



**US Army Corps
of Engineers®**



PLATING AREA SITE INVESTIGATION REPORT

Watervliet Arsenal
Watervliet, New York

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June 2020

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Acronyms and Abbreviations

AMSL	Above Mean Sea Level
APP	Accident Prevention Plan
bgs	below ground surface
CAMP	Community Air Monitoring Plan
DER	Division of Environmental Remediation
DMP	Data Management Plan
DUSR	Data Usability Summary Report
ELAP	Environmental Laboratory Approval
FFS	Focused Feasibility Study
ft/ft	foot per foot (ft/ft)
GPRS	Ground Penetrating Radar Systems, LLC
ID	Inner Diameter
IRP	Installation Restoration Program
LNAPL	Light Non-Aqueous Phase Liquid
MMA	Main Manufacturing Area
NMT	New Medium Tube
NYCRR	New York Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OD	Outer Diameter
PID	Photoionization Detector
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
REARM	Renovation of Armament Manufacturing
RFI	RCRA Facility Investigation
QAPP	Quality Assurance Project Plan
SA	Siberia Area
SCO	Soil Cleanup Objective
SOP	Standard Operating Procedure
SSHP	Site Safety and Health Plan

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TAL	Target Analyte List
TCL	Target Compounds List
TCLP	toxicity characteristic leaching procedure
UFP	Uniform Federal Policy
UN	United Nations
USACE	US Army Corps of Engineers
USEPA	United States Environmental Protection Agency
WVA	Watervliet Arsenal

1 INTRODUCTION

This Remedial Investigation (RI) Report summarizes the work completed and findings of the investigation into potential groundwater impacts from a chromic acid release at the Watervliet Arsenal (WVA) in Watervliet, New York (site) (Figure 1-1). These activities were performed under the US Army Corps of Engineers (USACE) Baltimore District contract No. W912DR-18-D-0004, Delivery Order No. W912DR-18-F-0736 and the 17 May 2019 contract modification from the USACE Baltimore District.

Investigation activities were conducted in accordance with the New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH)-approved Plating Area Site Investigation Work Plan, (Arcadis, July 2019) and provisions of Chapters 3 and 4 of the NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (DER-10) guidance document. This work was further supported by the existing Uniform Federal Policy (UFP) Quality Assurance Project Plan (QAPP), Data Management Plan (DMP), and Accident Prevention Plan (APP) contained in the approved WVA Installation Restoration Program (IRP) Work Plan (PIKA-MP, JV, 2016). Field and laboratory standard operating procedures (SOPs) that were specific to the Plating Area Site Investigation and were not included in the IRP Work Plan were provided in Appendix A of the Plating Area Site Investigation Work Plan (Arcadis, July 2019). This work was further supported by an APP addendum which consisted of a Site Safety and Health Plan (SSHP) specific to the scope of the Plating Area Site Investigation.

2 SITE BACKGROUND

2.1 Facility Description

The WVA encompasses approximately 140 acres in and around the City of Watervliet, New York, approximately 3.5 miles northeast of the City of Albany (Figures 1-1 and 2-1). To the east of the WVA, Broadway Street and a six-lane interstate highway (I-787) separate the WVA from the Hudson River. To the west, the WVA extends beyond the limits of the City of Watervliet into the Town of Colonie. Residential areas border the WVA to the north and south.

The WVA consists of two primary areas: (1) The "Main Manufacturing Area" (MMA), where manufacturing and administrative operations occur, comprises about 125 acres, and, (2) The "Siberia Area" (SA), which is chiefly used for the storage of raw and hazardous materials, comprises about 15 acres. These areas are shown on Figure 2-1.

Building 35, also known as the Heat Treat and Metal Processing Building, and was originally constructed in 1918, with several updates thereafter. Building 35 is located along the southern property boundary of the Main Manufacturing Area at WVA (Figure 2-1). It is bounded to the east by Buildings 20 and 25, to the south by residential property, to the west by Building 110, and to the north by the WVA fire house (Buildings 21 and 22).

As described in the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) (Malcolm Pirnie, 2000), Building 35 is a single-story structure approximately 850 feet long and 600 feet wide at its widest point. A 1983 floor plan shows the building divided, east to west, into 17 bays, labeled A through S, excluding I and O. Bays C through J comprise the original extent of Building 35 and Bays H and J represent a 1942 extension. During the mid to late 1970s, Building 35 was expanded further as part of the Renovation of Armament Manufacturing (REARM) program and buildings to the east, north and west were razed to accommodate this expansion. Bays A and B and Bays K through S are extensions to the west and east, respectively, built during this period. The shop floor level is at an elevation of approximately 55 feet above mean sea level (AMSL). The east side of the building has a basement level.

There were two process pits at the south end of the building at the time of construction, formerly referred to as the West and East Pits. Extensions were added to the west, east, and north and two additional process pits were installed in 1978. A number of reconstructions/conversions have been made to the process pits since their installation.

Following is a chronology of events relating to the process pits based on available WVA drawings and information provided by WVA personnel:

- 1918 – Two pits installed during construction of Building 35.
- 1952 – West Pit converted to chrome plating of 155 mm guns.
- 1976 – East Pit converted to chrome plating of 8-inch guns.
- 1978 – New Medium Tube (NMT) Pit installed, as an extension to the 8-inch Gun Pit. This pit was used for chrome plating.
- 1979/1980 – 120mm Gun Pit constructed, but left idle.

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- 1986/1987 – Chrome plating equipment installed in 120mm Gun Pit.
- 1990 – West pit converted to a furnace pit.

There are currently four process pits located at the south end of Building 35. From west to east these pits are called the 120-mm Gun Pit (a.k.a. West Pit), the Furnace Pit, the 8-inch Gun Pit (a.k.a., East Pit and now the Commercial Pit), and the NMT Pit. Note that the 8-inch Gun Pit (Commercial Pit) and the NMT Pit are contiguous. The 120 pit and the Commercial pit are currently capable of conducting chromium plating operations. The NMT pit has been inoperable since the 1990s. Process pits are shown on Figure 2-2.

The Furnace Pit is 45 feet long, 20 feet wide and 30 feet deep with a 3 feet cubed sump located at the southwest corner. During conversion of this pit from chrome plating to heat treating operations in 1987, the acid resistant brick, waterproof membrane, and part of the concrete floor slab, were removed. At that time, oil was observed to be seeping through cracks in the concrete walls. A groundwater/oil collection channel is located around the walls of the pit, approximately 3 feet above the concrete floor slab, and directs groundwater/oil seepage towards the sump.

The New Medium Tube/8-inch Gun Pit is 60 feet long, 60 feet wide and approximately 40 feet deep. A small sump is located in the southwest corner which collects condensate blowdown and some groundwater seepage. The pits at Building 35 were constructed partially in overburden material and partially in bedrock. This is confirmed by a soil boring installed adjacent to the New Medium Tube Pit (East Pit) in 1978 by the ACOE. Drilling logs for this boring shows the top of bedrock at 19.5 feet below shop floor level. Drawings for the 120mm Gun Pit were not available for review at the time of the investigation.

Current manufacturing operations at Building 35 include cannon tube chrome plating and heat treatment in the three process pits located at the southern end of the building. Cadmium-cyanide plating, previously conducted at Building 110, was relocated to Building 35 in 1985 and discontinued in 1994. In general, however, the manufacturing processes and equipment in Building 35 is believed to have changed very little since its construction. The remainder of the main floor is occupied by machining equipment used for finishing the cannon tubes and for conducting magnaflux testing operations.

2.2 Geology/Hydrogeology

The major overburden unit identified in the MMA is fill, consisting of brown or dark gray silty sand with angular gravel. The fill material is the only unit consistently found throughout the site, with the thickest amount of fill being in the eastern portion of the MMA. Underlying the fill are the following native overburden units: a fine-grained alluvium, a coarser alluvium, and glacial till. These units are not present in all areas of the site.

The bedrock underlying the site is a black, medium-hard laminated shale, showing some characteristics of minor metamorphism. This shale is part of the Snake Hill Formation. The bedrock can be described in three ways based on the degree of weathering observed. The first is an extremely weathered zone approximately four feet thick. This extremely weathered bedrock unit was encountered at depths ranging from near ground surface to approximately 20 feet below ground surface (bgs). Beneath this extremely weathered bedrock is a zone of less weathered shale showing minimal competency. Competent bedrock is generally encountered at depths ranging from approximately 1.5 feet bgs to 18 feet bgs.

The majority of the MMA is relatively impervious to rainfall except at the residential and recreational areas of the northeastern portion of the WVA. Due to the shallow depth of bedrock and the limited amount of overburden in several areas of the WVA, groundwater is encountered within different geologic units (overburden, weathered bedrock, or bedrock) depending on the location. For instance, groundwater is encountered in the bedrock at the western end of WVA (topographic high and local recharge area); progressing eastward toward the Hudson River, groundwater is encountered in the weathered bedrock and then in the overburden deposits.

Groundwater flow in bedrock in the MMA is primarily controlled by the degree of fracturing within the bedrock itself and in the local recharge area, which is coincident with a topographic high along a bedrock ridge in the central portion of the facility. The most prominent feature on the potentiometric surface is a groundwater divide trending approximately north to south through Buildings 135 and 125. This feature appears to mirror the bedrock ridge. The primary discharge area for groundwater from the Main Manufacturing Area is the Hudson River, which is located to the east of WVA. For the area surrounding Building 25, groundwater in each of the hydrostratigraphic units flows from west to east towards the Hudson River, with a component of flow to the northeast. In the Building 40 area, groundwater in the bedrock unit flows to the east-southeast. West of the groundwater divide, shallow groundwater flow discharges toward the Kromma Kill.

2.3 Previous Investigation and Remedial Action

In August 2018, the WVA discovered a subsurface release of chromic acid plating solution in the area next to the 120-mm Gun Pit plating pit in Building 35 (Figure 2-2). The release was associated with ventilation duct work that runs underground from the plating area to the air scrubber system. The WVA has conducted initial source removal activities required to conduct the necessary repairs to their plating systems. These activities have included soil excavation and focused groundwater dewatering. Arcadis completed an initial round of groundwater and sump water sampling. Observations of groundwater and initial sampling activities have confirmed that groundwater is impacted with hexavalent chromium in the area of the release.

In August 2018, initial groundwater samples were collected from the four existing site monitoring wells closest to the release and from sumps in the 120 Pit and Commercial Pit (see Figure 2-2). None of the groundwater samples from existing monitoring wells or the 120 Pit contained hexavalent chromium at concentrations greater than the corresponding NYSDEC Class GA Groundwater Standard of 0.05 milligrams per liter (mg/L). The groundwater sample from the Commercial Pit contained hexavalent chromium at a concentration of 680 mg/L. Groundwater and sump water sample results are summarized on Tables 2-1 and 2-2 respectively. Analytical laboratory reporting forms are provided in Appendix A.

In conjunction with the necessary repairs to their plating systems, the WVA excavated hexavalent chromium-impacted soil from the vicinity of the underground ventilation duct work in August 2018. The excavation area was dewatered by pumping out of the existing process pit sumps, with extracted water contained for shipment and disposal off-site. As shown on Figure 2-1, the excavation encompassed an area beneath Building 35 and the adjacent exterior soil around the ventilation duct work. Representative photographs of excavation activities were provided as Appendix C of the Plating Area Site Investigation Work Plan (Arcadis, July 2019). The excavation extended horizontally and vertically as far as was physically possible given constraints of building/duct work construction and bedrock. The northern

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sidewall was constrained by the wall of 120 mm Pit, while the eastern sidewall was constrained by the wall of the adjacent utility pit. The western and southern sidewalls were constrained by the ventilation duct work/scrubber infrastructure. The excavation extended vertically to the top of bedrock at approximately 13 feet below the Building 35 main floor level. Following excavation of impacted soil, sidewall and bottom soil samples were collected at the locations shown on Figure 2-2. The eastern interior sidewall sample, collected approximately one foot above the bedrock surface but below the bottom of the utility pit sidewall, contained hexavalent chromium at a concentration greater than the 6 New York Codes, Rules, and Regulations (NYCRR) Part 375 Industrial Soil Cleanup Objective (SCO). The southern exterior sidewall and exterior bottom samples contained hexavalent chromium at concentrations greater than the 6 NYCRR Part 375 Protection of Groundwater SCO. Excavation soil sample results are summarized on Table 2-3. Analytical laboratory reporting forms are provided in Appendix A. Prior to backfill of the excavation, an interstitial monitoring/recovery well/sump was installed in the northwest corner of the excavation area utilizing slotted 8-inch steel pipe to allow for post-excavation monitoring of groundwater conditions and possible future use for groundwater extraction and/or in-situ treatment. Two post-excavation groundwater samples were collected from this excavation area sump, which contained hexavalent chromium at concentrations of 2.7 and 1.6 mg/L, both greater than the corresponding NYSDEC Class GA Groundwater Standard. Additionally, a post-excavation groundwater sample was collected from the Commercial Pit after the sump was purged for one week. This sample contained hexavalent chromium at a concentration of 11 mg/L, which while greater than the corresponding NYSDEC Class GA Groundwater Standard, was an order of magnitude lower than the pre-excavation sample from this sump. Post-excavation groundwater sample results are summarized in Tables 2-1 and 2-2. The excavation was backfilled with clean off-site fill material, compacted, and surface restoration completed to match pre-excavation conditions.

3 SUMMARY OF 2019 SITE INVESTIGATION ACTIVITIES

The scope of work for the site investigation was designed to further characterize the magnitude and extent of groundwater impacts associated with the chromic acid release at Building 35. Surface soil sampling of the area surrounding the spill was also included to evaluate any potential direct contact exposure pathways. The base scope of work included the following:

- Geophysical survey/utility locating
- Surface soil and subsurface soil sampling
- Overburden and bedrock monitoring well installation
- Well development
- Groundwater and sump water sampling

Following evaluation of the groundwater sampling results, it was determined that a short term pumping test, as noted in the Work Plan, was not warranted.

An analytical laboratory approved by the NYSDOH under the National Environmental Laboratory Accreditation program (NELAP) analyzed all analytical samples during the investigation. Data Usability Summary Reports (DUSRs) were prepared upon receipt of all analytical data to ensure that the quality of the data was of sufficient quality to achieve the project objectives. Sample collection, handling activities, and QA/QC sampling were conducted in accordance with the QAPP and supplemental SOPs.

3.1 Geophysical Survey/Utility Clearance

A geophysical survey was conducted at the site on August 5, 2019 by Ground Penetrating Radar Systems, LLC (GPRS) using electromagnetic resistivity (ERM) and ground penetrating radar (GPR) methods to locate subsurface anomalies and utilities in the proposed drilling areas. Tracing of sewer line connections from buildings on the north side of Parker Road to the sewer mainline was also conducted where site features (sewer cleanouts) and access was available. DigSafely New York was notified prior to the field activities where intrusive activities were planned. GPRS provided a field map (Appendix B) with the interpretations of observed anomalies and detected utilities. The locations of the identified utilities were also marked in the field. Proposed boring locations were adjusted in the field based on results from the geophysical survey.

Additionally, review of available WVA utility maps and submittal of a WVA Dig Permit with associated mark outs was conducted prior to the work to evaluate potential underground utilities in the vicinity of proposed ground intrusive activities.

3.2 Surface Soil Sampling

On August 5, 2019, a total of nine surface soil samples were collected within the area shown on Figure 3-1 to evaluate potential surface exposure risk at unpaved areas within and immediately down-gradient of the release.

Surface soil samples were collected from the zero to two-inch interval below the vegetative cover at each of the locations using a decontaminated trowel. Soils were visually characterized/logged for color, texture, moisture, and consistence/density. Soil sample logs are attached as Appendix C. These samples were submitted to Adirondack Environmental Services, Inc. for analysis of Target Analyte List (TAL) Metals by USEPA Methods 6010 and 7471 and hexavalent chromium by USEPA Method 7196.

3.3 Groundwater Monitoring Well Installation and Subsurface Soil Sampling

Two overburden and two bedrock monitoring wells were installed to support the RI in assessing the extent of hexavalent chromium in subsurface soil and groundwater at the site.

Monitoring well installation was completed by Nothnagle Drilling Inc. (NDI) from August 19 through 27, 2019. Prior to advancement of the drilling activities proposed locations were hand cleared to approximately five feet bgs. Where applicable, a circular saw was used to cut through asphalt at locations near the building. During drilling activities, a Community Air Monitoring Plan (CAMP) was put in place and monitoring for volatile vapors and airborne dust (upwind and downwind) were conducted using a respirable airborne dust monitor (MIE Miniram) and a photoionization detector (PID), respectively. The total organic vapors and particulate concentrations did not exceed the action levels described in the CAMP.

One soil sample was collected directly above bedrock from each well location and submitted to Adirondack Environmental Services, Inc for analysis of hexavalent chromium by USEPA Method 7196. Neither visual (sheens or staining) nor olfactory evidence of contamination was noted in the monitoring well boreholes drilled during the investigation.

3.3.1 Overburden Monitoring Wells

Two overburden groundwater monitoring wells (WVA-AW-35-MW-9 and WVA-AW-35-MW-12) were installed at the locations shown on Figure 3-1 to further evaluate whether the chromic acid release has impacted groundwater quality beyond the release area. These were the closest accessible down-gradient sampling locations that also provide sufficient spatial separation to evaluate groundwater flow.

The monitoring wells were installed using hollow-stem auger drilling methods. Soils were continuously sampled using split spoon to classify overburden materials. Each boring was advanced to the top of bedrock/drilling refusal at approximately 11 to 13.5 feet bgs. Soil samples were screened for VOCs using a PID and visually characterized/logged for color, texture, moisture, and consistence/density.

Monitoring wells were constructed with an eight-foot section of 2-inch ID 0.010-inch slotted schedule 40 PVC screen and a 2-inch ID PVC riser capped with a j-plug to just below grade. Each well was also constructed with a 6-inch PVC sump at the bottom of the well screen. The sump serves as a storage area for sediment that flows into the well and drops out of suspension in order to keep turbidity low. Well construction materials consisted of #00N size sand filter pack extending 1 to 2 feet above the screened interval. A hydrated bentonite seal, 1 to 2 feet thick, was placed on top of the sand so as not to allow infiltration of grout into the sand pack or screened interval. Cement-bentonite grout was placed from the top of the hydrated bentonite seal to approximately 1-foot bgs using a tremie pipe. Each well was

completed with a flush-mounted road box. Monitoring well installation details are provided in Table 3-1. Soil boring logs and well construction details are attached as Appendix C.

A third overburden well was proposed down-gradient to the release (co-located with bedrock well WVA-AW-35-MW-10). However, while attempting to hand clear the drilling location, bedrock was encountered at approximately four feet bgs. Therefore, an overburden monitoring well was not completed as originally planned.

3.3.2 Bedrock Monitoring Wells

NDI installed two bedrock monitoring wells (WVA-AW-35-MW-10 and WVA-AW-35-MW-11) to evaluate whether the chromic acid release has impacted bedrock groundwater quality down-gradient of the release area. These are the closest accessible down-gradient sampling locations that best augment existing bedrock well WVA-AW-35-MW-5 and provide sufficient spatial separation to evaluate groundwater flow (Figure 3-1).

Monitoring well WVA-AW-35-MW-10 was hand cleared to four feet bgs where weathered bedrock was encountered. A split spoon from 4 to 6 feet confirmed weathered bedrock and refusal was encountered at 6.1 feet bgs. A 5-7/8-inch O.D. roller bit with water rotary drilling techniques was used to drill five feet into the competent bedrock to create the 5-foot rock socket in order to seal off the overburden groundwater. After setting and grouting the 4-inch steel isolation casing to approximately 12 feet bgs, the grout was allowed to cure for approximately 24 hours. The well was completed to the final depth of approximately 50 feet bgs (approximately 43 feet into competent bedrock) using a combination of HQ and NQ wire-line rock coring techniques.

Overburden at WVA-AW-35-MW-11 was continuously sampled using a two-foot-long split spoon until refusal/ weathered bedrock was encountered (approximately 11-12 feet bgs). The monitoring well was constructed of 4-inch inner diameter (I.D.) steel casing from ground surface to approximately five feet into competent bedrock using 6 ¼ inch hollow-stem auger to the top of competent bedrock (approximately at 14 feet bgs) followed by a 5-7/8 inch outer diameter (O.D.) roller bit with water rotary drilling techniques to drill the five foot rock socket. After grouting the 4-inch steel isolation casing to seal off the overburden groundwater from the bedrock, the grout was allowed to cure for approximately 24 hours. The well was completed to the final depth of approximately 50 feet bgs (approximately 36 feet into competent bedrock) using a combination of HQ and NQ wire-line rock coring techniques.

At each location, once the final well depth was reached, a 3- 7/8-inch O.D. roller bit was used to ream out the NQ borehole. The wells were completed as open bedrock monitoring wells. Rock cores were logged, documenting characteristics of rock mass, bedding, color, hardness, joints, and voids and calculating Rock Quality Designation (RQD) for all recovered cores. Rock cores were placed in core boxes for temporary retention and storage by Arcadis. Each well was completed with a flush-mounted road box. Soil boring and well construction logs are provided in Appendix C.

3.3.3 Well Development

Upon completion, monitoring wells were developed by NDI on August 26 and 27, 2019 to minimize turbidity in groundwater samples collected from each well, to improve their hydraulic properties, and

remove the water added while drilling. Surge and pump techniques with a whale pump/bailer, were used for well development.

Overburden well WVA-AW-35-MW-9 was dry upon completion, the water level was measured periodically during the drilling event, but the level was insufficient for development. Very little water was measured in overburden well WVA-AW-35-MW-12 with very little recharge at the time of development. Approximately 1.2 gallons of water was removed from this well during development activities. Both bedrock wells; WVA-AW-35-MW-10 and WVA-AW-35-MW-11 were developed successfully with turbidity readings less than 50 Nephelometric Turbidity Units (NTUs) and approximately 140-150 gallons removed from each. The well development logs are provided in Appendix D.

3.4 Groundwater and Sump Water Sampling

Upon the completion of well installation and development, groundwater and sump water samples were collected during two sampling events. The first sampling event was completed on September 17-18 and October 24, 2019. The second sampling event was completed on December 18 and 19, 2019. Unless otherwise noted, the following locations were sampled during each event:

- One new overburden monitoring well:
 - o WVA-AW-35-MW-12
- Two existing overburden monitoring wells:
 - o 93EM-SP-11
 - o 93EM-SP-9 (was only sampled in September and as noted below this well is compromised)
- Two new bedrock monitoring wells:
 - o WVA-AW-35-MW-10 and WVA-AW-35-MW-11
- Two existing bedrock monitoring wells:
 - o WVA-AW-MW-38, WVA-AW-35-MW-5
- Existing excavation area interstitial well/sump (Excavation Sump)
- Three existing process pit sumps:
 - o 120 Pit, Commercial Pit, and NMT Pit

Field parameters including temperature, oxidation-reduction potential (ORP), pH, specific conductivity and turbidity were measured using a water quality meter and recorded for groundwater and sump sample collection. Groundwater and sump water samples were collected and submitted to Adirondack Environmental and were analyzed for TAL Metals by USEPA Methods 6010 and 7470 and hexavalent chromium by USEPA Method SM3500-CR B-2011. If turbidity readings were greater than 50 NTU, a dissolved metals sample was also submitted for analysis. Sampling logs from the sampling events are provided in Appendix E. Laboratory analytical results are provided in Appendix A.

Groundwater Sampling

Prior to groundwater purging and sampling, the depth to groundwater and light non-aqueous phase liquid (LNAPL), if present, was measured using an oil water interface probe. Groundwater sampling was conducted in accordance with the USEPA Low-Flow/Low-Purge Sampling Protocol (USEPA, 1998) where applicable using a dedicated bladder pump or a peristaltic pump. To the extent practicable, groundwater purging rates were low enough to prevent significant drawdown of the groundwater level in the monitoring well. Water levels were monitored during sampling to ensure that excessive draw down is not occurring. If low-flow sampling was not possible due to poor recovery, a monitoring well was purged dry with a bailer and sampled following sufficient recharge.

Sump Water Sampling

Depending on the sump's construction, several methods were used to collect a sample from these four locations (Excavation Sump, 120 Pit, Commercial Pit, and NMT Pit). WVA purged the three existing process pit sumps a few days prior to each event. Grab samples were collected with a bailer from the NMT and 120 Pits and the Commercial Pit was sampled via a valve which was also purged for approximately 10 seconds before collecting the sample. A whale pump was used to purge a minimum of one well volume from the Excavation Sump and then sampled with the whale pump.

Monitoring well 93EM-SP-9 was noted during the September event to have been compromised. The installed dept to bottom was approximately 16.8 feet bgs, the measured depth to bottom in September 2019 was 2.86 feet bgs. Arcadis was unsuccessful at clearing any blockages while inspecting this well during the sampling events. During the September 2019 event this location was dry, but in October a grab sample was collected for analysis. It is likely that the water in 93EM-SP-9 is surface water runoff. During the December 2019 sampling event, monitoring well 93EM-SP-9 was flooded and unable to be sampled.

A dissolved metals sample was collected from monitoring well WVA-AW-35-MW-12 during both 2019 events and from Sump 120 during the December 2019 event due to high turbidity at the time of sample collection.

3.5 Investigation-Derived Waste

Soil, groundwater, and decontamination water during the RI were contained in UN-approved 55-gallon drums, sampled for waste characterization, and staged in a secured location at the site. One composite soil sample was collected from the IDW for polychlorinated biphenyls (PCBs) by USEPA Method 8082, toxicity characteristic leaching procedure (TCLP) VOCs USPEA Method 8260, and hexavalent chromium by USEPA Method 7196. Two composite waste characterization samples were collected to analyze the purge and drilling waters. Analysis included target compounds list (TCL) VOCs, (USEPA Method 8260), TCL SVOCs (USEPA Method 8270) and 8 RCRA metals. Laboratory analytical results are provided in Appendix A.

Based on the laboratory data and waste profiles, the IDW was characterized as non-hazardous/non-DOT regulated for both the soil and water IDW. The 24 drums (12 soil-water, and 12 water-soil) were transported for off-site disposal by Clean Harbors Environmental Services, Inc. on December 12, 2019. A copy of the shipping documents are presented in Appendix F.

3.6 Site Survey

Upon completion of the field investigation activities, the location and elevation of each new groundwater monitoring well installed during the investigation field activities was surveyed to the nearest 0.01-foot vertically and 0.1-foot horizontally by Thew Associates on September 17, 2019. The locations of the surface soil samples were also surveyed to the nearest 0.1-foot horizontally. The site map (Figure 3-1) as well as the AutoCAD base map were updated with the survey data.

4 DATA VALIDATION

Validation of the RI analytical data was performed by Data Validation Services to verify that the data generated was of sufficient quality to achieve the project objectives. The DUSRs, which were prepared in accordance with NYSDEC's final DER-10 program policy (Technical Guidance for Site Investigation and Remediation), are included in Appendix G. Sample processing was conducted in general compliance with the analytical protocol requirements and quality criteria for the data collected during the investigation, with the exceptions noted below and detailed in the DUSR covering the sampling from August (soil sampling) through October 2019 (groundwater and sump water):

- The results for hexavalent chromium in two soil samples (B35-SS4-08052019 and WVA-AW-35-MW-11(8-9)-082119) were rejected and not usable due to apparent matrix effect.
- The hexavalent chromium concentration in surface soil sample; B35-SS9-08052019 was qualified as estimated due to the apparent matrix effect.
- Results for hexavalent chromium in other 2019 soil samples may be biased low.

Further explanations on data validation and can be found in detail in the DUSR reports.

5 REMEDIAL INVESTIGATION RESULTS

Field observations and analytical results are summarized below.

5.1 Field Observations

The B35 investigation area is a mix of grassy lawn areas, blacktop roadway/parking lot, and Building 35 itself. The area has a general west to east slope. Consistent with previous investigations, the major overburden unit identified in the investigation area was fill, consisting of brown/dark brown silty sand with angular gravel ranging in depths from 0 to 9 feet bgs, followed by either a thin native overburden layer or directly above the weathered bedrock. The native overburden layer consists of either a fine grain or coarser alluvium. The bedrock underlying the site is a black, medium-hard laminated shale, showing some characteristics of minor metamorphism. The bedrock can be described in three ways based on the degree of weathering observed. The first is an extremely weathered zone approximately four feet thick. This extremely weathered bedrock unit was encountered at depths ranging from approximately 4 feet to approximately 12 feet bgs. Beneath this extremely weathered bedrock is a zone of less weathered shale showing minimal competency. Competent bedrock was encountered at depths ranging from approximately 12 feet bgs to 19 feet bgs in the two bedrock wells that were installed in the investigation area.

While yellow staining was observed on the excavation walls during the 2018 excavation and sampling, visual evidence of contamination was not noted in any of the subsequent 2019 investigation soil borings. PID readings during soil boring logging did not exceed background concentrations. LNAPL was not observed or measured in any of the monitoring wells. Groundwater elevations are included in Table 5-1. Visual evidence of contamination (yellow tinted water or sheens) was not noted during well development or groundwater sampling. Yellow tinted water was noted during the sump water sampling.

5.2 Groundwater Flow

As shown in Table 5-1 and Figures 5-1 and 5-2, groundwater flow in the vicinity of the site is generally to the east, consistent with historical measurements. The hydraulic gradient over much of the site is approximately 0.021 foot per foot (ft/ft) and 0.029 ft/ft, in overburden and bedrock, respectively.

5.3 Analytical Results

As a result of the subsurface release of chromic acid plating solution in the area next to the 120-mm Gun Pit plating pit in Building 35, the primary constituent of concern is hexavalent chromium in the soil and groundwater. Soil analytical data is presented in Tables 5-2 and 5-3. Sample results are evaluated against the respective 6 NYCRR Part 375 Industrial SCOs and the Protection of Groundwater SCOs. Groundwater analytical data are presented in Tables 2-1 and 2-2 and Figure 5-3. Sample results are evaluated against the NYSDEC Class GA Groundwater Quality Criteria (Class GA Standard).

Laboratory analytical data packages for soil and groundwater samples collected during the RI are provided in Appendix A.

5.3.1 Surface Soil Sampling

As shown in Table 5-2, none of the samples collected in August 2019 contained TAL metals or hexavalent chromium at concentrations greater than the corresponding 6 NYCRR Part 375 Industrial SCOs or 6 NYCRR Part 375 Protection of Groundwater SCOs. There were no visual observations made in the field (yellow stained soil) that would infer the presence of hexavalent chromium. As noted in Section 4, following validation, several limitations were noted in the surface soil data and the data may be biased low.

5.3.2 Subsurface Soil Sampling

As shown in Table 5-3, none of the subsurface soil samples collected in August 2019 contained hexavalent chromium at concentrations greater than the corresponding 6 NYCRR Part 375 Industrial SCO or 6 NYCRR Part 375 Protection of Groundwater SCO. Similar to the surface soil data, several limitations were noted following validation. The hexavalent chromium concentration in WVA-AW-35-MW-11(8-9') was rejected following validation, but the duplicate sample collected from this location was not rejected and was non-detect below the reporting limit. As with the surface soil samples, there were no visual observations made in the field (yellow stained soil) that would infer the presence of hexavalent chromium at elevated concentrations, but as noted in Section 4, the 2019 soil data may be biased low.

5.3.3 Groundwater and Sump Water

Overburden Groundwater

Iron, magnesium, and sodium were detected at least once in the groundwater at 93EM-SP-11 at concentrations greater than the Class GA Standard. Hexavalent chromium was reported as non-detect during both events.

As shown in Table 2-1, the samples from WVA-AW-35-MW-12 contained total chromium, iron magnesium, manganese and sodium, and dissolved chromium, magnesium, manganese, sodium, and thallium at concentrations greater than the corresponding Class GA Standards. In general, dissolved metals concentrations were similar or less than the total metal concentrations. The samples from WVA-AW-35-MW-12 contained hexavalent chromium at concentrations (0.2 and 0.4 mg/L respectively), which is greater than the Class GA Standard (0.05 mg/L) (Figure 5-3), during both sampling events (October and December).

None of the other overburden groundwater samples collected during the 2019 sampling events contained metals at concentrations greater than the corresponding Class GA Standards. As noted in Section 3.4, monitoring well 93EM-SP-9, has been compromised. During the October 2019 event, a grab sample was collected for analysis. Iron was the only metal detected at a concentration greater than the Class GA Standard. It is likely that the water in 93EM-SP-9 is surface water runoff. During the December 2019 sampling event, monitoring well 93EM-SP-9 was flooded and unable to be sampled.

The newly installed shallow overburden monitoring well WVA-AW-35-MW-9 remained dry and did not have a sufficient amount of water to collect a sample during either event.

Bedrock Groundwater

As shown in Table 2-1, the samples from up-gradient well WVA-AW-38 contained sodium at concentrations greater than the Class GA Standard during both the September and December sampling events. The samples from WVA-AW-35-MW-5, WVA-AW-35-MW-10, and WVA-AW-35-MW-11 contained barium and sodium, WVA-AW-35-MW-10, and WVA-AW-35-MW-11 samples contained iron, and WVA-AW-35-MW-11 contained manganese, all at concentrations greater than the corresponding Class GA Standards during at least one of the two sampling events.

As shown in Table 2-1 and Figure 5-3, none of the samples from the bedrock wells contained hexavalent chromium at concentrations greater than the corresponding Class GA Standard during the September and December 2019 sampling events.

Sump Water Samples

As shown in Table 2-2, antimony, chromium, copper, iron, manganese, and sodium were commonly detected at concentrations greater than the corresponding Class GA Standards in the sump/pit samples during the October and/or December 2019 sampling events. The December 2019 water sample collected from the NMT Pit contained arsenic (0.162 mg/L) at a concentration greater than the Class GA Standard. The samples collected from the 120 Pit contained barium (1.36 and 11.1 mg/L respectively) at concentrations greater than the Class GA Standard during both events, and lead (0.218 mg/L) at concentrations greater than the Class GA Standard during the December event.

Table 2-2 also shows that the December 2019 sample from the NMT Pit contained the highest concentration of hexavalent chromium during the investigation, an estimated 260 mg/L, which is greater than the Class GA Standard. October and December samples from the Commercial Pit contained hexavalent chromium at concentrations of 1.1 and 1.2 mg/L, respectively, both of which are greater than the Class GA Standard. None of the samples from the Excavation Sump or the 120 Pit contained hexavalent chromium at concentrations greater than the Class GA Standard.

6 QUALITATIVE EXPOSURE ASSESSMENT

A qualitative human health exposure pathway assessment was performed using the data collected during the RI. The qualitative exposure assessment consists of characterizing the exposure setting, identifying potential exposure pathways, and evaluating contaminant fate and transport. An exposure pathway describes the means by which an individual may be exposed to contaminants originating from the site. An exposure pathway has five elements: (1) a contaminant source; (2) contaminant release and transport mechanism; (3) a point of exposure; (4) a route of exposure; and (5) a receptor population. The plausible exposure pathways are discussed below by medium.

6.1 Soil

Surface soils in the vicinity of Building 35 chromic acid spill area do not contain hexavalent chromium at concentrations greater than the corresponding SCO. Subsurface soil containing hexavalent chromium at concentrations greater than the corresponding SCO is present beneath and immediately south of Building 35. Following the August 2018 interim corrective action, these subsurface soils do not presently have a direct exposure point or route, as they are at depth.

The most likely soil exposure pathway is construction/utility worker contact with subsurface soil via incidental ingestion, dermal contact, and inhalation of particulates during construction activities (i.e., trenches or excavations to repair or maintain underground infrastructure or utilities). While prolonged contact or ingestion of site soil is unlikely, contact with affected soil by construction and/or utility workers represents a possible future exposure pathway.

6.2 Groundwater/Pit Water

Based on the results of the investigation, hexavalent chromium-impacted groundwater is present in the groundwater beneath/surrounding the NMT and Commercial Pits. The impacts to groundwater appear limited in magnitude and extent, and the source removal has been completed and the pit dewatering sumps appear to limit groundwater movement downgradient of the process pits. Groundwater presently has no exposure point or route, as groundwater at the site is not used as a drinking water source, and is in fact prohibited from such use in accordance with the Site Management Plan (Arcadis, 2015).

The most likely groundwater exposure pathway is construction/utility worker contact with groundwater via incidental ingestion or dermal contact during construction activities (i.e., trenches or excavations to repair or maintain underground infrastructure or utilities). While prolonged contact or ingestion of site groundwater is unlikely, contact with affected groundwater by construction and/or utility workers represents a possible future exposure pathway.

The most likely exposure pathway for sump/pit water is Building 35 plating operation worker contact with water via dermal contact and incidental ingestion. While prolonged contact or ingestion of sump/pit water is unlikely, contact with affected sump/pit water by plating operations workers represents a possible exposure pathway.

7 INVESTIGATION SUMMARY

7.1 Site Investigation

The Plating Area Site Investigation expanded on previous data collection and source removal efforts at the site to evaluate potential down-gradient groundwater impacts from the chromic acid release. During the investigation, well installation, soil, groundwater, and sump/pit sampling were used to delineate hexavalent chromium impacts. Laboratory results indicate that hexavalent chromium is present in the NMT Pit and in overburden groundwater in the immediate down-gradient vicinity of the release area, however, the saturated overburden thickness in this area is very small and even absent in some areas. Hexavalent chromium was detected in the groundwater samples collected from the overburden well WVA-AW-35-MW-12 at concentrations greater than the Class GA Standard during both events. However, based on the fact that this well is located cross-gradient from the chromium plating area, and that overburden well WVA-AW-35-MW-9 was dry, and that there were no hexavalent chromium exceedances in bedrock well WVA-AW-35-MW-5, the presence of hexavalent chromium at this well does not appear to be associated with the 120 Pit release that was the subject of this investigation.

The 2019 Site Investigation sampling has documented a reduction in hexavalent chromium concentrations at the spill source since the 2018 release and excavation:

- Hexavalent chromium is no longer detected in samples from the Excavation Sump.
- Hexavalent chromium was not detected in the pre-excavation sample or the 2019 samples collected from the 120 Pit.
- Hexavalent chromium concentrations have dropped two orders of magnitude in the Commercial Pit; from 680 mg/L prior to the 2018 excavation, to 11 mg/L following the excavation, and to 1.2 mg/L during the 2019 sampling events.

Hexavalent chromium was not detected in any of the four bedrock wells during both the September and December 2019 events.

7.2 Conceptual Site Model

With the conclusion of the Plating Area Site Investigation sampling and corresponding activities, the Conceptual Site Model (CSM) for the site is as follows:

The majority of source area soil was removed during the 2018 excavation. However, excavation confirmation and groundwater sampling associated with the 2018 excavation indicate that residual hexavalent chromium-impacted soil remains beneath and immediately south of Building 35 at concentrations up to 802 µg/g. None of the 2019 investigation soil samples contained hexavalent chromium at concentrations greater than the applicable SCO, though based on the validation data, they may be biased low.

Additional delineation and sampling efforts during the Site Investigation showed that overburden groundwater impacted by hexavalent chromium is present to the south and east of the release area following the 2018 excavation at concentrations up to 0.4 mg/L in adjacent groundwater and up to 260 J mg/L in the NMT Pit. However, it is not clear if these detections are associated with the 2018 release, or

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historic activities. Due to the shallow depth of bedrock, impacts to the east of the release area appear limited to the NMT and Commercial Pits, as overburden groundwater is not present in the exterior locations where well installation was attempted. Figures 7-1 and 7-2 provides a schematic geological cross section of the shallow bedrock in this part of the site.

Groundwater flow in the vicinity of the site is generally to the east in both overburden and bedrock, toward the Hudson River. It does not appear that impacted groundwater has migrated significantly, or has the capacity for further migration. The site land surface slopes gradually to the east, while a retaining wall is present to the south at the WVA property boundary with adjacent properties lying at a lower elevation. The nearest residential area is approximately 150 feet to the south, and cross-gradient of the site. The area is serviced by a public water supply.

8 RECOMMENDATIONS

While residual soil and groundwater impacts associated with hexavalent chromium remain at the site, their magnitude and extent appear to be limited. The source of the hexavalent chromium concentrations in the NMT Pit is likely associated with past release from the plating area, however the actual source is not known. Nonetheless, the investigation data indicate that hexavalent chromium is not present in the bedrock groundwater immediately downgradient of this pit. It is therefore recommended that that NMT Pit sump groundwater should continue to be monitored as part of the WVA's existing Long-Term Monitoring program. The investigation data also indicate that the presence of hexavalent chromium in the groundwater at WVA-AW-35-MW-12 is not associated with the 120 Pit release that initiated this investigation. Therefore, it is also recommended that this well continue to be monitored as part of the WVA's Long-Term Monitoring program. Additionally, hexavalent chromium will be monitored at 93EM-SP-11 during Long-Term Monitoring sampling activities as this is the overburden well that is most representative of conditions down-gradient of the spill area. Additional delineation efforts do not appear warranted at this time and with the existing land use controls in place, remedial evaluations likewise do not appear warranted for the spill area.

9 REFERENCES

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USEPA, Region II. 1998. Ground Water Sampling Procedure, Low Stress (Low Flow) Purging and Sampling Standard Operating Procedure. March 16, 1998.

TABLES



Table 2-1
Summary of 2018 and 2019 Groundwater Analytical Data

Building 35 Chromic Acid Spill Evaluation
Watervliet Arsenal, Watervliet, NY

Sampling Date:	Units	NYSDEC Class GA Standards	93EM-SP-9			93EM-SP-11			WVA-AW-35-MW-9		WVA-AW-35-MW-12			
			08/15/18	10/24/19	12/18/19	08/15/18	09/18/19	12/18/19	09/18/19	12/18/19	(Total) 10/24/19	(Dissolved) 10/24/19	(Total) 12/19/19	(Dissolved) 12/19/19
ICP Metals														
Aluminum	mg/L	--	0.368	0.100 U	NS	0.978	0.232	0.100 U	NS	NS	4.71	0.200 UJ	13.4	0.200 UJ
Antimony	mg/L	0.003	0.060 U	0.060 U	NS	0.060 U	0.001 J	0.060 U	NS	NS	0.060 U	0.060 UJ	0.060 U	0.060 UJ
Arsenic	mg/L	0.025	0.005 U	0.005 U	NS	0.005 U	0.009	0.006	NS	NS	0.006	0.005 J-	0.010	0.010 UJ
Barium	mg/L	1.0	0.039	0.012	NS	0.086	0.100	0.115	NS	NS	0.418	0.377 J-	0.316	0.104 J
Beryllium	mg/L	0.003	0.005 U	0.005 U	NS	0.005 U	0.005 U	0.005 U	NS	NS	0.005 U	0.005 UJ	0.005 U	0.005 UJ
Cadmium	mg/L	0.005	0.005 U	0.005 U	NS	0.005 U	0.005 U	0.005 U	NS	NS	0.005 U	0.005 UJ	0.005 U	0.005 UJ
Calcium	mg/L	--	32.2	15.8	NS	57.7	71.1	84.1	NS	NS	336	344 J-	106	99.9 J
Chromium	mg/L	0.050	0.030	0.013	NS	0.013	0.009	0.005 U	NS	NS	0.383	0.375 J-	0.572	0.539 J
Cobalt	mg/L	--	0.050 U	0.050 U	NS	0.050 U	0.003 J	0.002 J	NS	NS	0.010 U	0.001 J-	0.012 J	0.050 UJ
Copper	mg/L	0.20	0.019	0.008	NS	0.012	0.005 U	0.005 U	NS	NS	0.034	0.025 UJ	0.040	0.0025 J
Iron	mg/L	0.30	0.935	0.180	NS	1.68	1.41	0.148	NS	NS	7.48	0.286 J-	22.2	0.257 J
Lead	mg/L	0.025	0.019	0.005 U	NS	0.005	0.005 J	0.007	NS	NS	0.022	0.003 UJ	0.011	0.003 UJ
Magnesium	mg/L	35	2.42	0.635	NS	18.9	26.0	23.1	NS	NS	65.4	62.4 J-	24.3	18.2 J
Manganese	mg/L	0.30	0.069	0.005 J	NS	0.453	0.660	0.627	NS	NS	1.34	0.406 J-	0.755	0.0134 J
Mercury	mg/L	0.0007	0.0002 U	0.0002 U	NS	0.0002 U	0.0002 U	0.0002 J-	NS	NS	0.0002 U	0.0002 UJ	0.0002 J-	0.0002 UJ
Nickel	mg/L	0.10	0.020 U	0.020 U	NS	0.020 U	0.001 J	0.020 U	NS	NS	0.015 J	0.003 J-	0.019 J	0.040 UJ
Potassium	mg/L	--	2.01	0.733	NS	13.0	7.81	8.95	NS	NS	67.3	68.0 J-	33.5	28.6 J
Selenium	mg/L	0.010	0.005 U	0.005 U	NS	0.005 U	0.005 U	0.005 U	NS	NS	0.005 U	0.005 UJ	0.005 U	0.005 UJ
Silver	mg/L	0.050	0.010 U	0.010 U	NS	0.010 U	0.010 U	0.010 U	NS	NS	0.010 U	0.010 UJ	0.010 U	0.010 UJ
Sodium	mg/L	20.0	19.7	2.27	NS	107	143	318	NS	NS	1,140 J	1,450 J-	743	699 J
Thallium	mg/L	0.0005	0.010 U	0.010 U	NS	0.011	0.010 U	0.010 U	NS	NS	0.010 U	0.009 J-	0.010 U	0.010 UJ
Vanadium	mg/L	--	0.020 U	0.020 U	NS	0.020 U	0.020 U	0.020 U	NS	NS	0.020 U	0.050 U	0.017 J	0.050 UJ
Zinc	mg/L	2.0	0.059	0.018	NS	0.087	0.023	0.023	NS	NS	0.432	0.059	0.091	0.020 UJ
Hexavalent Chromium														
Hexavalent Chromium	mg/L	0.050	0.02 U	0.02 U	NS	0.02 U	0.02 U	0.02 U	NS	NS	0.2	NA	0.4	NA

See Notes on Page 2.

