710A - Response was 86534 (60% Recovery)! LCL = 99437 UCL = 184668
26-Jun-19 11:42 PM	140-15402-a-4-c	Y_2243A - Response was 7625 (60% Recovery)! LCL = 8901 UCL = 16531
26-Jun-19 11:42 PM	140-15402-a-4-c	Y_3710A - Response was 87804 (61% Recovery)! LCL = 99437 UCL = 184668
27-Jun-19 12:53 AM	Sample-86	Y_2243A - Response was 30706 (241% Recovery)! LCL = 8901 UCL = 16531
27-Jun-19 12:53 AM	Sample-86	Y_3710A - Response was 313292 (220% Recovery)! LCL = 99437 UCL = 184668
27-Jun-19 12:53 AM	Sample-86	Y_3710R - Response was 22633 (174% Recovery)! LCL = 9056 UCL = 16819
27-Jun-19 12:58 AM	Sample-87	Y_2243A - Response was 30917 (243% Recovery)! LCL = 8901 UCL = 16531
27-Jun-19 12:58 AM	Sample-87	Y_3710A - Response was 327600 (230% Recovery)! LCL = 99437 UCL = 184668
27-Jun-19 12:58 AM	Sample-87	Y_3710R - Response was 23001 (177% Recovery)! LCL = 9056 UCL = 16819
27-Jun-19 01:03 AM	Sample-88	Y_2243A - Response was 31265 (245% Recovery)! LCL = 8901 UCL = 16531
27-Jun-19 01:03 AM	Sample-88	Y_3710A - Response was 327806 (230% Recovery)! LCL = 99437 UCL = 184668
27-Jun-19 01:03 AM	Sample-88	Y_3710R - Response was 22861 (176% Recovery)! LCL = 9056 UCL = 16819

Re-Calibration
lovC 6-27-19

Re-Analyze on Another Analysis
lovC 6-27-19

Relative Standard Deviation

27-Jun-19 10:04 AM 12 Standards were checked against the CCV/ICV %RSD limits
27-Jun-19 10:04 AM 3 Standard(s) failed the limits check

Date/Time	Lab ID	Problem

TestAmerica Knoxville
Data Quality Checks

Sequence: F062619

Relative Standard Deviation

Date/Time	Lab ID	Problem
26-Jun-19 12:10:35 PM	CCVL	aN - RSD is 7.3% >= Limit of 5.0%
26-Jun-19 04:11:26 PM	CCVL	aN - RSD is 13.1% >= Limit of 5.0%
26-Jun-19 07:59:13 PM	CCV	aN - RSD is 5.1% >= Limit of 5.0%

3010A Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-30480

Analyst: Collins, Kerry N

Batch Open: 6/4/2019 8:00:00AM
Batch End: 6/4/2019 5:00:00PM

Preparation, Total Metals

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	140-15377-A-1-G (6010B_SEP)	N/A (140-15377-1)	Oxalate Lea	5 mL	50 mL	6/20/19	18_Days	4		140-15377-A-1-H
2	140-15377-A-2-G (6010B_SEP)	N/A (140-15377-1)	Oxalate Lea	5 mL	50 mL	6/20/19	18_Days	4		140-15377-A-2-H
3	140-15376-A-1-M (6010B_SEP)	N/A (140-15376-1)	Oxalate Lea	5 mL	50 mL	6/20/19	18_Days	4		140-15376-A-1-O
4	140-15376-A-1-N~DU (6010B_SEP)	N/A (140-15376-1)	Oxalate Lea	5 mL	50 mL	6/20/19	18_Days	4		140-15376-A-1-P DU
5	140-15376-A-2-G (6010B_SEP)	N/A (140-15376-1)	Oxalate Lea	5 mL	50 mL	6/20/19	18_Days	4		140-15376-A-2-H
6	140-15376-A-3-G (6010B_SEP)	N/A (140-15376-1)	Oxalate Lea	5 mL	50 mL	6/20/19	18_Days	4		140-15376-A-3-H
7	140-15390-A-1-F (6010B_SEP)	N/A (140-15390-1)	Oxalate Lea	5 mL	50 mL	6/21/19	18_Days	4		140-15390-A-1-G
8	140-15390-A-2-F (6010B_SEP)	N/A (140-15390-1)	Oxalate Lea	5 mL	50 mL	6/21/19	18_Days	4		140-15390-A-2-G
9	140-15390-A-3-F (6010B_SEP)	N/A (140-15390-1)	Oxalate Lea	5 mL	50 mL	6/21/19	18_Days	4		140-15390-A-3-G
10	140-15390-A-4-F (6010B_SEP)	N/A (140-15390-1)	Oxalate Lea	5 mL	50 mL	6/21/19	18_Days	4		140-15390-A-4-G
11	MB~140-30453/11-A N/A	N/A		5 mL	50 mL	N/A	N/A	N/A		MB 140-30453/11-B
12	LCS~140-30453/12-A N/A	N/A		5 mL	50 mL	N/A	N/A	N/A		LCS 140-30453/12-B
13	LCSD~140-30453/13-A N/A	N/A		5 mL	50 mL	N/A	N/A	N/A		LCSD 140-30453/13-B

3010A Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-30528

Analyst: Collins, Kerry N

Batch Open: 6/10/2019 8:00:00AM
Batch End: 6/10/2019 5:00:00PM

Preparation, Total Metals

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	140-15377-A-1-I (6010B_SEP)	N/A (140-15377-1)	Hydroxyl Le	5 mL	50 mL	6/20/19	18_Days	4		140-15377-A-1-J
2	140-15377-A-2-I (6010B_SEP)	N/A (140-15377-1)	Hydroxyl Le	5 mL	50 mL	6/20/19	18_Days	4		140-15377-A-2-J
3	140-15376-A-1-Q (6010B_SEP)	N/A (140-15376-1)	Hydroxyl Le	5 mL	50 mL	6/20/19	18_Days	4		140-15376-A-1-S
4	140-15376-A-1-R~DU (6010B_SEP)	N/A (140-15376-1)	Hydroxyl Le	5 mL	50 mL	6/20/19	18_Days	4		140-15376-A-1-T DU
5	140-15376-A-2-I (6010B_SEP)	N/A (140-15376-1)	Hydroxyl Le	5 mL	50 mL	6/20/19	18_Days	4		140-15376-A-2-J
6	140-15376-A-3-I (6010B_SEP)	N/A (140-15376-1)	Hydroxyl Le	5 mL	50 mL	6/20/19	18_Days	4		140-15376-A-3-J
7	140-15390-A-1-H (6010B_SEP)	N/A (140-15390-1)	Hydroxyl Le	5 mL	50 mL	6/21/19	18_Days	4		140-15390-A-1-I
8	140-15390-A-2-H (6010B_SEP)	N/A (140-15390-1)	Hydroxyl Le	5 mL	50 mL	6/21/19	18_Days	4		140-15390-A-2-I
9	140-15390-A-3-H (6010B_SEP)	N/A (140-15390-1)	Hydroxyl Le	5 mL	50 mL	6/21/19	18_Days	4		140-15390-A-3-I
10	140-15390-A-4-H (6010B_SEP)	N/A (140-15390-1)	Hydroxyl Le	5 mL	50 mL	6/21/19	18_Days	4		140-15390-A-4-I
11	MB~140-30481/11-A N/A	N/A		5 mL	50 mL	N/A	N/A	N/A		MB 140-30481/11-B
12	LCS~140-30481/12-A N/A	N/A		5 mL	50 mL	N/A	N/A	N/A		LCS 140-30481/12-B
13	LCSD~140-30481/13-A N/A	N/A		5 mL	50 mL	N/A	N/A	N/A		LCSD 140-30481/13-B

Printed : 6/10/2019

Eurofins TestAmerica, Knoxville

3010A Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-30726

Analyst: Collins, Kerry N

Batch Open: 6/12/2019 8:00:00AM

Batch End: 6/12/2019 4:00:00PM

Preparation, Total Metals

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	140-15377-A-1-K (6010B_SEP)	N/A (140-15377-1)	NaClO Lead	5 mL	50 mL	6/20/19	18_Days	4		140-15377-A-1-L
2	140-15377-A-2-K (6010B_SEP)	N/A (140-15377-1)	NaClO Lead	5 mL	50 mL	6/20/19	18_Days	4		140-15377-A-2-L
3	140-15376-A-1-U (6010B_SEP)	N/A (140-15376-1)	NaClO Lead	5 mL	50 mL	6/20/19	18_Days	4		140-15376-A-1-W
4	140-15376-A-1-V~DU (6010B_SEP)	N/A (140-15376-1)	NaClO Lead	5 mL	50 mL	6/20/19	18_Days	4		140-15376-A-1-X DU
5	140-15376-A-2-K (6010B_SEP)	N/A (140-15376-1)	NaClO Lead	5 mL	50 mL	6/20/19	18_Days	4		140-15376-A-2-L
6	140-15376-A-3-K (6010B_SEP)	N/A (140-15376-1)	NaClO Lead	5 mL	50 mL	6/20/19	18_Days	4		140-15376-A-3-L
7	140-15390-A-1-J (6010B_SEP)	N/A (140-15390-1)	NaClO Lead	5 mL	50 mL	6/21/19	18_Days	4		140-15390-A-1-K
8	140-15390-A-2-J (6010B_SEP)	N/A (140-15390-1)	NaClO Lead	5 mL	50 mL	6/21/19	18_Days	4		140-15390-A-2-K
9	140-15390-A-3-J (6010B_SEP)	N/A (140-15390-1)	NaClO Lead	5 mL	50 mL	6/21/19	18_Days	4		140-15390-A-3-K
10	140-15390-A-4-J (6010B_SEP)	N/A (140-15390-1)	NaClO Lead	5 mL	50 mL	6/21/19	18_Days	4		140-15390-A-4-K
11	MB~140-30529/11-A N/A	N/A		5 mL	50 mL	N/A	N/A	N/A		MB 140-30529/11-B
12	LCS~140-30529/12-A N/A	N/A		5 mL	50 mL	N/A	N/A	N/A		LCS 140-30529/12-B
13	LCSD~140-30529/13-A N/A	N/A		5 mL	50 mL	N/A	N/A	N/A		LCSD 140-30529/13-B

Printed : 6/15/2019

Eurofins TestAmerica, Knoxville

SEP6_Acid Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-30781

Analyst: Collins, Kerry N

Batch Open: 6/15/2019 8:00:00AM

Batch End: 6/15/2019 3:00:00PM

Sequential Extraction Procedure, Acid/Sulfide Fraction

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	140-15377-A-1 (6010B_SEP)	N/A (140-15377-1)	Solid	5.000 g	250 mL	6/20/19	18_Days	4		140-15377-A-1-M
2	140-15377-A-2 (6010B_SEP)	N/A (140-15377-1)	Solid	5.000 g	250 mL	6/20/19	18_Days	4		140-15377-A-2-M
3	140-15376-A-1 (6010B_SEP)	N/A (140-15376-1)	Solid	5.000 g	250 mL	6/20/19	18_Days	4		140-15376-A-1-Y
4	140-15376-A-1~DU (6010B_SEP)	N/A (140-15376-1)	Solid	5.000 g	250 mL	6/20/19	18_Days	4		140-15376-A-1-Z DU
5	140-15376-A-2 (6010B_SEP)	N/A (140-15376-1)	Solid	5.000 g	250 mL	6/20/19	18_Days	4		140-15376-A-2-M
6	140-15376-A-3 (6010B_SEP)	N/A (140-15376-1)	Solid	5.000 g	250 mL	6/20/19	18_Days	4		140-15376-A-3-M
7	140-15390-A-1 (6010B_SEP)	N/A (140-15390-1)	Solid	5.000 g	250 mL	6/21/19	18_Days	4		140-15390-A-1-L
8	140-15390-A-2 (6010B_SEP)	N/A (140-15390-1)	Solid	5.000 g	250 mL	6/21/19	18_Days	4		140-15390-A-2-L
9	140-15390-A-3 (6010B_SEP)	N/A (140-15390-1)	Solid	5.000 g	250 mL	6/21/19	18_Days	4		140-15390-A-3-L
10	140-15390-A-4 (6010B_SEP)	N/A (140-15390-1)	Solid	5.000 g	250 mL	6/21/19	18_Days	4		140-15390-A-4-L
11	MB~140-30781/11 N/A	N/A		5.000 g	250 mL	N/A	N/A	N/A		MB 140-30781/11-A
12	LCS~140-30781/12 N/A	N/A		5.000 g	250 mL	N/A	N/A	N/A		LCS 140-30781/12-A
13	LCSD~140-30781/13 N/A	N/A		5.000 g	250 mL	N/A	N/A	N/A		LCSD 140-30781/13-A

Waste_Prep_LL Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 140-31034

Analyst: Nedkova, Teodora S

Batch Open: 6/21/2019 1:01:00PM
Batch End: 6/25/2019 5:00:00PM

Preparation, Waste (Low level)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Matrix	Initial Amount	Final Amount	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	140-15402-A-1 (6010C)	(140-15402-1)	Waste	25.04 g	100 mL	6/12/19	13_Days	4		140-15402-A-1-C
2	140-15402-A-2 (6010C)	(140-15402-1)	Waste	25.02 g	100 mL	6/12/19	13_Days	4		140-15402-A-2-G
3	140-15402-A-2~MS (6010C)	(140-15402-1)	Waste	25.04 g	100 mL	6/12/19	13_Days	4		140-15402-A-2-H MS
4	140-15402-A-2~MSD (6010C)	(140-15402-1)	Waste	25.03 g	100 mL	6/12/19	13_Days	4		140-15402-A-2-I MSD
5	140-15402-A-3 (6010C)	(140-15402-1)	Waste	25.02 g	100 mL	6/12/19	13_Days	4		140-15402-A-3-C
6	140-15402-A-4 (6010C)	(140-15402-1)	Waste	25.01 g	100 mL	6/12/19	13_Days	4		140-15402-A-4-C
7	140-15402-A-5 (6010C)	(140-15402-1)	Waste	25.03 g	100 mL	6/12/19	13_Days	4		140-15402-A-5-C
8	140-15402-A-6 (6010C)	(140-15402-1)	Waste	25.03 g	100 mL	6/12/19	13_Days	4		140-15402-A-6-C
9	140-15402-A-7 (6010C)	(140-15402-1)	Waste	25.03 g	100 mL	6/12/19	13_Days	4		140-15402-A-7-G
10	140-15402-A-7~MS (6010C)	(140-15402-1)	Waste	25.05 g	100 mL	6/12/19	13_Days	4		140-15402-A-7-H MS
11	140-15402-A-7~MSD (6010C)	(140-15402-1)	Waste	25.03 g	100 mL	6/12/19	13_Days	4		140-15402-A-7-I MSD
12	140-15402-A-8 (6010C)	(140-15402-1)	Waste	25.02 g	100 mL	6/12/19	13_Days	4		140-15402-A-8-C
13	MB~140-31034/13 N/A	N/A		25 g	100 mL	N/A	N/A	N/A		MB 140-31034/13-A
14	LCS~140-31034/14 N/A	N/A		25 g	100 mL	N/A	N/A	N/A		LCS 140-31034/14-A

Printed : 6/25/2019

Eurofins TestAmerica, Knoxville

Sample Name: ICIS Acquired: 6/26/2019 16:00:45 Type: Cal
Method: MT0007(v23) HF 022619(v11) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00029	.00025	-.00052	.00080	.00790	.00065
Stddev	.00003	.00041	.00005	.00003	.00085	.00012
%RSD	8.9264	160.28	9.6061	3.3030	10.747	18.747
#1	-.00026	-.00005	-.00056	.00083	.00885	.00079
#2	-.00028	.00072	-.00054	.00078	.00724	.00056
#3	-.00032	.00010	-.00046	.00080	.00759	.00061

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00839	-.00032	-.00095	.00010	.00132	.00029
Stddev	.00070	.00009	.00006	.00005	.00003	.00011
%RSD	8.3439	28.843	6.1492	52.630	2.4271	39.669
#1	.00914	-.00036	-.00101	.00013	.00136	.00022
#2	.00828	-.00038	-.00089	.00004	.00129	.00022
#3	.00776	-.00021	-.00096	.00013	.00132	.00042

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00988	.00017	-.00043	.00009	.00019	.00016
Stddev	.00036	.00014	.00007	.00003	.00011	.00026
%RSD	3.6539	78.904	17.399	35.379	61.317	165.77
#1	.00955	.00008	-.00050	.00013	.00005	.00038
#2	.00982	.00012	-.00044	.00008	.00026	-.00013
#3	.01027	.00033	-.00035	.00006	.00025	.00022

Sample Name: ICIS Acquired: 6/26/2019 16:00:45 Type: Cal
Method: MT0007(v23) HF 022619(v11) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00105	-.00022	.00002	.00013	-.00000	.00036
Stddev	.00081	.00018	.00003	.00001	.00006	.00006
%RSD	77.044	78.316	158.97	8.5309	1187.1	17.010
#1	-.00064	-.00041	.00004	.00015	.00002	.00043
#2	-.00052	-.00020	.00002	.00013	.00003	.00033
#3	-.00198	-.00006	-.00001	.00012	-.00007	.00032

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00024	.00124	.00027	-.00434	.00002	-.00015
Stddev	.00006	.00011	.00005	.00077	.00036	.00003
%RSD	26.076	8.5568	18.486	17.789	1639.9	22.233
#1	.00022	.00112	.00023	-.00347	.00041	-.00018
#2	.00019	.00129	.00025	-.00460	-.00031	-.00014
#3	.00031	.00132	.00033	-.00495	-.00004	-.00012

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	Cts/S	Cts/S
Avg	.00027	.00207
Stddev	.00003	.00015
%RSD	11.553	7.3412
#1	.00029	.00218
#2	.00028	.00212
#3	.00023	.00190

Sample Name: ICIS Acquired: 6/26/2019 16:00:45 Type: Cal
Method: MT0007(v23) HF 022619(v11) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12935.	146580.	13644.
Stddev	23.	829.	45.
%RSD	.17441	.56530	.32839
#1	12958.	146480.	13603.
#2	12913.	147460.	13637.
#3	12935.	145810.	13692.

Sample Name: S1 Acquired: 6/26/2019 16:05:55 Type: Cal
Method: MT0007(v23) HF 022619(v11) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.31141	1.3478	.07055	.21362	28.003	13.806
Stddev	.00155	.0019	.00063	.00012	.160	.048
%RSD	.49642	.13809	.88819	.05527	.57053	.34460
#1	.31314	1.3497	.07125	.21375	28.170	13.752
#2	.31090	1.3460	.07035	.21353	27.987	13.840
#3	.31018	1.3478	.07005	.21357	27.851	13.827

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	25.364	1.7216	4.2528	.54793	.89025	6.7213
Stddev	.099	.0025	.0172	.00206	.00936	.0076
%RSD	.39109	.14330	.40517	.37546	1.0514	.11235
#1	25.438	1.7239	4.2722	.54557	.90104	6.7199
#2	25.402	1.7220	4.2467	.54890	.88537	6.7144
#3	25.251	1.7190	4.2395	.54932	.88434	6.7294

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	5.3716	4.6844	2.0000	3.3268	1.5205	.02243
Stddev	.0074	.0300	.0129	.0102	.0095	.00009
%RSD	.13769	.63958	.64670	.30529	.62284	.39617
#1	5.3784	4.7163	1.9876	3.3242	1.5314	.02249
#2	5.3728	4.6798	1.9990	3.3182	1.5161	.02233
#3	5.3637	4.6569	2.0134	3.3380	1.5140	.02247

Sample Name: S1 Acquired: 6/26/2019 16:05:55 Type: Cal
Method: MT0007(v23) HF 022619(v11) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	17.830	2.8835	.14733	.01144	.15398	.07489
Stddev	.250	.0102	.00110	.00015	.00013	.00093
%RSD	1.4039	.35307	.74790	1.2785	.08182	1.2431
#1	17.686	2.8950	.14858	.01128	.15413	.07596
#2	18.119	2.8801	.14690	.01155	.15392	.07438
#3	17.684	2.8755	.14650	.01150	.15390	.07432

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.04116	.08085	.79354	31.220	2.0863	.09129
Stddev	.00052	.00024	.00129	.350	.0069	.00026
%RSD	1.2654	.30060	.16201	1.1221	.32917	.28013
#1	.04175	.08067	.79485	31.601	2.0941	.09159
#2	.04100	.08113	.79351	31.148	2.0834	.09118
#3	.04075	.08076	.79227	30.911	2.0813	.09111

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	Cts/S	Cts/S
Avg	.94324	6.3663
Stddev	.00071	.0460
%RSD	.07523	.72243
#1	.94370	6.4186
#2	.94242	6.3483
#3	.94359	6.3320

Sample Name: S1 Acquired: 6/26/2019 16:05:55 Type: Cal
Method: MT0007(v23) HF 022619(v11) Mode: IR Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12299.	138670.	12937.
Stddev	32.	574.	269.
%RSD	.26222	.41401	2.0800
#1	12262.	139310.	13219.
#2	12317.	138200.	12909.
#3	12319.	138510.	12683.

Sample Name: CCVL Acquired: 6/26/2019 16:11:26 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.48640	12.257	.24789	1.0028	.98820	1.0473
Stddev	.00075	.028	.00086	.0012	.00119	.0053
%RSD	.15366	.22650	.34757	.11976	.12000	.50246
#1	.48576	12.235	.24865	1.0019	.98879	1.0432
#2	.48722	12.288	.24806	1.0024	.98897	1.0456
#3	.48621	12.247	.24696	1.0042	.98683	1.0533
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.606	.25391	1.0106	1.0025	.98606	12.513
Stddev	.061	.00054	.0017	.0038	.00159	.030
%RSD	.24610	.21378	.16773	.37795	.16108	.24065
#1	24.537	.25351	1.0096	1.0008	.98785	12.480
#2	24.650	.25371	1.0098	.99977	.98549	12.538
#3	24.630	.25453	1.0126	1.0068	.98483	12.523
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCVL Acquired: 6/26/2019 16:11:26 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.485	.97992	24.493	1.0191	1.0105	23.787
Stddev	.037	.00200	.100	.0037	.0007	3.104
%RSD	.15165	.20405	.40922	.35967	.06677	13.051
#1	24.475	.97859	24.377	1.0159	1.0105	26.804
#2	24.526	.98222	24.552	1.0182	1.0098	20.602
#3	24.454	.97895	24.549	1.0231	1.0111	23.954
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.430	1.0194	.98958	.25267	.25421	.24589
Stddev	.049	.0012	.00169	.00046	.00116	.00170
%RSD	.20072	.11998	.17059	.18343	.45825	.69130
#1	24.383	1.0188	.98814	.25234	.25544	.24749
#2	24.481	1.0186	.98917	.25247	.25408	.24607
#3	24.425	1.0208	.99144	.25320	.25312	.24411
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCVL Acquired: 6/26/2019 16:11:26 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.24895	.98261	1.0155	.98848	.99495	.51430
Stddev	.00168	.01102	.0020	.00070	.00260	.00257
%RSD	.67491	1.1217	.19891	.07057	.26117	.50007
#1	.24926	.97132	1.0136	.98776	.99493	.51449
#2	.24714	.99334	1.0152	.98915	.99756	.51164
#3	.25046	.98317	1.0176	.98853	.99237	.51677
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.99603	.99615
Stddev	.00245	.00125
%RSD	.24567	.12552
#1	.99483	.99570
#2	.99441	.99519
#3	.99884	.99757
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCVL Acquired: 6/26/2019 16:11:26 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12828.	144660.	13549.
Stddev	18.	320.	64.
%RSD	.14143	.22109	.47071
#1	12809.	144500.	13599.
#2	12845.	145030.	13477.
#3	12830.	144460.	13570.

Sample Name: ICV Acquired: 6/26/2019 16:28:33 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.47755	11.866	.24652	.98584	.96302	1.0037
Stddev	.00098	.015	.00162	.00076	.00251	.0024
%RSD	.20568	.12850	.65864	.07666	.26022	.23998
#1	.47761	11.848	.24833	.98500	.96578	1.0039
#2	.47654	11.874	.24601	.98647	.96242	1.0060
#3	.47850	11.875	.24520	.98604	.96087	1.0012
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	23.974	.25248	.98636	.96353	.95600	12.161
Stddev	.042	.00019	.00070	.00325	.00101	.026
%RSD	.17461	.07570	.07066	.33753	.10517	.21071
#1	24.009	.25269	.98716	.96245	.95654	12.190
#2	23.928	.25232	.98605	.96718	.95484	12.152
#3	23.986	.25242	.98587	.96095	.95662	12.142
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: ICV Acquired: 6/26/2019 16:28:33 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	23.814	.97951	23.863	.98771	1.0073	23.976
Stddev	.058	.00396	.073	.00167	.0014	1.176
%RSD	.24429	.40395	.30414	.16923	.13726	4.9064
#1	23.832	.98404	23.934	.98819	1.0083	25.005
#2	23.749	.97676	23.789	.98910	1.0079	22.694
#3	23.861	.97772	23.867	.98586	1.0057	24.229
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	23.575	.98741	.97083	.24755	.24935	.24564
Stddev	.034	.00157	.00154	.00314	.00195	.00120
%RSD	.14574	.15884	.15853	1.2681	.78218	.49027
#1	23.614	.98922	.97238	.24865	.25020	.24627
#2	23.556	.98646	.96930	.24999	.24711	.24425
#3	23.554	.98655	.97080	.24401	.25072	.24640
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: ICV Acquired: 6/26/2019 16:28:33 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.24541	.97912	1.0053	.96083	.98461	.51006
Stddev	.00133	.02261	.0024	.00310	.00198	.00133
%RSD	.54293	2.3091	.24246	.32233	.20119	.26171
#1	.24544	.98694	1.0079	.96378	.98667	.50896
#2	.24673	.95364	1.0031	.96112	.98443	.51154
#3	.24406	.99678	1.0048	.95760	.98272	.50967
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.96396	.97421
Stddev	.00261	.00188
%RSD	.27104	.19316
#1	.96255	.97598
#2	.96697	.97442
#3	.96235	.97224
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: ICV Acquired: 6/26/2019 16:28:33 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12782.	144480.	13492.
Stddev	84.	1183.	113.
%RSD	.65687	.81847	.84085
#1	12685.	143480.	13364.
#2	12833.	144160.	13532.
#3	12827.	145790.	13580.

Sample Name: ICB Acquired: 6/26/2019 16:33:36 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00010	.00832	-.00106	.00080	-.00009	-.00001
Stddev	.00045	.00774	.00057	.00037	.00004	.00002
%RSD	473.02	92.952	54.108	46.415	47.578	161.59
#1	.00042	.01596	-.00171	.00122	-.00014	.00001
#2	-.00042	.00050	-.00063	.00064	-.00007	-.00002
#3	.00028	.00851	-.00083	.00053	-.00006	-.00004
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00002	-.00004	-.00003	-.00001	.00015	.00080
Stddev	.00163	.00005	.00018	.00038	.00037	.00097
%RSD	9394.3	128.32	598.90	6288.7	247.11	121.18
#1	.00092	-.00008	-.00023	-.00004	.00040	.00126
#2	-.00190	-.00006	.00013	-.00037	.00033	.00144
#3	.00092	.00002	.00001	.00039	-.00028	-.00031
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICB Acquired: 6/26/2019 16:33:36 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05723	-.00012	.01016	-.00008	-.00011	-.48901
Stddev	.00821	.00048	.00852	.00001	.00017	1.4358
%RSD	14.351	390.05	83.883	17.320	149.93	293.62
#1	.05152	-.00011	.01477	-.00007	-.00001	-1.4006
#2	.06664	.00035	.01538	-.00007	-.00031	1.1661
#3	.05352	-.00061	.00033	-.00009	-.00002	-1.2325
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00711	-.00012	.00014	.00100	.00085	-.00061
Stddev	.00355	.00014	.00105	.00106	.00053	.00170
%RSD	49.903	115.75	764.89	105.77	61.864	280.74
#1	-.00369	.00004	-.00107	.00020	.00045	-.00199
#2	-.00687	-.00021	.00087	.00060	.00145	-.00112
#3	-.01078	-.00020	.00061	.00220	.00066	.00129
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICB Acquired: 6/26/2019 16:33:36 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00009	-.01170	.00010	-.00003	-.00064	.00219
Stddev	.00057	.00407	.00019	.00004	.00036	.00139
%RSD	620.89	34.828	188.41	133.61	57.068	63.429
#1	.00050	-.01529	.00021	-.00003	-.00100	.00059
#2	-.00064	-.00727	-.00012	.00001	-.00063	.00308
#3	-.00014	-.01253	.00021	-.00008	-.00028	.00289
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00009	.00022
Stddev	.00015	.00009
%RSD	170.80	39.248
#1	-.00025	.00029
#2	-.00006	.00025
#3	.00005	.00012
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: ICB   Acquired: 6/26/2019 16:33:36   Type: Unk

Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000

User: kerry   Custom ID1:   Custom ID2:   Custom ID3:

Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12716.	142050.	12938.
Stddev	59.	795.	141.
%RSD	.46030	.55961	1.0870
#1	12651.	141210.	12952.
#2	12730.	142160.	13071.
#3	12766.	142790.	12790.

Sample Name: ICSA Acquired: 6/26/2019 16:38:48 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00016	486.72	-.00477	.06454	-.00013	-.00047
Stddev	.00010	.10	.00072	.00146	.00006	.00001
%RSD	61.495	.02093	15.095	2.2584	47.149	1.8258
#1	.00005	486.65	-.00559	.06339	-.00017	-.00047
#2	.00023	486.83	-.00425	.06618	-.00015	-.00046
#3	.00021	486.67	-.00447	.06404	-.00006	-.00047
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	440.31	.00053	-.00128	.00272	-.00142	182.48
Stddev	3.27	.00027	.00016	.00037	.00012	1.99
%RSD	.74228	50.900	12.596	13.577	8.2620	1.0917
#1	436.91	.00078	-.00110	.00302	-.00133	180.34
#2	443.42	.00057	-.00141	.00284	-.00155	182.83
#3	440.60	.00025	-.00132	.00231	-.00138	184.28
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICSA Acquired: 6/26/2019 16:38:48 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01962	.01345	484.07	-.00068	-.00150	F -5.5623
Stddev	.03508	.00016	2.71	.00003	.00023	.3463
%RSD	178.77	1.1843	.56070	4.5955	15.604	6.2264
#1	-.01469	.01339	480.96	-.00071	-.00137	-5.3391
#2	.01814	.01363	485.96	-.00065	-.00137	-5.9613
#3	.05542	.01333	485.29	-.00068	-.00177	-5.3865
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit						5.0000
Low Limit						-5.0000

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02416	-.00331	-.00409	F .01092	-.00757	-.00037
Stddev	.00272	.00018	.00206	.00143	.00068	.00421
%RSD	11.276	5.4291	50.274	13.105	8.9836	1145.8
#1	.02127	-.00317	-.00355	.01253	-.00702	-.00495
#2	.02454	-.00351	-.00235	.00979	-.00737	.00332
#3	.02668	-.00326	-.00636	.01044	-.00833	.00053
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				.00800		
Low Limit				-.00800		

Sample Name: ICSA Acquired: 6/26/2019 16:38:48 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00570	-.02214	.00122	-.01205	.01434	.00605
Stddev	.00231	.00797	.00072	.00024	.00070	.00131
%RSD	40.568	36.018	58.643	2.0313	4.8516	21.718
#1	-.00740	-.02912	.00110	-.01177	.01503	.00464
#2	-.00307	-.02384	.00199	-.01220	.01364	.00628
#3	-.00662	-.01345	.00057	-.01218	.01433	.00723
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00612	-.00209
Stddev	.00019	.00020
%RSD	3.0712	9.4744
#1	.00594	-.00192
#2	.00632	-.00204
#3	.00610	-.00230
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: ICSA Acquired: 6/26/2019 16:38:48 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12043.	136110.	13432.
Stddev	83.	578.	63.
%RSD	.68926	.42481	.46568
#1	11947.	135450.	13488.
#2	12093.	136480.	13364.
#3	12090.	136420.	13445.

Sample Name: ICSAB Acquired: 6/26/2019 16:44:06 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.21070	248.30	.10147	1.0736	.49987	.53594
Stddev	.00078	.88	.00069	.0028	.00121	.00573
%RSD	.36832	.35510	.67950	.25760	.24189	1.0700
#1	.21067	247.77	.10103	1.0705	.49907	.53336
#2	.21149	249.31	.10112	1.0747	.50126	.53196
#3	.20994	247.80	.10227	1.0757	.49927	.54251
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	234.63	.99961	.48796	.50287	.51426	98.307
Stddev	2.97	.00220	.00157	.00156	.00120	.371
%RSD	1.2649	.22046	.32234	.30965	.23401	.37695
#1	231.25	.99805	.48636	.50118	.51470	97.946
#2	235.86	.99864	.48802	.50319	.51518	98.686
#3	236.80	1.0021	.48950	.50424	.51290	98.290
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICSAB Acquired: 6/26/2019 16:44:06 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.297	1.0418	251.45	.50977	1.0146	11.093
Stddev	.058	.0017	1.26	.00120	.0034	1.012
%RSD	.56767	.16509	.50146	.23535	.33833	9.1193
#1	10.251	1.0418	250.07	.50839	1.0110	10.352
#2	10.363	1.0436	252.55	.51051	1.0151	10.682
#3	10.278	1.0401	251.71	.51043	1.0178	12.245
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.025	.98055	.99668	.05746	.04743	.64913
Stddev	.022	.00242	.00368	.00435	.00129	.00104
%RSD	.21946	.24657	.36968	7.5757	2.7197	.16011
#1	10.023	.97820	.99439	.05245	.04678	.64803
#2	10.047	.98042	.99472	.05967	.04891	.65010
#3	10.003	.98303	1.0009	.06027	.04658	.64926
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: ICSAB Acquired: 6/26/2019 16:44:06 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05017	1.0845	1.0073	1.0021	1.0343	.10294
Stddev	.00135	.0038	.0020	.0019	.0052	.00110
%RSD	2.6936	.34922	.19998	.19050	.50239	1.0676
#1	.05115	1.0888	1.0064	1.0014	1.0334	.10362
#2	.05072	1.0830	1.0060	1.0042	1.0399	.10167
#3	.04862	1.0817	1.0096	1.0006	1.0296	.10353
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.50298	.99781
Stddev	.00141	.00262
%RSD	.28089	.26251
#1	.50142	.99511
#2	.50332	.99798
#3	.50418	1.0003
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: ICSAB Acquired: 6/26/2019 16:44:06 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12016.	134080.	12408.
Stddev	14.	430.	125.
%RSD	.11507	.32068	1.0102
#1	12007.	134360.	12492.
#2	12032.	134290.	12264.
#3	12009.	133580.	12467.

Sample Name: CRI   Acquired: 6/26/2019 16:49:17   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01024	.21858	.01075	.20207	.00983	.00525
Stddev	.00022	.00451	.00035	.00079	.00009	.00001
%RSD	2.1429	2.0656	3.2982	.39002	.93660	.22909
#1	.01034	.21337	.01035	.20294	.00985	.00526
#2	.00998	.22133	.01100	.20140	.00974	.00524
#3	.01039	.22103	.01092	.20187	.00992	.00525
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.0672	.00531	.05128	.01047	.02467	.11095
Stddev	.0163	.00008	.00017	.00010	.00030	.00415
%RSD	.32238	1.4144	.32897	.96987	1.2278	3.7376
#1	5.0677	.00536	.05147	.01039	.02472	.11415
#2	5.0833	.00522	.05123	.01058	.02495	.11243
#3	5.0506	.00534	.05114	.01042	.02435	.10627
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI Acquired: 6/26/2019 16:49:17 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.9573	.05015	4.8921	.01533	.04152	5.1122
Stddev	.0346	.00030	.0101	.00003	.00039	.6389
%RSD	.69773	.59825	.20744	.17913	.95064	12.498
#1	4.9256	.04988	4.8815	.01530	.04132	4.3983
#2	4.9942	.05010	4.9018	.01535	.04198	5.3082
#3	4.9520	.05047	4.8929	.01533	.04127	5.6302
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.7934	.04123	.30490	.01164	.01146	.06327
Stddev	.0115	.00008	.00042	.00158	.00020	.00158
%RSD	.24080	.19236	.13728	13.568	1.7132	2.4941
#1	4.8042	.04121	.30480	.01347	.01167	.06151
#2	4.7947	.04116	.30453	.01072	.01128	.06373
#3	4.7812	.04131	.30535	.01074	.01145	.06456
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI   Acquired: 6/26/2019 16:49:17   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01058	.47785	.10459	.04972	.05012	.01248
Stddev	.00121	.00587	.00037	.00002	.00051	.00139
%RSD	11.459	1.2282	.35381	.03616	1.0092	11.141
#1	.01185	.47855	.10494	.04972	.05068	.01302
#2	.01046	.47166	.10463	.04970	.04998	.01090
#3	.00943	.48333	.10420	.04974	.04970	.01353
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02463	.02174
Stddev	.00015	.00004
%RSD	.60383	.20447
#1	.02473	.02179
#2	.02470	.02172
#3	.02446	.02171
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CRI   Acquired: 6/26/2019 16:49:17   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12852.	145330.	13416.
Stddev	51.	435.	17.
%RSD	.39525	.29925	.12785
#1	12793.	144830.	13433.
#2	12884.	145640.	13415.
#3	12878.	145510.	13399.

Sample Name: CCV Acquired: 6/26/2019 16:54:19 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.96391	24.446	.48707	1.9626	1.9493	2.0368
Stddev	.00161	.025	.00116	.0094	.0043	.0099
%RSD	.16675	.10408	.23839	.48024	.22112	.48805
#1	.96242	24.465	.48693	1.9523	1.9449	2.0260
#2	.96371	24.456	.48829	1.9645	1.9494	2.0387
#3	.96561	24.417	.48598	1.9709	1.9536	2.0456
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.902	.49809	1.9845	1.9749	1.9357	24.950
Stddev	.080	.00013	.0006	.0028	.0013	.086
%RSD	.16295	.02642	.03024	.14052	.06656	.34608
#1	48.856	.49813	1.9838	1.9720	1.9359	24.931
#2	48.994	.49794	1.9849	1.9775	1.9369	25.044
#3	48.855	.49819	1.9847	1.9752	1.9343	24.874
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV   Acquired: 6/26/2019 16:54:19   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.958	1.9396	49.520	2.0123	1.9803	47.771
Stddev	.142	.0029	.263	.0045	.0009	1.073
%RSD	.28976	.14697	.53126	.22432	.04533	2.2455
#1	48.800	1.9363	49.649	2.0075	1.9802	48.606
#2	49.075	1.9415	49.695	2.0129	1.9794	46.561
#3	48.998	1.9409	49.218	2.0165	1.9812	48.146
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.683	1.9969	1.9955	.49893	.49861	.48719
Stddev	.114	.0013	.0032	.00148	.00119	.00092
%RSD	.23328	.06441	.16019	.29622	.23811	.18818
#1	48.581	1.9981	1.9919	.49813	.49937	.48763
#2	48.663	1.9968	1.9966	.49803	.49921	.48781
#3	48.805	1.9956	1.9980	.50064	.49724	.48614
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/26/2019 16:54:19 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.48588	2.0032	1.9899	1.9474	1.9629	1.0013
Stddev	.00235	.0158	.0020	.0035	.0024	.0022
%RSD	.48314	.78961	.10048	.17797	.12164	.21985
#1	.48729	2.0161	1.9896	1.9434	1.9603	.99994
#2	.48717	1.9855	1.9881	1.9494	1.9650	1.0000
#3	.48317	2.0079	1.9921	1.9494	1.9635	1.0038
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	1.9628	1.9658
Stddev	.0015	.0009
%RSD	.07551	.04413
#1	1.9627	1.9661
#2	1.9643	1.9648
#3	1.9614	1.9665
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 6/26/2019 16:54:19 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12582.	140940.	12914.
Stddev	50.	1012.	196.
%RSD	.40095	.71794	1.5166
#1	12528.	139830.	12798.
#2	12592.	141180.	12804.
#3	12627.	141810.	13140.

Sample Name: CCB Acquired: 6/26/2019 16:59:20 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00026	-.00356	.00048	.00360	-.00014	.00003
Stddev	.00041	.02278	.00101	.00206	.00010	.00007
%RSD	156.89	640.65	210.97	57.141	67.816	278.30
#1	.00061	-.02434	.00151	.00597	-.00009	.00011
#2	-.00019	-.00712	-.00051	.00256	-.00026	.00000
#3	.00037	.02080	.00043	.00227	-.00008	-.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00198	-.00005	.00008	.00026	.00042	.00159
Stddev	.00256	.00003	.00017	.00007	.00026	.00183
%RSD	129.18	57.470	208.08	26.272	62.287	114.70
#1	.00457	-.00007	.00016	.00018	.00071	.00312
#2	.00195	-.00008	-.00011	.00031	.00034	.00208
#3	-.00056	-.00002	.00020	.00028	.00021	-.00043
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/26/2019 16:59:20 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03289	-.00042	.01992	-.00001	-.00005	-1.7176
Stddev	.03010	.00069	.00914	.00008	.00003	1.0245
%RSD	91.509	166.46	45.898	832.27	58.855	59.647
#1	.05622	.00034	.01254	.00008	-.00004	-2.7962
#2	-.00108	-.00056	.01706	-.00006	-.00009	-1.5992
#3	.04354	-.00103	.03014	-.00005	-.00004	-.75746
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00339	.00008	.00005	.00230	.00049	-.00067
Stddev	.00806	.00005	.00035	.00060	.00098	.00008
%RSD	237.60	67.748	677.02	25.962	199.88	11.636
#1	-.00498	.00014	.00025	.00292	.00145	-.00075
#2	.00534	.00004	.00026	.00225	-.00051	-.00059
#3	-.01053	.00005	-.00035	.00173	.00053	-.00066
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/26/2019 16:59:20 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00006	-.01087	.00008	.00001	.00027	.00106
Stddev	.00170	.01052	.00020	.00010	.00092	.00198
%RSD	2703.6	96.779	266.83	1432.9	344.37	185.90
#1	.00172	-.00009	-.00004	.00012	.00127	-.00077
#2	.00014	-.01140	-.00004	-.00006	.00007	.00316
#3	-.00167	-.02111	.00031	-.00005	-.00054	.00081
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00001	-.00007
Stddev	.00015	.00007
%RSD	1051.2	105.60
#1	-.00005	.00000
#2	-.00009	-.00007
#3	.00018	-.00014
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/26/2019 16:59:20 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12925.	145990.	13495.
Stddev	33.	836.	54.
%RSD	.25571	.57254	.40372
#1	12887.	145070.	13462.
#2	12936.	146700.	13558.
#3	12950.	146190.	13465.

Sample Name: mb 140-30453/11-b   Acquired: 6/26/2019 17:04:32   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00004	-.00031	.00128	.00764	F .00974	-.00005
Stddev	.00021	.00117	.00033	.00034	.00013	.00001
%RSD	495.66	379.44	26.000	4.4893	1.3702	13.042
#1	-.00000	-.00142	.00103	.00801	.00965	-.00004
#2	-.00027	-.00040	.00115	.00734	.00990	-.00005
#3	.00014	.00090	.00165	.00758	.00969	-.00005
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass
High Limit					.00500	
Low Limit					-.00500	

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03164	.00162	.00006	.00049	.00056	.00303
Stddev	.00089	.00003	.00008	.00009	.00016	.00037
%RSD	2.8285	2.1587	132.56	19.445	28.780	12.203
#1	.03208	.00160	-.00002	.00056	.00039	.00275
#2	.03223	.00166	.00007	.00038	.00058	.00345
#3	.03061	.00159	.00013	.00052	.00071	.00290
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-30453/11-b Acquired: 6/26/2019 17:04:32 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0401	-.00188	.10844	.00125	-.00015	-.77188
Stddev	.0144	.00040	.00372	.00005	.00008	1.2723
%RSD	1.3800	21.274	3.4273	4.3134	52.327	164.83
#1	1.0507	-.00219	.10566	.00122	-.00007	-2.2252
#2	1.0238	-.00143	.11266	.00121	-.00023	.14082
#3	1.0460	-.00201	.10701	.00131	-.00015	-.23126
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00326	.00120	.00263	.00113	.00045	-.00023
Stddev	.00496	.00003	.00129	.00196	.00065	.00021
%RSD	152.04	2.1541	48.823	173.66	145.86	90.490
#1	.00711	.00121	.00404	-.00084	.00077	.00001
#2	-.00233	.00117	.00151	.00308	.00088	-.00038
#3	.00501	.00122	.00236	.00115	-.00030	-.00033
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-30453/11-b   Acquired: 6/26/2019 17:04:32   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00307	-.00031	.00056	.00059	-.00051	.00034
Stddev	.00050	.01144	.00026	.00008	.00053	.00067
%RSD	16.473	3660.7	46.646	13.936	104.82	198.80
#1	.00352	.01225	.00032	.00067	-.00095	.00019
#2	.00252	-.00306	.00053	.00059	-.00065	.00107
#3	.00315	-.01013	.00085	.00050	.00008	-.00025
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00032	.00199
Stddev	.00052	.00002
%RSD	166.03	1.0910
#1	-.00068	.00202
#2	-.00055	.00198
#3	.00029	.00199
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: mb 140-30453/11-b Acquired: 6/26/2019 17:04:32 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12928.	146490.	13530.
Stddev	58.	550.	82.
%RSD	.44524	.37543	.60560
#1	12862.	146050.	13486.
#2	12951.	146310.	13625.
#3	12970.	147110.	13480.

Sample Name: lcs 140-30453/12-b Acquired: 6/26/2019 17:09:44 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .01853	1.9014	.10028	.97260	.08715	.05060
Stddev	.00017	.0155	.00058	.00231	.00018	.00003
%RSD	.89441	.81498	.58154	.23728	.20528	.06823
#1	.01853	1.9040	.10091	.97268	.08718	.05059
#2	.01870	1.8848	.09975	.97486	.08730	.05064
#3	.01837	1.9155	.10018	.97025	.08695	.05057
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value	.05000					
Range	-20.000%					

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .45099	F .01222	.09739	.19479	.23886	.98530
Stddev	.00181	.00007	.00028	.00076	.00087	.00624
%RSD	.40153	.61142	.28805	.38845	.36424	.63316
#1	.45244	.01219	.09741	.19509	.23869	.97817
#2	.45156	.01230	.09767	.19534	.23980	.98801
#3	.44896	.01216	.09711	.19393	.23809	.98973
Check ?	Chk Fail	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value	50.000	.05000				
Range	-20.000%	-20.000%				

Sample Name: lcs 140-30453/12-b   Acquired: 6/26/2019 17:09:44   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.857	.09672	9.7187	.09725	.48959	F 28.456
Stddev	.157	.00046	.0247	.00017	.00114	1.050
%RSD	.32225	.48073	.25374	.17982	.23345	3.6883
#1	48.958	.09645	9.7165	.09707	.49028	28.740
#2	48.937	.09644	9.6952	.09725	.49021	29.335
#3	48.675	.09725	9.7444	.09742	.48827	27.294
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value						50.000
Range						-20.000%

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	47.359	.48932	4.9199	F .00128	F .00340	.48360
Stddev	.073	.00085	.0147	.00192	.00059	.00120
%RSD	.15492	.17345	.29808	150.42	17.331	.24881
#1	47.408	.48953	4.9158	.00285	.00278	.48458
#2	47.394	.49005	4.9362	-.00087	.00395	.48396
#3	47.274	.48839	4.9077	.00185	.00348	.48225
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Fail	Chk Pass
Value				.10000	.10000	
Range				-20.000%	-20.000%	

Sample Name: lcs 140-30453/12-b   Acquired: 6/26/2019 17:09:44   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.14901	4.7149	.49941	F .15117	.09679	.40085
Stddev	.00024	.0164	.00113	.00049	.00034	.00246
%RSD	.15877	.34722	.22724	.32204	.35601	.61376
#1	.14873	4.7198	.49815	.15112	.09685	.39803
#2	.14916	4.7282	.49975	.15167	.09709	.40202
#3	.14912	4.6966	.50034	.15070	.09641	.40252
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
Value				.50000		
Range				-20.000%		

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.19281	.47166
Stddev	.00027	.00078
%RSD	.13823	.16632
#1	.19311	.47211
#2	.19260	.47212
#3	.19272	.47075
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: lcs 140-30453/12-b   Acquired: 6/26/2019 17:09:44   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12897.	146170.	13569.
Stddev	75.	595.	75.
%RSD	.57786	.40720	.55064
#1	12842.	145490.	13485.
#2	12867.	146420.	13596.
#3	12982.	146600.	13626.

Sample Name: lcsd 140-30453/13-b   Acquired: 6/26/2019 17:14:41   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .01834	1.9681	.10212	1.0131	.08848	.05280
Stddev	.00013	.0158	.00216	.0051	.00026	.00021
%RSD	.73041	.80032	2.1138	.49996	.29405	.40423
#1	.01847	1.9859	.09971	1.0073	.08866	.05265
#2	.01835	1.9628	.10387	1.0153	.08818	.05304
#3	.01820	1.9558	.10278	1.0166	.08860	.05271
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value	.05000					
Range	-20.000%					

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .49533	F .01130	.09977	.20312	.24844	1.0174
Stddev	.00030	.00002	.00031	.00051	.00062	.0025
%RSD	.06143	.16718	.30780	.25029	.24799	.24838
#1	.49535	.01128	.09949	.20266	.24800	1.0160
#2	.49502	.01132	.09973	.20367	.24915	1.0158
#3	.49563	.01129	.10010	.20304	.24819	1.0203
Check ?	Chk Fail	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value	50.000	.05000				
Range	-20.000%	-20.000%				

Sample Name: lcsd 140-30453/13-b Acquired: 6/26/2019 17:14:41 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.373	.09944	9.7511	.09996	.50440	F 30.627
Stddev	.149	.00049	.0347	.00053	.00129	.586
%RSD	.30111	.49202	.35549	.53133	.25653	1.9124
#1	49.479	.09989	9.7852	.09949	.50390	30.068
#2	49.203	.09950	9.7159	.10054	.50342	31.236
#3	49.436	.09892	9.7521	.09985	.50587	30.577
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value						50.000
Range						-20.000%

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	47.935	.50195	5.0857	F .00270	F .00256	.49933
Stddev	.100	.00161	.0208	.00124	.00083	.00184
%RSD	.20942	.31979	.40802	45.916	32.406	.36790
#1	47.975	.50125	5.0711	.00162	.00161	.49787
#2	47.821	.50081	5.0766	.00405	.00316	.49873
#3	48.010	.50379	5.1095	.00242	.00290	.50139
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Fail	Chk Pass
Value				.10000	.10000	
Range				-20.000%	-20.000%	

Sample Name: lcsd 140-30453/13-b Acquired: 6/26/2019 17:14:41 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.15599	4.8392	.51595	F .13972	.10024	.41408
Stddev	.00129	.0316	.00115	.00056	.00128	.00147
%RSD	.82896	.65289	.22227	.40301	1.2749	.35527
#1	.15483	4.8594	.51562	.13988	.09994	.41423
#2	.15738	4.8028	.51501	.13909	.09914	.41547
#3	.15577	4.8555	.51723	.14017	.10164	.41254
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
Value				.50000		
Range				-20.000%		

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20079	.48414
Stddev	.00073	.00164
%RSD	.36490	.33884
#1	.20000	.48336
#2	.20144	.48305
#3	.20094	.48603
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: lcsd 140-30453/13-b   Acquired: 6/26/2019 17:14:41   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12808.	144090.	13540.
Stddev	31.	609.	68.
%RSD	.23933	.42282	.50090
#1	12783.	143770.	13478.
#2	12842.	143710.	13529.
#3	12800.	144790.	13613.

Sample Name: 140-15377-a-1-h Acquired: 6/26/2019 17:19:37 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00018	.25077	.00374	.00787	.06225	.00018
Stddev	.00004	.00570	.00074	.00170	.00010	.00001
%RSD	20.798	2.2731	19.829	21.567	.16500	3.5628
#1	-.00015	.24580	.00331	.00970	.06233	.00019
#2	-.00022	.25699	.00460	.00758	.06213	.00017
#3	-.00016	.24951	.00332	.00634	.06227	.00018
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.07456	.00098	.00170	.00835	.00275	1.4180
Stddev	.00196	.00006	.00005	.00010	.00022	.0024
%RSD	2.6332	5.7403	2.6495	1.1631	7.8883	.16768
#1	.07514	.00100	.00175	.00842	.00286	1.4157
#2	.07617	.00092	.00169	.00838	.00289	1.4204
#3	.07237	.00102	.00166	.00824	.00250	1.4179
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-1-h Acquired: 6/26/2019 17:19:37 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0538	-.00108	5.3073	.13651	.00139	52.352
Stddev	.0118	.00032	.0261	.00009	.00006	1.603
%RSD	1.1214	30.035	.49191	.06951	4.3970	3.0617
#1	1.0571	-.00128	5.2851	.13650	.00132	53.566
#2	1.0407	-.00126	5.3009	.13641	.00143	52.954
#3	1.0637	-.00071	5.3361	.13660	.00142	50.535
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	90.592	.00289	.07205	.00575	.00655	-.00027
Stddev	.670	.00018	.00079	.00274	.00077	.00105
%RSD	.74013	6.0994	1.0947	47.737	11.686	385.18
#1	91.105	.00271	.07176	.00576	.00611	.00049
#2	90.836	.00290	.07145	.00848	.00611	.00017
#3	89.833	.00306	.07295	.00300	.00743	-.00147
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-1-h   Acquired: 6/26/2019 17:19:37   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00204	.36230	.00103	.00366	.00921	-.00104
Stddev	.00171	.00736	.00042	.00003	.00027	.00209
%RSD	83.852	2.0327	41.143	.83891	2.9729	200.28
#1	.00398	.35886	.00149	.00367	.00944	-.00298
#2	.00140	.35728	.00092	.00362	.00891	-.00133
#3	.00074	.37075	.00067	.00368	.00928	.00117
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00629	.00339
Stddev	.00013	.00005
%RSD	2.0845	1.4200
#1	.00623	.00343
#2	.00644	.00334
#3	.00620	.00342
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-1-h Acquired: 6/26/2019 17:19:37 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13047.	148370.	13979.
Stddev	47.	658.	36.
%RSD	.36231	.44372	.25915
#1	13008.	147680.	13960.
#2	13034.	148990.	13956.
#3	13100.	148420.	14021.

Sample Name: 140-15377-a-2-h Acquired: 6/26/2019 17:24:56 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00027	.08224	.00276	.00511	.02153	.00001
Stddev	.00033	.00707	.00033	.00070	.00010	.00002
%RSD	121.07	8.6010	11.998	13.607	.47701	293.25
#1	-.00017	.09023	.00242	.00441	.02164	.00002
#2	-.00064	.07972	.00308	.00513	.02151	-.00001
#3	-.00001	.07678	.00278	.00580	.02144	.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.11120	.00146	.00056	.00315	.00158	.45924
Stddev	.00223	.00002	.00003	.00012	.00019	.00076
%RSD	2.0053	1.7043	5.9659	3.7086	12.190	.16515
#1	.10986	.00149	.00059	.00308	.00180	.46012
#2	.11377	.00145	.00053	.00309	.00144	.45877
#3	.10996	.00145	.00054	.00328	.00151	.45883
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-2-h Acquired: 6/26/2019 17:24:56 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0390	-.00199	6.0869	.07802	.00056	57.022
Stddev	.0155	.00084	.0189	.00017	.00012	.521
%RSD	1.4873	42.374	.31086	.21945	20.717	.91354
#1	1.0497	-.00284	6.0693	.07785	.00045	57.436
#2	1.0213	-.00197	6.1069	.07801	.00068	57.194
#3	1.0462	-.00116	6.0845	.07819	.00056	56.437
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	101.53	.00158	.06485	.00466	.00359	-.00107
Stddev	1.49	.00022	.00143	.00022	.00069	.00061
%RSD	1.4654	14.136	2.2091	4.8223	19.278	57.495
#1	99.820	.00183	.06324	.00486	.00313	-.00079
#2	102.50	.00147	.06532	.00471	.00439	-.00177
#3	102.28	.00143	.06598	.00442	.00326	-.00064
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-2-h   Acquired: 6/26/2019 17:24:56   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00212	.12856	.00102	.00099	.00941	.00064
Stddev	.00028	.00694	.00021	.00008	.00066	.00123
%RSD	13.434	5.4003	21.049	8.4733	6.9666	192.59
#1	.00196	.12669	.00127	.00101	.00866	.00056
#2	.00244	.12274	.00090	.00105	.00979	-.00055
#3	.00194	.13624	.00089	.00089	.00979	.00190
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00320	.00211
Stddev	.00007	.00004
%RSD	2.0886	1.8620
#1	.00324	.00215
#2	.00313	.00207
#3	.00324	.00212
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-2-h Acquired: 6/26/2019 17:24:56 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13073.	147390.	13759.
Stddev	29.	324.	11.
%RSD	.22148	.21986	.08073
#1	13044.	147180.	13770.
#2	13102.	147220.	13748.
#3	13074.	147760.	13760.