Table 2-1
Summary of 2018 and 2019 Groundwater Analytical Data

Building 35 Chromic Acid Spill Evaluation
Watervliet Arsenal, Watervliet, NY

Sampling Date:	Units	NYSDEC Class GA Standards	WVA-AW-35-MW-38			WVA-AW-35-MW-5				WVA-AW-35-MW-10			WVA-AW-35-MW-11		
			08/15/18	09/18/19	12/18/19	08/15/18	DUP-GW- 08152018 08/15/18	09/18/19	12/19/19	09/17/19	DUP-01- 091719 09/17/19	12/18/19	09/17/19	12/19/19	Duplicate- 01-20191219 12/19/19
ICP Metals															
Aluminum	mg/L	--	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.091 J	0.100 U	0.100 U	0.100 U
Antimony	mg/L	0.003	0.060 U	0.060 U	0.060 U	0.060 U	0.060 U	0.002 J	0.060 U	0.002 J	0.002 J	0.060 U	0.060 U	0.060 U	0.060 U
Arsenic	mg/L	0.025	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Barium	mg/L	1.0	1.95	0.358	0.443	3.68	3.77	2.94	3.24	2.61	2.70	2.60	1.64	1.63	1.58
Beryllium	mg/L	0.003	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.001 J	0.001 J	0.001 J	0.001 J	0.005 U	0.0005 J	0.005 U	0.005 U
Cadmium	mg/L	0.005	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Calcium	mg/L	--	77.2	76.3	80.7	24.4	25.0	17.3	18.7	17.9	19.0	34.8	46.2	30.8	29.5
Chromium	mg/L	0.050	0.008	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.007 U	0.005 U	0.010 U	0.006 U
Cobalt	mg/L	--	0.050 U	0.0004 J	0.050 U	0.050 U	0.050 U	0.0002 J	0.050 U	0.0003 J	0.0002 J	0.050 U	0.0004 J	0.050 U	0.050 U
Copper	mg/L	0.20	0.007	0.005 J	0.003 J	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Iron	mg/L	0.30	0.124	0.065	0.092	0.050	0.050 U	0.013 J	0.061	1.00	0.839	3.74 J	8.08	10.9	11.6
Lead	mg/L	0.025	0.005 U	0.002 J	0.005 U	0.005 U	0.005 U	0.001 J	0.005 U	0.006	0.004 J	0.005 U	0.001 J	0.005 U	0.005 U
Magnesium	mg/L	35	31.9	30.0	33.0	7.44	7.60	5.33	5.68	4.65	4.97	9.02	14.0	12.0	11.6
Manganese	mg/L	0.30	0.171	0.030	0.039	0.114	0.117	0.073	0.091	0.166	0.172	0.258	0.258	0.336	0.332
Mercury	mg/L	0.0007	0.0002 U	0.0002 U	0.0001 J-	0.0002 U	0.0002 U	0.0002 U	0.0002 J-	0.0002 U	0.0002 U	0.0002 J-	0.0002 U	0.0002 J-	0.0002 J-
Nickel	mg/L	0.10	0.020 U	0.002 J	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.0003 J	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Potassium	mg/L	--	20.2	20.9	21.5	20.4	20.9	15.4	16.1	17.7	17.9	18.1	16.6	16.8	16.0
Selenium	mg/L	0.010	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 UJ	0.005 UJ	0.005 U	0.005 U
Silver	mg/L	0.050	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
Sodium	mg/L	20.0	174	188	189	269	327	282	237	269	265	254 J-	145 J-	198	139
Thallium	mg/L	0.0005	0.011	0.010 U	0.010 U	0.014	0.016	0.010 U	0.010 U	0.010 U	0.001 J	0.010 U	0.010 UJ	0.010 U	0.010 U
Vanadium	mg/L	--	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Zinc	mg/L	2.0	0.010 U	0.010 J	0.010 U	0.010 U	0.010 U	0.005 J	0.010 U	0.006 J	0.004 J	0.010 U	0.003 J	0.010 U	0.010 U
Hexavalent Chromium															
Hexavalent Chromium	mg/L	0.050	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 UJ	0.02 U	0.02 U	0.02 U

Notes:

Highlighted values show detections greater than the NYSDEC Class GA Standard.

Units are in milligrams per liter.

-- No regulatory criteria exists for respective analyte

93EM-SP-9 was not sampled in December 2019 because it was flooded

WVA-AW-35-MW-9 was not sampled in September or December 2019 because it was dry

NA = Not analyzed.

NS = Not sampled.

U = Not detected at the reporting limit.

J = Analyte detected below the quantitation limits (estimated value)

J- = Analyte detected below the quantitation limits (estimated biased low)

DUP-01-091719 taken from WVA-AW-35-MW-10

DUP-GW-08152018 taken from WVA-AW-35-MW-5

Table 2-2
Summary of 2018 and 2019 Sump Pit Groundwater Analytical Data

Building 35 Chromic Acid Spill Evaluation
Watervliet Arsenal, Watervliet, NY

Sampling Date:	Units	NYSDEC Class GA Standards	NMT - Pit			SUMP-120Pit				SUMP-CommPit				Excavation Sump			
			10/24/19	DUP-1- 20191025 10/24/19	12/19/19	08/15/18	10/24/19	(Total) 12/19/19	(Dissolved) 12/19/19	08/15/18	08/29/18	10/24/19	12/19/19	08/24/18	08/28/18	10/24/19	12/19/19
ICP Metals																	
Aluminum	mg/L	--	0.100 U	0.100 U	1.11	0.342	0.144	5.07	0.200 UJ	1.00 U	0.100 U	0.100 U	0.100 U	4.84	0.100 U	0.100 U	0.100 U
Antimony	mg/L	0.003	0.019 J	0.017 J	3.27	0.060 U	0.060 U	0.060 U	0.060 UJ	4.09	0.131	0.016 J	0.060 J-	0.060 U	0.060 U	0.060 U	0.060 U
Arsenic	mg/L	0.025	0.005 J-	0.005 U	0.162	0.005 U	0.005 U	0.005 U	0.010 UJ	0.112	0.016	0.006	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Barium	mg/L	1.0	0.104	0.107	0.275	2.50	1.36	11.1	0.837 J	0.166	0.16	0.141	0.088	0.297	0.060	0.062	0.061
Beryllium	mg/L	0.003	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 J	0.005 UJ	0.05 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Cadmium	mg/L	0.005	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 UJ	0.05 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Calcium	mg/L	--	66.0 J+	66.0	90.3	23.6	15.0	19.0	11.5 J	191	138	91.9	72.8	72.9	44.9	44.7	46.9
Chromium	mg/L	0.050	1.29 J+	1.28	244	0.015	0.005 U	0.106	0.007 J	232	7.69	1.40	1.39	3.42	1.98	0.025	0.015 U
Cobalt	mg/L	--	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.010 J	0.050 UJ	0.5 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Copper	mg/L	0.20	0.005	0.006	0.282	0.047	0.033	1.32	0.025 UJ	0.05 U	0.023	0.006	0.005 U	0.005 U	0.005 U	0.005 J	0.005 U
Iron	mg/L	0.30	0.040 J	0.053	1.98	6.44	1.90	61.8	0.048 J	0.5 U	0.139	0.994	0.061	10.6	0.050 U	3.20	0.920
Lead	mg/L	0.025	0.015	0.014	0.005 U	0.015	0.003 J	0.218	0.003 UJ	0.05 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Magnesium	mg/L	35	15.6	15.5	17.9	7.52	4.69	5.18	5.00 J	38.3	32.9	23.8	19.6	17.1	11.2	9.70	10.4
Manganese	mg/L	0.30	0.004 J	0.004 J	0.031	2.48	1.33	32.7	0.138 J	0.739	0.020 U	0.076	0.072	0.407	0.219	0.013 J	0.008 J
Mercury	mg/L	0.0007	0.0002 U	0.0002 U	0.0002 J-	0.0002 U	0.0002 U	0.0002 J-	0.0002 UJ	0.0002 U	0.0002 U	0.0002 U	0.0002 J-	0.0002 U	0.0002 U	0.0002 U	0.0002 J-
Nickel	mg/L	0.10	0.020 U	0.020 U	0.069	0.020 U	0.020 U	0.013 J	0.040 UJ	0.2 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U
Potassium	mg/L	--	13.0 J+	12.8	12.4	24.3	16.5	16.8	15.7 J	12.9	23.2	17.2	13.7	16.2	8.16	6.12	5.81
Selenium	mg/L	0.010	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 UJ	0.05 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Silver	mg/L	0.050	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 UJ	0.1 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
Sodium	mg/L	20.0	11.3 J+	120	95.9	333	264	262	281 J	199	169	146	154	16.3	135	119	130
Thallium	mg/L	0.0005	0.010 U	0.010 U	0.086	0.019	0.010 U	0.051	0.010 UJ	0.1 U	0.010 U	0.010 U	0.010 U	0.027	0.01 U	0.010 U	0.010 U
Vanadium	mg/L	--	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.050 UJ	0.2 U	0.020 U	0.020 U	0.020 U	0.020 U	0.02 U	0.020 U	0.020 U
Zinc	mg/L	2.0	0.010 U	0.010 U	0.131	0.118	0.055	1.13	0.020 UJ	0.113	0.010 U	0.007 J	0.010 U	0.033	0.01 U	0.010 U	0.010 U
Hexavalent Chromium																	
Hexavalent Chromium	mg/L	0.050	1.2	1.2	260 J	0.02 U	0.02 U	0.02 U	NA	680	11	1.1	1.2	2.7	1.6	0.02 U	0.02 U

Notes:

Highlighted values show detections greater than the NYSDEC Class GA Standard.

Units are in milligrams per liter.

-- No regulatory criteria exists for respective analyte

NA = Not analyzed.

U = Not detected at the reporting limit.

J = Analyte detected below the quantitation limits (estimated value)

J+ = Analyte detected below the quantitation limits (estimated biased high)

J- = Analyte detected below the quantitation limits (estimated biased low)

DUP-1-20191024 taken from NMT - Pit

Table 2-3
Summary of August 2018 Excavation Soil Sampling Data

Building 35 Chromic Acid Spill Evaluation
Watervliet Arsenal, Watervliet, NY

Sampling Date:	Units	6 NYCRR Part 375 Industrial SCO (ppm)	6 NYCRR Part 375 Protection of Groundwater SCO (ppm)	ADJ Ext Wall	ADJ w. Duct	OS	OE	OW	OB	IB	IE	IW
				08/24/18	08/24/18	08/24/18	08/24/18	08/24/18	08/24/18	08/24/18	08/24/18	08/24/18
ICP Metals												
Aluminum	µg/g	--	--	12000	11500	12600	12600	13500	12900	14700	15000	15000
Antimony	µg/g	--	--	3.20 U	3.40 U	3.9	3.20 U	3.30 U	5.86	3.50 U	27.8	3.30 U
Arsenic	µg/g	16	16	4.89	3.55	3.34	3.71	3.63	3.95	4.21	2.66	6.85
Barium	µg/g	10,000	820	73.3	75.4	93.4	101	111	87.8	110	131	148
Beryllium	µg/g	2,700	47	0.546	0.520	0.538	0.560	0.586	0.549	0.632	0.673	0.714
Cadmium	µg/g	60	7.5	1.45	1.44	1.36	1.53	1.67	1.37	1.60	1.63	1.85
Calcium	µg/g	--	--	13600	4260	16900	15300	20200	8010	17400	18600	10000
Chromium	µg/g	6,800	NS	15.6	19.4	195	31.3	19.3	394	42.6	1950	22.9
Cobalt	µg/g	--	--	7.58	7.67	7.48	7.39	8.52	7.91	9.43	10.9	10.7
Copper	µg/g	10,000	1,720	30.6	28.0	27.8	30.1	28.0	46.6	31.5	42.0	52.9
Iron	µg/g	--	--	31200	28000	27600	31300	32200	25900	34800	32100	32600
Lead	µg/g	3,900	450	15.8	14.3	24.4	17.7	14.9	23.1	25.5	34.8	49.9
Magnesium	µg/g	--	--	6240	6090	7300	7740	8590	7020	6300	7800	7240
Manganese	µg/g	10,000	2,000	423	530	880	755	1130	448	505	831	801
Mercury	µg/g	5.7	0.73	0.021 U	0.022 U	0.023	0.021 U	0.022 U	0.030	0.023 U	0.046	0.043
Nickel	µg/g	10,000	130	19.2	19.1	19.9	20.2	20.8	21.3	22.8	24.9	26.4
Potassium	µg/g	--	--	1430	1350	1620	1530	1750	1580	1560	1820	1780
Selenium	µg/g	6,800	4	0.270 U	0.280 U	0.270 U	0.260 U	0.270 U	0.280 U	0.290 U	0.280 U	0.280 U
Silver	µg/g	6,800	8.3	1.10 U	1.10 U	1.10 U	1.10 U	1.10 U	1.10 U	1.20 U	1.10 U	1.10 U
Sodium	µg/g	--	--	205	157	185	167	247	169	341	337	274
Thallium	µg/g	--	--	0.530 U	0.560 U	0.540 U	0.530 U	0.550 U	0.560 U	0.580 U	0.560 U	0.550 U
Vanadium	µg/g	--	--	20.3	18.9	19.3	20.4	21.2	19.2	24.8	15.8	25.4
Zinc	µg/g	10,000	2,480	68.7	111	54.5	59.1	60.2	59.3	62.9	64.1	78.5
Hexavalent Chromium												
Hexavalent Chromium	µg/g	800	19	1.1 U	1.1 U	133	6.7	1.1 U	150	12.7	802	2.0

Notes:

- Concentration exceeds corresponding 6 NYCRR Part 375 Industrial Soil Cleanup Objective (SCO).
- Concentration exceeds corresponding 6 NYCRR Part 375 Protection of Groundwater Soil Cleanup Objective (SCO).

Units are in micrograms per gram-dry weight.

-- No regulatory criteria exists for respective analyte.

U = Not detected at the reporting limit

J = Analyte detected below the quantitation limits (estimated)

Table 3-1
Groundwater Monitoring Well Construction Details

Remedial Investigation
 New York State Department of Environmental Conservation
 Watervliet Arsenal, Building 35
 Watervliet, New York

Location ID	Date Completed	Northing Coordinate	Easting Coordinate	MP Elevation	Ground Surface Elevation	Screened Formation	Well Diameter (in)	Isolation Casing			Riser/ Screen Type	Screen Slot Size (in)	Screen Length (ft)	Depth to Screened Interval (ft. bgs)		Total Well Depth	Comments
		ft.	ft.	ft. AMSL	ft. AMSL			Material	Size (in)	Depth (ft)				Top	Bottom	ft bgs	
WVA-AW-35-MW-9	8/19/19	1415968.9	704904.9	52.41	52.6	Shallow OB	2	NA	NA	NA	PVC	0.01	8	5.0	13.0	13.5	
WVA-AW-35-MW-10	8/20/19	1416012.1	705094.2	41.30	41.6	Bedrock	4	Steel	4	0-12	Steel	NA*	NA*	NA*	NA*	51.0	Open hole bedrock wells
WVA-AW-35-MW-11	8/21/19	1415888.1	705083.1	43.90	44.1	Bedrock	4	Steel	4	0-19	Steel	NA*	NA*	NA*	NA*	51.2	Open hole bedrock wells
WVA-AW-35-MW-12	8/21/19	1415916.6	704901.2	51.52	51.8	Shallow OB	2	NA	NA	NA	PVC	0.01	8	7.0	12.0	13.5	

Notes:
 NA* = Not Applicable, open hole bedrock wells
 OB = Overburden
 PVC = Polyvinyl chloride
 ft. AMSL = feet above mean sea level
 WVA-AW-35-MW-9 and WVA-AW-35-MW-12 were constructed with a 6 inch sump at the bottom of the well.

Table 5-1
Groundwater Elevation Monitoring

Building 35 Chromic Acid Spill Evaluation
Watervliet Arsenal, Watervliet, NY

Location ID	Measuring Point Elevation (ft amsl)	September 17, 2019		December 8, 2019	
		Depth to Water (ft)	Groundwater Elevation (ft amsl)	Depth to Water (ft)	Groundwater Elevation (ft amsl)
93EM-SP-9	43.41	DRY	--	Flooded	--
93EM-SP-11	35.39	9.37	26.02	8.05	27.34
WVA-AW-35-MW-5	52.80	14.21	38.59	12.85	39.95
WVA-AW-35-MW-9	52.41	DRY	--	12.97	39.44
WVA-AW-35-MW-10	41.30	5.69	35.61	5.97	35.33
WVA-AW-35-MW-11	43.90	8.70	35.20	8.15	35.75
WVA-AW-35-MW-12	51.52	DRY	--	12.43	39.09
WVA-AW-35-MW-38	57.30	9.69	47.61	7.55	49.75

Notes:

-- = not measured

amsl = above mean sea level

ft = feet

Table 5-2
Summary of 2019 Surface Soil Analytical Data

Building 35 Chromic Acid Spill Evaluation
Watervliet Arsenal, Watervliet, NY

Sampling Date:	Units	6 NYCRR Part 375 Industrial SCO (ppm)	6 NYCRR Part 375 Protection of Groundwater SCO (ppm)	B35-SS-1	B35-SS-2	B35-SS-3	B35-SS-4	B35-SS-5		B35-SS-6	B35-SS-7	B35-SS-8	B35-SS-9	
				08/05/19	08/05/19	08/05/19	08/05/19	08/05/19	B35-DUP- 1-SS 08/05/19	08/05/19	08/05/19	08/05/19	08/05/19	08/05/19
ICP Metals														
Aluminum	µg/g	--	--	12,400	13,100	9,020	10,600	11,500	11,600	13,500	11,100	7,610	13,800	
Antimony	µg/g	--	--	0.73 J	2.38 J	0.43 J	1.38 J	4.55 J	5.31 J	1.51 J	22.5	2.61 J	1.03 J	
Arsenic	µg/g	16	16	1.10 U	1.10 U	1.10 U	1.00 U	1.10 U	1.10 U	1.20 U	1.10 U	1.10 U	1.20 U	
Barium	µg/g	10,000	820	101	96.2	60.9	80.6	90.1	101	93.8	179	89.1	123	
Beryllium	µg/g	2,700	47	1.10 U	1.10 U	1.10 U	1.00 U	1.10 U	1.10 U	1.20 U	1.10 U	1.10 U	1.20 U	
Cadmium	µg/g	60	7.5	0.16 J	0.72 J	0.07 J	0.28 J	0.43 J	0.54 J	0.34 J	2.69	3.79	0.55 J	
Calcium	µg/g	--	--	4,240	2,390	5,190	2,370	6,660	6,290	3,590	59,000	123,000	5,540	
Chromium	µg/g	6,800	NS	23.6	116	14.6	60.4	213	253	50.6	314	92.8	38.5	
Cobalt	µg/g	--	--	9.15 J	8.76 J	6.88 J	7.12 J	7.72 J	7.63 J	8.65	4.77	1.62 J	9.74 J	
Copper	µg/g	10,000	1,720	31.9	34.3	19.1	23.7	48.6	53.8	41.8	111	41.0	56.6	
Iron	µg/g	--	--	23,500	25,300	15,100	19,900 J-	24,900	23,700	24,300	41,800	64,200	26,600	
Lead	µg/g	3,900	450	58.5	60.8	20.0	44.5 J	86.7 J	132 J	163	101	57.3	155	
Magnesium	µg/g	--	--	4,390	4,410	3,890	3,710	5,070	4,620	3,930	9,620	9,790	4,970	
Manganese	µg/g	10,000	2,000	546	627	366	492	457	608	434	396	290	589	
Mercury	µg/g	5.7	0.73	0.095 J	0.212 U	0.212 U	0.209 U	0.213 U	0.214 U	0.146	0.228 U	0.217 U	0.155 J	
Nickel	µg/g	10,000	130	20.4	24.1	12.7	17.2	34.3	43.0	42.1	40.9	25.3	35.5	
Potassium	µg/g	--	--	1,900	1,900	1,320	1,350 J-	1,660	1,720	1,690	1,880	1,850	1,870	
Selenium	µg/g	6,800	4	1.10 U	1.10 U	1.10 U	1.00 U	1.10 U	1.10 U	1.20 U	1.10 U	1.10 U	1.20 U	
Silver	µg/g	6,800	8.3	2.20 U	2.10 U	2.10 U	2.10 U	2.10 U	2.10 U	2.40 U	2.30 U	2.20 U	2.30 U	
Sodium	µg/g	--	--	512	479	388	434 J-	437	435	514	690	764	573	
Thallium	µg/g	--	--	2.20 U	2.10 U	2.10 U	2.10 U	2.10 U	2.10 U	2.40 U	2.30 U	2.20 U	2.30 U	
Vanadium	µg/g	--	--	24	24.5	18.8	20.8	22.3	21.6	27.6	19.2	17.0	33.1	
Zinc	µg/g	10,000	2,480	128	172	61.0	138	157	162	182	1,370	3,000	161	
Hexavalent Chromium														
Hexavalent Chromium	µg/g	800	19	1.10 U	1.10 U	1.10 U	R	1.10 U	1.10 U	1.20 U	1.10 U	1.10 U	2.00 J-	

Notes:

- Concentration exceeds corresponding 6 NYCRR Part 375 Industrial Soil Cleanup Objective (SCO).
- Concentration exceeds corresponding 6 NYCRR Part 375 Protection of Groundwater Soil Cleanup Objective (SCO).
- Units are in micrograms per gram-dry weight.
- No regulatory criteria exists for respective analyte.
- SS: Surface Soil samples collected from 0 to 2 inches below ground surface
- U = Not detected at the reporting limit
- R = Data rejected based on third-party data validation. The laboratory concentration before validation was non-detect (1.0 U µg/g).
- J = Analyte detected below the quantitation limits (estimated)
- J- = Analyte detected below the quantitation limits (estimated biased low)
- B35-DUP-1-SS taken from B35-SS-1

Table 5-3
Summary of 2019 Subsurface Soil Analytical Data

Building 35 Chromic Acid Spill Evaluation
Watervliet Arsenal, Watervliet, NY

Sampling Depth (feet):		6 NYCRR Part 375 Industrial SCO (ppm)	6 NYCRR Part 375 Protection of Groundwater SCO (ppm)	WVA-AW-35-MW-9	WVA-AW-35-MW-10	WVA-AW-35-MW-11		WVA-AW-35-MW-12
				9-11	3-4	8-9	8-9 WVA-AW-35-DUP-1	10-11
Sampling Date:	Units			08/19/19	08/20/19	08/21/19	08/21/19	08/21/19
Hexavalent Chromium	µg/g	800	19	1.10 U	1.30	R	1.11 U	1.07 U

Notes:

- Concentration exceeds corresponding 6 NYCRR Part 375 Industrial Soil Cleanup Objective (SCO).
- Concentration exceeds corresponding 6 NYCRR Part 375 Protection of Groundwater Soil Cleanup Objective (SCO).

Units are in micrograms per gram-dry weight.

9-11: Sample was collected at 9-11 feet below ground surface.

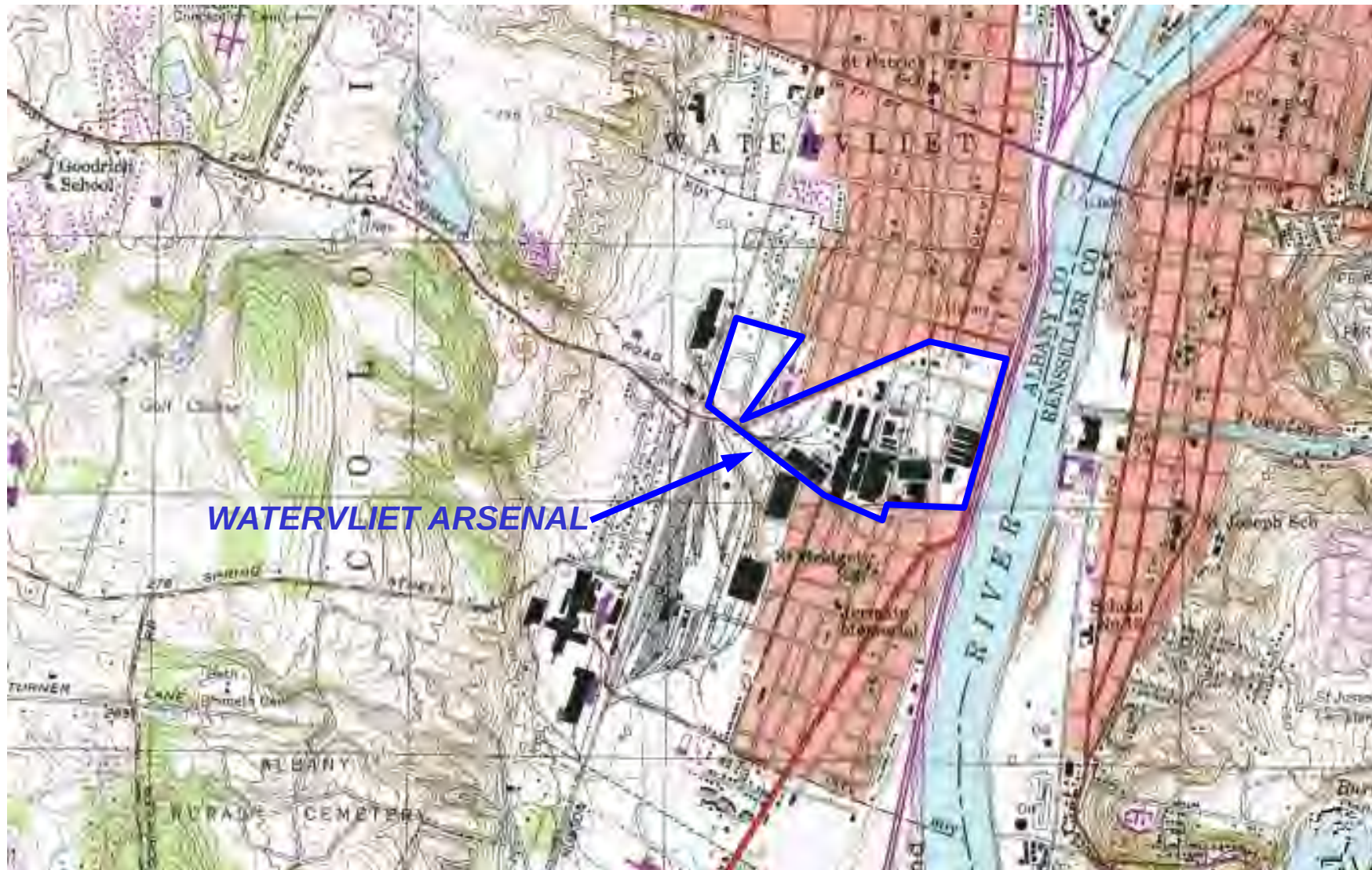
U = Not detected at the reporting limit.

R = Data rejected based on third-party data validation. The laboratory concentration before validation was non-detect (1.10 U µg/g).

WVA-AW-35-DUP-1 taken from WVA-AW-35-MW-11 (8-9)

FIGURES





SCALE IN FEET



SOURCE: U.S.G.S 7.5 MIN. TROY SOUTH QUADRANGLE



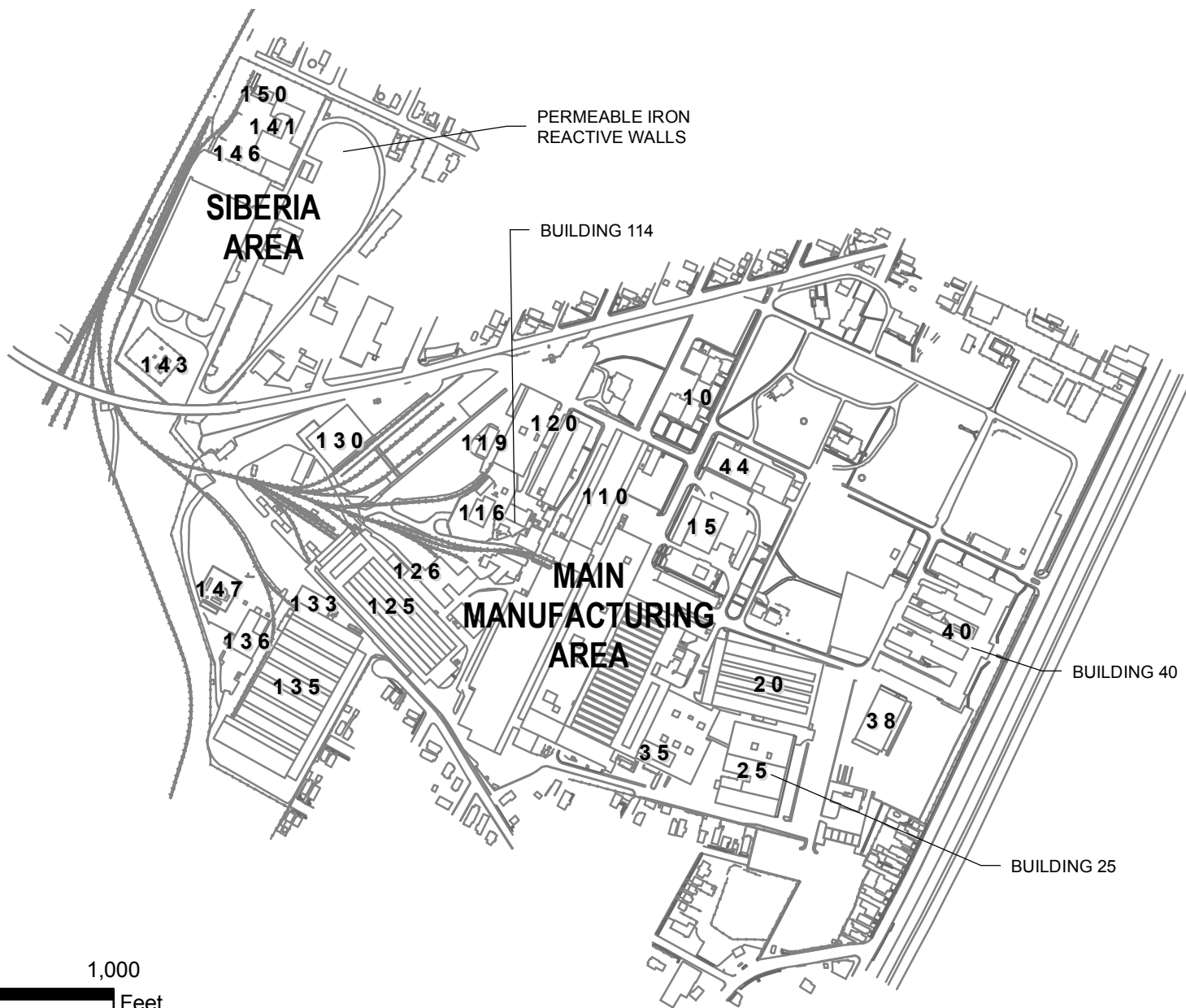
US Army Corps
of Engineers
Baltimore District

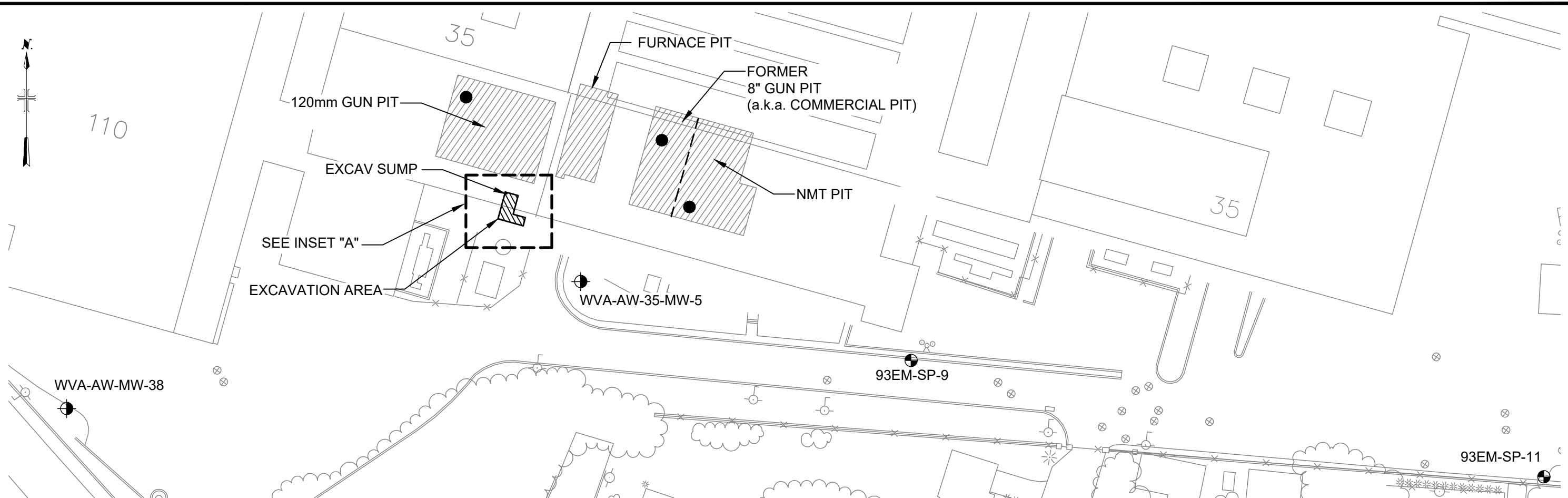
WATERVLIET ARSENAL
WATERVLIET, NEW YORK

PLATING AREA SITE INVESTIGATION

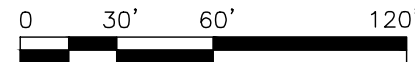
SITE LOCATION

FIGURE 1-1



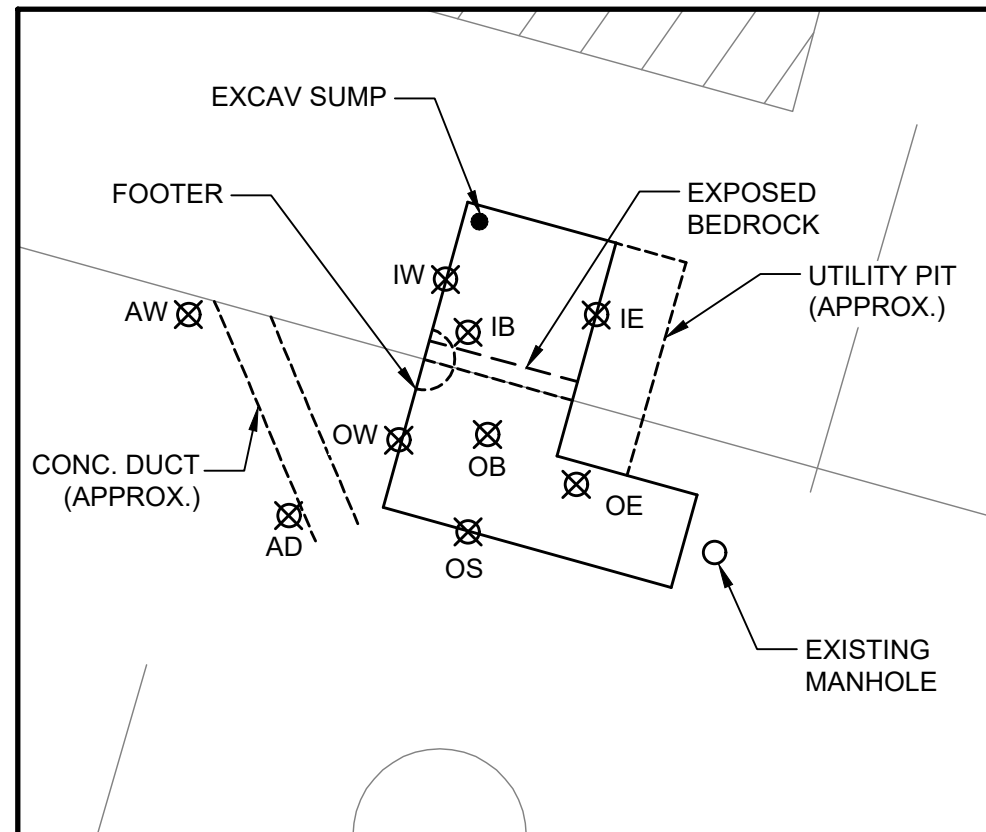


PLAN

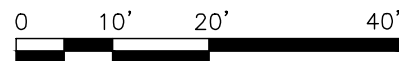


LEGEND

- ⊗ MANHOLE
- ⋈ HYDRANT
- BOLLARD
- UTILITY POLE
- UTILITY/LIGHT POLE
- x—x— FENCE
- ⊕ OVERBURDEN MONITORING WELL LOCATIONS
- ⊙ BEDROCK MONITORING WELL LOCATIONS
- GROUNDWATER SUMP LOCATIONS (APPROX.)
- ⊗ SOIL SAMPLE LOCATIONS (APPROX.)



INSET "A"



SOIL SAMPLE NOTES:

IW - 3' OFF BOTTOM, 5' FROM NORTH PIT WALL

IE - 2' OFF BOTTOM, BELOW CONC., 5' FROM NORTH PIT WALL

OW - 4' BELOW CONC.

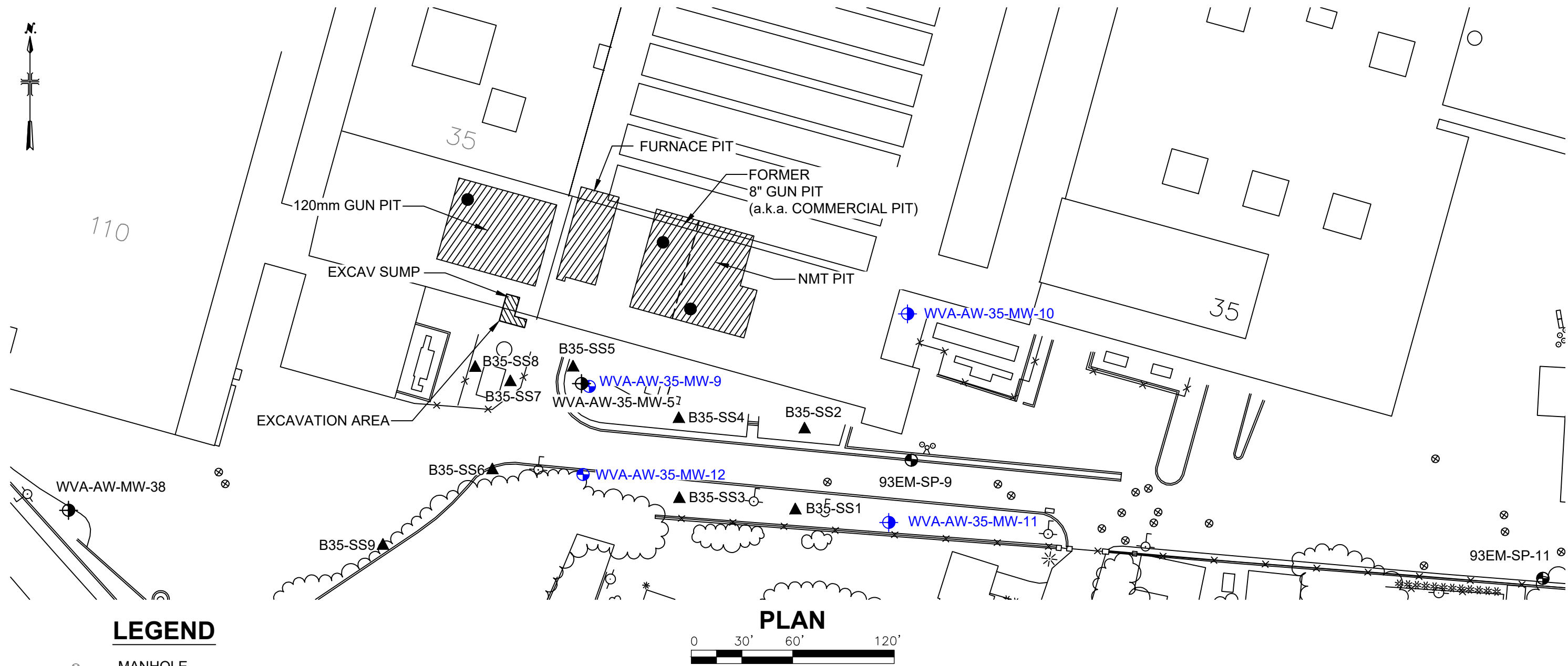
OE - 6" OUT FROM UTILITY PIT, BELOW CONDUIT

AW - ADJACENT TO EXISTING WALL ON WEST SIDE OF FENCE POST

AD - ADJACENT TO EXISTING DUCT

WATERVLIET ARSENAL
MAIN MANUFACTURING AREA
PLATING AREA SITE INVESTIGATION

2018 EXCAVATION AND
GROUNDWATER SAMPLING LOCATIONS



LEGEND

- MANHOLE
- HYDRANT
- BOLLARD
- UTILITY POLE
- UTILITY/LIGHT POLE
- FENCE
- OVERBURDEN MONITORING WELL LOCATIONS
- BEDROCK MONITORING WELL LOCATIONS
- OVERBURDEN MONITORING WELL LOCATIONS (INSTALLED 2019)
- BEDROCK MONITORING WELL LOCATIONS (INSTALLED 2019)
- GROUNDWATER SUMP LOCATIONS (APPROX.)
- SOIL SAMPLE LOCATIONS (APPROX.)
- SURFACE SOIL SAMPLE LOCATIONS (2019)

WATERVLIET ARSENAL
MAIN MANUFACTURING AREA
PLATING AREA SITE INVESTIGATION

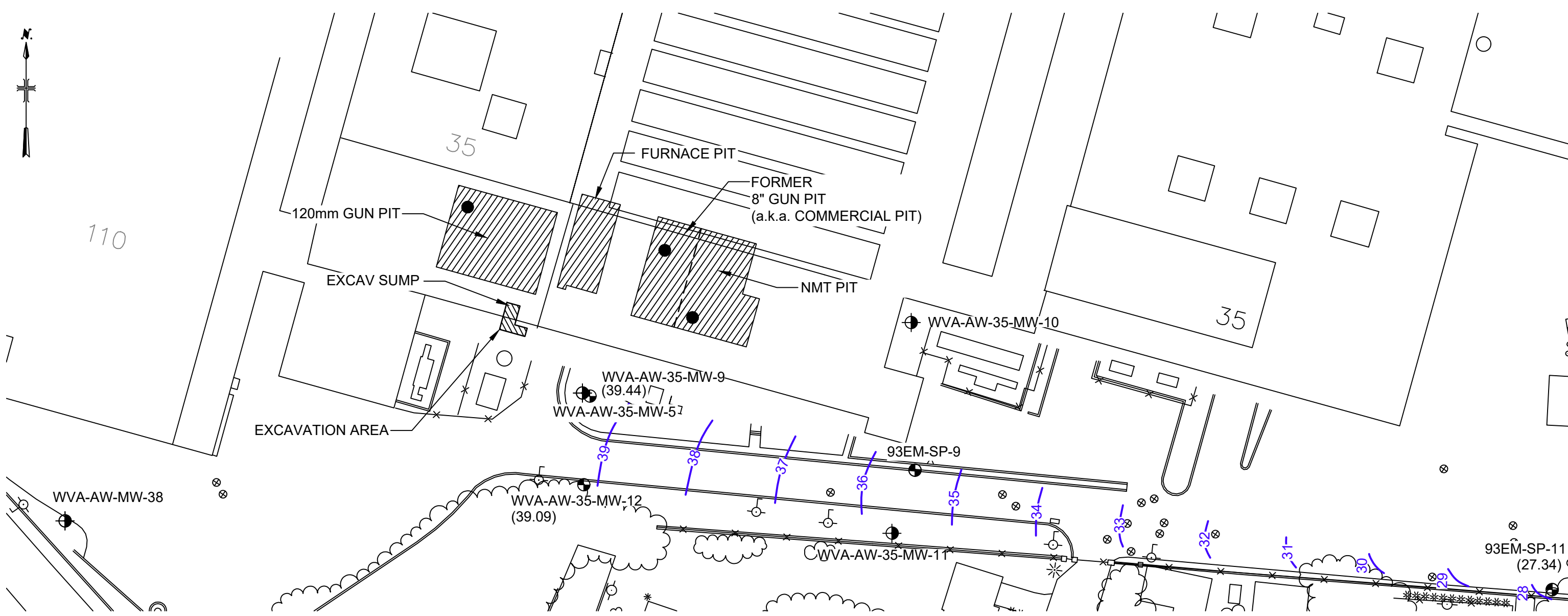
SAMPLING LOCATIONS

ARCADIS

Design & Consultancy
for natural and
built assets

FIGURE
3-1

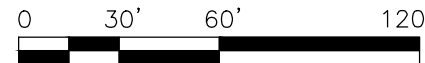
CITY/Reed DIV/Group/Reed DE/Reed LD/Op PIC/Op PM/Reed TM/Op LVR/Op/ON=OFF=REF
C:\Users\ym2640\BIM 360\Arcadis\ANA - USACE - BALTIMORE\Project Files\Watervliet Arsenal\2020\3001188\01-DWG\Figure 5-1.dwg LAYOUT: 5-1 SAVED: 2/6/2020 5:31 PM ACADVER: 23.1S (LMS TECH) PAGES: 5-1 PLOT: 2/6/2020 5:37 PM BY: Y.M. BABU



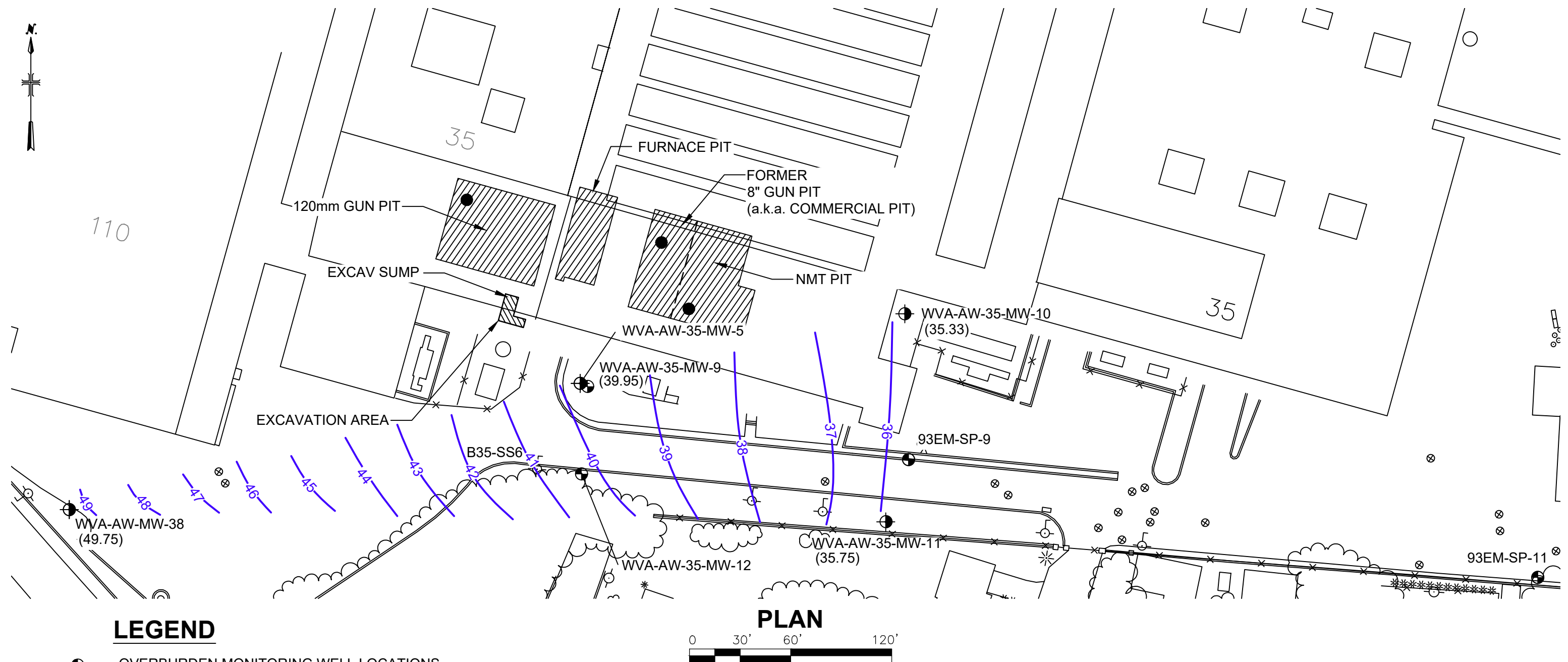
LEGEND

- OVERBURDEN MONITORING WELL LOCATIONS
- BEDROCK MONITORING WELL LOCATIONS
- GROUNDWATER SUMP LOCATIONS (APPROX.)
- ⊗ MANHOLE
- ⋈ HYDRANT
- BOLLARD
- UTILITY POLE
- UTILITY/LIGHT POLE
- X—X— FENCE
- 39 — GROUNDWATER ELEVATION CONTOUR
- (39.09) GROUNDWATER ELEVATION (FT AMSL) (FEET ABOVE MEAN SEA LEVEL)