Sample Name: 140-15376-a-1-o Acquired: 6/26/2019 17:30:13 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00009	.35189	.00200	.00442	.02202	.00030
Stddev	.00016	.01249	.00089	.00107	.00016	.00002
%RSD	174.09	3.5486	44.482	24.248	.72123	5.7313
#1	-.00009	.36463	.00226	.00374	.02190	.00032
#2	.00022	.33967	.00101	.00565	.02197	.00029
#3	.00015	.35136	.00273	.00386	.02220	.00029
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.14362	.00130	.00958	.00383	.00653	.89262
Stddev	.00212	.00004	.00003	.00014	.00036	.00321
%RSD	1.4787	3.3801	.33791	3.7215	5.5135	.35972
#1	.14543	.00125	.00961	.00378	.00694	.89459
#2	.14415	.00132	.00955	.00399	.00632	.88891
#3	.14128	.00133	.00958	.00372	.00632	.89435
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-o Acquired: 6/26/2019 17:30:13 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0984	-.00092	13.422	.21549	.00048	93.857
Stddev	.0210	.00081	.020	.00030	.00022	1.216
%RSD	1.9168	87.114	.14619	.13847	46.995	1.2956
#1	1.0774	-.00001	13.443	.21553	.00035	94.777
#2	1.1195	-.00124	13.419	.21517	.00035	94.315
#3	1.0985	-.00152	13.405	.21576	.00073	92.478
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	161.70	.00618	.19868	.00777	.00794	-.00040
Stddev	2.01	.00024	.00120	.00123	.00062	.00062
%RSD	1.2446	3.9587	.60306	15.839	7.7633	153.76
#1	164.02	.00607	.19885	.00774	.00853	-.00078
#2	160.71	.00601	.19741	.00902	.00730	-.00073
#3	160.38	.00646	.19978	.00656	.00800	.00031
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-o Acquired: 6/26/2019 17:30:13 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00283	.29246	.00103	.00188	.00896	-.00012
Stddev	.00095	.01127	.00031	.00001	.00056	.00148
%RSD	33.533	3.8532	29.997	.79264	6.2092	1268.1
#1	.00391	.28397	.00134	.00189	.00832	-.00163
#2	.00213	.30525	.00101	.00189	.00922	-.00004
#3	.00244	.28816	.00073	.00187	.00934	.00132
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00613	.01135
Stddev	.00003	.00006
%RSD	.54458	.54327
#1	.00612	.01139
#2	.00611	.01128
#3	.00617	.01139
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-o Acquired: 6/26/2019 17:30:13 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12733.	144260.	13504.
Stddev	16.	790.	11.
%RSD	.12679	.54739	.07895
#1	12714.	143350.	13492.
#2	12738.	144720.	13506.
#3	12745.	144710.	13513.

Sample Name: 140-15376-a-1-p du Acquired: 6/26/2019 17:35:27 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00001	.32838	.00190	.00252	.02096	.00031
Stddev	.00037	.01225	.00059	.00074	.00019	.00001
%RSD	2933.2	3.7313	30.967	29.381	.91661	1.7175
#1	.00023	.31468	.00234	.00166	.02115	.00031
#2	-.00041	.33829	.00123	.00292	.02096	.00031
#3	.00022	.33218	.00213	.00297	.02077	.00030
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.13725	.00120	.00918	.00297	.00712	.83651
Stddev	.00113	.00005	.00017	.00023	.00024	.00067
%RSD	.82649	4.5007	1.8104	7.6620	3.3918	.08047
#1	.13664	.00116	.00927	.00277	.00724	.83580
#2	.13855	.00117	.00929	.00322	.00728	.83714
#3	.13654	.00126	.00899	.00291	.00684	.83659
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-p du Acquired: 6/26/2019 17:35:27 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0644	-.00116	12.359	.11215	.00037	87.026
Stddev	.0211	.00102	.017	.00019	.00007	.922
%RSD	1.9781	88.056	.14038	.17196	19.802	1.0596
#1	1.0478	-.00073	12.345	.11197	.00032	86.502
#2	1.0574	-.00043	12.379	.11235	.00033	88.091
#3	1.0881	-.00232	12.355	.11213	.00045	86.485
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	151.09	.00417	.17921	.00710	.00729	-.00187
Stddev	1.67	.00016	.00166	.00138	.00089	.00071
%RSD	1.1030	3.9018	.92473	19.402	12.194	38.137
#1	151.45	.00434	.17754	.00705	.00657	-.00265
#2	149.26	.00401	.18085	.00850	.00828	-.00124
#3	152.54	.00415	.17923	.00575	.00700	-.00173
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-p du Acquired: 6/26/2019 17:35:27 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00186	.29907	.00114	.00182	.00751	-.00035
Stddev	.00165	.01093	.00014	.00005	.00038	.00081
%RSD	88.991	3.6546	12.336	2.7446	5.0803	230.03
#1	.00018	.29080	.00118	.00186	.00724	.00016
#2	.00348	.31146	.00126	.00177	.00794	.00007
#3	.00190	.29494	.00099	.00184	.00734	-.00128
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00569	.00914
Stddev	.00030	.00006
%RSD	5.2715	.67214
#1	.00576	.00911
#2	.00536	.00911
#3	.00594	.00921
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-p du   Acquired: 6/26/2019 17:35:27   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12972.	145770.	13596.
Stddev	24.	833.	11.
%RSD	.18327	.57163	.08263
#1	12947.	145640.	13599.
#2	12974.	145000.	13583.
#3	12994.	146650.	13605.

Sample Name: 140-15376-a-2-h Acquired: 6/26/2019 17:40:42 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00016	.62612	.00451	.00587	.10103	.00057
Stddev	.00043	.00787	.00063	.00033	.00011	.00001
%RSD	272.39	1.2569	13.938	5.6503	.10464	1.6581
#1	-.00030	.63377	.00389	.00562	.10096	.00056
#2	-.00051	.62654	.00515	.00574	.10098	.00056
#3	.00033	.61805	.00450	.00624	.10115	.00058
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.09734	.00104	.00990	.00226	.00679	.49856
Stddev	.00109	.00004	.00011	.00028	.00020	.00156
%RSD	1.1229	3.6085	1.1245	12.225	2.9722	.31291
#1	.09824	.00100	.00981	.00220	.00702	.49837
#2	.09612	.00104	.01002	.00256	.00664	.49711
#3	.09766	.00108	.00987	.00202	.00672	.50021
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-h Acquired: 6/26/2019 17:40:42 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0978	-.00237	11.713	.06907	.00023	83.878
Stddev	.0143	.00074	.020	.00004	.00011	.561
%RSD	1.3004	31.340	.17042	.05997	48.363	.66885
#1	1.0852	-.00163	11.734	.06908	.00036	84.465
#2	1.1133	-.00237	11.709	.06902	.00013	83.821
#3	1.0948	-.00311	11.695	.06910	.00021	83.348
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	145.69	.00169	.04181	.01214	.01250	-.00033
Stddev	1.50	.00017	.00075	.00137	.00099	.00109
%RSD	1.0297	10.062	1.7925	11.285	7.9370	329.26
#1	145.33	.00189	.04199	.01341	.01281	-.00073
#2	147.34	.00160	.04099	.01069	.01139	.00090
#3	144.40	.00159	.04246	.01231	.01330	-.00117
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-h   Acquired: 6/26/2019 17:40:42   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00206	.31954	.00106	.00603	.00476	-.00077
Stddev	.00289	.00446	.00038	.00006	.00045	.00111
%RSD	140.31	1.3960	35.769	1.0296	9.3939	143.46
#1	-.00108	.32374	.00107	.00607	.00468	-.00202
#2	.00460	.31485	.00144	.00606	.00525	.00011
#3	.00267	.32002	.00068	.00596	.00437	-.00041
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00608	.00421
Stddev	.00003	.00003
%RSD	.41431	.73515
#1	.00610	.00423
#2	.00608	.00417
#3	.00605	.00422
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-2-h Acquired: 6/26/2019 17:40:42 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12756.	142420.	13055.
Stddev	54.	879.	73.
%RSD	.42334	.61730	.55636
#1	12699.	141600.	12994.
#2	12763.	142330.	13036.
#3	12807.	143350.	13136.

Sample Name: 140-15376-a-3-h Acquired: 6/26/2019 17:45:58 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00026	.95706	.00466	.00407	.06182	.00154
Stddev	.00012	.01145	.00117	.00117	.00012	.00001
%RSD	48.258	1.1960	25.027	28.799	.19370	.56515
#1	.00040	.94385	.00333	.00444	.06168	.00155
#2	.00017	.96329	.00553	.00276	.06186	.00153
#3	.00021	.96404	.00511	.00501	.06191	.00154
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20413	.00122	.44049	.00231	.01783	.94861
Stddev	.00222	.00003	.00047	.00015	.00044	.00312
%RSD	1.0852	2.8045	.10648	6.5424	2.4846	.32866
#1	.20466	.00120	.44038	.00230	.01756	.94510
#2	.20604	.00120	.44008	.00217	.01759	.94965
#3	.20170	.00126	.44100	.00247	.01834	.95107
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-3-h Acquired: 6/26/2019 17:45:58 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0016	.01230	14.567	1.6450	.00131	90.872
Stddev	.0261	.00084	.076	.0060	.00012	.299
%RSD	2.6030	6.7937	.52426	.36600	9.1992	.32883
#1	.97329	.01201	14.480	1.6427	.00136	90.892
#2	1.0069	.01165	14.623	1.6405	.00117	90.563
#3	1.0246	.01324	14.599	1.6519	.00139	91.159
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	157.10	.01864	.05913	.01051	.01177	-.00101
Stddev	1.62	.00009	.00137	.00105	.00031	.00184
%RSD	1.0312	.48506	2.3193	9.9473	2.6180	181.04
#1	157.19	.01856	.05860	.01118	.01210	-.00201
#2	155.43	.01874	.05811	.01104	.01149	-.00213
#3	158.67	.01861	.06069	.00930	.01172	.00110
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-3-h Acquired: 6/26/2019 17:45:58 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00062	.42338	.00097	.00516	.00985	.00030
Stddev	.00110	.00510	.00016	.00009	.00094	.00082
%RSD	178.18	1.2047	16.637	1.8300	9.5705	274.33
#1	-.00059	.41860	.00078	.00513	.01069	.00124
#2	.00087	.42875	.00104	.00508	.00883	-.00020
#3	.00158	.42280	.00108	.00526	.01003	-.00014
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00991	.03669
Stddev	.00010	.00012
%RSD	1.0112	.32162
#1	.00999	.03658
#2	.00980	.03670
#3	.00994	.03681
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-3-h Acquired: 6/26/2019 17:45:58 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13597.	153170.	14337.
Stddev	21.	651.	43.
%RSD	.15264	.42505	.29862
#1	13574.	152730.	14321.
#2	13614.	153920.	14304.
#3	13602.	152870.	14385.

Sample Name: 140-15376-a-1-o SD@5 Acquired: 6/26/2019 17:51:11 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00027	.06671	.00072	-.00184	.00436	.00002
Stddev	.00027	.01175	.00044	.00016	.00009	.00001
%RSD	99.979	17.619	61.377	8.5793	2.0023	37.317
#1	.00057	.07940	.00103	-.00185	.00441	.00003
#2	.00018	.06454	.00021	-.00168	.00441	.00002
#3	.00005	.05619	.00091	-.00199	.00426	.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03869	.00025	.00197	.00058	.00150	.18747
Stddev	.00138	.00002	.00002	.00011	.00005	.00030
%RSD	3.5571	7.1785	.98541	19.149	3.6124	.15828
#1	.03754	.00024	.00195	.00064	.00154	.18781
#2	.04022	.00024	.00196	.00045	.00153	.18726
#3	.03833	.00027	.00199	.00065	.00144	.18733
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-o SD@5 Acquired: 6/26/2019 17:51:11 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.24676	-.00134	2.7197	.04402	-.00011	16.343
Stddev	.02428	.00109	.0251	.00011	.00007	1.126
%RSD	9.8413	81.307	.92423	.23895	65.769	6.8919
#1	.27019	-.00130	2.6907	.04410	-.00017	17.513
#2	.24839	-.00245	2.7355	.04390	-.00014	15.267
#3	.22170	-.00027	2.7328	.04406	-.00003	16.249
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	33.120	.00107	.04109	.00079	.00214	-.00057
Stddev	.067	.00006	.00021	.00097	.00089	.00039
%RSD	.20360	6.0044	.52146	123.64	41.759	68.146
#1	33.072	.00101	.04123	.00160	.00113	-.00022
#2	33.090	.00113	.04085	-.00029	.00283	-.00050
#3	33.197	.00106	.04120	.00105	.00245	-.00100
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-o SD@5 Acquired: 6/26/2019 17:51:11 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00031	.05839	.00030	.00044	.00193	.00084
Stddev	.00123	.00673	.00010	.00003	.00058	.00088
%RSD	391.93	11.532	32.758	6.4697	29.876	104.26
#1	.00062	.05074	.00021	.00045	.00239	.00062
#2	.00136	.06099	.00029	.00040	.00128	.00010
#3	-.00104	.06343	.00040	.00045	.00211	.00181
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00108	.00369
Stddev	.00005	.00003
%RSD	4.4201	.80343
#1	.00112	.00371
#2	.00103	.00366
#3	.00109	.00371
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-o SD@5 Acquired: 6/26/2019 17:51:11 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12915.	146130.	13629.
Stddev	30.	917.	44.
%RSD	.23125	.62727	.32090
#1	12880.	145090.	13631.
#2	12933.	146830.	13584.
#3	12931.	146460.	13671.

Sample Name: CCV Acquired: 6/26/2019 17:56:21 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.96046	24.334	.48752	1.9441	1.9509	2.0101
Stddev	.00144	.018	.00176	.0045	.0046	.0082
%RSD	.14957	.07286	.36069	.23253	.23534	.40990
#1	.95967	24.336	.48851	1.9399	1.9537	2.0051
#2	.95959	24.350	.48856	1.9434	1.9534	2.0057
#3	.96212	24.315	.48549	1.9489	1.9456	2.0197
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.394	.49293	1.9709	1.9411	1.9486	24.668
Stddev	.048	.00044	.0033	.0047	.0065	.042
%RSD	.09961	.08901	.16891	.24284	.33158	.17124
#1	48.344	.49264	1.9745	1.9358	1.9557	24.644
#2	48.397	.49272	1.9704	1.9449	1.9470	24.643
#3	48.441	.49344	1.9678	1.9426	1.9431	24.716
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV   Acquired: 6/26/2019 17:56:21   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.740	1.9337	48.294	1.9765	1.9744	47.208
Stddev	.058	.0023	.214	.0069	.0045	2.302
%RSD	.11834	.12089	.44336	.34730	.23014	4.8756
#1	48.784	1.9354	48.172	1.9686	1.9795	48.804
#2	48.675	1.9348	48.168	1.9800	1.9731	48.252
#3	48.762	1.9311	48.541	1.9809	1.9707	44.570
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.601	1.9826	2.0322	.48681	.49394	.48843
Stddev	.046	.0010	.0048	.00241	.00160	.00374
%RSD	.09378	.04909	.23662	.49470	.32478	.76571
#1	48.638	1.9831	2.0378	.48448	.49284	.49085
#2	48.614	1.9815	2.0294	.48929	.49578	.49032
#3	48.550	1.9832	2.0295	.48665	.49320	.48412
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV   Acquired: 6/26/2019 17:56:21   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49039	1.9708	1.9726	1.9439	1.9603	.99084
Stddev	.00235	.0092	.0019	.0031	.0030	.00244
%RSD	.47897	.46731	.09743	.15933	.15292	.24610
#1	.49308	1.9639	1.9749	1.9454	1.9636	.99363
#2	.48936	1.9812	1.9715	1.9460	1.9595	.98977
#3	.48874	1.9673	1.9715	1.9404	1.9578	.98911
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	1.9427	1.9620
Stddev	.0029	.0053
%RSD	.14986	.27049
#1	1.9434	1.9672
#2	1.9451	1.9622
#3	1.9394	1.9566
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV   Acquired: 6/26/2019 17:56:21   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12730.	145040.	13534.
Stddev	41.	356.	99.
%RSD	.31882	.24556	.73360
#1	12687.	144660.	13512.
#2	12767.	145100.	13642.
#3	12737.	145360.	13447.

Sample Name: CCB Acquired: 6/26/2019 18:01:21 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00004	-.01617	.00042	.00250	-.00000	.00007
Stddev	.00020	.00835	.00016	.00150	.00007	.00004
%RSD	503.13	51.620	37.032	59.888	1717.0	53.824
#1	.00023	-.02456	.00026	.00420	-.00008	.00010
#2	-.00017	-.00787	.00056	.00197	.00005	.00008
#3	.00006	-.01608	.00044	.00135	.00002	.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00010	-.00002	.00007	.00028	.00004	.00087
Stddev	.00259	.00004	.00008	.00026	.00023	.00179
%RSD	2536.0	215.86	113.42	94.176	548.33	205.65
#1	-.00213	.00001	.00015	-.00002	.00030	-.00016
#2	.00282	.00000	.00008	.00040	-.00014	.00294
#3	-.00099	-.00006	-.00001	.00047	-.00003	-.00016
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/26/2019 18:01:21 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02028	-.00200	.01032	.00005	.00005	1.0815
Stddev	.01313	.00076	.00345	.00006	.00031	1.4285
%RSD	64.769	37.883	33.394	136.84	622.60	132.08
#1	.03223	-.00221	.00772	.00011	.00021	2.1705
#2	.00622	-.00262	.01423	.00004	.00025	-.53588
#3	.02239	-.00116	.00901	-.00001	-.00031	1.6099
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00044	.00011	-.00057	.00044	.00174	.00026
Stddev	.00131	.00030	.00041	.00107	.00070	.00137
%RSD	297.39	259.44	72.504	240.26	40.232	530.59
#1	.00049	.00030	-.00060	.00013	.00247	.00088
#2	.00012	-.00023	-.00014	.00164	.00166	-.00131
#3	-.00194	.00028	-.00096	-.00043	.00108	.00121
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/26/2019 18:01:21 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00076	-.01302	.00038	.00002	-.00075	.00123
Stddev	.00163	.00815	.00037	.00008	.00035	.00080
%RSD	215.06	62.584	98.067	331.47	46.909	65.055
#1	.00181	-.00885	.00028	.00011	-.00035	.00169
#2	-.00112	-.02241	.00007	-.00002	-.00102	.00031
#3	.00160	-.00780	.00079	-.00002	-.00089	.00170
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00014	.00002
Stddev	.00013	.00015
%RSD	91.166	702.02
#1	-.00002	.00018
#2	-.00013	.00001
#3	-.00027	-.00012
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/26/2019 18:01:21 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12918.	145430.	13415.
Stddev	105.	625.	52.
%RSD	.81151	.42960	.39023
#1	12827.	144780.	13388.
#2	12895.	146020.	13382.
#3	13033.	145490.	13475.

Sample Name: 140-15390-a-1-t Acquired: 6/26/2019 18:06:32 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00004	.19632	.00105	.00262	.01506	.00003
Stddev	.00018	.00673	.00052	.00002	.00003	.00002
%RSD	499.30	3.4264	49.188	.77310	.18769	54.588
#1	-.00011	.19990	.00046	.00263	.01509	.00004
#2	-.00002	.20049	.00128	.00259	.01505	.00004
#3	.00023	.18856	.00140	.00262	.01504	.00001
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03530	.00150	.00052	.00262	.00143	.22257
Stddev	.00108	.00004	.00010	.00018	.00039	.00091
%RSD	3.0696	2.5560	18.331	6.7917	27.537	.40716
#1	.03644	.00151	.00056	.00268	.00188	.22297
#2	.03519	.00153	.00059	.00277	.00122	.22321
#3	.03428	.00145	.00041	.00242	.00119	.22153
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-t   Acquired: 6/26/2019 18:06:32   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0227	-.00153	4.3826	.00276	.00104	46.195
Stddev	.0051	.00071	.0127	.00000	.00015	1.604
%RSD	.50108	46.548	.29019	.08057	14.340	3.4721
#1	1.0278	-.00226	4.3685	.00275	.00094	44.372
#2	1.0176	-.00147	4.3933	.00276	.00121	47.391
#3	1.0228	-.00084	4.3859	.00275	.00097	46.822
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	84.402	.00132	.01520	.00311	.00237	-.00044
Stddev	1.679	.00006	.00058	.00087	.00080	.00122
%RSD	1.9891	4.2431	3.7851	27.947	33.692	279.01
#1	84.952	.00138	.01585	.00234	.00286	-.00179
#2	82.517	.00128	.01477	.00294	.00145	-.00012
#3	85.736	.00130	.01497	.00405	.00280	.00059
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-t Acquired: 6/26/2019 18:06:32 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00257	.06094	.00085	.00089	.01262	-.00081
Stddev	.00118	.01003	.00005	.00007	.00052	.00131
%RSD	46.112	16.453	6.4706	7.4245	4.1533	160.67
#1	.00211	.06037	.00091	.00087	.01205	.00054
#2	.00391	.05121	.00082	.00096	.01271	-.00091
#3	.00168	.07124	.00081	.00084	.01309	-.00207
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00376	.00192
Stddev	.00016	.00002
%RSD	4.3665	.84399
#1	.00364	.00193
#2	.00369	.00190
#3	.00395	.00192
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-1-t   Acquired: 6/26/2019 18:06:32   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12959.	147100.	13652.
Stddev	32.	1026.	24.
%RSD	.24808	.69712	.17720
#1	12930.	145920.	13626.
#2	12954.	147700.	13655.
#3	12994.	147690.	13675.

Sample Name: 140-15390-a-2-g Acquired: 6/26/2019 18:11:49 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00020	.35216	.00327	.00401	.01723	.00000
Stddev	.00020	.01341	.00086	.00044	.00017	.00000
%RSD	99.922	3.8094	26.250	11.073	.95966	51.190
#1	-.00037	.33910	.00419	.00360	.01741	.00000
#2	-.00026	.35147	.00250	.00396	.01708	.00000
#3	.00002	.36590	.00311	.00448	.01720	.00000
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04636	.00152	.00037	.00308	.00098	1.0264
Stddev	.00104	.00002	.00008	.00011	.00030	.0016
%RSD	2.2377	1.3441	22.702	3.6293	30.491	.15558
#1	.04517	.00150	.00038	.00296	.00131	1.0279
#2	.04708	.00152	.00044	.00318	.00092	1.0266
#3	.04684	.00154	.00027	.00310	.00072	1.0248
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-2-g Acquired: 6/26/2019 18:11:49 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0280	-.00049	3.5610	.01705	.01608	44.606
Stddev	.0028	.00035	.0130	.00010	.00010	1.189
%RSD	.27548	71.623	.36394	.59030	.61064	2.6652
#1	1.0305	-.00041	3.5462	.01710	.01602	44.884
#2	1.0249	-.00019	3.5664	.01712	.01604	45.631
#3	1.0286	-.00088	3.5704	.01694	.01620	43.303
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	78.742	.00154	.04585	.00128	.00296	-.00028
Stddev	.236	.00014	.00177	.00064	.00075	.00052
%RSD	.29979	9.3251	3.8649	49.520	25.446	184.72
#1	78.574	.00150	.04597	.00078	.00234	-.00031
#2	78.641	.00170	.04757	.00200	.00380	-.00079
#3	79.012	.00142	.04403	.00108	.00275	.00026
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-2-g Acquired: 6/26/2019 18:11:49 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00326	.11384	.00081	.00182	.01873	-.00061
Stddev	.00063	.00749	.00018	.00006	.00010	.00089
%RSD	19.321	6.5807	22.801	3.0483	.51916	145.54
#1	.00253	.10736	.00065	.00182	.01865	-.00074
#2	.00361	.11212	.00077	.00176	.01884	-.00144
#3	.00363	.12204	.00101	.00187	.01870	.00033
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00371	.00191
Stddev	.00016	.00004
%RSD	4.3603	1.8525
#1	.00383	.00193
#2	.00352	.00193
#3	.00377	.00187
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-2-g Acquired: 6/26/2019 18:11:49 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12900.	146570.	13687.
Stddev	16.	1100.	62.
%RSD	.12725	.75064	.45306
#1	12882.	145310.	13754.
#2	12903.	147070.	13676.
#3	12914.	147330.	13631.

Sample Name: 140-15390-a-3-g   Acquired: 6/26/2019 18:16:59   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00021	.58298	.00216	.00323	.01109	.00018
Stddev	.00018	.00880	.00074	.00016	.00017	.00002
%RSD	88.782	1.5087	34.302	5.0428	1.5068	9.3094
#1	.00031	.57350	.00292	.00319	.01128	.00016
#2	.00032	.58456	.00144	.00341	.01096	.00019
#3	-.00001	.59088	.00213	.00309	.01102	.00017
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04622	.00138	.00142	.00391	.00184	1.8025
Stddev	.00181	.00006	.00003	.00027	.00011	.0035
%RSD	3.9166	4.5172	2.1553	7.0167	5.8232	.19490
#1	.04716	.00140	.00145	.00359	.00193	1.7985
#2	.04737	.00131	.00139	.00411	.00186	1.8050
#3	.04413	.00142	.00141	.00401	.00172	1.8040
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-3-g Acquired: 6/26/2019 18:16:59 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0265	-.00072	7.2210	.07228	.00173	69.368
Stddev	.0181	.00001	.0303	.00022	.00005	1.814
%RSD	1.7634	.97259	.41993	.30811	3.0823	2.6154
#1	1.0067	-.00072	7.1873	.07220	.00176	67.507
#2	1.0305	-.00072	7.2460	.07210	.00176	69.464
#3	1.0423	-.00071	7.2298	.07253	.00167	71.132
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	119.73	.00129	.14069	.00570	.00624	-.00058
Stddev	.70	.00007	.00082	.00064	.00104	.00021
%RSD	.58505	5.7102	.58272	11.157	16.603	35.960
#1	119.78	.00130	.14107	.00598	.00699	-.00050
#2	120.40	.00120	.13975	.00615	.00668	-.00081
#3	119.00	.00135	.14126	.00497	.00506	-.00042
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-3-g Acquired: 6/26/2019 18:16:59 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00165	.10515	.00083	.00098	.02077	.00066
Stddev	.00246	.00612	.00027	.00015	.00046	.00021
%RSD	149.23	5.8200	31.941	14.815	2.2225	31.414
#1	.00147	.09864	.00082	.00115	.02059	.00042
#2	-.00072	.11079	.00057	.00092	.02043	.00078
#3	.00419	.10602	.00110	.00088	.02130	.00078
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00539	.00207
Stddev	.00031	.00004
%RSD	5.7418	1.9317
#1	.00565	.00205
#2	.00547	.00211
#3	.00504	.00204
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-3-g Acquired: 6/26/2019 18:16:59 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12754.	144740.	13571.
Stddev	33.	385.	34.
%RSD	.26172	.26594	.24820
#1	12717.	144480.	13605.
#2	12767.	145190.	13538.
#3	12780.	144560.	13571.

Sample Name: 140-15390-a-4-g Acquired: 6/26/2019 18:22:17 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00037	.80905	.00607	.00391	.01503	.00011
Stddev	.00029	.00667	.00186	.00027	.00009	.00001
%RSD	78.422	.82503	30.615	6.9661	.61887	6.7597
#1	.00058	.80181	.00647	.00397	.01511	.00011
#2	.00004	.81037	.00404	.00415	.01493	.00010
#3	.00048	.81496	.00769	.00361	.01505	.00012
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20184	.00146	.00121	.01295	.00257	2.8173
Stddev	.00205	.00005	.00005	.00021	.00030	.0079
%RSD	1.0176	3.1289	4.1475	1.6087	11.851	.28128
#1	.20044	.00148	.00118	.01289	.00281	2.8203
#2	.20420	.00141	.00119	.01279	.00268	2.8083
#3	.20089	.00149	.00127	.01319	.00223	2.8233
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-g   Acquired: 6/26/2019 18:22:17   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0448	-.00179	5.7312	.09787	.00491	51.209
Stddev	.0025	.00115	.0162	.00009	.00007	2.662
%RSD	.23700	64.574	.28307	.09144	1.3380	5.1977
#1	1.0420	-.00310	5.7152	.09794	.00499	52.912
#2	1.0459	-.00134	5.7308	.09776	.00486	52.574
#3	1.0466	-.00092	5.7476	.09790	.00489	48.142
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	89.352	.00130	.13442	.00226	.00356	.00000
Stddev	.676	.00017	.00228	.00116	.00072	.00078
%RSD	.75602	13.013	1.6941	51.552	20.150	65391.
#1	90.076	.00118	.13275	.00332	.00336	-.00053
#2	89.243	.00122	.13701	.00101	.00435	.00090
#3	88.738	.00149	.13350	.00245	.00296	-.00037
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-g   Acquired: 6/26/2019 18:22:17   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00208	.12808	.00110	.00108	.02542	.00034
Stddev	.00084	.00599	.00015	.00003	.00038	.00135
%RSD	40.383	4.6771	13.768	3.0478	1.4835	395.87
#1	.00153	.12993	.00103	.00111	.02534	-.00120
#2	.00167	.13292	.00099	.00105	.02510	.00092
#3	.00305	.12138	.00127	.00109	.02584	.00131
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00830	.00203
Stddev	.00009	.00001
%RSD	1.0350	.53955
#1	.00839	.00203
#2	.00822	.00204
#3	.00830	.00202
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-4-g Acquired: 6/26/2019 18:22:17 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12893.	145890.	13591.
Stddev	49.	1029.	93.
%RSD	.38083	.70519	.68229
#1	12838.	144730.	13504.
#2	12910.	146260.	13581.
#3	12932.	146690.	13689.

Sample Name: mb 140-30481/11-b Acquired: 6/26/2019 18:27:35 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00013	-.00558	.00439	.00332	-.00015	-.00005
Stddev	.00015	.01426	.00054	.00012	.00008	.00002
%RSD	120.70	255.39	12.269	3.4892	52.900	30.822
#1	.00018	.00225	.00500	.00320	-.00014	-.00004
#2	-.00005	.00304	.00399	.00333	-.00023	-.00004
#3	.00024	-.02204	.00417	.00343	-.00008	-.00007
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02362	-.00006	.00003	.00216	.00036	.01298
Stddev	.00067	.00006	.00003	.00021	.00016	.00160
%RSD	2.8228	104.37	85.997	9.5695	45.511	12.354
#1	.02285	-.00000	.00000	.00222	.00017	.01402
#2	.02408	-.00005	.00003	.00234	.00047	.01113
#3	.02391	-.00012	.00006	.00193	.00044	.01377
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-30481/11-b   Acquired: 6/26/2019 18:27:35   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02238	-.00163	.02228	.00011	-.00043	.99149
Stddev	.01115	.00072	.00995	.00002	.00021	2.3704
%RSD	49.821	44.158	44.658	13.740	48.187	239.07
#1	.02307	-.00142	.02130	.00012	-.00019	1.4327
#2	.01091	-.00104	.01286	.00009	-.00055	-1.5685
#3	.03318	-.00243	.03269	.00012	-.00054	3.1103
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.09635	.00019	.02329	-.00069	.00163	-.00158
Stddev	.00745	.00012	.00140	.00095	.00021	.00044
%RSD	7.7354	63.433	6.0252	138.26	12.660	27.626
#1	.10496	.00029	.02193	.00041	.00140	-.00155
#2	.09212	.00023	.02473	-.00127	.00169	-.00202
#3	.09198	.00006	.02322	-.00120	.00181	-.00115
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-30481/11-b Acquired: 6/26/2019 18:27:35 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .00945	.00178	.00389	.00008	-.00049	-.00436
Stddev	.00155	.01000	.00030	.00004	.00039	.00093
%RSD	16.372	560.40	7.5969	50.462	80.500	21.260
#1	.00846	.00193	.00366	.00007	-.00007	-.00332
#2	.01124	.01171	.00379	.00012	-.00054	-.00508
#3	.00867	-.00829	.00422	.00004	-.00086	-.00469
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	.00750					
Low Limit	-.00750					

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00037	.00153
Stddev	.00013	.00002
%RSD	36.217	1.4749
#1	-.00042	.00151
#2	-.00022	.00152
#3	-.00047	.00156
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: mb 140-30481/11-b   Acquired: 6/26/2019 18:27:35   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12869.	148380.	13913.
Stddev	30.	811.	106.
%RSD	.23159	.54660	.75833
#1	12837.	147690.	13860.
#2	12895.	148190.	14035.
#3	12876.	149270.	13845.

Sample Name: lcs 140-30481/12-b Acquired: 6/26/2019 18:32:44 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04884	1.9333	.10730	.98504	.09723	.05220
Stddev	.00017	.0060	.00096	.00186	.00030	.00010
%RSD	.35087	.31145	.89365	.18865	.30614	.18940
#1	.04864	1.9396	.10620	.98328	.09744	.05219
#2	.04898	1.9275	.10772	.98485	.09689	.05211
#3	.04889	1.9328	.10797	.98698	.09736	.05231
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.499	.05089	.09955	.19632	.24535	1.0020
Stddev	.305	.00009	.00014	.00042	.00079	.0063
%RSD	.61541	.18065	.14559	.21578	.32384	.62867
#1	49.763	.05083	.09972	.19588	.24605	1.0056
#2	49.166	.05099	.09945	.19637	.24552	.99469
#3	49.569	.05084	.09948	.19672	.24449	1.0056
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcs 140-30481/12-b Acquired: 6/26/2019 18:32:44 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.460	.10010	9.7423	.09975	.50242	F 32.120
Stddev	.276	.00084	.0610	.00033	.00173	.307
%RSD	.55794	.84230	.62608	.32798	.34392	.95478
#1	49.569	.09980	9.8099	.09953	.50099	32.280
#2	49.146	.10105	9.6913	.09960	.50434	32.314
#3	49.664	.09945	9.7256	.10013	.50192	31.767
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value						50.000
Range						-20.000%

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.730	.50190	5.2360	.09750	.10001	.49437
Stddev	.229	.00108	.0035	.00036	.00095	.00158
%RSD	.46035	.21548	.06726	.36438	.95348	.31992
#1	49.919	.50134	5.2376	.09770	.09953	.49255
#2	49.476	.50314	5.2385	.09772	.10111	.49545
#3	49.796	.50121	5.2320	.09709	.09939	.49510
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcs 140-30481/12-b   Acquired: 6/26/2019 18:32:44   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .00977	4.6770	.49561	.48471	.10214	.36469
Stddev	.00150	.0302	.00094	.00147	.00032	.00097
%RSD	15.308	.64680	.19029	.30351	.31254	.26693
#1	.00910	4.6887	.49585	.48547	.10185	.36576
#2	.00872	4.6427	.49640	.48302	.10248	.36386
#3	.01148	4.6997	.49456	.48566	.10208	.36447
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value	.15000					
Range	-20.000%					

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.19443	.49359
Stddev	.00011	.00097
%RSD	.05746	.19742
#1	.19441	.49303
#2	.19433	.49471
#3	.19455	.49302
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: lcs 140-30481/12-b Acquired: 6/26/2019 18:32:44 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12739.	146560.	14033.
Stddev	28.	895.	185.
%RSD	.21778	.61056	1.3174
#1	12722.	145610.	13870.
#2	12725.	147390.	14234.
#3	12771.	146680.	13994.

Sample Name: lcsd 140-30481/13-b Acquired: 6/26/2019 18:37:38 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05050	2.0066	.11206	1.0169	.10039	.05414
Stddev	.00022	.0201	.00132	.0007	.00008	.00010
%RSD	.44212	1.0024	1.1781	.06510	.07538	.18403
#1	.05045	1.9834	.11310	1.0177	.10046	.05404
#2	.05074	2.0180	.11252	1.0164	.10030	.05423
#3	.05031	2.0185	.11058	1.0168	.10040	.05416
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.202	.05269	.10301	.20380	.25418	1.0276
Stddev	.027	.00008	.00019	.00015	.00037	.0029
%RSD	.05463	.15074	.18368	.07427	.14743	.27893
#1	50.172	.05277	.10285	.20367	.25461	1.0256
#2	50.227	.05262	.10322	.20397	.25393	1.0263
#3	50.206	.05268	.10296	.20375	.25399	1.0309
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcsd 140-30481/13-b Acquired: 6/26/2019 18:37:38 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.130	.10304	9.8672	.10288	.53387	F 30.311
Stddev	.095	.00164	.0350	.00015	.00013	1.149
%RSD	.18934	1.5878	.35431	.14251	.02410	3.7900
#1	50.143	.10473	9.8355	.10272	.53379	31.082
#2	50.218	.10291	9.9047	.10301	.53402	30.859
#3	50.030	.10147	9.8614	.10290	.53381	28.990
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value						50.000
Range						-20.000%

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.324	.52034	5.5622	.10026	.10300	.52171
Stddev	.056	.00047	.0032	.00196	.00204	.00392
%RSD	.11193	.09019	.05823	1.9585	1.9843	.75106
#1	50.342	.52043	5.5648	.10252	.10322	.52322
#2	50.260	.51983	5.5633	.09916	.10085	.52464
#3	50.368	.52075	5.5586	.09908	.10492	.51726
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcsd 140-30481/13-b   Acquired: 6/26/2019 18:37:38   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F .01058	4.9613	.52542	.49951	.10782	.37407
Stddev	.00099	.0098	.00160	.00038	.00062	.00116
%RSD	9.3826	.19778	.30374	.07633	.57219	.30935
#1	.01005	4.9558	.52723	.49984	.10751	.37389
#2	.01172	4.9554	.52420	.49909	.10853	.37531
#3	.00997	4.9726	.52483	.49960	.10742	.37302
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value	.15000					
Range	-20.000%					

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20261	.50949
Stddev	.00057	.00110
%RSD	.28032	.21501
#1	.20200	.51033
#2	.20313	.50989
#3	.20269	.50825
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: lcsd 140-30481/13-b Acquired: 6/26/2019 18:37:38 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12835.	147990.	14019.
Stddev	43.	582.	75.
%RSD	.33368	.39346	.53340
#1	12786.	147510.	13940.
#2	12858.	147840.	14026.
#3	12862.	148640.	14089.

Sample Name: 140-15377-a-1-j Acquired: 6/26/2019 18:42:32 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00012	8.2487	.00972	.01129	.11350	.00094
Stddev	.00020	.0150	.00072	.00077	.00014	.00000
%RSD	172.62	.18156	7.4493	6.8125	.12462	.11612
#1	-.00022	8.2436	.00891	.01172	.11362	.00094
#2	-.00025	8.2655	.01031	.01173	.11354	.00094
#3	.00012	8.2369	.00994	.01040	.11335	.00094
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.4314	.00056	.00267	.01463	.00418	7.7689
Stddev	.0035	.00001	.00003	.00016	.00004	.0140
%RSD	.14404	1.8870	1.2600	1.1098	1.0136	.18009
#1	2.4277	.00056	.00265	.01453	.00414	7.7597
#2	2.4318	.00057	.00265	.01454	.00423	7.7620
#3	2.4347	.00055	.00271	.01482	.00418	7.7850
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-1-j Acquired: 6/26/2019 18:42:32 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.79369	.00275	1.2946	.03299	.00048	2.8466
Stddev	.01977	.00058	.0126	.00006	.00003	1.2250
%RSD	2.4911	21.128	.97262	.19192	6.1684	43.035
#1	.77329	.00229	1.2957	.03298	.00048	4.2055
#2	.81277	.00257	1.2815	.03305	.00050	1.8271
#3	.79502	.00341	1.3066	.03292	.00045	2.5071
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.7879	.00729	.08492	.00955	.01095	-.00253
Stddev	.0163	.00011	.00127	.00126	.00033	.00155
%RSD	.28225	1.4654	1.4927	13.159	2.9970	61.021
#1	5.7692	.00728	.08463	.00849	.01057	-.00075
#2	5.7993	.00719	.08383	.01094	.01117	-.00335
#3	5.7952	.00740	.08631	.00922	.01111	-.00351
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-1-j Acquired: 6/26/2019 18:42:32 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00812	9.6714	.00324	.03009	.00261	-.00416
Stddev	.00036	.0083	.00009	.00019	.00070	.00038
%RSD	4.4311	.08637	2.7179	.63200	26.725	9.1737
#1	.00817	9.6810	.00319	.02997	.00200	-.00399
#2	.00845	9.6674	.00334	.03031	.00337	-.00460
#3	.00774	9.6658	.00318	.03000	.00246	-.00390
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02337	.01036
Stddev	.00016	.00005
%RSD	.69554	.44178
#1	.02319	.01034
#2	.02351	.01033
#3	.02341	.01041
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-1-j   Acquired: 6/26/2019 18:42:32   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13630.	157120.	14634.
Stddev	20.	718.	125.
%RSD	.14724	.45698	.85671
#1	13609.	156840.	14589.
#2	13631.	156590.	14776.
#3	13649.	157940.	14538.

Sample Name: 140-15377-a-2-j Acquired: 6/26/2019 18:47:37 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00024	2.1965	.00510	.00508	.01388	.00017
Stddev	.00029	.0067	.00014	.00031	.00016	.00001
%RSD	120.26	.30613	2.6926	6.0343	1.1419	4.0296
#1	.00015	2.1974	.00526	.00532	.01398	.00017
#2	.00056	2.1894	.00500	.00520	.01370	.00016
#3	.00001	2.2028	.00505	.00474	.01396	.00017
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.35472	.00011	.00129	.00758	.00172	3.3180
Stddev	.00150	.00006	.00003	.00016	.00017	.0106
%RSD	.42247	56.662	2.4179	2.1238	9.9845	.31942
#1	.35603	.00007	.00126	.00747	.00174	3.3102
#2	.35505	.00019	.00129	.00776	.00189	3.3136
#3	.35309	.00008	.00132	.00750	.00154	3.3300
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-2-j   Acquired: 6/26/2019 18:47:37   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.35699	-.00139	.69489	.01573	-.00009	4.7590
Stddev	.01825	.00176	.00968	.00004	.00012	1.6512
%RSD	5.1111	126.34	1.3933	.23244	131.14	34.696
#1	.37126	-.00060	.68377	.01569	-.00018	6.5134
#2	.33643	-.00341	.69946	.01576	.00004	3.2353
#3	.36327	-.00017	.70144	.01574	-.00013	4.5284
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.8898	.00268	.07191	.00160	.00389	-.00286
Stddev	.0026	.00003	.00170	.00114	.00097	.00039
%RSD	.04398	.99683	2.3687	71.264	25.061	13.623
#1	5.8907	.00270	.07335	.00269	.00278	-.00276
#2	5.8869	.00265	.07236	.00041	.00429	-.00329
#3	5.8918	.00269	.07003	.00170	.00460	-.00253
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-2-j   Acquired: 6/26/2019 18:47:37   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00713	3.5588	.00322	.00513	.00389	-.00373
Stddev	.00118	.0222	.00020	.00007	.00038	.00133
%RSD	16.551	.62289	6.1480	1.3804	9.7695	35.752
#1	.00577	3.5524	.00299	.00521	.00378	-.00511
#2	.00791	3.5404	.00333	.00507	.00358	-.00244
#3	.00771	3.5834	.00334	.00511	.00432	-.00365
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.01303	.00458
Stddev	.00013	.00003
%RSD	.99759	.61141
#1	.01288	.00457
#2	.01311	.00461
#3	.01310	.00456
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-2-j Acquired: 6/26/2019 18:47:37 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12962.	149400.	13989.
Stddev	46.	251.	65.
%RSD	.35556	.16780	.46424
#1	12911.	149120.	14057.
#2	13001.	149470.	13927.
#3	12975.	149600.	13985.

Sample Name: 140-15376-a-1-s Acquired: 6/26/2019 18:52:46 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00003	9.2573	.00980	.00803	.14736	.00177
Stddev	.00035	.0870	.00065	.00070	.00062	.00003
%RSD	1077.1	.93959	6.6062	8.7554	.42396	1.5134
#1	-.00013	9.1788	.00970	.00731	.14667	.00174
#2	.00036	9.2423	.00920	.00806	.14753	.00179
#3	-.00033	9.3508	.01049	.00872	.14789	.00177
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.5212	.00059	.00627	.02147	.01303	20.692
Stddev	.0080	.00007	.00004	.00027	.00015	.093
%RSD	.52772	12.251	.65558	1.2390	1.1542	.45171
#1	1.5119	.00067	.00631	.02138	.01306	20.584
#2	1.5261	.00053	.00628	.02127	.01315	20.752
#3	1.5255	.00058	.00623	.02177	.01286	20.739
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-s Acquired: 6/26/2019 18:52:46 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0027	.01427	3.9733	.10539	-.00003	8.1720
Stddev	.0108	.00043	.0226	.00039	.00021	1.7332
%RSD	1.0766	3.0204	.56880	.37081	680.35	21.210
#1	.99047	.01389	3.9502	.10496	-.00026	6.7020
#2	1.0067	.01419	3.9954	.10573	.00016	10.083
#3	1.0109	.01474	3.9744	.10548	.00001	7.7307
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	14.883	.01863	.64723	.02302	.02341	-.00189
Stddev	.068	.00027	.00123	.00198	.00144	.00186
%RSD	.45967	1.4454	.19020	8.6048	6.1539	98.232
#1	14.805	.01848	.64587	.02284	.02236	.00025
#2	14.917	.01894	.64755	.02114	.02282	-.00296
#3	14.929	.01846	.64827	.02509	.02506	-.00297
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-s   Acquired: 6/26/2019 18:52:46   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00989	6.5645	.00474	.01720	.03431	-.00746
Stddev	.00127	.0543	.00024	.00011	.00036	.00058
%RSD	12.869	.82710	4.9582	.61896	1.0568	7.7395
#1	.01120	6.5018	.00490	.01728	.03389	-.00812
#2	.00866	6.5956	.00447	.01723	.03452	-.00720
#3	.00980	6.5961	.00485	.01708	.03452	-.00705
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.04093	.11933
Stddev	.00039	.00005
%RSD	.95877	.03823
#1	.04053	.11937
#2	.04094	.11933
#3	.04131	.11928
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-s Acquired: 6/26/2019 18:52:46 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13128.	152210.	14168.
Stddev	15.	149.	157.
%RSD	.11723	.09777	1.1098
#1	13145.	152380.	14348.
#2	13125.	152130.	14058.
#3	13114.	152120.	14098.

Sample Name: CCV Acquired: 6/26/2019 18:57:50 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.97361	24.667	.49873	1.9722	1.9794	2.0628
Stddev	.00373	.019	.00122	.0037	.0043	.0108
%RSD	.38318	.07712	.24481	.18699	.21785	.52413
#1	.97761	24.688	.50008	1.9714	1.9843	2.0729
#2	.97022	24.663	.49843	1.9689	1.9766	2.0514
#3	.97302	24.650	.49769	1.9762	1.9771	2.0642
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.822	.50072	1.9985	1.9763	1.9718	25.255
Stddev	.073	.00038	.0009	.0040	.0017	.054
%RSD	.15049	.07677	.04679	.20330	.08500	.21359
#1	48.870	.50113	1.9985	1.9759	1.9737	25.307
#2	48.737	.50068	1.9995	1.9725	1.9705	25.258
#3	48.859	.50036	1.9976	1.9805	1.9711	25.200
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/26/2019 18:57:50 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.006	1.9657	49.011	2.0130	2.0070	49.598
Stddev	.156	.0060	.087	.0077	.0019	.238
%RSD	.31776	.30404	.17800	.38337	.09572	.48073
#1	49.185	1.9725	49.058	2.0197	2.0093	49.761
#2	48.898	1.9632	48.910	2.0045	2.0059	49.710
#3	48.936	1.9614	49.064	2.0147	2.0059	49.325
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.238	2.0177	2.1053	.49123	.50062	.50104
Stddev	.126	.0011	.0032	.00436	.00103	.00111
%RSD	.25563	.05406	.15247	.88751	.20648	.22216
#1	49.353	2.0190	2.1082	.49027	.49969	.50051
#2	49.104	2.0170	2.1057	.48742	.50173	.50029
#3	49.256	2.0172	2.1019	.49598	.50045	.50232
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV   Acquired: 6/26/2019 18:57:50   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50280	2.0189	2.0028	1.9813	1.9915	1.0023
Stddev	.00129	.0110	.0001	.0053	.0027	.0020
%RSD	.25693	.54310	.00618	.26804	.13464	.19532
#1	.50410	2.0223	2.0029	1.9871	1.9943	1.0017
#2	.50152	2.0066	2.0027	1.9804	1.9911	1.0007
#3	.50278	2.0278	2.0027	1.9766	1.9890	1.0045
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	1.9703	1.9907
Stddev	.0034	.0011
%RSD	.17348	.05732
#1	1.9719	1.9920
#2	1.9664	1.9902
#3	1.9727	1.9900
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 6/26/2019 18:57:50 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12567.	143460.	13398.
Stddev	83.	1159.	60.
%RSD	.66189	.80799	.44821
#1	12478.	142150.	13372.
#2	12581.	144340.	13466.
#3	12643.	143880.	13355.

Sample Name: CCB Acquired: 6/26/2019 19:02:51 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00013	-.00410	.00008	.00109	.00005	-.00000
Stddev	.00016	.01480	.00053	.00117	.00005	.00003
%RSD	123.39	361.10	626.81	107.65	102.16	1923.5
#1	.00008	-.01427	.00045	.00231	.00005	.00003
#2	-.00000	-.01090	.00033	.00098	-.00000	-.00000
#3	.00032	.01288	-.00052	-.00003	.00009	-.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00066	-.00003	.00003	.00001	.00020	.00077
Stddev	.00085	.00003	.00003	.00021	.00023	.00201
%RSD	129.89	114.18	126.31	3354.0	114.98	260.09
#1	.00017	-.00006	.00006	.00025	.00038	.00304
#2	-.00153	-.00001	-.00001	-.00013	.00027	-.00078
#3	-.00060	-.00001	.00003	-.00010	-.00006	.00006
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/26/2019 19:02:51 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02882	-.00114	.00729	-.00002	-.00014	.70460
Stddev	.02156	.00105	.00711	.00006	.00007	2.2511
%RSD	74.838	92.305	97.626	297.50	47.568	319.49
#1	.02410	-.00049	.01537	.00004	-.00007	3.2943
#2	.01000	-.00058	.00450	-.00003	-.00020	-.78414
#3	.05235	-.00236	.00198	-.00007	-.00015	-.39633
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00418	-.00014	-.00045	.00232	.00067	-.00129
Stddev	.00558	.00009	.00114	.00214	.00091	.00045
%RSD	133.34	65.320	254.59	92.135	135.46	35.013
#1	-.00266	-.00010	-.00134	.00479	.00033	-.00179
#2	.00047	-.00007	.00084	.00124	-.00001	-.00113
#3	-.01037	-.00024	-.00086	.00094	.00171	-.00094
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/26/2019 19:02:51 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00109	.00375	.00020	.00001	.00018	.00056
Stddev	.00127	.00126	.00030	.00010	.00006	.00095
%RSD	116.59	33.454	148.26	1935.4	31.172	169.01
#1	-.00016	.00279	.00055	.00003	.00018	.00126
#2	.00105	.00517	.00009	.00009	.00013	-.00052
#3	.00238	.00330	-.00002	-.00011	.00024	.00095
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00018	-.00006
Stddev	.00005	.00008
%RSD	29.297	132.19
#1	-.00024	.00003
#2	-.00015	-.00009
#3	-.00015	-.00012
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/26/2019 19:02:51 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12879.	146100.	13503.
Stddev	67.	362.	153.
%RSD	.52133	.24752	1.1305
#1	12801.	145710.	13609.
#2	12910.	146420.	13572.
#3	12924.	146190.	13328.

Sample Name: 140-15376-a-1-t du Acquired: 6/26/2019 19:08:03 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00021	10.088	.00975	.00829	.15475	.00184
Stddev	.00022	.031	.00024	.00047	.00032	.00001
%RSD	100.97	.30936	2.5094	5.6724	.20363	.66380
#1	.00005	10.073	.00952	.00860	.15443	.00184
#2	.00013	10.124	.01001	.00852	.15476	.00182
#3	.00046	10.068	.00973	.00775	.15506	.00184
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.3414	.00055	.00682	.02230	.01471	21.011
Stddev	.0077	.00004	.00006	.00029	.00020	.064
%RSD	.57307	6.7661	.90128	1.2924	1.3556	.30326
#1	1.3352	.00059	.00675	.02223	.01494	20.938
#2	1.3500	.00055	.00686	.02261	.01456	21.041
#3	1.3390	.00051	.00684	.02204	.01464	21.055
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-t du Acquired: 6/26/2019 19:08:03 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0981	.01702	4.2140	.09155	.00010	8.0883
Stddev	.0083	.00067	.0267	.00009	.00013	1.2599
%RSD	.75470	3.9285	.63463	.09662	123.80	15.576
#1	1.1075	.01629	4.1946	.09144	.00012	8.7330
#2	1.0918	.01718	4.2445	.09160	-.00003	8.8953
#3	1.0950	.01759	4.2028	.09160	.00022	6.6366
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	14.261	.01896	.57595	.02191	.02331	-.00077
Stddev	.055	.00020	.00270	.00111	.00040	.00119
%RSD	.38443	1.0565	.46911	5.0778	1.7185	154.41
#1	14.200	.01919	.57501	.02299	.02372	.00033
#2	14.306	.01882	.57384	.02077	.02328	-.00060
#3	14.276	.01887	.57899	.02195	.02292	-.00203
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-t du   Acquired: 6/26/2019 19:08:03   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01067	6.6572	.00506	.01772	.03375	-.00723
Stddev	.00104	.0165	.00017	.00002	.00054	.00081
%RSD	9.6972	.24840	3.2684	.13463	1.6099	11.205
#1	.01172	6.6641	.00516	.01769	.03418	-.00631
#2	.00965	6.6692	.00515	.01774	.03314	-.00755
#3	.01065	6.6383	.00487	.01772	.03394	-.00784
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.04304	.12638
Stddev	.00044	.00008
%RSD	1.0173	.06592
#1	.04278	.12628
#2	.04281	.12642
#3	.04355	.12642
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-t du   Acquired: 6/26/2019 19:08:03   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13373.	155010.	14560.
Stddev	27.	659.	166.
%RSD	.20031	.42526	1.1381
#1	13351.	154940.	14611.
#2	13367.	154390.	14375.
#3	13403.	155700.	14694.

Sample Name: 140-15376-a-2-j Acquired: 6/26/2019 19:13:06 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00070	15.624	.01692	.01649	.19297	.00286
Stddev	.00011	.042	.00051	.00043	.00049	.00002
%RSD	15.480	.26778	2.9899	2.6044	.25353	.69941
#1	-.00080	15.656	.01662	.01691	.19324	.00284
#2	-.00071	15.639	.01663	.01605	.19326	.00285
#3	-.00059	15.577	.01750	.01650	.19241	.00288
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.28657	.00052	.01003	.02260	.03011	33.678
Stddev	.00164	.00004	.00019	.00033	.00020	.017
%RSD	.57315	8.3332	1.8721	1.4680	.67206	.05192
#1	.28683	.00047	.01014	.02299	.03016	33.666
#2	.28807	.00056	.00981	.02243	.03028	33.698
#3	.28482	.00052	.01013	.02240	.02988	33.670
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-j Acquired: 6/26/2019 19:13:06 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.71974	.00423	2.0439	.07570	.00030	6.1625
Stddev	.03035	.00082	.0118	.00004	.00015	1.5409
%RSD	4.2162	19.335	.57754	.04954	49.174	25.005
#1	.73317	.00330	2.0503	.07569	.00043	4.4146
#2	.74105	.00452	2.0512	.07574	.00033	7.3248
#3	.68499	.00486	2.0303	.07567	.00014	6.7480
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	13.020	.01894	.38930	.02978	.03342	-.00264
Stddev	.026	.00016	.00144	.00073	.00086	.00090
%RSD	.19789	.85279	.36994	2.4673	2.5705	34.271
#1	13.050	.01876	.38969	.03008	.03254	-.00326
#2	13.007	.01906	.38771	.03031	.03347	-.00160
#3	13.004	.01900	.39051	.02894	.03425	-.00305
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-j   Acquired: 6/26/2019 19:13:06   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00852	8.1506	.00492	.01436	.01491	-.00875
Stddev	.00060	.0243	.00012	.00008	.00037	.00183
%RSD	7.0768	.29837	2.4343	.58783	2.4862	20.874
#1	.00857	8.1763	.00500	.01441	.01520	-.01044
#2	.00789	8.1279	.00478	.01441	.01449	-.00899
#3	.00910	8.1477	.00497	.01426	.01505	-.00682
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.04568	.12187
Stddev	.00012	.00012
%RSD	.27146	.10066
#1	.04582	.12196
#2	.04559	.12192
#3	.04563	.12173
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-2-j Acquired: 6/26/2019 19:13:06 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13231.	153390.	14411.
Stddev	30.	686.	129.
%RSD	.22431	.44742	.89751
#1	13197.	152600.	14268.
#2	13249.	153730.	14445.
#3	13248.	153840.	14521.

Sample Name: 140-15376-a-3-j Acquired: 6/26/2019 19:18:10 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00330	27.802	.02964	.02565	.22344	.00382
Stddev	.00017	.028	.00020	.00072	.00048	.00002
%RSD	5.1418	.09999	.68703	2.8039	.21350	.58273
#1	-.00311	27.833	.02950	.02484	.22354	.00384
#2	-.00344	27.779	.02954	.02589	.22386	.00380
#3	-.00336	27.794	.02987	.02621	.22292	.00380
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.43428	.00090	.54939	.04478	.04367	53.146
Stddev	.00198	.00005	.00092	.00031	.00006	.075
%RSD	.45678	5.1456	.16805	.68769	.12684	.14106
#1	.43294	.00086	.55035	.04507	.04363	53.079
#2	.43335	.00095	.54931	.04480	.04373	53.132
#3	.43656	.00090	.54850	.04446	.04364	53.227
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-3-j Acquired: 6/26/2019 19:18:10 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.5485	.06081	1.9482	1.5135	.00279	9.1422
Stddev	.0241	.00071	.0187	.0015	.00007	1.1970
%RSD	.43361	1.1650	.96223	.10130	2.4794	13.093
#1	5.5435	.06126	1.9267	1.5128	.00277	8.0087
#2	5.5273	.06000	1.9570	1.5152	.00287	10.394
#3	5.5746	.06118	1.9610	1.5124	.00273	9.0240
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	19.204	.05914	.43131	.05940	.05924	-.00342
Stddev	.012	.00019	.00024	.00143	.00063	.00040
%RSD	.06380	.31473	.05605	2.4150	1.0556	11.818
#1	19.215	.05918	.43119	.05859	.05984	-.00302
#2	19.191	.05930	.43115	.06105	.05928	-.00344
#3	19.208	.05894	.43159	.05855	.05859	-.00382
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-3-j Acquired: 6/26/2019 19:18:10 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00468	10.505	.00381	.13604	.00728	-.00748
Stddev	.00159	.029	.00018	.00018	.00081	.00231
%RSD	34.016	.27811	4.6426	.13594	11.098	30.887
#1	.00629	10.484	.00376	.13608	.00676	-.01002
#2	.00464	10.493	.00366	.13620	.00687	-.00694
#3	.00311	10.539	.00400	.13584	.00821	-.00550
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.07321	.08848
Stddev	.00023	.00023
%RSD	.31157	.26513
#1	.07324	.08875
#2	.07342	.08838
#3	.07296	.08832
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-3-j   Acquired: 6/26/2019 19:18:10   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13276.	152030.	14001.
Stddev	40.	432.	153.
%RSD	.29851	.28436	1.0940
#1	13231.	151840.	14056.
#2	13303.	151720.	14118.
#3	13295.	152520.	13828.

Sample Name: 140-15390-a-1-i Acquired: 6/26/2019 19:23:14 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00011	4.2739	.00516	.00459	.03771	.00025
Stddev	.00013	.0134	.00074	.00038	.00009	.00001
%RSD	111.18	.31249	14.286	8.2839	.23729	4.4246
#1	-.00021	4.2727	.00600	.00427	.03772	.00026
#2	-.00015	4.2612	.00485	.00450	.03761	.00024
#3	.00003	4.2879	.00463	.00501	.03779	.00024
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.19504	.00009	.00245	.03347	.00277	5.9320
Stddev	.00300	.00004	.00016	.00048	.00034	.0156
%RSD	1.5384	46.346	6.6588	1.4367	12.345	.26312
#1	.19207	.00014	.00234	.03323	.00244	5.9157
#2	.19807	.00008	.00264	.03403	.00274	5.9468
#3	.19498	.00006	.00238	.03316	.00312	5.9334
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-i   Acquired: 6/26/2019 19:23:14   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.15478	.00075	.32334	.00993	.00047	2.4548
Stddev	.03366	.00030	.00322	.00005	.00022	1.3524
%RSD	21.749	40.146	.99689	.54893	46.181	55.094
#1	.11661	.00097	.32254	.00998	.00022	1.0448
#2	.18021	.00086	.32059	.00994	.00056	3.7411
#3	.16753	.00041	.32688	.00987	.00063	2.5785
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.2115	.00308	.06141	.00813	.00890	-.00193
Stddev	.0021	.00027	.00020	.00041	.00099	.00073
%RSD	.04919	8.6761	.32267	4.9908	11.170	37.783
#1	4.2139	.00316	.06119	.00772	.00924	-.00110
#2	4.2107	.00330	.06157	.00815	.00967	-.00223
#3	4.2100	.00278	.06147	.00853	.00778	-.00247
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-i Acquired: 6/26/2019 19:23:14 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00818	3.3786	.00366	.00444	.01002	-.00411
Stddev	.00042	.0188	.00014	.00003	.00071	.00240
%RSD	5.1019	.55690	3.8819	.73593	7.0799	58.545
#1	.00782	3.3965	.00358	.00441	.00923	-.00484
#2	.00807	3.3803	.00382	.00444	.01023	-.00142
#3	.00864	3.3590	.00357	.00447	.01060	-.00605
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02431	.00612
Stddev	.00007	.00003
%RSD	.27499	.44577
#1	.02438	.00615
#2	.02431	.00610
#3	.02425	.00612
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-1-i   Acquired: 6/26/2019 19:23:14   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13180.	151620.	14139.
Stddev	42.	511.	155.
%RSD	.31907	.33669	1.0931
#1	13141.	151550.	14288.
#2	13175.	151150.	13979.
#3	13224.	152170.	14150.

Sample Name: 140-15390-a-2-i Acquired: 6/26/2019 19:28:22 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00001	5.5825	.01077	.00759	.05060	.00006
Stddev	.00024	.0298	.00063	.00020	.00019	.00001
%RSD	1957.5	.53376	5.8628	2.6798	.36819	12.080
#1	.00012	5.5481	.01007	.00783	.05043	.00005
#2	.00013	5.6005	.01092	.00749	.05057	.00006
#3	-.00029	5.5988	.01131	.00746	.05080	.00007
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20671	.00000	.00093	.01069	.00358	8.6916
Stddev	.00086	.00004	.00009	.00009	.00022	.0296
%RSD	.41785	1520.8	9.5593	.86439	6.1393	.34046
#1	.20620	.00003	.00092	.01067	.00377	8.6576
#2	.20623	.00002	.00085	.01079	.00364	8.7061
#3	.20771	-.00004	.00103	.01061	.00334	8.7112
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-2-i Acquired: 6/26/2019 19:28:22 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20959	.01439	.32434	.02214	.00849	2.3304
Stddev	.03260	.00003	.00615	.00003	.00024	.7790
%RSD	15.554	.22830	1.8967	.15219	2.8598	33.425
#1	.18518	.01437	.31919	.02215	.00824	1.4644
#2	.24661	.01443	.33115	.02210	.00873	2.9739
#3	.19699	.01438	.32268	.02216	.00849	2.5530
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.1283	.00215	.11925	.00453	.00602	-.00132
Stddev	.0091	.00012	.00087	.00089	.00058	.00048
%RSD	.29067	5.3597	.72764	19.658	9.6949	36.354
#1	3.1278	.00206	.11860	.00532	.00613	-.00167
#2	3.1376	.00228	.12023	.00472	.00539	-.00152
#3	3.1194	.00212	.11892	.00356	.00654	-.00077
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-2-i Acquired: 6/26/2019 19:28:22 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01269	4.2659	.00545	.00591	.01369	-.00815
Stddev	.00081	.0088	.00030	.00009	.00046	.00102
%RSD	6.3757	.20727	5.4978	1.5732	3.3592	12.540
#1	.01352	4.2671	.00515	.00587	.01371	-.00923
#2	.01190	4.2566	.00575	.00602	.01322	-.00800
#3	.01264	4.2741	.00545	.00584	.01414	-.00720
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02054	.00646
Stddev	.00021	.00000
%RSD	1.0228	.05965
#1	.02030	.00646
#2	.02069	.00646
#3	.02063	.00647
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-2-i Acquired: 6/26/2019 19:28:22 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13104.	152720.	14284.
Stddev	22.	515.	143.
%RSD	.16864	.33753	1.0012
#1	13086.	152180.	14441.
#2	13097.	152770.	14249.
#3	13129.	153210.	14162.

Sample Name: 140-15390-a-3-i   Acquired: 6/26/2019 19:33:29   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00018	9.1358	.00636	.00704	.08843	.00036
Stddev	.00028	.0296	.00082	.00012	.00022	.00001
%RSD	158.72	.32378	12.963	1.7647	.24318	3.8136
#1	-.00046	9.1342	.00581	.00717	.08826	.00035
#2	.00010	9.1661	.00730	.00692	.08867	.00036
#3	-.00017	9.1070	.00596	.00703	.08837	.00038
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.21854	.00018	.00314	.01319	.00622	11.639
Stddev	.00131	.00005	.00007	.00021	.00023	.032
%RSD	.59873	26.648	2.2863	1.5861	3.6280	.27401
#1	.21973	.00018	.00306	.01319	.00639	11.675
#2	.21875	.00023	.00315	.01299	.00596	11.614
#3	.21714	.00013	.00320	.01341	.00630	11.627
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-3-i Acquired: 6/26/2019 19:33:29 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.39220	.00380	.91167	.08029	.00057	4.5485
Stddev	.02735	.00073	.01132	.00012	.00007	1.0968
%RSD	6.9741	19.316	1.2411	.15081	11.951	24.113
#1	.42090	.00310	.92315	.08021	.00062	5.8089
#2	.38925	.00373	.90053	.08023	.00059	4.0262
#3	.36643	.00457	.91131	.08043	.00049	3.8105
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	8.3058	.00607	.15534	.01877	.01868	-.00076
Stddev	.0223	.00023	.00088	.00138	.00113	.00082
%RSD	.26868	3.7503	.56513	7.3391	6.0246	108.56
#1	8.2935	.00633	.15599	.01724	.01858	-.00031
#2	8.3316	.00595	.15569	.01916	.01985	-.00170
#3	8.2924	.00592	.15434	.01991	.01760	-.00025
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-3-i   Acquired: 6/26/2019 19:33:29   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00840	6.6028	.00377	.00604	.01306	-.00451
Stddev	.00056	.0093	.00025	.00008	.00018	.00068
%RSD	6.6532	.14052	6.5313	1.3094	1.3616	15.076
#1	.00836	6.6031	.00404	.00595	.01324	-.00481
#2	.00786	6.6120	.00372	.00609	.01304	-.00499
#3	.00898	6.5934	.00356	.00607	.01289	-.00373
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02212	.01924
Stddev	.00023	.00004
%RSD	1.0543	.20266
#1	.02187	.01925
#2	.02233	.01920
#3	.02217	.01928
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-3-i Acquired: 6/26/2019 19:33:29 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13082.	151360.	13990.
Stddev	40.	162.	155.
%RSD	.30906	.10686	1.1081
#1	13045.	151230.	13826.
#2	13077.	151540.	14012.
#3	13125.	151320.	14134.

Sample Name: 140-15390-a-4-i   Acquired: 6/26/2019 19:38:33   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00005	10.276	.01428	.00536	.06596	.00031
Stddev	.00014	.022	.00076	.00008	.00009	.00001
%RSD	280.94	.21265	5.3049	1.5552	.13210	4.1678
#1	.00020	10.301	.01505	.00535	.06592	.00032
#2	-.00006	10.268	.01425	.00529	.06591	.00030
#3	.00001	10.260	.01353	.00545	.06606	.00031
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20021	.00003	.00230	.01977	.00689	10.640
Stddev	.00336	.00001	.00005	.00033	.00020	.028
%RSD	1.6786	23.395	2.3716	1.6863	2.8838	.26715
#1	.19698	.00003	.00228	.01941	.00709	10.619
#2	.19998	.00003	.00227	.01984	.00669	10.629
#3	.20369	.00002	.00237	.02007	.00687	10.672
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-i Acquired: 6/26/2019 19:38:33 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.30270	.00557	.66142	.07057	.00226	2.9194
Stddev	.02153	.00062	.01065	.00007	.00009	.1599
%RSD	7.1126	11.068	1.6102	.10115	3.7630	5.4760
#1	.27863	.00610	.67054	.07049	.00217	2.9248
#2	.32012	.00573	.64971	.07062	.00228	3.0765
#3	.30935	.00489	.66401	.07059	.00234	2.7569
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.9164	.00501	.21029	.00797	.00894	-.00167
Stddev	.0106	.00015	.00245	.00039	.00067	.00065
%RSD	.21551	2.9039	1.1673	4.9163	7.5351	38.957
#1	4.9251	.00506	.20822	.00779	.00944	-.00237
#2	4.9194	.00484	.20966	.00771	.00817	-.00110
#3	4.9046	.00512	.21300	.00843	.00921	-.00153
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-i   Acquired: 6/26/2019 19:38:33   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01506	7.2702	.00705	.00509	.00736	-.01069
Stddev	.00042	.0082	.00034	.00004	.00072	.00174
%RSD	2.8199	.11221	4.8419	.74876	9.8046	16.326
#1	.01457	7.2671	.00734	.00513	.00683	-.01134
#2	.01528	7.2641	.00715	.00506	.00818	-.01201
#3	.01532	7.2795	.00667	.00508	.00706	-.00871
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.01920	.01458
Stddev	.00021	.00012
%RSD	1.0699	.82531
#1	.01940	.01453
#2	.01922	.01448
#3	.01899	.01471
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-4-i Acquired: 6/26/2019 19:38:33 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13191.	154410.	14450.
Stddev	33.	315.	11.
%RSD	.25217	.20424	.07890
#1	13154.	154050.	14453.
#2	13200.	154590.	14437.
#3	13218.	154600.	14460.

Sample Name: 140-15376-a-1-s SD@5 Acquired: 6/26/2019 19:43:39 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00040	1.9390	.00190	-.00115	.03006	.00030
Stddev	.00016	.0263	.00042	.00082	.00017	.00001
%RSD	40.113	1.3580	21.948	71.558	.55836	3.9328
#1	.00032	1.9286	.00173	-.00209	.03012	.00030
#2	.00059	1.9690	.00238	-.00061	.03019	.00029
#3	.00030	1.9195	.00160	-.00074	.02987	.00031
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.32229	.00004	.00129	.00460	.00275	4.3351
Stddev	.00345	.00003	.00015	.00044	.00017	.0157
%RSD	1.0692	68.953	11.283	9.5152	6.1241	.36240
#1	.32626	.00006	.00127	.00415	.00255	4.3513
#2	.32005	.00001	.00116	.00502	.00284	4.3342
#3	.32055	.00004	.00145	.00462	.00285	4.3199
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-s SD@5 Acquired: 6/26/2019 19:43:39 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.23885	.00176	.82103	.02193	-.00001	4.4037
Stddev	.02636	.00077	.00373	.00003	.00013	.0944
%RSD	11.036	43.624	.45409	.15434	1304.0	2.1438
#1	.22832	.00095	.81901	.02197	-.00009	4.5088
#2	.26884	.00248	.82534	.02190	.00014	4.3761
#3	.21938	.00184	.81876	.02192	-.00008	4.3261
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.0768	.00361	.13469	.00585	.00581	.00007
Stddev	.0069	.00008	.00100	.00225	.00057	.00109
%RSD	.22319	2.1199	.74285	38.464	9.8314	1507.6
#1	3.0846	.00362	.13484	.00487	.00555	-.00075
#2	3.0719	.00369	.13561	.00842	.00647	.00131
#3	3.0738	.00353	.13363	.00425	.00542	-.00035
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-s SD@5 Acquired: 6/26/2019 19:43:39 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00321	1.3500	.00107	.00348	.00654	-.00028
Stddev	.00172	.0185	.00043	.00008	.00005	.00193
%RSD	53.490	1.3680	40.048	2.2425	.77411	684.61
#1	.00516	1.3708	.00152	.00353	.00650	-.00241
#2	.00259	1.3355	.00104	.00353	.00652	.00137
#3	.00189	1.3438	.00066	.00339	.00660	.00019
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00823	.02666
Stddev	.00018	.00007
%RSD	2.1269	.26766
#1	.00843	.02658
#2	.00814	.02670
#3	.00812	.02671
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-s SD@5 Acquired: 6/26/2019 19:43:39 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12843.	146850.	13425.
Stddev	62.	909.	69.
%RSD	.48425	.61884	.51579
#1	12793.	145860.	13346.
#2	12824.	147050.	13477.
#3	12913.	147650.	13452.

Sample Name: mb 140-30529/11-b @5 Acquired: 6/26/2019 19:48:45 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00039	.01443	-.00035	.00055	.00004	-.00010
Stddev	.00034	.00174	.00030	.00056	.00015	.00001
%RSD	86.228	12.030	85.958	101.88	391.63	6.2981
#1	.00001	.01529	-.00006	.00056	.00000	-.00010
#2	.00066	.01558	-.00066	.00110	-.00009	-.00011
#3	.00050	.01244	-.00033	-.00002	.00020	-.00009
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01879	-.00003	-.00036	.00091	.00018	.00234
Stddev	.00065	.00004	.00013	.00022	.00046	.00129
%RSD	3.4747	126.59	35.215	24.618	259.58	55.089
#1	.01894	-.00007	-.00050	.00093	.00068	.00232
#2	.01807	-.00002	-.00033	.00112	.00007	.00364
#3	.01935	.00000	-.00025	.00068	-.00022	.00106
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-30529/11-b @5 Acquired: 6/26/2019 19:48:45 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0134	-.00050	.05975	.00007	.00034	673.25
Stddev	.0262	.00052	.00916	.00003	.00009	3.76
%RSD	2.5830	102.26	15.333	41.614	25.841	.55830
#1	.98378	-.00109	.05800	.00009	.00024	674.09
#2	1.0231	-.00011	.05158	.00008	.00037	669.14
#3	1.0334	-.00032	.06965	.00004	.00042	676.52
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 999.54	-.00030	.00684	.00128	.00115	-.00010
Stddev	4.71	.00013	.00069	.00092	.00109	.00174
%RSD	.47096	43.759	10.116	71.888	94.520	1793.2
#1	995.04	-.00030	.00633	.00061	.00240	-.00205
#2	1004.4	-.00016	.00657	.00090	.00068	.00129
#3	999.15	-.00042	.00763	.00232	.00038	.00046
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: mb 140-30529/11-b @5 Acquired: 6/26/2019 19:48:45 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00040	.09872	.00024	.00001	-.00020	.00102
Stddev	.00101	.01184	.00041	.00014	.00047	.00120
%RSD	251.89	11.996	172.69	2155.2	229.78	118.27
#1	.00030	.10873	.00028	-.00009	.00019	.00228
#2	-.00055	.08565	.00062	.00017	-.00008	.00089
#3	.00147	.10177	-.00019	-.00006	-.00072	-.00012
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00004	.00195
Stddev	.00012	.00005
%RSD	280.12	2.3140
#1	-.00004	.00196
#2	.00017	.00199
#3	-.00000	.00190
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: mb 140-30529/11-b @5 Acquired: 6/26/2019 19:48:45 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	11878.	133040.	12912.
Stddev	19.	1154.	67.
%RSD	.15980	.86751	.51857
#1	11857.	131820.	12877.
#2	11891.	133190.	12869.
#3	11887.	134120.	12989.

Sample Name: lcs 30529/12-b @5 Acquired: 6/26/2019 19:54:04 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01191	.03998	.01697	.22754	.01110	.00569
Stddev	.00022	.01849	.00142	.00130	.00004	.00003
%RSD	1.8888	46.252	8.3497	.57318	.36701	.54505
#1	.01196	.02386	.01559	.22883	.01107	.00573
#2	.01167	.06017	.01691	.22622	.01115	.00568
#3	.01211	.03592	.01842	.22758	.01109	.00567
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.2530	.01159	.00675	.04626	.05166	.00085
Stddev	.0176	.00004	.00011	.00037	.00056	.00130
%RSD	.54170	.31256	1.6567	.79357	1.0747	151.98
#1	3.2705	.01162	.00680	.04643	.05227	.00071
#2	3.2532	.01159	.00682	.04651	.05153	.00222
#3	3.2352	.01155	.00662	.04584	.05118	-.00036
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: lcs 30529/12-b @5   Acquired: 6/26/2019 19:54:04   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	12.136	.02200	1.6635	.00423	.08494	519.39
Stddev	.031	.00068	.0125	.00003	.00012	2.82
%RSD	.25243	3.0767	.75373	.68378	.13990	.54227
#1	12.132	.02227	1.6492	.00426	.08499	517.16
#2	12.168	.02124	1.6725	.00421	.08480	518.46
#3	12.107	.02251	1.6689	.00422	.08501	522.55
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 773.59	.10893	.60285	.01500	.01344	.11438
Stddev	5.62	.00022	.00289	.00080	.00063	.00094
%RSD	.72659	.20092	.47978	5.3191	4.7162	.82037
#1	778.68	.10904	.60300	.01555	.01273	.11529
#2	774.53	.10908	.60566	.01408	.01366	.11342
#3	767.56	.10868	.59988	.01536	.01394	.11441
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: lcs 30529/12-b @5 Acquired: 6/26/2019 19:54:04 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03485	1.1567	.00080	.06774	-.00007	.03366
Stddev	.00074	.0157	.00058	.00019	.00022	.00231
%RSD	2.1171	1.3608	73.044	.27578	331.47	6.8664
#1	.03444	1.1386	.00070	.06788	-.00026	.03365
#2	.03571	1.1665	.00027	.06780	-.00012	.03135
#3	.03442	1.1651	.00143	.06753	.00018	.03597
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02455	.11447
Stddev	.00026	.00034
%RSD	1.0622	.30074
#1	.02485	.11476
#2	.02437	.11457
#3	.02443	.11409
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: lcs 30529/12-b @5 Acquired: 6/26/2019 19:54:04 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12027.	135280.	13043.
Stddev	45.	938.	81.
%RSD	.37699	.69326	.61804
#1	11976.	134210.	12951.
#2	12043.	135700.	13078.
#3	12062.	135940.	13101.

Sample Name: CCV   Acquired: 6/26/2019 19:59:13   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.97128	25.139	.50118	1.9610	1.9708	2.0894
Stddev	.00423	.036	.00227	.0057	.0036	.0195
%RSD	.43587	.14486	.45350	.28927	.18136	.93284
#1	.97565	25.180	.50308	1.9673	1.9746	2.0783
#2	.97099	25.112	.50179	1.9596	1.9703	2.0781
#3	.96720	25.124	.49866	1.9562	1.9675	2.1119
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.483	.50381	1.9865	2.0045	1.9758	25.617
Stddev	.106	.00173	.0088	.0003	.0082	.084
%RSD	.21928	.34402	.44333	.01279	.41389	.32921
#1	48.581	.50566	1.9959	2.0046	1.9847	25.688
#2	48.496	.50355	1.9851	2.0048	1.9739	25.639
#3	48.370	.50223	1.9785	2.0043	1.9687	25.524
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/26/2019 19:59:13 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.829	1.9470	48.820	2.0182	1.9967	49.864
Stddev	.173	.0078	.194	.0054	.0086	2.542
%RSD	.35446	.40264	.39687	.26788	.43228	5.0979
#1	49.023	1.9548	48.926	2.0227	2.0060	52.796
#2	48.772	1.9470	48.937	2.0197	1.9950	48.527
#3	48.690	1.9391	48.596	2.0122	1.9890	48.271
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.930	2.0380	2.1853	.49087	.50555	.50402
Stddev	.092	.0087	.0105	.00162	.00199	.00366
%RSD	.18482	.42906	.48092	.33016	.39329	.72525
#1	50.028	2.0477	2.1952	.48936	.50766	.50823
#2	49.844	2.0352	2.1865	.49258	.50528	.50228
#3	49.919	2.0309	2.1743	.49067	.50371	.50157
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/26/2019 19:59:13 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49461	1.9765	2.0250	1.9853	2.0051	.99289
Stddev	.00644	.0271	.0083	.0056	.0032	.00728
%RSD	1.3025	1.3699	.40822	.28062	.16107	.73311
#1	.50194	1.9857	2.0335	1.9910	2.0086	1.0013
#2	.49204	1.9977	2.0244	1.9850	2.0046	.98830
#3	.48985	1.9460	2.0170	1.9799	2.0022	.98910
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	1.9738	1.9869
Stddev	.0034	.0104
%RSD	.17296	.52443
#1	1.9777	1.9983
#2	1.9715	1.9845
#3	1.9722	1.9779
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 6/26/2019 19:59:13 Type: QC

Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000

User: kerry Custom ID1: Custom ID2: Custom ID3:

Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12444.	143940.	13174.
Stddev	97.	625.	202.
%RSD	.78216	.43415	1.5335
#1	12334.	143260.	12996.
#2	12476.	144080.	13133.
#3	12521.	144490.	13393.

Sample Name: CCB Acquired: 6/26/2019 20:04:15 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00000	-.00160	.00026	.00175	-.00009	-.00008
Stddev	.00022	.01140	.00056	.00153	.00004	.00003
%RSD	15463.	714.31	212.98	87.500	47.479	43.598
#1	-.00019	-.00955	-.00027	.00273	-.00007	-.00005
#2	.00024	.01147	.00021	.00253	-.00006	-.00007
#3	-.00004	-.00670	.00085	-.00001	-.00013	-.00011
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00168	-.00004	.00002	.00010	-.00038	.00080
Stddev	.00121	.00008	.00012	.00030	.00024	.00140
%RSD	71.981	181.13	572.90	311.64	63.758	174.26
#1	-.00281	.00001	-.00009	-.00021	-.00019	.00144
#2	-.00040	-.00014	.00014	.00011	-.00066	-.00080
#3	-.00183	-.00001	.00002	.00039	-.00030	.00178
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/26/2019 20:04:15 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03754	-.00136	.00407	-.00003	.00002	1.8029
Stddev	.01053	.00031	.00784	.00002	.00008	1.2693
%RSD	28.042	22.504	192.70	56.911	386.02	70.402
#1	.04961	-.00124	.00058	-.00001	.00011	1.5057
#2	.03278	-.00114	.01305	-.00004	-.00003	3.1945
#3	.03023	-.00171	-.00142	-.00004	-.00002	.70861
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05247	-.00019	-.00124	F .00326	.00131	.00025
Stddev	.00576	.00012	.00046	.00113	.00096	.00109
%RSD	10.987	62.600	37.271	34.546	72.960	441.39
#1	.05786	-.00019	-.00073	.00310	.00024	.00127
#2	.05316	-.00030	-.00136	.00222	.00207	.00037
#3	.04639	-.00007	-.00162	.00446	.00163	-.00090
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				.00260		
Low Limit				-.00260		

Sample Name: CCB Acquired: 6/26/2019 20:04:15 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00085	-.00636	-.00001	-.00002	-.00065	.00129
Stddev	.00029	.00252	.00010	.00007	.00030	.00129
%RSD	33.800	39.605	1215.9	467.83	45.570	100.14
#1	.00106	-.00509	-.00003	-.00009	-.00096	.00078
#2	.00095	-.00473	-.00009	.00006	-.00063	.00033
#3	.00052	-.00926	.00010	-.00001	-.00037	.00275
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00002	-.00007
Stddev	.00020	.00008
%RSD	825.89	109.65
#1	.00023	-.00014
#2	.00001	.00001
#3	-.00016	-.00008
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/26/2019 20:04:15 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12808.	146570.	13194.
Stddev	55.	634.	19.
%RSD	.43216	.43236	.14267
#1	12800.	147040.	13197.
#2	12757.	145850.	13174.
#3	12867.	146810.	13212.

Sample Name: lcsd 30529/13-b @5 Acquired: 6/26/2019 20:09:26 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01182	.02573	.01671	.22606	.01072	.00567
Stddev	.00046	.02238	.00145	.00037	.00007	.00001
%RSD	3.8954	87.003	8.6725	.16277	.64717	.13724
#1	.01201	.00237	.01749	.22630	.01076	.00567
#2	.01216	.04700	.01504	.22624	.01064	.00567
#3	.01130	.02781	.01760	.22563	.01075	.00568
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.0762	.01162	.00659	.04662	.05106	.00266
Stddev	.0108	.00011	.00009	.00020	.00018	.00026
%RSD	.35230	.95222	1.2958	.42959	.35084	9.9150
#1	3.0637	.01175	.00657	.04640	.05086	.00242
#2	3.0823	.01154	.00651	.04669	.05110	.00263
#3	3.0826	.01158	.00668	.04678	.05121	.00294
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: lcsd 30529/13-b @5 Acquired: 6/26/2019 20:09:26 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	11.793	.02316	1.5925	.00591	.08527	522.76
Stddev	.048	.00076	.0145	.00006	.00014	6.34
%RSD	.40928	3.2838	.90832	.97941	.16662	1.2134
#1	11.738	.02280	1.5920	.00584	.08513	515.97
#2	11.826	.02403	1.5783	.00596	.08542	528.53
#3	11.816	.02264	1.6072	.00592	.08526	523.77
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 767.11	.10869	.60015	.01472	.01380	.11391
Stddev	4.99	.00031	.00218	.00105	.00120	.00146
%RSD	.65050	.28154	.36329	7.1522	8.7142	1.2833
#1	765.52	.10899	.60246	.01353	.01508	.11560
#2	772.70	.10870	.59984	.01555	.01361	.11300
#3	763.10	.10838	.59813	.01508	.01270	.11314
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: lcsd 30529/13-b @5 Acquired: 6/26/2019 20:09:26 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03666	1.1203	.00057	.06602	.00051	.03485
Stddev	.00024	.0160	.00030	.00007	.00042	.00106
%RSD	.65383	1.4329	52.632	.10976	82.427	3.0400
#1	.03641	1.1149	.00045	.06595	.00066	.03606
#2	.03689	1.1383	.00035	.06601	.00083	.03436
#3	.03670	1.1076	.00091	.06609	.00003	.03412
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02550	.11318
Stddev	.00032	.00029
%RSD	1.2594	.25651
#1	.02513	.11343
#2	.02567	.11325
#3	.02571	.11287
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: lcsd 30529/13-b @5 Acquired: 6/26/2019 20:09:26 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12014.	135790.	13028.
Stddev	51.	281.	15.
%RSD	.42130	.20690	.11854
#1	11958.	135570.	13039.
#2	12025.	136110.	13035.
#3	12057.	135680.	13010.

Sample Name: 140-15377-a-1-l @5 Acquired: 6/26/2019 20:14:37 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00014	.09574	.00076	.00182	.00087	-.00012
Stddev	.00055	.01576	.00082	.00072	.00003	.00002
%RSD	389.86	16.460	107.88	39.430	3.4227	13.140
#1	-.00077	.11045	.00012	.00228	.00084	-.00011
#2	.00017	.09767	.00047	.00099	.00088	-.00010
#3	.00018	.07911	.00167	.00217	.00090	-.00013
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05266	.00000	-.00031	.00227	-.00014	.00258
Stddev	.00212	.00007	.00002	.00024	.00019	.00036
%RSD	4.0318	2333.7	5.8687	10.475	131.34	13.771
#1	.05344	.00008	-.00033	.00254	-.00005	.00246
#2	.05026	-.00002	-.00029	.00214	-.00002	.00230
#3	.05429	-.00004	-.00031	.00212	-.00036	.00298
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-1-l @5 Acquired: 6/26/2019 20:14:37 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.92780	.00083	.05550	.00008	.00013	683.41
Stddev	.00887	.00076	.00784	.00002	.00019	3.70
%RSD	.95569	91.246	14.125	31.909	151.21	.54201
#1	.92325	.00029	.05540	.00010	.00012	687.17
#2	.92214	.00051	.06339	.00006	-.00006	679.77
#3	.93802	.00170	.04771	.00007	.00032	683.29
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 982.82	-.00022	.00786	.00087	.00113	-.00002
Stddev	11.40	.00009	.00022	.00239	.00112	.00046
%RSD	1.1602	43.915	2.7462	274.45	98.801	2051.8
#1	987.99	-.00012	.00800	-.00132	.00057	-.00021
#2	969.75	-.00022	.00761	.00342	.00242	.00050
#3	990.71	-.00031	.00798	.00051	.00041	-.00036
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15377-a-1-l @5 Acquired: 6/26/2019 20:14:37 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00029	1.0167	.00051	.00091	-.00050	.00040
Stddev	.00135	.0053	.00034	.00009	.00050	.00114
%RSD	459.82	.52097	67.546	10.353	99.483	280.81
#1	.00126	1.0214	.00026	.00100	-.00094	.00101
#2	-.00107	1.0177	.00037	.00092	-.00060	-.00091
#3	-.00107	1.0109	.00090	.00081	.00004	.00111
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00067	.00413
Stddev	.00015	.00003
%RSD	23.042	.73799
#1	.00050	.00416
#2	.00070	.00413
#3	.00080	.00410
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-1-l @5 Acquired: 6/26/2019 20:14:37 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	11860.	133440.	12916.
Stddev	36.	610.	77.
%RSD	.30456	.45687	.59362
#1	11820.	132740.	12828.
#2	11872.	133860.	12971.
#3	11890.	133730.	12949.

Sample Name: 140-15377-a-2-l @5   Acquired: 6/26/2019 20:19:58   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00035	.08293	-.00024	.00092	.00017	-.00011
Stddev	.00025	.00939	.00080	.00059	.00010	.00001
%RSD	72.312	11.319	338.99	63.824	55.903	6.1111
#1	-.00018	.07295	.00037	.00028	.00019	-.00012
#2	-.00023	.09158	.00007	.00104	.00026	-.00010
#3	-.00063	.08426	-.00115	.00144	.00007	-.00012
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02999	-.00004	-.00034	.00158	.00110	.00452
Stddev	.00177	.00008	.00012	.00025	.00004	.00028
%RSD	5.9011	192.73	34.932	15.618	3.7050	6.2954
#1	.03197	.00000	-.00028	.00134	.00114	.00443
#2	.02946	-.00013	-.00026	.00158	.00106	.00430
#3	.02855	.00001	-.00047	.00183	.00111	.00484
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-2-l @5 Acquired: 6/26/2019 20:19:58 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.98319	-.00004	.05355	.00005	.00024	707.50
Stddev	.02096	.00066	.01930	.00008	.00007	2.71
%RSD	2.1314	1479.3	36.036	156.72	31.042	.38301
#1	.97332	.00026	.04377	.00006	.00024	708.98
#2	.96900	.00041	.07577	-.00003	.00031	704.37
#3	1.0073	-.00081	.04110	.00013	.00016	709.15
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 998.80	-.00015	.00834	.00228	.00104	.00076
Stddev	17.24	.00009	.00190	.00094	.00060	.00097
%RSD	1.7258	61.838	22.838	41.307	57.260	126.94
#1	1001.2	-.00019	.00976	.00288	.00045	.00087
#2	1014.7	-.00021	.00908	.00277	.00164	-.00025
#3	980.49	-.00004	.00617	.00120	.00104	.00167
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15377-a-2-l @5 Acquired: 6/26/2019 20:19:58 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00198	.44104	-.00006	.00014	-.00014	.00052
Stddev	.00138	.00459	.00025	.00005	.00047	.00042
%RSD	69.616	1.0398	397.36	34.065	344.08	81.039
#1	.00126	.44622	-.00020	.00012	-.00064	.00003
#2	.00358	.43938	.00023	.00019	.00028	.00078
#3	.00112	.43751	-.00021	.00010	-.00005	.00074
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00026	.00572
Stddev	.00022	.00003
%RSD	86.436	.45319
#1	.00003	.00575
#2	.00027	.00570
#3	.00047	.00571
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-2-l @5 Acquired: 6/26/2019 20:19:58 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	11715.	132550.	12944.
Stddev	9.	269.	62.
%RSD	.07473	.20273	.48180
#1	11705.	132810.	12888.
#2	11721.	132560.	13011.
#3	11718.	132270.	12932.

Sample Name: 140-15376-a-1-w @5 Acquired: 6/26/2019 20:25:18 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML (A)

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00012	.06882	.00000	-.00007	.00211	-.00013
Stddev	.00035	.00815	.00009	.00099	.00018	.00001
%RSD	286.82	11.844	9409.0	1414.2	8.6667	4.7352
#1	.00049	.07694	.00008	-.00014	.00232	-.00013
#2	-.00021	.06888	-.00010	-.00103	.00204	-.00013
#3	.00009	.06064	.00002	.00095	.00198	-.00014
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04480	-.00005	-.00036	.00256	.00010	.00573
Stddev	.00139	.00003	.00022	.00009	.00012	.00046
%RSD	3.1048	73.527	60.960	3.5052	119.62	7.9768
#1	.04428	-.00008	-.00059	.00265	.00003	.00625
#2	.04375	-.00005	-.00016	.00256	.00025	.00540
#3	.04638	-.00001	-.00032	.00247	.00003	.00554
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-w @5 Acquired: 6/26/2019 20:25:18 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML (A)

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.97085	-.00040	.08410	.00042	.00014	722.07
Stddev	.02058	.00180	.00774	.00003	.00005	4.61
%RSD	2.1193	453.36	9.2046	6.7343	39.378	.63775
#1	.95199	-.00216	.07790	.00045	.00008	716.76
#2	.99279	.00144	.08161	.00041	.00014	724.49
#3	.96777	-.00047	.09277	.00039	.00019	724.96
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1011.7	-.00006	.01991	.00192	.00031	.00040
Stddev	11.1	.00007	.00110	.00215	.00089	.00075
%RSD	1.0970	110.24	5.5250	111.79	290.44	188.58
#1	1019.6	-.00011	.02069	.00383	.00081	-.00034
#2	999.02	-.00010	.02039	.00233	-.00072	.00038
#3	1016.5	.00002	.01865	-.00040	.00084	.00116
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15376-a-1-w @5   Acquired: 6/26/2019 20:25:18   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 2ML TO 10ML (A)

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00216	1.1328	.00022	.00030	.00078	.00075
Stddev	.00128	.0107	.00035	.00006	.00062	.00092
%RSD	59.206	.94138	163.88	20.960	78.638	122.24
#1	.00314	1.1444	.00034	.00026	.00049	-.00030
#2	.00262	1.1304	-.00018	.00038	.00037	.00117
#3	.00071	1.1235	.00049	.00027	.00149	.00138
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00066	.00278
Stddev	.00030	.00003
%RSD	45.150	1.2201
#1	.00092	.00276
#2	.00072	.00278
#3	.00033	.00282
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-w @5 Acquired: 6/26/2019 20:25:18 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML (A)

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	11679.	132650.	12776.
Stddev	40.	800.	95.
%RSD	.34030	.60342	.73989
#1	11640.	132440.	12769.
#2	11676.	131980.	12686.
#3	11720.	133540.	12874.

Sample Name: 15376-a-1-x du @5 Acquired: 6/26/2019 20:30:38 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00005	.06252	.00065	-.00008	.00215	-.00013
Stddev	.00038	.02005	.00026	.00098	.00002	.00001
%RSD	766.92	32.066	39.437	1248.8	.86346	6.2135
#1	.00039	.06737	.00079	.00029	.00212	-.00013
#2	.00013	.07969	.00036	.00066	.00216	-.00012
#3	-.00037	.04049	.00082	-.00119	.00215	-.00013
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04841	-.00001	-.00036	.00253	.00132	.01014
Stddev	.00271	.00001	.00010	.00024	.00024	.00146
%RSD	5.6064	242.95	27.234	9.5921	18.542	14.390
#1	.04527	-.00001	-.00034	.00278	.00131	.01023
#2	.04989	-.00002	-.00047	.00230	.00156	.01155
#3	.05005	.00001	-.00028	.00251	.00107	.00864
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-x du @5 Acquired: 6/26/2019 20:30:38 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.97636	.00165	.10117	.00035	-.00001	705.68
Stddev	.01397	.00049	.01200	.00009	.00014	2.24
%RSD	1.4310	29.585	11.862	26.884	1791.5	.31771
#1	.96414	.00218	.09095	.00046	.00014	707.40
#2	.99159	.00155	.11439	.00029	-.00005	703.15
#3	.97334	.00122	.09818	.00031	-.00012	706.51
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 988.62	-.00007	.01602	.00312	.00161	.00164
Stddev	7.82	.00007	.00091	.00011	.00039	.00191
%RSD	.79123	91.141	5.6775	3.3640	24.477	116.66
#1	992.78	-.00004	.01543	.00324	.00152	-.00056
#2	979.60	-.00015	.01557	.00308	.00203	.00262
#3	993.48	-.00003	.01707	.00304	.00126	.00286
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 15376-a-1-x du @5 Acquired: 6/26/2019 20:30:38 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00128	1.1915	.00024	.00026	-.00018	.00077
Stddev	.00169	.0082	.00027	.00004	.00037	.00082
%RSD	131.31	.68640	109.24	15.087	201.95	106.36
#1	.00056	1.1855	-.00006	.00031	.00023	.00137
#2	.00321	1.1882	.00040	.00024	-.00047	.00112
#3	.00008	1.2009	.00039	.00024	-.00031	-.00017
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00064	.00476
Stddev	.00012	.00001
%RSD	19.643	.26206
#1	.00068	.00475
#2	.00049	.00477
#3	.00073	.00477
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 15376-a-1-x du @5 Acquired: 6/26/2019 20:30:38 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	11761.	133130.	12889.
Stddev	47.	682.	112.
%RSD	.40346	.51198	.86679
#1	11709.	132370.	12847.
#2	11770.	133670.	12804.
#3	11802.	133350.	13015.

Sample Name: 140-15376-a-2-l @5 Acquired: 6/26/2019 20:35:57 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00005	.09517	.00002	.00004	.00183	-.00012
Stddev	.00053	.01181	.00067	.00021	.00004	.00001
%RSD	1067.0	12.405	4225.9	556.70	1.9771	10.383
#1	.00035	.08310	.00046	.00027	.00185	-.00012
#2	.00036	.10669	-.00076	-.00011	.00179	-.00012
#3	-.00056	.09571	.00034	-.00005	.00184	-.00014
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01070	-.00005	-.00040	.00252	-.00044	.00195
Stddev	.00152	.00002	.00004	.00018	.00030	.00185
%RSD	14.239	35.397	10.917	7.1461	68.031	94.625
#1	.01221	-.00006	-.00042	.00254	-.00027	-.00018
#2	.01071	-.00003	-.00035	.00268	-.00079	.00297
#3	.00917	-.00006	-.00044	.00232	-.00026	.00307
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-l @5 Acquired: 6/26/2019 20:35:57 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.95988	-.00075	.06868	.00013	.00017	721.88
Stddev	.02904	.00079	.01268	.00003	.00012	2.89
%RSD	3.0258	105.40	18.469	26.315	69.351	.40014
#1	.93847	-.00139	.08094	.00012	.00015	725.13
#2	.94824	-.00098	.06951	.00017	.00029	719.62
#3	.99294	.00013	.05561	.00010	.00006	720.88
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 995.88	-.00036	.01206	.00142	.00150	.00043
Stddev	8.67	.00012	.00115	.00209	.00048	.00029
%RSD	.87065	33.487	9.5324	147.21	31.845	67.248
#1	1002.3	-.00045	.01189	.00187	.00155	.00052
#2	986.01	-.00040	.01329	.00325	.00100	.00066
#3	999.33	-.00022	.01101	-.00086	.00194	.00011
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15376-a-2-l @5 Acquired: 6/26/2019 20:35:57 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00008	.99239	.00048	.00011	-.00086	.00081
Stddev	.00274	.00399	.00048	.00004	.00034	.00172
%RSD	3414.7	.40159	98.326	34.967	39.744	212.43
#1	-.00216	.98816	.00019	.00014	-.00061	.00213
#2	.00314	.99296	.00023	.00012	-.00125	.00144
#3	-.00074	.99606	.00103	.00007	-.00073	-.00114
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00030	.00226
Stddev	.00022	.00004
%RSD	75.417	1.7350
#1	.00046	.00222
#2	.00038	.00230
#3	.00004	.00227
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-2-l @5 Acquired: 6/26/2019 20:35:57 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	11692.	131930.	12726.
Stddev	19.	891.	48.
%RSD	.16338	.67532	.37816
#1	11682.	130900.	12674.
#2	11680.	132400.	12733.
#3	11714.	132490.	12769.

Sample Name: 140-15376-a-3-l @5 Acquired: 6/26/2019 20:41:14 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00002	.06737	.00079	-.00059	.02801	-.00014
Stddev	.00043	.01209	.00079	.00078	.00011	.00001
%RSD	1871.1	17.939	99.552	132.24	.38272	6.2848
#1	.00046	.05598	.00057	.00019	.02799	-.00014
#2	-.00014	.06608	.00167	-.00059	.02792	-.00013
#3	-.00039	.08005	.00014	-.00136	.02813	-.00013
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01388	-.00008	.00263	.00319	.00018	.00295
Stddev	.00129	.00000	.00004	.00022	.00009	.00136
%RSD	9.2619	5.1311	1.3331	6.8009	50.021	46.196
#1	.01448	-.00007	.00261	.00337	.00009	.00449
#2	.01240	-.00008	.00261	.00325	.00018	.00193
#3	.01475	-.00007	.00267	.00295	.00027	.00241
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-3-l @5 Acquired: 6/26/2019 20:41:14 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0815	.00039	.05656	.00167	.00034	708.73
Stddev	.0098	.00095	.01085	.00003	.00016	2.34
%RSD	.90727	241.46	19.184	1.9845	46.815	.32957
#1	1.0836	.00055	.04403	.00167	.00051	711.16
#2	1.0902	.00125	.06271	.00171	.00021	708.52
#3	1.0709	-.00062	.06294	.00165	.00029	706.50
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 989.18	.00026	.02621	.00079	.00248	.00143
Stddev	5.17	.00011	.00163	.00102	.00143	.00082
%RSD	.52277	40.945	6.2300	128.01	57.649	57.248
#1	991.07	.00032	.02807	.00197	.00349	.00196
#2	993.14	.00031	.02501	.00020	.00084	.00183
#3	983.33	.00014	.02555	.00022	.00311	.00049
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15376-a-3-l @5 Acquired: 6/26/2019 20:41:14 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00245	.92937	.00026	.00483	.00041	.00125
Stddev	.00104	.00358	.00035	.00005	.00038	.00117
%RSD	42.428	.38551	135.04	.98372	91.093	92.994
#1	.00140	.93244	-.00014	.00483	.00015	.00243
#2	.00248	.93024	.00053	.00478	.00084	.00123
#3	.00347	.92544	.00038	.00488	.00024	.00010
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00079	.00217
Stddev	.00003	.00004
%RSD	3.4476	1.7747
#1	.00082	.00213
#2	.00077	.00219
#3	.00078	.00220
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-3-l @5 Acquired: 6/26/2019 20:41:14 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	11713.	132530.	12709.
Stddev	39.	456.	36.
%RSD	.33423	.34406	.28248
#1	11672.	132020.	12698.
#2	11715.	132910.	12750.
#3	11750.	132650.	12681.

Sample Name: 140-15390-a-1-k @5 Acquired: 6/26/2019 20:46:31 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00012	.14402	.00014	-.00108	.00071	-.00014
Stddev	.00034	.01685	.00133	.00072	.00001	.00003
%RSD	292.59	11.697	957.21	67.245	2.0447	19.693
#1	-.00010	.15965	-.00139	-.00191	.00070	-.00011
#2	.00051	.12618	.00078	-.00067	.00070	-.00015
#3	-.00006	.14624	.00103	-.00065	.00073	-.00016
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00832	-.00009	-.00035	.00404	.00020	.00318
Stddev	.00162	.00005	.00014	.00010	.00013	.00079
%RSD	19.490	56.155	40.926	2.5508	67.191	24.915
#1	.00851	-.00007	-.00021	.00404	.00035	.00403
#2	.00661	-.00005	-.00035	.00394	.00010	.00247
#3	.00984	-.00015	-.00050	.00414	.00015	.00303
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-k @5 Acquired: 6/26/2019 20:46:31 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.96028	-.00054	.05261	-.00001	.00002	711.04
Stddev	.02850	.00078	.00585	.00003	.00010	1.21
%RSD	2.9682	145.09	11.111	386.94	417.44	.17002
#1	.94676	-.00056	.05567	-.00004	-.00008	710.15
#2	.94106	.00025	.04587	.00002	.00003	712.42
#3	.99303	-.00131	.05629	-.00001	.00012	710.56
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 986.03	-.00038	.00744	.00264	.00097	.00192
Stddev	3.90	.00012	.00108	.00286	.00028	.00089
%RSD	.39595	32.206	14.545	108.32	28.952	46.360
#1	982.99	-.00041	.00720	.00573	.00129	.00103
#2	984.66	-.00047	.00650	.00209	.00077	.00281
#3	990.43	-.00024	.00863	.00010	.00084	.00190
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15390-a-1-k @5 Acquired: 6/26/2019 20:46:31 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00230	.41542	.00000	.00009	.00051	.00108
Stddev	.00068	.00700	.00011	.00003	.00025	.00043
%RSD	29.551	1.6860	2744.4	36.555	49.789	39.441
#1	.00227	.42304	-.00001	.00012	.00077	.00069
#2	.00299	.41396	-.00010	.00007	.00049	.00154
#3	.00163	.40926	.00012	.00007	.00026	.00103
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00034	.00204
Stddev	.00024	.00002
%RSD	69.742	1.1515
#1	.00046	.00205
#2	.00049	.00205
#3	.00007	.00201
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-1-k @5 Acquired: 6/26/2019 20:46:31 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	11883.	134090.	12983.
Stddev	23.	682.	139.
%RSD	.18958	.50845	1.0726
#1	11862.	133390.	12891.
#2	11880.	134130.	12915.
#3	11906.	134760.	13143.

Sample Name: 140-15390-a-2-k @5   Acquired: 6/26/2019 20:51:51   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00003	.15823	.00007	.00126	.00046	-.00014
Stddev	.00029	.00406	.00139	.00048	.00009	.00001
%RSD	930.17	2.5637	1910.3	38.561	20.021	5.3855
#1	.00029	.15442	-.00151	.00121	.00056	-.00014
#2	-.00010	.16250	.00065	.00080	.00040	-.00015
#3	-.00028	.15776	.00108	.00176	.00042	-.00014
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01535	-.00005	-.00047	.00178	-.00041	.00207
Stddev	.00102	.00006	.00005	.00008	.00023	.00121
%RSD	6.6676	120.76	11.294	4.3884	55.853	58.572
#1	.01450	-.00009	-.00053	.00182	-.00068	.00078
#2	.01649	-.00008	-.00042	.00183	-.00027	.00224
#3	.01507	.00002	-.00046	.00169	-.00029	.00319
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-2-k @5 Acquired: 6/26/2019 20:51:51 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.98344	-.00035	.05215	.00000	.00018	729.79
Stddev	.01328	.00046	.00066	.00004	.00003	3.46
%RSD	1.3508	131.89	1.2679	2685.6	18.916	.47404
#1	.99618	-.00078	.05288	.00004	.00017	733.72
#2	.96968	.00014	.05200	.00000	.00021	727.20
#3	.98446	-.00040	.05158	-.00004	.00014	728.45
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1016.6	-.00043	.00616	.00300	.00171	.00127
Stddev	10.1	.00003	.00108	.00122	.00058	.00130
%RSD	.98892	6.9352	17.519	40.475	34.068	102.33
#1	1008.1	-.00040	.00564	.00406	.00172	.00008
#2	1027.7	-.00046	.00545	.00168	.00229	.00265
#3	1014.1	-.00044	.00741	.00327	.00112	.00107
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15390-a-2-k @5   Acquired: 6/26/2019 20:51:51   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00263	.46542	.00037	.00016	-.00028	.00057
Stddev	.00116	.00714	.00013	.00010	.00034	.00063
%RSD	43.994	1.5339	35.997	65.491	118.67	111.05
#1	.00130	.46953	.00052	.00027	.00004	.00032
#2	.00321	.46955	.00034	.00014	-.00063	.00010
#3	.00338	.45718	.00026	.00006	-.00026	.00129
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00022	.00170
Stddev	.00018	.00001
%RSD	81.883	.34190
#1	.00001	.00171
#2	.00035	.00170
#3	.00029	.00170
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-2-k @5 Acquired: 6/26/2019 20:51:51 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	11737.	133010.	12797.
Stddev	54.	87.	24.
%RSD	.46061	.06571	.18635
#1	11675.	132910.	12780.
#2	11764.	133090.	12824.
#3	11773.	133020.	12786.

Sample Name: 15376-a-1-w SD@25 Acquired: 6/26/2019 20:57:09 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (A) TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00001	.00860	.00016	-.00234	.00031	-.00015
Stddev	.00027	.00838	.00028	.00037	.00005	.00002
%RSD	5148.3	97.470	179.74	15.820	15.567	12.513
#1	-.00030	.01826	-.00008	-.00265	.00026	-.00015
#2	.00010	.00409	.00008	-.00243	.00036	-.00013
#3	.00022	.00343	.00047	-.00193	.00030	-.00016
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02898	-.00005	-.00012	.00075	-.00015	.00574
Stddev	.00120	.00004	.00002	.00017	.00032	.00152
%RSD	4.1235	69.139	18.033	23.293	219.87	26.511
#1	.03010	-.00009	-.00014	.00094	-.00048	.00578
#2	.02772	-.00003	-.00010	.00070	-.00013	.00724
#3	.02913	-.00003	-.00012	.00060	.00017	.00420
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 15376-a-1-w SD@25 Acquired: 6/26/2019 20:57:09 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (A) TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20444	-.00142	.02842	.00012	.00017	141.28
Stddev	.01734	.00056	.01323	.00001	.00013	2.35
%RSD	8.4798	39.230	46.556	6.3766	76.516	1.6632
#1	.22428	-.00080	.04301	.00011	.00030	138.66
#2	.19220	-.00158	.02505	.00012	.00004	142.01
#3	.19685	-.00188	.01720	.00013	.00017	143.19
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 214.99	-.00021	.00313	.00081	.00117	.00159
Stddev	1.85	.00010	.00175	.00197	.00114	.00026
%RSD	.85839	47.355	55.760	242.06	97.348	16.500
#1	214.39	-.00021	.00132	-.00018	.00233	.00176
#2	213.52	-.00031	.00480	-.00046	.00006	.00171
#3	217.06	-.00011	.00328	.00308	.00110	.00129
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 15376-a-1-w SD@25 Acquired: 6/26/2019 20:57:09 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (A) TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00043	.22690	.00037	.00003	.00001	.00189
Stddev	.00081	.00526	.00009	.00006	.00054	.00034
%RSD	189.13	2.3178	25.057	217.24	6964.9	17.896
#1	-.00023	.23267	.00028	.00007	.00064	.00228
#2	.00133	.22566	.00037	.00007	-.00031	.00171
#3	.00018	.22237	.00046	-.00004	-.00030	.00167
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00005	.00768
Stddev	.00017	.00008
%RSD	359.22	1.0866
#1	-.00007	.00776
#2	-.00020	.00759
#3	.00014	.00769
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 15376-a-1-w SD@25 Acquired: 6/26/2019 20:57:09 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML (A) TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12448.	142800.	13133.
Stddev	21.	1530.	75.
%RSD	.16588	1.0712	.57285
#1	12427.	141040.	13158.
#2	12450.	143530.	13193.
#3	12468.	143830.	13049.