PLAN

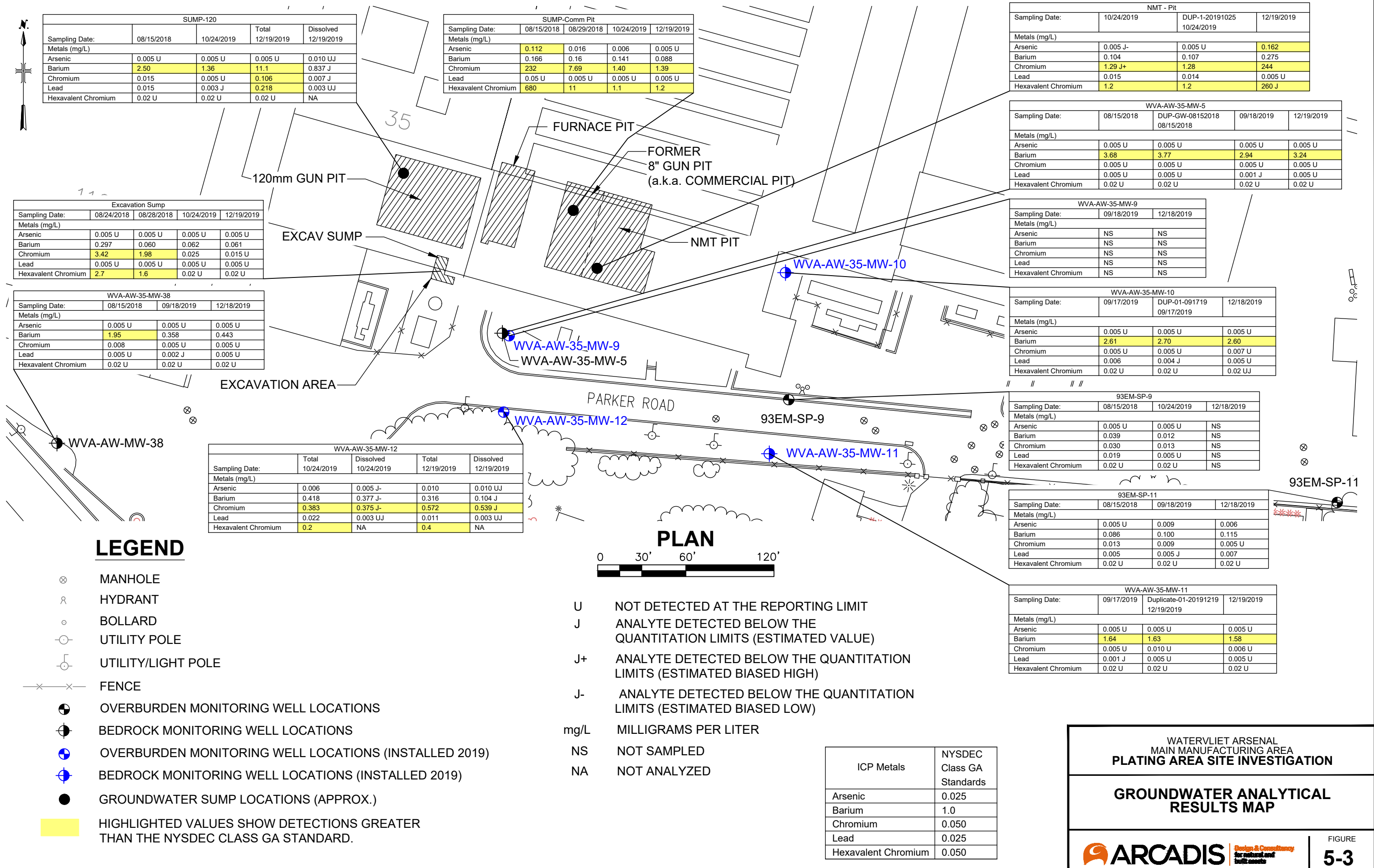


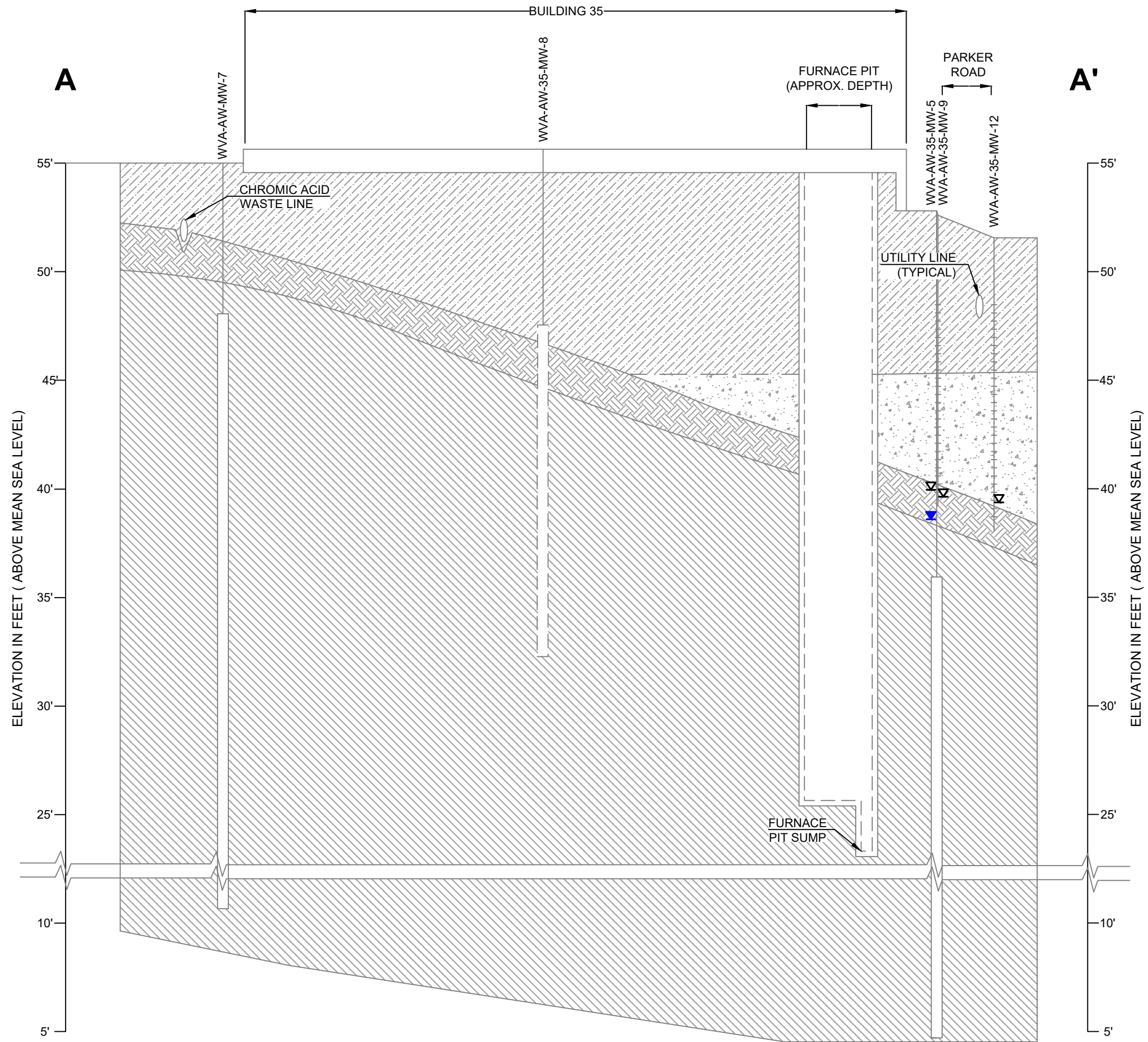
WATERVLIET ARSENAL MAIN MANUFACTURING AREA PLATING AREA SITE INVESTIGATION	
OVERBURDEN POTENTIOMETRIC CONTOUR MAP DECEMBER 8, 2019	
 ARCADIS Design & Consultancy for natural and built assets	FIGURE 5-1



LEGEND

WATERVLIT ARSENAL
MAIN MANUFACTURING AREA
PLATING AREA SITE INVESTIGATION





LEGEND:

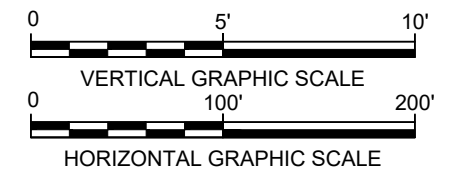
- WELL ID
- GROUNDWATER ELEVATION MEASURED (9-17-2019)
- GROUNDWATER ELEVATION MEASURED (12-8-2019)
- SCREENED INTERVAL
- OPEN INTERVAL
- EXTENT OF BORING

NOTES:

- FOUR (4) KNOWN UTILITY LINES RUN UNDER PARKER ROAD TO THE SOUTH OF BUILDING 5. THEY ARE:

- A) SOLUBLE OIL WASTE
- B) CHROMIC ACID WASTE
- C) STORM SEWER
- D) WATER MAIN

- FILL
- COARSE ALLUVIUM
- WEATHERED BEDROCK
- BEDROCK



WATERLIET ARSENAL
MAIN MANUFACTURING AREA
PLATING AREA SITE INVESTIGATION

INVESTIGATION AREA CROSS SECTION
A-A'



APPENDIX A

Laboratory Reporting Forms for 2018 and 2019 Sampling





Experience is the solution

314 North Pearl Street ♦ Albany, New York 12207
(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

June 17, 2019

Andy Vitolins
Arcadis
855 Route 146, Suite 210
Clifton Park, NY 12065
TEL: (518) 250-7382

Work Order No: **180815099**
PO#: 02118217.0000

RE: Watervliet Arsenal

Dear Andy Vitolins:

Adirondack Environmental Services, Inc received 7 samples on 8/15/2018 for the analyses presented in the following report.

Please see case narrative for specifics on analysis.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink that reads "Tara Daniels".

Tara Daniels
Laboratory Director

ELAP#: 10709

Adirondack Environmental Services, Inc

CASE NARRATIVE

CLIENT: Arcadis

Date: 17-Jun-19

Project: Watervliet Arsenal

Lab Order: 180815099

Sample containers were supplied by Adirondack Environmental Services.

At the request of client, this is an updated report to correct sample identification for sample 180815099-001 to SUMP-120 PIT-08152018.

Definitions - RL: Reporting Limit DF: Dilution factor

Qualifiers:	ND : Not Detected at reporting limit	C: CCV below acceptable Limits
	J: Analyte detected below quantitation limit	C+: CCV above acceptable Limits
	B: Analyte detected in Blank	S: LCS Spike recovery is below acceptable limits
	X : Exceeds maximum contamination limit	S+: LCS Spike recovery is above acceptable limits
	H: Hold time exceeded	Z: Duplication outside acceptable limits
	N: Matrix Spike below acceptable limits	T : Tentatively Identified Compound-Estimated
	N+: Matrix Spike is above acceptable limits	E :Above quantitation range-Estimated

Note : All Results are reported as wet weight unless noted

The results relate only to the items tested. Information supplied by the client is assumed to be correct.

Adirondack Environmental Services, Inc

Date: 17-Jun-19

CLIENT: Arcadis
Work Order: 180815099
Reference: Watervliet Arsenal /
PO#: 02118217.0000

Client Sample ID: SUMP-120 PIT-08152018
Collection Date: 8/15/2018 8:50:00 AM
Lab Sample ID: 180815099-001
Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP METALS - EPA 200.7 REV 4.4						Analyst: KH
(Prep: - 8/16/2018)						
Aluminum	0.342	0.100		mg/L	1	8/16/2018 1:26:00 PM
Antimony	ND	0.060		mg/L	1	8/16/2018 1:26:00 PM
Arsenic	ND	0.005		mg/L	1	8/16/2018 1:26:00 PM
Barium	2.50	0.010		mg/L	1	8/16/2018 1:26:00 PM
Beryllium	ND	0.005		mg/L	1	8/16/2018 1:26:00 PM
Cadmium	ND	0.005		mg/L	1	8/16/2018 1:26:00 PM
Calcium	23.6	0.050		mg/L	1	8/16/2018 1:26:00 PM
Chromium	0.015	0.005		mg/L	1	8/16/2018 1:26:00 PM
Cobalt	ND	0.050		mg/L	1	8/16/2018 1:26:00 PM
Copper	0.047	0.005		mg/L	1	8/16/2018 1:26:00 PM
Iron	6.44	0.050		mg/L	1	8/16/2018 1:26:00 PM
Lead	0.015	0.005		mg/L	1	8/16/2018 1:26:00 PM
Magnesium	7.52	0.050		mg/L	1	8/16/2018 1:26:00 PM
Manganese	2.48	0.020		mg/L	1	8/16/2018 1:26:00 PM
Nickel	ND	0.020		mg/L	1	8/16/2018 1:26:00 PM
Potassium	24.3	0.050		mg/L	1	8/16/2018 1:26:00 PM
Selenium	ND	0.005		mg/L	1	8/16/2018 1:26:00 PM
Silver	ND	0.010		mg/L	1	8/16/2018 1:26:00 PM
Sodium	333	0.500		mg/L	10	8/16/2018 1:37:00 PM
Thallium	0.019	0.010		mg/L	1	8/16/2018 1:26:00 PM
Vanadium	ND	0.020		mg/L	1	8/16/2018 1:26:00 PM
Zinc	0.118	0.010		mg/L	1	8/16/2018 1:26:00 PM
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 8/16/2018)						
Mercury	ND	0.0002		mg/L	1	8/16/2018 1:20:55 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	8/15/2018 5:15:00 PM

Adirondack Environmental Services, Inc

Date: 17-Jun-19

CLIENT: Arcadis

Client Sample ID: SUMP-COMMPIT-08152018

Work Order: 180815099

Collection Date: 8/15/2018 9:00:00 AM

Reference: Watervliet Arsenal /

Lab Sample ID: 180815099-002

PO#: 02118217.0000

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP METALS - EPA 200.7 REV 4.4						Analyst: KH
(Prep: - 8/16/2018)						
Aluminum	ND	1.00		mg/L	10	8/16/2018 3:14:00 PM
Antimony	4.09	0.600		mg/L	10	8/16/2018 3:14:00 PM
Arsenic	0.112	0.050		mg/L	10	8/16/2018 3:14:00 PM
Barium	0.166	0.100		mg/L	10	8/16/2018 3:14:00 PM
Beryllium	ND	0.050		mg/L	10	8/16/2018 3:14:00 PM
Cadmium	ND	0.050		mg/L	10	8/16/2018 3:14:00 PM
Calcium	191	0.500		mg/L	10	8/16/2018 3:14:00 PM
Chromium	232	0.500		mg/L	100	8/16/2018 3:18:00 PM
Cobalt	ND	0.500		mg/L	10	8/16/2018 3:14:00 PM
Copper	ND	0.050		mg/L	10	8/16/2018 3:14:00 PM
Iron	ND	0.500		mg/L	10	8/16/2018 3:14:00 PM
Lead	ND	0.050		mg/L	10	8/16/2018 3:14:00 PM
Magnesium	38.3	0.500		mg/L	10	8/16/2018 3:14:00 PM
Manganese	0.739	0.200		mg/L	10	8/16/2018 3:14:00 PM
Nickel	ND	0.200		mg/L	10	8/16/2018 3:14:00 PM
Potassium	12.9	0.500		mg/L	10	8/16/2018 3:14:00 PM
Selenium	ND	0.050		mg/L	10	8/16/2018 3:14:00 PM
Silver	ND	0.100		mg/L	10	8/16/2018 3:14:00 PM
Sodium	199	0.500		mg/L	10	8/16/2018 3:14:00 PM
Thallium	ND	0.100		mg/L	10	8/16/2018 3:14:00 PM
Vanadium	ND	0.200		mg/L	10	8/16/2018 3:14:00 PM
Zinc	0.113	0.100		mg/L	10	8/16/2018 3:14:00 PM
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 8/16/2018)						
Mercury	ND	0.0002		mg/L	1	8/16/2018 1:22:36 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	680	100		mg/L	5000	8/15/2018 5:15:00 PM

Adirondack Environmental Services, Inc

Date: 17-Jun-19

CLIENT: Arcadis
Work Order: 180815099
Reference: Watervliet Arsenal /
PO#: 02118217.0000

Client Sample ID: WVA-AW-MN-38-08152018
Collection Date: 8/15/2018 3:55:00 PM
Lab Sample ID: 180815099-003
Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP METALS - EPA 200.7 REV 4.4						Analyst: KH
(Prep: - 8/16/2018)						
Aluminum	ND	0.100		mg/L	1	8/16/2018 1:43:00 PM
Antimony	ND	0.060		mg/L	1	8/16/2018 1:43:00 PM
Arsenic	ND	0.005		mg/L	1	8/16/2018 1:43:00 PM
Barium	1.95	0.010		mg/L	1	8/16/2018 1:43:00 PM
Beryllium	ND	0.005		mg/L	1	8/16/2018 1:43:00 PM
Cadmium	ND	0.005		mg/L	1	8/16/2018 1:43:00 PM
Calcium	77.2	0.050		mg/L	1	8/16/2018 1:43:00 PM
Chromium	0.008	0.005		mg/L	1	8/16/2018 1:43:00 PM
Cobalt	ND	0.050		mg/L	1	8/16/2018 1:43:00 PM
Copper	0.007	0.005		mg/L	1	8/16/2018 1:43:00 PM
Iron	0.124	0.050		mg/L	1	8/16/2018 1:43:00 PM
Lead	ND	0.005		mg/L	1	8/16/2018 1:43:00 PM
Magnesium	31.9	0.050		mg/L	1	8/16/2018 1:43:00 PM
Manganese	0.171	0.020		mg/L	1	8/16/2018 1:43:00 PM
Nickel	ND	0.020		mg/L	1	8/16/2018 1:43:00 PM
Potassium	20.2	0.050		mg/L	1	8/16/2018 1:43:00 PM
Selenium	ND	0.005		mg/L	1	8/16/2018 1:43:00 PM
Silver	ND	0.010		mg/L	1	8/16/2018 1:43:00 PM
Sodium	174	0.500		mg/L	10	8/16/2018 2:00:00 PM
Thallium	0.011	0.010		mg/L	1	8/16/2018 1:43:00 PM
Vanadium	ND	0.020		mg/L	1	8/16/2018 1:43:00 PM
Zinc	ND	0.010		mg/L	1	8/16/2018 1:43:00 PM
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 8/16/2018)						
Mercury	ND	0.0002		mg/L	1	8/16/2018 1:24:17 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	8/15/2018 5:15:00 PM

Adirondack Environmental Services, Inc

Date: 17-Jun-19

CLIENT: Arcadis
Work Order: 180815099
Reference: Watervliet Arsenal /
PO#: 02118217.0000

Client Sample ID: 93EM-SP-9-08152018
Collection Date: 8/15/2018 3:40:00 PM
Lab Sample ID: 180815099-004
Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP METALS - EPA 200.7 REV 4.4						Analyst: KH
(Prep: - 8/16/2018)						
Aluminum	0.368	0.100		mg/L	1	8/16/2018 2:05:00 PM
Antimony	ND	0.060		mg/L	1	8/16/2018 2:05:00 PM
Arsenic	ND	0.005		mg/L	1	8/16/2018 2:05:00 PM
Barium	0.039	0.010		mg/L	1	8/16/2018 2:05:00 PM
Beryllium	ND	0.005		mg/L	1	8/16/2018 2:05:00 PM
Cadmium	ND	0.005		mg/L	1	8/16/2018 2:05:00 PM
Calcium	32.2	0.050		mg/L	1	8/16/2018 2:05:00 PM
Chromium	0.030	0.005		mg/L	1	8/16/2018 2:05:00 PM
Cobalt	ND	0.050		mg/L	1	8/16/2018 2:05:00 PM
Copper	0.019	0.005		mg/L	1	8/16/2018 2:05:00 PM
Iron	0.935	0.050		mg/L	1	8/16/2018 2:05:00 PM
Lead	0.019	0.005		mg/L	1	8/16/2018 2:05:00 PM
Magnesium	2.42	0.050		mg/L	1	8/16/2018 2:05:00 PM
Manganese	0.069	0.020		mg/L	1	8/16/2018 2:05:00 PM
Nickel	ND	0.020		mg/L	1	8/16/2018 2:05:00 PM
Potassium	2.01	0.050		mg/L	1	8/16/2018 2:05:00 PM
Selenium	ND	0.005		mg/L	1	8/16/2018 2:05:00 PM
Silver	ND	0.010		mg/L	1	8/16/2018 2:05:00 PM
Sodium	19.7	0.050		mg/L	1	8/16/2018 2:05:00 PM
Thallium	ND	0.010		mg/L	1	8/16/2018 2:05:00 PM
Vanadium	ND	0.020		mg/L	1	8/16/2018 2:05:00 PM
Zinc	0.059	0.010		mg/L	1	8/16/2018 2:05:00 PM
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 8/16/2018)						
Mercury	ND	0.0002		mg/L	1	8/16/2018 1:25:59 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	8/15/2018 5:15:00 PM

Adirondack Environmental Services, Inc

Date: 17-Jun-19

CLIENT: Arcadis
Work Order: **180815099**
Reference: Watervliet Arsenal /
PO#: 02118217.0000

Client Sample ID: 93EM-SP-11-08152018
Collection Date: 8/15/2018 3:03:00 PM
Lab Sample ID: 180815099-005
Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP METALS - EPA 200.7 REV 4.4						Analyst: KH
(Prep: - 8/16/2018)						
Aluminum	0.978	0.100		mg/L	1	8/16/2018 2:08:00 PM
Antimony	ND	0.060		mg/L	1	8/16/2018 2:08:00 PM
Arsenic	ND	0.005		mg/L	1	8/16/2018 2:08:00 PM
Barium	0.086	0.010		mg/L	1	8/16/2018 2:08:00 PM
Beryllium	ND	0.005		mg/L	1	8/16/2018 2:08:00 PM
Cadmium	ND	0.005		mg/L	1	8/16/2018 2:08:00 PM
Calcium	57.7	0.050		mg/L	1	8/16/2018 2:08:00 PM
Chromium	0.013	0.005		mg/L	1	8/16/2018 2:08:00 PM
Cobalt	ND	0.050		mg/L	1	8/16/2018 2:08:00 PM
Copper	0.012	0.005		mg/L	1	8/16/2018 2:08:00 PM
Iron	1.68	0.050		mg/L	1	8/16/2018 2:08:00 PM
Lead	0.005	0.005		mg/L	1	8/16/2018 2:08:00 PM
Magnesium	18.9	0.050		mg/L	1	8/16/2018 2:08:00 PM
Manganese	0.453	0.020		mg/L	1	8/16/2018 2:08:00 PM
Nickel	ND	0.020		mg/L	1	8/16/2018 2:08:00 PM
Potassium	13.0	0.050		mg/L	1	8/16/2018 2:08:00 PM
Selenium	ND	0.005		mg/L	1	8/16/2018 2:08:00 PM
Silver	ND	0.010		mg/L	1	8/16/2018 2:08:00 PM
Sodium	107	0.500		mg/L	10	8/16/2018 2:36:00 PM
Thallium	0.011	0.010		mg/L	1	8/16/2018 2:08:00 PM
Vanadium	ND	0.020		mg/L	1	8/16/2018 2:08:00 PM
Zinc	0.087	0.010		mg/L	1	8/16/2018 2:08:00 PM
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 8/16/2018)						
Mercury	ND	0.0002		mg/L	1	8/16/2018 1:27:41 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	8/15/2018 5:15:00 PM

Adirondack Environmental Services, Inc

Date: 17-Jun-19

CLIENT: Arcadis

Client Sample ID: WVA-AW-35-MW-S-08152018

Work Order: 180815099

Collection Date: 8/15/2018 3:55:00 PM

Reference: Watervliet Arsenal /

Lab Sample ID: 180815099-006

PO#: 02118217.0000

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP METALS - EPA 200.7 REV 4.4						Analyst: KH
(Prep: - 8/16/2018)						
Aluminum	ND	0.100		mg/L	1	8/16/2018 2:43:00 PM
Antimony	ND	0.060		mg/L	1	8/16/2018 2:43:00 PM
Arsenic	ND	0.005		mg/L	1	8/16/2018 2:43:00 PM
Barium	3.68	0.010		mg/L	1	8/16/2018 2:43:00 PM
Beryllium	ND	0.005		mg/L	1	8/16/2018 2:43:00 PM
Cadmium	ND	0.005		mg/L	1	8/16/2018 2:43:00 PM
Calcium	24.4	0.050		mg/L	1	8/16/2018 2:43:00 PM
Chromium	ND	0.005		mg/L	1	8/16/2018 2:43:00 PM
Cobalt	ND	0.050		mg/L	1	8/16/2018 2:43:00 PM
Copper	ND	0.005		mg/L	1	8/16/2018 2:43:00 PM
Iron	0.050	0.050		mg/L	1	8/16/2018 2:43:00 PM
Lead	ND	0.005		mg/L	1	8/16/2018 2:43:00 PM
Magnesium	7.44	0.050		mg/L	1	8/16/2018 2:43:00 PM
Manganese	0.114	0.020		mg/L	1	8/16/2018 2:43:00 PM
Nickel	ND	0.020		mg/L	1	8/16/2018 2:43:00 PM
Potassium	20.4	0.050		mg/L	1	8/16/2018 2:43:00 PM
Selenium	ND	0.005		mg/L	1	8/16/2018 2:43:00 PM
Silver	ND	0.010		mg/L	1	8/16/2018 2:43:00 PM
Sodium	269	0.500		mg/L	10	8/16/2018 2:48:00 PM
Thallium	0.014	0.010		mg/L	1	8/16/2018 2:43:00 PM
Vanadium	ND	0.020		mg/L	1	8/16/2018 2:43:00 PM
Zinc	ND	0.010		mg/L	1	8/16/2018 2:43:00 PM
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 8/16/2018)						
Mercury	ND	0.0002		mg/L	1	8/16/2018 1:29:23 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	8/15/2018 5:15:00 PM

Adirondack Environmental Services, Inc

Date: 17-Jun-19

CLIENT: Arcadis
Work Order: 180815099
Reference: Watervliet Arsenal /
PO#: 02118217.0000

Client Sample ID: DUP-GW-08152018
Collection Date: 8/15/2018
Lab Sample ID: 180815099-007
Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP METALS - EPA 200.7 REV 4.4						Analyst: KH
(Prep: - 8/16/2018)						
Aluminum	ND	0.100		mg/L	1	8/16/2018 3:00:00 PM
Antimony	ND	0.060		mg/L	1	8/16/2018 3:00:00 PM
Arsenic	ND	0.005		mg/L	1	8/16/2018 3:00:00 PM
Barium	3.77	0.010		mg/L	1	8/16/2018 3:00:00 PM
Beryllium	ND	0.005		mg/L	1	8/16/2018 3:00:00 PM
Cadmium	ND	0.005		mg/L	1	8/16/2018 3:00:00 PM
Calcium	25.0	0.050		mg/L	1	8/16/2018 3:00:00 PM
Chromium	ND	0.005		mg/L	1	8/16/2018 3:00:00 PM
Cobalt	ND	0.050		mg/L	1	8/16/2018 3:00:00 PM
Copper	ND	0.005		mg/L	1	8/16/2018 3:00:00 PM
Iron	ND	0.050		mg/L	1	8/16/2018 3:00:00 PM
Lead	ND	0.005		mg/L	1	8/16/2018 3:00:00 PM
Magnesium	7.60	0.050		mg/L	1	8/16/2018 3:00:00 PM
Manganese	0.117	0.020		mg/L	1	8/16/2018 3:00:00 PM
Nickel	ND	0.020		mg/L	1	8/16/2018 3:00:00 PM
Potassium	20.9	0.050		mg/L	1	8/16/2018 3:00:00 PM
Selenium	ND	0.005		mg/L	1	8/16/2018 3:00:00 PM
Silver	ND	0.010		mg/L	1	8/16/2018 3:00:00 PM
Sodium	327	0.500		mg/L	10	8/16/2018 3:04:00 PM
Thallium	0.016	0.010		mg/L	1	8/16/2018 3:00:00 PM
Vanadium	ND	0.020		mg/L	1	8/16/2018 3:00:00 PM
Zinc	ND	0.010		mg/L	1	8/16/2018 3:00:00 PM
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 8/16/2018)						
Mercury	ND	0.0002		mg/L	1	8/16/2018 1:31:05 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	8/15/2018 5:15:00 PM



CHAIN OF CUSTODY RECORD

AES Work Order#:

180815099

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TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

- (a) Neither **Adirondack Environmental Services, Inc.**, nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.**'s performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.
- (b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.
- (c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.
- (d) In no event shall **Adirondack Environmental Services, Inc.**, its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.
- (e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**
- (f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.
- (g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.



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August 27, 2018

Andy Vitolins
Arcadis
855 Route 146, Suite 210
Clifton Park, NY 12065
TEL: (518) 250-7382

Work Order No: 180824037

RE: Watervliet Arsenal

Dear Andy Vitolins:

Adirondack Environmental Services, Inc received 1 sample on 8/24/2018 for the analyses presented in the following report.

Please see case narrative for specifics on analysis.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Krzysztof Trafalski
Laboratory Manager

ELAP#: 10709

Adirondack Environmental Services, Inc

CASE NARRATIVE

CLIENT: Arcadis

Date: 27-Aug-18

Project: Watervliet Arsenal

Lab Order: 180824037

Sample containers were supplied by Adirondack Environmental Services.

Definitions - RL: Reporting Limit DF: Dilution factor

Qualifiers:	ND : Not Detected at reporting limit	C: CCV below acceptable Limits
	J: Analyte detected below quantitation limit	C+: CCV above acceptable Limits
	B: Analyte detected in Blank	S: LCS Spike recovery is below acceptable limits
	X : Exceeds maximum contamination limit	S+: LCS Spike recovery is above acceptable limits
	H: Hold time exceeded	Z: Duplication outside acceptable limits
	N: Matrix Spike below acceptable limits	T : Tentatively Identified Compound-Estimated
	N+: Matrix Spike is above acceptable limits	E :Above quantitation range-Estimated

Note : All Results are reported as wet weight unless noted

The results relate only to the items tested. Information supplied by the client is assumed to be correct.

Adirondack Environmental Services, Inc

Date: 27-Aug-18

CLIENT: Arcadis
Work Order: 180824037
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: Excav Sump
Collection Date: 8/24/2018 1:45:00 PM
Lab Sample ID: 180824037-001
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP METALS - EPA 200.7 REV 4.4						Analyst: KH
(Prep: - 8/27/2018)						
Aluminum	4.84	0.100		mg/L	1	8/27/2018 1:40:00 PM
Antimony	ND	0.060		mg/L	1	8/27/2018 1:40:00 PM
Arsenic	ND	0.005		mg/L	1	8/27/2018 1:40:00 PM
Barium	0.297	0.010		mg/L	1	8/27/2018 1:40:00 PM
Beryllium	ND	0.005		mg/L	1	8/27/2018 1:40:00 PM
Cadmium	ND	0.005		mg/L	1	8/27/2018 1:40:00 PM
Calcium	72.9	0.050		mg/L	1	8/27/2018 1:40:00 PM
Chromium	3.42	0.005		mg/L	1	8/27/2018 1:40:00 PM
Cobalt	ND	0.050		mg/L	1	8/27/2018 1:40:00 PM
Copper	ND	0.005		mg/L	1	8/27/2018 1:40:00 PM
Iron	10.6	0.050		mg/L	1	8/27/2018 1:40:00 PM
Lead	ND	0.005		mg/L	1	8/27/2018 1:40:00 PM
Magnesium	17.1	0.050		mg/L	1	8/27/2018 1:40:00 PM
Manganese	0.407	0.020		mg/L	1	8/27/2018 1:40:00 PM
Nickel	ND	0.020		mg/L	1	8/27/2018 1:40:00 PM
Potassium	16.2	0.050		mg/L	1	8/27/2018 1:40:00 PM
Selenium	ND	0.005		mg/L	1	8/27/2018 1:40:00 PM
Silver	ND	0.010		mg/L	1	8/27/2018 1:40:00 PM
Sodium	16.3	0.050		mg/L	1	8/27/2018 1:40:00 PM
Thallium	0.027	0.010		mg/L	1	8/27/2018 1:40:00 PM
Vanadium	ND	0.020		mg/L	1	8/27/2018 1:40:00 PM
Zinc	0.033	0.010		mg/L	1	8/27/2018 1:40:00 PM
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 8/27/2018)						
Mercury	ND	0.0002		mg/L	1	8/27/2018 1:03:30 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	2.7	1.0		mg/L	50	8/24/2018 3:45:00 PM



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TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

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- (b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.
- (c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.
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- (e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**
- (f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.
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August 28, 2018

Andy Vitolins
Arcadis
855 Route 146, Suite 210
Clifton Park, NY 12065
TEL: (518) 250-7382

Work Order No: 180824021

RE: Watervliet Arsenal

Dear Andy Vitolins:

Adirondack Environmental Services, Inc received 9 samples on 8/24/2018 for the analyses presented in the following report.

Please see case narrative for specifics on analysis.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Krzysztof Trafalski
Laboratory Manager

ELAP#: 10709

Adirondack Environmental Services, Inc

CASE NARRATIVE

CLIENT: Arcadis

Date: 28-Aug-18

Project: Watervliet Arsenal

Lab Order: 180824021

Sample containers were supplied by Adirondack Environmental Services.

Definitions - RL: Reporting Limit DF: Dilution factor

Qualifiers:	ND : Not Detected at reporting limit	C: CCV below acceptable Limits
	J: Analyte detected below quantitation limit	C+: CCV above acceptable Limits
	B: Analyte detected in Blank	S: LCS Spike recovery is below acceptable limits
	X : Exceeds maximum contamination limit	S+: LCS Spike recovery is above acceptable limits
	H: Hold time exceeded	Z: Duplication outside acceptable limits
	N: Matrix Spike below acceptable limits	T : Tentatively Identified Compound-Estimated
	N+: Matrix Spike is above acceptable limits	E :Above quantitation range-Estimated

Note : All Results are reported as wet weight unless noted

The results relate only to the items tested. Information supplied by the client is assumed to be correct.

Adirondack Environmental Services, Inc

Date: 28-Aug-18

CLIENT: Arcadis
Project: Watervliet Arsenal**LabWork Order:** 180824021
PO#:**Lab SampleID:** 180824021-001**Collection Date:** 8/24/2018**Client Sample ID:** ADJ Ext Wall**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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ICP METALS-EPA 6010CAnalyst: **WB**

(Prep: SW3050B - 8/24/2018)

Aluminum	12000	53.0		µg/g-dry	10	8/27/2018 2:32:13 PM
Antimony	ND	3.20		µg/g-dry	1	8/27/2018 2:27:48 PM
Arsenic	4.89	0.270		µg/g-dry	1	8/27/2018 2:27:48 PM
Barium	73.3	0.530		µg/g-dry	1	8/27/2018 2:27:48 PM
Beryllium	0.546	0.270		µg/g-dry	1	8/27/2018 2:27:48 PM
Cadmium	1.45	0.270		µg/g-dry	1	8/27/2018 2:27:48 PM
Calcium	13600	270		µg/g-dry	10	8/27/2018 2:32:13 PM
Chromium	15.6	0.270		µg/g-dry	1	8/27/2018 2:27:48 PM
Cobalt	7.58	2.70		µg/g-dry	1	8/27/2018 2:27:48 PM
Copper	30.6	0.270		µg/g-dry	1	8/27/2018 2:27:48 PM
Iron	31200	270		µg/g-dry	100	8/27/2018 4:18:15 PM
Lead	15.8	0.270		µg/g-dry	1	8/27/2018 2:27:48 PM
Magnesium	6240	270		µg/g-dry	10	8/27/2018 2:32:13 PM
Manganese	423	0.530		µg/g-dry	1	8/27/2018 2:27:48 PM
Nickel	19.2	2.70		µg/g-dry	1	8/27/2018 2:27:48 PM
Potassium	1430	27.0		µg/g-dry	1	8/27/2018 2:27:48 PM
Selenium	ND	0.270		µg/g-dry	1	8/27/2018 2:27:48 PM
Silver	ND	1.10		µg/g-dry	1	8/27/2018 2:27:48 PM
Sodium	205	27.0	B	µg/g-dry	1	8/27/2018 2:27:48 PM
Thallium	ND	0.530		µg/g-dry	1	8/27/2018 2:27:48 PM
Vanadium	20.3	2.70		µg/g-dry	1	8/27/2018 2:27:48 PM
Zinc	68.7	0.530		µg/g-dry	1	8/27/2018 2:27:48 PM

MERCURY - SW 7471BAnalyst: **AVB**

(Prep: SW7471B - 8/24/2018)

Mercury	ND	0.021		µg/g-dry	1	8/24/2018 3:53:46 PM
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HEXAVALENT CHROMIUM - SW 7196A (3060A)Analyst: **DAA**

(Prep: SW3060A - 8/27/2018)

Chromium, Hexavalent	ND	1.1	S	µg/g-dry	1	8/28/2018 11:30:00 AM
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MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)Analyst: **TSZ**

Percent Moisture	5.8	0.1		wt%	1	8/24/2018
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Adirondack Environmental Services, Inc

Date: 28-Aug-18

CLIENT: Arcadis
Project: Watervliet Arsenal**LabWork Order:** 180824021
PO#:**Lab SampleID:** 180824021-002**Collection Date:** 8/24/2018**Client Sample ID:** ADJ w. Duct**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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ICP METALS-EPA 6010CAnalyst: **WB**

(Prep: SW3050B - 8/24/2018)

Aluminum	11500	56.0		µg/g-dry	10	8/27/2018 2:47:30 PM
Antimony	ND	3.40		µg/g-dry	1	8/27/2018 2:36:25 PM
Arsenic	3.55	0.280		µg/g-dry	1	8/27/2018 2:36:25 PM
Barium	75.4	0.560		µg/g-dry	1	8/27/2018 2:36:25 PM
Beryllium	0.520	0.280		µg/g-dry	1	8/27/2018 2:36:25 PM
Cadmium	1.44	0.280		µg/g-dry	1	8/27/2018 2:36:25 PM
Calcium	4260	280		µg/g-dry	10	8/27/2018 2:47:30 PM
Chromium	19.4	0.280		µg/g-dry	1	8/27/2018 2:36:25 PM
Cobalt	7.67	2.80		µg/g-dry	1	8/27/2018 2:36:25 PM
Copper	28.0	0.280		µg/g-dry	1	8/27/2018 2:36:25 PM
Iron	28000	280		µg/g-dry	100	8/27/2018 4:28:13 PM
Lead	14.3	0.280		µg/g-dry	1	8/27/2018 2:36:25 PM
Magnesium	6090	280		µg/g-dry	10	8/27/2018 2:47:30 PM
Manganese	530	0.560		µg/g-dry	1	8/27/2018 2:36:25 PM
Nickel	19.1	2.80		µg/g-dry	1	8/27/2018 2:36:25 PM
Potassium	1350	28.0		µg/g-dry	1	8/27/2018 2:36:25 PM
Selenium	ND	0.280		µg/g-dry	1	8/27/2018 2:36:25 PM
Silver	ND	1.10		µg/g-dry	1	8/27/2018 2:36:25 PM
Sodium	157	28.0	B	µg/g-dry	1	8/27/2018 2:36:25 PM
Thallium	ND	0.560		µg/g-dry	1	8/27/2018 2:36:25 PM
Vanadium	18.9	2.80		µg/g-dry	1	8/27/2018 2:36:25 PM
Zinc	111	0.560		µg/g-dry	1	8/27/2018 2:36:25 PM

MERCURY - SW 7471BAnalyst: **AVB**

(Prep: SW7471B - 8/24/2018)

Mercury	ND	0.022		µg/g-dry	1	8/24/2018 3:55:28 PM
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HEXAVALENT CHROMIUM - SW 7196A (3060A)Analyst: **DAA**

(Prep: SW3060A - 8/27/2018)

Chromium, Hexavalent	ND	1.1	S	µg/g-dry	1	8/28/2018 11:30:00 AM
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MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)Analyst: **TSZ**

Percent Moisture	11.0	0.1		wt%	1	8/24/2018
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Adirondack Environmental Services, Inc

Date: 28-Aug-18

CLIENT: Arcadis
Project: Watervliet Arsenal**LabWork Order:** 180824021
PO#:**Lab SampleID:** 180824021-003**Collection Date:** 8/24/2018**Client Sample ID:** OS**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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ICP METALS-EPA 6010CAnalyst: **WB**

(Prep: SW3050B - 8/24/2018)

Aluminum	12600	54.0		µg/g-dry	10	8/27/2018 2:55:53 PM
Antimony	3.90	3.20		µg/g-dry	1	8/27/2018 2:51:29 PM
Arsenic	3.34	0.270		µg/g-dry	1	8/27/2018 2:51:29 PM
Barium	93.4	0.540		µg/g-dry	1	8/27/2018 2:51:29 PM
Beryllium	0.538	0.270		µg/g-dry	1	8/27/2018 2:51:29 PM
Cadmium	1.36	0.270		µg/g-dry	1	8/27/2018 2:51:29 PM
Calcium	16900	270		µg/g-dry	10	8/27/2018 2:55:53 PM
Chromium	195	0.270		µg/g-dry	1	8/27/2018 2:51:29 PM
Cobalt	7.48	2.70		µg/g-dry	1	8/27/2018 2:51:29 PM
Copper	27.8	0.270		µg/g-dry	1	8/27/2018 2:51:29 PM
Iron	27600	270		µg/g-dry	100	8/27/2018 4:31:28 PM
Lead	24.4	0.270		µg/g-dry	1	8/27/2018 2:51:29 PM
Magnesium	7300	270		µg/g-dry	10	8/27/2018 2:55:53 PM
Manganese	880	5.40		µg/g-dry	10	8/27/2018 2:55:53 PM
Nickel	19.9	2.70		µg/g-dry	1	8/27/2018 2:51:29 PM
Potassium	1620	27.0		µg/g-dry	1	8/27/2018 2:51:29 PM
Selenium	ND	0.270		µg/g-dry	1	8/27/2018 2:51:29 PM
Silver	ND	1.10		µg/g-dry	1	8/27/2018 2:51:29 PM
Sodium	185	27.0	B	µg/g-dry	1	8/27/2018 2:51:29 PM
Thallium	ND	0.540		µg/g-dry	1	8/27/2018 2:51:29 PM
Vanadium	19.3	2.70		µg/g-dry	1	8/27/2018 2:51:29 PM
Zinc	54.5	0.540		µg/g-dry	1	8/27/2018 2:51:29 PM

MERCURY - SW 7471BAnalyst: **AVB**

(Prep: SW7471B - 8/24/2018)

Mercury	0.023	0.022		µg/g-dry	1	8/24/2018 3:57:11 PM
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HEXAVALENT CHROMIUM - SW 7196A (3060A)Analyst: **DAA**

(Prep: SW3060A - 8/27/2018)

Chromium, Hexavalent	133	54.0	S	µg/g-dry	50	8/28/2018 11:30:00 AM
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MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)Analyst: **TSZ**

Percent Moisture	7.0	0.1		wt%	1	8/24/2018
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Adirondack Environmental Services, Inc

Date: 28-Aug-18

CLIENT: Arcadis
Project: Watervliet Arsenal**LabWork Order:** 180824021
PO#:**Lab SampleID:** 180824021-004**Collection Date:** 8/24/2018**Client Sample ID:** OE**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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ICP METALS-EPA 6010CAnalyst: **WB**

(Prep: SW3050B - 8/24/2018)

Aluminum	12600	53.0		µg/g-dry	10	8/27/2018 3:04:21 PM
Antimony	ND	3.20	N	µg/g-dry	1	8/27/2018 2:59:57 PM
Arsenic	3.71	0.260	N	µg/g-dry	1	8/27/2018 2:59:57 PM
Barium	101	0.530	NZ	µg/g-dry	1	8/27/2018 2:59:57 PM
Beryllium	0.560	0.260		µg/g-dry	1	8/27/2018 2:59:57 PM
Cadmium	1.53	0.260	N	µg/g-dry	1	8/27/2018 2:59:57 PM
Calcium	15300	260		µg/g-dry	10	8/27/2018 3:04:21 PM
Chromium	31.3	0.260	Z	µg/g-dry	1	8/27/2018 2:59:57 PM
Cobalt	7.39	2.60		µg/g-dry	1	8/27/2018 2:59:57 PM
Copper	30.1	0.260		µg/g-dry	1	8/27/2018 2:59:57 PM
Iron	31300	260		µg/g-dry	100	8/27/2018 4:34:46 PM
Lead	17.7	0.260		µg/g-dry	1	8/27/2018 2:59:57 PM
Magnesium	7740	260		µg/g-dry	10	8/27/2018 3:04:21 PM
Manganese	755	5.30	Z	µg/g-dry	10	8/27/2018 3:04:21 PM
Nickel	20.2	2.60	Z	µg/g-dry	1	8/27/2018 2:59:57 PM
Potassium	1530	26.0		µg/g-dry	1	8/27/2018 2:59:57 PM
Selenium	ND	0.260	N	µg/g-dry	1	8/27/2018 2:59:57 PM
Silver	ND	1.10	N	µg/g-dry	1	8/27/2018 2:59:57 PM
Sodium	167	26.0	B	µg/g-dry	1	8/27/2018 2:59:57 PM
Thallium	ND	0.530	N	µg/g-dry	1	8/27/2018 2:59:57 PM
Vanadium	20.4	2.60		µg/g-dry	1	8/27/2018 2:59:57 PM
Zinc	59.1	0.530		µg/g-dry	1	8/27/2018 2:59:57 PM

MERCURY - SW 7471BAnalyst: **AVB**

(Prep: SW7471B - 8/24/2018)

Mercury	ND	0.021		µg/g-dry	1	8/24/2018 3:58:52 PM
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HEXAVALENT CHROMIUM - SW 7196A (3060A)Analyst: **DAA**

(Prep: SW3060A - 8/27/2018)

Chromium, Hexavalent	6.7	1.1	S	µg/g-dry	1	8/28/2018 11:30:00 AM
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MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)Analyst: **TSZ**

Percent Moisture	5.4	0.1		wt%	1	8/24/2018
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Adirondack Environmental Services, Inc

Date: 28-Aug-18

CLIENT: Arcadis
Project: Watervliet Arsenal**LabWork Order:** 180824021
PO#:**Lab SampleID:** 180824021-005**Collection Date:** 8/24/2018**Client Sample ID:** OW**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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ICP METALS-EPA 6010CAnalyst: **WB**

(Prep: SW3050B - 8/24/2018)

Aluminum	13500	55.0		µg/g-dry	10	8/27/2018 3:25:24 PM
Antimony	ND	3.30		µg/g-dry	1	8/27/2018 3:21:08 PM
Arsenic	3.63	0.270		µg/g-dry	1	8/27/2018 3:21:08 PM
Barium	111	0.550		µg/g-dry	1	8/27/2018 3:21:08 PM
Beryllium	0.586	0.270		µg/g-dry	1	8/27/2018 3:21:08 PM
Cadmium	1.67	0.270		µg/g-dry	1	8/27/2018 3:21:08 PM
Calcium	20200	270		µg/g-dry	10	8/27/2018 3:25:24 PM
Chromium	19.3	0.270		µg/g-dry	1	8/27/2018 3:21:08 PM
Cobalt	8.52	2.70		µg/g-dry	1	8/27/2018 3:21:08 PM
Copper	28.0	0.270		µg/g-dry	1	8/27/2018 3:21:08 PM
Iron	32200	270		µg/g-dry	100	8/27/2018 4:41:22 PM
Lead	14.9	0.270		µg/g-dry	1	8/27/2018 3:21:08 PM
Magnesium	8590	270		µg/g-dry	10	8/27/2018 3:25:24 PM
Manganese	1130	5.50		µg/g-dry	10	8/27/2018 3:25:24 PM
Nickel	20.8	2.70		µg/g-dry	1	8/27/2018 3:21:08 PM
Potassium	1750	27.0		µg/g-dry	1	8/27/2018 3:21:08 PM
Selenium	ND	0.270		µg/g-dry	1	8/27/2018 3:21:08 PM
Silver	ND	1.10		µg/g-dry	1	8/27/2018 3:21:08 PM
Sodium	247	27.0	B	µg/g-dry	1	8/27/2018 3:21:08 PM
Thallium	ND	0.550		µg/g-dry	1	8/27/2018 3:21:08 PM
Vanadium	21.2	2.70		µg/g-dry	1	8/27/2018 3:21:08 PM
Zinc	60.2	0.550		µg/g-dry	1	8/27/2018 3:21:08 PM