Sample Name: CCV   Acquired: 6/26/2019 21:02:29   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.97873	25.719	.51039	1.9753	1.9907	2.1256
Stddev	.00270	.088	.00263	.0025	.0048	.0041
%RSD	.27562	.34040	.51437	.12637	.24226	.19096
#1	.97937	25.687	.51332	1.9738	1.9943	2.1224
#2	.98106	25.818	.50961	1.9782	1.9926	2.1302
#3	.97577	25.651	.50824	1.9739	1.9852	2.1243
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.812	.51089	2.0027	2.0453	1.9996	26.072
Stddev	.239	.00140	.0086	.0106	.0089	.109
%RSD	.48875	.27406	.42785	.51784	.44362	.41770
#1	48.801	.51231	2.0113	2.0532	2.0047	25.968
#2	49.057	.51084	2.0025	2.0495	2.0048	26.186
#3	48.580	.50951	1.9942	2.0333	1.9894	26.063
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/26/2019 21:02:29 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.151	1.9585	49.174	2.0468	2.0143	52.109
Stddev	.255	.0033	.332	.0074	.0096	1.503
%RSD	.51861	.16817	.67474	.36315	.47866	2.8844
#1	49.401	1.9572	48.896	2.0514	2.0249	52.468
#2	49.160	1.9622	49.541	2.0507	2.0118	50.459
#3	48.891	1.9560	49.084	2.0382	2.0061	53.400
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.982	2.0727	F 2.2617	.49402	.51306	.51779
Stddev	.182	.0070	.0061	.00480	.00082	.00547
%RSD	.35717	.33832	.26852	.97262	.15982	1.0569
#1	50.992	2.0800	2.2685	.49864	.51396	.52383
#2	51.160	2.0720	2.2596	.49439	.51237	.51637
#3	50.796	2.0660	2.2569	.48905	.51285	.51316
Check ?	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
Value			2.0000			
Range			10.500%			

Sample Name: CCV Acquired: 6/26/2019 21:02:29 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50065	1.9730	2.0545	2.0128	2.0378	1.0024
Stddev	.00362	.0041	.0070	.0033	.0064	.0057
%RSD	.72326	.20582	.34047	.16387	.31390	.57336
#1	.50426	1.9693	2.0610	2.0147	2.0406	1.0074
#2	.49702	1.9774	2.0553	2.0148	2.0423	1.0037
#3	.50067	1.9722	2.0471	2.0090	2.0304	.99609
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	1.9971	1.9948
Stddev	.0120	.0093
%RSD	.60257	.46643
#1	2.0052	2.0050
#2	2.0028	1.9925
#3	1.9833	1.9868
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 6/26/2019 21:02:29 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12311.	143590.	13002.
Stddev	43.	1318.	136.
%RSD	.35057	.91806	1.0433
#1	12264.	142300.	13060.
#2	12321.	143520.	12847.
#3	12349.	144940.	13099.

Sample Name: CCB   Acquired: 6/26/2019 21:07:31   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00022	-.00165	.00052	.00155	-.00002	-.00012
Stddev	.00049	.00593	.00066	.00219	.00010	.00001
%RSD	217.43	360.22	127.30	141.55	562.36	11.810
#1	-.00014	-.00450	-.00024	.00390	.00008	-.00010
#2	.00003	.00517	.00085	.00119	-.00011	-.00012
#3	.00078	-.00561	.00095	-.00044	-.00002	-.00013
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00136	-.00000	-.00003	.00011	-.00055	-.00079
Stddev	.00067	.00005	.00017	.00025	.00005	.00030
%RSD	49.676	2270.4	611.05	229.79	9.2736	38.779
#1	-.00059	.00005	.00003	.00039	-.00050	-.00044
#2	-.00183	-.00003	-.00022	-.00010	-.00056	-.00088
#3	-.00165	-.00003	.00011	.00003	-.00061	-.00103
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/26/2019 21:07:31 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04609	-.00111	.00250	-.00005	-.00012	-.01655
Stddev	.02920	.00068	.00513	.00004	.00014	.50166
%RSD	63.344	61.224	204.94	81.593	119.22	3031.1
#1	.05369	-.00161	-.00306	-.00000	-.00024	-.54208
#2	.01385	-.00139	.00352	-.00008	-.00017	.45723
#3	.07074	-.00034	.00705	-.00007	.00004	.03519
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.10760	-.00038	.00017	.00073	.00109	-.00001
Stddev	.00724	.00006	.00031	.00169	.00116	.00023
%RSD	6.7335	16.053	188.46	231.96	105.93	1565.4
#1	.11251	-.00040	-.00015	.00214	.00016	.00022
#2	.11100	-.00031	.00017	-.00114	.00073	-.00002
#3	.09928	-.00042	.00047	.00119	.00239	-.00024
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/26/2019 21:07:31 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00035	.00589	.00024	-.00006	-.00011	.00114
Stddev	.00166	.00380	.00010	.00005	.00081	.00087
%RSD	471.95	64.573	39.962	72.118	725.88	76.030
#1	.00115	.00166	.00030	-.00008	-.00102	.00029
#2	-.00213	.00903	.00013	-.00011	.00012	.00202
#3	-.00007	.00698	.00030	-.00001	.00056	.00110
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00012	.00004
Stddev	.00026	.00005
%RSD	217.14	131.73
#1	.00014	.00010
#2	-.00039	.00004
#3	-.00011	-.00001
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/26/2019 21:07:31 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12727.	146970.	13241.
Stddev	86.	963.	192.
%RSD	.67584	.65521	1.4523
#1	12632.	146130.	13024.
#2	12750.	146760.	13307.
#3	12800.	148020.	13391.

Sample Name: 140-15390-a-3-k @5 Acquired: 6/26/2019 21:12:43 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00015	.11673	-.00109	.00199	.00201	-.00015
Stddev	.00045	.02276	.00017	.00022	.00003	.00000
%RSD	294.01	19.497	15.696	11.048	1.7161	3.2706
#1	-.00059	.13267	-.00102	.00178	.00197	-.00015
#2	-.00016	.12686	-.00096	.00222	.00201	-.00016
#3	.00030	.09067	-.00128	.00197	.00204	-.00015
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01327	-.00007	-.00034	.00275	-.00008	.00214
Stddev	.00093	.00001	.00006	.00009	.00016	.00111
%RSD	7.0237	18.469	19.125	3.4483	202.37	51.833
#1	.01266	-.00008	-.00033	.00266	-.00008	.00152
#2	.01434	-.00006	-.00040	.00285	-.00023	.00342
#3	.01281	-.00008	-.00028	.00276	.00008	.00148
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-3-k @5   Acquired: 6/26/2019 21:12:43   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.0481	-.00018	.07560	.00013	.00016	781.46
Stddev	.0350	.00132	.01338	.00002	.00013	4.13
%RSD	3.3402	728.33	17.702	11.830	81.628	.52899
#1	1.0081	-.00032	.08459	.00014	.00004	778.34
#2	1.0736	.00120	.08200	.00011	.00014	779.90
#3	1.0625	-.00143	.06022	.00014	.00029	786.15
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 1065.2	-.00027	.00982	.00242	.00101	.00269
Stddev	12.6	.00006	.00036	.00129	.00014	.00089
%RSD	1.1825	23.124	3.6456	53.417	13.528	32.961
#1	1051.3	-.00023	.00949	.00366	.00115	.00276
#2	1068.4	-.00024	.00976	.00108	.00100	.00354
#3	1075.9	-.00034	.01020	.00252	.00087	.00177
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15390-a-3-k @5 Acquired: 6/26/2019 21:12:43 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00103	.74061	.00052	.00011	-.00033	.00172
Stddev	.00098	.00652	.00042	.00010	.00026	.00052
%RSD	94.652	.88027	80.619	86.923	79.392	30.131
#1	.00098	.73932	.00009	.00022	-.00004	.00229
#2	.00204	.74767	.00053	.00008	-.00040	.00157
#3	.00008	.73483	.00093	.00003	-.00055	.00129
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00012	.00273
Stddev	.00012	.00004
%RSD	98.883	1.5550
#1	.00015	.00278
#2	.00022	.00270
#3	-.00001	.00271
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-3-k @5 Acquired: 6/26/2019 21:12:43 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	11730.	132760.	12934.
Stddev	61.	150.	74.
%RSD	.52340	.11302	.57576
#1	11663.	132660.	12968.
#2	11742.	132690.	12849.
#3	11784.	132930.	12987.

Sample Name: 140-15390-a-4-k @5   Acquired: 6/26/2019 21:18:04   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00015	.14733	-.00015	.00004	.00068	-.00014
Stddev	.00030	.01062	.00067	.00061	.00009	.00001
%RSD	198.07	7.2091	452.62	1432.1	12.920	6.7841
#1	.00045	.15954	-.00028	.00044	.00059	-.00013
#2	-.00014	.14027	-.00074	.00035	.00076	-.00014
#3	.00014	.14216	.00058	-.00066	.00068	-.00015
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01174	-.00006	-.00029	.00203	-.00041	.00331
Stddev	.00046	.00007	.00007	.00041	.00005	.00137
%RSD	3.9446	113.03	25.278	20.210	12.926	41.428
#1	.01209	.00001	-.00037	.00165	-.00038	.00182
#2	.01121	-.00008	-.00022	.00246	-.00039	.00359
#3	.01192	-.00012	-.00029	.00198	-.00047	.00452
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-k @5 Acquired: 6/26/2019 21:18:04 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.97471	.00005	.06269	.00008	.00007	719.57
Stddev	.02224	.00027	.01237	.00001	.00022	2.17
%RSD	2.2813	555.69	19.726	8.9358	328.61	.30128
#1	.94920	.00021	.06823	.00008	-.00002	717.11
#2	.98998	.00020	.07132	.00008	.00031	720.36
#3	.98496	-.00026	.04852	.00009	-.00010	721.22
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 995.75	-.00049	.00863	.00180	.00055	.00064
Stddev	12.30	.00013	.00139	.00183	.00063	.00112
%RSD	1.2348	27.011	16.144	101.77	114.56	174.21
#1	1008.0	-.00056	.00814	.00171	.00128	.00191
#2	995.76	-.00034	.00755	.00367	.00014	.00026
#3	983.45	-.00057	.01021	.00002	.00024	-.00023
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15390-a-4-k @5 Acquired: 6/26/2019 21:18:04 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00213	.69903	.00035	.00004	.00010	.00039
Stddev	.00164	.01198	.00026	.00015	.00049	.00038
%RSD	76.769	1.7138	74.569	360.04	481.78	96.328
#1	.00320	.68562	.00010	.00020	.00060	.00010
#2	.00025	.70867	.00033	-.00009	.00008	.00026
#3	.00294	.70280	.00062	.00001	-.00038	.00082
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00003	.00184
Stddev	.00019	.00005
%RSD	583.56	2.6095
#1	.00025	.00179
#2	-.00010	.00188
#3	-.00006	.00186
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-4-k @5 Acquired: 6/26/2019 21:18:04 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	11660.	131960.	12680.
Stddev	35.	45.	87.
%RSD	.29835	.03409	.68546
#1	11648.	131910.	12780.
#2	11632.	131950.	12630.
#3	11699.	132000.	12629.

Sample Name: mb 140-30781/11-a   Acquired: 6/26/2019 21:23:26   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00014	-.00755	.00129	-.00445	.00001	-.00016
Stddev	.00014	.01132	.00013	.00077	.00013	.00000
%RSD	100.35	149.89	10.023	17.351	1058.3	1.4893
#1	-.00028	-.01560	.00142	-.00391	.00005	-.00016
#2	-.00013	.00539	.00130	-.00411	-.00013	-.00016
#3	-.00001	-.01245	.00116	-.00534	.00011	-.00016
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00583	-.00001	.00012	.00045	-.00080	-.00012
Stddev	.00115	.00006	.00007	.00034	.00028	.00113
%RSD	19.659	699.03	58.446	76.657	34.828	923.53
#1	-.00476	-.00001	.00020	.00025	-.00087	-.00066
#2	-.00704	.00005	.00010	.00025	-.00049	-.00088
#3	-.00570	-.00007	.00006	.00085	-.00103	.00118
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-30781/11-a   Acquired: 6/26/2019 21:23:26   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02884	-.00209	.00312	-.00008	-.00019	1.2698
Stddev	.01585	.00058	.00656	.00002	.00017	.6281
%RSD	54.950	27.546	210.54	24.230	90.911	49.460
#1	.01848	-.00265	-.00329	-.00011	.00000	.62190
#2	.04709	-.00214	.00982	-.00007	-.00024	1.8759
#3	.02096	-.00150	.00282	-.00007	-.00033	1.3117
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.30178	-.00017	.00966	.00148	.00219	-.00012
Stddev	.04299	.00007	.00168	.00235	.00123	.00048
%RSD	14.244	43.544	17.380	159.55	56.316	405.46
#1	.34403	-.00020	.01107	.00404	.00248	-.00060
#2	.30322	-.00009	.00780	-.00059	.00084	-.00012
#3	.25810	-.00022	.01010	.00098	.00325	.00037
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-30781/11-a Acquired: 6/26/2019 21:23:26 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00035	-.01910	.00017	-.00016	-.00045	.00272
Stddev	.00140	.00902	.00008	.00003	.00027	.00160
%RSD	403.65	47.200	44.716	18.839	59.772	59.021
#1	-.00130	-.02244	.00025	-.00018	-.00057	.00223
#2	.00126	-.00889	.00016	-.00018	-.00014	.00141
#3	-.00101	-.02597	.00010	-.00013	-.00064	.00451
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00009	-.00005
Stddev	.00023	.00003
%RSD	267.91	61.992
#1	-.00030	-.00006
#2	.00015	-.00002
#3	-.00011	-.00008
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: mb 140-30781/11-a Acquired: 6/26/2019 21:23:26 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12952.	148670.	13291.
Stddev	6.	739.	38.
%RSD	.04948	.49712	.28888
#1	12944.	147830.	13276.
#2	12955.	148910.	13263.
#3	12956.	149250.	13335.

Sample Name: lcs 140-30781/12-a   Acquired: 6/26/2019 21:28:38   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04752	1.9464	.10272	.98569	.09254	.05188
Stddev	.00018	.0270	.00085	.00273	.00018	.00014
%RSD	.38091	1.3891	.82875	.27673	.19501	.26887
#1	.04773	1.9591	.10369	.98258	.09268	.05178
#2	.04740	1.9153	.10240	.98680	.09234	.05181
#3	.04743	1.9647	.10208	.98768	.09262	.05204
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	47.250	.05039	.09550	.19522	.23363	.99117
Stddev	.096	.00015	.00007	.00013	.00009	.00622
%RSD	.20303	.29956	.07119	.06463	.03719	.62757
#1	47.287	.05022	.09542	.19530	.23364	.99773
#2	47.141	.05042	.09552	.19508	.23354	.99042
#3	47.321	.05052	.09556	.19530	.23371	.98536
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcs 140-30781/12-a Acquired: 6/26/2019 21:28:38 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	47.528	.09344	9.4945	.09744	.48520	F 33.479
Stddev	.100	.00017	.0483	.00020	.00086	.904
%RSD	.21125	.17706	.50868	.20772	.17798	2.7008
#1	47.412	.09337	9.5480	.09731	.48429	33.603
#2	47.584	.09363	9.4542	.09767	.48530	32.519
#3	47.587	.09332	9.4812	.09733	.48601	34.314
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value						50.000
Range						-20.000%

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.013	.49612	5.6052	.09797	.09937	.49903
Stddev	.083	.00118	.0072	.00226	.00186	.00291
%RSD	.16904	.23814	.12751	2.3057	1.8747	.58320
#1	49.037	.49515	5.6040	.09544	.09776	.50237
#2	48.921	.49577	5.5988	.09979	.09895	.49774
#3	49.081	.49743	5.6129	.09868	.10141	.49699
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcs 140-30781/12-a Acquired: 6/26/2019 21:28:38 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.14476	4.2132	.50295	.46605	.10063	.39402
Stddev	.00135	.0187	.00105	.00211	.00037	.00249
%RSD	.93074	.44411	.20960	.45186	.36389	.63166
#1	.14415	4.2348	.50174	.46848	.10097	.39437
#2	.14631	4.2035	.50367	.46489	.10024	.39138
#3	.14383	4.2014	.50345	.46477	.10067	.39632
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.18830	.48140
Stddev	.00039	.00079
%RSD	.20825	.16391
#1	.18798	.48059
#2	.18874	.48143
#3	.18819	.48217
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: lcs 140-30781/12-a   Acquired: 6/26/2019 21:28:38   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12734.	147270.	13334.
Stddev	32.	251.	78.
%RSD	.25095	.17027	.58324
#1	12750.	147230.	13307.
#2	12755.	147530.	13421.
#3	12697.	147030.	13272.

Sample Name: lcsd 140-30781/13-a Acquired: 6/26/2019 21:33:34 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05039	2.0555	.10989	1.0423	.09801	.05520
Stddev	.00034	.0133	.00138	.0047	.00027	.00014
%RSD	.67745	.64485	1.2523	.45037	.27927	.25052
#1	.05078	2.0457	.11023	1.0399	.09832	.05536
#2	.05020	2.0502	.11107	1.0394	.09787	.05512
#3	.05018	2.0706	.10838	1.0477	.09783	.05513
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.763	.05320	.10073	.20751	.24752	1.0471
Stddev	.132	.00020	.00031	.00088	.00031	.0036
%RSD	.26993	.38068	.31110	.42235	.12689	.33949
#1	48.894	.05307	.10074	.20800	.24735	1.0460
#2	48.631	.05309	.10041	.20650	.24788	1.0443
#3	48.765	.05343	.10104	.20804	.24733	1.0511
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcsd 140-30781/13-a   Acquired: 6/26/2019 21:33:34   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.136	.09856	9.7812	.10271	.51343	F 35.652
Stddev	.200	.00195	.0612	.00025	.00081	1.309
%RSD	.40751	1.9759	.62552	.24396	.15759	3.6727
#1	49.340	.09636	9.7283	.10277	.51273	37.124
#2	48.939	.10005	9.7672	.10243	.51324	34.618
#3	49.130	.09928	9.8482	.10293	.51432	35.212
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value						50.000
Range						-20.000%

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.984	.52629	5.9728	.10462	.10721	.53093
Stddev	.080	.00103	.0156	.00093	.00069	.00297
%RSD	.15774	.19549	.26143	.88721	.64742	.55952
#1	51.068	.52520	5.9554	.10564	.10728	.52761
#2	50.908	.52642	5.9775	.10381	.10786	.53185
#3	50.976	.52725	5.9856	.10443	.10648	.53333
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcsd 140-30781/13-a   Acquired: 6/26/2019 21:33:34   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.15544	4.3558	.53123	.49419	.10625	.41478
Stddev	.00130	.0177	.00150	.00046	.00083	.00249
%RSD	.83942	.40533	.28330	.09277	.77709	.60068
#1	.15395	4.3354	.52988	.49439	.10690	.41766
#2	.15602	4.3664	.53096	.49366	.10533	.41322
#3	.15636	4.3656	.53285	.49451	.10653	.41348
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.19993	.50875
Stddev	.00038	.00125
%RSD	.19245	.24652
#1	.20029	.50774
#2	.19998	.50836
#3	.19953	.51016
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: lcsd 140-30781/13-a Acquired: 6/26/2019 21:33:34 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12541.	145140.	13303.
Stddev	11.	596.	70.
%RSD	.09083	.41063	.52813
#1	12547.	144580.	13370.
#2	12528.	145770.	13310.
#3	12548.	145080.	13230.

Sample Name: 140-15377-a-1-m Acquired: 6/26/2019 21:38:29 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00032	16.434	.00544	.01090	.01930	.00048
Stddev	.00031	.145	.00045	.00072	.00013	.00001
%RSD	97.073	.88210	8.2436	6.6332	.67993	3.0455
#1	-.00068	16.578	.00508	.01135	.01942	.00050
#2	-.00015	16.436	.00530	.01128	.01932	.00047
#3	-.00013	16.288	.00595	.01006	.01916	.00048
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.07161	-.00014	.00395	.01452	.00391	12.841
Stddev	.00147	.00006	.00008	.00018	.00017	.139
%RSD	2.0570	40.896	2.1448	1.2498	4.3711	1.0822
#1	.07224	-.00011	.00395	.01464	.00390	12.954
#2	.07267	-.00020	.00403	.01461	.00408	12.883
#3	.06993	-.00010	.00386	.01431	.00374	12.685
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-1-m   Acquired: 6/26/2019 21:38:29   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.5588	.00534	1.5808	.03739	-.00005	235.65
Stddev	.0066	.00151	.0203	.00030	.00027	4.09
%RSD	.42214	28.213	1.2869	.79411	501.66	1.7355
#1	1.5645	.00573	1.5964	.03772	.00026	239.11
#2	1.5603	.00661	1.5882	.03734	-.00024	236.71
#3	1.5516	.00368	1.5578	.03713	-.00018	231.14
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 345.21	.00906	.07363	.00879	.00704	-.00140
Stddev	5.67	.00015	.00115	.00071	.00104	.00067
%RSD	1.6420	1.6170	1.5552	8.0747	14.841	47.749
#1	350.91	.00909	.07397	.00947	.00818	-.00201
#2	345.15	.00920	.07457	.00884	.00681	-.00068
#3	339.57	.00891	.07235	.00805	.00613	-.00150
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15377-a-1-m   Acquired: 6/26/2019 21:38:29   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00160	1.5671	.00092	.00883	.12619	-.00005
Stddev	.00135	.0153	.00016	.00002	.00095	.00255
%RSD	84.071	.97882	17.055	.18997	.75629	5225.6
#1	-.00056	1.5826	.00104	.00885	.12725	.00192
#2	-.00112	1.5519	.00098	.00883	.12591	-.00293
#3	-.00313	1.5668	.00074	.00882	.12540	.00086
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.03596	.02572
Stddev	.00019	.00019
%RSD	.54009	.72020
#1	.03574	.02588
#2	.03602	.02577
#3	.03612	.02552
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-1-m Acquired: 6/26/2019 21:38:29 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13190.	150070.	13851.
Stddev	94.	1786.	144.
%RSD	.71506	1.1903	1.0396
#1	13094.	148300.	13714.
#2	13192.	150040.	13838.
#3	13283.	151870.	14001.

Sample Name: 140-15377-a-2-m   Acquired: 6/26/2019 21:43:42   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00029	3.0164	.00365	.00170	.00757	-.00003
Stddev	.00021	.0173	.00033	.00060	.00001	.00000
%RSD	71.020	.57280	9.0658	35.154	.18191	3.2289
#1	-.00049	3.0154	.00392	.00221	.00758	-.00003
#2	-.00008	2.9996	.00373	.00184	.00757	-.00003
#3	-.00031	3.0341	.00328	.00104	.00755	-.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.12280	-.00008	.00159	.00680	.00082	4.7462
Stddev	.00264	.00005	.00013	.00008	.00012	.0043
%RSD	2.1478	63.040	8.1465	1.1159	14.847	.08957
#1	.12560	-.00012	.00145	.00672	.00068	4.7454
#2	.12243	-.00002	.00160	.00687	.00085	4.7424
#3	.12037	-.00011	.00170	.00683	.00092	4.7508
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15377-a-2-m   Acquired: 6/26/2019 21:43:42   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.62617	-.00011	.50572	.01566	-.00011	196.23
Stddev	.02502	.00096	.01630	.00016	.00013	2.06
%RSD	3.9951	900.50	3.2231	1.0083	109.59	1.0524
#1	.60130	.00097	.49192	.01558	-.00002	194.39
#2	.62588	-.00088	.52370	.01585	-.00026	198.46
#3	.65133	-.00042	.50154	.01557	-.00007	195.83
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 289.28	.00267	.08340	.00532	.00388	.00033
Stddev	2.17	.00019	.00081	.00098	.00050	.00045
%RSD	.75071	7.1462	.97183	18.494	12.815	137.21
#1	287.11	.00250	.08286	.00467	.00368	.00026
#2	291.46	.00264	.08433	.00485	.00350	-.00008
#3	289.27	.00288	.08300	.00646	.00444	.00081
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15377-a-2-m Acquired: 6/26/2019 21:43:42 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00196	1.6552	.00046	.00540	.07487	.00233
Stddev	.00083	.0190	.00023	.00003	.00061	.00077
%RSD	42.287	1.1466	50.784	.59227	.81391	32.933
#1	-.00113	1.6748	.00028	.00540	.07417	.00315
#2	-.00279	1.6540	.00038	.00536	.07529	.00162
#3	-.00198	1.6369	.00072	.00543	.07514	.00224
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.01600	.00923
Stddev	.00027	.00004
%RSD	1.7142	.45381
#1	.01568	.00920
#2	.01616	.00928
#3	.01615	.00922
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15377-a-2-m Acquired: 6/26/2019 21:43:42 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12463.	143320.	13140.
Stddev	40.	683.	50.
%RSD	.31840	.47652	.38190
#1	12425.	143320.	13148.
#2	12459.	142630.	13186.
#3	12505.	144000.	13087.

Sample Name: 140-15376-a-1-y Acquired: 6/26/2019 21:48:59 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00106	19.114	.00950	.00764	.09215	.00081
Stddev	.00038	.071	.00076	.00024	.00019	.00001
%RSD	35.495	.36900	7.9491	3.1958	.20140	.88530
#1	-.00070	19.035	.00956	.00759	.09193	.00080
#2	-.00103	19.170	.01022	.00791	.09226	.00081
#3	-.00146	19.136	.00872	.00743	.09225	.00080
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.35657	-.00013	.00406	.01970	.00551	16.425
Stddev	.00120	.00003	.00012	.00018	.00044	.023
%RSD	.33539	19.787	2.8588	.92216	7.9398	.14071
#1	.35751	-.00015	.00395	.01968	.00589	16.400
#2	.35522	-.00015	.00418	.01989	.00560	16.444
#3	.35696	-.00010	.00405	.01953	.00503	16.433
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-y Acquired: 6/26/2019 21:48:59 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.9584	.01428	3.7517	.15740	.00037	318.16
Stddev	.0377	.00010	.0168	.00022	.00010	1.29
%RSD	.95333	.67739	.44762	.13881	27.923	.40538
#1	3.9152	.01439	3.7546	.15725	.00026	316.92
#2	3.9749	.01422	3.7668	.15765	.00040	318.08
#3	3.9850	.01422	3.7336	.15730	.00046	319.49
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 461.00	.00997	.24357	.01680	.01512	-.00067
Stddev	7.22	.00027	.00195	.00045	.00213	.00101
%RSD	1.5660	2.7065	.80228	2.6602	14.097	151.07
#1	466.93	.01024	.24582	.01730	.01266	.00018
#2	463.10	.00970	.24235	.01645	.01617	-.00040
#3	452.96	.00996	.24253	.01666	.01652	-.00178
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15376-a-1-y Acquired: 6/26/2019 21:48:59 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00162	1.5813	.00267	.02956	1.1272	.00085
Stddev	.00024	.0167	.00021	.00006	.0039	.00129
%RSD	14.946	1.0528	8.0431	.19572	.34786	150.49
#1	-.00171	1.5848	.00288	.02954	1.1233	.00152
#2	-.00135	1.5959	.00246	.02963	1.1312	-.00063
#3	-.00181	1.5632	.00266	.02951	1.1272	.00167
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02671	.07293
Stddev	.00005	.00011
%RSD	.20051	.15560
#1	.02673	.07299
#2	.02676	.07299
#3	.02665	.07280
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-y Acquired: 6/26/2019 21:48:59 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12874.	146490.	13582.
Stddev	24.	431.	59.
%RSD	.18254	.29449	.43586
#1	12869.	146640.	13587.
#2	12853.	146010.	13521.
#3	12899.	146830.	13639.

Sample Name: 140-15376-a-1-z du Acquired: 6/26/2019 21:54:09 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00111	20.841	.00870	.00837	.09999	.00080
Stddev	.00026	.167	.00075	.00027	.00072	.00003
%RSD	23.806	.80032	8.6126	3.1664	.71587	3.3619
#1	-.00136	21.031	.00913	.00866	.10076	.00083
#2	-.00112	20.772	.00914	.00832	.09988	.00078
#3	-.00083	20.720	.00784	.00814	.09934	.00080
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.33592	-.00009	.00438	.02130	.00603	16.747
Stddev	.00397	.00006	.00003	.00030	.00011	.141
%RSD	1.1805	73.876	.79857	1.4106	1.8514	.84233
#1	.33966	-.00010	.00434	.02152	.00614	16.904
#2	.33635	-.00002	.00438	.02143	.00604	16.709
#3	.33176	-.00014	.00441	.02096	.00591	16.629
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-z du   Acquired: 6/26/2019 21:54:09   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.3106	.01381	4.1327	.16574	.00012	315.54
Stddev	.0449	.00060	.0389	.00130	.00007	4.65
%RSD	1.0418	4.3451	.94238	.78341	57.384	1.4749
#1	4.3405	.01450	4.1468	.16724	.00006	319.20
#2	4.3324	.01350	4.1626	.16508	.00011	317.12
#3	4.2590	.01342	4.0887	.16491	.00020	310.30
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 450.39	.01056	.23867	.01717	.01501	-.00118
Stddev	4.47	.00027	.00144	.00048	.00054	.00053
%RSD	.99340	2.5948	.60443	2.8123	3.6182	45.265
#1	449.58	.01086	.24021	.01760	.01547	-.00160
#2	455.21	.01046	.23843	.01726	.01441	-.00058
#3	446.37	.01034	.23736	.01665	.01514	-.00136
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15376-a-1-z du Acquired: 6/26/2019 21:54:09 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00222	1.7180	.00330	.03081	1.2035	.00047
Stddev	.00108	.0212	.00052	.00026	.0102	.00121
%RSD	48.761	1.2340	15.694	.84177	.84764	259.14
#1	-.00173	1.7401	.00370	.03108	1.2143	-.00061
#2	-.00346	1.7159	.00271	.03079	1.2022	.00177
#3	-.00147	1.6979	.00348	.03056	1.1940	.00024
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02756	.07750
Stddev	.00042	.00064
%RSD	1.5106	.82270
#1	.02803	.07824
#2	.02738	.07713
#3	.02726	.07713
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-z du Acquired: 6/26/2019 21:54:09 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12604.	143690.	13118.
Stddev	113.	1685.	129.
%RSD	.89788	1.1727	.98309
#1	12475.	141750.	13049.
#2	12649.	144780.	13038.
#3	12687.	144530.	13267.

Sample Name: 140-15376-a-1-y SD@5 Acquired: 6/26/2019 21:59:20 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00029	3.9136	.00226	-.00074	.01911	.00003
Stddev	.00013	.0159	.00093	.00065	.00012	.00001
%RSD	44.194	.40643	41.081	87.763	.61651	20.389
#1	-.00014	3.9200	.00329	-.00149	.01911	.00004
#2	-.00038	3.8955	.00149	-.00034	.01900	.00003
#3	-.00034	3.9253	.00199	-.00039	.01924	.00003
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.10186	-.00011	.00079	.00397	.00063	3.4529
Stddev	.00123	.00005	.00017	.00021	.00028	.0144
%RSD	1.2079	40.725	21.070	5.3403	45.024	.41686
#1	.10055	-.00007	.00096	.00376	.00091	3.4541
#2	.10202	-.00016	.00063	.00419	.00063	3.4379
#3	.10299	-.00011	.00076	.00394	.00034	3.4666
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-y SD@5 Acquired: 6/26/2019 21:59:20 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.82885	.00075	.79035	.03280	.00011	63.021
Stddev	.01572	.00101	.01128	.00005	.00020	2.099
%RSD	1.8966	135.52	1.4275	.14859	187.56	3.3302
#1	.81144	.00175	.78199	.03283	.00019	63.025
#2	.84200	-.00028	.80319	.03282	.00024	65.118
#3	.83311	.00077	.78588	.03274	-.00012	60.921
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	97.609	.00193	.04956	.00602	.00432	.00050
Stddev	1.313	.00021	.00050	.00044	.00081	.00041
%RSD	1.3446	10.973	1.0118	7.3131	18.791	81.968
#1	97.304	.00199	.05008	.00652	.00371	.00097
#2	99.046	.00169	.04951	.00568	.00525	.00037
#3	96.475	.00210	.04908	.00587	.00401	.00018
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-1-y SD@5 Acquired: 6/26/2019 21:59:20 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00015	.32562	.00071	.00612	.23424	.00031
Stddev	.00130	.00614	.00055	.00007	.00201	.00134
%RSD	848.06	1.8862	76.688	1.2052	.85738	427.82
#1	.00133	.32731	.00078	.00603	.23597	.00142
#2	-.00108	.33074	.00122	.00616	.23204	-.00117
#3	-.00070	.31881	.00014	.00617	.23471	.00069
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00564	.01808
Stddev	.00011	.00006
%RSD	1.9252	.34336
#1	.00552	.01807
#2	.00567	.01815
#3	.00573	.01802
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-1-y SD@5 Acquired: 6/26/2019 21:59:20 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12660.	145480.	13168.
Stddev	73.	385.	117.
%RSD	.57658	.26464	.88744
#1	12581.	145190.	13033.
#2	12674.	145920.	13242.
#3	12725.	145350.	13228.

Sample Name: CCV Acquired: 6/26/2019 22:04:35 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.97952	25.842	.51554	1.9754	1.9882	2.1477
Stddev	.00335	.115	.00200	.0075	.0103	.0080
%RSD	.34175	.44571	.38858	.37998	.51597	.37343
#1	.97582	25.710	.51343	1.9672	1.9765	2.1420
#2	.98038	25.905	.51578	1.9772	1.9924	2.1441
#3	.98235	25.913	.51741	1.9819	1.9957	2.1569
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.414	.51490	2.0061	2.0573	2.0037	26.288
Stddev	.340	.00152	.0050	.0130	.0052	.172
%RSD	.70208	.29430	.24929	.63163	.25701	.65434
#1	48.022	.51324	2.0004	2.0436	1.9984	26.091
#2	48.594	.51525	2.0080	2.0588	2.0040	26.365
#3	48.627	.51621	2.0099	2.0694	2.0086	26.409
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/26/2019 22:04:35 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.913	1.9554	48.909	2.0524	2.0220	51.236
Stddev	.236	.0129	.417	.0106	.0045	.949
%RSD	.48319	.65952	.85228	.51517	.22026	1.8522
#1	48.644	1.9406	48.429	2.0415	2.0169	51.785
#2	49.006	1.9616	49.172	2.0530	2.0236	51.783
#3	49.089	1.9641	49.127	2.0626	2.0254	50.140
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.115	2.0937	F 2.3127	.49467	.51871	.52082
Stddev	.240	.0053	.0057	.00123	.00253	.00176
%RSD	.46994	.25436	.24633	.24889	.48776	.33864
#1	50.838	2.0877	2.3090	.49382	.51581	.51888
#2	51.237	2.0957	2.3099	.49410	.51982	.52125
#3	51.270	2.0979	2.3193	.49608	.52049	.52233
Check ?	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
Value			2.0000			
Range			10.500%			

Sample Name: CCV Acquired: 6/26/2019 22:04:35 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50032	1.9465	2.0693	2.0189	2.0441	1.0022
Stddev	.00158	.0135	.0055	.0093	.0164	.0023
%RSD	.31561	.69581	.26674	.45931	.80356	.22759
#1	.50002	1.9371	2.0633	2.0085	2.0252	1.0013
#2	.50203	1.9620	2.0704	2.0218	2.0531	1.0005
#3	.49891	1.9403	2.0742	2.0264	2.0541	1.0048
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.0002	1.9978
Stddev	.0076	.0038
%RSD	.37910	.19053
#1	1.9930	1.9934
#2	1.9995	2.0001
#3	2.0081	1.9999
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV Acquired: 6/26/2019 22:04:35 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12151.	142580.	12903.
Stddev	41.	194.	36.
%RSD	.33428	.13584	.27680
#1	12123.	142380.	12908.
#2	12132.	142590.	12864.
#3	12197.	142760.	12935.

Sample Name: CCB Acquired: 6/26/2019 22:09:35 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00015	-.00008	.00061	.00252	.00007	-.00011
Stddev	.00030	.01339	.00089	.00159	.00010	.00006
%RSD	201.79	17562.	146.28	62.943	141.94	52.378
#1	-.00008	.01521	-.00040	.00427	.00018	-.00004
#2	-.00048	-.00573	.00129	.00214	.00004	-.00013
#3	.00011	-.00972	.00094	.00116	-.00001	-.00015
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00189	-.00005	-.00007	.00033	-.00102	.00059
Stddev	.00390	.00005	.00003	.00019	.00017	.00156
%RSD	206.00	98.643	47.639	56.647	16.875	264.19
#1	.00184	-.00001	-.00007	.00028	-.00121	.00100
#2	-.00158	-.00011	-.00011	.00053	-.00097	-.00113
#3	-.00594	-.00004	-.00004	.00017	-.00088	.00191
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/26/2019 22:09:35 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03672	-.00108	.00913	-.00001	-.00011	1.1345
Stddev	.00973	.00131	.00080	.00008	.00011	2.1451
%RSD	26.495	122.04	8.7494	863.30	99.306	189.08
#1	.03560	-.00251	.00854	.00009	-.00017	-.65697
#2	.04697	-.00081	.01004	-.00006	.00002	3.5116
#3	.02761	.00008	.00881	-.00006	-.00018	.54889
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.09134	-.00001	-.00021	.00257	.00143	-.00008
Stddev	.00611	.00015	.00056	.00142	.00116	.00105
%RSD	6.6913	1841.1	271.20	55.334	81.017	1378.0
#1	.09568	.00009	-.00035	.00147	.00129	-.00064
#2	.09398	.00007	.00041	.00418	.00035	.00114
#3	.08435	-.00018	-.00068	.00206	.00265	-.00073
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/26/2019 22:09:35 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00103	-.00351	.00054	-.00006	.00033	.00085
Stddev	.00099	.00616	.00019	.00015	.00128	.00167
%RSD	96.118	175.85	35.725	270.76	388.34	196.30
#1	.00201	.00346	.00034	-.00007	.00148	-.00062
#2	.00003	-.00571	.00056	.00010	.00057	.00051
#3	.00105	-.00827	.00072	-.00020	-.00106	.00266
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00011	.00009
Stddev	.00018	.00005
%RSD	156.00	53.258
#1	-.00008	.00005
#2	-.00030	.00007
#3	.00004	.00014
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/26/2019 22:09:35 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12454.	144570.	12930.
Stddev	23.	1022.	192.
%RSD	.18416	.70664	1.4858
#1	12428.	143490.	12711.
#2	12461.	144690.	13071.
#3	12473.	145520.	13007.

Sample Name: 140-15376-a-2-m Acquired: 6/26/2019 22:14:48 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00134	25.389	.01085	.00806	.06726	.00088
Stddev	.00017	.070	.00141	.00062	.00019	.00000
%RSD	12.994	.27395	13.029	7.6669	.27887	.53177
#1	-.00154	25.332	.01186	.00759	.06744	.00088
#2	-.00126	25.370	.01146	.00783	.06707	.00088
#3	-.00122	25.467	.00923	.00876	.06728	.00089
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.11345	-.00025	.00504	.01987	.01114	20.153
Stddev	.00108	.00003	.00009	.00014	.00011	.082
%RSD	.95625	13.938	1.7348	.69612	.94502	.40801
#1	.11443	-.00021	.00511	.01971	.01122	20.236
#2	.11229	-.00027	.00494	.01994	.01102	20.151
#3	.11365	-.00026	.00507	.01996	.01117	20.072
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-2-m Acquired: 6/26/2019 22:14:48 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.8072	.00899	2.7344	.10164	.00017	332.55
Stddev	.0262	.00063	.0144	.00040	.00027	1.63
%RSD	.68751	6.9690	.52782	.39091	158.67	.48928
#1	3.7924	.00926	2.7492	.10193	.00020	332.27
#2	3.7918	.00828	2.7336	.10118	.00043	334.30
#3	3.8374	.00944	2.7204	.10179	-.00011	331.08
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 468.57	.01496	.23411	.01894	.01639	-.00098
Stddev	8.78	.00026	.00123	.00126	.00046	.00005
%RSD	1.8728	1.7714	.52753	6.6768	2.8045	5.0305
#1	467.47	.01465	.23548	.02027	.01663	-.00099
#2	477.84	.01514	.23374	.01775	.01667	-.00093
#3	460.39	.01509	.23310	.01881	.01586	-.00103
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15376-a-2-m Acquired: 6/26/2019 22:14:48 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00083	.78142	.00389	.02729	.59876	.00009
Stddev	.00095	.01097	.00041	.00014	.00096	.00051
%RSD	114.54	1.4032	10.485	.50161	.15972	594.00
#1	-.00192	.79319	.00388	.02737	.59800	.00060
#2	-.00035	.77960	.00431	.02713	.59846	-.00041
#3	-.00021	.77149	.00349	.02736	.59983	.00006
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02202	.11357
Stddev	.00032	.00016
%RSD	1.4707	.14153
#1	.02172	.11344
#2	.02199	.11352
#3	.02236	.11375
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-2-m Acquired: 6/26/2019 22:14:48 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	13058.	148660.	13784.
Stddev	17.	1122.	33.
%RSD	.13311	.75483	.23884
#1	13048.	148590.	13765.
#2	13079.	149820.	13765.
#3	13049.	147580.	13822.

Sample Name: 140-15376-a-3-m Acquired: 6/26/2019 22:20:01 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00158	39.936	.02471	.01650	.54156	.00114
Stddev	.00030	.103	.00057	.00087	.00147	.00001
%RSD	19.033	.25835	2.2872	5.2747	.27171	1.0188
#1	-.00131	39.890	.02484	.01630	.54231	.00114
#2	-.00190	40.055	.02409	.01745	.54251	.00115
#3	-.00152	39.864	.02520	.01574	.53986	.00113
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.10694	-.00023	.02402	.01490	.02752	17.517
Stddev	.00249	.00006	.00017	.00020	.00022	.043
%RSD	2.3242	26.134	.71410	1.3262	.78850	.24818
#1	.10770	-.00029	.02417	.01468	.02751	17.562
#2	.10895	-.00017	.02405	.01505	.02731	17.513
#3	.10416	-.00023	.02383	.01498	.02774	17.475
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15376-a-3-m   Acquired: 6/26/2019 22:20:01   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.3434	.01843	.76698	.15653	.00326	374.65
Stddev	.0325	.00060	.00426	.00059	.00017	.77
%RSD	.97230	3.2327	.55503	.37674	5.3012	.20500
#1	3.3774	.01803	.77100	.15695	.00331	375.04
#2	3.3126	.01814	.76252	.15679	.00340	375.14
#3	3.3401	.01911	.76741	.15586	.00306	373.76
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 538.93	.02704	.32940	.03990	.03902	.00021
Stddev	2.11	.00018	.00271	.00125	.00056	.00130
%RSD	.39116	.67975	.82187	3.1240	1.4330	618.59
#1	541.19	.02694	.32968	.04068	.03965	.00083
#2	537.02	.02725	.33195	.04057	.03883	-.00129
#3	538.58	.02692	.32656	.03847	.03858	.00108
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15376-a-3-m   Acquired: 6/26/2019 22:20:01   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00210	.98566	.00437	.22049	.60689	.00036
Stddev	.00229	.01298	.00002	.00044	.00135	.00195
%RSD	109.10	1.3164	.36916	.20175	.22178	542.41
#1	.00029	.99970	.00436	.22088	.60739	-.00188
#2	-.00428	.97412	.00439	.22058	.60792	.00126
#3	-.00232	.98314	.00436	.22000	.60537	.00170
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.04853	.05770
Stddev	.00021	.00032
%RSD	.42579	.55103
#1	.04870	.05784
#2	.04858	.05793
#3	.04830	.05734
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15376-a-3-m Acquired: 6/26/2019 22:20:01 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12725.	143970.	13355.
Stddev	66.	155.	13.
%RSD	.51481	.10765	.09606
#1	12686.	144150.	13348.
#2	12688.	143850.	13369.
#3	12800.	143920.	13347.

Sample Name: 140-15390-a-1-l   Acquired: 6/26/2019 22:25:14   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00027	6.3714	.00293	.00141	.02806	.00014
Stddev	.00013	.0518	.00044	.00046	.00023	.00001
%RSD	48.247	.81356	14.883	32.777	.81538	6.2082
#1	.00014	6.4235	.00274	.00174	.02815	.00014
#2	.00040	6.3708	.00263	.00088	.02823	.00013
#3	.00028	6.3198	.00343	.00162	.02780	.00015
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04187	-.00007	.00153	.01221	.00168	8.2838
Stddev	.00102	.00003	.00003	.00036	.00009	.0338
%RSD	2.4299	42.110	1.8520	2.9255	5.4999	.40860
#1	.04296	-.00010	.00150	.01213	.00158	8.3163
#2	.04172	-.00006	.00156	.01259	.00176	8.2863
#3	.04094	-.00005	.00154	.01189	.00169	8.2487
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-1-l Acquired: 6/26/2019 22:25:14 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.61834	.00369	.26981	.01282	.00045	204.89
Stddev	.01081	.00020	.00486	.00005	.00005	2.19
%RSD	1.7479	5.3654	1.8022	.37722	11.299	1.0672
#1	.62868	.00366	.27438	.01288	.00051	207.29
#2	.61923	.00390	.27035	.01278	.00042	204.38
#3	.60712	.00350	.26470	.01281	.00042	203.01
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 295.10	.00410	.09677	.01333	.01141	-.00066
Stddev	3.17	.00027	.00204	.00062	.00157	.00176
%RSD	1.0751	6.6629	2.1033	4.6713	13.760	269.04
#1	297.22	.00404	.09900	.01269	.01149	-.00039
#2	291.45	.00386	.09630	.01393	.00980	.00096
#3	296.62	.00440	.09502	.01339	.01293	-.00254
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15390-a-1-l   Acquired: 6/26/2019 22:25:14   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00170	1.9395	.00092	.00573	.15566	.00097
Stddev	.00186	.0142	.00033	.00006	.00178	.00061
%RSD	109.70	.73241	35.796	1.0765	1.1449	62.618
#1	-.00319	1.9434	.00120	.00569	.15766	.00090
#2	.00039	1.9237	.00056	.00580	.15425	.00040
#3	-.00229	1.9513	.00100	.00570	.15506	.00161
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.03589	.01017
Stddev	.00020	.00012
%RSD	.56143	1.1497
#1	.03597	.01029
#2	.03566	.01017
#3	.03604	.01006
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-1-l   Acquired: 6/26/2019 22:25:14   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12738.	145250.	13416.
Stddev	79.	982.	88.
%RSD	.62308	.67617	.65779
#1	12649.	144300.	13337.
#2	12763.	145190.	13399.
#3	12801.	146260.	13511.

Sample Name: 140-15390-a-2-l Acquired: 6/26/2019 22:30:30 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00024	5.1556	.00223	.00107	.02900	-.00006
Stddev	.00037	.0218	.00087	.00116	.00018	.00001
%RSD	156.99	.42255	38.944	108.34	.61380	13.973
#1	.00058	5.1307	.00250	-.00005	.02901	-.00007
#2	-.00016	5.1648	.00126	.00100	.02918	-.00007
#3	.00029	5.1713	.00293	.00227	.02882	-.00005
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.06412	-.00004	.00060	.00437	.00212	2.0670
Stddev	.00146	.00007	.00011	.00044	.00015	.0077
%RSD	2.2816	186.99	17.863	10.131	7.2214	.37361
#1	.06274	.00004	.00070	.00387	.00227	2.0615
#2	.06565	-.00009	.00048	.00454	.00211	2.0759
#3	.06398	-.00006	.00061	.00470	.00197	2.0638
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-2-l Acquired: 6/26/2019 22:30:30 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.61846	.00753	.28347	.01042	.00010	204.42
Stddev	.01455	.00094	.01233	.00006	.00005	1.82
%RSD	2.3533	12.443	4.3507	.60473	44.533	.88844
#1	.60361	.00762	.26925	.01037	.00006	203.73
#2	.61907	.00842	.28992	.01049	.00009	206.49
#3	.63270	.00655	.29124	.01039	.00015	203.06
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 298.39	.00233	.03218	.01249	.01219	.00081
Stddev	1.98	.00008	.00035	.00045	.00097	.00064
%RSD	.66279	3.3006	1.0817	3.6217	7.9678	78.627
#1	296.83	.00239	.03256	.01283	.01313	.00096
#2	300.62	.00224	.03187	.01198	.01226	.00011
#3	297.73	.00235	.03211	.01267	.01119	.00137
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15390-a-2-l Acquired: 6/26/2019 22:30:30 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00101	1.7612	.00031	.00548	.21091	.00085
Stddev	.00186	.0235	.00015	.00005	.00056	.00058
%RSD	184.59	1.3323	47.161	.92464	.26632	68.113
#1	.00311	1.7875	.00025	.00542	.21030	.00020
#2	-.00043	1.7424	.00021	.00551	.21141	.00131
#3	.00035	1.7537	.00048	.00550	.21102	.00104
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00600	.00903
Stddev	.00039	.00005
%RSD	6.5445	.51065
#1	.00626	.00897
#2	.00555	.00906
#3	.00620	.00904
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-2-l Acquired: 6/26/2019 22:30:30 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12531.	143340.	13141.
Stddev	34.	703.	48.
%RSD	.27185	.49053	.36509
#1	12493.	143870.	13094.
#2	12541.	143610.	13190.
#3	12558.	142540.	13139.

Sample Name: 140-15390-a-3-l   Acquired: 6/26/2019 22:35:48   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00002	9.8115	.00257	.00284	.05791	.00010
Stddev	.00065	.0226	.00069	.00021	.00024	.00000
%RSD	3397.2	.22983	26.904	7.4098	.41259	1.4370
#1	-.00066	9.8375	.00303	.00305	.05818	.00010
#2	.00064	9.7981	.00178	.00263	.05773	.00010
#3	.00008	9.7988	.00291	.00285	.05781	.00010
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.08347	-.00007	.00252	.00782	.00460	5.8750
Stddev	.00077	.00011	.00006	.00019	.00021	.0117
%RSD	.92335	150.24	2.4168	2.4313	4.5951	.19865
#1	.08259	.00003	.00245	.00762	.00445	5.8879
#2	.08402	-.00019	.00256	.00799	.00484	5.8651
#3	.08380	-.00006	.00256	.00785	.00450	5.8720
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-3-l Acquired: 6/26/2019 22:35:48 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.1322	.00703	.72036	.03400	-.00002	257.11
Stddev	.0405	.00140	.00322	.00009	.00016	.71
%RSD	3.5738	19.911	.44656	.26871	653.30	.27433
#1	1.1764	.00771	.71901	.03399	.00016	256.37
#2	1.0969	.00796	.71804	.03410	-.00011	257.77
#3	1.1234	.00542	.72403	.03392	-.00012	257.19
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 374.48	.00740	.05546	.01499	.01379	.00037
Stddev	1.54	.00023	.00364	.00166	.00129	.00121
%RSD	.41110	3.0441	6.5560	11.076	9.3447	323.58
#1	375.25	.00743	.05314	.01313	.01521	.00042
#2	372.70	.00717	.05965	.01551	.01347	.00156
#3	375.48	.00762	.05358	.01632	.01269	-.00086
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15390-a-3-l Acquired: 6/26/2019 22:35:48 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00107	1.7552	.00126	.00691	.29282	.00129
Stddev	.00044	.0090	.00018	.00005	.00107	.00136
%RSD	40.606	.51039	14.074	.65863	.36373	105.52
#1	-.00058	1.7626	.00137	.00692	.29244	.00277
#2	-.00123	1.7576	.00105	.00686	.29199	.00098
#3	-.00141	1.7452	.00135	.00695	.29402	.00011
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.01140	.02360
Stddev	.00027	.00008
%RSD	2.3355	.34636
#1	.01126	.02366
#2	.01171	.02351
#3	.01123	.02363
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-3-l   Acquired: 6/26/2019 22:35:48   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12743.	144740.	13357.
Stddev	49.	733.	68.
%RSD	.38664	.50649	.51130
#1	12732.	144030.	13279.
#2	12797.	145500.	13390.
#3	12701.	144690.	13403.

Sample Name: 140-15390-a-4-l   Acquired: 6/26/2019 22:40:59   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00015	11.266	.00264	.00244	.04664	.00005
Stddev	.00017	.054	.00061	.00046	.00011	.00001
%RSD	116.92	.48286	23.097	18.650	.23166	22.712
#1	-.00009	11.282	.00252	.00268	.04662	.00007
#2	-.00001	11.205	.00330	.00273	.04655	.00004
#3	-.00034	11.310	.00210	.00192	.04676	.00006
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.07694	-.00006	.00197	.00769	.00433	5.9050
Stddev	.00085	.00010	.00010	.00021	.00032	.0151
%RSD	1.1100	151.22	5.3051	2.7338	7.4953	.25501
#1	.07595	-.00018	.00208	.00745	.00455	5.9224
#2	.07741	-.00001	.00196	.00776	.00395	5.8972
#3	.07745	-.00000	.00187	.00786	.00448	5.8955
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15390-a-4-l Acquired: 6/26/2019 22:40:59 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.95237	.00699	.64679	.02576	.00001	244.53
Stddev	.01544	.00008	.01256	.00005	.00017	1.74
%RSD	1.6211	1.1347	1.9413	.19294	1572.4	.71303
#1	.94614	.00709	.65631	.02579	.00020	242.95
#2	.94102	.00695	.65151	.02579	-.00006	244.25
#3	.96995	.00695	.63256	.02570	-.00011	246.40
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F 355.52	.00643	.05338	.01461	.01139	-.00093
Stddev	4.95	.00023	.00057	.00048	.00031	.00090
%RSD	1.3917	3.6238	1.0742	3.2605	2.7210	95.876
#1	360.79	.00640	.05285	.01407	.01159	-.00081
#2	354.80	.00668	.05330	.01477	.01104	-.00010
#3	350.97	.00621	.05399	.01499	.01155	-.00188
Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	200.00					
Low Limit	-200.00					

Sample Name: 140-15390-a-4-l Acquired: 6/26/2019 22:40:59 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00066	2.1131	.00105	.00673	.20357	.00118
Stddev	.00113	.0014	.00027	.00013	.00119	.00105
%RSD	171.08	.06577	26.111	1.8819	.58649	89.064
#1	-.00194	2.1146	.00079	.00687	.20268	.00094
#2	-.00022	2.1118	.00133	.00662	.20493	.00027
#3	.00018	2.1131	.00102	.00669	.20311	.00234
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.01150	.02208
Stddev	.00021	.00012
%RSD	1.8649	.55858
#1	.01142	.02208
#2	.01133	.02220
#3	.01174	.02195
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15390-a-4-l   Acquired: 6/26/2019 22:40:59   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12753.	146180.	13380.
Stddev	6.	429.	139.
%RSD	.04954	.29335	1.0420
#1	12746.	146550.	13348.
#2	12758.	145710.	13533.
#3	12754.	146290.	13259.

Sample Name: CRI Acquired: 6/26/2019 22:46:13 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00960	.20881	.01072	.19504	.00989	.00529
Stddev	.00022	.01395	.00058	.00053	.00011	.00004
%RSD	2.3397	6.6825	5.4262	.26966	1.1197	.72907
#1	.00983	.19270	.01133	.19464	.00985	.00533
#2	.00960	.21664	.01067	.19485	.00980	.00528
#3	.00938	.21709	.01017	.19564	.01001	.00525
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.9272	.00536	.05050	.01057	.02372	.11082
Stddev	.0103	.00004	.00020	.00007	.00013	.00178
%RSD	.20907	.73104	.39366	.68873	.54289	1.6030
#1	4.9356	.00538	.05066	.01063	.02386	.11187
#2	4.9302	.00532	.05056	.01059	.02361	.11183
#3	4.9157	.00538	.05027	.01049	.02369	.10877
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI Acquired: 6/26/2019 22:46:13 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.9081	.04818	4.8174	.01544	.04140	4.3401
Stddev	.0233	.00088	.0142	.00017	.00039	2.2875
%RSD	.47443	1.8239	.29547	1.1231	.94891	52.707
#1	4.9316	.04733	4.8273	.01561	.04183	1.8122
#2	4.9076	.04812	4.8011	.01544	.04130	4.9408
#3	4.8850	.04908	4.8239	.01526	.04106	6.2675
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.0934	.04193	.34535	.01098	.01262	.06697
Stddev	.0387	.00014	.00250	.00234	.00076	.00118
%RSD	.76060	.32489	.72287	21.317	6.0035	1.7693
#1	5.1295	.04201	.34796	.01091	.01301	.06832
#2	5.0982	.04177	.34299	.00867	.01174	.06609
#3	5.0525	.04200	.34511	.01335	.01309	.06649
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI Acquired: 6/26/2019 22:46:13 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00928	.47270	.10630	.05019	.05054	.01114
Stddev	.00059	.00620	.00023	.00024	.00090	.00009
%RSD	6.3846	1.3115	.21844	.47893	1.7754	.77394
#1	.00893	.47687	.10656	.05034	.05111	.01108
#2	.00894	.46557	.10612	.05032	.05099	.01124
#3	.00996	.47564	.10622	.04991	.04950	.01111
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02456	.02880
Stddev	.00003	.00013
%RSD	.11481	.44329
#1	.02455	.02895
#2	.02459	.02876
#3	.02453	.02871
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CRI   Acquired: 6/26/2019 22:46:13   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12456.	144620.	12980.
Stddev	84.	1307.	68.
%RSD	.67718	.90372	.52163
#1	12374.	143210.	12902.
#2	12454.	144850.	13022.
#3	12542.	145790.	13016.

Sample Name: CCV   Acquired: 6/26/2019 22:51:15   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.97589	25.818	.51279	1.9746	1.9786	2.1404
Stddev	.00256	.046	.00074	.0044	.0062	.0163
%RSD	.26192	.17932	.14408	.22103	.31542	.76142
#1	.97884	25.866	.51194	1.9795	1.9857	2.1590
#2	.97453	25.814	.51332	1.9714	1.9761	2.1334
#3	.97431	25.774	.51309	1.9728	1.9740	2.1288
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.399	.51278	1.9959	2.0538	1.9894	26.275
Stddev	.073	.00124	.0052	.0102	.0083	.051
%RSD	.15002	.24229	.25998	.49570	.41516	.19549
#1	48.449	.51417	2.0013	2.0651	1.9990	26.300
#2	48.431	.51240	1.9955	2.0508	1.9850	26.309
#3	48.315	.51178	1.9910	2.0454	1.9844	26.216
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/26/2019 22:51:15 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.714	1.9485	49.023	2.0541	2.0120	50.825
Stddev	.128	.0059	.188	.0067	.0044	.920
%RSD	.26200	.30212	.38430	.32727	.21805	1.8093
#1	48.804	1.9520	48.903	2.0609	2.0169	51.680
#2	48.769	1.9518	49.240	2.0539	2.0109	50.941
#3	48.568	1.9417	48.926	2.0475	2.0083	49.852
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	50.937	2.0835	F 2.3174	.49564	.51582	.51504
Stddev	.124	.0051	.0085	.00746	.00199	.00354
%RSD	.24361	.24280	.36715	1.5052	.38596	.68668
#1	51.074	2.0888	2.3272	.50425	.51741	.51842
#2	50.903	2.0829	2.3126	.49160	.51647	.51534
#3	50.833	2.0787	2.3123	.49106	.51359	.51136
Check ?	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
Value			2.0000			
Range			10.500%			

Sample Name: CCV Acquired: 6/26/2019 22:51:15 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49820	1.9754	2.0595	2.0119	2.0362	.99619
Stddev	.00161	.0170	.0063	.0067	.0077	.00310
%RSD	.32344	.86125	.30392	.33273	.37604	.31163
#1	.49921	1.9558	2.0656	2.0187	2.0447	.99895
#2	.49905	1.9841	2.0599	2.0117	2.0343	.99680
#3	.49635	1.9863	2.0531	2.0053	2.0297	.99283
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	1.9942	1.9887
Stddev	.0098	.0068
%RSD	.48910	.34366
#1	2.0052	1.9958
#2	1.9906	1.9883
#3	1.9868	1.9821
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV   Acquired: 6/26/2019 22:51:15   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12215.	142800.	12883.
Stddev	85.	1817.	61.
%RSD	.69233	1.2722	.47276
#1	12128.	140780.	12909.
#2	12221.	143300.	12813.
#3	12297.	144310.	12926.

Sample Name: CCB   Acquired: 6/26/2019 22:56:16   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00025	-.01692	-.00055	.00165	.00014	-.00003
Stddev	.00031	.00901	.00108	.00194	.00001	.00011
%RSD	127.69	53.258	195.02	117.78	5.9217	353.41
#1	-.00010	-.01347	.00062	.00284	.00015	.00009
#2	.00052	-.01014	-.00078	.00271	.00013	-.00006
#3	.00031	-.02714	-.00150	-.00059	.00014	-.00012
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00065	-.00002	.00007	.00039	-.00083	.00145
Stddev	.00174	.00006	.00010	.00022	.00006	.00173
%RSD	268.00	221.48	138.38	56.561	7.6302	118.64
#1	.00262	.00003	.00013	.00062	-.00077	.00311
#2	-.00066	-.00002	.00014	.00018	-.00083	-.00033
#3	-.00001	-.00008	-.00004	.00038	-.00089	.00158
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/26/2019 22:56:16 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04454	-.00087	.00414	.00003	.00013	1.9656
Stddev	.01509	.00097	.00466	.00009	.00009	.7601
%RSD	33.890	111.33	112.52	315.61	70.562	38.671
#1	.02824	-.00151	.00488	.00014	.00007	1.1297
#2	.05803	.00025	-.00084	.00000	.00024	2.1515
#3	.04735	-.00136	.00838	-.00005	.00009	2.6154
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.09224	-.00024	-.00021	.00095	.00131	.00029
Stddev	.00610	.00014	.00210	.00037	.00185	.00197
%RSD	6.6158	57.698	1010.4	38.860	140.96	672.77
#1	.09355	-.00032	-.00243	.00125	-.00002	.00253
#2	.09758	-.00008	.00008	.00054	.00343	-.00045
#3	.08559	-.00032	.00173	.00106	.00054	-.00120
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/26/2019 22:56:16 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00014	-.00645	.00043	.00015	-.00011	.00174
Stddev	.00120	.01583	.00045	.00003	.00048	.00121
%RSD	837.81	245.43	104.13	19.766	446.37	69.539
#1	.00151	.00965	.00053	.00018	-.00029	.00306
#2	-.00074	-.00700	.00083	.00012	.00043	.00149
#3	-.00034	-.02199	-.00006	.00014	-.00047	.00068
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00008	.00016
Stddev	.00030	.00007
%RSD	384.93	45.610
#1	-.00003	.00021
#2	.00019	.00020
#3	-.00040	.00008
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/26/2019 22:56:16 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12446.	144150.	13023.
Stddev	88.	302.	30.
%RSD	.70517	.20951	.22719
#1	12361.	143820.	13035.
#2	12441.	144420.	13046.
#3	12536.	144220.	12990.

Sample Name: mb 140-31034/13-a Acquired: 6/26/2019 23:01:28 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00007	.00703	-.00081	.01592	.00013	-.00017
Stddev	.00024	.00927	.00093	.00056	.00012	.00001
%RSD	353.23	131.85	114.69	3.5251	93.999	8.8725
#1	-.00012	-.00276	-.00077	.01615	.00018	-.00016
#2	.00033	.01568	.00010	.01528	-.00001	-.00016
#3	-.00001	.00817	-.00175	.01633	.00022	-.00018
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04081	-.00010	.00000	.00145	-.00059	.02162
Stddev	.00126	.00003	.00011	.00007	.00017	.00138
%RSD	3.0859	28.769	2710.5	5.0631	28.559	6.3819
#1	.03937	-.00012	-.00001	.00146	-.00043	.02003
#2	.04172	-.00007	-.00010	.00138	-.00057	.02239
#3	.04133	-.00009	.00012	.00152	-.00077	.02245
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-31034/13-a Acquired: 6/26/2019 23:01:28 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.11813	-.00154	.02338	.00067	.00018	1.5911
Stddev	.02926	.00127	.01618	.00001	.00018	2.2896
%RSD	24.769	81.995	69.200	1.4949	94.967	143.90
#1	.13198	-.00280	.03363	.00067	.00039	-1.0519
#2	.08452	-.00027	.00473	.00066	.00008	2.9698
#3	.13789	-.00156	.03179	.00068	.00009	2.8553
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.11658	.00244	.10367	.00203	.00153	.00075
Stddev	.00422	.00017	.00184	.00176	.00092	.00080
%RSD	3.6210	6.9181	1.7759	86.663	60.286	106.80
#1	.11425	.00225	.10572	.00359	.00226	.00151
#2	.12145	.00247	.10215	.00013	.00049	-.00009
#3	.11404	.00258	.10315	.00237	.00184	.00082
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: mb 140-31034/13-a Acquired: 6/26/2019 23:01:28 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00207	.04170	F .12219	.00009	.00081	.00088
Stddev	.00098	.00426	.00030	.00005	.00079	.00160
%RSD	47.498	10.225	.24343	51.200	96.955	180.77
#1	.00313	.03705	.12193	.00004	.00163	-.00083
#2	.00191	.04542	.12212	.00013	.00005	.00234
#3	.00118	.04264	.12251	.00012	.00076	.00114
Check ?	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit			.05000			
Low Limit			-.05000			

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00013	.01115
Stddev	.00024	.00003
%RSD	184.86	.30279
#1	-.00007	.01117
#2	-.00040	.01116
#3	.00008	.01111
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: mb 140-31034/13-a Acquired: 6/26/2019 23:01:28 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12380.	144940.	13027.
Stddev	27.	931.	73.
%RSD	.21467	.64222	.56041
#1	12357.	143940.	13015.
#2	12373.	145100.	13105.
#3	12409.	145780.	12960.

Sample Name: lcs 140-31034/14-a   Acquired: 6/26/2019 23:06:39   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04931	2.0927	.10497	1.0112	.09930	.05587
Stddev	.00056	.0222	.00058	.0022	.00054	.00022
%RSD	1.1350	1.0591	.54788	.21482	.54360	.38712
#1	.04993	2.1123	.10545	1.0137	.09978	.05610
#2	.04885	2.0971	.10513	1.0100	.09940	.05568
#3	.04913	2.0687	.10434	1.0099	.09872	.05582
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.909	.05289	.10102	.21035	.25137	1.0885
Stddev	.189	.00006	.00043	.00076	.00122	.0037
%RSD	.38661	.11898	.42594	.35923	.48613	.34415
#1	49.076	.05296	.10151	.21123	.25241	1.0920
#2	48.946	.05284	.10074	.20994	.25167	1.0889
#3	48.704	.05288	.10080	.20990	.25002	1.0846
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: lcs 140-31034/14-a   Acquired: 6/26/2019 23:06:39   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.955	.10097	9.7702	.10387	.52713	F 35.322
Stddev	.233	.00098	.0239	.00051	.00192	1.245
%RSD	.47648	.97166	.24513	.48864	.36488	3.5244
#1	49.201	.10034	9.7445	.10443	.52927	35.384
#2	48.926	.10210	9.7919	.10373	.52656	36.534
#3	48.738	.10047	9.7741	.10345	.52555	34.047
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value						50.000
Range						-20.000%

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.278	.52764	F 6.0125	.10173	.10480	.53313
Stddev	.295	.00146	.0231	.00136	.00029	.00073
%RSD	.57599	.27655	.38353	1.3338	.27962	.13633
#1	51.537	.52930	6.0366	.10031	.10457	.53349
#2	51.341	.52704	6.0103	.10187	.10471	.53361
#3	50.956	.52658	5.9906	.10301	.10513	.53230
Check ?	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
Value			5.0000			
Range			20.000%			

Sample Name: lcs 140-31034/14-a   Acquired: 6/26/2019 23:06:39   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.15126	4.8395	F .65156	.50233	.10870	.40015
Stddev	.00066	.0250	.00032	.00258	.00110	.00155
%RSD	.43912	.51710	.04872	.51313	1.0138	.38620
#1	.15149	4.8159	.65188	.50449	.10978	.40144
#2	.15051	4.8657	.65125	.50302	.10872	.39844
#3	.15178	4.8370	.65155	.49948	.10758	.40058
Check ?	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
Value			.50000			
Range			20.000%			

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20165	.51037
Stddev	.00068	.00113
%RSD	.33690	.22166
#1	.20238	.51164
#2	.20104	.51003
#3	.20155	.50945
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: lcs 140-31034/14-a Acquired: 6/26/2019 23:06:39 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12316.	143370.	13067.
Stddev	72.	2081.	77.
%RSD	.58064	1.4514	.58827
#1	12240.	140970.	12986.
#2	12325.	144560.	13139.
#3	12382.	144590.	13077.

Sample Name: 140-15402-a-1-c   Acquired: 6/26/2019 23:11:34   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00021	.14253	-.00174	.05501	.01037	-.00019
Stddev	.00057	.00845	.00133	.00143	.00008	.00002
%RSD	271.34	5.9256	76.523	2.6033	.73998	12.812
#1	.00038	.13817	-.00050	.05662	.01029	-.00016
#2	.00068	.13715	-.00157	.05454	.01044	-.00020
#3	-.00043	.15226	-.00314	.05387	.01038	-.00020
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.9581	-.00001	.00064	.00363	.00317	.40630
Stddev	.0063	.00007	.00018	.00024	.00021	.00676
%RSD	.21121	765.41	28.563	6.7324	6.5506	1.6626
#1	2.9636	.00007	.00082	.00371	.00340	.41000
#2	2.9513	-.00005	.00064	.00335	.00300	.41039
#3	2.9595	-.00005	.00045	.00382	.00312	.39850
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-1-c Acquired: 6/26/2019 23:11:34 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	15.961	.00460	.26537	.01115	.00545	F 14574.
Stddev	2.564	.00071	.01391	.00012	.00016	75.
%RSD	16.064	15.393	5.2404	1.0794	2.8585	.51697
#1	18.782	.00459	.25136	.01123	.00556	14648.
#2	15.328	.00389	.26560	.01121	.00552	14577.
#3	13.773	.00531	.27917	.01101	.00527	14497.
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit						1000.0
Low Limit						-1000.0

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	^ *****	5.8282	.94849	1.1968	1.2174	.00390
Stddev	-----	.0044	.00401	.0057	.0035	.00054
%RSD	-----	.07572	.42263	.47731	.29085	13.765
#1	^ -----	5.8307	.95181	1.2030	1.2178	.00329
#2	^ -----	5.8231	.94404	1.1918	1.2137	.00432
#3	^ -----	5.8308	.94962	1.1956	1.2207	.00408
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-1-c   Acquired: 6/26/2019 23:11:34   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00610	2.3637	.08022	.01266	.00542	-.00204
Stddev	.00126	.0072	.00070	.00003	.00073	.00059
%RSD	20.621	.30248	.86826	.20280	13.426	28.744
#1	.00605	2.3657	.08083	.01268	.00535	-.00145
#2	.00738	2.3697	.07946	.01265	.00618	-.00263
#3	.00487	2.3558	.08035	.01263	.00473	-.00205
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00074	.01704
Stddev	.00014	.00025
%RSD	18.838	1.4639
#1	.00080	.01733
#2	.00058	.01691
#3	.00084	.01689
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15402-a-1-c   Acquired: 6/26/2019 23:11:34   Type: Unk

Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000

User: kerry   Custom ID1:   Custom ID2:   Custom ID3:

Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	7810.2	89147.	10898.
Stddev	49.7	820.	45.
%RSD	.63677	.91950	.40975
#1	7753.5	88275.	10850.
#2	7830.8	89262.	10939.
#3	7846.4	89902.	10906.

Sample Name: 140-15402-a-2-g Acquired: 6/26/2019 23:16:45 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00055	.15104	-.00178	.04386	.00847	-.00019
Stddev	.00012	.01848	.00081	.00041	.00005	.00002
%RSD	21.156	12.235	45.683	.93710	.54786	8.1305
#1	-.00066	.15299	-.00183	.04424	.00845	-.00020
#2	-.00043	.13166	-.00256	.04342	.00853	-.00017
#3	-.00055	.16846	-.00094	.04392	.00844	-.00020
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.3414	-.00011	.00119	.00456	.00374	.56186
Stddev	.0145	.00003	.00010	.00027	.00026	.00291
%RSD	.61874	29.119	8.6574	5.9419	6.9155	.51739
#1	2.3573	-.00014	.00107	.00478	.00380	.56181
#2	2.3380	-.00009	.00125	.00426	.00346	.56479
#3	2.3289	-.00008	.00126	.00464	.00397	.55897
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-2-g Acquired: 6/26/2019 23:16:45 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.888	.00303	.19937	.01432	.00268	F 14880.
Stddev	.203	.00035	.01371	.00004	.00007	82.
%RSD	1.8665	11.689	6.8789	.31140	2.7002	.55093
#1	11.045	.00264	.19245	.01435	.00261	14863.
#2	10.960	.00333	.21517	.01435	.00275	14807.
#3	10.659	.00313	.19050	.01427	.00268	14969.
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit						1000.0
Low Limit						-1000.0

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	^ *****	7.2436	.23205	1.4516	1.4754	.00312
Stddev	-----	.0078	.00216	.0175	.0029	.00285
%RSD	-----	.10742	.93225	1.2080	.19952	91.396
#1	^ -----	7.2425	.23365	1.4572	1.4736	.00473
#2	^ -----	7.2365	.22959	1.4657	1.4738	.00480
#3	^ -----	7.2519	.23291	1.4320	1.4788	-.00017
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-2-g Acquired: 6/26/2019 23:16:45 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00372	2.2222	.08105	.00919	.00533	-.00118
Stddev	.00336	.0131	.00013	.00009	.00040	.00150
%RSD	90.293	.59031	.15515	.93701	7.5455	127.12
#1	.00518	2.2112	.08108	.00913	.00576	.00049
#2	.00611	2.2367	.08117	.00929	.00526	-.00161
#3	-.00012	2.2187	.08092	.00915	.00497	-.00243
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00058	.02193
Stddev	.00011	.00019
%RSD	18.586	.86568
#1	.00051	.02215
#2	.00071	.02185
#3	.00053	.02179
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15402-a-2-g   Acquired: 6/26/2019 23:16:45   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	7824.2	89796.	10984.
Stddev	47.0	1106.	88.
%RSD	.60051	1.2313	.80433
#1	7771.5	88830.	10885.
#2	7839.3	89557.	11016.
#3	7861.8	91002.	11053.

Sample Name: 140-15402-a-2-h ms Acquired: 6/26/2019 23:21:57 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.07891	2.3891	.14716	1.2727	.11816	.05253
Stddev	.00058	.0085	.00106	.0036	.00027	.00018
%RSD	.73908	.35681	.71885	.28635	.22748	.33608
#1	.07841	2.3964	.14644	1.2710	.11821	.05248
#2	.07877	2.3797	.14666	1.2769	.11839	.05238
#3	.07955	2.3911	.14838	1.2702	.11786	.05272
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	49.701	.05082	.09352	.20651	.34666	1.6297
Stddev	.055	.00011	.00016	.00139	.00150	.0097
%RSD	.11122	.20934	.17639	.67292	.43181	.59205
#1	49.709	.05083	.09338	.20598	.34759	1.6280
#2	49.752	.05071	.09347	.20547	.34745	1.6401
#3	49.642	.05092	.09370	.20809	.34493	1.6210
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-2-h ms Acquired: 6/26/2019 23:21:57 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	70.252	.14126	8.9099	.11691	.51921	F 17205.
Stddev	.217	.00142	.0154	.00060	.00108	81.
%RSD	.30861	1.0082	.17334	.51400	.20866	.46860
#1	70.306	.13974	8.8938	.11622	.51927	17164.
#2	70.438	.14147	8.9113	.11721	.52026	17297.
#3	70.014	.14256	8.9246	.11730	.51809	17152.
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit						1000.0
Low Limit						-1000.0

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	^ *****	7.4718	8.4927	1.4693	1.5184	.69762
Stddev	-----	.0027	.0214	.0104	.0040	.00246
%RSD	-----	.03679	.25165	.70802	.26120	.35256
#1	^ -----	7.4750	8.5102	1.4615	1.5211	.69554
#2	^ -----	7.4705	8.4990	1.4653	1.5138	.70033
#3	^ -----	7.4701	8.4689	1.4811	1.5201	.69697
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-2-h ms Acquired: 6/26/2019 23:21:57 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.27517	7.5764	.56137	.56266	.12155	.33194
Stddev	.00301	.0524	.00087	.00100	.00076	.00366
%RSD	1.0948	.69121	.15456	.17734	.62376	1.1020
#1	.27792	7.6368	.56142	.56195	.12077	.33438
#2	.27195	7.5487	.56048	.56380	.12158	.33371
#3	.27564	7.5436	.56222	.56224	.12229	.32773
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.21245	.71394
Stddev	.00029	.00106
%RSD	.13698	.14868
#1	.21266	.71422
#2	.21258	.71484
#3	.21212	.71277
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15402-a-2-h ms Acquired: 6/26/2019 23:21:57 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	7329.3	85181.	10442.
Stddev	51.9	464.	80.
%RSD	.70745	.54482	.76671
#1	7278.0	84647.	10361.
#2	7328.2	85408.	10444.
#3	7381.6	85488.	10521.

Sample Name: 140-15402-a-2-i msd   Acquired: 6/26/2019 23:26:56   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.06492	2.2282	.13770	1.1873	.11179	.04926
Stddev	.00079	.0088	.00075	.0042	.00006	.00032
%RSD	1.2133	.39372	.54280	.35707	.05096	.63971
#1	.06535	2.2249	.13850	1.1833	.11175	.04891
#2	.06402	2.2215	.13758	1.1870	.11186	.04951
#3	.06540	2.2381	.13702	1.1917	.11177	.04935
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	47.174	.04172	.08799	.19479	.32473	1.3311
Stddev	.054	.00005	.00011	.00192	.00099	.0101
%RSD	.11382	.11664	.12766	.98766	.30396	.75747
#1	47.169	.04178	.08805	.19278	.32576	1.3202
#2	47.230	.04171	.08786	.19661	.32380	1.3331
#3	47.123	.04168	.08806	.19499	.32461	1.3401
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-2-i msd Acquired: 6/26/2019 23:26:56 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	65.095	.12941	8.3539	.10069	.49005	F 16471.
Stddev	.471	.00115	.0347	.00043	.00032	74.
%RSD	.72426	.88570	.41565	.42965	.06560	.45079
#1	65.344	.12945	8.3183	.10025	.49004	16460.
#2	65.390	.13054	8.3557	.10112	.49037	16549.
#3	64.551	.12825	8.3877	.10070	.48973	16402.
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit						1000.0
Low Limit						-1000.0

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	^ *****	6.1675	7.9360	1.1017	1.1321	.65213
Stddev	-----	.0116	.0153	.0146	.0050	.00185
%RSD	-----	.18725	.19272	1.3235	.43984	.28345
#1	^ -----	6.1726	7.9482	1.0862	1.1374	.65362
#2	^ -----	6.1756	7.9188	1.1152	1.1317	.65006
#3	^ -----	6.1543	7.9408	1.1036	1.1274	.65271
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-2-i msd   Acquired: 6/26/2019 23:26:56   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.25956	6.7383	.53010	.52576	.11364	.31213
Stddev	.00360	.0355	.00091	.00129	.00081	.00120
%RSD	1.3851	.52651	.17187	.24619	.71522	.38342
#1	.26291	6.6985	.53099	.52552	.11362	.31350
#2	.25576	6.7497	.52917	.52715	.11446	.31158
#3	.26002	6.7667	.53014	.52459	.11284	.31131
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20013	.66745
Stddev	.00141	.00068
%RSD	.70261	.10164
#1	.19869	.66795
#2	.20150	.66668
#3	.20021	.66772
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15402-a-2-i msd   Acquired: 6/26/2019 23:26:56   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	7404.0	85627.	10582.
Stddev	42.8	468.	76.
%RSD	.57741	.54709	.71936
#1	7361.6	85742.	10495.
#2	7403.4	85112.	10614.
#3	7447.1	86028.	10636.

Sample Name: 140-15402-a-2-g PDS   Acquired: 6/26/2019 23:31:56   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.06868	2.1567	.12928	1.1423	.10721	.04825
Stddev	.00141	.0068	.00094	.0042	.00020	.00020
%RSD	2.0579	.31553	.72420	.36860	.18466	.40507
#1	.07012	2.1510	.13036	1.1456	.10730	.04813
#2	.06861	2.1642	.12868	1.1436	.10735	.04815
#3	.06730	2.1547	.12881	1.1375	.10699	.04848
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	45.728	.04629	.08591	.19090	.30525	1.4824
Stddev	.062	.00012	.00025	.00089	.00130	.0005
%RSD	.13544	.26519	.28885	.46619	.42693	.03276
#1	45.777	.04639	.08620	.19013	.30622	1.4820
#2	45.748	.04632	.08572	.19070	.30576	1.4829
#3	45.658	.04615	.08582	.19188	.30377	1.4825
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-2-g PDS Acquired: 6/26/2019 23:31:56 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	58.215	.12223	8.2758	.10837	.47417	F 14327.
Stddev	.063	.00184	.0707	.00026	.00053	63.
%RSD	.10812	1.5054	.85487	.23915	.11080	.44280
#1	58.287	.12096	8.2125	.10858	.47474	14257.
#2	58.189	.12140	8.3522	.10808	.47407	14380.
#3	58.169	.12434	8.2627	.10846	.47370	14344.
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit						1000.0
Low Limit						-1000.0

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	^ *****	7.3641	7.5296	1.4710	1.4996	.61817
Stddev	-----	.0167	.0075	.0109	.0015	.00129
%RSD	-----	.22630	.09964	.73970	.10150	.20792
#1	^ -----	7.3832	7.5344	1.4661	1.5012	.61814
#2	^ -----	7.3561	7.5335	1.4634	1.4994	.61947
#3	^ -----	7.3529	7.5210	1.4834	1.4982	.61690
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-2-g PDS   Acquired: 6/26/2019 23:31:56   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.24118	6.8551	.52568	.50372	.11081	.32869
Stddev	.00116	.0052	.00121	.00166	.00025	.00186
%RSD	.48004	.07570	.23036	.32952	.22878	.56555
#1	.24074	6.8583	.52707	.50539	.11106	.33038
#2	.24031	6.8578	.52484	.50372	.11056	.32899
#3	.24250	6.8491	.52513	.50207	.11081	.32670
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.19419	.63383
Stddev	.00024	.00189
%RSD	.12121	.29800
#1	.19393	.63564
#2	.19438	.63398
#3	.19427	.63187
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15402-a-2-g PDS Acquired: 6/26/2019 23:31:56 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	7946.7	91043.	10965.
Stddev	62.6	539.	48.
%RSD	.78818	.59182	.43528
#1	7876.3	90445.	10922.
#2	7967.7	91490.	10955.
#3	7996.1	91195.	11016.

Sample Name: 140-15402-a-3-c Acquired: 6/26/2019 23:36:55 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00005	.13407	-.00195	.04521	.01044	-.00019
Stddev	.00046	.01409	.00137	.00085	.00002	.00001
%RSD	867.42	10.512	70.229	1.8847	.15406	5.0340
#1	-.00006	.14695	-.00353	.04581	.01044	-.00019
#2	.00041	.11901	-.00121	.04424	.01046	-.00019
#3	-.00051	.13626	-.00111	.04560	.01042	-.00018
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.8411	-.00006	.00058	.00276	.00272	.45861
Stddev	.0081	.00004	.00016	.00036	.00031	.00309
%RSD	.28620	63.290	27.346	13.017	11.494	.67390
#1	2.8452	-.00008	.00045	.00310	.00303	.46218
#2	2.8317	-.00009	.00053	.00278	.00241	.45678
#3	2.8463	-.00002	.00075	.00239	.00273	.45688
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-3-c Acquired: 6/26/2019 23:36:55 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.6433	.00261	.21457	.01128	.00308	F 15924.
Stddev	.0926	.00104	.00862	.00006	.00020	35.
%RSD	1.6402	39.749	4.0164	.55318	6.5316	.21737
#1	5.6182	.00205	.21650	.01135	.00293	15941.
#2	5.7458	.00198	.22206	.01123	.00331	15885.
#3	5.5659	.00381	.20515	.01127	.00299	15947.
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit						1000.0
Low Limit						-1000.0

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	^ *****	5.8583	.24159	1.2158	1.2398	.00307
Stddev	-----	.0057	.00162	.0051	.0007	.00154
%RSD	-----	.09705	.66880	.41736	.05456	50.346
#1	^ -----	5.8641	.24301	1.2212	1.2390	.00484
#2	^ -----	5.8580	.24193	1.2150	1.2402	.00202
#3	^ -----	5.8528	.23983	1.2111	1.2401	.00234
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-3-c Acquired: 6/26/2019 23:36:55 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00614	2.1327	.07783	.01120	.00479	-.00383
Stddev	.00122	.0112	.00057	.00015	.00043	.00128
%RSD	19.852	.52469	.72886	1.3636	8.9041	33.519
#1	.00479	2.1356	.07760	.01138	.00435	-.00367
#2	.00647	2.1203	.07742	.01112	.00484	-.00519
#3	.00716	2.1421	.07848	.01111	.00520	-.00264
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00021	.02237
Stddev	.00020	.00020
%RSD	96.876	.91014
#1	.00005	.02257
#2	.00014	.02238
#3	.00043	.02216
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15402-a-3-c Acquired: 6/26/2019 23:36:55 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	7553.3	86534.	10742.
Stddev	57.9	707.	98.
%RSD	.76686	.81666	.91598
#1	7491.6	85732.	10633.
#2	7561.8	86803.	10768.
#3	7606.5	87066.	10825.

Sample Name: 140-15402-a-4-c Acquired: 6/26/2019 23:42:06 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00045	.26835	-.00081	.03369	.02462	-.00019
Stddev	.00068	.00592	.00119	.00087	.00007	.00001
%RSD	148.88	2.2051	146.46	2.5771	.28650	3.6744
#1	-.00106	.26825	-.00219	.03345	.02463	-.00020
#2	-.00059	.26249	-.00014	.03466	.02454	-.00019
#3	.00028	.27432	-.00011	.03297	.02468	-.00019
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	7.9174	-.00004	.00083	.02582	.01031	2.4336
Stddev	.0067	.00014	.00022	.00011	.00018	.0106
%RSD	.08530	361.32	26.069	.44275	1.7301	.43636
#1	7.9131	-.00015	.00060	.02570	.01037	2.4330
#2	7.9139	-.00009	.00103	.02593	.01045	2.4233
#3	7.9252	.00012	.00085	.02583	.01011	2.4445
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-4-c   Acquired: 6/26/2019 23:42:06   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.5307	.00238	1.5364	.04861	.00801	F 16062.
Stddev	.1367	.00123	.0179	.00014	.00005	134.
%RSD	2.4716	51.662	1.1650	.29360	.59290	.83282
#1	5.3729	.00106	1.5513	.04865	.00800	15937.
#2	5.6137	.00349	1.5166	.04846	.00797	16045.
#3	5.6054	.00261	1.5414	.04873	.00806	16203.
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit						1000.0
Low Limit						-1000.0

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	^ *****	5.3392	2.2625	1.2196	1.2486	.00243
Stddev	-----	.0131	.0146	.0117	.0037	.00198
%RSD	-----	.24595	.64371	.95646	.29966	81.262
#1	^ -----	5.3241	2.2459	1.2229	1.2445	.00185
#2	^ -----	5.3470	2.2681	1.2067	1.2494	.00081
#3	^ -----	5.3466	2.2733	1.2293	1.2518	.00463
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-4-c   Acquired: 6/26/2019 23:42:06   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00699	1.7832	.07500	.01950	.01380	-.00039
Stddev	.00335	.0015	.00036	.00010	.00122	.00004
%RSD	47.929	.08393	.48098	.49949	8.8203	10.373
#1	.01037	1.7842	.07464	.01939	.01240	-.00036
#2	.00693	1.7838	.07536	.01952	.01454	-.00044
#3	.00367	1.7815	.07501	.01958	.01448	-.00037
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00101	.09621
Stddev	.00017	.00035
%RSD	17.197	.36421
#1	.00119	.09583
#2	.00084	.09629
#3	.00099	.09652
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15402-a-4-c Acquired: 6/26/2019 23:42:06 Type: Unk

Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000

User: kerry Custom ID1: Custom ID2: Custom ID3:

Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	7625.1	87804.	10819.
Stddev	25.0	833.	72.
%RSD	.32836	.94814	.66823
#1	7596.9	86898.	10740.
#2	7634.1	88535.	10882.
#3	7644.5	87978.	10835.

Sample Name: 140-15402-a-2-g SD@5 Acquired: 6/26/2019 23:47:16 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00002	.02678	-.00150	.00607	.00168	-.00020
Stddev	.00006	.02001	.00074	.00072	.00012	.00002
%RSD	235.35	74.741	49.478	11.897	7.3533	11.951
#1	.00003	.04942	-.00088	.00658	.00170	-.00017
#2	-.00008	.01945	-.00130	.00639	.00180	-.00020
#3	-.00002	.01146	-.00233	.00524	.00155	-.00022
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.53734	-.00006	-.00038	.00120	.00013	.12821
Stddev	.00299	.00010	.00007	.00005	.00042	.00171
%RSD	.55615	173.31	19.314	4.4618	331.71	1.3333
#1	.53733	-.00006	-.00034	.00125	.00061	.12869
#2	.54034	.00004	-.00033	.00114	-.00009	.12962
#3	.53436	-.00015	-.00046	.00121	-.00014	.12631
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-2-g SD@5 Acquired: 6/26/2019 23:47:16 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.33468	-.00136	.04931	.00304	.00044	F 3083.2
Stddev	.02783	.00081	.01613	.00008	.00013	11.5
%RSD	8.3151	59.867	32.714	2.6935	30.691	.37199
#1	.30601	-.00061	.04146	.00303	.00029	3095.8
#2	.33644	-.00123	.06787	.00312	.00047	3080.4
#3	.36158	-.00222	.03861	.00295	.00055	3073.4
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit						1000.0
Low Limit						-1000.0

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	^ *****	1.6182	.04278	.33169	.33200	-.00002
Stddev	-----	.0006	.00222	.00136	.00225	.00135
%RSD	-----	.03973	5.1803	.40915	.67773	5443.7
#1	^ -----	1.6189	.04529	.33018	.33244	-.00015
#2	^ -----	1.6177	.04192	.33212	.33400	-.00130
#3	^ -----	1.6179	.04112	.33279	.32956	.00138
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-2-g SD@5 Acquired: 6/26/2019 23:47:16 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00113	.42551	.01906	.00183	.00045	-.00176
Stddev	.00057	.00192	.00026	.00008	.00053	.00220
%RSD	49.892	.45234	1.3664	4.3142	116.65	124.62
#1	.00113	.42756	.01933	.00191	-.00001	-.00424
#2	.00170	.42374	.01902	.00175	.00102	-.00100
#3	.00057	.42524	.01882	.00183	.00034	-.00005
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00013	.01379
Stddev	.00024	.00015
%RSD	186.99	1.1055
#1	-.00010	.01391
#2	.00038	.01362
#3	.00011	.01383
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15402-a-2-g SD@5 Acquired: 6/26/2019 23:47:16 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment: 2ML TO 10ML

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	10586.	119700.	12545.
Stddev	35.	854.	149.
%RSD	.32730	.71317	1.1863
#1	10546.	118750.	12468.
#2	10605.	119950.	12451.
#3	10607.	120400.	12717.

Sample Name: CCV Acquired: 6/26/2019 23:52:26 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.98046	25.770	.51629	1.9757	1.9903	2.1671
Stddev	.00292	.087	.00032	.0027	.0056	.0126
%RSD	.29774	.33929	.06274	.13578	.28143	.58344
#1	.98321	25.681	.51653	1.9787	1.9941	2.1610
#2	.98077	25.774	.51592	1.9750	1.9930	2.1586
#3	.97739	25.856	.51641	1.9734	1.9839	2.1816
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.077	.51454	1.9984	2.0730	2.0122	25.691
Stddev	.085	.00091	.0052	.0036	.0111	.074
%RSD	.17720	.17725	.26164	.17132	.55180	.28976
#1	48.110	.51559	2.0044	2.0741	2.0245	25.724
#2	48.140	.51391	1.9960	2.0690	2.0094	25.744
#3	47.980	.51414	1.9949	2.0759	2.0028	25.606
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/26/2019 23:52:26 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.872	1.9474	47.984	2.0588	2.0201	52.301
Stddev	.078	.0086	.128	.0007	.0063	.332
%RSD	.15955	.44061	.26588	.03268	.31325	.63493
#1	48.953	1.9507	47.998	2.0582	2.0270	52.226
#2	48.865	1.9539	48.105	2.0588	2.0190	52.664
#3	48.798	1.9377	47.851	2.0595	2.0145	52.013
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	52.476	2.0965	F 2.3505	.49666	.51787	.52218
Stddev	.142	.0038	.0030	.00525	.00157	.00273
%RSD	.26991	.18224	.12846	1.0575	.30271	.52265
#1	52.634	2.1009	2.3539	.49254	.51912	.52527
#2	52.431	2.0940	2.3489	.50257	.51611	.52115
#3	52.362	2.0946	2.3485	.49486	.51836	.52011
Check ?	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
Value			2.0000			
Range			10.500%			

Sample Name: CCV Acquired: 6/26/2019 23:52:26 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49847	1.9045	2.0697	2.0201	2.0425	1.0025
Stddev	.00456	.0225	.0053	.0059	.0015	.0035
%RSD	.91414	1.1831	.25551	.29257	.07230	.34640
#1	.50322	1.8830	2.0757	2.0238	2.0442	1.0055
#2	.49805	1.9025	2.0656	2.0232	2.0413	1.0034
#3	.49413	1.9279	2.0679	2.0132	2.0421	.99872
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	2.0068	1.9886
Stddev	.0041	.0056
%RSD	.20492	.27957
#1	2.0112	1.9949
#2	2.0030	1.9866
#3	2.0063	1.9843
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV   Acquired: 6/26/2019 23:52:26   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12168.	142650.	12810.
Stddev	52.	327.	23.
%RSD	.43066	.22888	.17935
#1	12110.	142280.	12807.
#2	12180.	142910.	12834.
#3	12213.	142760.	12789.

Sample Name: CCB Acquired: 6/26/2019 23:57:26 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00039	-.00236	-.00008	.00147	.00001	-.00016
Stddev	.00031	.00137	.00065	.00099	.00015	.00004
%RSD	81.016	58.182	787.91	67.699	1101.7	21.553
#1	-.00075	-.00192	.00041	.00262	.00011	-.00012
#2	-.00018	-.00127	.00017	.00093	-.00016	-.00018
#3	-.00023	-.00390	-.00082	.00086	.00009	-.00018
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00446	-.00008	-.00005	.00004	-.00115	-.00061
Stddev	.00168	.00006	.00004	.00034	.00017	.00161
%RSD	37.604	67.888	78.960	844.70	14.626	262.24
#1	-.00384	-.00013	-.00009	.00022	-.00106	-.00001
#2	-.00318	-.00002	-.00006	.00026	-.00105	-.00244
#3	-.00636	-.00010	-.00001	-.00035	-.00135	.00061
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB   Acquired: 6/26/2019 23:57:26   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.03907	-.00197	.01861	-.00005	.00022	.38597
Stddev	.00378	.00072	.01269	.00004	.00011	1.1145
%RSD	9.6873	36.683	68.198	84.510	49.594	288.74
#1	.03475	-.00161	.01206	-.00009	.00025	-.54762
#2	.04065	-.00150	.03323	-.00006	.00010	.08573
#3	.04180	-.00281	.01052	-.00000	.00030	1.6198
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.8621	-.00037	-.00060	F .00307	.00156	.00225
Stddev	.1227	.00023	.00033	.00058	.00094	.00116
%RSD	6.5887	60.682	54.642	18.983	60.216	51.587
#1	2.0036	-.00012	-.00074	.00355	.00074	.00338
#2	1.7846	-.00042	-.00084	.00242	.00259	.00233
#3	1.7983	-.00057	-.00023	.00324	.00136	.00106
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit				.00260		
Low Limit				-.00260		

Sample Name: CCB Acquired: 6/26/2019 23:57:26 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00062	-.01309	.00036	.00001	-.00021	.00062
Stddev	.00259	.02167	.00031	.00009	.00057	.00227
%RSD	415.34	165.54	87.532	1592.4	266.83	363.38
#1	.00294	-.02858	.00072	.00002	.00044	.00301
#2	-.00218	-.02236	.00012	-.00009	-.00063	.00037
#3	.00111	.01167	.00024	.00009	-.00045	-.00151
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00009	.00013
Stddev	.00011	.00006
%RSD	127.46	45.912
#1	.00002	.00007
#2	-.00021	.00011
#3	-.00009	.00019
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB   Acquired: 6/26/2019 23:57:26   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12454.	146190.	13266.
Stddev	16.	791.	94.
%RSD	.12506	.54107	.70525
#1	12437.	145570.	13232.
#2	12468.	145920.	13372.
#3	12456.	147080.	13195.

Sample Name: 140-15402-a-5-c Acquired: 6/27/2019 0:02:37 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00001	.01841	-.00013	.03318	.00091	-.00019
Stddev	.00027	.00208	.00018	.00071	.00012	.00001
%RSD	2151.4	11.283	135.53	2.1269	13.339	6.8171
#1	-.00013	.01602	-.00034	.03334	.00105	-.00019
#2	-.00015	.01979	-.00004	.03379	.00084	-.00018
#3	.00032	.01942	-.00001	.03240	.00085	-.00021
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.38460	-.00017	.00043	.01670	-.00022	.12480
Stddev	.00374	.00008	.00005	.00025	.00009	.00116
%RSD	.97242	50.071	12.212	1.4822	38.055	.93332
#1	.38725	-.00022	.00039	.01697	-.00015	.12511
#2	.38033	-.00021	.00040	.01649	-.00020	.12351
#3	.38624	-.00007	.00049	.01663	-.00032	.12577
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-5-c Acquired: 6/27/2019 0:02:37 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	5.9524	-.00174	.13479	.00198	.00499	1.6410
Stddev	.0283	.00018	.00641	.00003	.00021	1.1680
%RSD	.47586	10.104	4.7544	1.7545	4.2703	71.175
#1	5.9403	-.00194	.13209	.00197	.00477	2.9795
#2	5.9320	-.00170	.14210	.00195	.00519	.82855
#3	5.9847	-.00159	.13017	.00202	.00503	1.1150
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.4832	.02879	.30331	.00227	.00311	.00141
Stddev	.2145	.00018	.00118	.00065	.00114	.00185
%RSD	8.6382	.62470	.38838	28.759	36.729	131.06
#1	2.7286	.02891	.30195	.00272	.00441	.00084
#2	2.3899	.02887	.30404	.00256	.00226	-.00009
#3	2.3312	.02858	.30395	.00152	.00267	.00348
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-5-c Acquired: 6/27/2019 0:02:37 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00060	.03742	.11702	.00162	.00063	.00024
Stddev	.00022	.00852	.00079	.00014	.00014	.00032
%RSD	35.876	22.767	.67789	8.6674	22.947	133.39
#1	.00079	.02848	.11619	.00169	.00066	.00041
#2	.00037	.04545	.11709	.00146	.00075	-.00013
#3	.00064	.03831	.11777	.00170	.00047	.00043
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00005	.02793
Stddev	.00020	.00012
%RSD	375.26	.41953
#1	.00011	.02805
#2	-.00017	.02793
#3	.00022	.02782
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15402-a-5-c Acquired: 6/27/2019 0:02:37 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12512.	147680.	13400.
Stddev	32.	145.	135.
%RSD	.25688	.09791	1.0058
#1	12476.	147560.	13287.
#2	12520.	147660.	13549.
#3	12539.	147840.	13363.

Sample Name: 140-15402-a-6-c   Acquired: 6/27/2019 0:07:46   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00016	.05448	-.00073	.01194	.00055	-.00020
Stddev	.00028	.00852	.00052	.00050	.00008	.00001
%RSD	174.68	15.635	71.043	4.1455	14.296	5.4400
#1	-.00047	.05039	-.00120	.01250	.00046	-.00020
#2	.00010	.04879	-.00017	.01176	.00058	-.00019
#3	-.00012	.06428	-.00081	.01156	.00062	-.00021
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.06036	-.00014	.00010	.00244	-.00017	.08348
Stddev	.00083	.00001	.00010	.00012	.00011	.00086
%RSD	1.3704	3.6493	95.110	4.9489	62.307	1.0360
#1	.05960	-.00014	.00015	.00257	-.00011	.08412
#2	.06124	-.00014	-.00001	.00238	-.00029	.08250
#3	.06026	-.00013	.00016	.00235	-.00011	.08383
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-6-c Acquired: 6/27/2019 0:07:46 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.7342	-.00216	.13018	.00091	.00048	.71085
Stddev	.0357	.00017	.01147	.00002	.00005	2.5961
%RSD	.75400	8.0941	8.8085	2.2369	11.232	365.21
#1	4.7436	-.00236	.14196	.00089	.00043	-.88309
#2	4.7643	-.00204	.11905	.00091	.00053	3.7065
#3	4.6948	-.00208	.12955	.00093	.00047	-.69088
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.9210	.00157	.11553	.00161	.00243	.00151
Stddev	.0824	.00006	.00070	.00182	.00083	.00075
%RSD	4.2918	4.1053	.60751	113.12	34.148	49.845
#1	2.0107	.00150	.11480	.00357	.00148	.00074
#2	1.9037	.00160	.11559	.00129	.00277	.00224
#3	1.8486	.00162	.11620	-.00003	.00303	.00154
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-6-c Acquired: 6/27/2019 0:07:46 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00148	.11922	.11520	.00015	.00464	-.00096
Stddev	.00077	.01414	.00035	.00004	.00050	.00099
%RSD	52.183	11.857	.30692	23.985	10.683	102.88
#1	.00201	.11730	.11538	.00018	.00413	-.00208
#2	.00059	.10614	.11479	.00016	.00466	-.00064
#3	.00183	.13422	.11543	.00011	.00512	-.00018
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.00006	.01182
Stddev	.00009	.00010
%RSD	150.02	.82248
#1	.00009	.01192
#2	.00012	.01172
#3	-.00004	.01182
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15402-a-6-c Acquired: 6/27/2019 0:07:46 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12374.	145480.	13166.
Stddev	70.	1185.	65.
%RSD	.56263	.81417	.49159
#1	12305.	144260.	13119.
#2	12371.	145550.	13140.
#3	12445.	146630.	13240.

Sample Name: 140-15402-a-7-g Acquired: 6/27/2019 0:12:58 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00005	.02689	-.00100	.01368	.00023	-.00019
Stddev	.00046	.01567	.00020	.00029	.00009	.00001
%RSD	866.86	58.289	19.731	2.1364	39.813	7.4988
#1	-.00024	.01097	-.00099	.01336	.00024	-.00020
#2	.00047	.02739	-.00081	.01375	.00031	-.00020
#3	-.00038	.04231	-.00121	.01393	.00013	-.00017
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05203	-.00007	.00007	.00215	-.00054	.03974
Stddev	.00107	.00003	.00009	.00012	.00033	.00051
%RSD	2.0516	46.424	136.05	5.4946	60.971	1.2717
#1	.05106	-.00011	.00008	.00228	-.00019	.03952
#2	.05185	-.00007	-.00003	.00205	-.00058	.04032
#3	.05317	-.00004	.00015	.00211	-.00084	.03939
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-7-g Acquired: 6/27/2019 0:12:58 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.8123	-.00176	.03630	.00059	.00050	.80985
Stddev	.0155	.00048	.00247	.00006	.00008	2.0417
%RSD	.40761	27.223	6.8136	9.6206	15.655	252.11
#1	3.8297	-.00212	.03912	.00053	.00050	-1.2011
#2	3.7997	-.00193	.03448	.00064	.00042	2.8809
#3	3.8075	-.00121	.03530	.00059	.00058	.74979
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.7063	.00121	.10371	.00135	.00130	.00136
Stddev	.0141	.00021	.00186	.00153	.00063	.00146
%RSD	.82421	17.287	1.7975	113.52	48.155	107.34
#1	1.7215	.00127	.10586	.00252	.00177	-.00015
#2	1.6937	.00139	.10256	-.00038	.00155	.00147
#3	1.7036	.00098	.10271	.00190	.00059	.00276
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-7-g   Acquired: 6/27/2019 0:12:58   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00109	.04549	.11555	-.00000	.00005	-.00001
Stddev	.00076	.01293	.00059	.00007	.00021	.00142
%RSD	69.564	28.431	.50941	2348.5	432.97	19898.
#1	.00174	.05531	.11567	.00007	.00001	.00035
#2	.00126	.05031	.11491	-.00008	.00027	-.00157
#3	.00026	.03084	.11606	-.00000	-.00014	.00120
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00027	.01270
Stddev	.00010	.00002
%RSD	39.193	.18067
#1	-.00034	.01267
#2	-.00032	.01272
#3	-.00015	.01270
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15402-a-7-g Acquired: 6/27/2019 0:12:58 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12308.	145300.	13138.
Stddev	72.	1384.	53.
%RSD	.58319	.95237	.40001
#1	12227.	143750.	13113.
#2	12335.	145770.	13198.
#3	12363.	146390.	13102.

Sample Name: 140-15402-a-7-h ms Acquired: 6/27/2019 0:18:09 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05114	2.1232	.10865	1.0297	.10157	.05760
Stddev	.00068	.0163	.00077	.0039	.00065	.00024
%RSD	1.3270	.76631	.70567	.38046	.64398	.41831
#1	.05042	2.1135	.10819	1.0256	.10081	.05733
#2	.05122	2.1419	.10953	1.0302	.10199	.05768
#3	.05177	2.1140	.10822	1.0334	.10190	.05779
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.838	.05422	.10338	.21670	.25937	1.0873
Stddev	.174	.00008	.00020	.00080	.00058	.0053
%RSD	.35588	.15512	.19351	.36749	.22386	.48250
#1	48.639	.05412	.10315	.21620	.25875	1.0820
#2	48.962	.05424	.10351	.21762	.25990	1.0925
#3	48.912	.05429	.10347	.21628	.25946	1.0873
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-7-h ms Acquired: 6/27/2019 0:18:09 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	53.009	.10105	9.6138	.10653	.53392	37.078
Stddev	.310	.00051	.0468	.00044	.00151	1.200
%RSD	.58451	.50852	.48713	.41403	.28193	3.2367
#1	52.678	.10103	9.5745	.10602	.53226	35.938
#2	53.291	.10055	9.6013	.10684	.53519	38.330
#3	53.059	.10158	9.6656	.10672	.53432	36.967
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	53.233	.54394	6.2603	.10194	.10871	.54100
Stddev	.356	.00196	.0105	.00150	.00067	.00030
%RSD	.66858	.35995	.16826	1.4734	.61449	.05462
#1	52.830	.54169	6.2503	.10073	.10892	.54082
#2	53.505	.54531	6.2713	.10362	.10924	.54083
#3	53.364	.54481	6.2594	.10146	.10796	.54134
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-7-h ms   Acquired: 6/27/2019 0:18:09   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.15663	4.7247	.65518	.51369	.11026	.03343
Stddev	.00094	.0051	.00204	.00230	.00121	.00158
%RSD	.59871	.10808	.31124	.44857	1.0996	4.7359
#1	.15722	4.7296	.65295	.51104	.10913	.03516
#2	.15555	4.7194	.65696	.51523	.11010	.03205
#3	.15711	4.7251	.65563	.51479	.11154	.03309
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20705	.51936
Stddev	.00076	.00060
%RSD	.36644	.11576
#1	.20619	.51868
#2	.20738	.51960
#3	.20759	.51981
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15402-a-7-h ms   Acquired: 6/27/2019 0:18:09   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12214.	143860.	13249.
Stddev	61.	634.	25.
%RSD	.49654	.44083	.19026
#1	12171.	143470.	13234.
#2	12187.	143520.	13278.
#3	12283.	144590.	13235.

Sample Name: 140-15402-a-7-i msd Acquired: 6/27/2019 0:23:04 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05007	2.1061	.10717	1.0131	.10027	.05667
Stddev	.00022	.0075	.00083	.0027	.00024	.00015
%RSD	.43799	.35716	.77048	.26619	.23937	.25685
#1	.05002	2.1077	.10804	1.0143	.10048	.05652
#2	.05032	2.0979	.10639	1.0150	.10001	.05669
#3	.04989	2.1127	.10709	1.0100	.10032	.05681
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.203	.05329	.10154	.21355	.25476	1.0821
Stddev	.116	.00006	.00020	.00079	.00036	.0016
%RSD	.24061	.10801	.20152	.37011	.14203	.14692
#1	48.188	.05335	.10131	.21266	.25507	1.0834
#2	48.096	.05330	.10170	.21380	.25484	1.0803
#3	48.326	.05323	.10162	.21418	.25436	1.0825
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-7-i msd Acquired: 6/27/2019 0:23:04 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.680	.09982	9.5225	.10500	.52548	37.761
Stddev	.192	.00090	.0162	.00007	.00042	.950
%RSD	.37100	.90610	.16977	.07075	.07910	2.5146
#1	51.570	.09941	9.5131	.10506	.52502	36.887
#2	51.569	.09919	9.5132	.10492	.52583	37.626
#3	51.902	.10086	9.5412	.10503	.52558	38.771
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	52.448	.53526	6.1446	.10131	.10759	.53148
Stddev	.111	.00065	.0165	.00146	.00081	.00034
%RSD	.21138	.12234	.26940	1.4422	.75748	.06377
#1	52.418	.53564	6.1632	.09978	.10753	.53152
#2	52.355	.53564	6.1388	.10145	.10843	.53112
#3	52.571	.53451	6.1316	.10269	.10681	.53180
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-7-i msd Acquired: 6/27/2019 0:23:04 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.15307	4.6865	.64880	.50602	.11033	.03923
Stddev	.00040	.0080	.00114	.00072	.00048	.00078
%RSD	.26392	.17042	.17567	.14227	.43331	1.9881
#1	.15338	4.6895	.64823	.50676	.11088	.03996
#2	.15261	4.6774	.65012	.50532	.11007	.03840
#3	.15322	4.6926	.64807	.50599	.11003	.03932
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20359	.51117
Stddev	.00031	.00055
%RSD	.15457	.10668
#1	.20329	.51151
#2	.20354	.51054
#3	.20392	.51146
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15402-a-7-i msd   Acquired: 6/27/2019 0:23:04   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12197.	144370.	13109.
Stddev	49.	449.	101.
%RSD	.40339	.31133	.77060
#1	12148.	143850.	13008.
#2	12196.	144560.	13210.
#3	12246.	144690.	13107.

Sample Name: 140-15402-a-7-g PDS   Acquired: 6/27/2019 0:28:01   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05006	2.0995	.10833	1.0251	.10103	.05731
Stddev	.00025	.0154	.00011	.0022	.00012	.00011
%RSD	.50382	.73269	.09903	.21687	.11770	.19393
#1	.04977	2.0822	.10827	1.0230	.10101	.05718
#2	.05021	2.1044	.10827	1.0249	.10116	.05739
#3	.05020	2.1118	.10846	1.0274	.10093	.05735
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	48.463	.05396	.10265	.21599	.25719	1.0928
Stddev	.024	.00005	.00015	.00096	.00106	.0026
%RSD	.04972	.09844	.14168	.44619	.41071	.23355
#1	48.487	.05390	.10277	.21583	.25839	1.0916
#2	48.439	.05396	.10268	.21512	.25678	1.0957
#3	48.461	.05401	.10249	.21702	.25640	1.0910
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-7-g PDS Acquired: 6/27/2019 0:28:01 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	52.471	.10003	9.5378	.10606	.53660	36.509
Stddev	.070	.00054	.0356	.00034	.00071	2.877
%RSD	.13314	.54361	.37295	.32343	.13182	7.8789
#1	52.551	.09941	9.5035	.10567	.53736	39.095
#2	52.421	.10024	9.5745	.10629	.53596	37.022
#3	52.442	.10044	9.5353	.10622	.53649	33.411
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	52.838	.54124	6.2560	.10479	.10960	.54756
Stddev	.117	.00051	.0104	.00074	.00006	.00257
%RSD	.22051	.09334	.16562	.70958	.05659	.46985
#1	52.856	.54168	6.2667	.10457	.10955	.54977
#2	52.714	.54069	6.2553	.10418	.10967	.54474
#3	52.945	.54135	6.2460	.10562	.10959	.54816
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-7-g PDS Acquired: 6/27/2019 0:28:01 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.15402	4.8113	.65409	.51134	.11107	.41654
Stddev	.00049	.0133	.00076	.00060	.00093	.00187
%RSD	.31853	.27539	.11673	.11661	.83865	.44952
#1	.15440	4.7961	.65496	.51163	.11176	.41868
#2	.15347	4.8173	.65355	.51174	.11001	.41570
#3	.15420	4.8205	.65375	.51066	.11144	.41523
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.20717	.51845
Stddev	.00012	.00142
%RSD	.05980	.27348
#1	.20723	.52007
#2	.20702	.51744
#3	.20724	.51783
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15402-a-7-g PDS   Acquired: 6/27/2019 0:28:01   Type: Unk

Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000

User: kerry   Custom ID1:   Custom ID2:   Custom ID3:

Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12198.	143850.	13157.
Stddev	40.	592.	67.
%RSD	.32630	.41119	.51070
#1	12162.	143490.	13122.
#2	12190.	143540.	13234.
#3	12241.	144530.	13113.