MERCURY - SW 7471BAnalyst: **AVB**

(Prep: SW7471B - 8/24/2018)

Mercury	ND	0.022		µg/g-dry	1	8/24/2018 4:03:59 PM
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HEXAVALENT CHROMIUM - SW 7196A (3060A)Analyst: **DAA**

(Prep: SW3060A - 8/27/2018)

Chromium, Hexavalent	ND	1.1	S	µg/g-dry	1	8/28/2018 11:30:00 AM
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MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)Analyst: **TSZ**

Percent Moisture	8.4	0.1		wt%	1	8/24/2018
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Adirondack Environmental Services, Inc

Date: 28-Aug-18

CLIENT: Arcadis
Project: Watervliet Arsenal**LabWork Order:** 180824021
PO#:**Lab SampleID:** 180824021-006**Collection Date:** 8/24/2018**Client Sample ID:** OB**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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ICP METALS-EPA 6010CAnalyst: **WB**

(Prep: SW3050B - 8/24/2018)

Aluminum	12900	56.0		µg/g-dry	10	8/27/2018 3:40:38 PM
Antimony	5.86	3.30		µg/g-dry	1	8/27/2018 3:36:12 PM
Arsenic	3.95	0.280		µg/g-dry	1	8/27/2018 3:36:12 PM
Barium	87.8	0.560		µg/g-dry	1	8/27/2018 3:36:12 PM
Beryllium	0.549	0.280		µg/g-dry	1	8/27/2018 3:36:12 PM
Cadmium	1.37	0.280		µg/g-dry	1	8/27/2018 3:36:12 PM
Calcium	8010	280		µg/g-dry	10	8/27/2018 3:40:38 PM
Chromium	394	0.280		µg/g-dry	1	8/27/2018 3:36:12 PM
Cobalt	7.91	2.80		µg/g-dry	1	8/27/2018 3:36:12 PM
Copper	46.6	0.280		µg/g-dry	1	8/27/2018 3:36:12 PM
Iron	25900	280		µg/g-dry	100	8/27/2018 4:44:42 PM
Lead	23.1	0.280		µg/g-dry	1	8/27/2018 3:36:12 PM
Magnesium	7020	280		µg/g-dry	10	8/27/2018 3:40:38 PM
Manganese	448	0.560		µg/g-dry	1	8/27/2018 3:36:12 PM
Nickel	21.3	2.80		µg/g-dry	1	8/27/2018 3:36:12 PM
Potassium	1580	28.0		µg/g-dry	1	8/27/2018 3:36:12 PM
Selenium	ND	0.280		µg/g-dry	1	8/27/2018 3:36:12 PM
Silver	ND	1.10		µg/g-dry	1	8/27/2018 3:36:12 PM
Sodium	169	28.0	B	µg/g-dry	1	8/27/2018 3:36:12 PM
Thallium	ND	0.560		µg/g-dry	1	8/27/2018 3:36:12 PM
Vanadium	19.2	2.80		µg/g-dry	1	8/27/2018 3:36:12 PM
Zinc	59.3	0.560		µg/g-dry	1	8/27/2018 3:36:12 PM

MERCURY - SW 7471BAnalyst: **AVB**

(Prep: SW7471B - 8/24/2018)

Mercury	0.030	0.022		µg/g-dry	1	8/24/2018 4:05:41 PM
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HEXAVALENT CHROMIUM - SW 7196A (3060A)Analyst: **DAA**

(Prep: SW3060A - 8/27/2018)

Chromium, Hexavalent	150	56.0	S	µg/g-dry	50	8/28/2018 11:30:00 AM
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MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)Analyst: **TSZ**

Percent Moisture	10.4	0.1		wt%	1	8/24/2018
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Adirondack Environmental Services, Inc

Date: 28-Aug-18

CLIENT: Arcadis
Project: Watervliet Arsenal**LabWork Order:** 180824021
PO#:**Lab SampleID:** 180824021-007**Collection Date:** 8/24/2018**Client Sample ID:** IB**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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ICP METALS-EPA 6010CAnalyst: **WB**

(Prep: SW3050B - 8/24/2018)

Aluminum	14700	58.0		µg/g-dry	10	8/27/2018 3:48:52 PM
Antimony	ND	3.50		µg/g-dry	1	8/27/2018 3:44:37 PM
Arsenic	4.21	0.290		µg/g-dry	1	8/27/2018 3:44:37 PM
Barium	110	0.580		µg/g-dry	1	8/27/2018 3:44:37 PM
Beryllium	0.632	0.290		µg/g-dry	1	8/27/2018 3:44:37 PM
Cadmium	1.60	0.290		µg/g-dry	1	8/27/2018 3:44:37 PM
Calcium	17400	290		µg/g-dry	10	8/27/2018 3:48:52 PM
Chromium	42.6	0.290		µg/g-dry	1	8/27/2018 3:44:37 PM
Cobalt	9.43	2.90		µg/g-dry	1	8/27/2018 3:44:37 PM
Copper	31.5	0.290		µg/g-dry	1	8/27/2018 3:44:37 PM
Iron	34800	290		µg/g-dry	100	8/27/2018 4:47:57 PM
Lead	25.5	0.290		µg/g-dry	1	8/27/2018 3:44:37 PM
Magnesium	6300	290		µg/g-dry	10	8/27/2018 3:48:52 PM
Manganese	505	0.580		µg/g-dry	1	8/27/2018 3:44:37 PM
Nickel	22.8	2.90		µg/g-dry	1	8/27/2018 3:44:37 PM
Potassium	1560	29.0		µg/g-dry	1	8/27/2018 3:44:37 PM
Selenium	ND	0.290		µg/g-dry	1	8/27/2018 3:44:37 PM
Silver	ND	1.20		µg/g-dry	1	8/27/2018 3:44:37 PM
Sodium	341	29.0	B	µg/g-dry	1	8/27/2018 3:44:37 PM
Thallium	ND	0.580		µg/g-dry	1	8/27/2018 3:44:37 PM
Vanadium	24.8	2.90		µg/g-dry	1	8/27/2018 3:44:37 PM
Zinc	62.9	0.580		µg/g-dry	1	8/27/2018 3:44:37 PM

MERCURY - SW 7471BAnalyst: **AVB**

(Prep: SW7471B - 8/24/2018)

Mercury	ND	0.023		µg/g-dry	1	8/24/2018 4:10:46 PM
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HEXAVALENT CHROMIUM - SW 7196A (3060A)Analyst: **DAA**

(Prep: SW3060A - 8/27/2018)

Chromium, Hexavalent	12.7	1.2	S	µg/g-dry	1	8/28/2018 11:30:00 AM
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MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)Analyst: **TSZ**

Percent Moisture	13.8	0.1		wt%	1	8/24/2018
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Adirondack Environmental Services, Inc

Date: 28-Aug-18

CLIENT: Arcadis
Project: Watervliet Arsenal**LabWork Order:** 180824021
PO#:**Lab SampleID:** 180824021-008**Collection Date:** 8/24/2018**Client Sample ID:** IE**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP METALS-EPA 6010C						Analyst: WB
(Prep: SW3050B - 8/24/2018)						
Aluminum	15000	56.0		µg/g-dry	10	8/27/2018 3:57:20 PM
Antimony	27.8	3.40		µg/g-dry	1	8/27/2018 3:52:57 PM
Arsenic	2.66	0.280		µg/g-dry	1	8/27/2018 3:52:57 PM
Barium	131	0.560		µg/g-dry	1	8/27/2018 3:52:57 PM
Beryllium	0.673	0.280		µg/g-dry	1	8/27/2018 3:52:57 PM
Cadmium	1.63	0.280		µg/g-dry	1	8/27/2018 3:52:57 PM
Calcium	18600	280		µg/g-dry	10	8/27/2018 3:57:20 PM
Chromium	1950	2.80		µg/g-dry	10	8/27/2018 3:57:20 PM
Cobalt	10.9	2.80		µg/g-dry	1	8/27/2018 3:52:57 PM
Copper	42.0	0.280		µg/g-dry	1	8/27/2018 3:52:57 PM
Iron	32100	280		µg/g-dry	100	8/27/2018 4:51:15 PM
Lead	34.8	0.280		µg/g-dry	1	8/27/2018 3:52:57 PM
Magnesium	7800	280		µg/g-dry	10	8/27/2018 3:57:20 PM
Manganese	831	5.60		µg/g-dry	10	8/27/2018 3:57:20 PM
Nickel	24.9	2.80		µg/g-dry	1	8/27/2018 3:52:57 PM
Potassium	1820	28.0		µg/g-dry	1	8/27/2018 3:52:57 PM
Selenium	ND	0.280		µg/g-dry	1	8/27/2018 3:52:57 PM
Silver	ND	1.10		µg/g-dry	1	8/27/2018 3:52:57 PM
Sodium	337	28.0	B	µg/g-dry	1	8/27/2018 3:52:57 PM
Thallium	ND	0.560		µg/g-dry	1	8/27/2018 3:52:57 PM
Vanadium	15.8	2.80		µg/g-dry	1	8/27/2018 3:52:57 PM
Zinc	64.1	0.560		µg/g-dry	1	8/27/2018 3:52:57 PM
MERCURY - SW 7471B						Analyst: AVB
(Prep: SW7471B - 8/24/2018)						
Mercury	0.046	0.022		µg/g-dry	1	8/24/2018 4:12:29 PM
HEXAVALENT CHROMIUM - SW 7196A (3060A)						Analyst: DAA
(Prep: SW3060A - 8/27/2018)						
Chromium, Hexavalent	802	56.0	S	µg/g-dry	50	8/28/2018 11:30:00 AM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	10.7	0.1		wt%	1	8/24/2018

Adirondack Environmental Services, Inc

Date: 28-Aug-18

CLIENT: Arcadis
Project: Watervliet Arsenal**LabWork Order:** 180824021
PO#:**Lab SampleID:** 180824021-009**Collection Date:** 8/24/2018**Client Sample ID:** IW**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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ICP METALS-EPA 6010CAnalyst: **WB**

(Prep: SW3050B - 8/24/2018)

Aluminum	15000	55.0		µg/g-dry	10	8/27/2018 4:05:45 PM
Antimony	ND	3.30		µg/g-dry	1	8/27/2018 4:01:24 PM
Arsenic	6.85	0.280		µg/g-dry	1	8/27/2018 4:01:24 PM
Barium	148	0.550		µg/g-dry	1	8/27/2018 4:01:24 PM
Beryllium	0.714	0.280		µg/g-dry	1	8/27/2018 4:01:24 PM
Cadmium	1.85	0.280		µg/g-dry	1	8/27/2018 4:01:24 PM
Calcium	10000	280		µg/g-dry	10	8/27/2018 4:05:45 PM
Chromium	22.9	0.280		µg/g-dry	1	8/27/2018 4:01:24 PM
Cobalt	10.7	2.80		µg/g-dry	1	8/27/2018 4:01:24 PM
Copper	52.9	0.280		µg/g-dry	1	8/27/2018 4:01:24 PM
Iron	32600	280		µg/g-dry	100	8/27/2018 4:54:34 PM
Lead	49.9	0.280		µg/g-dry	1	8/27/2018 4:01:24 PM
Magnesium	7240	280		µg/g-dry	10	8/27/2018 4:05:45 PM
Manganese	801	5.50		µg/g-dry	10	8/27/2018 4:05:45 PM
Nickel	26.4	2.80		µg/g-dry	1	8/27/2018 4:01:24 PM
Potassium	1780	28.0		µg/g-dry	1	8/27/2018 4:01:24 PM
Selenium	ND	0.280		µg/g-dry	1	8/27/2018 4:01:24 PM
Silver	ND	1.10		µg/g-dry	1	8/27/2018 4:01:24 PM
Sodium	274	28.0	B	µg/g-dry	1	8/27/2018 4:01:24 PM
Thallium	ND	0.550		µg/g-dry	1	8/27/2018 4:01:24 PM
Vanadium	25.4	2.80		µg/g-dry	1	8/27/2018 4:01:24 PM
Zinc	78.5	0.550		µg/g-dry	1	8/27/2018 4:01:24 PM

MERCURY - SW 7471BAnalyst: **AVB**

(Prep: SW7471B - 8/24/2018)

Mercury	0.043	0.022		µg/g-dry	1	8/24/2018 4:14:12 PM
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HEXAVALENT CHROMIUM - SW 7196A (3060A)Analyst: **DAA**

(Prep: SW3060A - 8/27/2018)

Chromium, Hexavalent	2.0	1.1	SN+	µg/g-dry	1	8/28/2018 11:30:00 AM
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MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)Analyst: **TSZ**

Percent Moisture	9.2	0.1		wt%	1	8/24/2018
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CHAIN OF CUSTODY RECORD

AES Work Order #

30824021

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Client Name: ARCADIS U.S., INC.		Address: 855 ROUTE 146, SUITE 210 CLIFFON PARK, NY 12065						
Send Report To: ANDY VITOLINS		Project Name (Location): 511 IN BAGNATO						
Client Phone No: 518-250-7300		Client Email: andy.vitolins@arcadis.com						
PO Number: 02110217.0002		Samplers: (Signature) [Signature]						
AES Sample Number	Client Sample Identification & Location	Date Sampled	Time A=a.m. P=p.m.	Sample Type Matrix	Comp	Grab	Number of Cont's	Analysis Required
001	ADJ EXT WALL	9/24/18	0910	(A) Soil		X	1	TAL METALS HEX. CHROME
002	ADJ W. DUCT		0915	(A) P				
003	OS		0930	(A) P				
004	OE		0935	(A) P				
005	OW		0940	(A) P				
006	OB		0945	(A) P				
007	IB		0950	(A) P				
008	IE		0955	(A) P				
009	IW		1000	(A) P				
				A				
				P				
				A				
				P				
				A				
				P				
				A				
				P				

Shipment Arrived Via: FedEx UPS <u>Client</u> AES Other: _____		CC Report To / Special Instructions/Remarks: stefan.bagnato@arcadis.com	
Turnaround Time Request: ☒ 1 Day ☐ 3 Day ☐ Normal ☐ 2 Day ☐ 5 Day Note: Samples received after 3:30 pm are considered next business day			
Relinquished by: (Signature) [Signature]		Received by: (Signature)	
Relinquished by: (Signature)		Received by: (Signature)	
Relinquished by: (Signature)		Received for Laboratory by: _____	
Temperature Ambient or Chilled Notes: _____		AES Bottles Y ☒ N ☐	
Notes: _____		PROPERLY PRESERVED Y ☒ N ☐	
Notes: _____		RECEIVED WITHIN HOLDING TIMES Y ☒ N ☐	

WHITE - Lab Copy

YELLOW - Sampler Copy

Adirondack Environmental Services



180824021



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TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

- (a) Neither **Adirondack Environmental Services, Inc.**, nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.**'s performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.
- (b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.
- (c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.
- (d) In no event shall **Adirondack Environmental Services, Inc.**, its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.
- (e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**
- (f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.
- (g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.



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August 29, 2018

Andy Vitolins
Arcadis
855 Route 146, Suite 210
Clifton Park, NY 12065
TEL: (518) 250-7382

Work Order No: 180828055

RE: Watervliet Arsenal
WVA

Dear Andy Vitolins:

Adirondack Environmental Services, Inc received 1 sample on 8/28/2018 for the analyses presented in the following report.

Please see case narrative for specifics on analysis.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Krzysztof Trafalski
Laboratory Manager

ELAP#: 10709

Adirondack Environmental Services, Inc

CASE NARRATIVE

CLIENT: Arcadis

Date: 29-Aug-18

Project: Watervliet Arsenal

Lab Order: 180828055

Sample containers were supplied by Adirondack Environmental Services.

These samples were received under ambient conditions. Chilling process was started following receipt at laboratory.

Definitions - RL: Reporting Limit DF: Dilution factor

Qualifiers:	ND : Not Detected at reporting limit	C: CCV below acceptable Limits
	J: Analyte detected below quantitation limit	C+: CCV above acceptable Limits
	B: Analyte detected in Blank	S: LCS Spike recovery is below acceptable limits
	X : Exceeds maximum contamination limit	S+: LCS Spike recovery is above acceptable limits
	H: Hold time exceeded	Z: Duplication outside acceptable limits
	N: Matrix Spike below acceptable limits	T : Tentatively Identified Compound-Estimated
	N+: Matrix Spike is above acceptable limits	E :Above quantitation range-Estimated

Note : All Results are reported as wet weight unless noted

The results relate only to the items tested. Information supplied by the client is assumed to be correct.

Adirondack Environmental Services, Inc

Date: 29-Aug-18

CLIENT: Arcadis
Work Order: 180828055
Reference: Watervliet Arsenal / WVA
PO#:

Client Sample ID: Excav Sump
Collection Date: 8/28/2018 3:10:00 PM
Lab Sample ID: 180828055-001
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP METALS - EPA 200.7 REV 4.4						Analyst: SM
(Prep: - 8/29/2018)						
Aluminum	ND	0.100		mg/L	1	8/29/2018
Antimony	ND	0.060		mg/L	1	8/29/2018
Arsenic	ND	0.005		mg/L	1	8/29/2018
Barium	0.060	0.010		mg/L	1	8/29/2018
Beryllium	ND	0.005		mg/L	1	8/29/2018
Cadmium	ND	0.005		mg/L	1	8/29/2018
Calcium	44.9	0.050		mg/L	1	8/29/2018
Chromium	1.98	0.005		mg/L	1	8/29/2018
Cobalt	ND	0.050		mg/L	1	8/29/2018
Copper	ND	0.005		mg/L	1	8/29/2018
Iron	ND	0.050		mg/L	1	8/29/2018
Lead	ND	0.005		mg/L	1	8/29/2018
Magnesium	11.2	0.050		mg/L	1	8/29/2018
Manganese	0.219	0.020		mg/L	1	8/29/2018
Nickel	ND	0.020		mg/L	1	8/29/2018
Potassium	8.16	0.050		mg/L	1	8/29/2018
Selenium	ND	0.005		mg/L	1	8/29/2018
Silver	ND	0.010		mg/L	1	8/29/2018
Sodium	135	0.500		mg/L	10	8/29/2018
Thallium	ND	0.010		mg/L	1	8/29/2018
Vanadium	ND	0.020		mg/L	1	8/29/2018
Zinc	ND	0.010		mg/L	1	8/29/2018
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 8/29/2018)						
Mercury	ND	0.0002		mg/L	1	8/29/2018 1:05:30 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	1.6	1.0		mg/L	50	8/29/2018 12:09:00 PM



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CHAIN OF CUSTODY RECORD

AES Work Order #

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Client Name: <i>Aracelis US Inc.</i>		Address: <i>855 Route 146, Suite 210 Clifton Park, NY</i>					
Send Report To: <i>Andy Vitolins</i>		Project Name (Location): <i>WVA</i>		Samplers: (Names) <i>Andy Vitolins</i>			
Client Phone No: <i>518-250-7300</i>		Client Email: <i>andy.vitolins@aracelis.com</i>		PO Number: <i>02118217-0000</i>		Samplers: (Signature) <i>[Signature]</i>	
AES Sample Number	Client Sample Identification & Location	Date Sampled	Time A=a.m. P=p.m.	Sample Type Matrix	Grab	Number of Cont's	Analysis Required
-	<i>Excav Sump</i>	<i>8/28/18</i>		<i>AQ</i>		<i>x 2</i>	<i>AL Metals Heavy Chrome</i>
	<i>SUMP to Pit</i>	<i>8/28/18</i>		<i>V</i>		<i>x 2</i>	<i>[Arrow]</i>
				A			
				P			
				A			
				P			
				A			
				P			
				A			
				P			
				A			
				P			
				A			
				P			
				A			
				P			
				A			
				P			
				A			
				P			

Shipment Arrived Via: FedEx UPS <u>Client</u> AES Other: _____		CC Report To / Special Instructions/Remarks: <i>Stefan.bagnato@aracelis.com</i>	
Turnaround Time Request: ☒ 1 Day ☐ 3 Day ☐ Normal ☐ 2 Day ☐ 5 Day Note: Samples received after 3:30 pm are considered next business day			
Relinquished by: (Signature) <i>[Signature]</i>		Received by: (Signature) <i>[Signature]</i>	
Relinquished by: (Signature)		Received by: (Signature)	
Relinquished by: (Signature)		Received for Laboratory by: <i>[Signature]</i>	
Temperature <u>Ambient</u> or Chilled Notes: <i>23°C</i>		PROPERLY PRESERVED <u>Y</u> N Notes: _____	
AES Bottles ☒ Y ☐ N		RECEIVED WITHIN HOLDING TIMES <u>Y</u> N Notes: _____	

WHITE - Lab Copy

YELLOW - Sampler Copy

Adirondack Environmental Services



180828055



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All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

- (a) Neither **Adirondack Environmental Services, Inc.**, nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.**'s performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.
- (b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.
- (c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.
- (d) In no event shall **Adirondack Environmental Services, Inc.**, its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.
- (e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**
- (f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.
- (g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.



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August 30, 2018

Andy Vitolins

Arcadis

855 Route 146, Suite 210

Clifton Park, NY 12065

TEL: (518) 250-7382

Work Order No: 180829023

RE: Watervliet Arsenal

WVA

Dear Andy Vitolins:

Adirondack Environmental Services, Inc received 1 sample on 8/29/2018 for the analyses presented in the following report.

Please see case narrative for specifics on analysis.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Krzysztof Trafalski

Laboratory Manager

ELAP#: 10709

Adirondack Environmental Services, Inc

CASE NARRATIVE

CLIENT: Arcadis

Date: 30-Aug-18

Project: Watervliet Arsenal

Lab Order: 180829023

Sample containers were supplied by Adirondack Environmental Services.

These samples were received under ambient conditions. Chilling process was started following receipt at laboratory.

Definitions - RL: Reporting Limit DF: Dilution factor

Qualifiers:	ND : Not Detected at reporting limit	C: CCV below acceptable Limits
	J: Analyte detected below quantitation limit	C+: CCV above acceptable Limits
	B: Analyte detected in Blank	S: LCS Spike recovery is below acceptable limits
	X : Exceeds maximum contamination limit	S+: LCS Spike recovery is above acceptable limits
	H: Hold time exceeded	Z: Duplication outside acceptable limits
	N: Matrix Spike below acceptable limits	T : Tentatively Identified Compound-Estimated
	N+: Matrix Spike is above acceptable limits	E :Above quantitation range-Estimated

Note : All Results are reported as wet weight unless noted

The results relate only to the items tested. Information supplied by the client is assumed to be correct.

Adirondack Environmental Services, Inc

Date: 30-Aug-18

CLIENT: Arcadis

Work Order: 180829023

Reference: Watervliet Arsenal / WVA

PO#:

Client Sample ID: Sump- CommPit

Collection Date: 8/29/2018 10:15:00 AM

Lab Sample ID: 180829023-001

Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP METALS - EPA 200.7 REV 4.4						Analyst: SM
(Prep: - 8/29/2018)						
Aluminum	ND	0.100		mg/L	1	8/30/2018 4:09:00 PM
Antimony	0.131	0.060		mg/L	1	8/30/2018 4:09:00 PM
Arsenic	0.016	0.005		mg/L	1	8/30/2018 4:09:00 PM
Barium	0.160	0.010		mg/L	1	8/30/2018 4:09:00 PM
Beryllium	ND	0.005		mg/L	1	8/30/2018 4:09:00 PM
Cadmium	ND	0.005		mg/L	1	8/30/2018 4:09:00 PM
Calcium	138	0.050		mg/L	1	8/30/2018 4:09:00 PM
Chromium	7.69	0.005		mg/L	1	8/30/2018 4:09:00 PM
Cobalt	ND	0.050		mg/L	1	8/30/2018 4:09:00 PM
Copper	0.023	0.005		mg/L	1	8/30/2018 4:09:00 PM
Iron	0.139	0.050		mg/L	1	8/30/2018 4:09:00 PM
Lead	ND	0.005		mg/L	1	8/30/2018 4:09:00 PM
Magnesium	32.9	0.050		mg/L	1	8/30/2018 4:09:00 PM
Manganese	ND	0.020		mg/L	1	8/30/2018 4:09:00 PM
Nickel	ND	0.020		mg/L	1	8/30/2018 4:09:00 PM
Potassium	23.2	0.050		mg/L	1	8/30/2018 4:09:00 PM
Selenium	ND	0.005		mg/L	1	8/30/2018 4:09:00 PM
Silver	ND	0.010		mg/L	1	8/30/2018 4:09:00 PM
Sodium	169	0.500		mg/L	10	8/30/2018 4:13:00 PM
Thallium	ND	0.010		mg/L	1	8/30/2018 4:09:00 PM
Vanadium	ND	0.020		mg/L	1	8/30/2018 4:09:00 PM
Zinc	0.011	0.010		mg/L	1	8/30/2018 4:09:00 PM
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 8/30/2018)						
Mercury	ND	0.0002		mg/L	1	8/30/2018 12:39:47 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	11	1.0		mg/L	50	8/29/2018 12:09:00 PM



100

180829023



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- (c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.
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- (f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.
- (g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.



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August 26, 2019

Stefan Bagnato

Arcadis

855 Route 146, Suite 210

Clifton Park, NY 12065

TEL: (518) 250-7382

Work Order No: 190806001

RE: Watervliet Arsenal

Soil Sampling

Project# : 30001988.0002P

Dear Stefan Bagnato:

"I certify that this data package is in compliance with the terms and conditions of the protocol, both technically and for completeness, to the best of my knowledge, for other than the conditions detailed in the Case Narrative. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Director or his designee, as verified by the following signature."

A handwritten signature in black ink, appearing to read "Tara Daniels", written over a horizontal line.

Tara Daniels

Laboratory Director

Workorder Sample Summary

Client: Arcadis

Work Order: 190806001

ProjectName: Watervliet Arsenal

ProjLocation: Soil Sampling

AES Sample No	ClientSampID	Matrix	CollectionDate	DateReceived
190806001-001	B35-SS1-08052019	Soil	8/5/2019 1:10:00 PM	8/5/2019 4:19:00 PM
190806001-002	B35-SS2-08052019	Soil	8/5/2019 1:20:00 PM	8/5/2019 4:19:00 PM
190806001-003	B35-SS3-08052019	Soil	8/5/2019 1:30:00 PM	8/5/2019 4:19:00 PM
190806001-004	B35-SS4-08052019	Soil	8/5/2019 2:00:00 PM	8/5/2019 4:19:00 PM
190806001-005	B35-SS5-08052019	Soil	8/5/2019 2:10:00 PM	8/5/2019 4:19:00 PM
190806001-006	B35-DUP-1-SS-08052019	Soil	8/5/2019	8/5/2019 4:19:00 PM
190806001-007	B35-SS6-08052019	Soil	8/5/2019 3:00:00 PM	8/5/2019 4:19:00 PM
190806001-008	B35-SS7-08052019	Soil	8/5/2019 3:15:00 PM	8/5/2019 4:19:00 PM
190806001-009	B35-SS8-08052019	Soil	8/5/2019 3:20:00 PM	8/5/2019 4:19:00 PM
190806001-010	B35-SS9-08052019	Soil	8/5/2019 3:30:00 PM	8/5/2019 4:19:00 PM
190806001-011	Field Blank-B3555-08052019	Water	8/5/2091 2:35:00 PM	8/5/2019 4:19:00 PM



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Case Narrative

Client: Arcadis – Watervliet Arsenal

Case: 190806001

SDG: B35-SS1-05052019

Inorganics – Metals (Soil)

- 1) The soil samples was analyzed for TAL Metals using EPA Method 6010C and 7471B.
- 2) The samples received on 8/6/19 had a temperature of 12 °C.
- 3) The recovery for Aluminum, Calcium, Iron and Magnesium in the ICSA and the ICSAB check standards may be outside the required limit. The required concentration for these analytes in the check standards is 500,000 ug/L, 500,000 ug/L, 200,000 ug/L and 500,000 ug/L, respectively. The linear range on this instrument for Aluminum, Calcium, Iron and Magnesium is 250,000 ug/L, 250,000 ug/L, 100,000 ug/L and 250,000 ug/L, respectively. At this level accurate recovery of Aluminum, Calcium, Iron and Magnesium in the check standards is not possible. No further action is required.
- 4) The digested spike recovery for the element Antimony for sample B35-SS4-08052019 (AES sample number 190806001-004) was lower than the required 75-125 % limits. A post digestion spike was performed and the recovery for Antimony was within acceptable limits. This indicates possible matrix interference. The results for Aluminum, Iron and Lead for sample B35-SS4-08052019 (AES sample number 190806001-004) were outside the specified limits, but the sample concentration were greater than four (4) times the spike level. The metals Aluminum, Iron and Lead are not required to be flagged.
- 5) The digested spike recovery for Mercury on sample B35-SS4-08052019 (AES sample number 190806001-004) was outside the required 75-125 % limits. The result for Mercury for sample B35-SS4-08052019 (AES sample number 190806001-004) is not flagged with an “N+” since the sample result was below the reporting limit.
- 6) The recovery between sample B35-SS4-08052019 (AES sample number 190806001-004) and the duplicate sample for the element Lead was outside the required limits for sample duplication. This element for sample B35-SS4-08052019 (AES sample number 190806001-004) is flagged with a “Z” to denote the duplicate outside of acceptable limits.
- 7) Sample B35-SS4-08052019 (AES sample number 190806001-004) was used as the Mercury duplicate sample. All recoveries were within acceptable limits.



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- 8) The elements Iron, Lead, Manganese, Potassium, Sodium and Zinc for sample B35-SS4-08052019 (AES sample number 190806001-004) did not meet the serial dilution criteria of 10 %. This indicates a possible chemical or physical interference.

Conventionals

- 1) The soil samples were analyzed for Hexavalent Chromium using EPA Method 3060A/7196A.
- 2) Sample B35-SS4-08052019 (AES sample number 190806001-004) was used as the soil matrix spike sample for Hexavalent Chromium. The recovery for the soluble Hexavalent Chromium spike was below the acceptable limits. The recovery for the insoluble Hexavalent Chromium spike was within the acceptable limits. The result for Hexavalent Chromium for sample B35-SS4-08052019 (AES sample number 190806001-004) is flagged with an "N" to denote the low recovery.
- 3) Sample B35-SS9-08052019 (AES sample number 190806001-010) was used as the soil matrix spike sample for Hexavalent Chromium. The recovery for the soluble Hexavalent Chromium spike was below the acceptable limits. The recovery for the insoluble Hexavalent Chromium spike was within the acceptable limits. The result for Hexavalent Chromium for sample B35-SS9-08052019 (AES sample number 190806001-010) is flagged with an "N" to denote the low recovery.
- 4) The recovery between sample B35-SS4-08052019 (AES sample number 190806001-004) and the duplicate sample for the Hexavalent Chromium was outside the required limits for sample duplication. This analyte for sample B35-SS4-08052019 (AES sample number 190806001-004) is flagged with a "Z" to denote the duplicate outside of acceptable limits.
- 5) The recovery between sample B35-SS9-08052019 (AES sample number 190806001-010) and the duplicate sample for the Hexavalent Chromium was outside the required limits for sample duplication. This analyte for sample B35-SS9-08052019 (AES sample number 190806001-010) is flagged with a "Z" to denote the duplicate outside of acceptable limits.
- 6) AES sample number 190807051-001 was used as the soil duplicate sample for Percent Moisture. All recoveries were within acceptable limits.

"I certify that this data package is in compliance with the terms and conditions of the protocol, both technically and for completeness, to the best of my knowledge, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature."

A handwritten signature in black ink, appearing to read "Tara Daniel", is written over a horizontal line.

Laboratory Director

Date: 8/26/19



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CHAIN OF CUSTODY RECORD

AES Work Order #

190806001

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Client Name: Arcadis		Address: 855 Route 146, Suite 210 Clifton Park NY 12065	
Send Report To: stefan.Bugnato@arcadis.com Kate.Bidwell@arcadis.com		Project Name (Location): WVA	
Client Phone No: 518 250 9387		Client Email: stefan.Bugnato@arcadis.com	
PO Number: 30001988		Samplers: (Names) Kim Stilson	
		Samplers: (Signature) K Stilson	

AES Sample Number	Client Sample Identification & Location	Date Sampled	Time A=a.m. P=p.m.	Sample Type Matrix	Comp	Grab	Number of Cont's	Analysis Required
001	B35-SS1-08052019	8/5/19	1310	A			1	6010 + 7471 TAL Metals
002	B35-SS2-08052019		1320	A			1	7196 Hexavalent Chromium
003	B35-SS3-08052019		1330	A			1	
	B35-SS3-08052019 (KS)			A			1	
				P			1	
004	B35-SS4-08052019		1400	A			1	
005	B35-SS4-08052019 (US/MSD)		1400	A			1	
006	B35-SS5-08052019		1410	A			1	
007	B35-DUP-1-SS-08052019			A			1	
008	B35-SS6-08052019		1500	A			1	
009	B35-SS7-08052019		1515	A			1	
010	B35-SS8-08052019		1520	A			1	
011	B35-SS9-08052019		1530	A			1	
012	Field Blank - B35SS-08052019		1435	A	W		2	
				P				
				P				

Shipment Arrived Via:

FedEx UPS Client AES Other: _____

Turnaround Time Request:

☐ 1 Day ☐ 3 Day ☒ Normal
☐ 2 Day ☐ 5 Day

Note: Samples received after 3:30 pm are considered next business day

CC Report To / Special Instructions/Remarks:

Relinquished by: (Signature)

Relinquished by: (Signature)

Relinquished by: (Signature)

Received by: (Signature)

Received by: (Signature)

Received for Laboratory by:

Date/Time

8/5/19 7:19

Date/Time

Date/Time

8/5/19 4:49P

TEMPERATURE

Ambient or Chilled

Notes:

120C

AES Bottles

Y

N

Notes:

PROPERLY PRESERVED

Y

N

RECEIVED WITHIN HOLDING TIMES

Y

N

WHITE - Lab Copy

YELLOW - Sampler Copy

Adirondack Environmental Services



190806001

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
 Work Order: 190806001
 Reference: Watervliet Arsenal / Soil Sampling
 PO#:

Client Sample ID: B35-SS1-08052019
 Collection Date: 8/5/2019 1:10:00 PM
 Lab Sample ID: 190806001-001
 Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - SW 7471B						
(Prep: SW7471B - 8/6/2019)						Analyst: AVB
Mercury	0.095	0.216	J	µg/g-dry	1	8/7/2019 11:24:52 AM
ICP METALS EPA 6010C						
(Prep: SW3050B - 8/6/2019)						Analyst: KH
Aluminum	12400	22.0		µg/g-dry	1	8/19/2019 1:30:00 PM
Antimony	0.73	6.50	J	µg/g-dry	1	8/19/2019 1:30:00 PM
Arsenic	ND	1.10		µg/g-dry	1	8/19/2019 1:30:00 PM
Barium	101	2.20		µg/g-dry	1	8/19/2019 1:30:00 PM
Beryllium	0.62	1.10	J	µg/g-dry	1	8/19/2019 1:30:00 PM
Cadmium	0.16	1.10	J	µg/g-dry	1	8/19/2019 1:30:00 PM
Calcium	4240	110		µg/g-dry	1	8/19/2019 1:30:00 PM
Chromium	23.6	1.10		µg/g-dry	1	8/19/2019 1:30:00 PM
Cobalt	9.15	11.0	J	µg/g-dry	1	8/19/2019 1:30:00 PM
Copper	31.9	1.10		µg/g-dry	1	8/19/2019 1:30:00 PM
Iron	23500	110		µg/g-dry	10	8/19/2019 1:35:00 PM
Lead	58.5	1.10		µg/g-dry	1	8/19/2019 1:30:00 PM
Magnesium	4390	110		µg/g-dry	1	8/19/2019 1:30:00 PM
Manganese	546	2.20		µg/g-dry	1	8/19/2019 1:30:00 PM
Nickel	20.4	11.0		µg/g-dry	1	8/19/2019 1:30:00 PM
Potassium	1900	110		µg/g-dry	1	8/19/2019 1:30:00 PM
Selenium	ND	1.10		µg/g-dry	1	8/19/2019 1:30:00 PM
Silver	ND	2.20		µg/g-dry	1	8/19/2019 1:30:00 PM
Sodium	512	110		µg/g-dry	1	8/19/2019 1:30:00 PM
Thallium	ND	2.20		µg/g-dry	1	8/19/2019 1:30:00 PM
Vanadium	24.2	11.0		µg/g-dry	1	8/19/2019 1:30:00 PM
Zinc	128	2.20		µg/g-dry	1	8/19/2019 1:30:00 PM
HEXAVALENT CHROMIUM - SW 7196A (3060A)						
(Prep: SW3060A - 8/7/2019)						Analyst: DAA
Chromium, Hexavalent	ND	1.1		µg/g-dry	1	8/7/2019 2:40:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						
						Analyst: TSZ
Percent Moisture	7.3	0.1		wt%	1	8/7/2019

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: B35-SS2-08052019
Collection Date: 8/5/2019 1:20:00 PM
Lab Sample ID: 190806001-002
Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - SW 7471B						
(Prep: SW7471B - 8/6/2019)						Analyst: AVB
Mercury	ND	0.212		µg/g-dry	1	8/7/2019 11:26:35 AM
ICP METALS EPA 6010C						
(Prep: SW3050B - 8/6/2019)						Analyst: KH
Aluminum	13100	21.0		µg/g-dry	1	8/19/2019 1:40:00 PM
Antimony	2.38	6.40	J	µg/g-dry	1	8/19/2019 1:40:00 PM
Arsenic	ND	1.10		µg/g-dry	1	8/19/2019 1:40:00 PM
Barium	96.2	2.10		µg/g-dry	1	8/19/2019 1:40:00 PM
Beryllium	0.67	1.10	J	µg/g-dry	1	8/19/2019 1:40:00 PM
Cadmium	0.72	1.10	J	µg/g-dry	1	8/19/2019 1:40:00 PM
Calcium	2390	110		µg/g-dry	1	8/19/2019 1:40:00 PM
Chromium	116	1.10		µg/g-dry	1	8/19/2019 1:40:00 PM
Cobalt	8.76	11.0	J	µg/g-dry	1	8/19/2019 1:40:00 PM
Copper	34.3	1.10		µg/g-dry	1	8/19/2019 1:40:00 PM
Iron	25300	110		µg/g-dry	10	8/19/2019 1:44:00 PM
Lead	60.8	1.10		µg/g-dry	1	8/19/2019 1:40:00 PM
Magnesium	4410	110		µg/g-dry	1	8/19/2019 1:40:00 PM
Manganese	627	2.10		µg/g-dry	1	8/19/2019 1:40:00 PM
Nickel	24.1	11.0		µg/g-dry	1	8/19/2019 1:40:00 PM
Potassium	1900	110		µg/g-dry	1	8/19/2019 1:40:00 PM
Selenium	ND	1.10		µg/g-dry	1	8/19/2019 1:40:00 PM
Silver	ND	2.10		µg/g-dry	1	8/19/2019 1:40:00 PM
Sodium	479	110		µg/g-dry	1	8/19/2019 1:40:00 PM
Thallium	ND	2.10		µg/g-dry	1	8/19/2019 1:40:00 PM
Vanadium	24.5	11.0		µg/g-dry	1	8/19/2019 1:40:00 PM
Zinc	172	2.10		µg/g-dry	1	8/19/2019 1:40:00 PM
HEXAVALENT CHROMIUM - SW 7196A (3060A)						
(Prep: SW3060A - 8/7/2019)						Analyst: DAA
Chromium, Hexavalent	ND	1.1		µg/g-dry	1	8/7/2019 2:40:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						
						Analyst: TSZ
Percent Moisture	5.6	0.1		wt%	1	8/7/2019

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: B35-SS3-08052019
Collection Date: 8/5/2019 1:30:00 PM
Lab Sample ID: 190806001-003
Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - SW 7471B						
(Prep: SW7471B - 8/6/2019)						Analyst: AVB
Mercury	ND	0.212		µg/g-dry	1	8/7/2019 11:28:16 AM
ICP METALS EPA 6010C						
(Prep: SW3050B - 8/6/2019)						Analyst: KH
Aluminum	9020	21.0		µg/g-dry	1	8/19/2019 2:00:00 PM
Antimony	0.43	6.40	J	µg/g-dry	1	8/19/2019 2:00:00 PM
Arsenic	ND	1.10		µg/g-dry	1	8/19/2019 2:00:00 PM
Barium	60.9	2.10		µg/g-dry	1	8/19/2019 2:00:00 PM
Beryllium	0.46	1.10	J	µg/g-dry	1	8/19/2019 2:00:00 PM
Cadmium	0.07	1.10	J	µg/g-dry	1	8/19/2019 2:00:00 PM
Calcium	5190	110		µg/g-dry	1	8/19/2019 2:00:00 PM
Chromium	14.6	1.10		µg/g-dry	1	8/19/2019 2:00:00 PM
Cobalt	6.88	11.0	J	µg/g-dry	1	8/19/2019 2:00:00 PM
Copper	19.1	1.10		µg/g-dry	1	8/19/2019 2:00:00 PM
Iron	15100	11.0		µg/g-dry	1	8/19/2019 2:00:00 PM
Lead	20.0	1.10		µg/g-dry	1	8/19/2019 2:00:00 PM
Magnesium	3890	110		µg/g-dry	1	8/19/2019 2:00:00 PM
Manganese	366	2.10		µg/g-dry	1	8/19/2019 2:00:00 PM
Nickel	12.7	11.0		µg/g-dry	1	8/19/2019 2:00:00 PM
Potassium	1320	110		µg/g-dry	1	8/19/2019 2:00:00 PM
Selenium	ND	1.10		µg/g-dry	1	8/19/2019 2:00:00 PM
Silver	ND	2.10		µg/g-dry	1	8/19/2019 2:00:00 PM
Sodium	388	110		µg/g-dry	1	8/19/2019 2:00:00 PM
Thallium	ND	2.10		µg/g-dry	1	8/19/2019 2:00:00 PM
Vanadium	18.8	11.0		µg/g-dry	1	8/19/2019 2:00:00 PM
Zinc	61.0	2.10		µg/g-dry	1	8/19/2019 2:00:00 PM
HEXAVALENT CHROMIUM - SW 7196A (3060A)						
(Prep: SW3060A - 8/7/2019)						Analyst: DAA
Chromium, Hexavalent	ND	1.1		µg/g-dry	1	8/7/2019 2:40:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						
						Analyst: TSZ
Percent Moisture	5.6	0.1		wt%	1	8/7/2019

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate
S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: B35-SS4-08052019
Collection Date: 8/5/2019 2:00:00 PM
Lab Sample ID: 190806001-004
Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - SW 7471B						
(Prep: SW7471B - 8/6/2019)						Analyst: AVB
Mercury	ND	0.209		µg/g-dry	1	8/7/2019 11:29:56 AM
ICP METALS EPA 6010C						
(Prep: SW3050B - 8/6/2019)						Analyst: KH
Aluminum	10600	21.0		µg/g-dry	1	8/19/2019 2:07:00 PM
Antimony	1.38	6.30	JN	µg/g-dry	1	8/19/2019 2:07:00 PM
Arsenic	ND	1.00		µg/g-dry	1	8/19/2019 2:07:00 PM
Barium	80.6	2.10		µg/g-dry	1	8/19/2019 2:07:00 PM
Beryllium	0.53	1.00	J	µg/g-dry	1	8/19/2019 2:07:00 PM
Cadmium	0.28	1.00	J	µg/g-dry	1	8/19/2019 2:07:00 PM
Calcium	2370	100		µg/g-dry	1	8/19/2019 2:07:00 PM
Chromium	60.4	1.00		µg/g-dry	1	8/19/2019 2:07:00 PM
Cobalt	7.12	10.0	J	µg/g-dry	1	8/19/2019 2:07:00 PM
Copper	23.7	1.00		µg/g-dry	1	8/19/2019 2:07:00 PM
Iron	19900	100		µg/g-dry	10	8/19/2019 2:18:00 PM
Lead	44.5	1.00	Z	µg/g-dry	1	8/19/2019 2:07:00 PM
Magnesium	3710	100		µg/g-dry	1	8/19/2019 2:07:00 PM
Manganese	492	2.10		µg/g-dry	1	8/19/2019 2:07:00 PM
Nickel	17.2	10.0		µg/g-dry	1	8/19/2019 2:07:00 PM
Potassium	1350	100		µg/g-dry	1	8/19/2019 2:07:00 PM
Selenium	ND	1.00		µg/g-dry	1	8/19/2019 2:07:00 PM
Silver	ND	2.10		µg/g-dry	1	8/19/2019 2:07:00 PM
Sodium	434	100		µg/g-dry	1	8/19/2019 2:07:00 PM
Thallium	ND	2.10		µg/g-dry	1	8/19/2019 2:07:00 PM
Vanadium	20.8	10.0		µg/g-dry	1	8/19/2019 2:07:00 PM
Zinc	138	2.10		µg/g-dry	1	8/19/2019 2:07:00 PM
HEXAVALENT CHROMIUM - SW 7196A (3060A)						
(Prep: SW3060A - 8/7/2019)						Analyst: DAA
Chromium, Hexavalent	ND	1.0	NZ	µg/g-dry	1	8/7/2019 2:40:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						
						Analyst: TSZ
Percent Moisture	4.5	0.1		wt%	1	8/7/2019

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: B35-SS5-08052019
Collection Date: 8/5/2019 2:10:00 PM
Lab Sample ID: 190806001-005
Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - SW 7471B Analyst: AVB						
(Prep: SW7471B - 8/6/2019)						
Mercury	ND	0.213		µg/g-dry	1	8/7/2019 11:38:20 AM
ICP METALS EPA 6010C Analyst: KH						
(Prep: SW3050B - 8/6/2019)						
Aluminum	11500	21.0		µg/g-dry	1	8/19/2019 2:53:00 PM
Antimony	4.55	6.40	J	µg/g-dry	1	8/19/2019 2:53:00 PM
Arsenic	ND	1.10		µg/g-dry	1	8/19/2019 2:53:00 PM
Barium	90.1	2.10		µg/g-dry	1	8/19/2019 2:53:00 PM
Beryllium	0.56	1.10	J	µg/g-dry	1	8/19/2019 2:53:00 PM
Cadmium	0.43	1.10	J	µg/g-dry	1	8/19/2019 2:53:00 PM
Calcium	6660	110		µg/g-dry	1	8/19/2019 2:53:00 PM
Chromium	213	1.10		µg/g-dry	1	8/19/2019 2:53:00 PM
Cobalt	7.72	11.0	J	µg/g-dry	1	8/19/2019 2:53:00 PM
Copper	48.6	1.10		µg/g-dry	1	8/19/2019 2:53:00 PM
Iron	24900	110		µg/g-dry	10	8/19/2019 2:58:00 PM
Lead	86.7	1.10		µg/g-dry	1	8/19/2019 2:53:00 PM
Magnesium	5070	110		µg/g-dry	1	8/19/2019 2:53:00 PM
Manganese	457	2.10		µg/g-dry	1	8/19/2019 2:53:00 PM
Nickel	34.3	11.0		µg/g-dry	1	8/19/2019 2:53:00 PM
Potassium	1660	110		µg/g-dry	1	8/19/2019 2:53:00 PM
Selenium	ND	1.10		µg/g-dry	1	8/19/2019 2:53:00 PM
Silver	ND	2.10		µg/g-dry	1	8/19/2019 2:53:00 PM
Sodium	437	110		µg/g-dry	1	8/19/2019 2:53:00 PM
Thallium	ND	2.10		µg/g-dry	1	8/19/2019 2:53:00 PM
Vanadium	22.3	11.0		µg/g-dry	1	8/19/2019 2:53:00 PM
Zinc	157	2.10		µg/g-dry	1	8/19/2019 2:53:00 PM
HEXAVALENT CHROMIUM - SW 7196A (3060A) Analyst: DAA						
(Prep: SW3060A - 8/7/2019)						
Chromium, Hexavalent	ND	1.1		µg/g-dry	1	8/7/2019 2:40:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED) Analyst: TSZ						
Percent Moisture	5.9	0.1		wt%	1	8/7/2019

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate
S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: B35-DUP-1-SS-08052019
Collection Date: 8/5/2019
Lab Sample ID: 190806001-006
Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - SW 7471B Analyst: AVB						
(Prep: SW7471B - 8/6/2019)						
Mercury	ND	0.214		µg/g-dry	1	8/7/2019 11:40:02 AM
ICP METALS EPA 6010C Analyst: KH						
(Prep: SW3050B - 8/6/2019)						
Aluminum	11600	21.0		µg/g-dry	1	8/19/2019 3:15:00 PM
Antimony	5.31	6.40	J	µg/g-dry	1	8/19/2019 3:15:00 PM
Arsenic	ND	1.10		µg/g-dry	1	8/19/2019 3:15:00 PM
Barium	101	2.10		µg/g-dry	1	8/19/2019 3:15:00 PM
Beryllium	0.53	1.10	J	µg/g-dry	1	8/19/2019 3:15:00 PM
Cadmium	0.54	1.10	J	µg/g-dry	1	8/19/2019 3:15:00 PM
Calcium	6290	110		µg/g-dry	1	8/19/2019 3:15:00 PM
Chromium	253	1.10		µg/g-dry	1	8/19/2019 3:15:00 PM
Cobalt	7.63	11.0	J	µg/g-dry	1	8/19/2019 3:15:00 PM
Copper	53.8	1.10		µg/g-dry	1	8/19/2019 3:15:00 PM
Iron	23700	110		µg/g-dry	10	8/19/2019 3:22:00 PM
Lead	132	1.10		µg/g-dry	1	8/19/2019 3:15:00 PM
Magnesium	4620	110		µg/g-dry	1	8/19/2019 3:15:00 PM
Manganese	608	2.10		µg/g-dry	1	8/19/2019 3:15:00 PM
Nickel	43.0	11.0		µg/g-dry	1	8/19/2019 3:15:00 PM
Potassium	1720	110		µg/g-dry	1	8/19/2019 3:15:00 PM
Selenium	ND	1.10		µg/g-dry	1	8/19/2019 3:15:00 PM
Silver	ND	2.10		µg/g-dry	1	8/19/2019 3:15:00 PM
Sodium	435	110		µg/g-dry	1	8/19/2019 3:15:00 PM
Thallium	ND	2.10		µg/g-dry	1	8/19/2019 3:15:00 PM
Vanadium	21.6	11.0		µg/g-dry	1	8/19/2019 3:15:00 PM
Zinc	162	2.10		µg/g-dry	1	8/19/2019 3:15:00 PM
HEXAVALENT CHROMIUM - SW 7196A (3060A) Analyst: DAA						
(Prep: SW3060A - 8/13/2019)						
Chromium, Hexavalent	ND	1.1		µg/g-dry	1	8/13/2019 5:15:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED) Analyst: TSZ						
Percent Moisture	6.6	0.1		wt%	1	8/7/2019

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate
S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: B35-SS6-08052019
Collection Date: 8/5/2019 3:00:00 PM
Lab Sample ID: 190806001-007
Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - SW 7471B Analyst: AVB						
(Prep: SW7471B - 8/6/2019)						
Mercury	0.146	0.241	J	µg/g-dry	1	8/7/2019 11:41:44 AM
ICP METALS EPA 6010C Analyst: KH						
(Prep: SW3050B - 8/6/2019)						
Aluminum	13500	24.0		µg/g-dry	1	8/19/2019 3:28:00 PM
Antimony	1.51	7.20	J	µg/g-dry	1	8/19/2019 3:28:00 PM
Arsenic	ND	1.20		µg/g-dry	1	8/19/2019 3:28:00 PM
Barium	93.8	2.40		µg/g-dry	1	8/19/2019 3:28:00 PM
Beryllium	0.52	1.20	J	µg/g-dry	1	8/19/2019 3:28:00 PM
Cadmium	0.34	1.20	J	µg/g-dry	1	8/19/2019 3:28:00 PM
Calcium	3590	120		µg/g-dry	1	8/19/2019 3:28:00 PM
Chromium	50.6	1.20		µg/g-dry	1	8/19/2019 3:28:00 PM
Cobalt	8.65	12.0	J	µg/g-dry	1	8/19/2019 3:28:00 PM
Copper	41.8	1.20		µg/g-dry	1	8/19/2019 3:28:00 PM
Iron	24300	120		µg/g-dry	10	8/19/2019 3:34:00 PM
Lead	163	1.20		µg/g-dry	1	8/19/2019 3:28:00 PM
Magnesium	3930	120		µg/g-dry	1	8/19/2019 3:28:00 PM
Manganese	434	2.40		µg/g-dry	1	8/19/2019 3:28:00 PM
Nickel	42.1	12.0		µg/g-dry	1	8/19/2019 3:28:00 PM
Potassium	1690	120		µg/g-dry	1	8/19/2019 3:28:00 PM
Selenium	ND	1.20		µg/g-dry	1	8/19/2019 3:28:00 PM
Silver	ND	2.40		µg/g-dry	1	8/19/2019 3:28:00 PM
Sodium	514	120		µg/g-dry	1	8/19/2019 3:28:00 PM
Thallium	ND	2.40		µg/g-dry	1	8/19/2019 3:28:00 PM
Vanadium	27.6	12.0		µg/g-dry	1	8/19/2019 3:28:00 PM
Zinc	182	2.40		µg/g-dry	1	8/19/2019 3:28:00 PM
HEXAVALENT CHROMIUM - SW 7196A (3060A) Analyst: DAA						
(Prep: SW3060A - 8/13/2019)						
Chromium, Hexavalent	ND	1.2		µg/g-dry	1	8/13/2019 5:15:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED) Analyst: TSZ						
Percent Moisture	17.1	0.1		wt%	1	8/7/2019

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate
S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: B35-SS7-08052019
Collection Date: 8/5/2019 3:15:00 PM
Lab Sample ID: 190806001-008
Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - SW 7471B						
(Prep: SW7471B - 8/6/2019)						Analyst: AVB
Mercury	ND	0.228		µg/g-dry	1	8/7/2019 11:43:26 AM
ICP METALS EPA 6010C						
(Prep: SW3050B - 8/6/2019)						Analyst: KH
Aluminum	11100	23.0		µg/g-dry	1	8/19/2019 4:04:00 PM
Antimony	22.5	6.80		µg/g-dry	1	8/19/2019 4:04:00 PM
Arsenic	ND	1.10		µg/g-dry	1	8/19/2019 4:04:00 PM
Barium	179	2.30		µg/g-dry	1	8/19/2019 4:04:00 PM
Beryllium	0.64	1.10	J	µg/g-dry	1	8/19/2019 4:04:00 PM
Cadmium	2.69	1.10		µg/g-dry	1	8/19/2019 4:04:00 PM
Calcium	59000	1100		µg/g-dry	10	8/19/2019 4:09:00 PM
Chromium	314	1.10		µg/g-dry	1	8/19/2019 4:04:00 PM
Cobalt	4.77	11.0	J	µg/g-dry	1	8/19/2019 4:04:00 PM
Copper	111	1.10		µg/g-dry	1	8/19/2019 4:04:00 PM
Iron	41800	110		µg/g-dry	10	8/19/2019 4:09:00 PM
Lead	101	1.10		µg/g-dry	1	8/19/2019 4:04:00 PM
Magnesium	9620	110		µg/g-dry	1	8/19/2019 4:04:00 PM
Manganese	396	2.30		µg/g-dry	1	8/19/2019 4:04:00 PM
Nickel	40.9	11.0		µg/g-dry	1	8/19/2019 4:04:00 PM
Potassium	1880	110		µg/g-dry	1	8/19/2019 4:04:00 PM
Selenium	ND	1.10		µg/g-dry	1	8/19/2019 4:04:00 PM
Silver	ND	2.30		µg/g-dry	1	8/19/2019 4:04:00 PM
Sodium	690	110		µg/g-dry	1	8/19/2019 4:04:00 PM
Thallium	ND	2.30		µg/g-dry	1	8/19/2019 4:04:00 PM
Vanadium	19.2	11.0		µg/g-dry	1	8/19/2019 4:04:00 PM
Zinc	1370	2.30		µg/g-dry	1	8/19/2019 4:04:00 PM
HEXAVALENT CHROMIUM - SW 7196A (3060A)						
(Prep: SW3060A - 8/13/2019)						Analyst: DAA
Chromium, Hexavalent	ND	1.1		µg/g-dry	1	8/13/2019 5:15:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						
						Analyst: TSZ
Percent Moisture	12.4	0.1		wt%	1	8/7/2019

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: B35-SS8-08052019
Collection Date: 8/5/2019 3:20:00 PM
Lab Sample ID: 190806001-009
Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - SW 7471B Analyst: AVB						
(Prep: SW7471B - 8/6/2019)						
Mercury	ND	0.217		µg/g-dry	1	8/7/2019 11:45:07 AM
ICP METALS EPA 6010C Analyst: KH						
(Prep: SW3050B - 8/6/2019)						
Aluminum	7610	22.0		µg/g-dry	1	8/19/2019 4:15:00 PM
Antimony	2.61	6.50	J	µg/g-dry	1	8/19/2019 4:15:00 PM
Arsenic	ND	1.10		µg/g-dry	1	8/19/2019 4:15:00 PM
Barium	89.1	2.20		µg/g-dry	1	8/19/2019 4:15:00 PM
Beryllium	0.57	1.10	J	µg/g-dry	1	8/19/2019 4:15:00 PM
Cadmium	3.79	1.10		µg/g-dry	1	8/19/2019 4:15:00 PM
Calcium	123000	1100		µg/g-dry	10	8/19/2019 4:19:00 PM
Chromium	92.8	1.10		µg/g-dry	1	8/19/2019 4:15:00 PM
Cobalt	1.62	11.0	J	µg/g-dry	1	8/19/2019 4:15:00 PM
Copper	41.0	1.10		µg/g-dry	1	8/19/2019 4:15:00 PM
Iron	64200	110		µg/g-dry	10	8/19/2019 4:19:00 PM
Lead	57.3	1.10		µg/g-dry	1	8/19/2019 4:15:00 PM
Magnesium	9790	110		µg/g-dry	1	8/19/2019 4:15:00 PM
Manganese	290	2.20		µg/g-dry	1	8/19/2019 4:15:00 PM
Nickel	25.3	11.0		µg/g-dry	1	8/19/2019 4:15:00 PM
Potassium	1850	110		µg/g-dry	1	8/19/2019 4:15:00 PM
Selenium	ND	1.10		µg/g-dry	1	8/19/2019 4:15:00 PM
Silver	ND	2.20		µg/g-dry	1	8/19/2019 4:15:00 PM
Sodium	764	110		µg/g-dry	1	8/19/2019 4:15:00 PM
Thallium	ND	2.20		µg/g-dry	1	8/19/2019 4:15:00 PM
Vanadium	17.0	11.0		µg/g-dry	1	8/19/2019 4:15:00 PM
Zinc	3000	2.20		µg/g-dry	1	8/19/2019 4:15:00 PM
HEXAVALENT CHROMIUM - SW 7196A (3060A) Analyst: DAA						
(Prep: SW3060A - 8/13/2019)						
Chromium, Hexavalent	ND	1.1		µg/g-dry	1	8/13/2019 5:15:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED) Analyst: TSZ						
Percent Moisture	7.7	0.1		wt%	1	8/7/2019

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate
S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: B35-SS9-08052019
Collection Date: 8/5/2019 3:30:00 PM
Lab Sample ID: 190806001-010
Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - SW 7471B Analyst: AVB						
(Prep: SW7471B - 8/6/2019)						
Mercury	0.155	0.234	J	µg/g-dry	1	8/7/2019 11:46:50 AM
ICP METALS EPA 6010C Analyst: KH						
(Prep: SW3050B - 8/6/2019)						
Aluminum	13800	23.0		µg/g-dry	1	8/19/2019 4:25:00 PM
Antimony	1.03	7.00	J	µg/g-dry	1	8/19/2019 4:25:00 PM
Arsenic	ND	1.20		µg/g-dry	1	8/19/2019 4:25:00 PM
Barium	123	2.30		µg/g-dry	1	8/19/2019 4:25:00 PM
Beryllium	0.65	1.20	J	µg/g-dry	1	8/19/2019 4:25:00 PM
Cadmium	0.55	1.20	J	µg/g-dry	1	8/19/2019 4:25:00 PM
Calcium	5540	120		µg/g-dry	1	8/19/2019 4:25:00 PM
Chromium	38.5	1.20		µg/g-dry	1	8/19/2019 4:25:00 PM
Cobalt	9.74	12.0	J	µg/g-dry	1	8/19/2019 4:25:00 PM
Copper	56.6	1.20		µg/g-dry	1	8/19/2019 4:25:00 PM
Iron	26600	120		µg/g-dry	10	8/19/2019 4:30:00 PM
Lead	155	1.20		µg/g-dry	1	8/19/2019 4:25:00 PM
Magnesium	4970	120		µg/g-dry	1	8/19/2019 4:25:00 PM
Manganese	589	2.30		µg/g-dry	1	8/19/2019 4:25:00 PM
Nickel	35.5	12.0		µg/g-dry	1	8/19/2019 4:25:00 PM
Potassium	1870	120		µg/g-dry	1	8/19/2019 4:25:00 PM
Selenium	ND	1.20		µg/g-dry	1	8/19/2019 4:25:00 PM
Silver	ND	2.30		µg/g-dry	1	8/19/2019 4:25:00 PM
Sodium	573	120		µg/g-dry	1	8/19/2019 4:25:00 PM
Thallium	ND	2.30		µg/g-dry	1	8/19/2019 4:25:00 PM
Vanadium	33.1	12.0		µg/g-dry	1	8/19/2019 4:25:00 PM
Zinc	161	2.30		µg/g-dry	1	8/19/2019 4:25:00 PM
HEXAVALENT CHROMIUM - SW 7196A (3060A) Analyst: DAA						
(Prep: SW3060A - 8/13/2019)						
Chromium, Hexavalent	2.0	1.2	NZ	µg/g-dry	1	8/13/2019 5:15:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED) Analyst: TSZ						
Percent Moisture	14.7	0.1		wt%	1	8/7/2019

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate
S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: Field Blank-B3555-08052019
Collection Date: 8/5/2019 2:35:00 PM
Lab Sample ID: 190806001-011
Matrix: WATER

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 8/6/2019)						
Mercury	ND	0.20		µg/L	1	8/7/2019 11:48:33 AM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 8/6/2019)						
Aluminum	ND	100		µg/L	1	8/19/2019 12:56:00 PM
Antimony	ND	60.0		µg/L	1	8/19/2019 12:56:00 PM
Arsenic	ND	5.00		µg/L	1	8/19/2019 12:56:00 PM
Barium	ND	10.0		µg/L	1	8/19/2019 12:56:00 PM
Beryllium	0.24	5.00	J	µg/L	1	8/19/2019 12:56:00 PM
Cadmium	ND	5.00		µg/L	1	8/19/2019 12:56:00 PM
Calcium	107	50.0		µg/L	1	8/19/2019 12:56:00 PM
Chromium	ND	5.00		µg/L	1	8/19/2019 12:56:00 PM
Cobalt	ND	50.0		µg/L	1	8/19/2019 12:56:00 PM
Copper	ND	5.00		µg/L	1	8/19/2019 12:56:00 PM
Iron	ND	50.0		µg/L	1	8/19/2019 12:56:00 PM
Lead	0.35	5.00	J	µg/L	1	8/19/2019 12:56:00 PM
Magnesium	ND	50.0		µg/L	1	8/19/2019 12:56:00 PM
Manganese	ND	20.0		µg/L	1	8/19/2019 12:56:00 PM
Nickel	ND	20.0		µg/L	1	8/19/2019 12:56:00 PM
Potassium	29.5	50.0	J	µg/L	1	8/19/2019 12:56:00 PM
Selenium	2.23	5.00	J	µg/L	1	8/19/2019 12:56:00 PM
Silver	ND	10.0		µg/L	1	8/19/2019 12:56:00 PM
Sodium	64.4	50.0		µg/L	1	8/19/2019 12:56:00 PM
Thallium	1.37	10.0	J	µg/L	1	8/19/2019 12:56:00 PM
Vanadium	ND	20.0		µg/L	1	8/19/2019 12:56:00 PM
Zinc	2.07	10.0	J	µg/L	1	8/19/2019 12:56:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	8/6/2019 8:50:00 AM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: B35-SS1-08052019
Collection Date: 8/5/2019 1:10:00 PM
Lab Sample ID: 190806001-001
Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - SW 7471B						Analyst: AVB
(Prep: SW7471B - 8/6/2019)						
Mercury	0.095	0.216	J	µg/g-dry	1	8/7/2019 11:24:52 AM
ICP METALS EPA 6010C						Analyst: KH
(Prep: SW3050B - 8/6/2019)						
Aluminum	12400	22.0		µg/g-dry	1	8/19/2019 1:30:00 PM
Antimony	0.73	6.50	J	µg/g-dry	1	8/19/2019 1:30:00 PM
Arsenic	ND	1.10		µg/g-dry	1	8/19/2019 1:30:00 PM
Barium	101	2.20		µg/g-dry	1	8/19/2019 1:30:00 PM
Beryllium	0.62	1.10	J	µg/g-dry	1	8/19/2019 1:30:00 PM
Cadmium	0.16	1.10	J	µg/g-dry	1	8/19/2019 1:30:00 PM
Calcium	4240	110		µg/g-dry	1	8/19/2019 1:30:00 PM
Chromium	23.6	1.10		µg/g-dry	1	8/19/2019 1:30:00 PM
Cobalt	9.15	11.0	J	µg/g-dry	1	8/19/2019 1:30:00 PM
Copper	31.9	1.10		µg/g-dry	1	8/19/2019 1:30:00 PM
Iron	23500	110		µg/g-dry	10	8/19/2019 1:35:00 PM
Lead	58.5	1.10		µg/g-dry	1	8/19/2019 1:30:00 PM
Magnesium	4390	110		µg/g-dry	1	8/19/2019 1:30:00 PM
Manganese	546	2.20		µg/g-dry	1	8/19/2019 1:30:00 PM
Nickel	20.4	11.0		µg/g-dry	1	8/19/2019 1:30:00 PM
Potassium	1900	110		µg/g-dry	1	8/19/2019 1:30:00 PM
Selenium	ND	1.10		µg/g-dry	1	8/19/2019 1:30:00 PM
Silver	ND	2.20		µg/g-dry	1	8/19/2019 1:30:00 PM
Sodium	512	110		µg/g-dry	1	8/19/2019 1:30:00 PM
Thallium	ND	2.20		µg/g-dry	1	8/19/2019 1:30:00 PM
Vanadium	24.2	11.0		µg/g-dry	1	8/19/2019 1:30:00 PM
Zinc	128	2.20		µg/g-dry	1	8/19/2019 1:30:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: B35-SS2-08052019
Collection Date: 8/5/2019 1:20:00 PM
Lab Sample ID: 190806001-002
Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - SW 7471B						Analyst: AVB
(Prep: SW7471B - 8/6/2019)						
Mercury	ND	0.212		µg/g-dry	1	8/7/2019 11:26:35 AM
ICP METALS EPA 6010C						Analyst: KH
(Prep: SW3050B - 8/6/2019)						
Aluminum	13100	21.0		µg/g-dry	1	8/19/2019 1:40:00 PM
Antimony	2.38	6.40	J	µg/g-dry	1	8/19/2019 1:40:00 PM
Arsenic	ND	1.10		µg/g-dry	1	8/19/2019 1:40:00 PM
Barium	96.2	2.10		µg/g-dry	1	8/19/2019 1:40:00 PM
Beryllium	0.67	1.10	J	µg/g-dry	1	8/19/2019 1:40:00 PM
Cadmium	0.72	1.10	J	µg/g-dry	1	8/19/2019 1:40:00 PM
Calcium	2390	110		µg/g-dry	1	8/19/2019 1:40:00 PM
Chromium	116	1.10		µg/g-dry	1	8/19/2019 1:40:00 PM
Cobalt	8.76	11.0	J	µg/g-dry	1	8/19/2019 1:40:00 PM
Copper	34.3	1.10		µg/g-dry	1	8/19/2019 1:40:00 PM
Iron	25300	110		µg/g-dry	10	8/19/2019 1:44:00 PM
Lead	60.8	1.10		µg/g-dry	1	8/19/2019 1:40:00 PM
Magnesium	4410	110		µg/g-dry	1	8/19/2019 1:40:00 PM
Manganese	627	2.10		µg/g-dry	1	8/19/2019 1:40:00 PM
Nickel	24.1	11.0		µg/g-dry	1	8/19/2019 1:40:00 PM
Potassium	1900	110		µg/g-dry	1	8/19/2019 1:40:00 PM
Selenium	ND	1.10		µg/g-dry	1	8/19/2019 1:40:00 PM
Silver	ND	2.10		µg/g-dry	1	8/19/2019 1:40:00 PM
Sodium	479	110		µg/g-dry	1	8/19/2019 1:40:00 PM
Thallium	ND	2.10		µg/g-dry	1	8/19/2019 1:40:00 PM
Vanadium	24.5	11.0		µg/g-dry	1	8/19/2019 1:40:00 PM
Zinc	172	2.10		µg/g-dry	1	8/19/2019 1:40:00 PM

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: B35-SS3-08052019
Collection Date: 8/5/2019 1:30:00 PM
Lab Sample ID: 190806001-003
Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - SW 7471B						Analyst: AVB
(Prep: SW7471B - 8/6/2019)						
Mercury	ND	0.212		µg/g-dry	1	8/7/2019 11:28:16 AM
ICP METALS EPA 6010C						Analyst: KH
(Prep: SW3050B - 8/6/2019)						
Aluminum	9020	21.0		µg/g-dry	1	8/19/2019 2:00:00 PM
Antimony	0.43	6.40	J	µg/g-dry	1	8/19/2019 2:00:00 PM
Arsenic	ND	1.10		µg/g-dry	1	8/19/2019 2:00:00 PM
Barium	60.9	2.10		µg/g-dry	1	8/19/2019 2:00:00 PM
Beryllium	0.46	1.10	J	µg/g-dry	1	8/19/2019 2:00:00 PM
Cadmium	0.07	1.10	J	µg/g-dry	1	8/19/2019 2:00:00 PM
Calcium	5190	110		µg/g-dry	1	8/19/2019 2:00:00 PM
Chromium	14.6	1.10		µg/g-dry	1	8/19/2019 2:00:00 PM
Cobalt	6.88	11.0	J	µg/g-dry	1	8/19/2019 2:00:00 PM
Copper	19.1	1.10		µg/g-dry	1	8/19/2019 2:00:00 PM
Iron	15100	11.0		µg/g-dry	1	8/19/2019 2:00:00 PM
Lead	20.0	1.10		µg/g-dry	1	8/19/2019 2:00:00 PM
Magnesium	3890	110		µg/g-dry	1	8/19/2019 2:00:00 PM
Manganese	366	2.10		µg/g-dry	1	8/19/2019 2:00:00 PM
Nickel	12.7	11.0		µg/g-dry	1	8/19/2019 2:00:00 PM
Potassium	1320	110		µg/g-dry	1	8/19/2019 2:00:00 PM
Selenium	ND	1.10		µg/g-dry	1	8/19/2019 2:00:00 PM
Silver	ND	2.10		µg/g-dry	1	8/19/2019 2:00:00 PM
Sodium	388	110		µg/g-dry	1	8/19/2019 2:00:00 PM
Thallium	ND	2.10		µg/g-dry	1	8/19/2019 2:00:00 PM
Vanadium	18.8	11.0		µg/g-dry	1	8/19/2019 2:00:00 PM
Zinc	61.0	2.10		µg/g-dry	1	8/19/2019 2:00:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
 Work Order: 190806001
 Reference: Watervliet Arsenal / Soil Sampling
 PO#:

Client Sample ID: B35-SS4-08052019
 Collection Date: 8/5/2019 2:00:00 PM
 Lab Sample ID: 190806001-004
 Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - SW 7471B						Analyst: AVB
(Prep: SW7471B - 8/6/2019)						
Mercury	ND	0.209		µg/g-dry	1	8/7/2019 11:29:56 AM
ICP METALS EPA 6010C						Analyst: KH
(Prep: SW3050B - 8/6/2019)						
Aluminum	10600	21.0		µg/g-dry	1	8/19/2019 2:07:00 PM
Antimony	1.38	6.30	JN	µg/g-dry	1	8/19/2019 2:07:00 PM
Arsenic	ND	1.00		µg/g-dry	1	8/19/2019 2:07:00 PM
Barium	80.6	2.10		µg/g-dry	1	8/19/2019 2:07:00 PM
Beryllium	0.53	1.00	J	µg/g-dry	1	8/19/2019 2:07:00 PM
Cadmium	0.28	1.00	J	µg/g-dry	1	8/19/2019 2:07:00 PM
Calcium	2370	100		µg/g-dry	1	8/19/2019 2:07:00 PM
Chromium	60.4	1.00		µg/g-dry	1	8/19/2019 2:07:00 PM
Cobalt	7.12	10.0	J	µg/g-dry	1	8/19/2019 2:07:00 PM
Copper	23.7	1.00		µg/g-dry	1	8/19/2019 2:07:00 PM
Iron	19900	100		µg/g-dry	10	8/19/2019 2:18:00 PM
Lead	44.5	1.00	Z	µg/g-dry	1	8/19/2019 2:07:00 PM
Magnesium	3710	100		µg/g-dry	1	8/19/2019 2:07:00 PM
Manganese	492	2.10		µg/g-dry	1	8/19/2019 2:07:00 PM
Nickel	17.2	10.0		µg/g-dry	1	8/19/2019 2:07:00 PM
Potassium	1350	100		µg/g-dry	1	8/19/2019 2:07:00 PM
Selenium	ND	1.00		µg/g-dry	1	8/19/2019 2:07:00 PM
Silver	ND	2.10		µg/g-dry	1	8/19/2019 2:07:00 PM
Sodium	434	100		µg/g-dry	1	8/19/2019 2:07:00 PM
Thallium	ND	2.10		µg/g-dry	1	8/19/2019 2:07:00 PM
Vanadium	20.8	10.0		µg/g-dry	1	8/19/2019 2:07:00 PM
Zinc	138	2.10		µg/g-dry	1	8/19/2019 2:07:00 PM

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: B35-SS5-08052019
Collection Date: 8/5/2019 2:10:00 PM
Lab Sample ID: 190806001-005
Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - SW 7471B						Analyst: AVB
(Prep: SW7471B - 8/6/2019)						
Mercury	ND	0.213		µg/g-dry	1	8/7/2019 11:38:20 AM
ICP METALS EPA 6010C						Analyst: KH
(Prep: SW3050B - 8/6/2019)						
Aluminum	11500	21.0		µg/g-dry	1	8/19/2019 2:53:00 PM
Antimony	4.55	6.40	J	µg/g-dry	1	8/19/2019 2:53:00 PM
Arsenic	ND	1.10		µg/g-dry	1	8/19/2019 2:53:00 PM
Barium	90.1	2.10		µg/g-dry	1	8/19/2019 2:53:00 PM
Beryllium	0.56	1.10	J	µg/g-dry	1	8/19/2019 2:53:00 PM
Cadmium	0.43	1.10	J	µg/g-dry	1	8/19/2019 2:53:00 PM
Calcium	6660	110		µg/g-dry	1	8/19/2019 2:53:00 PM
Chromium	213	1.10		µg/g-dry	1	8/19/2019 2:53:00 PM
Cobalt	7.72	11.0	J	µg/g-dry	1	8/19/2019 2:53:00 PM
Copper	48.6	1.10		µg/g-dry	1	8/19/2019 2:53:00 PM
Iron	24900	110		µg/g-dry	10	8/19/2019 2:58:00 PM
Lead	86.7	1.10		µg/g-dry	1	8/19/2019 2:53:00 PM
Magnesium	5070	110		µg/g-dry	1	8/19/2019 2:53:00 PM
Manganese	457	2.10		µg/g-dry	1	8/19/2019 2:53:00 PM
Nickel	34.3	11.0		µg/g-dry	1	8/19/2019 2:53:00 PM
Potassium	1660	110		µg/g-dry	1	8/19/2019 2:53:00 PM
Selenium	ND	1.10		µg/g-dry	1	8/19/2019 2:53:00 PM
Silver	ND	2.10		µg/g-dry	1	8/19/2019 2:53:00 PM
Sodium	437	110		µg/g-dry	1	8/19/2019 2:53:00 PM
Thallium	ND	2.10		µg/g-dry	1	8/19/2019 2:53:00 PM
Vanadium	22.3	11.0		µg/g-dry	1	8/19/2019 2:53:00 PM
Zinc	157	2.10		µg/g-dry	1	8/19/2019 2:53:00 PM

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: B35-DUP-1-SS-08052019
Collection Date: 8/5/2019
Lab Sample ID: 190806001-006
Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - SW 7471B						Analyst: AVB
(Prep: SW7471B - 8/6/2019)						
Mercury	ND	0.214		µg/g-dry	1	8/7/2019 11:40:02 AM
ICP METALS EPA 6010C						Analyst: KH
(Prep: SW3050B - 8/6/2019)						
Aluminum	11600	21.0		µg/g-dry	1	8/19/2019 3:15:00 PM
Antimony	5.31	6.40	J	µg/g-dry	1	8/19/2019 3:15:00 PM
Arsenic	ND	1.10		µg/g-dry	1	8/19/2019 3:15:00 PM
Barium	101	2.10		µg/g-dry	1	8/19/2019 3:15:00 PM
Beryllium	0.53	1.10	J	µg/g-dry	1	8/19/2019 3:15:00 PM
Cadmium	0.54	1.10	J	µg/g-dry	1	8/19/2019 3:15:00 PM
Calcium	6290	110		µg/g-dry	1	8/19/2019 3:15:00 PM
Chromium	253	1.10		µg/g-dry	1	8/19/2019 3:15:00 PM
Cobalt	7.63	11.0	J	µg/g-dry	1	8/19/2019 3:15:00 PM
Copper	53.8	1.10		µg/g-dry	1	8/19/2019 3:15:00 PM
Iron	23700	110		µg/g-dry	10	8/19/2019 3:22:00 PM
Lead	132	1.10		µg/g-dry	1	8/19/2019 3:15:00 PM
Magnesium	4620	110		µg/g-dry	1	8/19/2019 3:15:00 PM
Manganese	608	2.10		µg/g-dry	1	8/19/2019 3:15:00 PM
Nickel	43.0	11.0		µg/g-dry	1	8/19/2019 3:15:00 PM
Potassium	1720	110		µg/g-dry	1	8/19/2019 3:15:00 PM
Selenium	ND	1.10		µg/g-dry	1	8/19/2019 3:15:00 PM
Silver	ND	2.10		µg/g-dry	1	8/19/2019 3:15:00 PM
Sodium	435	110		µg/g-dry	1	8/19/2019 3:15:00 PM
Thallium	ND	2.10		µg/g-dry	1	8/19/2019 3:15:00 PM
Vanadium	21.6	11.0		µg/g-dry	1	8/19/2019 3:15:00 PM
Zinc	162	2.10		µg/g-dry	1	8/19/2019 3:15:00 PM

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: B35-SS6-08052019
Collection Date: 8/5/2019 3:00:00 PM
Lab Sample ID: 190806001-007
Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - SW 7471B						Analyst: AVB
(Prep: SW7471B - 8/6/2019)						
Mercury	0.146	0.241	J	µg/g-dry	1	8/7/2019 11:41:44 AM
ICP METALS EPA 6010C						Analyst: KH
(Prep: SW3050B - 8/6/2019)						
Aluminum	13500	24.0		µg/g-dry	1	8/19/2019 3:28:00 PM
Antimony	1.51	7.20	J	µg/g-dry	1	8/19/2019 3:28:00 PM
Arsenic	ND	1.20		µg/g-dry	1	8/19/2019 3:28:00 PM
Barium	93.8	2.40		µg/g-dry	1	8/19/2019 3:28:00 PM
Beryllium	0.52	1.20	J	µg/g-dry	1	8/19/2019 3:28:00 PM
Cadmium	0.34	1.20	J	µg/g-dry	1	8/19/2019 3:28:00 PM
Calcium	3590	120		µg/g-dry	1	8/19/2019 3:28:00 PM
Chromium	50.6	1.20		µg/g-dry	1	8/19/2019 3:28:00 PM
Cobalt	8.65	12.0	J	µg/g-dry	1	8/19/2019 3:28:00 PM
Copper	41.8	1.20		µg/g-dry	1	8/19/2019 3:28:00 PM
Iron	24300	120		µg/g-dry	10	8/19/2019 3:34:00 PM
Lead	163	1.20		µg/g-dry	1	8/19/2019 3:28:00 PM
Magnesium	3930	120		µg/g-dry	1	8/19/2019 3:28:00 PM
Manganese	434	2.40		µg/g-dry	1	8/19/2019 3:28:00 PM
Nickel	42.1	12.0		µg/g-dry	1	8/19/2019 3:28:00 PM
Potassium	1690	120		µg/g-dry	1	8/19/2019 3:28:00 PM
Selenium	ND	1.20		µg/g-dry	1	8/19/2019 3:28:00 PM
Silver	ND	2.40		µg/g-dry	1	8/19/2019 3:28:00 PM
Sodium	514	120		µg/g-dry	1	8/19/2019 3:28:00 PM
Thallium	ND	2.40		µg/g-dry	1	8/19/2019 3:28:00 PM
Vanadium	27.6	12.0		µg/g-dry	1	8/19/2019 3:28:00 PM
Zinc	182	2.40		µg/g-dry	1	8/19/2019 3:28:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
 Work Order: 190806001
 Reference: Watervliet Arsenal / Soil Sampling
 PO#:

Client Sample ID: B35-SS7-08052019
 Collection Date: 8/5/2019 3:15:00 PM
 Lab Sample ID: 190806001-008
 Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - SW 7471B						Analyst: AVB
(Prep: SW7471B - 8/6/2019)						
Mercury	ND	0.228		µg/g-dry	1	8/7/2019 11:43:26 AM
ICP METALS EPA 6010C						Analyst: KH
(Prep: SW3050B - 8/6/2019)						
Aluminum	11100	23.0		µg/g-dry	1	8/19/2019 4:04:00 PM
Antimony	22.5	6.80		µg/g-dry	1	8/19/2019 4:04:00 PM
Arsenic	ND	1.10		µg/g-dry	1	8/19/2019 4:04:00 PM
Barium	179	2.30		µg/g-dry	1	8/19/2019 4:04:00 PM
Beryllium	0.64	1.10	J	µg/g-dry	1	8/19/2019 4:04:00 PM
Cadmium	2.69	1.10		µg/g-dry	1	8/19/2019 4:04:00 PM
Calcium	59000	1100		µg/g-dry	10	8/19/2019 4:09:00 PM
Chromium	314	1.10		µg/g-dry	1	8/19/2019 4:04:00 PM
Cobalt	4.77	11.0	J	µg/g-dry	1	8/19/2019 4:04:00 PM
Copper	111	1.10		µg/g-dry	1	8/19/2019 4:04:00 PM
Iron	41800	110		µg/g-dry	10	8/19/2019 4:09:00 PM
Lead	101	1.10		µg/g-dry	1	8/19/2019 4:04:00 PM
Magnesium	9620	110		µg/g-dry	1	8/19/2019 4:04:00 PM
Manganese	396	2.30		µg/g-dry	1	8/19/2019 4:04:00 PM
Nickel	40.9	11.0		µg/g-dry	1	8/19/2019 4:04:00 PM
Potassium	1880	110		µg/g-dry	1	8/19/2019 4:04:00 PM
Selenium	ND	1.10		µg/g-dry	1	8/19/2019 4:04:00 PM
Silver	ND	2.30		µg/g-dry	1	8/19/2019 4:04:00 PM
Sodium	690	110		µg/g-dry	1	8/19/2019 4:04:00 PM
Thallium	ND	2.30		µg/g-dry	1	8/19/2019 4:04:00 PM
Vanadium	19.2	11.0		µg/g-dry	1	8/19/2019 4:04:00 PM
Zinc	1370	2.30		µg/g-dry	1	8/19/2019 4:04:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 B - Analyte detected in the associated Method Blank
 X - Value exceeds Maximum Contaminant Level
 E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
 Z - RPD outside accepted recovery limits
 N - Matrix Spike below accepted limits (+ above)
 T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: B35-SS8-08052019
Collection Date: 8/5/2019 3:20:00 PM
Lab Sample ID: 190806001-009
Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - SW 7471B						Analyst: AVB
(Prep: SW7471B - 8/6/2019)						
Mercury	ND	0.217		µg/g-dry	1	8/7/2019 11:45:07 AM
ICP METALS EPA 6010C						Analyst: KH
(Prep: SW3050B - 8/6/2019)						
Aluminum	7610	22.0		µg/g-dry	1	8/19/2019 4:15:00 PM
Antimony	2.61	6.50	J	µg/g-dry	1	8/19/2019 4:15:00 PM
Arsenic	ND	1.10		µg/g-dry	1	8/19/2019 4:15:00 PM
Barium	89.1	2.20		µg/g-dry	1	8/19/2019 4:15:00 PM
Beryllium	0.57	1.10	J	µg/g-dry	1	8/19/2019 4:15:00 PM
Cadmium	3.79	1.10		µg/g-dry	1	8/19/2019 4:15:00 PM
Calcium	123000	1100		µg/g-dry	10	8/19/2019 4:19:00 PM
Chromium	92.8	1.10		µg/g-dry	1	8/19/2019 4:15:00 PM
Cobalt	1.62	11.0	J	µg/g-dry	1	8/19/2019 4:15:00 PM
Copper	41.0	1.10		µg/g-dry	1	8/19/2019 4:15:00 PM
Iron	64200	110		µg/g-dry	10	8/19/2019 4:19:00 PM
Lead	57.3	1.10		µg/g-dry	1	8/19/2019 4:15:00 PM
Magnesium	9790	110		µg/g-dry	1	8/19/2019 4:15:00 PM
Manganese	290	2.20		µg/g-dry	1	8/19/2019 4:15:00 PM
Nickel	25.3	11.0		µg/g-dry	1	8/19/2019 4:15:00 PM
Potassium	1850	110		µg/g-dry	1	8/19/2019 4:15:00 PM
Selenium	ND	1.10		µg/g-dry	1	8/19/2019 4:15:00 PM
Silver	ND	2.20		µg/g-dry	1	8/19/2019 4:15:00 PM
Sodium	764	110		µg/g-dry	1	8/19/2019 4:15:00 PM
Thallium	ND	2.20		µg/g-dry	1	8/19/2019 4:15:00 PM
Vanadium	17.0	11.0		µg/g-dry	1	8/19/2019 4:15:00 PM
Zinc	3000	2.20		µg/g-dry	1	8/19/2019 4:15:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
 Work Order: 190806001
 Reference: Watervliet Arsenal / Soil Sampling
 PO#:

Client Sample ID: B35-SS9-08052019
 Collection Date: 8/5/2019 3:30:00 PM
 Lab Sample ID: 190806001-010
 Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - SW 7471B						Analyst: AVB
(Prep: SW7471B - 8/6/2019)						
Mercury	0.155	0.234	J	µg/g-dry	1	8/7/2019 11:46:50 AM
ICP METALS EPA 6010C						Analyst: KH
(Prep: SW3050B - 8/6/2019)						
Aluminum	13800	23.0		µg/g-dry	1	8/19/2019 4:25:00 PM
Antimony	1.03	7.00	J	µg/g-dry	1	8/19/2019 4:25:00 PM
Arsenic	ND	1.20		µg/g-dry	1	8/19/2019 4:25:00 PM
Barium	123	2.30		µg/g-dry	1	8/19/2019 4:25:00 PM
Beryllium	0.65	1.20	J	µg/g-dry	1	8/19/2019 4:25:00 PM
Cadmium	0.55	1.20	J	µg/g-dry	1	8/19/2019 4:25:00 PM
Calcium	5540	120		µg/g-dry	1	8/19/2019 4:25:00 PM
Chromium	38.5	1.20		µg/g-dry	1	8/19/2019 4:25:00 PM
Cobalt	9.74	12.0	J	µg/g-dry	1	8/19/2019 4:25:00 PM
Copper	56.6	1.20		µg/g-dry	1	8/19/2019 4:25:00 PM
Iron	26600	120		µg/g-dry	10	8/19/2019 4:30:00 PM
Lead	155	1.20		µg/g-dry	1	8/19/2019 4:25:00 PM
Magnesium	4970	120		µg/g-dry	1	8/19/2019 4:25:00 PM
Manganese	589	2.30		µg/g-dry	1	8/19/2019 4:25:00 PM
Nickel	35.5	12.0		µg/g-dry	1	8/19/2019 4:25:00 PM
Potassium	1870	120		µg/g-dry	1	8/19/2019 4:25:00 PM
Selenium	ND	1.20		µg/g-dry	1	8/19/2019 4:25:00 PM
Silver	ND	2.30		µg/g-dry	1	8/19/2019 4:25:00 PM
Sodium	573	120		µg/g-dry	1	8/19/2019 4:25:00 PM
Thallium	ND	2.30		µg/g-dry	1	8/19/2019 4:25:00 PM
Vanadium	33.1	12.0		µg/g-dry	1	8/19/2019 4:25:00 PM
Zinc	161	2.30		µg/g-dry	1	8/19/2019 4:25:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 B - Analyte detected in the associated Method Blank
 X - Value exceeds Maximum Contaminant Level
 E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
 Z - RPD outside accepted recovery limits
 N - Matrix Spike below accepted limits (+ above)
 T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 20-Aug-19

CLIENT: Arcadis
 Work Order: 190806001
 Reference: Watervliet Arsenal / Soil Sampling
 PO#:

Client Sample ID: Field Blank-B3555-08052019
 Collection Date: 8/5/2019 2:35:00 PM
 Lab Sample ID: 190806001-011
 Matrix: WATER

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 8/6/2019)						
Mercury	ND	0.20		µg/L	1	8/7/2019 11:48:33 AM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 8/6/2019)						
Aluminum	ND	100		µg/L	1	8/19/2019 12:56:00 PM
Antimony	ND	60.0		µg/L	1	8/19/2019 12:56:00 PM
Arsenic	ND	5.00		µg/L	1	8/19/2019 12:56:00 PM
Barium	ND	10.0		µg/L	1	8/19/2019 12:56:00 PM
Beryllium	0.24	5.00	J	µg/L	1	8/19/2019 12:56:00 PM
Cadmium	ND	5.00		µg/L	1	8/19/2019 12:56:00 PM
Calcium	107	50.0		µg/L	1	8/19/2019 12:56:00 PM
Chromium	ND	5.00		µg/L	1	8/19/2019 12:56:00 PM
Cobalt	ND	50.0		µg/L	1	8/19/2019 12:56:00 PM
Copper	ND	5.00		µg/L	1	8/19/2019 12:56:00 PM
Iron	ND	50.0		µg/L	1	8/19/2019 12:56:00 PM
Lead	0.35	5.00	J	µg/L	1	8/19/2019 12:56:00 PM
Magnesium	ND	50.0		µg/L	1	8/19/2019 12:56:00 PM
Manganese	ND	20.0		µg/L	1	8/19/2019 12:56:00 PM
Nickel	ND	20.0		µg/L	1	8/19/2019 12:56:00 PM
Potassium	29.5	50.0	J	µg/L	1	8/19/2019 12:56:00 PM
Selenium	2.23	5.00	J	µg/L	1	8/19/2019 12:56:00 PM
Silver	ND	10.0		µg/L	1	8/19/2019 12:56:00 PM
Sodium	64.4	50.0		µg/L	1	8/19/2019 12:56:00 PM
Thallium	1.37	10.0	J	µg/L	1	8/19/2019 12:56:00 PM
Vanadium	ND	20.0		µg/L	1	8/19/2019 12:56:00 PM
Zinc	2.07	10.0	J	µg/L	1	8/19/2019 12:56:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 B - Analyte detected in the associated Method Blank
 X - Value exceeds Maximum Contaminant Level
 E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
 Z - RPD outside accepted recovery limits
 N - Matrix Spike below accepted limits (+ above)
 T - Tentatively Identified Compound-Estimated Conc.