Sample Name: 140-15402-a-8-c   Acquired: 6/27/2019 0:32:58   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00013	.03592	-.00003	.01842	.00116	-.00022
Stddev	.00013	.00577	.00086	.00030	.00014	.00001
%RSD	101.48	16.073	2480.3	1.6343	11.866	5.5237
#1	-.00021	.04057	.00095	.01839	.00107	-.00021
#2	-.00021	.03774	-.00046	.01874	.00110	-.00022
#3	.00002	.02946	-.00060	.01814	.00132	-.00024
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.24526	-.00006	.00022	.00230	.00036	.06266
Stddev	.00111	.00006	.00004	.00024	.00020	.00169
%RSD	.45152	87.108	17.433	10.605	54.788	2.6904
#1	.24421	-.00012	.00021	.00202	.00014	.06281
#2	.24516	-.00001	.00027	.00243	.00042	.06426
#3	.24641	-.00006	.00019	.00246	.00052	.06090
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-8-c Acquired: 6/27/2019 0:32:58 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	3.2197	-.00248	.07745	.00122	.00072	-.94157
Stddev	.0326	.00088	.00422	.00001	.00015	3.4029
%RSD	1.0128	35.335	5.4450	1.0536	20.289	361.40
#1	3.2192	-.00148	.08180	.00121	.00069	-.85201
#2	3.1873	-.00313	.07338	.00123	.00060	-4.3883
#3	3.2525	-.00283	.07718	.00122	.00088	2.4156
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	2.3706	.00293	.33152	.00284	.00164	.00147
Stddev	.0168	.00014	.00100	.00065	.00041	.00109
%RSD	.70947	4.7631	.30219	22.711	24.863	74.340
#1	2.3719	.00305	.33248	.00216	.00211	.00258
#2	2.3532	.00298	.33048	.00293	.00141	.00142
#3	2.3867	.00278	.33162	.00344	.00139	.00040
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: 140-15402-a-8-c   Acquired: 6/27/2019 0:32:58   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00244	.09382	.11485	.00042	.00041	.00066
Stddev	.00132	.00932	.00016	.00009	.00037	.00097
%RSD	54.016	9.9347	.14210	20.487	88.561	147.22
#1	.00185	.09490	.11471	.00052	.00044	-.00007
#2	.00396	.08401	.11503	.00035	.00003	.00028
#3	.00153	.10256	.11480	.00040	.00076	.00176
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00030	.01942
Stddev	.00007	.00006
%RSD	24.529	.31524
#1	-.00025	.01940
#2	-.00026	.01937
#3	-.00038	.01949
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: 140-15402-a-8-c Acquired: 6/27/2019 0:32:58 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12346.	146700.	13375.
Stddev	48.	1347.	101.
%RSD	.38547	.91819	.75597
#1	12295.	145280.	13395.
#2	12355.	146870.	13465.
#3	12389.	147960.	13265.

Sample Name: CRI   Acquired: 6/27/2019 0:38:08   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00938	.20331	.01054	.19644	.01001	.00534
Stddev	.00004	.01576	.00033	.00067	.00017	.00003
%RSD	.42153	7.7541	3.1368	.34181	1.7076	.52179
#1	.00935	.21361	.01087	.19591	.00982	.00534
#2	.00936	.21116	.01055	.19719	.01005	.00537
#3	.00942	.18516	.01021	.19622	.01016	.00531
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.8955	.00542	.05084	.01085	.02401	.10562
Stddev	.0078	.00006	.00008	.00024	.00007	.00110
%RSD	.15950	1.0491	.16639	2.1907	.27285	1.0439
#1	4.9032	.00545	.05089	.01098	.02409	.10649
#2	4.8876	.00547	.05088	.01100	.02397	.10599
#3	4.8958	.00536	.05074	.01058	.02397	.10438
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI Acquired: 6/27/2019 0:38:08 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.8826	.04749	4.7180	.01552	.04180	3.3808
Stddev	.0179	.00084	.0201	.00007	.00020	1.2614
%RSD	.36741	1.7684	.42527	.46320	.48466	37.310
#1	4.9020	.04843	4.7395	.01559	.04161	4.3966
#2	4.8791	.04720	4.6997	.01545	.04202	1.9689
#3	4.8667	.04683	4.7149	.01550	.04177	3.7768
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.1567	.04248	.35609	.01324	.01144	.06757
Stddev	.0039	.00017	.00170	.00035	.00058	.00194
%RSD	.06389	.38869	.47842	2.6537	5.0487	2.8641
#1	6.1610	.04266	.35785	.01333	.01104	.06629
#2	6.1533	.04243	.35596	.01285	.01211	.06979
#3	6.1558	.04234	.35445	.01354	.01118	.06662
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CRI   Acquired: 6/27/2019 0:38:08   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00984	.44232	.10741	.05073	.05121	.01229
Stddev	.00075	.01487	.00029	.00005	.00033	.00104
%RSD	7.6647	3.3612	.26861	.09700	.65279	8.4669
#1	.01040	.45633	.10773	.05067	.05102	.01335
#2	.00898	.44391	.10732	.05074	.05159	.01127
#3	.01013	.42672	.10717	.05077	.05101	.01224
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	.02496	.02293
Stddev	.00014	.00008
%RSD	.55634	.34948
#1	.02509	.02294
#2	.02498	.02284
#3	.02481	.02299
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CRI Acquired: 6/27/2019 0:38:08 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12570.	148320.	13337.
Stddev	18.	794.	30.
%RSD	.14546	.53545	.22248
#1	12549.	147410.	13303.
#2	12583.	148870.	13357.
#3	12578.	148680.	13351.

Sample Name: CCV   Acquired: 6/27/2019 0:43:12   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.96363	25.460	.51358	1.9463	1.9702	2.1594
Stddev	.00326	.087	.00179	.0011	.0066	.0197
%RSD	.33860	.34084	.34778	.05452	.33626	.91128
#1	.96592	25.495	.51561	1.9471	1.9736	2.1517
#2	.96508	25.524	.51285	1.9451	1.9744	2.1817
#3	.95990	25.361	.51227	1.9466	1.9625	2.1447
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	46.956	.51004	1.9714	2.0507	1.9776	25.401
Stddev	.013	.00125	.0031	.0076	.0066	.077
%RSD	.02667	.24468	.15729	.37198	.33125	.30332
#1	46.966	.51068	1.9729	2.0546	1.9843	25.454
#2	46.960	.51084	1.9734	2.0556	1.9774	25.436
#3	46.942	.50861	1.9678	2.0419	1.9712	25.313
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Sample Name: CCV Acquired: 6/27/2019 0:43:12 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	47.802	1.9138	46.699	2.0352	1.9951	48.277
Stddev	.079	.0102	.078	.0070	.0037	1.046
%RSD	.16582	.53518	.16619	.34537	.18621	2.1673
#1	47.890	1.9193	46.787	2.0380	1.9984	47.209
#2	47.736	1.9201	46.672	2.0403	1.9957	48.322
#3	47.781	1.9020	46.639	2.0272	1.9911	49.300
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	51.662	2.0821	F 2.3588	.48495	.51427	.51904
Stddev	.032	.0037	.0099	.00300	.00050	.00110
%RSD	.06287	.17517	.41922	.61790	.09650	.21281
#1	51.687	2.0831	2.3690	.48437	.51407	.52032
#2	51.672	2.0851	2.3581	.48819	.51390	.51842
#3	51.625	2.0780	2.3493	.48228	.51483	.51839
Check ?	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
Value			2.0000			
Range			10.500%			

Sample Name: CCV Acquired: 6/27/2019 0:43:12 Type: QC
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49432	1.8491	2.0451	2.0074	2.0192	.98206
Stddev	.00171	.0159	.0039	.0075	.0026	.00476
%RSD	.34631	.85946	.19123	.37322	.13068	.48470
#1	.49629	1.8318	2.0451	2.0114	2.0188	.98725
#2	.49324	1.8630	2.0490	2.0120	2.0221	.98105
#3	.49342	1.8526	2.0412	1.9988	2.0168	.97789
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value						
Range						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	1.9787	1.9609
Stddev	.0047	.0048
%RSD	.23535	.24566
#1	1.9809	1.9646
#2	1.9817	1.9627
#3	1.9733	1.9554
Check ?	Chk Pass	Chk Pass
Value		
Range		

Sample Name: CCV   Acquired: 6/27/2019 0:43:12   Type: QC
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12185.	144690.	13248.
Stddev	39.	1474.	83.
%RSD	.32164	1.0187	.62599
#1	12168.	143760.	13162.
#2	12158.	143920.	13327.
#3	12230.	146390.	13254.

Sample Name: CCB   Acquired: 6/27/2019 0:48:13   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00018	-.00465	.00052	.00246	.00001	-.00016
Stddev	.00037	.00316	.00119	.00092	.00011	.00002
%RSD	200.75	67.999	230.71	37.339	1036.1	15.082
#1	.00023	-.00600	.00070	.00341	.00013	-.00014
#2	-.00047	-.00691	.00160	.00238	.00001	-.00016
#3	-.00031	-.00104	-.00076	.00158	-.00010	-.00019
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00210	-.00009	-.00015	.00014	-.00132	.00049
Stddev	.00201	.00003	.00005	.00034	.00011	.00220
%RSD	95.801	39.571	32.966	243.61	8.2993	444.51
#1	.00018	-.00010	-.00011	.00028	-.00144	.00238
#2	-.00287	-.00011	-.00020	-.00025	-.00126	.00102
#3	-.00361	-.00005	-.00013	.00039	-.00124	-.00192
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB   Acquired: 6/27/2019 0:48:13   Type: Unk
Method: MT0007(v23) HF 022619(v11)   Mode: CONC   Corr. Factor: 1.000000
User: kerry   Custom ID1:   Custom ID2:   Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.04549	-.00221	.00483	-.00001	.00014	-.45972
Stddev	.01446	.00083	.00443	.00005	.00004	.40361
%RSD	31.794	37.509	91.699	798.79	26.294	87.795
#1	.03373	-.00160	.00930	.00004	.00012	-.06717
#2	.04110	-.00186	.00045	-.00006	.00018	-.87354
#3	.06164	-.00315	.00473	.00001	.00012	-.43845
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.92239	-.00033	-.00004	.00086	.00087	.00147
Stddev	.02656	.00021	.00047	.00228	.00095	.00144
%RSD	2.8798	63.540	1327.9	263.45	108.57	97.499
#1	.89415	-.00048	.00035	-.00059	-.00007	.00296
#2	.92616	-.00009	.00011	-.00031	.00085	.00136
#3	.94687	-.00042	-.00056	.00349	.00183	.00010
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: CCB Acquired: 6/27/2019 0:48:13 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00067	-.01602	.00022	-.00005	-.00015	.00111
Stddev	.00082	.01139	.00031	.00012	.00018	.00081
%RSD	121.79	71.132	140.79	224.09	126.57	73.020
#1	-.00011	-.02709	.00058	-.00000	-.00022	.00031
#2	-.00029	-.01664	-.00001	.00003	.00006	.00107
#3	-.00161	-.00432	.00010	-.00019	-.00028	.00193
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00053	.00016
Stddev	.00012	.00008
%RSD	22.153	51.033
#1	-.00040	.00010
#2	-.00060	.00025
#3	-.00060	.00012
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: CCB Acquired: 6/27/2019 0:48:13 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	12393.	145720.	13187.
Stddev	39.	442.	138.
%RSD	.31725	.30316	1.0453
#1	12387.	145400.	13211.
#2	12358.	145530.	13039.
#3	12435.	146220.	13312.

Sample Name: Sample-86 Acquired: 6/27/2019 0:53:24 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00058	-.00989	.00506	-.00969	-.00025	-.00025
Stddev	.00011	.00880	.00025	.00031	.00011	.00001
%RSD	18.659	88.984	4.9160	3.1867	45.509	5.4920
#1	.00060	-.00062	.00512	-.00961	-.00028	-.00023
#2	.00046	-.01814	.00479	-.00943	-.00034	-.00026
#3	.00067	-.01092	.00527	-.01003	-.00012	-.00025
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.01459	.00016	.00053	-.00028	-.00279	-.00212
Stddev	.00119	.00003	.00002	.00010	.00019	.00067
%RSD	8.1475	17.787	2.9756	35.322	6.9930	31.733
#1	-.01322	.00017	.00051	-.00033	-.00283	-.00224
#2	-.01539	.00013	.00054	-.00017	-.00257	-.00139
#3	-.01516	.00018	.00053	-.00035	-.00296	-.00272
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: Sample-86 Acquired: 6/27/2019 0:53:24 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01301	-.00119	.01029	-.00012	-.00037	.70059
Stddev	.00200	.00034	.00633	.00001	.00001	.74810
%RSD	15.340	28.986	61.564	11.567	3.7969	106.78
#1	.01108	-.00080	.01739	-.00012	-.00036	.64404
#2	.01506	-.00144	.00825	-.00010	-.00038	-.01763
#3	.01289	-.00133	.00522	-.00013	-.00038	1.4754
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.76066	.00003	-.00070	-.00276	.00088	-.00290
Stddev	.02831	.00005	.00041	.00031	.00060	.00003
%RSD	3.7216	182.98	59.040	11.134	67.661	.97919
#1	.78333	.00008	-.00110	-.00308	.00131	-.00286
#2	.72893	-.00002	-.00028	-.00247	.00020	-.00291
#3	.76971	.00002	-.00071	-.00274	.00114	-.00292
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: Sample-86 Acquired: 6/27/2019 0:53:24 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00463	-.04257	-.00065	-.00005	-.00039	.00274
Stddev	.00015	.00480	.00014	.00004	.00048	.00091
%RSD	3.2203	11.277	20.856	74.732	125.05	33.035
#1	-.00448	-.03766	-.00067	-.00006	-.00050	.00318
#2	-.00478	-.04725	-.00051	-.00001	.00014	.00170
#3	-.00464	-.04279	-.00078	-.00007	-.00080	.00335
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00049	-.00098
Stddev	.00008	.00001
%RSD	17.015	1.4414
#1	-.00044	-.00100
#2	-.00044	-.00097
#3	-.00058	-.00099
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: Sample-86 Acquired: 6/27/2019 0:53:24 Type: Unk

Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000

User: kerry Custom ID1: Custom ID2: Custom ID3:

Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	30706.	313290.	22633.
Stddev	669.	16950.	223.
%RSD	2.1777	5.4104	.98540
#1	29944.	302940.	22611.
#2	30979.	304080.	22866.
#3	31195.	332850.	22422.

Sample Name: Sample-87 Acquired: 6/27/2019 0:58:40 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00048	-.00744	.00510	-.01048	-.00031	-.00024
Stddev	.00016	.00432	.00061	.00024	.00003	.00000
%RSD	34.433	57.978	11.977	2.2842	10.338	1.8398
#1	.00030	-.00498	.00446	-.01071	-.00034	-.00024
#2	.00062	-.01243	.00515	-.01023	-.00028	-.00025
#3	.00051	-.00492	.00568	-.01051	-.00033	-.00024
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.01530	.00014	.00053	-.00022	-.00282	-.00203
Stddev	.00084	.00002	.00001	.00007	.00016	.00065
%RSD	5.5128	10.800	2.0506	33.500	5.6151	32.241
#1	-.01457	.00013	.00054	-.00022	-.00290	-.00150
#2	-.01622	.00016	.00052	-.00029	-.00293	-.00183
#3	-.01511	.00014	.00054	-.00014	-.00264	-.00276
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: Sample-87 Acquired: 6/27/2019 0:58:40 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00605	-.00175	.00747	-.00011	-.00033	.23377
Stddev	.01186	.00079	.00646	.00002	.00013	1.4342
%RSD	196.11	45.205	86.570	14.922	38.684	613.53
#1	.00330	-.00261	.01324	-.00012	-.00018	-.05167
#2	.01904	-.00156	.00867	-.00012	-.00040	-1.0363
#3	-.00420	-.00107	.00048	-.00009	-.00040	1.7893
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.74842	.00004	-.00136	-.00245	.00077	-.00311
Stddev	.01623	.00002	.00046	.00099	.00023	.00032
%RSD	2.1683	36.803	33.867	40.396	30.079	10.309
#1	.76519	.00006	-.00096	-.00242	.00059	-.00325
#2	.73279	.00003	-.00126	-.00346	.00103	-.00275
#3	.74728	.00003	-.00186	-.00148	.00069	-.00334
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: Sample-87 Acquired: 6/27/2019 0:58:40 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00441	-.03934	-.00078	.00001	-.00075	.00284
Stddev	.00085	.00501	.00000	.00005	.00044	.00025
%RSD	19.259	12.726	.59230	529.51	58.831	8.6444
#1	-.00369	-.04365	-.00078	-.00005	-.00089	.00311
#2	-.00535	-.03385	-.00077	.00002	-.00111	.00263
#3	-.00419	-.04051	-.00078	.00005	-.00026	.00278
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00062	-.00099
Stddev	.00011	.00002
%RSD	17.406	2.5232
#1	-.00075	-.00096
#2	-.00058	-.00101
#3	-.00054	-.00099
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: Sample-87 Acquired: 6/27/2019 0:58:40 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	30917.	327600.	23001.
Stddev	542.	4462.	620.
%RSD	1.7533	1.3619	2.6960
#1	30300.	331760.	22287.
#2	31134.	322890.	23405.
#3	31316.	328140.	23310.

Sample Name: Sample-88 Acquired: 6/27/2019 1:03:56 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Ag3280A	Al3082R	As1890A	B_2496A	Ba4554R	Be3130A
Line	328.068 {103}	308.215 {109}	189.042 {478}	249.678 {135}	455.403 { 74}	313.042 {108}
IS Ref	(Y_3710A)	(Y_3710R)	(Y_2243A)	(Y_3710A)	(Y_3710R)	(Y_3710A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00031	-.00717	.00537	-.01049	-.00026	-.00025
Stddev	.00017	.00816	.00024	.00002	.00001	.00001
%RSD	55.898	113.75	4.4036	.16888	4.6648	2.0626
#1	.00031	-.00237	.00522	-.01050	-.00027	-.00024
#2	.00014	-.01659	.00525	-.01051	-.00025	-.00024
#3	.00049	-.00256	.00564	-.01047	-.00025	-.00025
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Ca3179R	Cd2265A	Co2286A	Cr2677A	Cu3247A	Fe2599R
Line	317.933 {106}	226.502 {449}	228.616 {447}	267.716 {126}	324.754 {104}	259.940 {130}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_3710A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.01490	.00016	.00051	-.00040	-.00272	-.00155
Stddev	.00071	.00003	.00002	.00006	.00011	.00103
%RSD	4.7365	16.928	3.5442	15.062	3.9177	66.494
#1	-.01468	.00019	.00050	-.00041	-.00268	-.00062
#2	-.01433	.00014	.00053	-.00046	-.00285	-.00138
#3	-.01569	.00015	.00050	-.00034	-.00265	-.00267
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: Sample-88 Acquired: 6/27/2019 1:03:56 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	K_7664R	Li6707R	Mg2790R	Mn2576A	Mo2020A	aN
Line	766.490 { 44}	670.784 { 50}	279.079 {121}	257.610 {131}	202.030 {467}	330.237 {102}
IS Ref	(Y_3710R)	(Y_3710R)	(Y_3710R)	(Y_3710A)	(Y_2243A)	(Y_3710R)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01651	-.00198	.01184	-.00010	-.00035	.13323
Stddev	.01078	.00013	.00463	.00001	.00002	2.0600
%RSD	65.328	6.8184	39.105	14.226	5.8757	1546.2
#1	.01377	-.00191	.01699	-.00010	-.00036	-1.9204
#2	.02840	-.00213	.00804	-.00008	-.00037	.12059
#3	.00736	-.00189	.01048	-.00010	-.00033	2.1995
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	Na5895R	Ni2316A	P_1782A	bP	Pb2203A	Sb2068A
Line	589.592 { 57}	231.604 {445}	178.284 {489}	220.353 {153}	220.353 {453}	206.833 {463}
IS Ref	(Y_3710R)	(Y_2243A)	(Y_2243A)	(Y_3710A)	(Y_2243A)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.76659	.00001	-.00121	-.00302	.00044	-.00258
Stddev	.01213	.00006	.00050	.00076	.00024	.00038
%RSD	1.5827	608.74	41.087	25.272	54.799	14.766
#1	.77978	.00002	-.00069	-.00221	.00063	-.00257
#2	.76408	.00006	-.00125	-.00314	.00052	-.00296
#3	.75590	-.00006	-.00168	-.00372	.00017	-.00220
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Sample Name: Sample-88 Acquired: 6/27/2019 1:03:56 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Elem	Se1960A	Si2506R	Sn1899A	Sr4215R	Ti3349R	Tl1908A
Line	196.090 {472}	250.690 {134}	189.989 {477}	421.552 { 80}	334.941 {101}	190.856 {477}
IS Ref	(Y_2243A)	(Y_3710R)	(Y_2243A)	(Y_3710R)	(Y_3710R)	(Y_2243A)
Units	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00425	-.04277	-.00062	.00001	-.00049	.00250
Stddev	.00087	.00387	.00019	.00005	.00031	.00074
%RSD	20.560	9.0434	31.531	743.08	62.152	29.473
#1	-.00329	-.04450	-.00056	-.00003	-.00059	.00328
#2	-.00446	-.03834	-.00084	.00006	-.00015	.00241
#3	-.00500	-.04548	-.00046	-.00001	-.00074	.00181
Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit						
Low Limit						

Elem	V_2924A	Zn2138A
Line	292.402 {115}	213.856 {457}
IS Ref	(Y_3710A)	(Y_2243A)
Units	ppm	ppm
Avg	-.00048	-.00096
Stddev	.00018	.00001
%RSD	37.486	.94029
#1	-.00064	-.00097
#2	-.00028	-.00096
#3	-.00052	-.00095
Check ?	Chk Pass	Chk Pass
High Limit		
Low Limit		

Sample Name: Sample-88 Acquired: 6/27/2019 1:03:56 Type: Unk
Method: MT0007(v23) HF 022619(v11) Mode: CONC Corr. Factor: 1.000000
User: kerry Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243A	Y_3710A	Y_3710R
Line	224.306 {450}	371.030 { 91}	371.030 { 91}2
Units	Cts/S	Cts/S	Cts/S
Avg	31265.	327810.	22861.
Stddev	238.	6298.	396.
%RSD	.75986	1.9213	1.7326
#1	31253.	324310.	22435.
#2	31033.	324030.	22931.
#3	31508.	335080.	23218.

TestAmerica Knoxville ICP Batch Review Checklist – SOPs: KNOX-MT-0007r15, KNOX-MT-0008r7

Chart Name:	F062619	Analysis Batch #:	31197	Analyst:	KNC	Instrument:	DUO

A. Calibration/Instrument Run QC	1st	2nd	Why is data reportable?
1. Instrument calibrated per SOP?	Y	Y	Calibration at 1600
2. Was CCVL within limits? (90-110%R)	Y	Y	
3. ICV analyzed within limits? (90-110%R and <5.0% RSD)	Y	Y	
4. CCV analyzed at required frequency & within limits? (90 - 110%R and <5.0% RSD)	Y	Y	☐ CCV reanalyzed one time; reanalysis within limits ☐ **CCV - %D, High, Sample ND** (NCM#__________)
5. ICB/CCB analyzed at required frequency & within limits? (Water/Soil/Waste <MDL; Air/SEP/PM10/JN Waste <RL)	Y	Y	☐ CCB reanalyzed one time; reanalysis within limits ☐ **CCB-Out, Samples ND or 10x** (NCM#__________)
6. ICSA/ICSAB run before samples?	Y	Y	
7. ICSAB interferents and analytes within limits? (80 - 120%R)	Y	Y	
8. ICSA criteria for non-interfering elements met? (Water/Soil/Waste ±1x RL) (Air/SEP/PM10/JN ±2x RL if RL ≤10 µg/L; ±1x RL if RL >10 µg/L)	Y	Y	☐ **ICSA->2X MDL; Stock Impurities** (NCM#__________)
9. Reporting Limit Check Standard (CRI) within limits? (Water/Soil/Waste=70-130%R; Air/SEP/PM10/JN Waste=50-150%)	Y	Y	
10. 6010C samples bracketed by RL Check Standards?	Y	Y	
B. Client Sample and QC Sample Results			
1. Were samples with target element concentrations > the linear range (LR) diluted and reanalyzed?	NA	NA	Comments: Dilutions per SEP SOP
2. Were all hits reported from a run with interfering elements < LR?	Y	Y	
3. Elements with F, k or ^ flags reported from a dilution if necessary?	NA	NA	
4. Were sample results reported as ND with elevated RLs?	NA	NA	☐ **RL-Dilution, Matrix** (NCM# __________) ☐ **RL-Dilution, Interferents** (NCM# __________) ☐ **RL-Dilution, Matrix, Neg. Analyte** (NCM# __________)
5. Internal standard (IS) response ±30% of ICB IS? *If no, list details:* Samples to be Reanalyzed	N	N	☐ **ISTD – Matrix, DL Required** (NCM#__________) ☒ Low IS response. Reanalyzed.
6. Report flag turned to No for Mg-SEP Step1 and Na-Steps 2 & 5?	NA	NA	
7. Calculations checked for error? (Document manual calc in comments.)	Y	Y	
C. Preparation/Matrix QC			
1. Method blank done per prep batch and within limits? (Waters/Soils/Waste < ½ RL; Zn <RL; Air/SEP/PM10/JN Waste <RL)	Y	Y	☐ **Method Blank–Report, ND** (NCM#__________) ☐ **Method Blank – Report, 10X** (NCM#__________) ☐ **Method Blank–Insufficient Sample** (NCM#__________) ☐ See narrative-common analyte in SEP leachate.
2. LCS done per prep batch & within QC limits?	N	N	☐ **LCS/LCSD –Insufficient Sample** (NCM#__________) ☐ **LCS/LCSD - %R High** (NCM#__________) ☒ See narrative-SEP LCS within historical limits. 9866
3. MS/MSD or MS/DUP run at required frequency?	Y	Y	☐ **MS/MSD/DUP-Insufficient Volume** (NCM#__________)
4. MS/MSD %R and RPD within QC limits?	Y	Y	☐ LCS acceptable-matrix effects ☐ Native analyte > 4x spike level
5. DUP RPD within limits?	N	N	☒ **MS/MSD/DUP - %RPD** (NCM# 140-18439)
6. PDS/PDSD run at required frequency & within QC limits? (75-125%R)	Y	Y	☐ **Post Digestion Spike - %R** (NCM#__________) ☐ **MS/MSD; High Bias; PDS Acceptable** (NCM#__________)
7. Serial dilution per prep batch & ≤ 10% D for analytes >50X MDL?	Y	Y	☐ **Serial Dilution - %D** (NCM#__________)

D. TALS Review		1st
TALS Run Log Tab	Date and time match raw data *(to verify TALS import worked properly)*	Y
	Dilutions are correct *(instrument sample ID vs. Dilution column)*	Y
TALS Worksheet Tab	Complete and correct *(Final amount and notes populated where needed)*	Y
TALS Reagents Tab	Complete and correct	Y
TALS QC Links Tab	All samples, standards and QC linked correctly	Y
TALS Sample Results Tab	All unused data are marked Rejected or Accepted	Y
	All reported analytes are marked Primary or Secondary	Y
TALS Batch Information Screen	Documentation is complete	Y
TALS Sample List Tab	TALS Status set to appropriate review level	Y

1st Level Review by: KNC 7-1-19	2nd Level Review by: DRW 7/9/19

Calculation: Mn at 1730

$0.21549\ mg/L \times \frac{0.025L}{0.005kg} \times \frac{0.050L}{0.005L} \times \frac{1}{0.766} = 14.066\ mg/kg$

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Knoxville Job Number: 140-15390-1

SDG No.:

Project: RDMorrow (19117989)

Client Sample ID	Lab Sample ID
MW-2 (14-19)	140-15390-1
MW-5 (12-17)	140-15390-2
MW-106 (10-15)	140-15390-3
MW-107 (19-24)	140-15390-4

Comments:

COVER PAGE
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Seattle   Job Number: 140-15390-1

SDG No.:

Project: RDMorrow (19117989)

Client Sample ID	Lab Sample ID
MW-2 (14-19)	140-15390-1
MW-5 (12-17)	140-15390-2
MW-106 (10-15)	140-15390-3
MW-107 (19-24)	140-15390-4

Comments:

INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MW-2 (14-19)
Lab Sample ID: 140-15390-1
Lab Name: Eurofins TestAmerica, Seattle
Job No.: 140-15390-1
SDG ID.:
Matrix: Solid
Date Sampled: 05/23/2019 10:15
Reporting Basis: WET
Date Received: 05/25/2019 10:30

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-44-0	Total Organic Carbon - Average Dup	ND	2000	44	mg/Kg			1	9060

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MW-5 (12-17)

Lab Sample ID: 140-15390-2

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 12:50

Reporting Basis: WET

Date Received: 05/25/2019 10:30

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-44-0	Total Organic Carbon - Average Dup	ND	2000	44	mg/Kg			1	9060

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MW-106 (10-15)

Lab Sample ID: 140-15390-3

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 140-15390-1

SDG ID.:

Matrix: Solid

Date Sampled: 05/23/2019 13:40

Reporting Basis: WET

Date Received: 05/25/2019 10:30

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-44-0	Total Organic Carbon - Average Dup	97	2000	44	mg/Kg	J		1	9060

INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: MW-107 (19-24)
Lab Sample ID: 140-15390-4

Lab Name: Eurofins TestAmerica, Seattle
Job No.: 140-15390-1

SDG ID.:

Matrix: Solid
Date Sampled: 05/23/2019 14:50

Reporting Basis: WET
Date Received: 05/25/2019 10:30

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-44-0	Total Organic Carbon - Average Dup	140	2000	44	mg/Kg	J		1	9060

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Seattle　　Job No.: 140-15390-1

SDG No.:

Analyst: JKM　　Batch Start Date: 06/10/2019

Reporting Units: mg/Kg　　Analytical Batch No.: 302804

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
20	ICV	08:06	Total Organic Carbon - Average Dup	120000	120000	100	80-120		CaCO3_00004_00007
21	ICB	08:08	Total Organic Carbon - Average Dup	ND					
29	CCV	11:24	Total Organic Carbon - Average Dup	123000	120000	103	80-120		CaCO3_00008
30	CCB	11:27	Total Organic Carbon - Average Dup	ND					
40	CCV	12:34	Total Organic Carbon - Average Dup	124000	120000	104	80-120		CaCO3_00008
41	CCB	12:36	Total Organic Carbon - Average Dup	ND					
48	CCV	13:09	Total Organic Carbon - Average Dup	124000	120000	103	80-120		CaCO3_00008
49	CCB	13:11	Total Organic Carbon - Average Dup	78.2				J	
59	CCV	14:05	Total Organic Carbon - Average Dup	124000	120000	104	80-120		CaCO3_00008
60	CCB	14:07	Total Organic Carbon - Average Dup	ND					
67	CCV	15:02	Total Organic Carbon - Average Dup	124000	120000	104	80-120		CaCO3_00008
68	CCB	15:04	Total Organic Carbon - Average Dup	55.8				J	

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM II-IN

3-IN
METHOD BLANK
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Seattle   Job No.: 140-15390-1

SDG No.:

Method	Lab Sample ID	Analyte	Result	Qual	Units	RL	Dil
Batch ID: 302804 Date: 06/10/2019 10:46							
9060	MB 580-302804/22	Total Organic Carbon - Average Dup	ND		mg/Kg	2000	1
Batch ID: 302804 Date: 06/10/2019 13:18							
9060	MB 580-302804/50	Total Organic Carbon - Average Dup	ND		mg/Kg	2000	1

FORM III-IN

7A-IN
LAB CONTROL SAMPLE
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Seattle   Job No.: 140-15390-1

SDG No.:

Matrix: Solid

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 302804 Date: 06/10/2019 10:49											
					LCS Source: TOCS_LCS_00008						
9060	LCS 580-302804/23	Total Organic Carbon - Average Dup	2570		mg/Kg	4270	60	40-180			
Batch ID: 302804 Date: 06/10/2019 13:20											
					LCS Source: TOCS_LCS_00008						
9060	LCS 580-302804/51	Total Organic Carbon - Average Dup	2510		mg/Kg	4270	59	40-180	8	32	

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA-IN

7A-IN
LAB CONTROL SAMPLE DUPLICATE
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Seattle   Job No.: 140-15390-1

SDG No.:

Matrix: Solid

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 302804	Date: 06/10/2019 10:52										
					LCSD Source: TOCS_LCS_00008						
9060	LCSD 580-302804/24	Total Organic Carbon - Average Dup	2720		mg/Kg	4270	64	40-180	8	32	
Batch ID: 302804	Date: 06/10/2019 13:22										
					LCSD Source: TOCS_LCS_00008						
9060	LCSD 580-302804/52	Total Organic Carbon - Average Dup	2670		mg/Kg	4270	62	40-180	6	32	

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA-IN

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Knoxville Job Number: 140-15390-1

SDG Number:

Matrix: Solid Instrument ID: W3

Method: Moisture RL Date: 01/01/2015 16:10

Analyte	Wavelength/ Mass	RL (%)	
Percent Moisture		0.1	
Percent Solids		0.1	

FORM IX - IN

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Seattle Job Number: 140-15390-1

SDG Number:

Matrix: Solid Instrument ID: TAC105

Method: 9060 MDL Date: 02/09/2015 13:47

Analyte	Wavelength/ Mass	RL (mg/Kg)	MDL (mg/Kg)
Total Organic Carbon - Average Dup		2000	44.4

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Seattle   Job Number: 140-15390-1

SDG Number:

Matrix: Solid   Instrument ID: TAC105

Method: 9060   XMDL Date: 02/25/2015 10:21

Analyte	Wavelength/ Mass	XRL (mg/Kg)	XMDL (mg/Kg)
Total Organic Carbon - Average Dup		2000	44.4

FORM IX - IN

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Knoxville   Job No.: 140-15390-1

SDG No.:

Instrument ID: W3   Analysis Method: Moisture

Start Date: 05/28/2019 16:16   End Date: 05/28/2019 16:16

Lab Sample Id	D/F	Type	Time	Analytes: %Sol	Analytes: Moist
ZZZZZZ			16:16		
ZZZZZZ			16:16		
ZZZZZZ			16:16		
ZZZZZZ			16:16		
ZZZZZZ			16:16		
ZZZZZZ			16:16		
ZZZZZZ			16:16		
140-15390-1	1	T	16:16	X	X
140-15390-2	1	T	16:16	X	X
140-15390-3	1	T	16:16	X	X
140-15390-4	1	T	16:16	X	X
ZZZZZZ			16:16		
ZZZZZZ			16:16		
ZZZZZZ			16:16		
ZZZZZZ			16:16		
ZZZZZZ			16:16		
ZZZZZZ			16:16		
ZZZZZZ			16:16		
ZZZZZZ			16:16		
ZZZZZZ			16:16		
ZZZZZZ			16:16		

Prep Types:
T = Total/NA

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Seattle   Job No.: 140-15390-1

SDG No.:

Instrument ID: TAC105   Analysis Method: 9060

Start Date: 05/29/2019 08:05   End Date: 06/10/2019 15:04

Lab Sample Id	D/F	Type	Time	Analytes
				TOCD
ZZZZZZ			08:05	
ZZZZZZ			08:07	
ZZZZZZ			08:10	
ZZZZZZ			08:13	
ZZZZZZ			08:16	
ZZZZZZ			08:19	
ZZZZZZ			08:31	
ZZZZZZ			08:44	
ZZZZZZ			08:48	
ZZZZZZ			08:51	
ZZZZZZ			09:03	
ZZZZZZ			09:15	
ZZZZZZ			09:27	
ZZZZZZ			09:33	
ZZZZZZ			09:48	
ZZZZZZ			09:54	
ZZZZZZ			10:01	
ZZZZZZ			11:16	
ZZZZZZ			11:18	
ICV 580-302804/20	1		08:06	X
ICB 580-302804/21	1		08:08	X
MB 580-302804/22	1	T	10:46	X
LCS 580-302804/23	1	T	10:49	X
LCSD 580-302804/24	1	T	10:52	X
ZZZZZZ			11:00	
ZZZZZZ			11:09	
ZZZZZZ			11:19	
ZZZZZZ			11:22	
CCV 580-302804/29	1		11:24	X
CCB 580-302804/30	1		11:27	X
ZZZZZZ			11:29	
ZZZZZZ			11:39	
ZZZZZZ			11:49	
ZZZZZZ			12:04	
ZZZZZZ			12:09	
ZZZZZZ			12:14	
ZZZZZZ			12:20	
ZZZZZZ			12:25	
140-15390-1	1	T	12:29	X
CCV 580-302804/40	1		12:34	X

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Seattle   Job No.: 140-15390-1

SDG No.:

Instrument ID: TAC105   Analysis Method: 9060

Start Date: 05/29/2019 08:05   End Date: 06/10/2019 15:04

Lab Sample Id	D/F	Type	Time	Analytes: TOCD
CCB 580-302804/41	1		12:36	X
140-15390-2	1	T	12:40	X
140-15390-3	1	T	12:44	X
140-15390-4	1	T	12:48	X
ZZZZZZ			12:53	
ZZZZZZ			12:58	
ZZZZZZ			13:03	
CCV 580-302804/48	1		13:09	X
CCB 580-302804/49	1		13:11	X
MB 580-302804/50	1	T	13:18	X
LCS 580-302804/51	1	T	13:20	X
LCSD 580-302804/52	1	T	13:22	X
ZZZZZZ			13:25	
ZZZZZZ			13:33	
ZZZZZZ			13:42	
ZZZZZZ			13:45	
ZZZZZZ			13:47	
ZZZZZZ			13:56	
CCV 580-302804/59	1		14:05	X
CCB 580-302804/60	1		14:07	X
ZZZZZZ			14:10	
ZZZZZZ			14:19	
ZZZZZZ			14:27	
ZZZZZZ			14:36	
ZZZZZZ			14:44	
ZZZZZZ			14:53	
CCV 580-302804/67	1		15:02	X
CCB 580-302804/68	1		15:04	X

Prep Types:
T = Total/NA

FORM XIII-IN

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxvill Job No.: 140-15390-1

SDG No.:

Batch Number: 30352 Batch Start Date: 05/28/19 16:16 Batch Analyst: Dameron, Bryan K

Batch Method: Moisture Batch End Date: 05/29/19 10:35

Lab Sample ID	Client Sample ID	Method Chain	Basis	DishWeight	SampleMassWet	SampleMassDry			
140-15390-A-1	MW-2 (14-19)	Moisture	T	1.06 g	6.82 g	6.018 g			
140-15390-A-2	MW-5 (12-17)	Moisture	T	1.07 g	7.77 g	6.916 g			
140-15390-A-3	MW-106 (10-15)	Moisture	T	1.05 g	8.59 g	6.821 g			
140-15390-A-4	MW-107 (19-24)	Moisture	T	1.07 g	8.51 g	7.477 g			

Batch Notes	
Balance ID	S1
Date samples were placed in the oven	05/28/2019
Oven Temp In	105 Degrees C
Time samples were place in the oven	16:47
Date samples were removed from oven	05/29/2019
Oven Temp Out	105 Degrees C
Time Samples were removed from oven	08:35
Oven ID	023
Thermometer ID	023
Temperature - Start - Uncorrected	105 Degrees C

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Seattle   Job No.: 140-15390-1

SDG No.:

Batch Number: 302804   Batch Start Date: 05/29/19 08:05   Batch Analyst: Mundey, Jaspreet K

Batch Method: 9060   Batch End Date: 06/10/19 15:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	Baked Sand 00062	CaCO3 00008	CaCO3_00004 00007	TOCS_LCS 00008		
ICV 580-302804/20		9060				# g			
ICB 580-302804/21		9060		# g					
MB 580-302804/22		9060		# g					
LCS 580-302804/23		9060					# g		
LCSD 580-302804/24		9060					# g		
CCV 580-302804/29		9060			# g				
CCB 580-302804/30		9060		# g					
CCV 580-302804/40		9060			# g				
CCB 580-302804/41		9060		# g					
CCV 580-302804/48		9060			# g				
CCB 580-302804/49		9060		# g					
MB 580-302804/50		9060		# g					
LCS 580-302804/51		9060					# g		
LCSD 580-302804/52		9060					# g		
CCV 580-302804/59		9060			# g				
CCB 580-302804/60		9060		# g					
CCV 580-302804/67		9060			# g				
CCB 580-302804/68		9060		# g					

Batch Notes	
Pipette/Syringe/Dispenser ID	x

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Seattle Job No.: 140-15390-1

SDG No.:

Batch Number: 302804 Batch Start Date: 05/29/19 08:05 Batch Analyst: Mundey, Jaspreet K

Batch Method: 9060 Batch End Date: 06/10/19 15:00

Basis	Basis Description

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

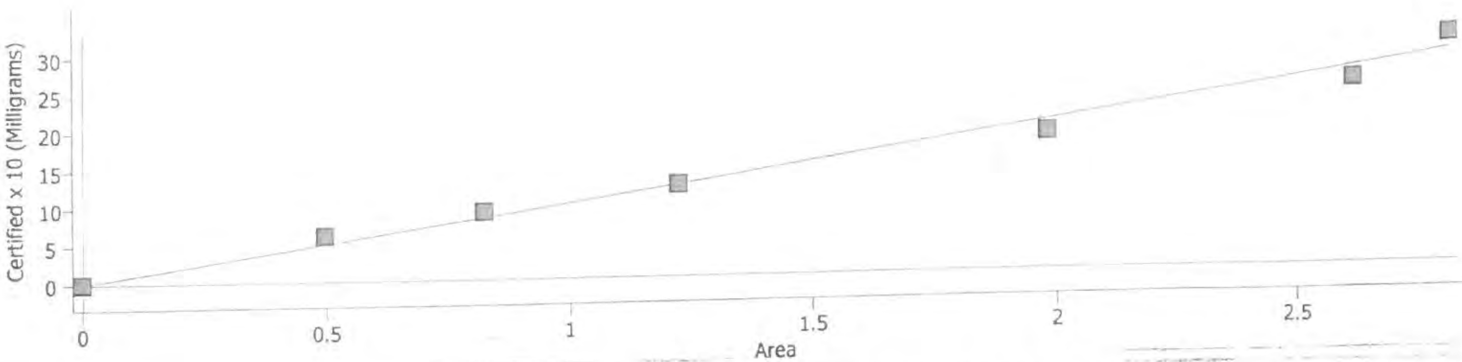
SC632

TA SOIL LINNEAR Calibration - Read Only

CO2 Low (range: 0.000000 to 30.084000 mg)

Previous Calibration:
y= +0.996445x - 0.00160676
Date: 4/5/2019 5:12:31 PM

New Calibration:
y= +0.996445x - 0.00160676
Curve Type: Linear
Weighting: 1 / Certified
RMS Error: 0.0020979



Row	Standard	Drift	Mass	Certified	Calculated	Error %	Prev Err %	Peak	Peak Area	Weighting	Date	Range	Saturated
1	Blank	0	1.0000	0.000000000075		100.00	100.00	21.233	0.0016126	2.5000E+6	04/05/19 04:47 PM	Low	No
2	1297337	0	0.050900	12.000	9.7026	-19.145	-19.145	909.54	0.49724	1.6372	04/05/19 04:50 PM	Low	No
3	1297337	0	0.075200	12.000	10.929	-8.9277	-8.9277	1291.7	0.82638	1.1082	04/05/19 04:53 PM	Low	No
4	1297337	1	0.10110	12.000	12.028	0.23308	0.23308	1802.4	1.2220	0.82427	04/05/19 04:57 PM	Low	No
5	1297337	0	0.15130	12.000	13.048	8.7323	8.7323	2773.7	1.9828	0.55078	04/05/19 05:00 PM	Low	No
6	1297337	0	0.20320	12.000	12.820	6.8349	6.8349	3108.4	2.6160	0.41010	04/05/19 05:04 PM	Low	No
7	1297337	0	0.25070	12.000	11.208	-6.5964	-6.5964	3121.8	2.8216	0.33240	04/05/19 05:07 PM	Low	No

SC632

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
Blank	3600.5		1.0000	TA SOIL LINNEAR	4/5/2019 4:47:48 PM	0.00000007548	A01

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
1297337	265754		0.0509	TA SOIL LINNEAR	4/5/2019 4:50:59 PM	9.703	A02
1297337	439850		0.0752	TA SOIL LINNEAR	4/5/2019 4:53:58 PM	10.93	A03
1297337	649096		0.1011	TA SOIL LINNEAR	4/5/2019 4:57:10 PM	12.03	A04
1297337	1051521		0.1513	TA SOIL LINNEAR	4/5/2019 5:00:33 PM	13.05	A05
1297337	1386427		0.2032	TA SOIL LINNEAR	4/5/2019 5:04:02 PM	12.82	A06
1297337	1495189		0.2507	TA SOIL LINNEAR	4/5/2019 5:07:39 PM	11.21	A07
Average			0.1387			11.62	
Std. Deviation			0.08			1.262	
RSD			55.85			10.86	

SC632

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
ICV CaCO3_0000	1335764		0.2048	TA SOIL LINNEAR	4/5/2019 5:23:48 PM	12.25	A08

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
ICB 1936920	5091.2		0.2068	TA SOIL LINNEAR	4/5/2019 5:26:13 PM	0.01358	A09

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
CCV 1947764	1399133		0.2041	TA SOIL LINNEAR	5/29/2019 8:05:07 AM	12.88	A01
CCV 1947764	452347		0.2045	TA SOIL LINNEAR	5/29/2019 11:16:26 AM	4.134	A01
Average			0.2043			8.507	
Std. Deviation			0.0003			6.1851	
RSD			0.138			72.70	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
CCB 1936920	4803.8		0.2093	TA SOIL LINNEAR	5/29/2019 8:07:42 AM	0.01083	A02
CCB 1936920	1094.6		0.2063	TA SOIL LINNEAR	5/29/2019 11:18:37 AM	-0.02288	A02
Average			0.2078			-0.006026	
Std. Deviation			0.002			0.023839	
RSD			1.021			395.6	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
MB 1936920	2866.7		0.2097	TA SOIL LINNEAR	5/29/2019 8:10:02 AM	-0.006592	A03

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
LCS 2186025	44564		0.2062	TA SOIL LINNEAR	5/29/2019 8:13:01 AM	0.3742	A04

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
LCSD 2186025	52133		0.2078	TA SOIL LINNEAR	5/29/2019 8:16:12 AM	0.4400	A05

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86114-D-1	103048		0.2025	TA SOIL LINNEAR	5/29/2019 8:19:23 AM	0.9252	A06
580-86114-D-1	98003		0.2026	TA SOIL LINNEAR	5/29/2019 8:22:34 AM	0.8778	A07

SC632

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86114-D-1	93321		0.2050	TA SOIL LINNEAR	5/29/2019 8:25:45 AM	0.8245	A08
580-86114-D-1	110463		0.2058	TA SOIL LINNEAR	5/29/2019 8:28:44 AM	0.9782	A09
Average			0.2040			0.9014	
Std. Deviation			0.002			0.06566	
RSD			0.823			7.284	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86114-D-1 DU	94624		0.2035	TA SOIL LINNEAR	5/29/2019 8:31:55 AM	0.8426	A10
580-86114-D-1 DU	112191		0.2053	TA SOIL LINNEAR	5/29/2019 8:34:50 AM	0.9964	B01
580-86114-D-1 DU	100240		0.2072	TA SOIL LINNEAR	5/29/2019 8:37:49 AM	0.8787	B02
580-86114-D-1 DU	105178		0.2079	TA SOIL LINNEAR	5/29/2019 8:41:03 AM	0.9204	B03
Average			0.2060			0.9095	
Std. Deviation			0.002			0.06608	
RSD			0.962			7.266	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86114-D-1 MS	515361	0.1045	0.1031	TA SOIL LINNEAR	5/29/2019 8:44:31 AM	9.351	B04

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86114-D-1 MSD	632430	0.1074	0.1043	TA SOIL LINNEAR	5/29/2019 8:48:10 AM	11.36	B05

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86114-D-2	186198		0.2080	TA SOIL LINNEAR	5/29/2019 8:51:21 AM	1.654	B06

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Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86114-D-2	176604		0.2046	TA SOIL LINNEAR	5/29/2019 8:54:32 AM	1.593	B07
580-86114-D-2	197034		0.2059	TA SOIL LINNEAR	5/29/2019 8:57:43 AM	1.770	B08
580-86114-D-2	195563		0.2083	TA SOIL LINNEAR	5/29/2019 9:00:40 AM	1.736	B09
Average			0.2067			1.688	
Std. Deviation			0.002			0.0800	
RSD			0.852			4.740	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86114-C-3	48430		0.2036	TA SOIL LINNEAR	5/29/2019 9:03:51 AM	0.4148	B10
580-86114-C-3	53049		0.2076	TA SOIL LINNEAR	5/29/2019 9:06:32 AM	0.4487	C01
580-86114-C-3	61448		0.2086	TA SOIL LINNEAR	5/29/2019 9:09:31 AM	0.5224	C02
580-86114-C-3	52292		0.2051	TA SOIL LINNEAR	5/29/2019 9:12:42 AM	0.4472	C03
Average			0.2062			0.4583	
Std. Deviation			0.002			0.04553	
RSD			1.109			9.934	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86114-D-4	157829		0.2054	TA SOIL LINNEAR	5/29/2019 9:15:42 AM	1.415	C04
580-86114-D-4	155146		0.2039	TA SOIL LINNEAR	5/29/2019 9:18:53 AM	1.400	C05
580-86114-D-4	153063		0.2034	TA SOIL LINNEAR	5/29/2019 9:21:52 AM	1.384	C06
580-86114-D-4	163774		0.2084	TA SOIL LINNEAR	5/29/2019 9:25:03 AM	1.448	C07
Average			0.2053			1.412	
Std. Deviation			0.002			0.0271	
RSD			1.096			1.920	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
720-93097-D-1	20354		0.2085	TA SOIL LINNEAR	5/29/2019 9:27:48 AM	0.1514	C08

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Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
720-93097-D-1	19571		0.2021	TA SOIL LINNEAR	5/29/2019 9:30:28 AM	0.1489	C09
Average			0.2053			0.1501	
Std. Deviation			0.005			0.00177	
RSD			2.204			1.178	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
720-93097-D-2	25134		0.2068	TA SOIL LINNEAR	5/29/2019 9:33:14 AM	0.1962	C10
720-93097-D-2	19370		0.2059	TA SOIL LINNEAR	5/29/2019 9:35:52 AM	0.1443	D01
Average			0.2064			0.1702	
Std. Deviation			0.0006			0.03668	
RSD			0.308			21.55	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86210-C-1	483888		0.2049	TA SOIL LINNEAR	Aborted	4.416	D02
580-86210-C-1	122692		0.0559	TA SOIL LINNEAR	5/29/2019 9:48:40 AM	4.013	D03
580-86210-C-1	135046		0.0575	TA SOIL LINNEAR	5/29/2019 9:51:39 AM	4.307	D04
Average			0.1061			4.245	
Std. Deviation			0.09			0.2081	
RSD			80.65			4.901	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86210-C-2	146153		0.0576	TA SOIL LINNEAR	5/29/2019 9:54:51 AM	4.662	D05
580-86210-C-2	156551		0.0595	TA SOIL LINNEAR	5/29/2019 9:58:02 AM	4.843	D06
Average			0.0586			4.753	
Std. Deviation			0.001			0.1275	
RSD			2.295			2.683	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86210-C-3	168578		0.0577	TA SOIL LINNEAR	5/29/2019 10:01:13 AM	5.386	D07

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Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86210-C-3	171668		0.0537	TA SOIL LINNEAR	5/29/2019 10:04:24 AM	5.896	D08
Average			0.0557			5.641	
Std. Deviation			0.003			0.3604	
RSD			5.078			6.388	

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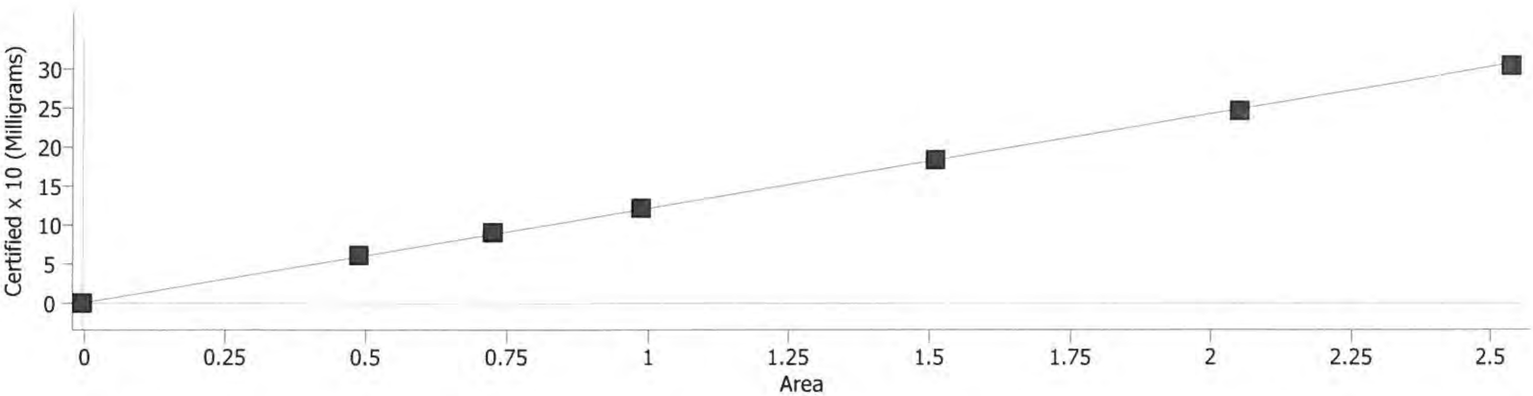
TA SOIL LINNEAR Calibration - Read Only

CO_2 Low (range: 0.000000 to 30.384000 mg)

Previous Calibration:
  y= +1.20938x + 0.0043831
  Date: 6/10/2019 7:54:35 AM

New Calibration:
  y= +1.20938x + 0.0043831
  Curve Type: Linear
  Weighting: 1 / Certified
  RMS Error: 0.00035357



Row	Standard	Drift	Mass	Certified	Calculated	Error %	Prev Err %	Peak	Peak Area	Weighting	Date	Range	Saturated
1	Blank	0	1.0000	0.0000	00000018	100.00	100.00	4.0227	-0.0036242	2.5000E+6	06/07/19 06:10 PM	Low	No
2	1947764	0	0.050900	12.000	11.675	-2.7090	-2.7090	861.07	0.48775	1.6372	06/07/19 06:13 PM	Low	No
3	1947764	0	0.075400	12.000	11.689	-2.5931	-2.5931	1200.3	0.72513	1.1052	06/07/19 06:15 PM	Low	No
4	1947764	1	0.10120	12.000	11.841	-1.3215	-1.3215	1468.7	0.98726	0.82345	06/07/19 06:18 PM	Low	No
5	1947764	0	0.15280	12.000	11.978	-0.17921	-0.17921	2255.7	1.5098	0.54538	06/07/19 06:20 PM	Low	No
6	1947764	0	0.20490	12.000	12.125	1.0383	1.0383	2893.6	2.0506	0.40670	06/07/19 06:23 PM	Low	No
7	1947764	0	0.25320	12.000	12.126	1.0511	1.0511	3158.9	2.5351	0.32912	06/07/19 06:26 PM	Low	No

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Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
1947764	260733		0.0509	TA SOIL LINNEAR	6/7/2019 6:13:07 PM	11.67	A05
1947764	386293		0.0754	TA SOIL LINNEAR	6/7/2019 6:15:38 PM	11.69	A06
1947764	524942		0.1012	TA SOIL LINNEAR	6/7/2019 6:18:14 PM	11.84	A07
1947764	801337		0.1528	TA SOIL LINNEAR	6/7/2019 6:20:55 PM	11.98	A08
1947764	1087378		0.2049	TA SOIL LINNEAR	6/7/2019 6:23:37 PM	12.12	A09
1947764	1343674		0.2532	TA SOIL LINNEAR	6/7/2019 6:26:28 PM	12.13	A10
Average			0.1397			11.91	
Std. Deviation			0.08			0.203	
RSD			56.17			1.706	

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Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
ICV 1821631	1064310		0.2021	TA SOIL LINNEAR	6/10/2019 8:06:41 AM	12.03	A01

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
ICB 1936920	1116.7		0.2050	TA SOIL LINNEAR	6/10/2019 8:08:53 AM	0.003192	A02

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
MB 1936920	1023.5		0.2044	TA SOIL LINNEAR	6/10/2019 10:46:49 AM	0.002159	A03
MB 1936920	1212.1		0.2037	TA SOIL LINNEAR	6/10/2019 1:18:01 PM	0.004283	A01
Average			0.2041			0.003221	
Std. Deviation			0.0005			0.0015020	
RSD			0.243			46.63	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
LCS 2186025	23924		0.2054	TA SOIL LINNEAR	6/10/2019 10:49:37 AM	0.2571	A04
LCS 2186025	23626		0.2073	TA SOIL LINNEAR	6/10/2019 1:20:19 PM	0.2514	A02
Average			0.2064			0.2542	
Std. Deviation			0.001			0.00399	
RSD			0.651			1.571	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
LCSD 2186025	25293		0.2053	TA SOIL LINNEAR	6/10/2019 10:52:12 AM	0.2724	A05
LCSD 2186025	25170		0.2088	TA SOIL LINNEAR	6/10/2019 1:22:52 PM	0.2665	A03
Average			0.2071			0.2695	
Std. Deviation			0.002			0.00419	
RSD			1.195			1.553	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86114-D-1	86027		0.2029	TA SOIL LINNEAR	6/10/2019 11:00:25 AM	0.9601	A04
580-86114-D-1	71992		0.2013	TA SOIL LINNEAR	6/10/2019 11:02:46 AM	0.8083	A05