CLIENT: Arcadis
 Work Order: 190806001
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

PS	SeqNo: 2682425	PrepDate:	TestNo: SW6010C	RunNo: 174445
	Samp ID: 190806001-004 (B35-SS4-080520)	PrepRef:(SW3050B)	Units: µg/g-dry	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	11770	21.0	837.6	10610	138	75	125	0	0		S
Antimony	206	6.30	209.4	1.381	97.7	75	125	0	0		
Arsenic	11.57	1.00	16.75	0	69.1	75	125	0	0		S
Barium	942	2.10	837.6	80.62	103	75	125	0	0		
Beryllium	23.29	1.00	20.94	0.5338	109	75	125	0	0		
Cadmium	21.03	1.00	20.94	0.2786	99.1	75	125	0	0		
Chromium	152.8	1.00	83.76	60.42	110	75	125	0	0		
Cobalt	208	10.0	209.4	7.12	96	75	125	0	0		
Copper	142.2	1.00	104.7	23.73	113	75	125	0	0		
Iron	17610	10.0	418.8	17520	20	75	125	0	0		S
Lead	51.96	1.00	8.376	44.47	89.5	75	125	0	0		
Manganese	676.7	2.10	209.4	492.4	88	75	125	0	0		
Nickel	225.5	4.20	209.4	17.24	99.4	75	125	0	0		
Selenium	1.533	1.00	4.188	0	36.6	75	125	0	0		S
Silver	14.1	2.10	20.94	0	67.3	75	125	0	0		S
Thallium	15.62	2.10	20.94	0	74.6	75	125	0	0		S
Vanadium	239.6	10.0	209.4	20.81	104	75	125	0	0		
Zinc	341.6	2.10	209.4	137.5	97.5	75	125	0	0		

SD	SeqNo: 2682426	PrepDate:	TestNo: SW6010C	RunNo: 174445
	Samp ID: 190806001-004 (B35-SS4-080520)	PrepRef:(SW3050B)	Units: µg/g-dry	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	10300	100	0	0	0	0	0	10610	3.01	0	
Antimony	ND	31.0	0	0	0	0	0	1.381	0	0	
Arsenic	ND	5.20	0	0	0	0	0	0	0	0	
Barium	81.74	10.0	0	0	0	0	0	80.62	1.38	0	
Beryllium	0.5835	5.20	0	0	0	0	0	0.5338	0	0	J
Cadmium	ND	5.20	0	0	0	0	0	0.2786	0	0	
Calcium	2433	52.0	0	0	0	0	0	2367	2.73	0	
Chromium	59.53	5.20	0	0	0	0	0	60.42	1.50	0	

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

SD	SeqNo: 2682426	PrepDate:	TestNo: SW6010C	RunNo: 174445
	Samp ID: 190806001-004 (B35-SS4-080520)	PrepRef:(SW3050B)	Units: µg/g-dry	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cobalt	8.313	52.0	0	0	0	0	0	7.12	0	0	J
Copper	23.37	5.20	0	0	0	0	0	23.73	1.57	0	
Iron	21410	52.0	0	0	0	0	0	17520	20.0	0	
Lead	50.58	5.20	0	0	0	0	0	44.47	12.9	0	
Magnesium	3703	52.0	0	0	0	0	0	3706	0.0989	0	
Manganese	548.6	10.0	0	0	0	0	0	492.4	10.8	0	
Nickel	20.59	21.0	0	0	0	0	0	17.24	0	0	J
Potassium	1124	52.0	0	0	0	0	0	1348	18.2	0	
Selenium	ND	5.20	0	0	0	0	0	0	0	0	
Silver	ND	10.0	0	0	0	0	0	0	0	0	
Sodium	310.3	52.0	0	0	0	0	0	433.8	33.2	0	
Thallium	ND	10.0	0	0	0	0	0	0	0	0	
Vanadium	12.5	52.0	0	0	0	0	0	20.81	0	0	J
Zinc	155.8	10.0	0	0	0	0	0	137.5	12.5	0	

MBLK	SeqNo: 2682411	PrepDate:8/6/2019 1	TestNo: SW6010C	RunNo: 174445
	Samp ID: MB-74858	PrepRef:(SW3050B)	Units: µg/g	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	20.0									
Antimony	ND	6.00									
Arsenic	ND	1.00									
Barium	ND	2.00									
Beryllium	ND	1.00									
Cadmium	ND	1.00									
Calcium	8.471	10.0									J
Chromium	0.4838	1.00									J
Cobalt	ND	10.0									
Copper	0.3938	1.00									J
Iron	ND	10.0									
Lead	ND	1.00									
Magnesium	ND	10.0									
Manganese	ND	2.00									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
 Work Order: 190806001
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

MBLK	SeqNo: 2682411	PrepDate:8/6/2019 1	TestNo: SW6010C	RunNo: 174445
	Samp ID: MB-74858	PrepRef:(SW3050B)	Units: µg/g	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nickel	ND	4.00									
Potassium	3.855	10.0									J
Selenium	ND	1.00									
Silver	ND	2.00									
Sodium	ND	10.0									
Thallium	ND	2.00									
Vanadium	ND	10.0									
Zinc	ND	2.00									

LCS	SeqNo: 2682412	PrepDate:8/6/2019 1	TestNo: SW6010C	RunNo: 174445
	Samp ID: LCS-74858	PrepRef:(SW3050B)	Units: µg/g	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	8976	20.0	8160	0	110	48.5	152	0	0		
Antimony	41.15	6.00	60.9	0	67.6	1.3	198.7	0	0		
Arsenic	138.2	1.00	135	0	102	83	117	0	0		
Barium	478.9	2.00	443	0	108	82.6	117.6	0	0		
Beryllium	218.4	1.00	197	0	111	83.2	116.2	0	0		
Cadmium	228.6	1.00	204	0	112	82.8	117.6	0	0		
Calcium	5123	10.0	4830	0	106	81.8	118	0	0		
Chromium	151.7	1.00	132	0	115	82.6	117.4	0	0		
Cobalt	184	10.0	179	0	103	84.4	115.6	0	0		
Copper	205.6	1.00	184	0	112	84.2	115.8	0	0		
Iron	14490	10.0	14400	0	101	60.9	138.9	0	0		
Lead	236.2	1.00	216	0	109	82.4	117.6	0	0		
Magnesium	2484	10.0	2340	0	106	76.1	123.9	0	0		
Manganese	318.1	2.00	323	0	98.5	82.4	117.6	0	0		
Nickel	162.8	4.00	152	0	107	82.9	117.1	0	0		
Potassium	2118	10.0	2050	0	103	70.2	129.8	0	0		
Selenium	81.12	1.00	74.9	0	108	79.2	120.8	0	0		
Silver	61.06	2.00	53.9	0	113	79.8	120.2	0	0		
Sodium	182.3	10.0	149	0	122	74.5	126.2	0	0		
Thallium	234.4	2.00	232	0	101	81	119	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

LCS	SeqNo: 2682412	PrepDate:8/6/2019 1	TestNo: SW6010C	RunNo: 174445
	Samp ID: LCS-74858	PrepRef:(SW3050B)	Units: µg/g	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vanadium	184.7	10.0	172	0	107	79.7	120.3	0	0		
Zinc	226.7	2.00	211	0	107	81	118.5	0	0		

MS	SeqNo: 2682424	PrepDate:8/6/2019 1	TestNo: SW6010C	RunNo: 174445
	Samp ID: 190806001-004 (B35-SS4-080520)	PrepRef:(SW3050B)	Units: µg/g-dry	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	15380	21.0	418.8	10610	1140	75	125	0	0		S
Antimony	53.88	6.30	104.7	1.381	50.1	75	125	0	0		S
Arsenic	7.808	1.00	8.376	0	93.2	75	125	0	0		
Barium	523.4	2.10	418.8	80.62	106	75	125	0	0		
Beryllium	11.72	1.00	10.47	0.5338	107	75	125	0	0		
Cadmium	10.3	1.00	10.47	0.2786	95.7	75	125	0	0		
Chromium	108.9	1.00	41.88	60.42	116	75	125	0	0		
Cobalt	105	10.0	104.7	7.12	93.5	75	125	0	0		
Copper	83.6	1.00	52.35	23.73	114	75	125	0	0		
Iron	18980	10.0	209.4	17520	698	75	125	0	0		S
Lead	36.47	1.00	4.188	44.47	-191	75	125	0	0		S
Manganese	589.3	2.10	104.7	492.4	92.6	75	125	0	0		
Nickel	118.5	4.20	104.7	17.24	96.7	75	125	0	0		
Selenium	2.543	1.00	2.094	0	121	75	125	0	0		
Silver	9.956	2.10	10.47	0	95.1	75	125	0	0		
Thallium	9.399	2.10	10.47	0	89.8	75	125	0	0		
Vanadium	129.4	10.0	104.7	20.81	104	75	125	0	0		
Zinc	244.4	2.10	104.7	137.5	102	75	125	0	0		

DUP	SeqNo: 2682422	PrepDate:8/6/2019 1	TestNo: SW6010C	RunNo: 174445
	Samp ID: 190806001-004	PrepRef:	Units: µg/g-dry	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	10490	21.0	0	0	0	0	0	10610	1.17	22.9	
Antimony	1.724	6.30	0	0	0	0	0	1.381	0	14.4	
Arsenic	ND	1.00	0	0	0	0	0	0	0	22.3	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
 Work Order: 190806001
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

DUP	SeqNo: 2682422	PrepDate: 8/6/2019 1	TestNo: SW6010C	RunNo: 174445
	Samp ID: 190806001-004	PrepRef:	Units: µg/g-dry	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	79.15	2.10	0	0	0	0	0	80.62	1.83	24.4	
Beryllium	0.5438	1.00	0	0	0	0	0	0.5338	0	20	
Cadmium	0.2446	1.00	0	0	0	0	0	0.2786	0	26.4	
Calcium	2351	10.0	0	0	0	0	0	2367	0.683	25	
Chromium	66.27	1.00	0	0	0	0	0	60.42	9.24	25	
Cobalt	6.755	10.0	0	0	0	0	0	7.12	0	21.3	
Copper	24.54	1.00	0	0	0	0	0	23.73	3.33	24.7	
Lead	34.3	1.00	0	0	0	0	0	44.47	25.8	25	Z
Magnesium	3502	10.0	0	0	0	0	0	3706	5.68	25	
Manganese	447.2	2.10	0	0	0	0	0	492.4	9.62	25	
Nickel	16.16	4.20	0	0	0	0	0	17.24	6.46	25	
Potassium	1441	10.0	0	0	0	0	0	1348	6.70	22.6	
Selenium	ND	1.00	0	0	0	0	0	0	0	20.2	
Silver	ND	2.10	0	0	0	0	0	0	0	10.4	
Sodium	397.7	10.0	0	0	0	0	0	433.8	8.68	25	
Thallium	ND	2.10	0	0	0	0	0	0	0	23.1	
Vanadium	19.24	10.0	0	0	0	0	0	20.81	7.88	24.1	
Zinc	136.6	2.10	0	0	0	0	0	137.5	0.671	25	

DUP	SeqNo: 2682423	PrepDate: 8/6/2019 1	TestNo: SW6010C	RunNo: 174445
	Samp ID: 190806001-004	PrepRef:	Units: µg/g-dry	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	20450	100	0	0	0	0	0	19930	2.56	20.9	

CCB	SeqNo: 2682406	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CCB-1	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	17.83	200	0	0	0	0	0	0	0		
Antimony	0.4885	60.0	0	0	0	0	0	0	0		
Arsenic	ND	10.0	0	0	0	0	0	0	0		
Barium	1.682	200	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
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CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

CCB	SeqNo: 2682406	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CCB-1	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	0.2606	5.00	0	0	0	0	0	0	0		
Boron	1.768	50.0	0	0	0	0	0	0	0		
Cadmium	0.0582	5.00	0	0	0	0	0	0	0		
Calcium	0.3681	5000	0	0	0	0	0	0	0		
Chromium	ND	10.0	0	0	0	0	0	0	0		
Cobalt	ND	50.0	0	0	0	0	0	0	0		
Copper	0.1439	25.0	0	0	0	0	0	0	0		
Iron	ND	100	0	0	0	0	0	0	0		
Lead	0.3734	3.00	0	0	0	0	0	0	0		
Lithium	15.39	100	0	0	0	0	0	0	0		
Magnesium	ND	5000	0	0	0	0	0	0	0		
Manganese	ND	15.0	0	0	0	0	0	0	0		
Molybdenum	1.278	50.0	0	0	0	0	0	0	0		
Nickel	ND	40.0	0	0	0	0	0	0	0		
Potassium	7.284	5000	0	0	0	0	0	0	0		
Selenium	1.101	5.00	0	0	0	0	0	0	0		
Silver	ND	10.0	0	0	0	0	0	0	0		
Sodium	6.621	5000	0	0	0	0	0	0	0		
Strontium	ND	20.0	0	0	0	0	0	0	0		
Thallium	0.06934	10.0	0	0	0	0	0	0	0		
Tin	0.303	50.0	0	0	0	0	0	0	0		
Titanium	0.9032	50.0	0	0	0	0	0	0	0		
Vanadium	ND	50.0	0	0	0	0	0	0	0		
Zinc	ND	20.0	0	0	0	0	0	0	0		

CCB	SeqNo: 2682418	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CCB-2	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0		
Antimony	0.4349	60.0	0	0	0	0	0	0	0		
Arsenic	ND	10.0	0	0	0	0	0	0	0		
Barium	ND	200	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
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S - Spike Recovery outside accepted recovery limits
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B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

CCB	SeqNo: 2682418	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CCB-2	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	0.0899	5.00	0	0	0	0	0	0	0	0	
Boron	1.257	50.0	0	0	0	0	0	0	0	0	
Cadmium	0.07759	5.00	0	0	0	0	0	0	0	0	
Calcium	ND	5000	0	0	0	0	0	0	0	0	
Chromium	ND	10.0	0	0	0	0	0	0	0	0	
Cobalt	ND	50.0	0	0	0	0	0	0	0	0	
Copper	ND	25.0	0	0	0	0	0	0	0	0	
Iron	ND	100	0	0	0	0	0	0	0	0	
Lead	0.04227	3.00	0	0	0	0	0	0	0	0	
Lithium	3.341	100	0	0	0	0	0	0	0	0	
Magnesium	ND	5000	0	0	0	0	0	0	0	0	
Manganese	ND	15.0	0	0	0	0	0	0	0	0	
Molybdenum	1.381	50.0	0	0	0	0	0	0	0	0	
Nickel	ND	40.0	0	0	0	0	0	0	0	0	
Potassium	8.262	5000	0	0	0	0	0	0	0	0	
Selenium	ND	5.00	0	0	0	0	0	0	0	0	
Silver	ND	10.0	0	0	0	0	0	0	0	0	
Sodium	ND	5000	0	0	0	0	0	0	0	0	
Strontium	0.00897	20.0	0	0	0	0	0	0	0	0	
Thallium	1.355	10.0	0	0	0	0	0	0	0	0	
Tin	0.3679	50.0	0	0	0	0	0	0	0	0	
Titanium	0.9031	50.0	0	0	0	0	0	0	0	0	
Vanadium	ND	50.0	0	0	0	0	0	0	0	0	
Zinc	ND	20.0	0	0	0	0	0	0	0	0	

CCB	SeqNo: 2682430	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CCB-3	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0	0	
Antimony	0.05462	60.0	0	0	0	0	0	0	0	0	
Arsenic	0.3719	10.0	0	0	0	0	0	0	0	0	
Barium	ND	200	0	0	0	0	0	0	0	0	

Qualifiers: ND - Not Detected at the Reporting Limit
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B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

CCB	SeqNo: 2682430	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CCB-3	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	0.395	5.00	0	0	0	0	0	0	0	0	
Boron	ND	50.0	0	0	0	0	0	0	0	0	
Cadmium	0.02686	5.00	0	0	0	0	0	0	0	0	
Calcium	ND	5000	0	0	0	0	0	0	0	0	
Chromium	ND	10.0	0	0	0	0	0	0	0	0	
Cobalt	ND	50.0	0	0	0	0	0	0	0	0	
Copper	1.248	25.0	0	0	0	0	0	0	0	0	
Iron	ND	100	0	0	0	0	0	0	0	0	
Lead	ND	3.00	0	0	0	0	0	0	0	0	
Lithium	1.071	100	0	0	0	0	0	0	0	0	
Magnesium	ND	5000	0	0	0	0	0	0	0	0	
Manganese	ND	15.0	0	0	0	0	0	0	0	0	
Molybdenum	ND	50.0	0	0	0	0	0	0	0	0	
Nickel	ND	40.0	0	0	0	0	0	0	0	0	
Potassium	4.975	5000	0	0	0	0	0	0	0	0	
Selenium	0.6051	5.00	0	0	0	0	0	0	0	0	
Silver	ND	10.0	0	0	0	0	0	0	0	0	
Sodium	ND	5000	0	0	0	0	0	0	0	0	
Strontium	5.075	20.0	0	0	0	0	0	0	0	0	
Thallium	ND	10.0	0	0	0	0	0	0	0	0	
Tin	0.6494	50.0	0	0	0	0	0	0	0	0	
Titanium	ND	50.0	0	0	0	0	0	0	0	0	
Vanadium	ND	50.0	0	0	0	0	0	0	0	0	
Zinc	ND	20.0	0	0	0	0	0	0	0	0	

CCB	SeqNo: 2682442	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CCB-4	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0	0	
Antimony	ND	60.0	0	0	0	0	0	0	0	0	
Arsenic	ND	10.0	0	0	0	0	0	0	0	0	
Barium	0.4885	200	0	0	0	0	0	0	0	0	

Qualifiers: ND - Not Detected at the Reporting Limit
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S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

CCB	SeqNo: 2682442	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CCB-4	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	0.2225	5.00	0	0	0	0	0	0	0	0	
Boron	1.41	50.0	0	0	0	0	0	0	0	0	
Cadmium	0.1059	5.00	0	0	0	0	0	0	0	0	
Calcium	ND	5000	0	0	0	0	0	0	0	0	
Chromium	ND	10.0	0	0	0	0	0	0	0	0	
Cobalt	ND	50.0	0	0	0	0	0	0	0	0	
Copper	1.47	25.0	0	0	0	0	0	0	0	0	
Iron	ND	100	0	0	0	0	0	0	0	0	
Lead	ND	3.00	0	0	0	0	0	0	0	0	
Lithium	8.405	100	0	0	0	0	0	0	0	0	
Magnesium	ND	5000	0	0	0	0	0	0	0	0	
Manganese	ND	15.0	0	0	0	0	0	0	0	0	
Molybdenum	1.092	50.0	0	0	0	0	0	0	0	0	
Nickel	ND	40.0	0	0	0	0	0	0	0	0	
Potassium	9.002	5000	0	0	0	0	0	0	0	0	
Selenium	1.831	5.00	0	0	0	0	0	0	0	0	
Silver	ND	10.0	0	0	0	0	0	0	0	0	
Sodium	1.745	5000	0	0	0	0	0	0	0	0	
Strontium	5.519	20.0	0	0	0	0	0	0	0	0	
Thallium	ND	10.0	0	0	0	0	0	0	0	0	
Tin	0.4546	50.0	0	0	0	0	0	0	0	0	
Titanium	1.535	50.0	0	0	0	0	0	0	0	0	
Vanadium	ND	50.0	0	0	0	0	0	0	0	0	
Zinc	ND	20.0	0	0	0	0	0	0	0	0	

CCB	SeqNo: 2682447	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CCB-5	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0	0	
Antimony	ND	60.0	0	0	0	0	0	0	0	0	
Arsenic	ND	10.0	0	0	0	0	0	0	0	0	
Barium	ND	200	0	0	0	0	0	0	0	0	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

CCB	SeqNo: 2682447	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CCB-5	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	0.2623	5.00	0	0	0	0	0	0	0	0	
Boron	0.8614	50.0	0	0	0	0	0	0	0	0	
Cadmium	0.06564	5.00	0	0	0	0	0	0	0	0	
Calcium	ND	5000	0	0	0	0	0	0	0	0	
Chromium	ND	10.0	0	0	0	0	0	0	0	0	
Cobalt	ND	50.0	0	0	0	0	0	0	0	0	
Copper	0.3002	25.0	0	0	0	0	0	0	0	0	
Iron	ND	100	0	0	0	0	0	0	0	0	
Lead	0.08833	3.00	0	0	0	0	0	0	0	0	
Lithium	11.15	100	0	0	0	0	0	0	0	0	
Magnesium	ND	5000	0	0	0	0	0	0	0	0	
Manganese	ND	15.0	0	0	0	0	0	0	0	0	
Molybdenum	0.7656	50.0	0	0	0	0	0	0	0	0	
Nickel	ND	40.0	0	0	0	0	0	0	0	0	
Potassium	4.442	5000	0	0	0	0	0	0	0	0	
Selenium	0.8533	5.00	0	0	0	0	0	0	0	0	
Silver	ND	10.0	0	0	0	0	0	0	0	0	
Sodium	4.647	5000	0	0	0	0	0	0	0	0	
Strontium	3.83	20.0	0	0	0	0	0	0	0	0	
Thallium	0.9422	10.0	0	0	0	0	0	0	0	0	
Tin	0.8226	50.0	0	0	0	0	0	0	0	0	
Titanium	ND	50.0	0	0	0	0	0	0	0	0	
Vanadium	ND	50.0	0	0	0	0	0	0	0	0	
Zinc	ND	20.0	0	0	0	0	0	0	0	0	

CCV	SeqNo: 2682405	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CCV-1	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1982	200	2000	0	99.1	90	110	0	0	0	
Antimony	2020	60.0	2000	0	101	90	110	0	0	0	
Arsenic	2075	10.0	2000	0	104	90	110	0	0	0	
Barium	2049	200	2000	0	102	90	110	0	0	0	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

CCV	SeqNo: 2682405	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CCV-1	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	2012	5.00	2000	0	101	90	110	0	0		
Boron	2063	50.0	2000	0	103	90	110	0	0		
Cadmium	2094	5.00	2000	0	105	90	110	0	0		
Calcium	1992	5000	2000	0	99.6	90	110	0	0		
Chromium	2008	10.0	2000	0	100	90	110	0	0		
Cobalt	1986	50.0	2000	0	99.3	90	110	0	0		
Copper	2058	25.0	2000	0	103	90	110	0	0		
Iron	2035	100	2000	0	102	90	110	0	0		
Lead	2004	3.00	2000	0	100	90	110	0	0		
Lithium	1965	100	2000	0	98.3	90	110	0	0		
Magnesium	1961	5000	2000	0	98.1	90	110	0	0		
Manganese	1963	15.0	2000	0	98.2	90	110	0	0		
Molybdenum	2062	50.0	2000	0	103	90	110	0	0		
Nickel	2064	40.0	2000	0	103	90	110	0	0		
Potassium	9913	5000	10000	0	99.1	90	110	0	0		
Selenium	1958	5.00	2000	0	97.9	90	110	0	0		
Silver	524.7	10.0	500	0	105	90	110	0	0		
Sodium	1934	5000	2000	0	96.7	90	110	0	0		
Strontium	2006	20.0	2000	0	100	90	110	0	0		
Thallium	1985	10.0	2000	0	99.3	90	110	0	0		
Tin	2014	50.0	2000	0	101	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	1987	50.0	2000	0	99.4	90	110	0	0		
Zinc	2079	20.0	2000	0	104	90	110	0	0		

CCV	SeqNo: 2682417	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CCV-2	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1958	200	2000	0	97.9	90	110	0	0		
Antimony	2015	60.0	2000	0	101	90	110	0	0		
Arsenic	2077	10.0	2000	0	104	90	110	0	0		
Barium	2042	200	2000	0	102	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

CCV	SeqNo: 2682417	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CCV-2	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	2015	5.00	2000	0	101	90	110	0	0		
Boron	2185	50.0	2000	0	109	90	110	0	0		
Cadmium	2100	5.00	2000	0	105	90	110	0	0		
Calcium	1988	5000	2000	0	99.4	90	110	0	0		
Chromium	2008	10.0	2000	0	100	90	110	0	0		
Cobalt	2000	50.0	2000	0	100	90	110	0	0		
Copper	2073	25.0	2000	0	104	90	110	0	0		
Iron	2037	100	2000	0	102	90	110	0	0		
Lead	2017	3.00	2000	0	101	90	110	0	0		
Lithium	1976	100	2000	0	98.8	90	110	0	0		
Magnesium	1938	5000	2000	0	96.9	90	110	0	0		
Manganese	1980	15.0	2000	0	99	90	110	0	0		
Molybdenum	2073	50.0	2000	0	104	90	110	0	0		
Nickel	2077	40.0	2000	0	104	90	110	0	0		
Potassium	9300	5000	10000	0	93	90	110	0	0		
Selenium	1979	5.00	2000	0	98.9	90	110	0	0		
Silver	529	10.0	500	0	106	90	110	0	0		
Sodium	1918	5000	2000	0	95.9	90	110	0	0		
Strontium	2052	20.0	2000	0	103	90	110	0	0		
Thallium	2000	10.0	2000	0	100	90	110	0	0		
Tin	2024	50.0	2000	0	101	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	1998	50.0	2000	0	99.9	90	110	0	0		
Zinc	2096	20.0	2000	0	105	90	110	0	0		

CCV	SeqNo: 2682429	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CCV-3	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1984	200	2000	0	99.2	90	110	0	0		
Antimony	2027	60.0	2000	0	101	90	110	0	0		
Arsenic	2089	10.0	2000	0	104	90	110	0	0		
Barium	2070	200	2000	0	104	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

CCV	SeqNo: 2682429	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CCV-3	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	2026	5.00	2000	0	101	90	110	0	0		
Boron	2074	50.0	2000	0	104	90	110	0	0		
Cadmium	2092	5.00	2000	0	105	90	110	0	0		
Calcium	2001	5000	2000	0	100	90	110	0	0		
Chromium	2034	10.0	2000	0	102	90	110	0	0		
Cobalt	1991	50.0	2000	0	99.5	90	110	0	0		
Copper	2090	25.0	2000	0	105	90	110	0	0		
Iron	2031	100	2000	0	102	90	110	0	0		
Lead	2128	3.00	2000	0	106	90	110	0	0		
Lithium	1993	100	2000	0	99.7	90	110	0	0		
Magnesium	1968	5000	2000	0	98.4	90	110	0	0		
Manganese	1974	15.0	2000	0	98.7	90	110	0	0		
Molybdenum	2070	50.0	2000	0	104	90	110	0	0		
Nickel	2066	40.0	2000	0	103	90	110	0	0		
Potassium	9411	5000	10000	0	94.1	90	110	0	0		
Selenium	2071	5.00	2000	0	104	90	110	0	0		
Silver	530.2	10.0	500	0	106	90	110	0	0		
Sodium	1967	5000	2000	0	98.3	90	110	0	0		
Strontium	2036	20.0	2000	0	102	90	110	0	0		
Thallium	2004	10.0	2000	0	100	90	110	0	0		
Tin	2014	50.0	2000	0	101	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	2018	50.0	2000	0	101	90	110	0	0		
Zinc	2084	20.0	2000	0	104	90	110	0	0		

CCV	SeqNo: 2682441	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CCV-4	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1974	200	2000	0	98.7	90	110	0	0		
Antimony	2037	60.0	2000	0	102	90	110	0	0		
Arsenic	2097	10.0	2000	0	105	90	110	0	0		
Barium	2078	200	2000	0	104	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

CCV	SeqNo: 2682441	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CCV-4	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	2030	5.00	2000	0	102	90	110	0	0		
Boron	2083	50.0	2000	0	104	90	110	0	0		
Cadmium	2097	5.00	2000	0	105	90	110	0	0		
Calcium	1994	5000	2000	0	99.7	90	110	0	0		
Chromium	2042	10.0	2000	0	102	90	110	0	0		
Cobalt	1999	50.0	2000	0	99.9	90	110	0	0		
Copper	2097	25.0	2000	0	105	90	110	0	0		
Iron	2034	100	2000	0	102	90	110	0	0		
Lead	2134	3.00	2000	0	107	90	110	0	0		
Lithium	2015	100	2000	0	101	90	110	0	0		
Magnesium	1948	5000	2000	0	97.4	90	110	0	0		
Manganese	1974	15.0	2000	0	98.7	90	110	0	0		
Molybdenum	2072	50.0	2000	0	104	90	110	0	0		
Nickel	2074	40.0	2000	0	104	90	110	0	0		
Potassium	9446	5000	10000	0	94.5	90	110	0	0		
Selenium	1994	5.00	2000	0	99.7	90	110	0	0		
Silver	530.7	10.0	500	0	106	90	110	0	0		
Sodium	1982	5000	2000	0	99.1	90	110	0	0		
Strontium	2048	20.0	2000	0	102	90	110	0	0		
Thallium	2003	10.0	2000	0	100	90	110	0	0		
Tin	2022	50.0	2000	0	101	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	2014	50.0	2000	0	101	90	110	0	0		
Zinc	2089	20.0	2000	0	104	90	110	0	0		

CCV	SeqNo: 2682446	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CCV-5	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1962	200	2000	0	98.1	90	110	0	0		
Antimony	2021	60.0	2000	0	101	90	110	0	0		
Arsenic	2087	10.0	2000	0	104	90	110	0	0		
Barium	2069	200	2000	0	103	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

CCV	SeqNo: 2682446	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CCV-5	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	2021	5.00	2000	0	101	90	110	0	0		
Boron	2069	50.0	2000	0	103	90	110	0	0		
Cadmium	2075	5.00	2000	0	104	90	110	0	0		
Calcium	1997	5000	2000	0	99.8	90	110	0	0		
Chromium	2033	10.0	2000	0	102	90	110	0	0		
Cobalt	1977	50.0	2000	0	98.9	90	110	0	0		
Copper	2091	25.0	2000	0	105	90	110	0	0		
Iron	2043	100	2000	0	102	90	110	0	0		
Lead	2115	3.00	2000	0	106	90	110	0	0		
Lithium	1985	100	2000	0	99.2	90	110	0	0		
Magnesium	1971	5000	2000	0	98.5	90	110	0	0		
Manganese	1970	15.0	2000	0	98.5	90	110	0	0		
Molybdenum	2063	50.0	2000	0	103	90	110	0	0		
Nickel	2059	40.0	2000	0	103	90	110	0	0		
Potassium	9400	5000	10000	0	94	90	110	0	0		
Selenium	1994	5.00	2000	0	99.7	90	110	0	0		
Silver	525.5	10.0	500	0	105	90	110	0	0		
Sodium	1968	5000	2000	0	98.4	90	110	0	0		
Strontium	2044	20.0	2000	0	102	90	110	0	0		
Thallium	2000	10.0	2000	0	100	90	110	0	0		
Tin	1998	50.0	2000	0	99.9	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	2009	50.0	2000	0	100	90	110	0	0		
Zinc	2069	20.0	2000	0	103	90	110	0	0		

CRI	SeqNo: 2682402	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CRI-1	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	7.041	200	0	0	0	50	150	0	0		
Antimony	118.7	60.0	120	0	98.9	50	150	0	0		
Arsenic	19.29	10.0	20	0	96.4	50	150	0	0		
Barium	0.1941	200	0	0	0	50	150	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
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S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

CRI	SeqNo: 2682402	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CRI-1	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	10.26	5.00	10	0	103	50	150	0	0		
Cadmium	10.23	5.00	10	0	102	50	150	0	0		
Calcium	ND	5000	0	0	0	50	150	0	0		
Chromium	20	10.0	20	0	100	50	150	0	0		
Cobalt	97.79	50.0	100	0	97.8	50	150	0	0		
Copper	50.79	25.0	50	0	102	50	150	0	0		
Iron	ND	100	0	0	0	50	150	0	0		
Lead	6.623	3.00	6	0	110	50	150	0	0		
Magnesium	ND	5000	0	0	0	50	150	0	0		
Manganese	28.5	15.0	30	0	95	50	150	0	0		
Nickel	80.74	40.0	80	0	101	50	150	0	0		
Potassium	11.07	5000	0	0	0	50	150	0	0		
Selenium	11.25	5.00	10	0	112	50	150	0	0		
Silver	19.03	10.0	20	0	95.2	50	150	0	0		
Sodium	2.341	5000	0	0	0	50	150	0	0		
Thallium	20.03	10.0	20	0	100	50	150	0	0		
Vanadium	89.33	50.0	100	0	89.3	50	150	0	0		
Zinc	45.4	20.0	40	0	114	50	150	0	0		

CRI	SeqNo: 2682443	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CRI-2	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	50	150	0	0		
Antimony	116.8	60.0	120	0	97.4	50	150	0	0		
Arsenic	19.18	10.0	20	0	95.9	50	150	0	0		
Barium	ND	200	0	0	0	50	150	0	0		
Beryllium	10.18	5.00	10	0	102	50	150	0	0		
Cadmium	10.09	5.00	10	0	101	50	150	0	0		
Calcium	1.289	5000	0	0	0	50	150	0	0		
Chromium	22.97	10.0	20	0	115	50	150	0	0		
Cobalt	95.86	50.0	100	0	95.9	50	150	0	0		
Copper	50.75	25.0	50	0	101	50	150	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
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R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

CRI	SeqNo: 2682443	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: CRI-2	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	ND	100	0	0	0	50	150	0	0		
Lead	5.419	3.00	6	0	90.3	50	150	0	0		
Magnesium	ND	5000	0	0	0	50	150	0	0		
Manganese	28.12	15.0	30	0	93.7	50	150	0	0		
Nickel	79.27	40.0	80	0	99.1	50	150	0	0		
Potassium	13.68	5000	0	0	0	50	150	0	0		
Selenium	10.2	5.00	10	0	102	50	150	0	0		
Silver	19.36	10.0	20	0	96.8	50	150	0	0		
Sodium	5.192	5000	0	0	0	50	150	0	0		
Thallium	18.75	10.0	20	0	93.8	50	150	0	0		
Vanadium	94.53	50.0	100	0	94.5	50	150	0	0		
Zinc	44.72	20.0	40	0	112	50	150	0	0		

ICB	SeqNo: 2682401	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: ICB-1	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0		
Antimony	ND	60.0	0	0	0	0	0	0	0		
Arsenic	ND	10.0	0	0	0	0	0	0	0		
Barium	1.124	200	0	0	0	0	0	0	0		
Beryllium	0.2142	5.00	0	0	0	0	0	0	0		
Cadmium	0.1283	5.00	0	0	0	0	0	0	0		
Calcium	ND	5000	0	0	0	0	0	0	0		
Chromium	0.3812	10.0	0	0	0	0	0	0	0		
Cobalt	ND	50.0	0	0	0	0	0	0	0		
Copper	ND	25.0	0	0	0	0	0	0	0		
Iron	ND	100	0	0	0	0	0	0	0		
Lead	0.7251	3.00	0	0	0	0	0	0	0		
Magnesium	ND	5000	0	0	0	0	0	0	0		
Manganese	ND	15.0	0	0	0	0	0	0	0		
Nickel	ND	40.0	0	0	0	0	0	0	0		
Potassium	8.943	5000	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
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R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

ICB	SeqNo: 2682401	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: ICB-1	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	0.1707	5.00	0	0	0	0	0	0	0		
Silver	ND	10.0	0	0	0	0	0	0	0		
Sodium	8.434	5000	0	0	0	0	0	0	0		
Thallium	1.144	10.0	0	0	0	0	0	0	0		
Vanadium	ND	50.0	0	0	0	0	0	0	0		
Zinc	0.1299	20.0	0	0	0	0	0	0	0		

ICV	SeqNo: 2682400	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: ICV-1	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1997	200	2000	0	99.9	90	110	0	0		
Antimony	2022	60.0	2000	0	101	90	110	0	0		
Arsenic	2081	10.0	2000	0	104	90	110	0	0		
Barium	2046	200	2000	0	102	90	110	0	0		
Beryllium	2009	5.00	2000	0	100	90	110	0	0		
Cadmium	2094	5.00	2000	0	105	90	110	0	0		
Calcium	1993	5000	2000	0	99.7	90	110	0	0		
Chromium	2007	10.0	2000	0	100	90	110	0	0		
Cobalt	1981	50.0	2000	0	99.1	90	110	0	0		
Copper	2059	25.0	2000	0	103	90	110	0	0		
Iron	2010	100	2000	0	100	90	110	0	0		
Lead	2001	3.00	2000	0	100	90	110	0	0		
Magnesium	1934	5000	2000	0	96.7	90	110	0	0		
Manganese	1952	15.0	2000	0	97.6	90	110	0	0		
Nickel	2060	40.0	2000	0	103	90	110	0	0		
Potassium	9950	5000	10000	0	99.5	90	110	0	0		
Selenium	1944	5.00	2000	0	97.2	90	110	0	0		
Silver	505.1	10.0	500	0	101	90	110	0	0		
Sodium	1934	5000	2000	0	96.7	90	110	0	0		
Thallium	1977	10.0	2000	0	98.8	90	110	0	0		
Vanadium	1982	50.0	2000	0	99.1	90	110	0	0		
Zinc	2075	20.0	2000	0	104	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
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S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

ICSA	SeqNo: 2682403	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: ICSA-1	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	505800	200	500000	0	101	80	120	0	0		
Antimony	ND	60.0	0	0	0	80	120	0	0		
Arsenic	ND	10.0	0	0	0	80	120	0	0		
Barium	0.2274	200	0	0	0	80	120	0	0		
Beryllium	2.856	5.00	0	0	0	80	120	0	0		
Cadmium	ND	5.00	0	0	0	80	120	0	0		
Calcium	431000	5000	500000	0	86.2	80	120	0	0		
Chromium	ND	10.0	0	0	0	80	120	0	0		
Cobalt	0.1596	50.0	0	0	0	80	120	0	0		
Copper	ND	25.0	0	0	0	80	120	0	0		
Iron	121200	100	200000	0	60.6	80	120	0	0		S
Lead	ND	3.00	0	0	0	80	120	0	0		
Magnesium	531200	5000	500000	0	106	80	120	0	0		
Manganese	ND	15.0	0	0	0	80	120	0	0		
Nickel	ND	40.0	0	0	0	80	120	0	0		
Potassium	8.054	5000	0	0	0	80	120	0	0		
Selenium	ND	5.00	0	0	0	80	120	0	0		
Silver	ND	10.0	0	0	0	80	120	0	0		
Sodium	15.29	5000	0	0	0	80	120	0	0		
Thallium	ND	10.0	0	0	0	80	120	0	0		
Vanadium	ND	50.0	0	0	0	80	120	0	0		
Zinc	ND	20.0	0	0	0	80	120	0	0		

ICSA	SeqNo: 2682444	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: ICSA-2	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	504700	200	500000	0	101	80	120	0	0		
Antimony	ND	60.0	0	0	0	80	120	0	0		
Arsenic	ND	10.0	0	0	0	80	120	0	0		
Barium	ND	200	0	0	0	80	120	0	0		
Beryllium	2.955	5.00	0	0	0	80	120	0	0		
Cadmium	ND	5.00	0	0	0	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
 Work Order: 190806001
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

ICSA	SeqNo: 2682444	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: ICSA-2	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	429700	5000	500000	0	85.9	80	120	0	0		
Chromium	ND	10.0	0	0	0	80	120	0	0		
Cobalt	0.1556	50.0	0	0	0	80	120	0	0		
Copper	ND	25.0	0	0	0	80	120	0	0		
Iron	120000	100	200000	0	60	80	120	0	0		S
Lead	ND	3.00	0	0	0	80	120	0	0		
Magnesium	531200	5000	500000	0	106	80	120	0	0		
Manganese	ND	15.0	0	0	0	80	120	0	0		
Nickel	ND	40.0	0	0	0	80	120	0	0		
Potassium	3.879	5000	0	0	0	80	120	0	0		
Selenium	ND	5.00	0	0	0	80	120	0	0		
Silver	ND	10.0	0	0	0	80	120	0	0		
Sodium	14.22	5000	0	0	0	80	120	0	0		
Thallium	ND	10.0	0	0	0	80	120	0	0		
Vanadium	ND	50.0	0	0	0	80	120	0	0		
Zinc	ND	20.0	0	0	0	80	120	0	0		

ICSAB	SeqNo: 2682404	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: ICSAB-1	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	511600	200	500000	0	102	80	120	0	0		
Antimony	2.412	60.0	0	0	0	80	120	0	0		
Arsenic	ND	10.0	0	0	0	80	120	0	0		
Barium	509.1	200	500	0	102	80	120	0	0		
Beryllium	490.6	5.00	500	0	98.1	80	120	0	0		
Cadmium	910	5.00	1000	0	91	80	120	0	0		
Calcium	435200	5000	500000	0	87	80	120	0	0		
Chromium	486.9	10.0	500	0	97.4	80	120	0	0		
Cobalt	441.4	50.0	500	0	88.3	80	120	0	0		
Copper	572.6	25.0	500	0	115	80	120	0	0		
Iron	121600	100	200000	0	60.8	80	120	0	0		S
Lead	856.5	3.00	1000	0	85.7	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

ICSAB	SeqNo: 2682404	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: ICSAB-1	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Magnesium	535800	5000	500000	0	107	80	120	0	0		
Manganese	463.4	15.0	500	0	92.7	80	120	0	0		
Nickel	870.7	40.0	1000	0	87.1	80	120	0	0		
Potassium	2.428	5000	0	0	0	80	120	0	0		
Selenium	ND	5.00	0	0	0	80	120	0	0		
Silver	1153	10.0	1000	0	115	80	120	0	0		
Sodium	14.26	5000	0	0	0	80	120	0	0		
Thallium	ND	10.0	0	0	0	80	120	0	0		
Vanadium	456.2	50.0	500	0	91.2	80	120	0	0		
Zinc	853.5	20.0	1000	0	85.4	80	120	0	0		

ICSAB	SeqNo: 2682445	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: ICSAB-2	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	513200	200	500000	0	103	80	120	0	0		
Antimony	0.7088	60.0	0	0	0	80	120	0	0		
Arsenic	ND	10.0	0	0	0	80	120	0	0		
Barium	514.8	200	500	0	103	80	120	0	0		
Beryllium	496.3	5.00	500	0	99.3	80	120	0	0		
Cadmium	912.4	5.00	1000	0	91.2	80	120	0	0		
Calcium	437000	5000	500000	0	87.4	80	120	0	0		
Chromium	491.6	10.0	500	0	98.3	80	120	0	0		
Cobalt	443.4	50.0	500	0	88.7	80	120	0	0		
Copper	578.8	25.0	500	0	116	80	120	0	0		
Iron	121200	100	200000	0	60.6	80	120	0	0		S
Lead	860.7	3.00	1000	0	86.1	80	120	0	0		
Magnesium	540900	5000	500000	0	108	80	120	0	0		
Manganese	350.8	15.0	500	0	70.2	80	120	0	0		S
Nickel	877.7	40.0	1000	0	87.8	80	120	0	0		
Potassium	5.508	5000	0	0	0	80	120	0	0		
Selenium	ND	5.00	0	0	0	80	120	0	0		
Silver	1161	10.0	1000	0	116	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74858

ICSAB	SeqNo: 2682445	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: ICSAB-2	PrepRef:	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	15.05	5000	0	0	0	80	120	0	0		
Thallium	ND	10.0	0	0	0	80	120	0	0		
Vanadium	463.1	50.0	500	0	92.6	80	120	0	0		
Zinc	856.4	20.0	1000	0	85.6	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
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CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74859

CCB	SeqNo: 2673878	PrepDate:	TestNo: E245.1	RunNo: 174032
	Samp ID: CCB	PrepRef:	Units: µg/L	Analysis Date: 8/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	-0.0425	0.200	0	0	0	0	0	0	0		

CCB	SeqNo: 2673887	PrepDate:	TestNo: E245.1	RunNo: 174032
	Samp ID: CCB	PrepRef:	Units: µg/L	Analysis Date: 8/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	-0.0584	0.200	0	0	0	0	0	0	0		

CCV	SeqNo: 2673877	PrepDate:	TestNo: E245.1	RunNo: 174032
	Samp ID: CCV	PrepRef:	Units: µg/L	Analysis Date: 8/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	2.136	0.200	2	0	107	85	115	0	0		

CCV	SeqNo: 2673886	PrepDate:	TestNo: E245.1	RunNo: 174032
	Samp ID: CCV	PrepRef:	Units: µg/L	Analysis Date: 8/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	2.116	0.200	2	0	106	85	115	0	0		

cra	SeqNo: 2673867	PrepDate:	TestNo: E245.1	RunNo: 174032
	Samp ID: 0.2ppb	PrepRef:	Units: µg/L	Analysis Date: 8/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.1901	0.200	0.2	0	95.1	70	130	0	0		

ICB	SeqNo: 2673866	PrepDate:	TestNo: E245.1	RunNo: 174032
	Samp ID: ICB	PrepRef:	Units: µg/L	Analysis Date: 8/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	-0.0569	0.200	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
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S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
 Work Order: 190806001
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74859

ICV	SeqNo: 2673865	PrepDate:		TestNo: E245.1	RunNo: 174032	
	Samp ID: ICV	PrepRef:		Units: µg/L	Analysis Date: 8/7/2019	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	2.013	0.200	2	0	101	90	110	0	0		

mbk	SeqNo: 2673869	PrepDate:8/6/2019 1		TestNo: SW7471B	RunNo: 174032	
	Samp ID: MB-74859	PrepRef:(SW7471B)		Units: µg/g	Analysis Date: 8/7/2019	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.200									

lcs	SeqNo: 2673870	PrepDate:8/6/2019 1		TestNo: SW7471B	RunNo: 174032	
	Samp ID: LCS-74859	PrepRef:(SW7471B)		Units: µg/g	Analysis Date: 8/7/2019	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	16.03	2.00	13.2	0	121	65.5	134.1	0	0		

ms	SeqNo: 2673876	PrepDate:8/6/2019 1		TestNo: SW7471B	RunNo: 174032	
	Samp ID: 190806001-004 (B35-SS4-080520)	PrepRef:(SW7471B)		Units: µg/g-dry	Analysis Date: 8/7/2019	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	1.876	0.209	1.047	0	179	80	120	0	0		S

dup	SeqNo: 2673875	PrepDate:8/6/2019 1		TestNo: SW7471B	RunNo: 174032	
	Samp ID: 190806001-004	PrepRef:		Units: µg/g-dry	Analysis Date: 8/7/2019	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0457	0.209	0	0	0	0	0	0	0	20	

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

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 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74865

MBLK	SeqNo: 2682407	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: MB-W	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200									
Antimony	ND	60.0									
Arsenic	ND	10.0									
Barium	ND	200									
Beryllium	ND	5.00									
Cadmium	ND	5.00									
Calcium	ND	5000									
Chromium	ND	10.0									
Cobalt	ND	50.0									
Copper	ND	25.0									
Iron	ND	100									
Lead	ND	3.00									
Magnesium	ND	5000									
Manganese	ND	15.0									
Nickel	ND	40.0									
Potassium	ND	5000									
Selenium	ND	5.00									
Silver	ND	10.0									
Sodium	ND	5000									
Thallium	ND	10.0									
Vanadium	ND	50.0									
Zinc	ND	20.0									

LCS	SeqNo: 2682408	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: LCS-W	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1955	200	2000	0	97.8	80	120	0	0		
Antimony	1922	60.0	2000	0	96.1	80	120	0	0		
Arsenic	1978	10.0	2000	0	98.9	80	120	0	0		
Barium	2017	200	2000	0	101	80	120	0	0		
Beryllium	2005	5.00	2000	0	100	80	120	0	0		
Cadmium	1978	5.00	2000	0	98.9	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74865

LCS	SeqNo: 2682408	PrepDate:	TestNo: E200.7	RunNo: 174445
	Samp ID: LCS-W	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 8/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	1962	5000	2000	0	98.1	80	120	0	0		J
Chromium	2002	10.0	2000	0	100	80	120	0	0		
Cobalt	1923	50.0	2000	0	96.2	80	120	0	0		
Copper	2124	25.0	2000	0	106	80	120	0	0		
Iron	2015	100	2000	0	101	80	120	0	0		
Lead	2038	3.00	2000	0	102	80	120	0	0		
Magnesium	1899	5000	2000	0	94.9	80	120	0	0		J
Manganese	1939	15.0	2000	0	96.9	80	120	0	0		
Nickel	2004	40.0	2000	0	100	80	120	0	0		
Potassium	9186	5000	10000	0	91.9	80	120	0	0		
Selenium	1978	5.00	2000	0	98.9	80	120	0	0		
Silver	528.4	10.0	500	0	106	80	120	0	0		
Sodium	2044	5000	2000	0	102	80	120	0	0		J
Thallium	1830	10.0	2000	0	91.5	80	120	0	0		
Vanadium	1978	50.0	2000	0	98.9	80	120	0	0		
Zinc	1941	20.0	2000	0	97	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
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B - Analyte detected in the associated Method Blank

Test Code:	CLPHGS	METHOD DETECTION / REPORTING LIMITS	
Test Number:	SW7471B		
Test Name:	Mercury		
Matrix:	Soil		
Type	Analyte	MDL	PQL
A	Mercury	0.00784	0.02

Adirondack Environmental Services, Inc**Date:** 26-Aug-19

Test Code: CLPS
Test Number: SW6010C
Test Name: ICP Metals - EPA 6010 (solid)
Matrix: Soil **Units:** µg/g

**METHOD DETECTION /
REPORTING LIMITS****Updated:** 25-Oct-18

Type	Analyte	MDL	PQL
A	Aluminum	2.6	20
A	Antimony	0.55	6
A	Arsenic	0.46	1
A	Barium	0.04	2
A	Beryllium	0.03	1
A	Boron	0.2	10
A	Cadmium	0.12	1
A	Calcium	3.74	10
A	Chromium	0.12	1
A	Cobalt	0.15	10
A	Copper	0.23	1
A	Iron	0.65	10
A	Lead	0.3	1
A	Lithium	1.74	100
A	Magnesium	0.52	10
A	Manganese	0.08	2
A	Molybdenum	0.12	2
A	Nickel	0.13	4
A	Potassium	0.29	10
A	Selenium	0.41	1
A	Silver	0.03	2
A	Sodium	0.75	10
A	Strontium	0.16	10
A	Thallium	0.32	2
A	Tin	1.74	10
A	Titanium	0.33	10
A	Vanadium	0.13	10
A	Zinc	0.63	2

Seq. No.	57	AS Loc:	1	Date:	8/7/2019			
Sample ID:	Blank							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[0.00] µg/L		0.0006	0.0018		0.0006		11:03:42AM
	[0.00] µg/L		0.0007	0.0022		0.0007		11:04:12AM
Mean:	[0.00] µg/L		0.0006	0.0020		0.0006		
SD:	0.00 µg/L							
%RSD:	9.48							

Seq. No.	58	AS Loc:	2	Date:	8/7/2019			
Sample ID:	0.2ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[0.200] µg/L		0.0022	0.0102		0.0029		11:05:22AM
	[0.200] µg/L		0.0023	0.0104		0.0029		11:05:52AM
Mean:	[0.200] µg/L		0.0023	0.0103		0.0029		
SD:	0.00 µg/L							
%RSD:	1.81							

Seq. No.	59	AS Loc:	3	Date:	8/7/2019			
Sample ID:	0.5ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[0.500] µg/L		0.0051	0.0213		0.0057		11:07:03AM
	[0.500] µg/L		0.0051	0.0216		0.0058		11:07:34AM
Mean:	[0.500] µg/L		0.0051	0.0215		0.0057		
SD:	0.00 µg/L							
%RSD:	1.09							

Seq. No.	60	AS Loc:	4	Date:	8/7/2019			
Sample ID:	1.00ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[1.000] µg/L		0.0100	0.0400		0.0106		11:08:45AM
	[1.000] µg/L		0.0101	0.0400		0.0107		11:09:15AM
Mean:	[1.000] µg/L		0.0100	0.0400		0.0107		
SD:	0.00 µg/L							
%RSD:	0.45							

Seq. No.	61	AS Loc:	5	Date:	8/7/2019			
Sample ID:	2.00ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[2.000] µg/L		0.0202	0.0791		0.0208		11:10:28AM
	[2.000] µg/L		0.0204	0.0790		0.0210		11:10:58AM
Mean:	[2.000] µg/L		0.0203	0.0790		0.0209		
SD:	0.00 µg/L							
%RSD:	0.70							

Seq. No.	62	AS Loc:	6	Date:	8/7/2019			
Sample ID:	5.00ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[5.000] µg/L		0.0501	0.1949		0.0507		11:12:10AM
	[5.000] µg/L		0.0504	0.1953		0.0511		11:12:40AM
Mean:	[5.000] µg/L		0.0503	0.1951		0.0509		
SD:	0.00 µg/L							
%RSD:	0.51							

Seq. No.	63	AS Loc:	7	Date:	8/7/2019			
Sample ID:	10.00ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[10.000] µg/L		0.0969	0.3743		0.0975		11:13:50AM
	[10.000] µg/L		0.0974	0.3745		0.0981		11:14:20AM
Mean:	[10.000] µg/L		0.0971	0.3744		0.0978		
SD:	0.00 µg/L							
%RSD:	0.41							

Seq. No.	64	AS Loc:	5	Date:	8/7/2019			
Sample ID:	ICV							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7	8/7/2019 11:16:04AM All analyte(s) passed QC.							
	2.004 µg/L	2.004 µg/L	0.0199	0.0788		0.0206		11:15:31AM
	2.022 µg/L	2.022 µg/L	0.0201	0.0785		0.0208		11:16:01AM
Mean:	2.013 µg/L	2.013 µg/L	0.0200	0.0787		0.0207		
SD:	0.0129 µg/L	µg/L						
%RSD:	0.64							

8/7/2019 11:16:04AM QC value within limits for Hg 253.7 Recovery = 100.63%

Seq. No.	65	AS Loc:	1	Date:	8/7/2019				
Sample ID:	ICB								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7	8/7/2019 11:17:45AM All analyte(s) passed QC.								
	-0.0630 µg/L	-0.0630 µg/L	-0.0002	0.0010		0.0005		11:17:13AM	
	-0.0508 µg/L	-0.0508 µg/L	-0.0001	0.0017		0.0006		11:17:43AM	
Mean:	-0.0569 µg/L	-0.0569 µg/L	-0.0001	0.0014		0.0005			
SD:	0.00866 µg/L	µg/L							
%RSD:	15.23								

8/7/2019 11:17:45AM QC value within limits for Hg 253.7 Recovery = Not calculated

Seq. No.	66	AS Loc:		9	Date:		8/7/2019			
Sample ID:	0.2ppb									
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance		Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7										
	0.1878 µg/L	0.1878 µg/L	0.0023		0.0108			0.0029		11:18:53AM
	0.1925 µg/L	0.1925 µg/L	0.0023		0.0112			0.0029		11:19:24AM
Mean:	0.1901 µg/L	0.1901 µg/L	0.0023		0.0110			0.0029		
SD:	0.00333 µg/L	0.00333 µg/L								
%RSD:	1.75									

Seq. No.	67	AS Loc:	10	Date:	8/7/2019				
Sample ID:	2.0ppb								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7									
	2.140 µg/L	2.140 µg/L	0.0213	0.0787		0.0219		11:20:35AM	
	2.158 µg/L	2.158 µg/L	0.0214	0.0781		0.0221		11:21:06AM	
Mean:	2.149 µg/L	2.149 µg/L	0.0214	0.0784		0.0220			
SD:	0.0126 µg/L	0.0126 µg/L							
%RSD:	0.59								

Seq. No.	68	AS Loc:			11	Date:		8/7/2019		
Sample ID:	MB-74859									
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance		Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7										
	0.0302 µg/L	0.0302 µg/L	0.0007		0.0042			0.0014		11:22:18AM
	-0.0426 µg/L	-0.0426 µg/L	0.0000		0.0022			0.0007		11:22:48AM
Mean:	-0.0062 µg/L	-0.0062 µg/L	0.0004		0.0032			0.0010		
SD:	0.05153 µg/L	0.05153 µg/L								
%RSD:	831.57									

Seq. No.	69	AS Loc:	12	Date:	8/7/2019			
Sample ID:	LCS-74859							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	3.170 µg/L	3.170 µg/L	0.0313	0.1205		0.0319		11:24:00AM
	3.241 µg/L	3.241 µg/L	0.0320	0.1229		0.0326		11:24:31AM
Mean:	3.206 µg/L	3.206 µg/L	0.0316	0.1217		0.0323		
SD:	0.0498 µg/L	0.0498 µg/L						
%RSD:	1.55							

Seq. No.	70	AS Loc:	13	Date:	8/7/2019			
Sample ID:	190806001-001A							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.1738 µg/L	0.1738 µg/L	0.0021	0.0089		0.0028		11:25:43AM
	0.1789 µg/L	0.1789 µg/L	0.0022	0.0088		0.0028		11:26:14AM
Mean:	0.1763 µg/L	0.1763 µg/L	0.0022	0.0088		0.0028		
SD:	0.00361 µg/L	0.00361 µg/L						
%RSD:	2.05							

Seq. No.	71	AS Loc:	14	Date:	8/7/2019			
Sample ID:	190806001-002A							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.1093 µg/L	0.1093 µg/L	0.0015	0.0069		0.0021		11:27:25AM
	0.1118 µg/L	0.1118 µg/L	0.0015	0.0068		0.0022		11:27:55AM
Mean:	0.1105 µg/L	0.1105 µg/L	0.0015	0.0068		0.0021		
SD:	0.00173 µg/L	0.00173 µg/L						
%RSD:	1.56							

Seq. No.	72	AS Loc:	15	Date:	8/7/2019			
Sample ID:	190806001-003A							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.1239 µg/L	0.1239 µg/L	0.0016	0.0071		0.0023		11:29:06AM
	0.1247 µg/L	0.1247 µg/L	0.0017	0.0072		0.0023		11:29:36AM
Mean:	0.1243 µg/L	0.1243 µg/L	0.0016	0.0071		0.0023		
SD:	0.00058 µg/L	0.00058 µg/L						
%RSD:	0.47							

Seq. No.	73	AS Loc:	16	Date:	8/7/2019			
Sample ID:	190806001-004A							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.0821 µg/L	0.0821 µg/L	0.0012	0.0057		0.0019		11:30:46AM
	0.0915 µg/L	0.0915 µg/L	0.0013	0.0063		0.0020		11:31:16AM
Mean:	0.0868 µg/L	0.0868 µg/L	0.0013	0.0060		0.0019		
SD:	0.00667 µg/L	0.00667 µg/L						
%RSD:	7.68							

Seq. No.	74	AS Loc:	17	Date:	8/7/2019			
Sample ID:	190806001-004ADP							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.0834 µg/L	0.0834 µg/L	0.0012	0.0060		0.0019		11:32:26AM
	0.0911 µg/L	0.0911 µg/L	0.0013	0.0067		0.0020		11:32:57AM
Mean:	0.0873 µg/L	0.0873 µg/L	0.0013	0.0063		0.0019		
SD:	0.00542 µg/L	0.00542 µg/L						
%RSD:	6.21							

Seq. No.	75	AS Loc:	18	Date:	8/7/2019			
Sample ID:	190806001-004AMS							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	3.589 µg/L	3.589 µg/L	0.0354	0.1263		0.0360		11:34:07AM
	3.579 µg/L	3.579 µg/L	0.0353	0.1266		0.0359		11:34:37AM
Mean:	3.584 µg/L	3.584 µg/L	0.0353	0.1265		0.0360		
SD:	0.0070 µg/L	0.0070 µg/L						
%RSD:	0.20							

Seq. No.	76	AS Loc:	5	Date:	8/7/2019			
Sample ID:	CCV							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
		8/7/2019 11:36:21AM	All analyte(s) passed QC.					
	2.110 µg/L	2.110 µg/L	0.0210	0.0849		0.0216		11:35:48AM
	2.163 µg/L	2.163 µg/L	0.0215	0.0840		0.0221		11:36:19AM
Mean:	2.136 µg/L	2.136 µg/L	0.0212	0.0844		0.0219		
SD:	0.0375 µg/L	µg/L						
%RSD:	1.76							

8/7/2019 11:36:21AM QC value within limits for Hg 253.7 Recovery = 106.80%

Seq. No.	77	AS Loc:	1	Date:	8/7/2019				
Sample ID:	CCB								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7	8/7/2019 11:38:03AM All analyte(s) passed QC.								
	-0.0475 µg/L	-0.0475 µg/L	0.0000	0.0020		0.0006		11:37:30AM	
	-0.0375 µg/L	-0.0375 µg/L	0.0001	0.0026		0.0007		11:38:00AM	
Mean:	-0.0425 µg/L	-0.0425 µg/L	0.0000	0.0023		0.0007			
SD:	0.00706 µg/L	µg/L							
%RSD:	16.63								

8/7/2019 11:38:03AM QC value within limits for Hg 253.7 Recovery = Not calculated

Seq. No.	78	AS Loc:		19	Date:		8/7/2019		
Sample ID:	190806001-005A								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance		Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7									
	0.1269 µg/L	0.1269 µg/L	0.0017		0.0076		0.0023		11:39:10AM
	0.1349 µg/L	0.1349 µg/L	0.0018		0.0082		0.0024		11:39:41AM
Mean:	0.1309 µg/L	0.1309 µg/L	0.0017		0.0079		0.0023		
SD:	0.00565 µg/L	0.00565 µg/L							
%RSD:	4.32								

Seq. No.	79	AS Loc:	20	Date:	8/7/2019				
Sample ID:	190806001-006A								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7									
	0.1279 µg/L	0.1279 µg/L	0.0017	0.0078		0.0023		11:40:52AM	
	0.1336 µg/L	0.1336 µg/L	0.0017	0.0078		0.0024		11:41:23AM	
Mean:	0.1307 µg/L	0.1307 µg/L	0.0017	0.0078		0.0023			
SD:	0.00402 µg/L	0.00402 µg/L							
%RSD:	3.08								

Seq. No.	80	AS Loc:	21	Date:	8/7/2019				
Sample ID:	190806001-007A								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7									
	0.2394 µg/L	0.2394 µg/L	0.0028	0.0116		0.0034		11:42:35AM	
	0.2446 µg/L	0.2446 µg/L	0.0028	0.0120		0.0035		11:43:05AM	
Mean:	0.2420 µg/L	0.2420 µg/L	0.0028	0.0118		0.0034			
SD:	0.00368 µg/L	0.00368 µg/L							
%RSD:	1.52								

Seq. No.	81	AS Loc:	22	Date:	8/7/2019			
Sample ID:	190806001-008A							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.0574 µg/L	0.0574 µg/L	0.0010	0.0053		0.0016		11:44:16AM
	0.0645 µg/L	0.0645 µg/L	0.0011	0.0060		0.0017		11:44:46AM
Mean:	0.0609 µg/L	0.0609 µg/L	0.0010	0.0056		0.0017		
SD:	0.00502 µg/L	0.00502 µg/L						
%RSD:	8.23							

Seq. No.	82	AS Loc:	23	Date:	8/7/2019			
Sample ID:	190806001-009A							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.0610 µg/L	0.0610 µg/L	0.0010	0.0053		0.0017		11:45:58AM
	0.0554 µg/L	0.0554 µg/L	0.0010	0.0051		0.0016		11:46:28AM
Mean:	0.0582 µg/L	0.0582 µg/L	0.0010	0.0052		0.0016		
SD:	0.00396 µg/L	0.00396 µg/L						
%RSD:	6.81							

Seq. No.	83	AS Loc:	24	Date:	8/7/2019			
Sample ID:	190806001-010A							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.2608 µg/L	0.2608 µg/L	0.0030	0.0122		0.0036		11:47:41AM
	0.2691 µg/L	0.2691 µg/L	0.0031	0.0121		0.0037		11:48:12AM
Mean:	0.2650 µg/L	0.2650 µg/L	0.0030	0.0122		0.0037		
SD:	0.00591 µg/L	0.00591 µg/L						
%RSD:	2.23							

Seq. No.	84	AS Loc:	25	Date:	8/7/2019			
Sample ID:	190806001-011B							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	-0.0148 µg/L	-0.0148 µg/L	0.0003	0.0029		0.0009		11:49:25AM
	-0.0124 µg/L	-0.0124 µg/L	0.0003	0.0031		0.0010		11:49:55AM
Mean:	-0.0136 µg/L	-0.0136 µg/L	0.0003	0.0030		0.0009		
SD:	0.00175 µg/L	0.00175 µg/L						
%RSD:	12.87							

Seq. No.	85	AS Loc:	5	Date:	8/7/2019				
Sample ID:	CCV								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7	8/7/2019 11:51:40AM All analyte(s) passed QC.								
	2.108 µg/L	2.108 µg/L	0.0210	0.0846		0.0216		11:51:08AM	
	2.124 µg/L	2.124 µg/L	0.0211	0.0849		0.0217		11:51:38AM	
Mean:	2.116 µg/L	2.116 µg/L	0.0210	0.0848		0.0217			
SD:	0.0113 µg/L	µg/L							
%RSD:	0.53								

8/7/2019 11:51:40AM QC value within limits for Hg 253.7 Recovery = 105.80%

Seq. No.	86	AS Loc:	1	Date:	8/7/2019				
Sample ID:	CCB								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7	8/7/2019 11:53:22AM All analyte(s) passed QC.								
	-0.0622 µg/L	-0.0622 µg/L	-0.0002	0.0013		0.0005		11:52:49AM	
	-0.0546 µg/L	-0.0546 µg/L	-0.0001	0.0014		0.0005		11:53:19AM	
Mean:	-0.0584 µg/L	-0.0584 µg/L	-0.0001	0.0014		0.0005			
SD:	0.00538 µg/L	µg/L							
%RSD:	9.21								

8/7/2019 11:53:22AM QC value within limits for Hg 253.7 Recovery = Not calculated

Sample Report

Report Author

Printed: 8/20/2019 9:09 am

Ag - 1ppm

Acquire Date: 19-Aug-2019 10:00 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ag	19.608	Cts/S	.021	.10864

200.7-6

Acquire Date: 19-Aug-2019 10:03 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
As	11.690	Cts/S	.060	.51033
Cr	21.652	Cts/S	.177	.81615
Li	27.871	Cts/S	4.372	15.688
Se	9.9488	Cts/S	.0620	.62284
Si	26.752	Cts/S	.375	1.4013
Sn	28.495	Cts/S	.146	.51346
V_	14.255	Cts/S	.118	.82986

200.7-3

Acquire Date: 19-Aug-2019 11:39 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
B_	16.525	Cts/S	.022	.13565
Cd	103.46	Cts/S	.50	.47990
Pb	14.888	Cts/S	.051	.34306
Tl	5.1401	Cts/S	.0210	.40796

200.7-4

Acquire Date: 19-Aug-2019 11:48 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mo	596.51	Cts/S	.15	.02501
Sb	113.66	Cts/S	.16	.14310
Ti	460.61	Cts/S	.61	.13211

200.7-1

Acquire Date: 19-Aug-2019 11:53 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1504.0	Cts/S	7.8	.51996

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

200.7-1

Acquire Date: 19-Aug-2019 11:53 am

Sample Type: Calib. Std.

Correction Factor: 1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Al	78.508	Cts/S	.517	.65802
Ca	75.331	Cts/S	.099	.13087
K_	469.27	Cts/S	2.19	.46576
Mg	59.717	Cts/S	.218	.36459
Na	2785.0	Cts/S	17.7	.63485
Ni	483.64	Cts/S	1.40	.28964
Zn	1272.8	Cts/S	3.6	.28187

200.7-2

Acquire Date: 19-Aug-2019 12:00 pm

Sample Type: Calib. Std.

Correction Factor: 1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ba	963.57	Cts/S	.82	.08469
Be	839.55	Cts/S	2.85	.33998
Co	305.57	Cts/S	.07	.02380
Cu	28.922	Cts/S	.067	.23128
Fe	3071.9	Cts/S	.6	.01810
Mn	940.34	Cts/S	.28	.02958
Sr	89.161	Cts/S	.229	.25661

Blank

Acquire Date: 19-Aug-2019 12:03 pm

Sample Type: Calib. Std.

Correction Factor: 1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	-1.7075	Cts/S	.2607	15.268
Ag	-.09293	Cts/S	.04903	52.759
Al	-.28158	Cts/S	.17854	63.405
As	.04073	Cts/S	.00785	19.283
Au	.18575	Cts/S	.00611	3.2903
B_	.11417	Cts/S	.01484	12.997
Ba	4.8504	Cts/S	.6697	13.808
Be	3.1084	Cts/S	.0055	.17798
Ca	.00555	Cts/S	.03923	706.83
Cd	.01882	Cts/S	.01353	71.871
Co	.04844	Cts/S	.00306	6.3068
Cr	-.12760	Cts/S	.08924	69.934
Cu	.58307	Cts/S	.03716	6.3728
Fe	1.8322	Cts/S	.3936	21.484
K_	.76844	Cts/S	.16486	21.454

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

Blank

Acquire Date: 19-Aug-2019 12:03 pm

Sample Type: Calib. Std.

Correction Factor: 1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Li	-89.233	Cts/S	.100	.11176
Mg	-.01804	Cts/S	.09220	511.16
Mn	.73839	Cts/S	.09994	13.535
Mo	.00432	Cts/S	.00436	101.02
Na	-80.545	Cts/S	2.970	3.6875
Ni	.15181	Cts/S	.00960	6.3251
Pb	-.02376	Cts/S	.00305	12.858
Pd	.02081	Cts/S	.07258	348.78
Sb	.00062	Cts/S	.00000	.00139
Se	.00255	Cts/S	.00316	124.28
Si	.32596	Cts/S	.04900	15.034
Sn	-.01142	Cts/S	.00305	26.757
Sr	-.03575	Cts/S	.07497	209.71
Ti	-.09848	Cts/S	.01767	17.938
Tl	-.00771	Cts/S	.00480	62.224
V_	.13107	Cts/S	.08728	66.586
Zn	.09658	Cts/S	.00044	.45044
Zr	-.57841	Cts/S	.00595	1.0288

ICV-1

Acquire Date: 19-Aug-2019 12:08 pm

Sample Type: Unknown

Correction Factor: 1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1881.2	ppb	20.1	1.0707
Ag	505.06	ppb	.27	.05423
Al	1997.2	ppb	16.2	.81351
As	2080.7	ppb	5.3	.25471
Au	4.0249	ppb	.0406	1.0099
B_	2065.4	ppb	8.7	.42246
Ba	2045.9	ppb	14.1	.68914
Be	2009.1	ppb	12.7	.63428
Ca	1993.3	ppb	24.0	1.2053
Cd	2093.7	ppb	6.0	.28647
Co	1981.3	ppb	2.0	.10241
Cr	2006.7	ppb	22.4	1.1141
Cu	2059.4	ppb	7.3	.35496
Fe	2009.7	ppb	4.0	.20138
K_	9949.6	ppb	108.7	1.0926
Li	1965.9	ppb	53.8	2.7353
Mg	1933.6	ppb	26.3	1.3619

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

ICV-1

Acquire Date: 19-Aug-2019 12:08 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mn	1951.9	ppb	.4	.02191
Mo	2057.4	ppb	3.8	.18487
Na	1933.5	ppb	25.5	1.3206
Ni	2060.4	ppb	3.3	.16164
Pb	2001.1	ppb	.9	.04272
Pd	<.00000	ppb	1.773	6.6523
Sb	2021.8	ppb	6.2	.30647
Se	1944.5	ppb	.9	.04629
Si	4737.3	ppb	47.7	1.0062
Sn	2012.9	ppb	4.1	.20529
Sr	2056.6	ppb	16.1	.78267
Ti	<.00000	ppb	.3833	35.362
Tl	1976.9	ppb	4.8	.24418
V_	1981.8	ppb	10.3	.52184
Zn	2074.9	ppb	3.4	.16624
Zr	1.2703	ppb	.0343	2.6980

ICB-1

Acquire Date: 19-Aug-2019 12:11 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	<.00000	ppb	1.3415	79.971
Ag	<.00000	ppb	4.6803	255.59
Al	<.00000	ppb	7.4681	201.95
As	<.00000	ppb	.45057	70.948
Au	.16099	ppb	.47372	294.26
B_	1.9747	ppb	1.1440	57.936
Ba	1.1235	ppb	1.5620	139.04
Be	.21416	ppb	.06112	28.538
Ca	<.00000	ppb	2.0837	25.715
Cd	.12830	ppb	.04855	37.845
Co	<.00000	ppb	.11430	102.92
Cr	.38117	ppb	3.33217	874.19
Cu	<.00000	ppb	1.0001	60.633
Fe	<.00000	ppb	.3632	12.459
K_	8.9426	ppb	4.4394	49.643
Li	15.376	ppb	2.700	17.560
Mg	<.00000	ppb	18.390	83.364
Mn	<.00000	ppb	.03398	10.066
Mo	1.2779	ppb	.9733	76.162

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

ICB-1

Acquire Date: 19-Aug-2019 12:11 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Na	8.4338	ppb	8.5560	101.45
Ni	<.00000	ppb	.04081	24.154
Pb	.72513	ppb	1.16995	161.34
Pd	.94010	ppb	1.77401	188.71
Sb	<.00000	ppb	.42213	44.426
Se	.17069	ppb	.01766	10.345
Si	<.00000	ppb	14.8427	257.43
Sn	.88762	ppb	.30620	34.497
Sr	<.00000	ppb	2.6395	67.661
Ti	<.00000	ppb	1.44766	320.47
Tl	1.1437	ppb	.4747	41.507
V_	<.00000	ppb	2.2918	29.734
Zn	.12990	ppb	.12772	98.320
Zr	<.00000	ppb	1.24379	130.42

CRI-1

Acquire Date: 19-Aug-2019 12:15 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	4.3015	ppb	.3646	8.4760
Ag	19.034	ppb	.995	5.2292
Al	7.0411	ppb	1.2458	17.693
As	19.287	ppb	.146	.75618
Au	<.00000	ppb	.09403	50.347
B_	.92541	ppb	.11666	12.607
Ba	.19411	ppb	.10498	54.082
Be	10.256	ppb	.096	.93348
Ca	<.00000	ppb	.2604	10.875
Cd	10.227	ppb	.046	.44859
Co	97.788	ppb	.121	.12343
Cr	19.998	ppb	4.864	24.321
Cu	50.792	ppb	.489	.96206
Fe	<.00000	ppb	.0038	.22347
K_	11.074	ppb	5.108	46.121
Li	.84147	ppb	.35601	42.309
Mg	<.00000	ppb	4.598	24.447
Mn	28.495	ppb	.045	.15752
Mo	.49149	ppb	.10966	22.312
Na	2.3413	ppb	9.4104	401.94
Ni	80.735	ppb	.107	.13298

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

CRI-1

Acquire Date: 19-Aug-2019 12:15 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Pb	6.6228	ppb	.0887	1.3392
Pd	<.00000	ppb	6.2085	86.075
Sb	118.73	ppb	.71	.59916
Se	11.247	ppb	.133	1.1863
Si	<.00000	ppb	.739	5.0317
Sn	.43292	ppb	.03068	7.0859
Sr	16.657	ppb	14.955	89.785
Ti	.51174	ppb	.25544	49.916
Tl	20.030	ppb	.600	2.9939
V_	89.326	ppb	.767	.85893
Zn	45.402	ppb	.139	.30672
Zr	.97682	ppb	.10396	10.643

ICSA-1

Acquire Date: 19-Aug-2019 12:20 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	15.753	ppb	.143	.90982
Ag	<.00000	ppb	.797	1.4868
Al	505800.	ppb	1,527	.30199
As	<.00000	ppb	3.58	1.7255
Au	126.03	ppb	.43	.33879
B_	<.00000	ppb	.25	.11422
Ba	.22743	ppb	.26226	115.31
Be	2.8560	ppb	.0586	2.0533
Ca	431040.	ppb	2,305	.53481
Cd	<.00000	ppb	.07377	8.5861
Co	.15963	ppb	.01718	10.763
Cr	<.00000	ppb	5.306	26.790
Cu	<.00000	ppb	.174	.54712
Fe	121250.	ppb	107	.08835
K_	8.0544	ppb	3.1823	39.510
Li	<.00000	ppb	128.0	10.547
Mg	531200.	ppb	1,306	.24594
Mn	<.00000	ppb	.050	.29851
Mo	<.00000	ppb	.4101	9.0487
Na	15.287	ppb	11.873	77.666
Ni	<.00000	ppb	.151	.70131
Pb	<.00000	ppb	.059	.08076
Pd	<.00000	ppb	11.0864	196.40

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

ICSA-1

Acquire Date: 19-Aug-2019 12:20 pm

Sample Type: Unknown

Correction Factor: 1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Sb	<.00000	ppb	.6341	14.922
Se	<.00000	ppb	1.708	3.8556
Si	<.00000	ppb	1.485	11.323
Sn	.73605	ppb	.21433	29.119
Sr	11.473	ppb	8.295	72.298
Ti	<.00000	ppb	1.277	6.8760
Tl	<.00000	ppb	2.223	12.543
V_	<.00000	ppb	3.354	11.447
Zn	<.00000	ppb	.053	.28389
Zr	<.00000	ppb	.1728	7.2125

ICSAB-1

Acquire Date: 19-Aug-2019 12:25 pm

Sample Type: Unknown

Correction Factor: 1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	16.941	ppb	2.137	12.615
Ag	1152.7	ppb	4.4	.37995
Al	511570.	ppb	1,716	.33546
As	<.00000	ppb	.37	.17445
Au	131.27	ppb	.82	.62200
B_	<.00000	ppb	2.82	1.2711
Ba	509.06	ppb	2.55	.50138
Be	490.55	ppb	3.21	.65405
Ca	435170.	ppb	1,647	.37844
Cd	910.02	ppb	3.76	.41361
Co	441.35	ppb	.41	.09371
Cr	486.89	ppb	5.99	1.2294
Cu	572.62	ppb	6.40	1.1184
Fe	121620.	ppb	336	.27662
K_	2.4280	ppb	1.2577	51.801
Li	<.00000	ppb	122.7	10.462
Mg	535790.	ppb	2,622	.48941
Mn	463.36	ppb	1.32	.28422
Mo	<.00000	ppb	.0658	1.7534
Na	14.261	ppb	6.335	44.421
Ni	870.66	ppb	7.08	.81356
Pb	856.51	ppb	2.69	.31398
Pd	<.00000	ppb	12.418	48.891
Sb	2.4117	ppb	.8276	34.315
Se	<.00000	ppb	7.084	16.992

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

ICSAB-1

Acquire Date: 19-Aug-2019 12:25 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Si	<.00000	ppb	9.642	36.743
Sn	<.00000	ppb	.91847	223.31
Sr	.09781	ppb	8.54590	8,737.5
Ti	<.00000	ppb	.044	.24215
Tl	<.00000	ppb	.895	4.2876
V_	456.24	ppb	5.64	1.2354
Zn	853.51	ppb	2.23	.26134
Zr	<.00000	ppb	.4158	21.001

CCV-1

Acquire Date: 19-Aug-2019 12:29 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1893.2	ppb	15.5	.82123
Ag	524.71	ppb	6.41	1.2223
Al	1982.1	ppb	17.7	.89332
As	2075.0	ppb	13.6	.65440
Au	4.4684	ppb	.0568	1.2720
B_	2063.3	ppb	9.5	.46253
Ba	2049.4	ppb	15.5	.75810
Be	2011.8	ppb	16.7	.82911
Ca	1992.4	ppb	15.4	.77268
Cd	2094.5	ppb	10.5	.49981
Co	1985.6	ppb	9.6	.48488
Cr	2007.7	ppb	21.5	1.0715
Cu	2058.2	ppb	7.4	.36134
Fe	2035.1	ppb	3.7	.17984
K_	9913.4	ppb	61.4	.61968
Li	1965.4	ppb	55.3	2.8113
Mg	1961.3	ppb	8.9	.45355
Mn	1963.3	ppb	6.3	.32276
Mo	2061.5	ppb	9.3	.44920
Na	1934.4	ppb	7.2	.37045
Ni	2063.5	ppb	8.1	.39146
Pb	2004.5	ppb	10.7	.53178
Pd	<.00000	ppb	20.843	123.09
Sb	2019.8	ppb	6.4	.31831
Se	1958.4	ppb	2.8	.14091
Si	4751.7	ppb	33.5	.70454
Sn	2014.2	ppb	9.0	.44624

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCV-1

Acquire Date: 19-Aug-2019 12:29 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Sr	2005.8	ppb	10.3	.51523
Ti	<.00000	ppb	1.8310	82.169
Tl	1985.3	ppb	3.6	.18193
V_	1987.2	ppb	17.0	.85412
Zn	2079.4	ppb	10.4	.50079
Zr	<.00000	ppb	2.73049	796.08

CCB-1

Acquire Date: 19-Aug-2019 12:33 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	<.00000	ppb	1.86282	224.44
Ag	<.00000	ppb	1.6926	85.836
Al	17.831	ppb	9.105	51.064
As	<.00000	ppb	.5990	23.560
Au	<.00000	ppb	.41674	183.69
B_	1.7680	ppb	1.0961	61.996
Ba	1.6819	ppb	2.2330	132.76
Be	.26062	ppb	.04212	16.162
Ca	.36811	ppb	4.16697	1,132.0
Cd	.05820	ppb	.07175	123.28
Co	<.00000	ppb	.00573	3.9985
Cr	<.00000	ppb	1.4866	108.46
Cu	.14387	ppb	1.81304	1,260.1
Fe	<.00000	ppb	.2136	7.4704
K_	7.2845	ppb	1.5906	21.835
Li	15.392	ppb	8.139	52.875
Mg	<.00000	ppb	21.676	73.498
Mn	<.00000	ppb	.03580	8.0293
Mo	1.2779	ppb	1.0757	84.173
Na	6.6211	ppb	6.9649	105.19
Ni	<.00000	ppb	.05427	16.049
Pb	.37340	ppb	.38090	102.01
Pd	4.0760	ppb	13.3039	326.40
Sb	.48853	ppb	.23034	47.149
Se	1.1014	ppb	2.6326	239.02
Si	12.607	ppb	11.138	88.348
Sn	.30298	ppb	.52060	171.83
Sr	<.00000	ppb	4.5245	394.74
Ti	.90316	ppb	.12777	14.147

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCB-1

Acquire Date: 19-Aug-2019 12:33 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Tl	.06934	ppb	.36609	527.97
V_	<.00000	ppb	7.2921	101.03
Zn	<.00000	ppb	.07814	197.15
Zr	.26815	ppb	.00024	.08911

MB-W

Acquire Date: 19-Aug-2019 12:37 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	<.00000	ppb	1.2116	115.33
Ag	<.00000	ppb	2.8876	93.202
Al	11.268	ppb	1.245	11.048
As	<.00000	ppb	.4496	42.464
Au	.14776	ppb	.03787	25.628
B_	.24467	ppb	.15426	63.048
Ba	.15048	ppb	.20745	137.86
Be	.04818	ppb	.02814	58.403
Ca	<.00000	ppb	14.063	136.37
Cd	.06416	ppb	.05907	92.071
Co	<.00000	ppb	.06285	40.418
Cr	<.00000	ppb	5.08888	591.40
Cu	<.00000	ppb	2.35335	378.09
Fe	<.00000	ppb	.1345	4.0173
K_	5.5959	ppb	5.4014	96.523
Li	<.00000	ppb	7.07126	1,326.9
Mg	<.00000	ppb	13.793	65.274
Mn	<.00000	ppb	.01115	2.2382
Mo	.12935	ppb	.05122	39.596
Na	<.00000	ppb	9.6519	416.01
Ni	<.00000	ppb	.20762	22.131
Pb	.00069	ppb	.26375	38,091
Pd	11.914	ppb	14.633	122.82
Sb	<.00000	ppb	.34560	181.71
Se	1.3653	ppb	.5924	43.389
Si	2.6284	ppb	19.3004	734.30
Sn	.38961	ppb	.21434	55.014
Sr	7.1183	ppb	7.1632	100.63
Ti	.24084	ppb	1.14964	477.35
Tl	1.1436	ppb	.0407	3.5583
V_	<.00000	ppb	3.611	33.734

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

MB-W

Acquire Date: 19-Aug-2019 12:37 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Zn	<.00000	ppb	.03150	39.394
Zr	.68401	ppb	2.10813	308.20

LCS-W

Acquire Date: 19-Aug-2019 12:41 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1982.6	ppb	10.3	.51857
Ag	528.37	ppb	6.52	1.2337
Al	1955.3	ppb	9.3	.47501
As	1978.1	ppb	10.1	.51166
Au	4.3480	ppb	.6055	13.925
B_	2055.7	ppb	13.1	.63806
Ba	2016.8	ppb	12.8	.63321
Be	2005.1	ppb	12.8	.63656
Ca	1962.0	ppb	4.1	.20845
Cd	1977.8	ppb	15.1	.76443
Co	1923.2	ppb	14.8	.76710
Cr	2002.3	ppb	13.5	.67532
Cu	2123.7	ppb	10.9	.51104
Fe	2015.4	ppb	12.8	.63622
K_	9185.7	ppb	40.6	.44241
Li	1966.9	ppb	51.9	2.6373
Mg	1898.6	ppb	29.8	1.5701
Mn	1938.6	ppb	8.3	.42655
Mo	2059.5	ppb	14.7	.71505
Na	2044.3	ppb	12.8	.62818
Ni	2003.8	ppb	12.2	.60643
Pb	2038.3	ppb	17.7	.86593
Pd	<.00000	ppb	4.877	19.442
Sb	1922.1	ppb	13.4	.69946
Se	1977.5	ppb	5.3	.26768
Si	9935.7	ppb	92.4	.92996
Sn	1956.9	ppb	17.4	.88895
Sr	2037.6	ppb	24.0	1.1803
Ti	<.00000	ppb	.55365	306.22
Tl	1829.5	ppb	6.4	.34730
V_	1977.9	ppb	9.4	.47357
Zn	1940.7	ppb	14.9	.76674
Zr	.02372	ppb	.48345	2,037.9

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

190806001-011B

Acquire Date: 19-Aug-2019 12:56 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	81.276	ppb	.091	.11201
Ag	<.00000	ppb	2.2904	31.887
Al	29.400	ppb	7.470	25.407
As	<.00000	ppb	1.4239	86.767
Au	.10793	ppb	.01882	17.437
B_	2.9605	ppb	.1225	4.1364
Ba	.33501	ppb	.26210	78.236
Be	.23919	ppb	.06801	28.432
Ca	107.37	ppb	2.34	2.1829
Cd	.04627	ppb	.13081	282.72
Co	<.00000	ppb	.02000	11.513
Cr	<.00000	ppb	1.621	12.790
Cu	2.0579	ppb	1.3342	64.832
Fe	<.00000	ppb	.0094	.66479
K_	29.522	ppb	2.722	9.2192
Li	3.2346	ppb	3.1125	96.223
Mg	<.00000	ppb	10.838	56.915
Mn	<.00000	ppb	.00092	.15081
Mo	<.00000	ppb	.01464	5.2400
Na	64.438	ppb	7.047	10.935
Ni	<.00000	ppb	.0452	3.3541
Pb	.35217	ppb	1.34605	382.21
Pd	8.1527	ppb	17.2954	212.14
Sb	<.00000	ppb	1.45933	335.64
Se	2.2343	ppb	2.2600	101.15
Si	<.00000	ppb	3.7121	88.679
Sn	<.00000	ppb	.18371	121.07
Sr	1.6975	ppb	.7541	44.423
Ti	.27080	ppb	.51099	188.69
Tl	1.3738	ppb	1.5058	109.61
V_	<.00000	ppb	1.0422	13.021
Zn	2.0732	ppb	.0305	1.4697
Zr	.29225	ppb	.10366	35.471

MB-S

Acquire Date: 19-Aug-2019 1:15 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
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Color Legend: Pass/Unchecked Internal Standard Check Fail Check Warn

Sample Report

Printed: 8/20/2019 9:09 am

MB-S

Acquire Date: 19-Aug-2019 1:15 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	16.389	ppb	2.606	15.900
Ag	<.00000	ppb	4.3814	109.15
Al	<.00000	ppb	3.236	20.421
As	<.00000	ppb	.0005	.02791
Au	.17424	ppb	.26531	152.27
B_	.49275	ppb	.31361	63.646
Ba	<.00000	ppb	.5411	51.922
Be	.06836	ppb	.00473	6.9221
Ca	42.357	ppb	6.772	15.988
Cd	.04028	ppb	.04218	104.71
Co	<.00000	ppb	.00858	3.3699
Cr	2.4189	ppb	6.3054	260.68
Cu	1.9690	ppb	.9059	46.010
Fe	<.00000	ppb	.9950	96.032
K_	19.277	ppb	3.978	20.638
Li	<.00000	ppb	.7202	8.3689
Mg	<.00000	ppb	7.225	61.009
Mn	<.00000	ppb	.00142	.28165
Mo	<.00000	ppb	.29264	217.56
Na	2.3407	ppb	8.5228	364.12
Ni	<.00000	ppb	.2167	16.090
Pb	1.2626	ppb	.2340	18.532
Pd	3.1353	ppb	8.4258	268.74
Sb	<.00000	ppb	.69111	212.24
Se	1.3962	ppb	.1976	14.155
Si	20.485	ppb	1.486	7.2554
Sn	.86594	ppb	.15308	17.678
Sr	2.1419	ppb	.8797	41.073
Ti	<.00000	ppb	2.5549	119.50
Tl	1.5752	ppb	.6782	43.054
V_	<.00000	ppb	9.167	71.269
Zn	.99982	ppb	.00524	.52384
Zr	1.1232	ppb	.5185	46.165

LCS-S

Acquire Date: 19-Aug-2019 1:19 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	922.90	ppb	5.52	.59856
Ag	305.31	ppb	2.69	.88204

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

LCS-S

Acquire Date: 19-Aug-2019 1:19 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Al	44880.	ppb	307	.68468
As	690.81	ppb	2.24	.32480
Au	76.098	ppb	.737	.96908
B_	796.12	ppb	2.61	.32810
Ba	2394.7	ppb	20.8	.86900
Be	1092.1	ppb	10.4	.95297
Ca	25616.	ppb	225	.87884
Cd	1142.9	ppb	5.5	.48150
Co	919.88	ppb	3.81	.41436
Cr	758.74	ppb	6.80	.89638
Cu	1028.2	ppb	11.4	1.1084
Fe	72448.	ppb	169	.23378
K_	10591.	ppb	75	.70521
Li	49.947	ppb	15.826	31.686
Mg	12421.	ppb	67	.54082
Mn	1590.5	ppb	2.6	.16653
Mo	945.42	ppb	2.60	.27491
Na	911.37	ppb	9.39	1.0302
Ni	814.25	ppb	1.27	.15616
Pb	1181.1	ppb	3.8	.32486
Pd	<.00000	ppb	2.67	.79075
Sb	205.77	ppb	1.15	.55735
Se	405.62	ppb	4.10	1.0108
Si	8555.7	ppb	138.2	1.6153
Sn	698.33	ppb	2.78	.39840
Sr	497.31	ppb	3.64	.73144
Ti	2161.4	ppb	18.1	.83677
Tl	1172.2	ppb	1.2	.10474
V_	923.30	ppb	9.16	.99236
Zn	1133.3	ppb	4.1	.36473
Zr	27.004	ppb	.208	.76882

190806001-001A

Acquire Date: 19-Aug-2019 1:30 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2322.5	ppb	19.5	.84037
Ag	<.00000	ppb	2.491	8.7552
Al	57589.	ppb	28	.04821
As	<.00000	ppb	2.098	8.4610

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

190806001-001A

Acquire Date: 19-Aug-2019 1:30 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Au	95.658	ppb	.511	.53413
B_	<.00000	ppb	.378	.56794
Ba	467.11	ppb	.08	.01689
Be	2.8576	ppb	.0565	1.9776
Ca	19639.	ppb	29	.14927
Cd	.75769	ppb	.04430	5.8463
Co	42.405	ppb	.117	.27628
Cr	109.51	ppb	7.07	6.4571
Cu	147.62	ppb	.37	.24801
Fe	91130.	ppb	87	.09601
K_	8818.6	ppb	22.1	.25011
Li	45.171	ppb	1.759	3.8938
Mg	20355.	ppb	43	.21314
Mn	2531.8	ppb	4.6	.18180
Mo	5.1365	ppb	.0366	.71200
Na	2374.8	ppb	16.9	.71142
Ni	94.504	ppb	.234	.24812
Pb	270.93	ppb	1.48	.54698
Pd	<.00000	ppb	7.97	2.2756
Sb	3.3626	ppb	.7682	22.845
Se	<.00000	ppb	.614	2.5830
Si	3186.2	ppb	8.3	.25982
Sn	18.206	ppb	.184	1.0090
Sr	72.256	ppb	1.008	1.3946
Ti	910.80	ppb	.67	.07352
Tl	<.00000	ppb	.1492	2.5723
V_	112.30	ppb	7.08	6.3052
Zn	591.50	ppb	.93	.15738
Zr	7.5752	ppb	1.6934	22.354

190806001-001A

Acquire Date: 19-Aug-2019 1:35 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	152.43	ppb	3.50	2.2979
Ag	<.00000	ppb	.0997	2.9494
Al	5037.6	ppb	29.4	.58342
As	<.00000	ppb	1.7980	94.275
Au	10.101	ppb	.757	7.4920
B_	<.00000	ppb	.0212	.24840

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

190806001-001A

Acquire Date: 19-Aug-2019 1:35 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ba	43.738	ppb	.202	.46188
Be	.40986	ppb	.04228	10.315
Ca	1859.0	ppb	19.0	1.0212
Cd	.08203	ppb	.01266	15.429
Co	4.1730	ppb	.0257	.61560
Cr	<.00000	ppb	1.8887	75.775
Cu	10.980	ppb	.089	.80874
Fe	10880.	ppb	64	.59041
K_	616.21	ppb	4.68	.75957
Li	7.6748	ppb	.1791	2.3333
Mg	1845.4	ppb	6.5	.35447
Mn	265.32	ppb	1.88	.70749
Mo	.30002	ppb	.02926	9.7527
Na	123.27	ppb	4.20	3.4107
Ni	8.2983	ppb	.2074	2.4998
Pb	27.529	ppb	.300	1.0881
Pd	<.00000	ppb	.000	.00100
Sb	<.00000	ppb	1.15141	511.85
Se	<.00000	ppb	2.4130	183.01
Si	269.29	ppb	1.49	.55344
Sn	1.4721	ppb	.1531	10.398
Sr	13.072	ppb	2.765	21.149
Ti	84.306	ppb	3.107	3.6857
Tl	.51070	ppb	.06781	13.278
V_	4.8116	ppb	2.3591	49.029
Zn	62.926	ppb	.554	.88026
Zr	2.3943	ppb	1.2789	53.413

190806001-002A

Acquire Date: 19-Aug-2019 1:40 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2225.2	ppb	4.8	.21379
Ag	<.00000	ppb	1.791	5.6638
Al	61609.	ppb	184	.29825
As	<.00000	ppb	.749	2.9218
Au	101.17	ppb	.25	.24291
B_	<.00000	ppb	.585	.78714
Ba	453.89	ppb	.43	.09519
Be	3.1561	ppb	.1122	3.5563

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

190806001-002A

Acquire Date: 19-Aug-2019 1:40 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ca	11275.	ppb	46	.41137
Cd	3.3798	ppb	.0654	1.9349
Co	41.326	ppb	.157	.38036
Cr	548.71	ppb	2.13	.38857
Cu	161.74	ppb	1.17	.72039
Fe	96345.	ppb	922	.95700
K_	8957.7	ppb	19.3	.21568
Li	68.592	ppb	.104	.15164
Mg	20789.	ppb	50	.23864
Mn	2958.1	ppb	10.9	.37008
Mo	18.725	ppb	.249	1.3281
Na	2259.0	ppb	.9	.03986
Ni	113.54	ppb	.33	.29376
Pb	287.04	ppb	1.43	.49677
Pd	<.00000	ppb	12.40	4.9636
Sb	11.213	ppb	.962	8.5797
Se	<.00000	ppb	.724	3.4934
Si	3016.2	ppb	12.5	.41336
Sn	20.652	ppb	.704	3.4097
Sr	59.194	ppb	5.909	9.9831
Ti	542.69	ppb	2.03	.37360
Tl	<.00000	ppb	2.3057	33.218
V_	115.55	ppb	3.27	2.8284
Zn	809.89	ppb	2.10	.25946
Zr	7.9417	ppb	1.1060	13.927

190806001-002A

Acquire Date: 19-Aug-2019 1:44 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	152.04	ppb	1.49	.97973
Ag	<.00000	ppb	3.3861	39.740
Al	5577.2	ppb	2.1	.03724
As	<.00000	ppb	.2997	13.468
Au	11.425	ppb	.511	4.4714
B_	<.00000	ppb	.4255	4.6830
Ba	42.708	ppb	.404	.94564
Be	.40992	ppb	.02333	5.6909
Ca	1097.6	ppb	7.3	.66136
Cd	.33708	ppb	.10758	31.914

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

190806001-002A

Acquire Date: 19-Aug-2019 1:44 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Co	4.2073	ppb	.0457	1.0865
Cr	43.888	ppb	3.420	7.7920
Cu	11.462	ppb	1.428	12.455
Fe	11929.	ppb	92	.76834
K_	636.12	ppb	1.57	.24703
Li	3.7406	ppb	2.4919	66.617
Mg	1914.7	ppb	.7	.03733
Mn	318.15	ppb	3.20	1.0052
Mo	1.3656	ppb	.0878	6.4284
Na	120.32	ppb	7.47	6.2097
Ni	10.553	ppb	.212	2.0101
Pb	30.668	ppb	1.483	4.8357
Pd	<.00000	ppb	5.764	22.978
Sb	1.4244	ppb	1.3438	94.338
Se	<.00000	ppb	2.52266	271.06
Si	276.12	ppb	2.21	.80217
Sn	2.3813	ppb	.0918	3.8568
Sr	2.4976	ppb	14.7042	588.74
Ti	51.458	ppb	.595	1.1556
Tl	.27094	ppb	.78665	290.34
V_	2.6687	ppb	3.9590	148.35
Zn	88.750	ppb	.803	.90438
Zr	1.1967	ppb	.2762	23.082