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Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86114-D-1	67110		0.2039	TA SOIL LINNEAR	6/10/2019 11:05:08 AM	0.7432	A06
580-86114-D-1	73172		0.2058	TA SOIL LINNEAR	6/10/2019 11:07:30 AM	0.8037	A07
Average			0.2035			0.8288	
Std. Deviation			0.002			0.09238	
RSD			0.926			11.15	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86114-D-1 DU	66839		0.2035	TA SOIL LINNEAR	6/10/2019 11:09:50 AM	0.7416	A08
580-86114-D-1 DU	76426		0.2046	TA SOIL LINNEAR	6/10/2019 11:12:10 AM	0.8448	A09
580-86114-D-1 DU	68602		0.2033	TA SOIL LINNEAR	6/10/2019 11:14:29 AM	0.7622	A10
580-86114-D-1 DU	72808		0.2055	TA SOIL LINNEAR	6/10/2019 11:16:52 AM	0.8008	B01
Average			0.2042			0.7874	
Std. Deviation			0.001			0.04548	
RSD			0.502			5.776	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86114-D-1 MS	593762	0.1040	0.1089	TA SOIL LINNEAR	6/10/2019 11:19:32 AM	12.45	B02

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86114-D-1 MSD	599625	0.1055	0.1084	TA SOIL LINNEAR	6/10/2019 11:22:03 AM	12.63	B03

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
CCV 1947764	1104363		0.2052	TA SOIL LINNEAR	6/10/2019 11:24:58 AM	12.30	D06

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Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
CCV 1947764	1122091		0.2062	TA SOIL LINNEAR	6/10/2019 12:34:12 PM	12.43	D10
CCV 1947764	1093959		0.2024	TA SOIL LINNEAR	6/10/2019 1:09:15 PM	12.35	A02
CCV 1947764	1105851		0.2032	TA SOIL LINNEAR	6/10/2019 2:05:37 PM	12.43	C02
CCV 1947764	1110196		0.2041	TA SOIL LINNEAR	6/10/2019 3:02:29 PM	12.43	E08
Average			0.2042			12.39	
Std. Deviation			0.002			0.063	
RSD			0.745			0.506	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
CCB 1936920	836.88		0.2052	TA SOIL LINNEAR	6/10/2019 11:27:09 AM	0.00007098	D07
CCB 1936920	984.43		0.2058	TA SOIL LINNEAR	6/10/2019 12:36:23 PM	0.001710	E01
CCB 1936920	1535.6		0.2061	TA SOIL LINNEAR	6/10/2019 1:11:26 PM	0.007822	A03
CCB 1936920	1143.6		0.2050	TA SOIL LINNEAR	6/10/2019 2:07:48 PM	0.003492	C03
CCB 1936920	1329.0		0.2042	TA SOIL LINNEAR	6/10/2019 3:04:40 PM	0.005582	E09
Average			0.2053			0.003735	
Std. Deviation			0.0007			0.0030699	
RSD			0.361			82.19	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86114-D-2	80584		0.2039	TA SOIL LINNEAR	6/10/2019 11:29:54 AM	0.8943	B04
580-86114-D-2	84064		0.2058	TA SOIL LINNEAR	6/10/2019 11:32:22 AM	0.9247	B05
580-86114-D-2	75802		0.2033	TA SOIL LINNEAR	6/10/2019 11:34:47 AM	0.8432	B06

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Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86114-D-2	81422		0.2038	TA SOIL LINNEAR	6/10/2019 11:37:13 AM	0.9042	B07
Average			0.2042			0.8916	
Std. Deviation			0.001			0.03468	
RSD			0.538			3.889	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86114-D-3	20592		0.2055	TA SOIL LINNEAR	6/10/2019 11:39:38 AM	0.2199	B08
580-86114-D-3	20102		0.2037	TA SOIL LINNEAR	6/10/2019 11:41:57 AM	0.2163	B09
580-86114-D-3	21528		0.2078	TA SOIL LINNEAR	6/10/2019 11:44:23 AM	0.2277	B10
580-86114-D-3	21728		0.2061	TA SOIL LINNEAR	6/10/2019 11:46:47 AM	0.2318	C01
Average			0.2058			0.2239	
Std. Deviation			0.002			0.00710	
RSD			0.822			3.172	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86114-D-4	76072		0.2064	TA SOIL LINNEAR	6/10/2019 11:49:10 AM	0.8335	C02
580-86114-D-4	78338		0.2069	TA SOIL LINNEAR	6/10/2019 11:51:34 AM	0.8565	C03
580-86114-D-4	70431		0.2024	TA SOIL LINNEAR	6/10/2019 11:53:59 AM	0.7863	C04
580-86114-D-4	78100		0.2078	TA SOIL LINNEAR	6/10/2019 11:56:24 AM	0.8502	C05
Average			0.2059			0.8316	
Std. Deviation			0.002			0.03177	
RSD			1.160			3.820	

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Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
440-239686-A-6	168936		0.2037	TA SOIL LINNEAR	6/10/2019 12:04:27 PM	1.887	C06
440-239686-A-6	158366		0.2024	TA SOIL LINNEAR	6/10/2019 12:06:38 PM	1.780	C07
Average			0.2031			1.833	
Std. Deviation			0.0009			0.0759	
RSD			0.453			4.138	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
440-239686-A-7	170368		0.2079	TA SOIL LINNEAR	6/10/2019 12:09:16 PM	1.865	C08
440-239686-A-7	163254		0.2023	TA SOIL LINNEAR	6/10/2019 12:11:38 PM	1.836	C09
Average			0.2051			1.850	
Std. Deviation			0.004			0.0204	
RSD			1.931			1.100	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
440-239686-B-14	22723		0.2079	TA SOIL LINNEAR	6/10/2019 12:14:00 PM	0.2408	C10
440-239686-B-14	21135		0.2070	TA SOIL LINNEAR	6/10/2019 12:16:29 PM	0.2243	D01
Average			0.2075			0.2325	
Std. Deviation			0.0006			0.01166	
RSD			0.307			5.013	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
720-93097-D-1	9596.8		0.2042	TA SOIL LINNEAR	6/10/2019 12:20:52 PM	0.09816	D02
720-93097-D-1	11050		0.2048	TA SOIL LINNEAR	6/10/2019 12:23:03 PM	0.1141	D03

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Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
Average			0.2045			0.1061	
Std. Deviation			0.0004			0.01127	
RSD			0.207			10.62	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
720-93097-D-2	9743.1		0.2049	TA SOIL LINNEAR	6/10/2019 12:25:02 PM	0.09945	D04
720-93097-D-2	10351		0.2049	TA SOIL LINNEAR	6/10/2019 12:27:13 PM	0.1062	D05
Average			0.2049			0.1028	
Std. Deviation			0			0.00480	
RSD			0.000			4.667	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
140-15390-B-1	767.30		0.2076	TA SOIL LINNEAR	6/10/2019 12:29:25 PM	-0.0006962	D06
140-15390-B-1	932.84		0.2055	TA SOIL LINNEAR	6/10/2019 12:31:36 PM	0.001138	D07
Average			0.2066			0.0002211	
Std. Deviation			0.001			0.0012973	
RSD			0.719			586.7	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
140-15390-B-2	636.85		0.2030	TA SOIL LINNEAR	6/10/2019 12:40:07 PM	-0.002181	D08
140-15390-B-2	868.77		0.2026	TA SOIL LINNEAR	6/10/2019 12:42:18 PM	0.0004317	D09
Average			0.2028			-0.0008748	
Std. Deviation			0.0003			0.0018477	
RSD			0.139			211.2	

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Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
140-15390-B-3	2129.3		0.2097	TA SOIL LINNEAR	6/10/2019 12:44:17 PM	0.01416	E02
140-15390-B-3	1307.2		0.2061	TA SOIL LINNEAR	6/10/2019 12:46:28 PM	0.005288	E03
Average			0.2079			0.009724	
Std. Deviation			0.003			0.0062739	
RSD			1.224			64.52	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
140-15390-B-4	1987.8		0.2084	TA SOIL LINNEAR	6/10/2019 12:48:39 PM	0.01270	E04
140-15390-B-4	2160.4		0.2096	TA SOIL LINNEAR	6/10/2019 12:50:50 PM	0.01451	E05
Average			0.2090			0.01360	
Std. Deviation			0.0008			0.001280	
RSD			0.406			9.412	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86210-C-1	48518	Sample has organic matter	0.0512	TA SOIL LINNEAR	6/10/2019 12:53:27 PM	2.130	E06
580-86210-C-1	50461	Sample has organic matter	0.0528	TA SOIL LINNEAR	6/10/2019 12:56:00 PM	2.149	E07
Average			0.0520			2.139	
Std. Deviation			0.001			0.0139	
RSD			2.176			0.649	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86210-C-2	71015	Sample has organic matter	0.0530	TA SOIL LINNEAR	6/10/2019 12:58:35 PM	3.028	E08
580-86210-C-2	75587	Sample has organic matter	0.0521	TA SOIL LINNEAR	6/10/2019 1:01:10 PM	3.281	E09
Average			0.0526			3.154	
Std. Deviation			0.0006			0.1789	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
RSD			1.211			5.670	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86210-C-3	69903	Sample has organic matter	0.0538	TA SOIL LINNEAR	6/10/2019 1:03:49 PM	2.935	E10
580-86210-C-3	70248	Sample has organic matter	0.0529	TA SOIL LINNEAR	6/10/2019 1:06:29 PM	3.000	A01
Average			0.0534			2.968	
Std. Deviation			0.0006			0.0459	
RSD			1.193			1.546	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86580-A-8	703041		0.2049	TA SOIL LINNEAR	6/10/2019 1:25:03 PM	7.836	A04
580-86580-A-8	734268		0.2070	TA SOIL LINNEAR	6/10/2019 1:27:14 PM	8.101	A05
580-86580-A-8	702998		0.2029	TA SOIL LINNEAR	6/10/2019 1:29:25 PM	7.913	A06
580-86580-A-8	711132		0.2040	TA SOIL LINNEAR	6/10/2019 1:31:36 PM	7.961	A07
Average			0.2047			7.953	
Std. Deviation			0.002			0.1117	
RSD			0.849			1.404	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86580-A-8 DU	678783		0.2067	TA SOIL LINNEAR	6/10/2019 1:33:47 PM	7.499	A08
580-86580-A-8 DU	701588		0.2056	TA SOIL LINNEAR	6/10/2019 1:35:58 PM	7.793	A09
580-86580-A-8 DU	710811		0.2066	TA SOIL LINNEAR	6/10/2019 1:38:09 PM	7.857	A10
580-86580-A-8 DU	731082		0.2053	TA SOIL LINNEAR	6/10/2019 1:40:20 PM	8.133	B01

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Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
Average			0.2061			7.821	
Std. Deviation			0.0007			0.2600	
RSD			0.342			3.325	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86580-A-8 MS	907333	0.1091	0.1046	TA SOIL LINNEAR	6/10/2019 1:42:49 PM	19.82	B02

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86580-A-8 MSD	881544	0.1033	0.1088	TA SOIL LINNEAR	6/10/2019 1:45:31 PM	18.51	B03

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86580-A-1	170332		0.2031	TA SOIL LINNEAR	6/10/2019 1:47:42 PM	1.908	B04
580-86580-A-1	175650		0.2040	TA SOIL LINNEAR	6/10/2019 1:49:53 PM	1.959	B05
580-86580-A-1	168274		0.2058	TA SOIL LINNEAR	6/10/2019 1:52:04 PM	1.860	B06
580-86580-A-1	178269		0.2035	TA SOIL LINNEAR	6/10/2019 1:54:15 PM	1.994	B07
Average			0.2041			1.930	
Std. Deviation			0.001			0.0584	
RSD			0.584			3.027	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86580-A-2	143007		0.2050	TA SOIL LINNEAR	6/10/2019 1:56:13 PM	1.586	B08
580-86580-A-2	141848		0.2024	TA SOIL LINNEAR	6/10/2019 1:58:24 PM	1.593	B09
580-86580-A-2	146476		0.2058	TA SOIL LINNEAR	6/10/2019 2:00:35 PM	1.618	B10
580-86580-A-2	147119		0.2068	TA SOIL LINNEAR	6/10/2019 2:02:46 PM	1.617	C01
Average			0.2050			1.604	
Std. Deviation			0.002			0.0167	
RSD			0.919			1.039	

SC632

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86580-A-3	32911		0.2097	TA SOIL LINNEAR	6/10/2019 2:10:30 PM	0.3498	C04
580-86580-A-3	33243		0.2064	TA SOIL LINNEAR	6/10/2019 2:12:41 PM	0.3591	C05
580-86580-A-3	34243		0.2053	TA SOIL LINNEAR	6/10/2019 2:14:41 PM	0.3721	C06
580-86580-A-3	31964		0.2066	TA SOIL LINNEAR	6/10/2019 2:16:52 PM	0.3445	C07
Average			0.2070			0.3564	
Std. Deviation			0.002			0.01209	
RSD			0.912			3.392	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86580-A-4	776656		0.2050	TA SOIL LINNEAR	6/10/2019 2:19:03 PM	8.653	C08
580-86580-A-4	782717		0.2045	TA SOIL LINNEAR	6/10/2019 2:21:14 PM	8.742	C09
580-86580-A-4	750798		0.2039	TA SOIL LINNEAR	6/10/2019 2:23:25 PM	8.410	C10
580-86580-A-4	721104		0.2026	TA SOIL LINNEAR	6/10/2019 2:25:36 PM	8.129	D01
Average			0.2040			8.483	
Std. Deviation			0.001			0.2750	
RSD			0.508			3.242	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86580-A-5	670214		0.2030	TA SOIL LINNEAR	6/10/2019 2:27:36 PM	7.539	D02
580-86580-A-5	676466		0.2048	TA SOIL LINNEAR	6/10/2019 2:29:47 PM	7.543	D03
580-86580-A-5	691842		0.2070	TA SOIL LINNEAR	6/10/2019 2:31:59 PM	7.633	D04
580-86580-A-5	697769		0.2072	TA SOIL LINNEAR	6/10/2019 2:34:10 PM	7.691	D05
Average			0.2055			7.601	
Std. Deviation			0.002			0.0735	
RSD			0.968			0.967	

SC632

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86580-A-6	102668		0.2089	TA SOIL LINNEAR	6/10/2019 2:36:21 PM	1.115	D06
580-86580-A-6	102444		0.2055	TA SOIL LINNEAR	6/10/2019 2:38:21 PM	1.131	D07
580-86580-A-6	98899		0.2056	TA SOIL LINNEAR	6/10/2019 2:40:32 PM	1.091	D08
580-86580-A-6	104240		0.2075	TA SOIL LINNEAR	6/10/2019 2:42:43 PM	1.139	D09
Average			0.2069			1.119	
Std. Deviation			0.002			0.0214	
RSD			0.790			1.916	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86580-A-7	34128		0.2011	TA SOIL LINNEAR	6/10/2019 2:44:54 PM	0.3786	D10
580-86580-A-7	33278		0.2026	TA SOIL LINNEAR	6/10/2019 2:46:52 PM	0.3662	E01
580-86580-A-7	35951		0.2087	TA SOIL LINNEAR	6/10/2019 2:49:03 PM	0.3848	E02
580-86580-A-7	35893		0.2041	TA SOIL LINNEAR	6/10/2019 2:51:14 PM	0.3928	E03
Average			0.2041			0.3806	
Std. Deviation			0.003			0.01122	
RSD			1.610			2.949	

Name	Carbon Low Area	Description	Mass	Method	Analysis Date	Carbon %	Location
580-86580-A-9	181528		0.2063	TA SOIL LINNEAR	6/10/2019 2:53:25 PM	2.003	E04
580-86580-A-9	173941		0.2052	TA SOIL LINNEAR	6/10/2019 2:55:22 PM	1.929	E05
580-86580-A-9	172917		0.2074	TA SOIL LINNEAR	6/10/2019 2:57:33 PM	1.897	E06
580-86580-A-9	170750		0.2066	TA SOIL LINNEAR	6/10/2019 2:59:44 PM	1.880	E07
Average			0.2064			1.927	
Std. Deviation			0.0009			0.0541	
RSD			0.441			2.808	

Subcontract Data

Shipping and Receiving Documents

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone (865) 291-3000 Fax (865) 584-4315

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Jeremy VanSlyke / [illegible]	Lab PM: Walker Wasmund, Terry	Carrier Tracking No(s):	COC No: 140-6692-2233.1
Client Contact: Dawn Prell	Phone:	E-Mail: terry.wasmund@testamericainc.com		Page: Page 1 of 1
Company: Golder Associates Inc.				Job #:
Address: 27200 Haggerty Road, Suite B-12	Due Date Requested:			
City: Farmington Hills	TAT Requested (days):			
State, Zip: MI, 48331-5719				
Phone: 248-536-5445(Tel)	PO #: Purchase Order Requested			
Email: Dawn_Prell@golder.com	WO #:			
Project Name: RDMorrow (19117989)	Project #: 14005280			
Site:	SSOW#:			

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010B_SEP - 7-Step SEP (Al, Co, Fe, Li, Mn, Mo, Tl)	TOC	Total Number of containers	Special Instructions/Note:
				Preservation Code:			N			
MW-2 (14-19)	5-23-19	1015	C	S			X	X		
MW-5 (12-17)	5-23-19	1250	C	S			X	X		
MW-106 (10-15)	5-23-19	1340	C	S			X	X		
MW-107 (19-24)	5-23-19	1450	C	S			X	X		
										CUSTODY SEALS INTACT
										RECEIVED AT RT 0.2/CT 0.2 °C
										BAD 5-25-19
										1 COOLER FEDX#
										775308936701 PDS

140-15390 Chain of Custody

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ______ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: [signature]	Date/Time: 5.24.19 / 1425	Company: EMS	Received by: — Fed Ex —	Date/Time:	Company
Relinquished by: — Fed Ex —	Date/Time:	Company	Received by: [signature]	Date/Time: ~~5-25-19~~ 5-25-19 10:30	Company: ETA KNX
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Loc: 140
15390

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Log In Number:

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	/			☐ **Containers, Broken**
2. Were ambient air containers received intact?			/	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?	/			☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SC68 Correction factor: 0.0	/			☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	/			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	/			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	/			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	/			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	/			☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?	/			☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	/			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	/			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	/			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	/			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	/			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			/	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			/	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			/	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			/	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			/	☐ Project missing info

Comments/Actions Taken

12, CLIENT ADDED TOC, NOT IN PROJECT

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: 1400S280 PM Instructions: NA

Sample Receiving Associate: [signature] Date: 5·25·19

QA026R31.doc, 112618

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone: 865-291-3000 Fax: 865-584-4315

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Walker Wasmund, Terry	Carrier Tracking No(s):	COC No: 140-5531.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: terry.wasmund@testamericainc.com	State of Origin: Michigan	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - Oregon		Job #: 140-15390-1
Address: 5755 8th Street East,	Due Date Requested: 6/19/2019	Analysis Requested		Preservation Codes:
City: Tacoma	TAT Requested (days):			
State, Zip: WA, 98424				
Phone: 253-922-2310(Tel) 253-922-5047(Fax)	PO #:			
Email:	WO #:			
Project Name: RDMorrow (19117989)	Project #: 14005280			
Site:	SSOW#:			

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9060/ Standard Soil TOC	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-2 (14-19) (140-15390-1)	5/23/19	10:15 Eastern		Solid			X	1	
MW-5 (12-17) (140-15390-2)	5/23/19	12:50 Eastern		Solid			X	1	
MW-106 (10-15) (140-15390-3)	5/23/19	13:40 Eastern		Solid			X	1	
MW-107 (19-24) (140-15390-4)	5/23/19	14:50 Eastern		Solid			X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* ______ *Months*

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2
Special Instructions/QC Requirements:

Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:	
Relinquished by: [signature]	Date/Time: 5-29-19 16:20	Company: ETA KNX	Received by: [signature]	Date/Time: 5-30-19 0930	Company: TASea
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 5-5.2		

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Golder Associates Inc.　　Job Number: 140-15390-1

Login Number: 15390　　**List Source: Eurofins TestAmerica, Seattle**
List Number: 2　　**List Creation: 05/30/19 11:33 AM**
Creator: Hobbs, Kenneth F

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	IR5=5.2/5.3
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

APPENDIX D

Groundwater Modeling Summary

REPORT

GROUNDWATER MODELING SUMMARY

RD Morrow Sr. Generating Station Landfill CCR Unit

Submitted to:

Cooperative Energy

7037 US HWY 49
Hattiesburg, MS 39402

Submitted by:

WSP USA Inc.

46850 Magellan Drive Suite 190 Novi, Michigan, USA 48377

GL21453914

April 2023

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1.0 INTRODUCTION

WSP USA Inc. (WSP) is pleased to provide this Technical Memorandum summarizing modeling results for closure with Monitoring Natural Attenuation (MNA) at the Cooperative Energy R.D. Morrow Sr. Generating Station's (Site, Morrow) Coal Combustion Residual (CCR) Landfill Unit (CCR Landfill Unit, or the Landfill) in Purvis, Mississippi. As part of the Cooperative Energy MNA Evaluation, the fate and transport of metals after closure of the Landfill was investigated through modeling, and this memo summarizes these tasks conducted in support of the MNA Evaluation.

1.1 Ground Water Modeling Objectives

The objectives of the modeling analysis are as follows:

- Synthesize the most recent hydrogeologic data into an integrated conceptual and numerical framework for evaluation of remedial strategies at the Site.
- Use the groundwater model to predict future metal concentrations after capping and closing the Landfill.

2.0 GROUNDWATER MODEL DEVELOPMENT

WSP has developed a groundwater flow model for the Landfill. There have been many groundwater samples, CCR pore-water samples, and groundwater elevation measurements collected at the Site; sampling locations which were used to generate the model input data are shown in Figure 1. The area covered by the groundwater flow model is shown in Figure 2. The purpose of this groundwater model summary is to document model setup, calibration and prediction results, and related data.

The focus of the Technical Memorandum is on the groundwater flow as well as the fate and transport of metals after closure of the Landfill. The former Surface Impoundment Unit and the associated monitoring wells to the north are included in the model as the Impoundment Unit had localized effects on groundwater flow; however, it was closed by removal in 2020, and the monitoring wells are now abandoned. Based on groundwater data (Golder, 2021a), there are no impacts from the former Surface Impoundment Unit, therefore it is not used as a potential source of elevated metals concentrations in the model.

2.1 General Geology and Setting

At the Site, Black Creek has cut a valley through the Citronelle and the Miocene Hattiesburg (clay) formations (EMS, 2003, and 2018b), and redeposited within the valley as alluvial terrace deposits. This feature has geologically divided the area immediately surrounding the facility into two different geological terrains; (1) The upland areas to the north and south of the Black Creek Valley made up of a Miocene sequence of clays with interbedded layers of silt and silty clay and (2) lowland unconsolidated fluvial deposits from Black Creek.

The geology in the lowland areas immediately around the Landfill can be further divided into two (2) distinctly different geological terrains; (1) the man-made features such as the CCR Landfill Unit and the perimeter berm materials and (2) the native unconsolidated materials present below the Landfill. Six (6) piezometers were installed in the CCR Landfill Unit and, along with associated Landfill design drawings, have provided the basis for the geologic interpretation of the man-made Landfill. Several investigations have been completed during permitting of the Landfill which provide descriptions and test results from within the unconsolidated materials (EMS 2003, 2005, 2018a, Golder 2019, 2020). From the investigations within the unconsolidated materials beneath the CCR Landfill Unit, four (4) distinct geologic units have been identified as follows.

- Stratum I – A poorly sorted silty sand that is generally brown or gray in color.
- Stratum II – Stiff clay and silty clay that is gray in color.
- Stratum III – Sand and silty sand with occasional gravel.
- Stratum IV – Massive bluish green clay with occasional gravel lenses.

In the area beneath the Landfill, Stratum I is not present, and the Landfill has been reported to have been built directly on top of Stratum II.

2.2 Conceptual Model

The Landfill at Morrow can be divided into eight (8) different CCR zones or cells, which are all monitored as one multi-unit network for the CCR Rule (Figure 3). The two (2) oldest of these CCR units are the Original Landfill Cell and the Secondary Landfill Cell, which are located on the northeast and southeastern portions of the overall Landfill footprint. According to Environmental Management Services, Inc., (EMS) 2003 report, these Landfill cells were built on top of an in-situ clay liner. In the 2000s, construction began on six (6) new Landfill cells on the western-southwestern side of the Landfill. These Landfill cells (Cells 1-6) were installed with a clay liner of at least 5 feet of in-situ clay that had a maximum conductivity of 1 x 10^{-6} centimeters per second (cm/sec). A Leachate Collection System was incorporated into the base of each of the new cells. A series of unconsolidated deposits are layered beneath the CCR Landfill Unit and are discussed further below.

Groundwater flow outside of the Landfill typically flows from the higher topographic areas to the north towards the south and east. Prior to closure, recharge from precipitation and low conductivity liner systems (clays) caused local mounding within the unit. Closure of the CCR Landfill Unit with a geomembrane liner system has significantly reduced recharge (nearly eliminated) to minimal amounts and dewatering within the CCR is removing the remaining pore-water. This will remove pore-water from the CCR materials, and no further impacts are expected as no more water can infiltrate into the CCR Landfill Unit.

2.3 Selection of Computer Code

The numerical computer code MODFLOW – developed by the United States Geological Survey (USGS) – was selected for much of this analysis because it is well suited to represent a wide range of hydrologic and hydrogeologic conditions, has been widely tested and accepted in the professional hydrology community and by regulatory agencies, and has been scrutinized closely in a number of legal proceedings over the past 20 years. In total, five software packages were used for the groundwater investigation.

- Groundwater flow: USGS software package MODFLOW (McDonald and Harbaugh 1988, Harbaugh and McDonald 1996, Harbaugh et al. 2000, Harbaugh 2005). MODFLOW-2005 was used in the analyses presented here.
- Groundwater transport: USGS software package MT3DMS (Zheng and Wang, 1999)
- Particle tracking: USGS software package MODPATH (Pollock 2012)
- Parameter estimation: PEST (Doherty 2010 and 2016)
- Graphical user interface: Groundwater Vistas (Environmental Simulations 2020, Rumbaugh and Rumbaugh 2011)

2.4 Model Domain and Grid

The finite-difference model grid size and location are shown in Figure 4. The model grid was oriented north-south and east-west as the primary groundwater flow direction is towards the south from the higher topographic regions. The grid contains 357 rows and 250 columns. The grid sizes in the Landfill area are uniform horizontally at 25 feet by 25 feet, and the grid sizes further from the Landfill in the upland areas to the north and south are uniform horizontally at 100 feet by 100 feet. The vertical thickness of the grid cells varies based on geologic layer thickness and the Landfill geometry.

The model area (excluding inactive (no flow) cells) is approximately 8,750 feet east-west along the x-axis by 16,500 feet north-south along the y-axis at the widest points. The southwest corner of the model grid (model coordinates 0,0) corresponds with NAD 27 Mississippi East coordinates 318336.674 north and 554377.434 west. Vertically, the model's base is at 100 feet above mean sea level (feet MSL) and ranges up to 360 feet MSL in the highest upland areas to the north.

2.4.1 Model Layering and Geometry

The model layering is based on the geologic and hydrogeologic conditions with additional layering needed to complete several different dewatering scenarios for the CCR Landfill Unit. Overall, the model is divided into seven (7) different layers, and hydraulic conductivity values in each layer vary, due to the geologic conditions onsite. Figures 5 and 6 display the distribution of the different geological units within the different model layers in cross-sectional view across the model.

The top of the model for all regions represents surface topography based on the 2016 1/3 arc second digital elevation map for the area, with a collection date of January 1, 2013, through January 1, 2016 (publicly available at: https://www.sciencebase.gov/catalog/item/5f7783de82ce1d74e7d6c224). The top of the model ranges from approximately 207 to 360 feet in elevation across the model domain. The following section discusses the layering across the model.

2.4.1.1 CCR Landfill Unit Geometry

For the Original and Secondary Landfill Cells, the base of the Landfill was placed in the model at an elevation of 230 feet MSL with CCR present from 230 feet MSL to the ground based on documentation from EMS, 2003. A low-hydraulic conductivity material was placed (berm) around the outside of the CCR up to an elevation of approximately 260 feet MSL. For the newer Landfill Cells 1-6 to the south and west, the base of the CCR was placed in the model at 233.5 feet MSL, followed by a 1.5-foot layer of sand with a hydraulic conductivity of 1×10^{-3} centimeter per second (cm/sec) representing the Leachate Collection System, that is simulated as a separate layer in the model (EMS 2014). Additionally, drain cells in the model are placed in this sandy layer to simulate the Leachate Collection System. Beneath the CCR and the Leachate Collection System are Stratum II clays, followed by the Stratum III uppermost aquifer unit (EMS, 2014).

2.4.1.2 Lowland Geometry

Outside of the CCR Landfill Unit in the lowland areas of the model, the model is made up of the unconsolidated Stratum I – IV deposits. Depth and variability of the materials is based on geologic borehole logs from the monitoring wells and borings as identified in Figure 1. Stratum I materials are typically present in layers 1-3, except for the area near MW-5 west of the Landfill, where the Stratum II materials are found at a higher elevation and are present in layers 2-3. Layers 4-5 are typically comprised of Stratum II materials, except for in the area near MW-5, and near Black Creek, where Stratum III materials are present at a shallower depth. Layer 6 consists of Stratum III across the lowland area, and layer 7 consists of Stratum IV clays.

2.4.1.3 Upland Geometry

The upland area is represented by Miocene clays in all layers 1-7.

2.5 Model Input Data

The model input data consisted of geologic layering, hydraulic properties of these layers, surface recharge, river/stream properties, Landfill geometry data, and calibration data (hydraulic heads, concentration data). These are described in more detail in the following sections.

2.5.1 Hydraulic Properties

Hydraulic conductivity testing has been completed within the CCR materials as well as in the native materials present below the CCR Landfill Unit. These tests were used to generate ranges of appropriate hydraulic conductivities for the model and calibration tests were used to refine these values. The hydraulic properties used for this modeling effort as well as the reported ranges from Site conductivity testing are provided below in **Table 1**.

Table 1 – Hydraulic Properties of Geological Units Applied in the Model

Geologic Unit	Hydraulic Conductivity		Vertical Anisotropy Ratio	Reported Range		Data Sources
	feet per day	cm/sec		feet per day	cm/sec	
CCR	0.161	$5.7x10^{-05}$	0.1	0.065 to 0.204	$2.3x10^{-05}$ to $7.2x10^{-05}$	EMS 2019a
Berm Materials	0.002	$7.1x10^{-07}$	1	0.000003 to 0.283	$1.0x10^{-04}$ to $1.0x10^{-09}$	Fetter, C.W. (2000), Calibrated Values
Leachate Collection System Sands	2.84	$1.0x10^{-03}$	1	2.84	$1.0x10^{-03}$	EMS 2017
Stratum I	1.41	$5.0x10^{-04}$	0.1	0.0034 to 0.89	$1.2x10^{-06}$ to $3.1x10^{-04}$	EMS 2003, Fetter, C.W. (2000), Calibrated values
Stratum II	0.003	$1.1x10^{-06}$	0.67	0.000068 to 0.0096	$2.4x10^{-08}$ to $3.4x10^{-06}$	EMS 2003
Stratum III	3.0	$1.1x10^{-03}$	0.1	2.063 to 8.384	$7.3x10^{-04}$ to $3.0x10^{-03}$	EMS 2005
Stratum IV	0.5	$1.8x10^{-04}$	0.1	0.0000822 to 0.89	$2.9x10^{-08}$ to $3.1x10^{-04}$	EMS 2003, EMS 2018b, Fetter, C.W. (2000), Calibrated Values
Miocene Clays (upland area)	0.4	$1.4x10^{-04}$	0.01	.0034 to 0.89	$1.2x10^{-06}$ to $3.1x10^{-04}$	EMS 2018b

Notes:
1) ft – feet
2) cm/sec – centimeters per second
3) Vertical Anisotropy Ratio is the ratio of vertical to horizontal hydraulic conductivity
4) CCR – Coal Combustion Residuals
5) Specific storage (1/ft) is $1x10^{-7}$ for each unit
6) Specific yield is 0.25 for each unit

2.5.2 Model Recharge

Recharge rates were applied to the highest active layer of the model. Recharge in the model represents the amount of precipitation that recharges the aquifer, which is generally the precipitation rate minus losses due to runoff, evapotranspiration (ET), and changes in soil moisture. Previous modeling analyses completed for the region (Halford and Barber, 1995) used estimated potential recharge to groundwater at 3-6 inches across southern Mississippi. This estimate is based on an average rainfall in the area of 56 inches per year, minus ET and surface runoff. Recharge rates in the model used this as a starting point and were refined using model calibration.

The model is subdivided into a total of fifteen (15) different recharge zones as displayed in Figure 7. Of these fifteen (15) recharge zones, twelve (12) are associated with the CCR Landfill Unit and represent the different recharge rates and historical active CCR placement conditions applied to the transient fate and transport modeling. The remaining three (3) recharge zones are associated with recharge rates outside of the CCR Landfill Unit including the upland area, the lowland area, and surface water areas.

2.5.3 Evapotranspiration

Eleven (11) ET zones were used in the model to represent ET and a figure displaying these zones, as well as the rates and depths are provided in Figure 8. The ET zones were selected based on aerial imagery of the Site. ET rates were based on typical published rates (Reitz et al., 2017; Hunt, Randall J., 2001; Halford and Barber, 1995; USGS, 1985) and then refined based on model calibration.

2.5.4 Landfill Dewatering Wells

As a part of the final design for the dewatering of the Landfill, six (6) dewatering wells were installed in the Secondary Landfill Cell to accelerate the dewatering (Figure 01). Each dewatering well has a screened interval of 235 to 255 feet MSL. These wells were incorporated in the model to simulate pore-water removal in layers 1-4 of the model. The pumping rate for the dewatering wells was simulated to have a maximum pumping rate of 2,887.5 cubic feet per day (15 gallons per minute). The diameter of the wells is modeled to be 0.5 feet (6-inches) in diameter. These features are only used in the transient modeling scenario.

2.6 Model Boundary Conditions

The following sections describe the boundary conditions used in the model, including constant head boundaries, drains, no flow boundaries, and river boundaries. Figure 9 displays the model boundary conditions used in the model.

2.6.1 No Flow Boundaries

By default, no flow boundaries are assumed at the bottom of the lowest layer and along the edge of each layer, unless another boundary condition is specified. Additionally, for this groundwater model, no flow boundaries were placed to the north, south, east and west of the Site area along hydrologic divides. To the north and south, no flow boundaries were placed along the ridge top of the Black Creek valley. To the east and west, the no flow boundaries were placed along streams or ditches that act as a hydrologic divide including the Trace Branch to the west and the Sandy Run to the east (Figure 2).

2.6.1.1 Constant Head Boundaries

Constant head boundaries (CHB) were assigned along several streams in layers 1-7. CHB were assigned on the eastern and western edges of the model along the Trace Branch and Sandy Run (Figure 2 and Figure 9). Constant head boundary elevations in these CHB cells were set approximately equal to the estimated surface water elevation, based on digital elevation maps. The Trace Branch along the western side of the model has CHB that range from 251.86 to the north to 216.96 feet above mean sea level to the south where it intersects with Black Creek. The Sandy Run along the eastern Site of the model has CHBs that range from 231.80 to the north to 212.89 feet above mean sea level where it intersects Black Creek.

2.6.1.2 River Boundary Conditions

River boundary conditions are head-dependent boundary conditions, where the model computes the difference in head between the river cell where the boundary is defined and underlying model cells. River boundary cells were used for the Black Creek, the former Surface Impoundment Unit, un-named lakes in the upland region, the

Cooling Tower Blowdown Pond, as well as several un-named drainage features present onsite. All river boundary conditions are modeled in layer 1, and information on each of the river boundary areas is provided below:

- **Lake Features** – The model has four (4) man-made lakes included as river boundary conditions as displayed on Figure 9. The elevation for each of these lakes was estimated based on digital elevation maps. Each lake has lakebed thickness of 2 feet and a hydraulic conductivity equal to the corresponding vertical hydraulic conductivity of the underlying unit (0.004 feet per day if above Miocene clays, 0.141 feet per day if above Stratum 1).
- **Former Surface Impoundment Unit and Non-CCR Regulated Drainage Ponds 4 and 4A** – The model incorporates the former Surface Impoundment Unit and the non-CCR regulated drainage Ponds 4 and 4A located north of the Landfill as identified in Figure 2. Each of these features has a modeled “riverbed” thickness of 2 feet. Ponds 4 and 4A are modeled to have a hydraulic conductivity equal to that of the vertical conductivity of the underlying unit (0.004 feet per day if above Miocene clays, 0.141 if above Stratum 1) and are active throughout the model. The former Surface Impoundment Unit has a hydraulic conductivity of 0.0004 feet per day based on model calibration and are only active in the model through 2020. After this timeframe (2021 and beyond), these are not modeled as active river cells, as they have been closed by removal and are no longer in service.
- **Cooling Tower Blowdown Pond** – The Cooling Tower Blowdown Pond was modeled with a “riverbed” thickness of 2 feet, a hydraulic conductivity of 0.00062 feet per day, a top elevation of 232 feet MSL, and a bottom elevation of 220 feet MSL.
- **Streams and Creeks** – There are several creeks and streams included in the model. For the features located within the lowland areas, a streambed thickness of 2 feet was used except for Black Creek, where a thickness of 4 feet was used. Each of these features has a hydraulic conductivity of 0.28 feet per day based on model calibration. For the features located within the uplands (Miocene clays), the thickness remained the same (2 feet), however, the hydraulic conductivity used was 0.004 feet per day based on model calibration. The width of the different features was based on aerial imagery and ranges from 8 to 60 feet. The stage for each feature was based on digital elevation maps.

2.6.1.3 Drain Boundary Conditions

Drain boundary conditions were used in the model to simulate the Leachate Collection System for Landfill Cells 1-6 as well as the perimeter trench drain used for Landfill dewatering purposes. The drain used for the Leachate Collection System was placed in layer 4 of the model, beneath the CCR Cells of layers 1-3. The drain characteristics were set to have a drain stage at 233.9 feet MSL for Landfill Cell 6, and 232.9 feet MSL for Landfill Cells 1-5.

The base conductivity of the drain cells was calibrated so that the drain cells would remove a similar amount of water as those observed from the Leachate Collection System in 2019. In 2019, the amount of leachate removed from Landfill Cell 6 based on monthly totals ranged from approximately 47 to 295 cubic feet per day with an average of 132 cubic feet per day and Landfill Cells 1-5 ranged from approximately 996 to 2,892 cubic feet per day with an average of 1,857 cubic feet per day. The hydraulic conductivity of the drains in the model was adjusted to 115 feet per day such that the steady state model displayed withdrawals of 109 cubic feet per day removed from Landfill Cell 6 and 2,195 cubic feet per day removed from Landfill Cells 1-5.

The drain cells used for the Landfill dewatering trench were placed in layers 1-3, within the berm (the low-hydraulic conductivity material placed surrounding the CCR) and CCR materials based on the Golder (2021b) CCR Closure Project Drawings. The drain stage was set at 235 feet MSL and the drain hydraulic conductivity was set equal to that of the CCR materials. The perimeter trench is only used in the transient model.

2.7 Flow Calibration

Model calibration consists of successive refinement of estimated model properties and input data within expected ranges to improve the fit between observed and model-simulated flows and elevations. A steady state flow model calibration was carried out for September 13, 2019, for which ten (10) groundwater elevations within the unconsolidated materials in the lowlands and uplands as well as six (6) piezometers within the pore-water of the CCR Landfill Unit were available as targets (LF-P-1, LF-P-2, LF-P-3, LF-P-5, LF-P-6, LF-P-7, MW-02, MW-03, MW-04, MW-05, MW-06, MW-10, MW-11, MW-12, MWI-1, and MWI-2). In addition, as discussed above, the extraction rate of the Leachate Collection System was used to calibrate the recharge rates into Landfill Cells 1-6 on the south side of the Landfill. This date was selected for the steady state calibration because the date represented average water level conditions when compared with historical data and this date was after the installation of the pore-water piezometers as well as the assessment monitoring wells MW-10, MW-11, and MW-12.

Manual and automated parameter estimation approaches were used to derive reasonable estimates of hydraulic conductivities and natural recharge rates that produce groundwater elevations close to the observed data. The resulting estimated parameter values fall within expected ranges (Table 1). The results are summarized in Figure 10. The average head residual is less than 2 feet, and the normalized root mean square error in the model is 9.0%. It should be noted that observed elevations varied from 215.02 – 234.72 feet MSL for groundwater in the areas outside of the Landfill and from 241.47 – 263.77 feet MSL in the Landfill pore-water. The calibrated model was found to be acceptable for current purposes.

2.8 Transport Model Analysis

This section describes the transport modeling analyses conducted for the Landfill contaminant source area. The former Surface Impoundment Unit north of Old Okahola School Road was not modeled as a source area because there is no evidence of groundwater impacts based on the results from the former Surface Impoundment Unit well network (MWI wells), designed in accordance with the CCR Rule to identify any such release. In 2020, the former Surface Impoundment Unit was closed by removal. Based on drilling data, historical images, and previous reports the Landfill has historically been managed with a mixture of bottom ash, fly ash, and scrubber solids mixed throughout the Landfill.

Boron was selected as the primary constituent for transport analysis because it is a key indicator of CCR impacts. Boron is a CCR Appendix III constituent for detection monitoring but is not an Appendix IV constituent for which remediation would be required. It is a conservative, not reactive constituent, which is not affected by the changes in pH displayed onsite, is mobile in most hydrogeological settings, and is present in CCR leachate at a concentration higher than background. The primary boron transport mechanisms are advection and mixing due to natural and Landfill recharge, advection and mixing under varying natural hydraulic gradients controlled by groundwater flow onsite and buffering and/or precipitation due to interaction between boron in pore water and aquifer solids.

The transport model was setup with the following assumed parameters:

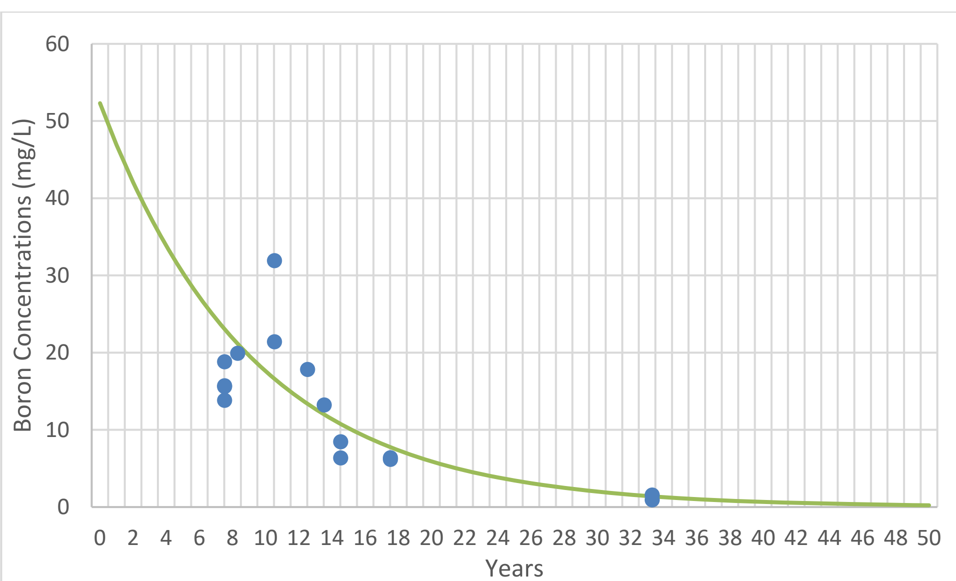
- Estimated aquifer bulk densities of 1.75 g/ml (EMS, 2003).
- Uniform effective porosity of 0.25 (Morris and Johnson, 1967).
- Longitudinal, transverse and vertical dispersivity were assumed to have values of 50, 5, and 0.5 ft, respectively (EPA 2021).
- To be conservative, no sorption represented by a partition coefficient (Kd) was included in the model (Kd = 0 mL/g).

2.8.1 Boron Concentrations

Source samples with boron results were collected from three (3) piezometers within the CCR Landfill Unit in 2019, the six (6) extraction wells used for dewatering purposes in 2021, and six (6) samples were collected from each of the new Landfill Cell sumps (cells 1-6) in 2021. The results from these samples ranged from 0.929 to 31.9 mg/L, with a mean value of 10.03 mg/L. Downgradient concentrations in the monitoring wells used as targets ranged from non-detect (< 0.05 mg/L) to 41.6 mg/L from October 2015 through April 2021.

It has been documented by several authors (Chichester and Landsberger, 1996; Hassett et al., 2003) that boron leaching rates from CCR materials decrease over time. Laboratory tests display a rapid rate of decreasing leaching rates over time, approaching a near level constant (Hassett et al., 2003). This decrease is predicted to reflect depletion of readily leachable boron. As discussed above, concentrations in boron from downgradient wells is higher than those identified in the source; therefore, historic source boron concentrations are expected to be higher than those collected in 2019-2021. To calculate the decrease in boron concentration over time, the results from the different CCR samples were plotted vs the time since new CCR materials were added to the landfill cell that the sample was collected from. The plotted data was used to calculate an exponential trend line for boron leaching concentrations over time, as displayed below in Figure 11.

Figure 11 – Boron Source Leaching Concentrations



The best fit formula derived from the exponential trend line plot as displayed in Figure 11 was then used to calculate boron concentrations for the source area. For each cell, 52.3 mg/L was used as the recharge concentration to the unit while the Landfill zone was modeled as actively receiving CCR. Details on timing are provided below. Once each Landfill zone is modeled as no longer being active, the boron concentration decreases each year, based on the formula provided above in Figure 11.

2.8.2 Transient Model Sources and Leachate Collection System

Different zones within the Landfill have been actively receiving CCR materials at different times throughout the history of the Landfill. The following discusses the different Landfill Cells and their history based on aerial imagery and previous reporting.

- **Original Landfill Cell** – Active at the start of the plant in 1978. Estimated to be only area in which Cooperative Energy deposited CCR through 1984, at which time the Secondary Landfill Cell was put into service.
- **Secondary Landfill Cell** – Active starting in 1985, the outer areas are simulated as active CCR waste placement from 1985 – 1991. The inner portions of the Landfill are subdivided into three sections, west, central, and east based on when CCR was being placed into the units.
  - The western landfill zone is modeled as actively receiving CCR from 1985 – 2003.
  - The central landfill zone is modeled as actively receiving CCR from 1985 – 2005.
  - The eastern landfill zone is modeled as actively receiving CCR from 1985 – 2001.
- **Newer Landfill** – Cells 5 and 6 were constructed in 2004 and are simulated as actively receiving CCR from 2005 – 2008. Cells 1 – 4 were constructed in 2009. Cells 1-4 are furthered divided into two different zones, the outer section on the southern side and the inner zone towards the center of the unit. The outer zone is simulated as actively receiving CCR from 2010 – 2012. The inner zone is modeled as actively receiving CCR from 2010 – 2019.
- **Leachate Collection System** – the Leachate Collection System was updated in 2018 with the installation of piping to transport the water from the Landfill Cells to the National Pollutant Discharge Elimination System (NPDES) permitted outfall. Prior to that time, the water from the Leachate Collection System flowed through above-ground channels. For this model, the above-ground channel was modeled as receiving leachate pore water from 2005 through 2017.

2.8.3 Transient Model Results

The calibrated steady state model was then used in combination with changing Site conditions as discussed above to generate a transient model to provide the basis for flow and transport predictions. Predicted transient groundwater elevations for the monitored locations were compared to historical groundwater elevation data collected at the facility in order to confirm model calibration. Data from the same 16 locations (LF-P-1, LF-P-2, LF-P-3, LF-P-5, LF-P-6, LF-P-7, MW-02, MW-03, MW-04, MW-05, MW-06, MW-10, MW-11, MW-12, MWI-1, and MWI-2) that were used for the steady state calibration were used for the transient statistics, with a total of 227 observations used. The results of the transient statistics are provided in Figure 12, with the average head residual less than 3 feet and the normalized root mean square error in the model of 9.0%. This calibration was found to be acceptable for current purposes.

Boron data from October 2015 through April 2021 was included as calibration targets in the model using 23 locations (9 locations within the CCR Landfill Unit: LF-P-3, LF-P-6, LF-P-7, EW-10, EW-11, EW-12, EW-13, EW-14, EW-15; and, 14 in the surrounding aquifer: MW-02, MW-03, MW-04, MW-05, MW-06, MW-10, MW-11, MW-12, MWI-01, MWI-02, MWI-03, MWI-04, P-A, P-B,) with a total of 175 observations. During transport model calibration the unknown historical pore-water elevations and concentrations in the Landfill were varied across expected ranges, but the hydraulic parameters were unchanged.

The transport model calibration results are summarized in Figure 13. The average boron concentration residual is less than 0.6 mg/L, and the normalized root mean square error is 10.0%. The calibrated model was found to be acceptable for current purposes. Predictive simulations were used to assess future plume movement under closure conditions.

A graph displaying the predicted boron concentrations at MW-5 (the only well with an Appendix IV constituent at Statistically Significant Levels (SSLs) above the groundwater protection standard) compared to sampling results and closure of the CCR Landfill Unit is provided in Figure 14. This figure shows that concentrations sampled at MW-5, located directly adjacent to the CCR Landfill Unit, has already undergone a greater than 50% reduction in concentration since boron data has been collected starting in 2015 and is predicted to reach a 90% reduction in concentrations (under 4 mg/L) by 2050.

3.0 GROUNDWATER MODELING SUMMARY

Through standard numerical groundwater modeling procedures, WSP has developed both steady state and transient groundwater flow models for the Site that are considered to be calibrated. The modeling results were used to inform the groundwater MNA evaluation by providing predicted boron concentrations at downgradient monitoring wells, specifically MW-5, for further geochemical evaluation.

4.0 LIMITATIONS

The modeling analyses presented in this report are a simplification of reality, and the model-predicted results should be used with this understanding. The limitations associated with analyses such as these are detailed below.

Hydrogeologic investigations and groundwater modeling are dynamic and inexact sciences. They are dynamic in the sense that the state of any hydrological system is changing with time, and in the sense that the science is continually developing new techniques to evaluate these systems. They are inexact in the sense that groundwater systems are complicated beyond human capability to evaluate them comprehensively in detail, and invariably there is insufficient data to do so. A groundwater model uses the laws of science and mathematics to draw together the available data into a mathematical or computer-based representation of the essential features of an existing hydrogeologic system. While the model itself obviously lacks the detailed reality of the existing hydrogeologic system, the behavior of a valid groundwater model reasonably approximates that of the real system. The validity and accuracy of the model depends on the amount of data available relative to the degree of complexity of the geologic formations, the site geochemistry, the fate and transport of the dissolved compounds, and on the quality and degree of accuracy of the data entered. Therefore, every groundwater model is a simplification of a reality, and the model described in this report is not an exception.

The professional groundwater and geochemical modeling services performed as described in this report were conducted in a manner consistent with that level of care and skill normally exercised by other members of the engineering and science professions currently practicing under similar conditions, subject to the quality and quantity of available data, the time limits and financial and physical constraints applicable to the services. Unless otherwise specified, the results of previous or simultaneous work provided by sources other than WSP and quoted and/or used herein are considered as having been obtained according to recognized and accepted professional rules and practices, and therefore deemed valid. This model provides a predictive scientific tool to evaluate the impacts on a real groundwater system of specified hydrological stresses and/or to compare various scenarios in a decision-making process. However, and despite the professional care taken during the construction of the model and in conducting the simulations, its accuracy is bound to the normal uncertainty associated to groundwater modeling, and no warranty, express or implied, is made.

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Signature Page

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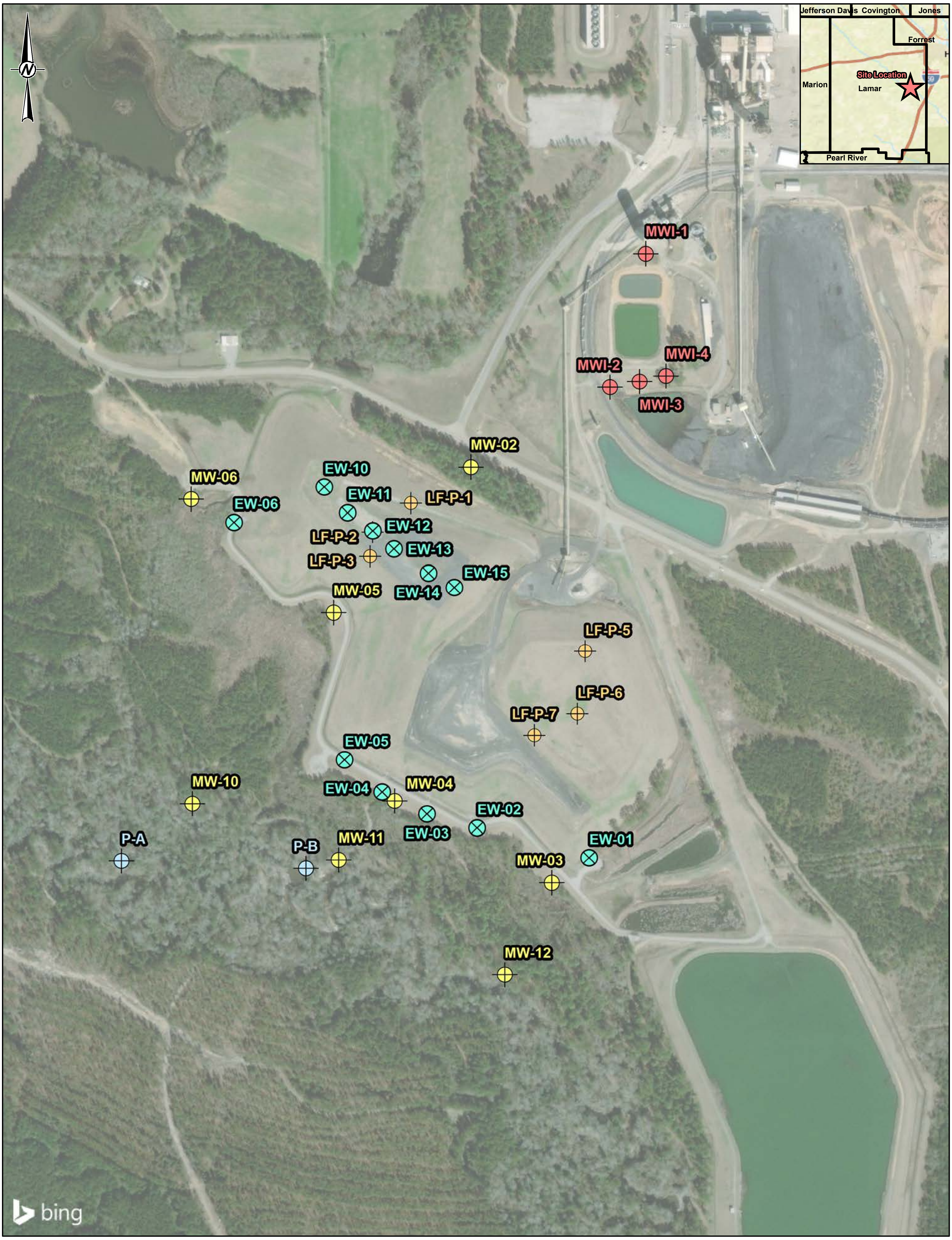


LEGEND

- Former Surface Impoundments CCR Rule Monitoring Wells
- Supplemental Monitoring Points
- Landfill CCR Rule Monitoring Wells and Piezometers
- CCR Pore-water Extraction Points
- CCR Pore-water Piezometers

0 250 500 750 1,000
Feet

NOTE(S)
1. LOCATIONS AND BOUNDARIES ARE APPROXIMATE

REFERENCE(S)
1. COORDINATE SYSTEM: NAD 1927 STATEPLANE MISSISSIPPI EAST FIPS 2301.
2. MARIS - MISSISSIPPI AUTOMATED RESOURCE INFORMATION SYSTEM - AVAILABLE AT HTTPS://WWW.MARIS.STATE.MS.US/HTML/DATA.HTML.

CLIENT
COOPERATIVE ENERGY

PROJECT
RD MORROW GENERATING STATION
PURVIS, MISSISSIPPI

TITLE
GROUNDWATER MODEL WATER TARGET LOCATION MAP

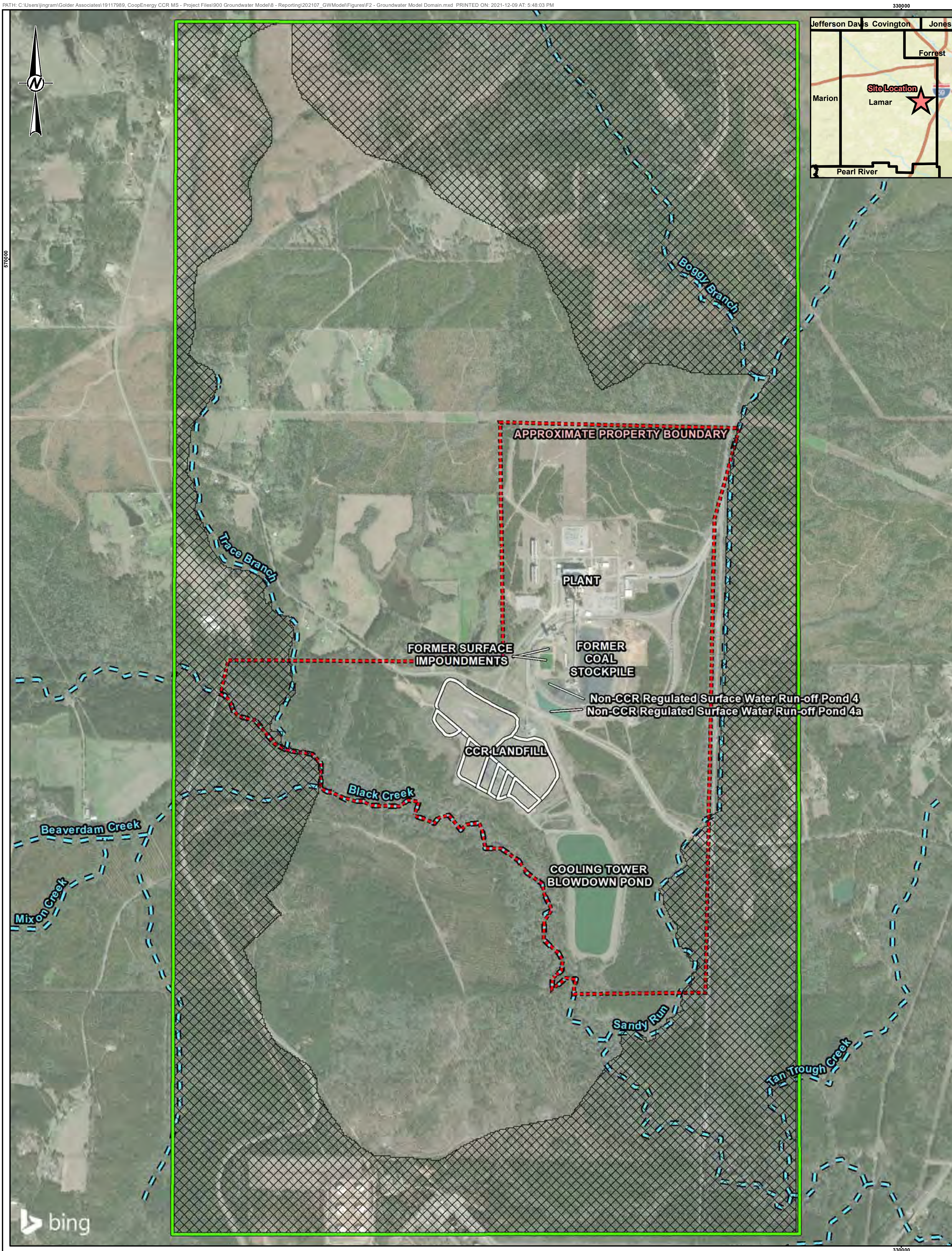
CONSULTANT

YYYY-MM-DD	2021-08-10
DESIGNED	JSI
PREPARED	JSI
REVIEWED	JM
APPROVED	JM

PROJECT NO.	CONTROL	REV.	FIGURE
19117989	1240	0.0	01

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

PATH: C:\Users\jingram\Golder Associates\19117989, CoopEnergy CCR MS - Project Files\900 Groundwater Model\8 - Reporting\202107_GWModel\Figures\F2 - Groundwater Model Domain.mxd PRINTED ON: 2021-12-09 AT: 5:48:03 PM



LEGEND

- Approximate Property Boundary
- Groundwater Model Boundary
- Inactive Model Area
- CCR Landfill Cells
- Approximate Creek Locations

0 1,000 2,000 3,000 4,000
Feet

NOTE(S)
1. LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2. CREEK LOCATIONS AND NAMES FROM MISSISSIPPI AUTOMATED RESOURCE INFORMATION SYSTEM (MARIS)

REFERENCE(S)
1. COORDINATE SYSTEM: NAD 1927 STATEPLANE MISSISSIPPI EAST FIPS 2301.
2. MARIS - MISSISSIPPI AUTOMATED RESOURCES INFORMATION SYSTEM - AVAILABLE AT: HTTPS://WWW.MARIS.STATE.MS.US/HTML/DATA.HTML.

CLIENT
COOPERATIVE ENERGY

PROJECT
RD MORROW GENERATING STATION
PURVIS, MISSISSIPPI

TITLE
GROUNDWATER MODEL DOMAIN

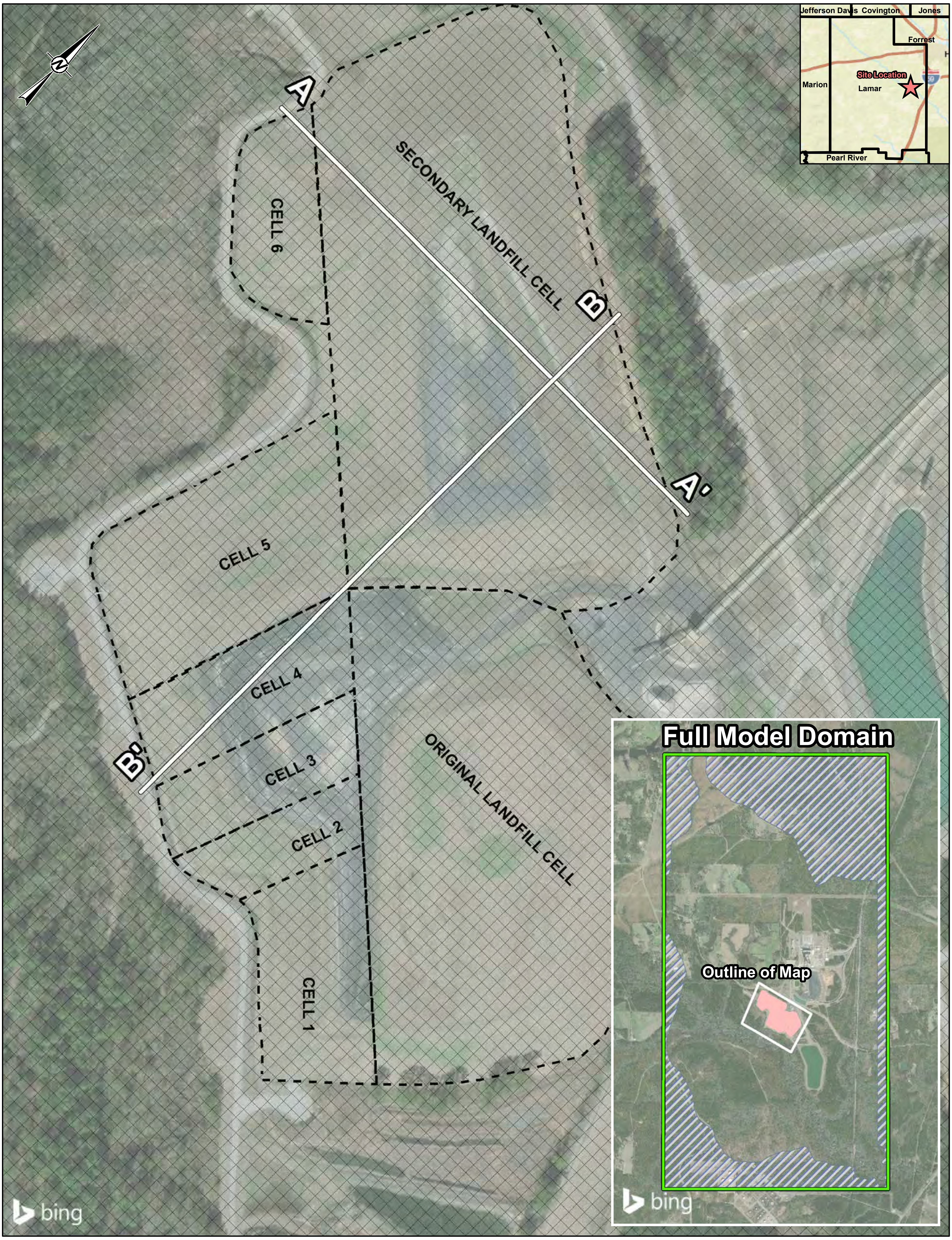
CONSULTANT
wsp

YYYY-MM-DD	2021-08-17
DESIGNED	JSI
PREPARED	JSI
REVIEWED	JM
APPROVED	JM

PROJECT NO.	CONTROL	REV.	FIGURE
19117989	1240	0.0	02

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

PATH: C:\Users\jingram\Golder Associates\19117989, CoopEnergy CCR MS - Project Files\900 Groundwater Model\8 - Reporting\202107_GWModel\Figures\F3- RD Morrow Landfills.mxd PRINTED ON: 2021-12-10 AT: 4:02:55 PM



LEGEND

- Approximate Landfill Cell Boundaries
- Inactive Model Area
- Groundwater Model Boundary

0 250 500

Feet

NOTE(S)

1. LOCATIONS AND BOUNDARIES ARE APPROXIMATE

REFERENCE(S)

1. COORDINATE SYSTEM: NAD 1927 STATEPLANE MISSISSIPPI EAST FIPS 2301.

CLIENT

COOPERATIVE ENERGY

PROJECT

R.D. MORROW, SR. GENERATING STATION
PURVIS, LAMAR COUNTY, MISSISSIPPI
CCR LANDFILL CLOSURE PROJECT

TITLE

CCR LANDFILL DETAILS

CONSULTANT

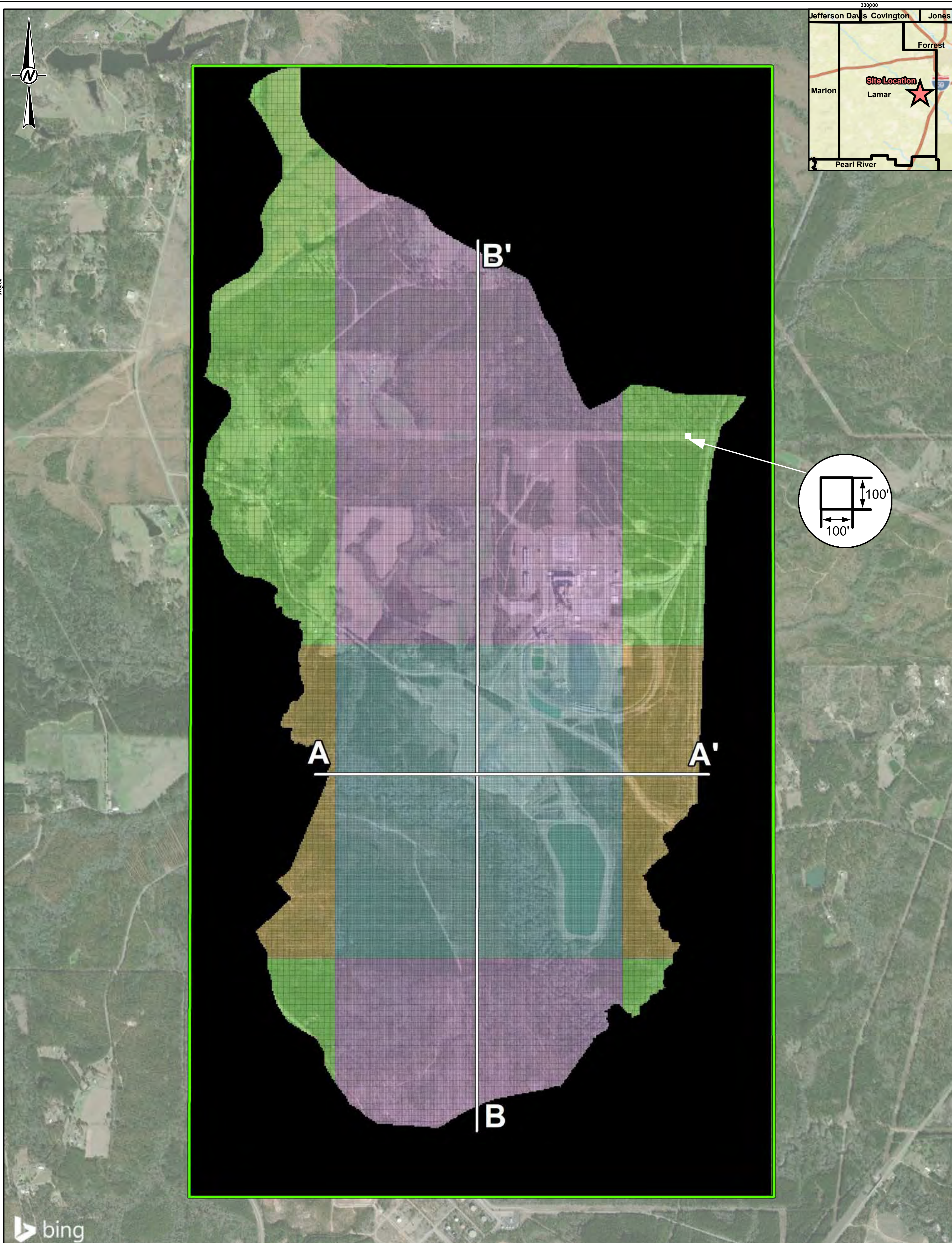
wsp

YYYY-MM-DD	2020-03-05
DESIGNED	JSI
PREPARED	JSI
REVIEWED	JS
APPROVED	JM

PROJECT NO.	CONTROL	REV.	FIGURE
19117989	1240	0.0	03

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

PATH: C:\Users\jingram\Golder Associates\19117989, CoopEnergy CCR MS - Project Files\900 Groundwater Model\8 - Reporting\202107_GWModel\Figures\F4 - Grid.mxd PRINTED ON: 2021-11-22 AT: 11:19:51 AM



LEGEND

- Groundwater Model Boundary
- Inactive Model Area
- Grid Lines

Grid Zones (Feet)

- 25 x 25 Grid Zone
- 100 x 25 Grid Zone
- 25 x 100 Grid Zone
- 100 x 100 Grid Zone

0 1,000 2,000 3,000 4,000
Feet

NOTE(S)

1. LOCATIONS AND BOUNDARIES ARE APPROXIMATE

REFERENCE(S)

1. COORDINATE SYSTEM: NAD 1927 STATEPLANE MISSISSIPPI EAST FIPS 2301.

CLIENT
COOPERATIVE ENERGY

PROJECT
RD MORROW GENERATING STATION
PURVIS, MISSISSIPPI

TITLE
GROUNDWATER MODEL DOMAIN, GRID, AND CROSS SECTION LOCATION MAP

CONSULTANT

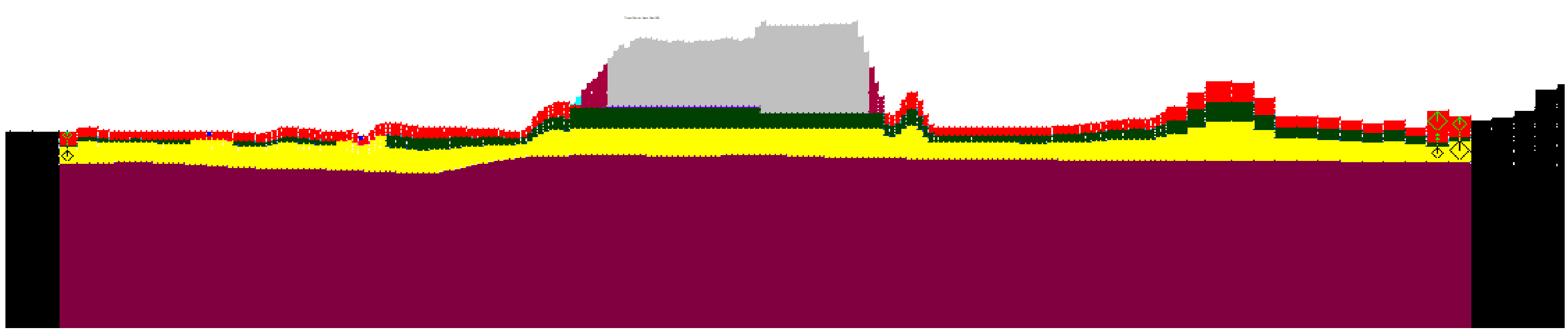
wsp

YYYY-MM-DD	2021-08-17
DESIGNED	JSI
PREPARED	JSI
REVIEWED	JM
APPROVED	JM

PROJECT NO.	CONTROL	REV.	FIGURE
19117989	1240	0.0	04

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

0 1 in



Color		Kx, Ky		Kz		Vertical
		cm/sec	ft/day	cm/sec	ft/day	Anisotropy
	Stratum 1	5.0E-04	1.41	5.0E-05	0.141	0.1
	Stratum 2	1.1E-06	0.003	5.3E-07	0.0015	0.5
	Stratum 3	1.1E-03	3	1.1E-04	0.3	0.1
	Stratum 4	1.8E-04	0.5	1.8E-05	0.05	0.1
	CCR	5.7E-05	0.161	5.7E-06	0.0161	0.1
	Miocene Clays	1.4E-04	0.4	1.4E-05	0.04	0.1
	Leachate Collection System Sands	1.0E-03	2.84	1.0E-03	2.84	1
	Berm Materials	7.1E-07	0.002	7.1E-07	0.002	1
	Leachate Collection System	NA				
	Inactive Model Area	NA				
	Surface Water	NA				

NOTE(S)

1) Cross-section has a 10X vertical exaggeration.
2) Cm/sec = centimeters per second.
3) Ft/day = feet per day.
4) See Figure 3 for cross section locations.
5) Cross-section along row 188.

CLIENT
COOPERATIVE ENERGY

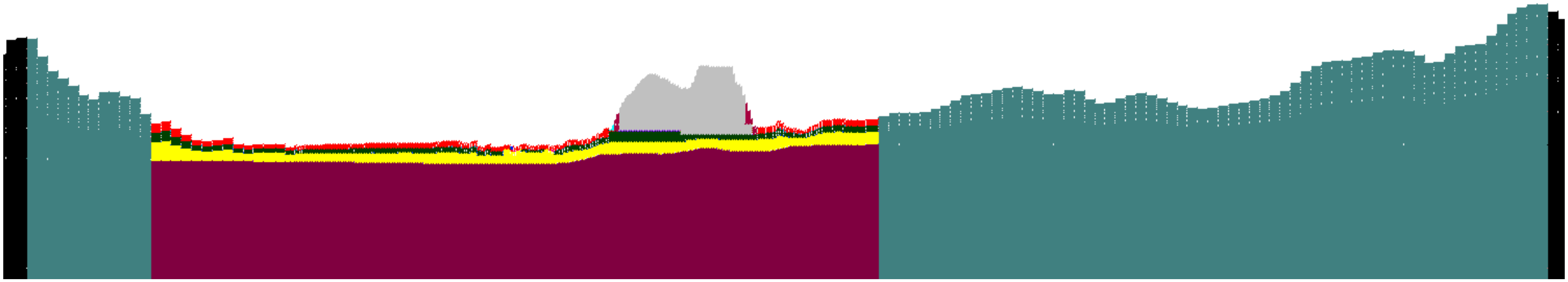
CONSULTANT

YYYY-MM-DD	2021-07-14
PREPARED	JSI
DESIGN	JSI
REVIEW	JM
APPROVED	JM

PROJECT
RD MORROW GENERATION STATION
PURVIS, MISSISSIPPI

TITLE
A-A' CROSS-SECTION AND HYDRAULIC CONDUCTIVITIES

PROJECT No. **19117989** REV. **0.0** FIGURE **05**



Color	Conductivity Zone	Kx, Ky		Kz		Vertical
		cm/sec	ft/day	cm/sec	ft/day	Anisotropy
	Stratum 1	5.0E-04	1.41	5.0E-05	0.141	0.1
	Stratum 2	1.1E-06	0.003	5.3E-07	0.0015	0.5
	Stratum 3	1.1E-03	3	1.1E-04	0.3	0.1
	Stratum 4	1.8E-04	0.5	1.8E-05	0.05	0.1
	CCR	5.7E-05	0.161	5.7E-06	0.0161	0.1
	Miocene Clays	1.4E-04	0.4	1.4E-05	0.04	0.1
	Leachate Collection System Sands	1.0E-03	2.84	1.0E-03	2.84	1
	Berm Materials	7.1E-07	0.002	7.1E-07	0.002	1
	Leachate Collection System	NA				
	Inactive Model Area					
	Surface Water					

NOTE(S)

1) Cross-section has a 10X vertical exaggeration.
2) Cm/sec = centimeters per second.
3) Ft/day = feet per day.
4) See Figure 3 for cross section locations.
5) Cross-section along Column 123

CLIENT
COOPERATIVE ENERGY

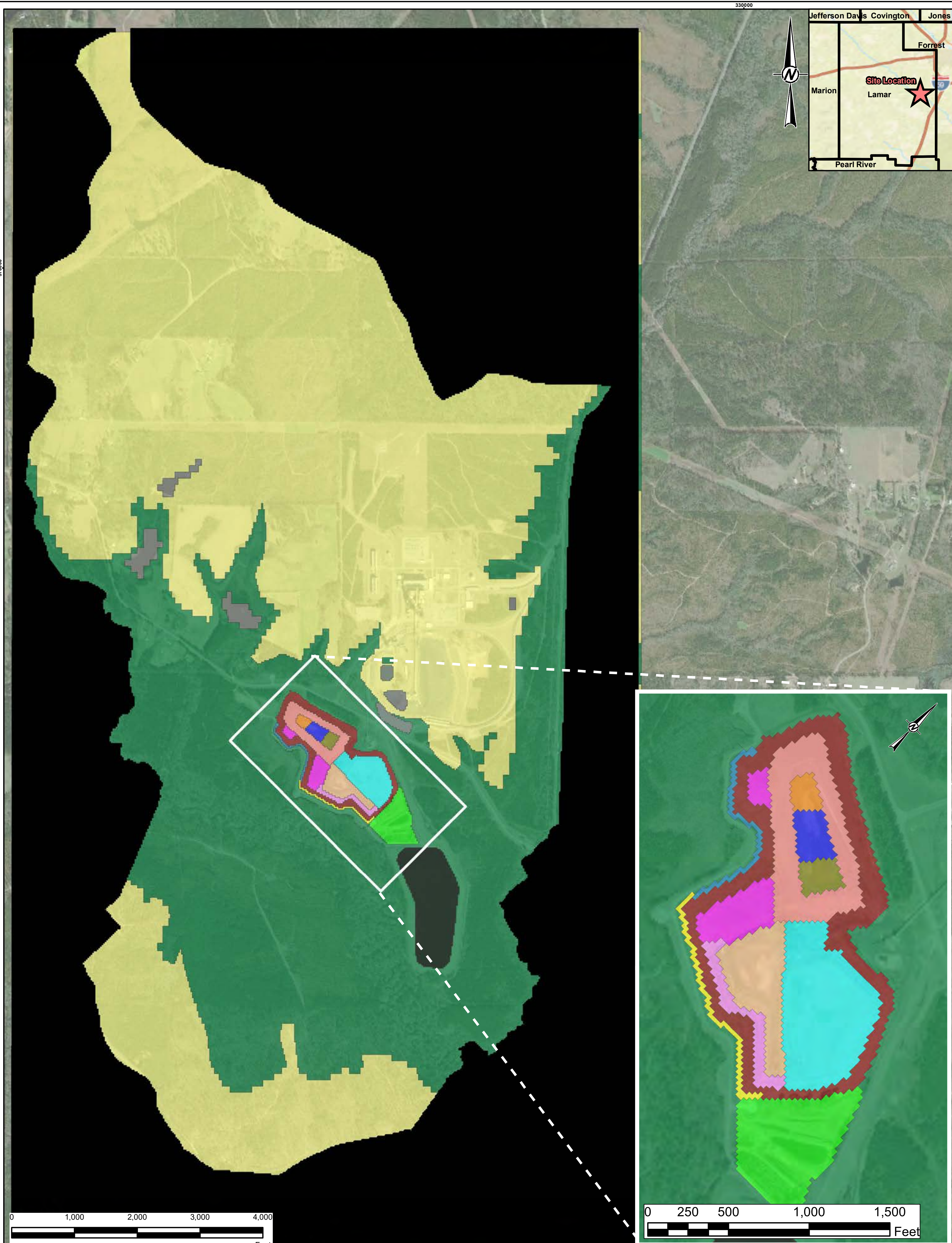
CONSULTANT

YYYY-MM-DD	2021-07-14
PREPARED	JSI
DESIGN	JSI
REVIEW	JM
APPROVED	JM

PROJECT
RD MORROW GENERATION STATION
PURVIS, MISSISSIPPI

TITLE
B-B' CROSS-SECTION AND HYDRAULIC CONDUCTIVITIES

PROJECT No. **19117989** REV. **0.0** FIGURE **06**



Color	Zone	Pre-Active CCR Landfill Conditions		Active CCR Landfill Conditions		Inactive or Closed Conditions	
		In/Yr	Ft/Day	In/Yr	Ft/Day	In/Yr	Ft/Day
	Lowlands	1.5	3.5E-04	1.5	3.5E-04	1.5	3.5E-04
	Uplands	0.4	1.0E-04	0.4	1.0E-04	0.4	1.0E-04
	Surface Water	Not Applicable					
	Filtration Area	1.5	3.5E-04	5.7	1.3E-03	0.00004	1.0E-08
	Original Landfill	Not Applicable		9.2	2.1E-03	0.00004	1.0E-08
	Outer Secondary Landfill	1.5	3.5E-04	8.3	1.9E-03	0.00004	1.0E-08
	Inner West of Secondary Landfill	1.5	3.5E-04	30.7	7.0E-03	0.00004	1.0E-08
	Inner Center of Secondary Landfill	1.5	3.5E-04	30.7	7.0E-03	0.00004	1.0E-08
	Inner East of Secondary Landfill	1.5	3.5E-04	30.7	7.0E-03	0.00004	1.0E-08
	Landfill Cells 6 and 5	15.3	3.5E-03	21.9	5.0E-03	0.00004	1.0E-08
	Inner Landfills Cells 1-4	1.5	3.5E-04	30.7	7.0E-03	0.00004	1.0E-08
	Outer Landfill Cells 1-4	1.5	3.5E-04	22.8	5.2E-03	0.00004	1.0E-08
	Western Leachate Collection System	0.04	1.0E-05	81.0	1.9E-02	0.04	1.0E-05
	Eastern Leachate Collection System	0.04	1.0E-05	43.8	1.0E-02	0.04	1.0E-05
	Berm Materials	0.04	1.0E-05	0.04	1.0E-05	0.04	1.0E-05

Notes:
1) In/Yr - Inches per year.
2) Ft/Day - Feet per day.

CLIENT
COOPERATIVE ENERGY

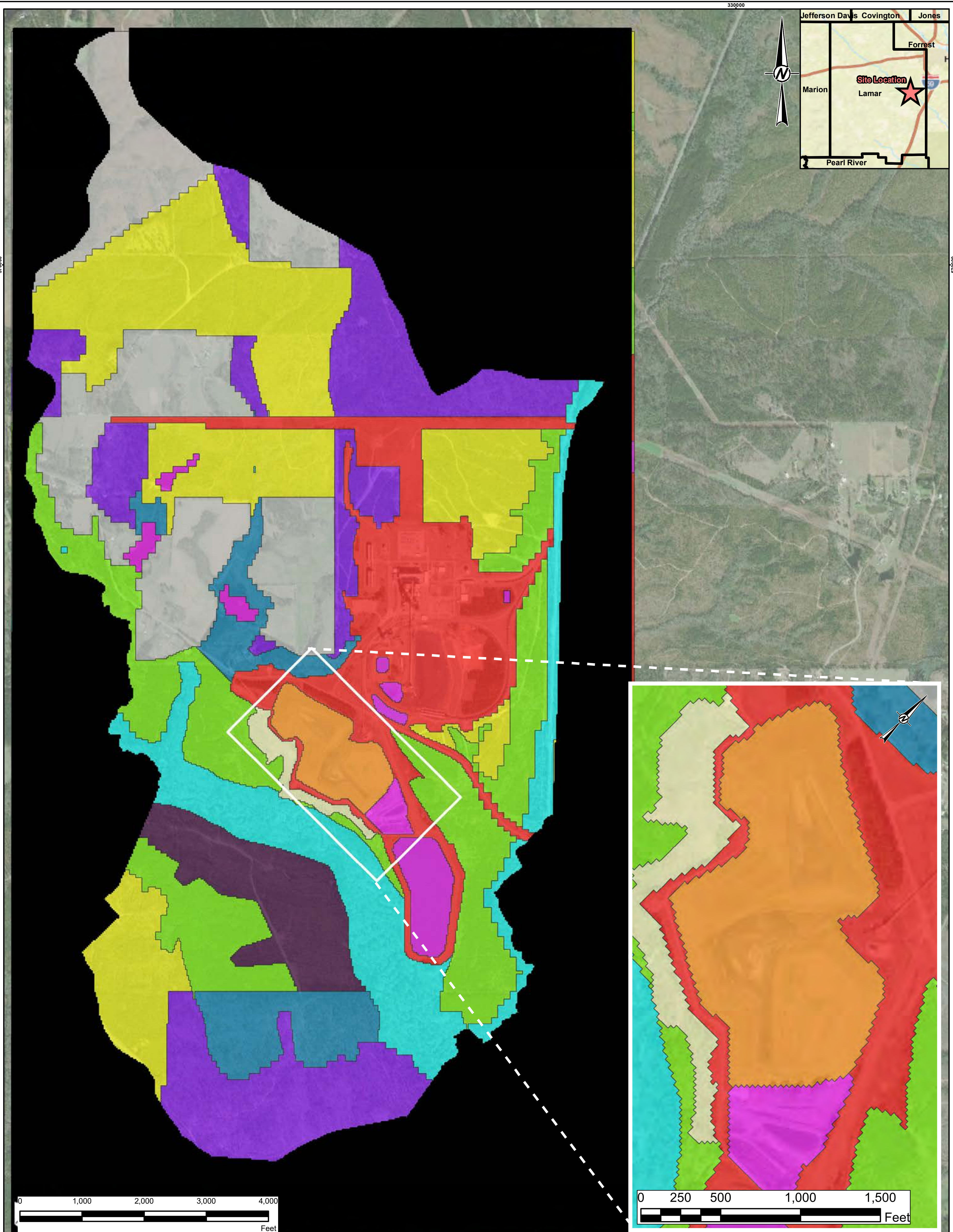
PROJECT
RD MORROW GENERATING STATION
PURVIS, MISSISSIPPI

TITLE
RECHARGE DISTRIBUTION

CONSULTANT

YYYY-MM-DD	2021-08-23
DESIGNED	JSI
PREPARED	JSI
REVIEWED	JM
APPROVED	JM

PROJECT NO.	CONTROL	REV.	FIGURE
19117989	1240	0.0	07



Color	Zone	Rate (feet per day)	Ext Depth (feet)
	1 - Surface Water	0 - Not Applicable	0 - Not Applicable
	2 - Plant Facilities, Limited Vegetation	0.0005	1
	3 – CCR Landfill	0.00005	1
	4 – Upland Area - Limited Vegetation (Fields)	0.001	3
	5 - Upland Area - Dense Forest	0.001	5
	6 - Upland Area – Forest	0.001	3
	7 - Lowland Area - Creek Floodplain with Thick Vegetation	0.007	3
	8 - Lowland Area - Dense Forest	0.001	5
	9 - Lowland Area - Some Vegetation	0.001	4
	10 - Lowland Area - Limited Vegetation (Fields)	0.001	1
	11 - Lowland Area - Wetland Area	0.002	4

CLIENT
COOPERATIVE ENERGY

PROJECT
RD MORROW GENERATING STATION
PURVIS, MISSISSIPPI

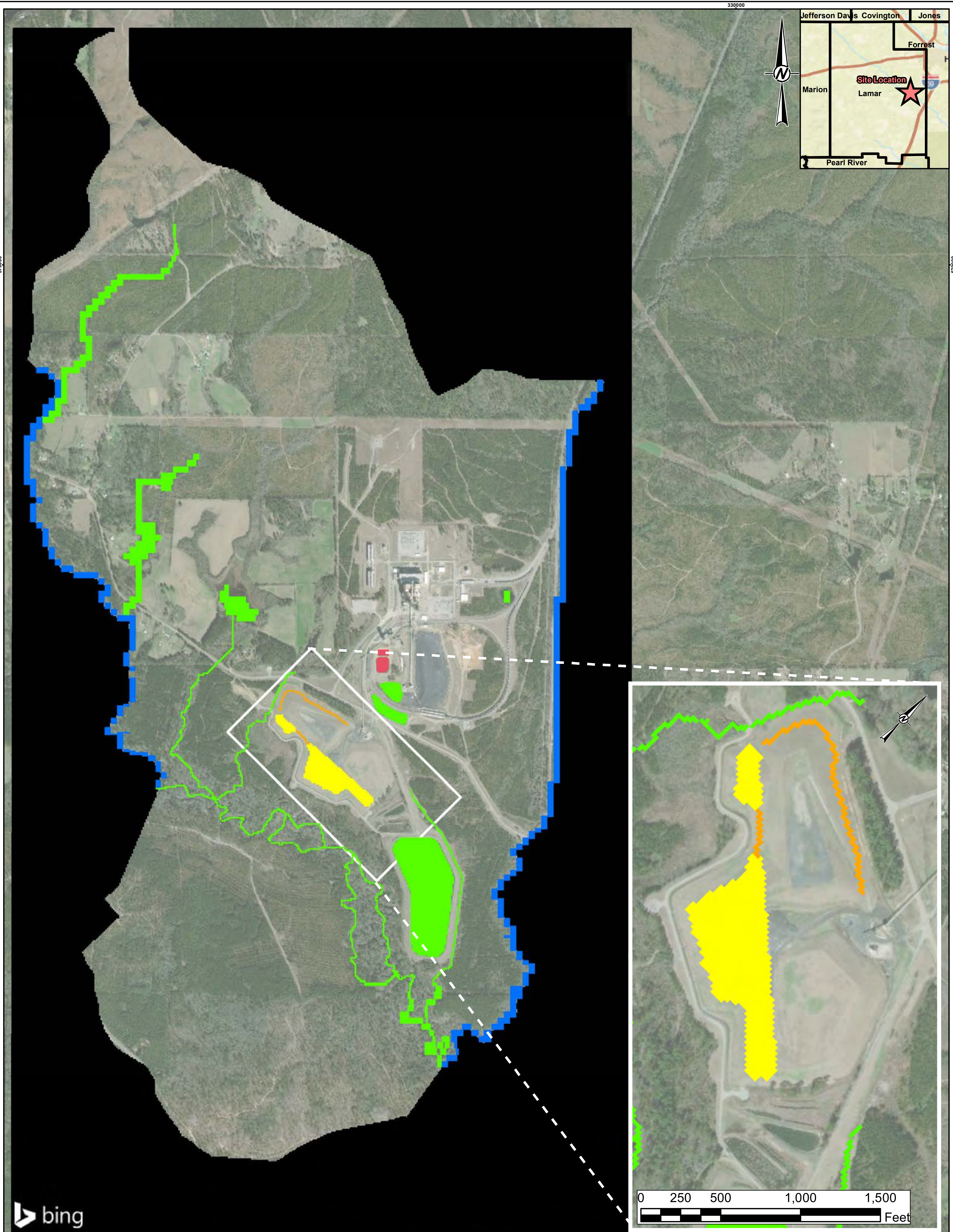
TITLE
EVAPOTRANSPIRATION DISTRIBUTION

CONSULTANT
wsp

YYYY-MM-DD	2021-08-23
DESIGNED	JSI
PREPARED	JSI
REVIEWED	JM
APPROVED	JM

PROJECT NO.	CONTROL	REV.	FIGURE
19117989	1240	0.0	08

PATH: C:\Users\jingram\Golder Associates\19117989, CoopEnergy CCR MS - Project Files\900 Groundwater Model\8 - Reporting\202107_GWModel\Figures\F9 - BCs.mxd PRINTED ON: 2021-12-10 AT: 3:26:14 PM



LEGEND

- No Flow Areas - Layers 1 - 7
- Constant Head Boundary - Layers 1 - 7
- Drain - Perimeter Trench - Layers 1 - 3
- River - Temporary Surface Water Feature, Active until 2020 - Layer 1
- River - Surface Water Feature - Layer 1
- Drain - Leachate Collection System - Layer 4

0 1,000 2,000 3,000 4,000
Feet

NOTE(S)
1. LOCATIONS AND BOUNDARIES ARE APPROXIMATE.

REFERENCE(S)
1. COORDINATE SYSTEM: NAD 1927 STATEPLANE MISSISSIPPI EAST FIPS 2301.

CLIENT
COOPERATIVE ENERGY

PROJECT
RD MORROW GENERATING STATION
PURVIS, MISSISSIPPI

TITLE
BOUNDARY CONDITIONS

CONSULTANT
wsp

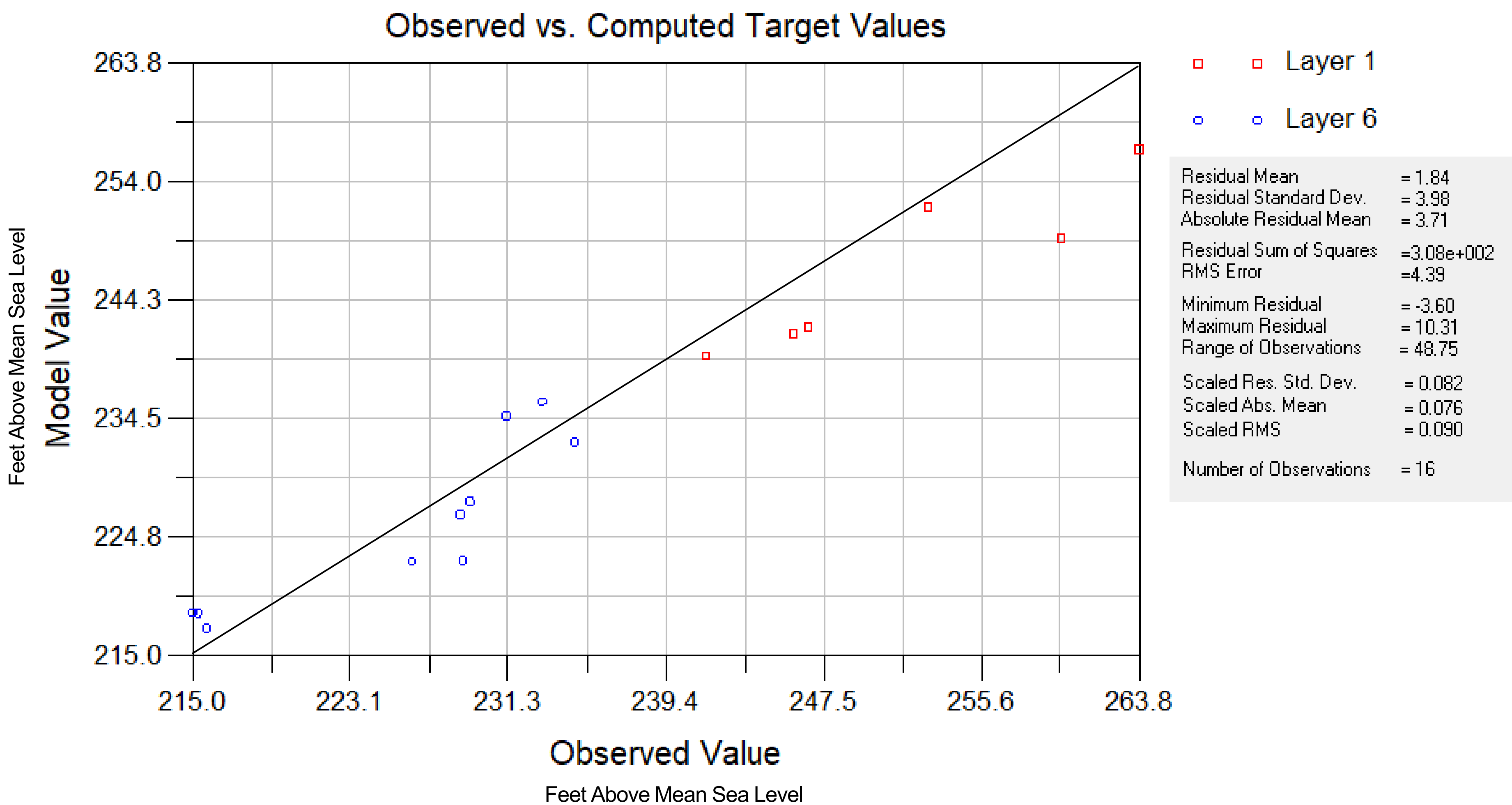
YYYY-MM-DD	2021-08-23
DESIGNED	JSI
PREPARED	JSI
REVIEWED	JM
APPROVED	JM

PROJECT NO.	CONTROL	REV.	FIGURE
19117989	1240	0.0	09

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

1 in

0



NOTE(S)

1) Values from water levels collected September 13, 2019, when the R.D. Morrow Landfill was in active conditions.

CLIENT
COOPERATIVE ENERGY

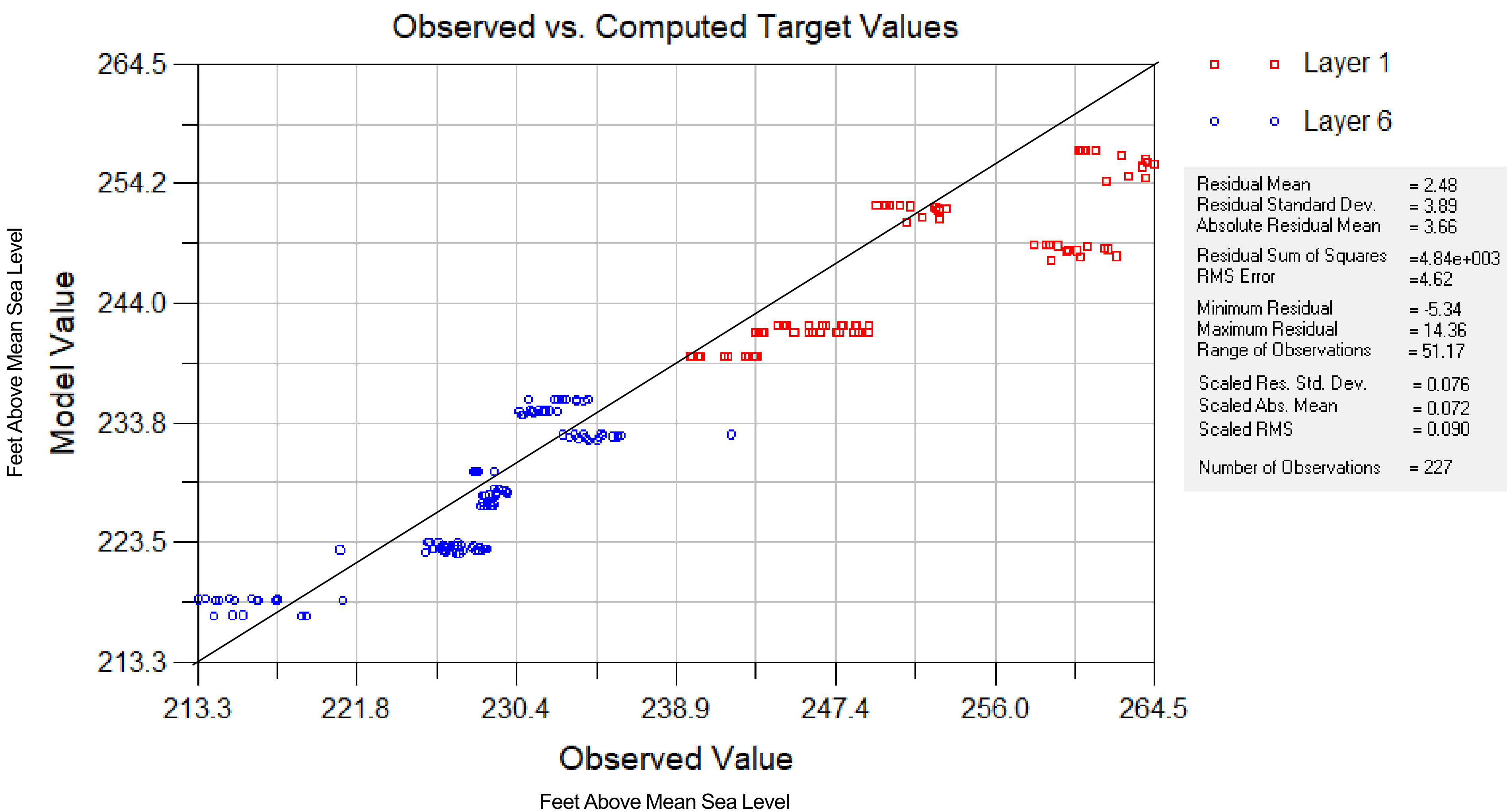
CONSULTANT

YYYY-MM-DD	2021-08-25
PREPARED	JSI
DESIGN	JSI
REVIEW	JM
APPROVED	JM

PROJECT
RD MORROW GENERATION STATION
PURVIS, MISSISSIPPI

TITLE
SCATTER DIAGRAM FOR PREDICTED AND OBSERVED HYDRAULIC HEADS – STEADY STATE CONDITIONS

PROJECT No.	REV.	FIGURE
19117989	**0.0**	**10**



NOTE(S)

1) Values from water levels collected from 2016 through 2021 as a part of the CCR Rule program.

CLIENT
COOPERATIVE ENERGY

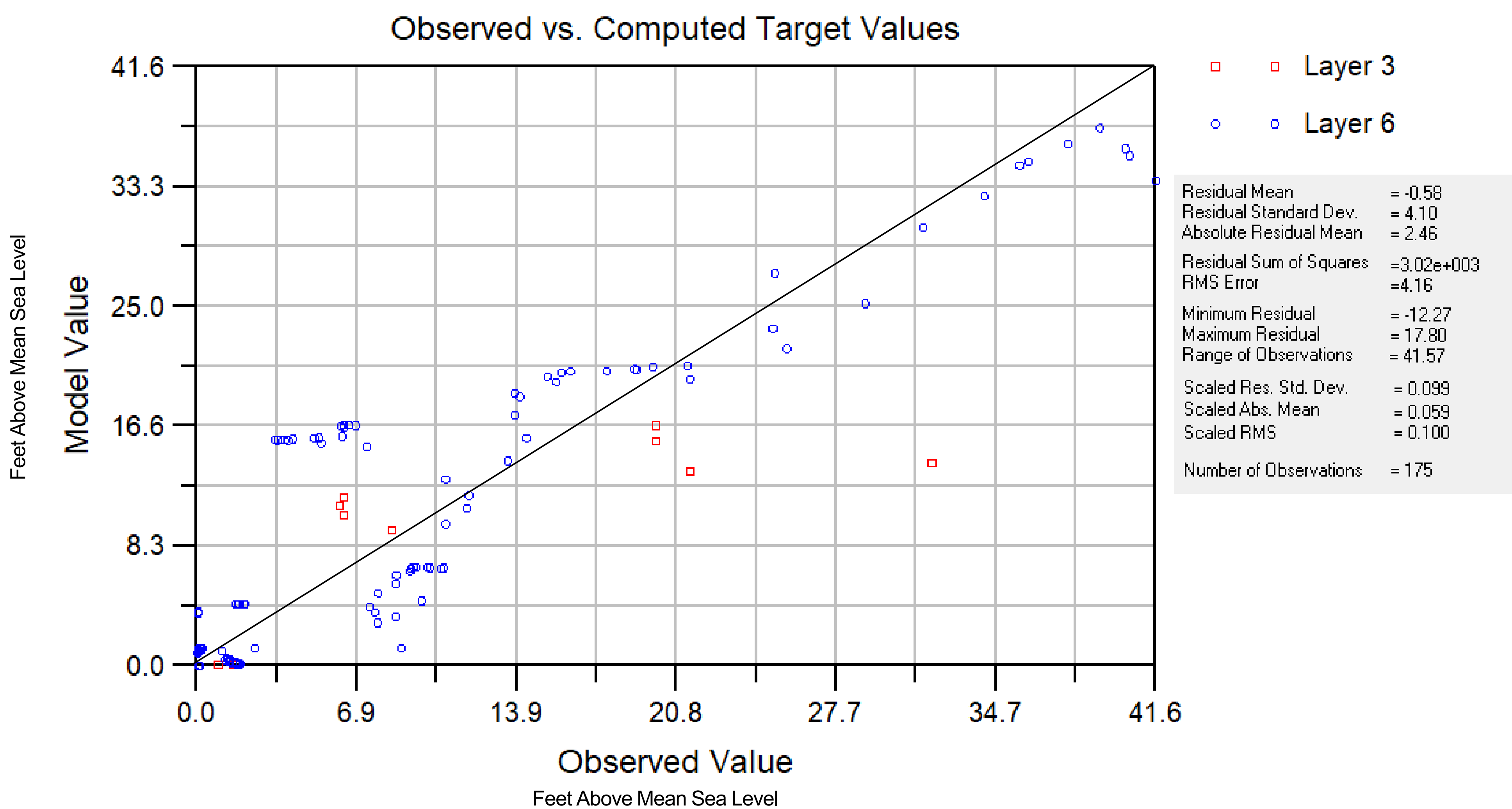
CONSULTANT
wsp

YYYY-MM-DD	2021-08-25
PREPARED	JSI
DESIGN	JSI
REVIEW	JM
APPROVED	JM

PROJECT
RD MORROW GENERATION STATION
PURVIS, MISSISSIPPI

TITLE
SCATTER DIAGRAM FOR PREDICTED AND OBSERVED HYDRAULIC HEADS – TRANSIENT CONDITIONS

PROJECT No.	REV.	FIGURE
19117989	**0.0**	**12**



NOTE(S)

1) Values from groundwater samples collected between 2015 and 2021.

CLIENT
COOPERATIVE ENERGY

CONSULTANT

wsp

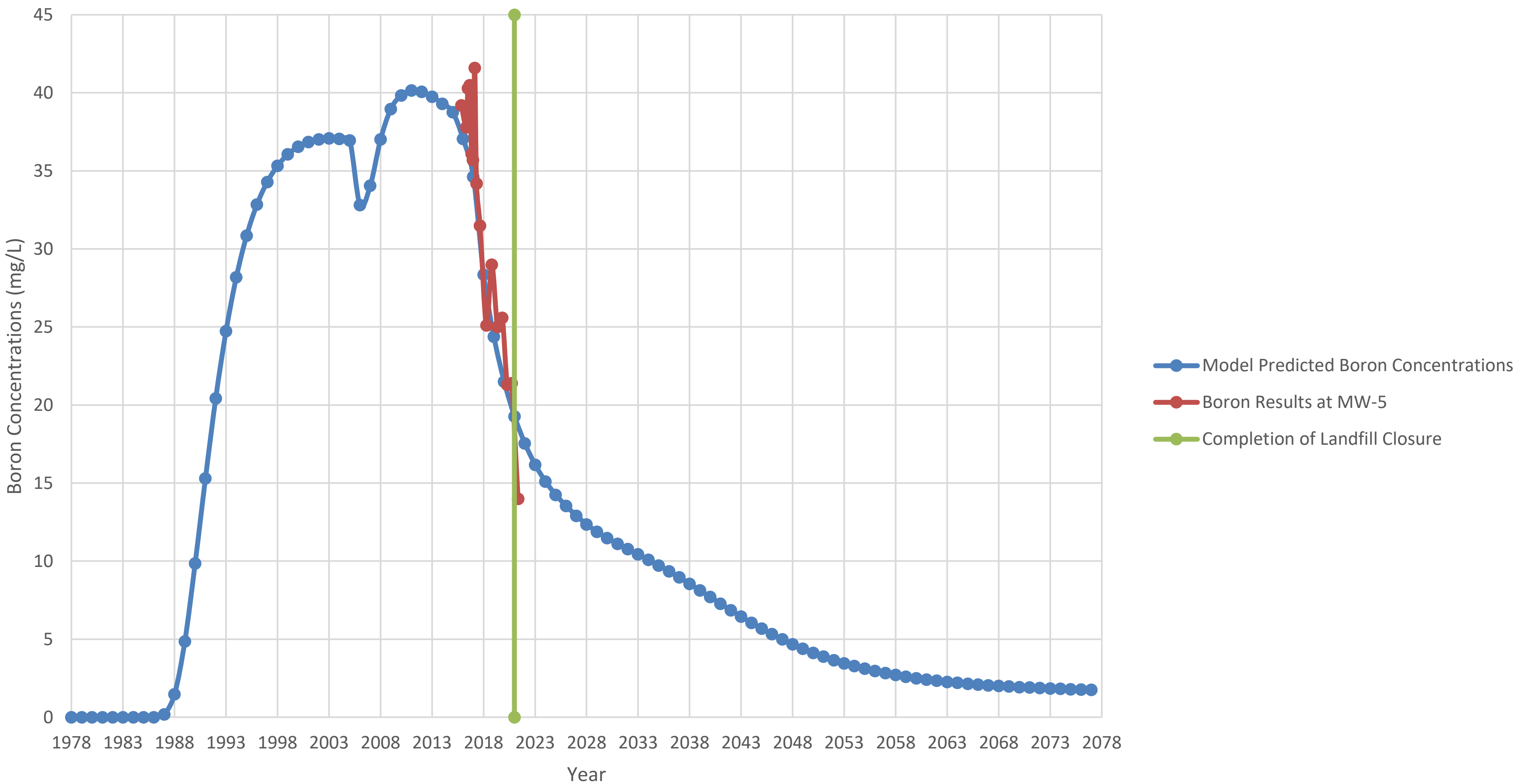
YYYY-MM-DD	2021-08-25
PREPARED	JSI
DESIGN	JSI
REVIEW	JM
APPROVED	JM

PROJECT
RD MORROW GENERATION STATION
PURVIS, MISSISSIPPI

TITLE
SCATTER DIAGRAM FOR PREDICTED AND OBSERVED BORON CONCENTRATIONS – TRANSIENT CONDITIONS

PROJECT No.	REV.	FIGURE
19117989	0.0	13

MW-5



NOTE(S)

1) mg/L – Milligrams per liter.

CLIENT
COOPERATIVE ENERGY

CONSULTANT

YYYY-MM-DD	2021-08-25
PREPARED	JSI
DESIGN	JSI
REVIEW	JM
APPROVED	JM

PROJECT
RD MORROW GENERATION STATION
PURVIS, MISSISSIPPI

TITLE
PREDICTED VS OBSERVED BORON CONCENTRATIONS AT MW-5

PROJECT No.	REV.	FIGURE
19117989	**0.0**	**14**

wsp.com

APPENDIX B

CCR LANDFILL CLOSURE CERTIFICATION

State of Mississippi

TATE REEVES
Governor

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

CHRIS WELLS, EXECUTIVE DIRECTOR

June 16, 2022

VIA EMAIL AT skilgore@cooperativeenergy.com

Ms. Stephanie Kilgore, Environmental Manager
Cooperative Energy
Post Office Box 15849
Hattiesburg, MS 39404

Dear Ms. Kilgore:

The Mississippi Department of Environmental Quality (MDEQ) has received and reviewed the closure certification for the R.D. Morrow, Sr. Generating Plant, CCB Landfill (Solid Waste Management Permit No. SW0370020308) provided by Golder Associates, Inc. dated October 12, 2021 on behalf of Cooperative Energy. Further, MDEQ conducted a closure inspection of the CCB Landfill on December 7, 2021. Based on the information provided in the closure certification and as observed during the closure inspection, the CCB Landfill appears to have been closed in accordance with the certification report and as required by the approved closure plan, the Mississippi Nonhazardous Solid Waste Management Regulations, and Solid Waste Management Permit No. SW0370020308.

As required by Rule 1.4(E)(3) of the Mississippi Nonhazardous Solid Waste Management Regulations, Cooperative Energy must now implement post-closure activities at the CCB Landfill. These activities include, but are not limited to, maintenance of the final closure cap, continued maintenance and operation of the leachate collection system, and continued compliance with Rule 1.4(D) of the Regulations regarding continued groundwater monitoring. Any proposed modifications to the required post-closure activities must be approved by MDEQ prior to implementing such changes. Should you have any questions regarding this matter please contact me directly at 601-961-5613.

Sincerely,

Ethan Mayeu, P.E., Manager
Solid Waste Compliance and Enforcement Branch
Waste Division

cc: David List, Golder Associates, Inc.

wsp.com