CCV-2

Acquire Date: 19-Aug-2019 1:51 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1885.5	ppb	20.6	1.0909
Ag	529.04	ppb	.47	.08898
Al	1957.7	ppb	13.6	.69213
As	2077.3	ppb	7.4	.35699
Au	3.6657	ppb	.3216	8.7743
B_	2184.6	ppb	4.6	.21125
Ba	2042.0	ppb	18.5	.90582
Be	2015.0	ppb	16.6	.82544
Ca	1987.7	ppb	14.6	.73255
Cd	2100.5	ppb	14.4	.68764
Co	2000.5	ppb	12.3	.61471
Cr	2008.4	ppb	16.9	.84198

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

CCV-2

Acquire Date: 19-Aug-2019 1:51 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Cu	2072.7	ppb	22.2	1.0712
Fe	2036.6	ppb	4.6	.22536
K_	9300.4	ppb	55.4	.59546
Li	1975.5	ppb	43.0	2.1749
Mg	1938.3	ppb	13.8	.71044
Mn	1979.9	ppb	6.3	.31951
Mo	2073.3	ppb	7.1	.34309
Na	1917.7	ppb	10.4	.53978
Ni	2077.4	ppb	12.5	.60267
Pb	2017.2	ppb	12.7	.62758
Pd	<.00000	ppb	2.217	5.0497
Sb	2015.3	ppb	7.8	.38665
Se	1978.9	ppb	.2	.01212
Si	4764.1	ppb	100.2	2.1024
Sn	2024.0	ppb	15.8	.78194
Sr	2052.3	ppb	16.7	.81330
Ti	<.00000	ppb	1.53295	154.26
Tl	2000.4	ppb	5.5	.27316
V_	1998.5	ppb	4.5	.22474
Zn	2096.2	ppb	13.0	.61957
Zr	.63480	ppb	1.00236	157.90

CCB-2

Acquire Date: 19-Aug-2019 1:55 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	<.00000	ppb	.7429	46.845
Ag	<.00000	ppb	1.19504	154.17
Al	<.00000	ppb	6.971	21.171
As	<.00000	ppb	.82405	103.86
Au	.10786	ppb	.24618	228.23
B_	1.2566	ppb	1.1171	88.905
Ba	<.00000	ppb	.16063	45.241
Be	.08990	ppb	.03055	33.982
Ca	<.00000	ppb	8.074	61.747
Cd	.07759	ppb	.02321	29.918
Co	<.00000	ppb	.02285	15.937
Cr	<.00000	ppb	1.8912	46.383
Cu	<.00000	ppb	1.1326	65.687
Fe	<.00000	ppb	.4273	12.928

Color Legend: Pass/Unchecked Internal Standard Check Fail Check Warn

CCB-2

Acquire Date: 19-Aug-2019 1:55 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
K_	8.2623	ppb	6.4908	78.559
Li	3.3414	ppb	3.6760	110.01
Mg	<.00000	ppb	11.494	36.394
Mn	<.00000	ppb	.05529	11.502
Mo	1.3814	ppb	1.0171	73.626
Na	<.00000	ppb	11.2224	141.40
Ni	<.00000	ppb	.17605	30.838
Pb	.04227	ppb	.02969	70.228
Pd	7.2119	ppb	12.4173	172.18
Sb	.43486	ppb	.30727	70.659
Se	<.00000	ppb	3.01026	324.52
Si	<.00000	ppb	8.164	40.955
Sn	.36792	ppb	.79618	216.40
Sr	.00897	ppb	6.91241	77,045
Ti	.90313	ppb	.12773	14.143
Tl	1.3546	ppb	.2578	19.028
V_	<.00000	ppb	8.2641	166.77
Zn	<.00000	ppb	.04225	48.220
Zr	.70780	ppb	1.93530	273.42

190806001-003A

Acquire Date: 19-Aug-2019 2:00 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1807.6	ppb	20.6	1.1396
Ag	<.00000	ppb	.695	2.6121
Al	42583.	ppb	82	.19216
As	<.00000	ppb	1.347	8.4186
Au	73.498	ppb	.666	.90639
B_	<.00000	ppb	1.543	2.9589
Ba	287.66	ppb	.57	.19676
Be	2.1644	ppb	.0419	1.9348
Ca	24493.	ppb	19	.07807
Cd	.31476	ppb	.02117	6.7272
Co	32.475	ppb	.054	.16515
Cr	68.881	ppb	4.664	6.7708
Cu	90.232	ppb	1.303	1.4446
Fe	71286.	ppb	522	.73276
K_	6243.6	ppb	18.1	.29013
Li	<.00000	ppb	3.2041	59.169

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

190806001-003A

Acquire Date: 19-Aug-2019 2:00 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mg	18342.	ppb	51	.27792
Mn	1728.5	ppb	13.1	.75843
Mo	2.0383	ppb	.0589	2.8916
Na	1832.3	ppb	30.5	1.6659
Ni	60.004	ppb	.186	.31053
Pb	94.286	ppb	.133	.14127
Pd	<.00000	ppb	15.50	5.5310
Sb	2.0276	ppb	.5391	26.587
Se	<.00000	ppb	4.297	23.492
Si	2806.2	ppb	12.8	.45573
Sn	14.138	ppb	.732	5.1795
Sr	78.210	ppb	5.651	7.2255
Ti	820.53	ppb	5.28	.64405
Tl	<.00000	ppb	1.2461	16.005
V_	88.875	ppb	.901	1.0141
Zn	288.17	ppb	1.68	.58176
Zr	9.2614	ppb	.8295	8.9566

190806001-004A

Acquire Date: 19-Aug-2019 2:07 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2045.9	ppb	.8	.04021
Ag	<.00000	ppb	.299	1.1170
Al	50677.	ppb	60	.11931
As	<.00000	ppb	2.547	10.878
Au	85.690	ppb	1.779	2.0757
B_	<.00000	ppb	.452	.64864
Ba	384.99	ppb	.37	.09608
Be	2.5493	ppb	.0469	1.8388
Ca	11305.	ppb	23	.20457
Cd	1.3304	ppb	.0654	4.9151
Co	34.000	ppb	.148	.43668
Cr	288.55	ppb	11.37	3.9393
Cu	113.34	ppb	2.39	2.1102
Fe	83674.	ppb	646	.77215
K_	6437.8	ppb	17.4	.26977
Li	64.668	ppb	1.783	2.7566
Mg	17700.	ppb	3	.01623
Mn	2351.5	ppb	8.4	.35885

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

190806001-004A

Acquire Date: 19-Aug-2019 2:07 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mo	9.7143	ppb	.1902	1.9581
Na	2071.4	ppb	5.8	.28110
Ni	82.308	ppb	.059	.07173
Pb	212.36	ppb	.87	.40944
Pd	<.00000	ppb	5.77	2.4849
Sb	6.5968	ppb	.6135	9.3001
Se	<.00000	ppb	.066	.33906
Si	3187.9	ppb	8.9	.27895
Sn	15.825	ppb	.673	4.2560
Sr	46.131	ppb	4.022	8.7183
Ti	551.43	ppb	3.96	.71768
Tl	<.00000	ppb	2.1158	29.743
V_	99.400	ppb	3.823	3.8457
Zn	656.64	ppb	.56	.08587
Zr	4.8624	ppb	1.1751	24.167

190806001-004A

Acquire Date: 19-Aug-2019 2:18 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	130.78	ppb	2.21	1.6871
Ag	<.00000	ppb	.3001	8.8818
Al	4342.0	ppb	4.5	.10474
As	<.00000	ppb	.5245	12.222
Au	8.8299	ppb	.2459	2.7849
B_	<.00000	ppb	.0000	.00036
Ba	33.861	ppb	.746	2.2026
Be	.45738	ppb	.06874	15.030
Ca	1037.9	ppb	10.9	1.0463
Cd	.15064	ppb	.02953	19.602
Co	3.2338	ppb	.0229	.70715
Cr	25.530	ppb	13.776	53.960
Cu	7.4054	ppb	.2944	3.9761
Fe	9516.9	ppb	13.3	.14012
K_	447.61	ppb	.76	.16869
Li	1.4400	ppb	2.8828	200.20
Mg	1566.3	ppb	1.4	.08713
Mn	236.52	ppb	.46	.19498
Mo	.65694	ppb	.05121	7.7954
Na	108.33	ppb	2.77	2.5564

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

190806001-004A

Acquire Date: 19-Aug-2019 2:18 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ni	6.7914	ppb	.0587	.86413
Pb	21.366	ppb	.613	2.8700
Pd	<.00000	ppb	16.845	63.210
Sb	<.00000	ppb	.03845	9.4608
Se	1.0703	ppb	.2632	24.595
Si	297.06	ppb	17.15	5.7720
Sn	1.1257	ppb	.2755	24.476
Sr	6.2298	ppb	3.8958	62.535
Ti	51.992	ppb	2.648	5.0940
Tl	1.2875	ppb	1.4105	109.55
V_	<.00000	ppb	1.66289	2,743.5
Zn	67.318	ppb	.196	.29136
Zr	.92935	ppb	.72403	77.907

190806001-004ADP

Acquire Date: 19-Aug-2019 2:25 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1856.0	ppb	8.9	.47896
Ag	<.00000	ppb	1.394	5.0368
Al	50087.	ppb	58	.11571
As	<.00000	ppb	.974	4.4951
Au	82.360	ppb	.435	.52843
B_	<.00000	ppb	.218	.38792
Ba	378.00	ppb	1.98	.52323
Be	2.5970	ppb	.0257	.99118
Ca	11228.	ppb	36	.32151
Cd	1.1679	ppb	.0042	.36118
Co	32.257	ppb	.294	.91216
Cr	316.49	ppb	1.92	.60801
Cu	117.18	ppb	2.61	2.2250
Fe	80883.	ppb	205	.25341
K_	6883.8	ppb	26.0	.37802
Li	44.307	ppb	6.111	13.792
Mg	16723.	ppb	47	.28385
Mn	2135.6	ppb	.3	.01564
Mo	9.4040	ppb	.0146	.15553
Na	1899.1	ppb	10.0	.52614
Ni	77.155	ppb	.221	.28629
Pb	163.79	ppb	1.05	.63904

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

190806001-004ADP

Acquire Date: 19-Aug-2019 2:25 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Pd	<.00000	ppb	2.22	.98670
Sb	8.2331	ppb	.3064	3.7218
Se	<.00000	ppb	1.338	6.9570
Si	2921.6	ppb	5.2	.17878
Sn	15.825	ppb	.000	.00004
Sr	35.554	ppb	16.211	45.596
Ti	564.38	ppb	.52	.09142
Tl	<.00000	ppb	.4611	7.4692
V_	91.866	ppb	1.602	1.7434
Zn	652.25	ppb	.71	.10901
Zr	6.9154	ppb	.3456	4.9978

190806001-004ADP

Acquire Date: 19-Aug-2019 2:31 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	128.14	ppb	1.53	1.1950
Ag	<.00000	ppb	.8955	10.598
Al	4498.7	ppb	4.9	.10916
As	<.00000	ppb	.5993	24.592
Au	8.7629	ppb	.0377	.43065
B_	<.00000	ppb	.0265	.34922
Ba	35.246	ppb	.211	.59817
Be	.31367	ppb	.03774	12.031
Ca	1098.1	ppb	.3	.02898
Cd	.14468	ppb	.05484	37.909
Co	3.2418	ppb	.0343	1.0582
Cr	21.477	ppb	4.009	18.667
Cu	9.3040	ppb	2.5156	27.038
Fe	9763.9	ppb	3.8	.03856
K_	500.29	ppb	2.78	.55533
Li	12.650	ppb	4.142	32.744
Mg	1548.7	ppb	2.7	.17490
Mn	228.72	ppb	.52	.22778
Mo	.60520	ppb	.10973	18.132
Na	106.07	ppb	7.40	6.9776
Ni	6.9408	ppb	.0723	1.0410
Pb	17.182	ppb	.351	2.0448
Pd	<.00000	ppb	.442	1.8088
Sb	.18891	ppb	.72939	386.12

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

190806001-004ADP

Acquire Date: 19-Aug-2019 2:31 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Se	.54287	ppb	.21935	40.406
Si	266.14	ppb	25.26	9.4912
Sn	1.4288	ppb	.2755	19.285
Sr	4.8965	ppb	11.3107	231.00
Ti	54.377	ppb	.210	.38648
Tl	<.00000	ppb	1.96659	316.71
V_	<.00000	ppb	2.0150	53.734
Zn	71.678	ppb	.115	.16072
Zr	.92799	ppb	.65714	70.813

190806001-004AMS

Acquire Date: 19-Aug-2019 2:40 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2176.2	ppb	23.2	1.0646
Ag	47.547	ppb	4.011	8.4365
Al	73456.	ppb	868	1.1813
As	37.285	ppb	1.574	4.2208
Au	93.062	ppb	.169	.18208
B_	<.00000	ppb	.362	.56526
Ba	2499.4	ppb	26.5	1.0597
Be	55.961	ppb	.639	1.1415
Ca	14271.	ppb	129	.90385
Cd	49.180	ppb	.144	.29251
Co	501.47	ppb	.40	.08003
Cr	520.13	ppb	3.51	.67419
Cu	399.21	ppb	1.07	.26733
Fe	90655.	ppb	633	.69871
K_	12396.	ppb	85	.68213
Li	136.39	ppb	24.05	17.637
Mg	22601.	ppb	194	.85970
Mn	2814.4	ppb	4.3	.15113
Mo	8.8712	ppb	.0513	.57809
Na	2216.4	ppb	22.1	.99933
Ni	565.96	ppb	.43	.07608
Pb	174.17	ppb	.02	.01082
Pd	<.00000	ppb	5.61	2.1868
Sb	257.30	ppb	1.18	.45927
Se	12.145	ppb	2.457	20.230
Si	3562.6	ppb	37.1	1.0408

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

190806001-004AMS

Acquire Date: 19-Aug-2019 2:40 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Sn	17.254	ppb	.184	1.0638
Sr	49.168	ppb	10.282	20.912
Ti	714.46	ppb	7.57	1.0592
Tl	44.886	ppb	1.054	2.3480
V_	617.81	ppb	6.50	1.0520
Zn	1167.0	ppb	.5	.04470
Zr	14.933	ppb	.412	2.7588

190806001-004AA

Acquire Date: 19-Aug-2019 2:45 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2079.0	ppb	1.4	.06538
Ag	67.311	ppb	.694	1.0311
Al	56208.	ppb	52	.09305
As	55.254	ppb	1.274	2.3056
Au	85.798	ppb	.152	.17691
B_	<.00000	ppb	1.782	2.5858
Ba	4498.3	ppb	2.7	.06012
Be	111.20	ppb	.01	.01192
Ca	11518.	ppb	40	.34846
Cd	100.41	ppb	.01	.00793
Co	993.53	ppb	1.19	.12006
Cr	729.57	ppb	.15	.02075
Cu	679.21	ppb	1.52	.22380
Fe	84075.	ppb	890	1.0587
K_	6637.7	ppb	10.3	.15551
Li	183.15	ppb	3.59	1.9588
Mg	18085.	ppb	36	.19676
Mn	3231.6	ppb	17.9	.55331
Mo	11.308	ppb	.117	1.0356
Na	2133.2	ppb	6.0	.28178
Ni	1076.7	ppb	1.6	.14529
Pb	248.15	ppb	.61	.24617
Pd	<.00000	ppb	.90	.35870
Sb	983.95	ppb	3.45	.35076
Se	7.3213	ppb	1.2503	17.078
Si	3240.2	ppb	14.7	.45322
Sn	15.543	ppb	.153	.98528
Sr	43.108	ppb	.756	1.7535

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190806001-004AA

Acquire Date: 19-Aug-2019 2:45 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ti	559.11	ppb	1.69	.30178
Tl	74.597	ppb	3.743	5.0177
V_	1144.3	ppb	1.0	.09012
Zn	1631.5	ppb	1.4	.08437
Zr	4.9116	ppb	1.1062	22.521

190806001-004AL

Acquire Date: 19-Aug-2019 2:50 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	320.92	ppb	1.03	.32172
Ag	<.00000	ppb	4.581	43.082
Al	9835.0	ppb	32.4	.32929
As	<.00000	ppb	1.8730	38.016
Au	18.208	ppb	.681	3.7421
B_	<.00000	ppb	.101	.59678
Ba	78.066	ppb	.012	.01540
Be	.55729	ppb	.02575	4.6211
Ca	2323.6	ppb	6.8	.29245
Cd	.24461	ppb	.04429	18.108
Co	7.9400	ppb	.1258	1.5841
Cr	56.853	ppb	2.069	3.6395
Cu	22.316	ppb	1.623	7.2742
Fe	20450.	ppb	59	.29008
K_	1073.1	ppb	4.4	.41075
Li	8.4418	ppb	3.3661	39.874
Mg	3536.5	ppb	3.0	.08462
Mn	523.96	ppb	2.49	.47484
Mo	1.7380	ppb	.3219	18.521
Na	296.34	ppb	1.92	.64811
Ni	19.661	ppb	.163	.82691
Pb	48.306	ppb	.228	.47290
Pd	<.00000	ppb	7.538	13.816
Sb	1.4534	ppb	.9978	68.655
Se	<.00000	ppb	.6362	19.530
Si	639.85	ppb	7.42	1.1589
Sn	2.6627	ppb	.0612	2.2988
Sr	19.115	ppb	5.027	26.299
Ti	111.40	ppb	1.15	1.0330
Tl	.38603	ppb	.35265	91.352

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190806001-004AL

Acquire Date: 19-Aug-2019 2:50 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
V_	11.942	ppb	5.488	45.951
Zn	148.79	ppb	.89	.59752
Zr	1.1972	ppb	.4837	40.407

190806001-005A

Acquire Date: 19-Aug-2019 2:53 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2016.8	ppb	2.8	.13744
Ag	<.00000	ppb	3.685	12.459
Al	54167.	ppb	6	.01075
As	<.00000	ppb	1.723	7.2120
Au	90.774	ppb	.567	.62502
B_	<.00000	ppb	.559	.79455
Ba	423.65	ppb	.54	.12662
Be	2.6272	ppb	.0633	2.4085
Ca	31308.	ppb	110	.35014
Cd	2.0210	ppb	.0591	2.9226
Co	36.309	ppb	.140	.38523
Cr	1000.0	ppb	4.4	.43639
Cu	228.38	ppb	1.13	.49273
Fe	89367.	ppb	278	.31123
K_	7791.7	ppb	7.4	.09442
Li	<.00000	ppb	2.592	14.351
Mg	23848.	ppb	74	.30923
Mn	2148.0	ppb	8.2	.37997
Mo	24.596	ppb	.022	.08896
Na	2057.4	ppb	2.4	.11492
Ni	161.18	ppb	1.20	.74165
Pb	407.85	ppb	3.13	.76709
Pd	<.00000	ppb	1.33	.54190
Sb	21.404	ppb	.729	3.4075
Se	<.00000	ppb	1.009	4.8013
Si	2947.0	ppb	18.6	.63056
Sn	22.060	ppb	.551	2.4979
Sr	110.65	ppb	3.52	3.1810
Ti	624.75	ppb	.77	.12344
Tl	<.00000	ppb	.3255	4.2656
V_	104.74	ppb	11.39	10.874
Zn	737.54	ppb	3.48	.47224

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190806001-005A

Acquire Date: 19-Aug-2019 2:53 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Zr	6.6953	ppb	1.2096	18.067

190806001-005A

Acquire Date: 19-Aug-2019 2:58 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	146.05	ppb	2.73	1.8692
Ag	<.00000	ppb	6.5708	158.23
Al	5281.1	ppb	10.6	.20030
As	<.00000	ppb	.9740	29.182
Au	10.382	ppb	.360	3.4630
B_	<.00000	ppb	.0053	.05936
Ba	43.086	ppb	.341	.79085
Be	.52159	ppb	.00452	.86678
Ca	3332.7	ppb	11.3	.33977
Cd	.26101	ppb	.03375	12.930
Co	4.1124	ppb	.0028	.06918
Cr	90.469	ppb	2.392	2.6439
Cu	21.599	ppb	.430	1.9886
Fe	11724.	ppb	55	.46826
K_	602.85	ppb	2.74	.45422
Li	1.9106	ppb	5.3993	282.61
Mg	2374.5	ppb	6.3	.26668
Mn	244.15	ppb	2.05	.83879
Mo	2.1829	ppb	.0878	4.0212
Na	125.18	ppb	2.85	2.2741
Ni	16.926	ppb	.054	.31944
Pb	47.188	ppb	1.662	3.5228
Pd	<.00000	ppb	11.971	41.505
Sb	2.1882	ppb	1.0367	47.379
Se	<.00000	ppb	.70195	156.05
Si	284.41	ppb	.73	.25525
Sn	2.4246	ppb	.4592	18.940
Sr	13.159	ppb	1.885	14.325
Ti	65.502	ppb	.897	1.3687
Tl	<.00000	ppb	.74596	77.205
V_	3.9570	ppb	2.1538	54.432
Zn	87.115	ppb	.509	.58461
Zr	.56378	ppb	.41501	73.611

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCV-3

Acquire Date: 19-Aug-2019 3:03 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1915.1	ppb	17.5	.91233
Ag	530.20	ppb	7.42	1.3999
Al	1984.2	ppb	9.5	.47647
As	2089.2	ppb	7.2	.34463
Au	3.8129	ppb	.1514	3.9705
B_	2074.2	ppb	8.2	.39670
Ba	2070.0	ppb	13.2	.63625
Be	2026.3	ppb	14.3	.70612
Ca	2000.7	ppb	2.7	.13405
Cd	2092.2	ppb	6.9	.32774
Co	1990.7	ppb	2.9	.14637
Cr	2034.3	ppb	10.5	.51522
Cu	2090.1	ppb	12.2	.58472
Fe	2031.3	ppb	7.3	.36108
K_	9410.7	ppb	33.7	.35763
Li	1993.3	ppb	39.5	1.9840
Mg	1968.3	ppb	1.7	.08730
Mn	1973.6	ppb	5.9	.29764
Mo	2070.2	ppb	7.1	.34340
Na	1966.8	ppb	9.8	.49894
Ni	2066.5	ppb	6.1	.29373
Pb	2128.3	ppb	2.6	.12269
Pd	<.00000	ppb	6.208	22.754
Sb	2027.0	ppb	3.5	.17082
Se	2070.7	ppb	5.4	.26097
Si	4743.7	ppb	53.6	1.1307
Sn	2013.8	ppb	3.6	.17976
Sr	2036.3	ppb	9.8	.47910
Ti	<.00000	ppb	2.51242	260.71
Tl	2003.6	ppb	7.2	.35778
V_	2017.5	ppb	13.6	.67511
Zn	2083.8	ppb	5.5	.26405
Zr	.21920	ppb	.89897	410.11

CCB-3

Acquire Date: 19-Aug-2019 3:11 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
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Color Legend: Pass/Unchecked Internal Standard Check Fail Check Warn

Sample Report

Printed: 8/20/2019 9:09 am

CCB-3

Acquire Date: 19-Aug-2019 3:11 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	<.00000	ppb	.5999	11.646
Ag	<.00000	ppb	.3985	22.634
Al	<.00000	ppb	16.597	61.344
As	.37191	ppb	.22520	60.551
Au	.16114	ppb	.20793	129.03
B_	<.00000	ppb	.05856	14.034
Ba	<.00000	ppb	.1472	12.075
Be	.39498	ppb	.01187	3.0043
Ca	<.00000	ppb	4.4274	267.08
Cd	.02686	ppb	.03164	117.78
Co	<.00000	ppb	.00286	1.2213
Cr	<.00000	ppb	3.2420	96.015
Cu	1.2477	ppb	1.4594	116.96
Fe	<.00000	ppb	.0614	1.6267
K_	4.9753	ppb	2.0944	42.095
Li	1.0711	ppb	7.8553	733.37
Mg	<.00000	ppb	2.298	12.069
Mn	<.00000	ppb	.00510	.93045
Mo	<.00000	ppb	.21218	315.55
Na	<.00000	ppb	8.9215	115.49
Ni	<.00000	ppb	.05425	5.5208
Pb	<.00000	ppb	1.34632	725.34
Pd	11.602	ppb	5.322	45.873
Sb	.05462	ppb	1.07495	1,968.2
Se	.60508	ppb	.57037	94.262
Si	<.00000	ppb	11.139	106.21
Sn	.64943	ppb	.15311	23.576
Sr	5.0746	ppb	7.2893	143.64
Ti	<.00000	ppb	.63882	75.760
Tl	<.00000	ppb	.7462	51.599
V_	<.00000	ppb	1.5284	25.953
Zn	<.00000	ppb	.02767	24.871
Zr	<.00000	ppb	.03491	17.790

190806001-006A

Acquire Date: 19-Aug-2019 3:15 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1964.1	ppb	6.2	.31522
Ag	<.00000	ppb	1.595	5.7051

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

190806001-006A

Acquire Date: 19-Aug-2019 3:15 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Al	54087.	ppb	83	.15308
As	<.00000	ppb	1.573	5.9277
Au	88.861	ppb	1.192	1.3416
B_	<.00000	ppb	.665	1.0265
Ba	473.83	ppb	1.06	.22329
Be	2.4663	ppb	.0284	1.1531
Ca	29394.	ppb	50	.16977
Cd	2.5147	ppb	.0738	2.9356
Co	35.658	ppb	.026	.07192
Cr	1180.5	ppb	.3	.02623
Cu	251.42	ppb	.73	.29021
Fe	85486.	ppb	674	.78836
K_	8056.1	ppb	15.7	.19463
Li	<.00000	ppb	.664	4.8129
Mg	21586.	ppb	27	.12344
Mn	2839.2	ppb	12.7	.44605
Mo	44.661	ppb	.293	.65501
Na	2030.7	ppb	13.0	.64111
Ni	200.96	ppb	.47	.23610
Pb	618.64	ppb	1.42	.23031
Pd	<.00000	ppb	13.29	5.8472
Sb	24.825	ppb	.500	2.0148
Se	<.00000	ppb	.307	1.4461
Si	3462.4	ppb	5.0	.14515
Sn	22.557	ppb	.704	3.1214
Sr	113.67	ppb	2.01	1.7644
Ti	664.39	ppb	3.50	.52720
Tl	<.00000	ppb	.8273	15.439
V_	100.87	ppb	6.87	6.8152
Zn	754.94	ppb	2.87	.38063
Zr	7.5751	ppb	.5877	7.7577

190806001-006A

Acquire Date: 19-Aug-2019 3:22 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	137.62	ppb	4.16	3.0197
Ag	<.00000	ppb	8.8627	286.00
Al	5113.9	ppb	37.0	.72344
As	<.00000	ppb	2.6221	69.711

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

190806001-006A

Acquire Date: 19-Aug-2019 3:22 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Au	10.355	ppb	.322	3.1052
B_	<.00000	ppb	.3669	4.2000
Ba	46.952	ppb	.291	.61927
Be	.42659	ppb	.00002	.00398
Ca	3040.3	ppb	45.6	1.4987
Cd	.23118	ppb	.00000	.00096
Co	3.9508	ppb	.0085	.21616
Cr	103.10	ppb	8.39	8.1334
Cu	20.448	ppb	2.630	12.862
Fe	11061.	ppb	183	1.6563
K_	615.14	ppb	8.16	1.3270
Li	<.00000	ppb	6.74084	1,328.5
Mg	2094.7	ppb	22.0	1.0501
Mn	322.63	ppb	6.17	1.9122
Mo	4.4278	ppb	.0293	.66155
Na	123.87	ppb	4.64	3.7432
Ni	21.464	ppb	.577	2.6898
Pb	69.631	ppb	1.209	1.7364
Pd	<.00000	ppb	10.200	43.954
Sb	2.7060	ppb	.7683	28.393
Se	<.00000	ppb	.1535	7.7334
Si	335.45	ppb	20.78	6.1961
Sn	2.3380	ppb	.5817	24.879
Sr	8.3627	ppb	3.6447	43.583
Ti	67.628	ppb	2.682	3.9665
Tl	.42440	ppb	1.54615	364.31
V_	3.1384	ppb	5.6925	181.39
Zn	87.510	ppb	1.264	1.4440
Zr	.43890	ppb	3.35246	763.84

190806001-007A

Acquire Date: 19-Aug-2019 3:28 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2063.4	ppb	9.7	.47097
Ag	<.00000	ppb	3.883	13.718
Al	56069.	ppb	47	.08368
As	<.00000	ppb	.075	.28264
Au	82.238	ppb	.569	.69129
B_	<.00000	ppb	.042	.06834

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190806001-007A

Acquire Date: 19-Aug-2019 3:28 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ba	388.88	ppb	.03	.00749
Be	2.1430	ppb	.0914	4.2643
Ca	14869.	ppb	63	.42594
Cd	1.4169	ppb	.0654	4.6159
Co	35.870	ppb	.446	1.2433
Cr	209.59	ppb	1.06	.50750
Cu	173.23	ppb	.44	.25193
Fe	80884.	ppb	582	.71941
K_	7000.7	ppb	3.2	.04617
Li	41.892	ppb	.314	.74882
Mg	16281.	ppb	36	.22131
Mn	1798.3	ppb	4.5	.25144
Mo	12.709	ppb	.007	.05651
Na	2131.0	ppb	5.7	.26541
Ni	174.46	ppb	.48	.27793
Pb	676.14	ppb	4.16	.61555
Pd	<.00000	ppb	11.53	5.4007
Sb	6.2590	ppb	.3846	6.1444
Se	<.00000	ppb	1.009	5.6628
Si	3962.2	ppb	8.2	.20758
Sn	24.527	ppb	.184	.74993
Sr	60.528	ppb	10.558	17.443
Ti	865.43	ppb	.71	.08221
Tl	<.00000	ppb	.0679	1.1823
V_	114.36	ppb	10.14	8.8659
Zn	753.01	ppb	3.82	.50720
Zr	5.0579	ppb	.6912	13.665

190806001-007A

Acquire Date: 19-Aug-2019 3:34 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	143.89	ppb	1.47	1.0199
Ag	<.00000	ppb	.9953	12.509
Al	5181.2	ppb	12.8	.24794
As	<.00000	ppb	.2248	5.6567
Au	8.9101	ppb	.2081	2.3357
B_	<.00000	ppb	.0798	.93007
Ba	37.225	ppb	.122	.32671
Be	.32702	ppb	.05174	15.823

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

190806001-007A

Acquire Date: 19-Aug-2019 3:34 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ca	1488.0	ppb	.1	.00358
Cd	.11634	ppb	.01477	12.692
Co	3.7710	ppb	.1485	3.9390
Cr	11.139	ppb	3.918	35.170
Cu	12.144	ppb	1.427	11.752
Fe	10073.	ppb	11	.10610
K_	525.53	ppb	2.45	.46641
Li	.01709	ppb	4.30106	25,171
Mg	1545.0	ppb	16.4	1.0593
Mn	196.81	ppb	.11	.05501
Mo	.98281	ppb	.05852	5.9547
Na	125.31	ppb	5.08	4.0502
Ni	17.427	ppb	.005	.02604
Pb	74.631	ppb	.935	1.2527
Pd	<.00000	ppb	11.531	51.789
Sb	<.00000	ppb	.88286	607.72
Se	<.00000	ppb	.9871	55.824
Si	373.76	ppb	27.49	7.3537
Sn	2.3380	ppb	.7041	30.117
Sr	6.6744	ppb	12.3165	184.53
Ti	85.361	ppb	.088	.10326
Tl	<.00000	ppb	.2577	21.200
V_	4.8528	ppb	1.8767	38.672
Zn	84.929	ppb	.206	.24230
Zr	1.1478	ppb	.0688	5.9941

190806001-008A

Acquire Date: 19-Aug-2019 4:04 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2930.4	ppb	5.0	.17209
Ag	<.00000	ppb	.310	.62570
Al	48803.	ppb	38	.07739
As	<.00000	ppb	.000	.00111
Au	146.90	ppb	.10	.06576
B_	<.00000	ppb	.80	.66623
Ba	782.81	ppb	.21	.02677
Be	2.8003	ppb	.0830	2.9657
Ca	261950.	ppb	287	.10969
Cd	11.776	ppb	.025	.21362

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190806001-008A

Acquire Date: 19-Aug-2019 4:04 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Co	20.883	ppb	.309	1.4786
Cr	1374.8	ppb	6.0	.43654
Cu	486.28	ppb	3.61	.74261
Fe	132150.	ppb	1,370	1.0368
K_	8249.7	ppb	11.4	.13876
Li	<.00000	ppb	4.77	.51086
Mg	42148.	ppb	10	.02338
Mn	1733.4	ppb	2.0	.11456
Mo	198.03	ppb	.36	.17968
Na	3020.9	ppb	5.4	.17807
Ni	179.32	ppb	.41	.23042
Pb	440.94	ppb	2.67	.60652
Pd	<.00000	ppb	3.59	1.6579
Sb	98.623	ppb	.881	.89355
Se	<.00000	ppb	3.466	13.373
Si	3212.5	ppb	8.2	.25540
Sn	267.38	ppb	1.04	.39063
Sr	504.52	ppb	4.50	.89260
Ti	569.10	ppb	1.95	.34265
Tl	<.00000	ppb	1.777	12.026
V_	84.024	ppb	6.090	7.2484
Zn	6003.6	ppb	20.0	.33313
Zr	11.876	ppb	1.486	12.515

190806001-008A

Acquire Date: 19-Aug-2019 4:09 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	175.05	ppb	1.27	.72619
Ag	<.00000	ppb	.1995	4.6434
Al	4071.5	ppb	35.8	.87923
As	<.00000	ppb	1.4984	36.261
Au	16.536	ppb	.095	.57155
B_	<.00000	ppb	.170	1.1814
Ba	70.183	ppb	.700	.99755
Be	.42484	ppb	.01656	3.8978
Ca	25856.	ppb	104	.40148
Cd	1.1171	ppb	.0844	7.5521
Co	2.7712	ppb	.0943	3.4020
Cr	100.44	ppb	8.11	8.0763

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190806001-008A

Acquire Date: 19-Aug-2019 4:09 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Cu	38.991	ppb	3.503	8.9838
Fe	18313.	ppb	37	.20416
K_	529.49	ppb	3.71	.70028
Li	<.00000	ppb	7.996	10.593
Mg	3644.2	ppb	14.3	.39309
Mn	184.48	ppb	.20	.10894
Mo	19.020	ppb	.168	.88416
Na	159.30	ppb	2.28	1.4307
Ni	17.460	ppb	.027	.15530
Pb	47.344	ppb	1.371	2.8965
Pd	<.00000	ppb	7.095	50.279
Sb	10.565	ppb	.883	8.3547
Se	<.00000	ppb	1.0749	25.290
Si	271.92	ppb	6.69	2.4620
Sn	26.649	ppb	.735	2.7568
Sr	55.018	ppb	4.777	8.6835
Ti	50.885	ppb	1.662	3.2669
Tl	<.00000	ppb	.96296	441.38
V_	<.00000	ppb	8.6783	180.60
Zn	705.07	ppb	3.60	.51057
Zr	1.4655	ppb	1.8320	125.01

190806001-009A

Acquire Date: 19-Aug-2019 4:15 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	3409.1	ppb	67.9	1.9920
Ag	<.00000	ppb	2.776	3.7149
Al	35118.	ppb	726	2.0686
As	<.00000	ppb	.300	.93970
Au	205.36	ppb	1.04	.50676
B_	<.00000	ppb	1.57	.61320
Ba	411.38	ppb	7.32	1.7789
Be	2.6509	ppb	.1579	5.9582
Ca	490610.	ppb	8,908	1.8157
Cd	17.506	ppb	.190	1.0845
Co	7.4734	ppb	.2942	3.9369
Cr	428.50	ppb	13.13	3.0641
Cu	189.31	ppb	3.56	1.8801
Fe	167360.	ppb	2,608	1.5581

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190806001-009A

Acquire Date: 19-Aug-2019 4:15 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
K_	8517.9	ppb	140.1	1.6452
Li	<.00000	ppb	163.4	14.297
Mg	45198.	ppb	910	2.0134
Mn	1337.3	ppb	7.0	.52236
Mo	40.896	ppb	.132	.32194
Na	3524.6	ppb	69.2	1.9619
Ni	116.97	ppb	.77	.66149
Pb	264.50	ppb	1.29	.48660
Pd	<.00000	ppb	11.01	2.7643
Sb	12.028	ppb	.260	2.1600
Se	<.00000	ppb	1.031	3.4654
Si	3070.1	ppb	44.7	1.4571
Sn	21.259	ppb	.031	.14398
Sr	1426.1	ppb	34.7	2.4304
Ti	243.15	ppb	4.15	1.7069
Tl	<.00000	ppb	1.587	7.6435
V_	78.350	ppb	4.701	6.0006
Zn	13855.	ppb	58	.41691
Zr	15.874	ppb	.048	.30345

190806001-009A

Acquire Date: 19-Aug-2019 4:19 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	222.30	ppb	4.86	2.1854
Ag	<.00000	ppb	3.4851	51.556
Al	3232.8	ppb	18.7	.57947
As	<.00000	ppb	2.3225	50.391
Au	26.945	ppb	.397	1.4740
B_	<.00000	ppb	.181	.56587
Ba	40.536	ppb	.380	.93694
Be	.50105	ppb	.13371	26.687
Ca	56666.	ppb	373	.65819
Cd	1.9106	ppb	.0211	1.1045
Co	<.00000	ppb	.16282	52.344
Cr	33.299	ppb	6.627	19.901
Cu	14.301	ppb	2.738	19.144
Fe	29618.	ppb	140	.47192
K_	587.22	ppb	5.82	.99040
Li	<.00000	ppb	4.77	2.3474

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

190806001-009A

Acquire Date: 19-Aug-2019 4:19 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mg	4306.7	ppb	10.1	.23565
Mn	162.57	ppb	.80	.49061
Mo	5.4521	ppb	.1024	1.8780
Na	208.92	ppb	.35	.16692
Ni	12.734	ppb	.117	.92249
Pb	32.630	ppb	1.243	3.8108
Pd	<.00000	ppb	21.286	107.75
Sb	.20449	ppb	2.34171	1,145.1
Se	<.00000	ppb	.3729	9.1757
Si	280.31	ppb	24.50	8.7403
Sn	3.2689	ppb	.6123	18.731
Sr	159.88	ppb	6.03	3.7724
Ti	23.094	ppb	2.044	8.8497
Tl	<.00000	ppb	1.23421	1,009.5
V_	<.00000	ppb	1.5960	98.945
Zn	2235.6	ppb	11.9	.53051
Zr	3.0053	ppb	.1383	4.6017

190806001-010A

Acquire Date: 19-Aug-2019 4:25 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2370.1	ppb	17.3	.72839
Ag	<.00000	ppb	2.483	8.4380
Al	58800.	ppb	159	.27089
As	<.00000	ppb	1.648	8.0596
Au	97.557	ppb	1.305	1.3372
B_	<.00000	ppb	1.722	2.1291
Ba	522.80	ppb	2.29	.43772
Be	2.7807	ppb	.0082	.29649
Ca	23643.	ppb	71	.29972
Cd	2.3536	ppb	.0949	4.0320
Co	41.532	ppb	.100	.23980
Cr	164.23	ppb	5.28	3.2176
Cu	241.39	ppb	1.88	.77795
Fe	93222.	ppb	1,050	1.1268
K_	7970.1	ppb	20.6	.25858
Li	41.853	ppb	.527	1.2595
Mg	21190.	ppb	73	.34669
Mn	2511.5	ppb	23.0	.91489

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

190806001-010A

Acquire Date: 19-Aug-2019 4:25 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mo	9.8282	ppb	.1462	1.4877
Na	2445.5	ppb	3.5	.14507
Ni	151.53	ppb	1.27	.83851
Pb	661.70	ppb	3.98	.60154
Pd	<.00000	ppb	3.59	1.4770
Sb	4.3793	ppb	1.0002	22.839
Se	<.00000	ppb	1.273	5.5244
Si	3263.6	ppb	15.0	.45948
Sn	22.709	ppb	.306	1.3473
Sr	98.285	ppb	2.907	2.9574
Ti	713.52	ppb	1.28	.17948
Tl	<.00000	ppb	.1900	2.4462
V_	141.18	ppb	2.26	1.6008
Zn	686.07	ppb	4.47	.65222
Zr	5.5961	ppb	.6228	11.130

190806001-010A

Acquire Date: 19-Aug-2019 4:30 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	165.27	ppb	4.51	2.7316
Ag	<.00000	ppb	2.8873	52.568
Al	5182.3	ppb	6.1	.11792
As	<.00000	ppb	1.7981	70.709
Au	10.609	ppb	.530	4.9939
B_	<.00000	ppb	.144	1.4352
Ba	48.152	ppb	.769	1.5963
Be	.45300	ppb	.10337	22.819
Ca	2281.7	ppb	7.9	.34667
Cd	.19837	ppb	.00000	.00044
Co	4.1770	ppb	.0314	.75256
Cr	6.6574	ppb	15.1347	227.34
Cu	19.838	ppb	2.575	12.982
Fe	11340.	ppb	53	.46508
K_	565.91	ppb	.85	.15102
Li	10.887	ppb	5.492	50.444
Mg	1921.6	ppb	22.4	1.1664
Mn	265.66	ppb	1.34	.50305
Mo	.74487	ppb	.02926	3.9287
Na	146.41	ppb	.90	.61595

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

190806001-010A

Acquire Date: 19-Aug-2019 4:30 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ni	14.514	ppb	.072	.49767
Pb	68.780	ppb	.755	1.0977
Pd	<.00000	ppb	7.540	25.579
Sb	<.00000	ppb	.61420	183.17
Se	<.00000	ppb	1.33811	187.53
Si	295.54	ppb	4.47	1.5131
Sn	2.2081	ppb	.0306	1.3867
Sr	14.761	ppb	2.891	19.585
Ti	67.626	ppb	1.913	2.8294
Tl	<.00000	ppb	.16276	37.096
V_	<.00000	ppb	.6253	23.944
Zn	74.971	ppb	.083	.11055
Zr	2.2965	ppb	1.3475	58.677

CCV-4

Acquire Date: 19-Aug-2019 4:37 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1924.7	ppb	30.6	1.5903
Ag	530.68	ppb	7.02	1.3224
Al	1974.3	ppb	47.8	2.4220
As	2097.2	ppb	9.6	.46003
Au	3.7861	ppb	.7569	19.991
B_	2083.4	ppb	2.0	.09499
Ba	2078.2	ppb	26.0	1.2502
Be	2030.4	ppb	25.1	1.2358
Ca	1994.4	ppb	21.8	1.0933
Cd	2096.9	ppb	.6	.02681
Co	1998.6	ppb	1.1	.05361
Cr	2041.8	ppb	19.8	.96910
Cu	2096.8	ppb	23.3	1.1089
Fe	2034.1	ppb	1.3	.06478
K_	9446.1	ppb	101.5	1.0749
Li	2014.9	ppb	47.5	2.3554
Mg	1948.1	ppb	44.6	2.2891
Mn	1973.9	ppb	5.3	.26599
Mo	2072.2	ppb	2.2	.10724
Na	1982.4	ppb	26.3	1.3246
Ni	2073.7	ppb	.2	.00832
Pb	2134.4	ppb	1.3	.06082

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

CCV-4

Acquire Date: 19-Aug-2019 4:37 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Pd	<.00000	ppb	4.879	12.349
Sb	2037.1	ppb	1.2	.05758
Se	1994.1	ppb	.4	.02119
Si	4820.3	ppb	97.8	2.0292
Sn	2022.4	ppb	2.4	.11738
Sr	2047.5	ppb	25.1	1.2240
Ti	<.00000	ppb	1.6182	57.789
Tl	2002.8	ppb	6.7	.33305
V_	2013.7	ppb	15.5	.77221
Zn	2088.7	ppb	.5	.02322
Zr	.58594	ppb	.86435	147.51

CCB-4

Acquire Date: 19-Aug-2019 4:42 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	<.00000	ppb	.4955	14.896
Ag	<.00000	ppb	.0998	5.4489
Al	<.00000	ppb	1.330	4.1129
As	<.00000	ppb	.4498	30.333
Au	<.00000	ppb	.30290	68.657
B_	1.4105	ppb	1.1436	81.081
Ba	.48847	ppb	.74275	152.06
Be	.22247	ppb	.03999	17.976
Ca	<.00000	ppb	.782	5.9783
Cd	.10592	ppb	.13502	127.47
Co	<.00000	ppb	.16284	62.985
Cr	<.00000	ppb	4.0988	96.754
Cu	1.4701	ppb	1.6227	110.38
Fe	<.00000	ppb	.0700	1.9205
K_	9.0019	ppb	7.2866	80.945
Li	8.4046	ppb	5.6159	66.819
Mg	<.00000	ppb	25.616	136.19
Mn	<.00000	ppb	.03531	6.9061
Mo	1.0916	ppb	.6658	60.995
Na	1.7450	ppb	10.2000	584.53
Ni	<.00000	ppb	.0406	3.7094
Pb	<.00000	ppb	.26399	53.235
Pd	<.00000	ppb	11.0865	589.12
Sb	<.00000	ppb	.4224	36.192

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

CCB-4

Acquire Date: 19-Aug-2019 4:42 pm

Sample Type: Unknown

Correction Factor: 1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Se	1.8306	ppb	1.4700	80.301
Si	<.00000	ppb	14.844	123.04
Sn	.45459	ppb	.18370	40.409
Sr	5.5190	ppb	10.6825	193.56
Ti	1.5354	ppb	2.5549	166.40
Tl	<.00000	ppb	.13556	28.402
V_	<.00000	ppb	2.361	20.378
Zn	<.00000	ppb	.03038	42.632
Zr	.75693	ppb	1.17478	155.20

CRI-2

Acquire Date: 19-Aug-2019 4:47 pm

Sample Type: Unknown

Correction Factor: 1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	.77318	ppb	.35206	45.533
Ag	19.362	ppb	1.991	10.283
Al	<.00000	ppb	3.238	16.823
As	19.180	ppb	.453	2.3606
Au	.04047	ppb	.22756	562.30
B_	.51160	ppb	.31935	62.422
Ba	<.00000	ppb	.15539	23.967
Be	10.183	ppb	.077	.75639
Ca	1.2890	ppb	11.1985	868.81
Cd	10.090	ppb	.168	1.6640
Co	95.858	ppb	.248	.25895
Cr	22.966	ppb	3.584	15.608
Cu	50.746	ppb	1.055	2.0793
Fe	<.00000	ppb	.0410	2.4477
K_	13.679	ppb	1.341	9.8009
Li	11.200	ppb	.108	.96263
Mg	<.00000	ppb	10.181	47.657
Mn	28.117	ppb	.046	.16286
Mo	.19141	ppb	.00728	3.8053
Na	5.1916	ppb	8.1490	156.97
Ni	79.268	ppb	.312	.39392
Pb	5.4192	ppb	1.0205	18.831
Pd	<.00000	ppb	10.1993	180.69
Sb	116.85	ppb	.01	.01224
Se	10.198	ppb	1.403	13.755
Si	<.00000	ppb	17.81937	3,443.7

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CRI-2

Acquire Date: 19-Aug-2019 4:47 pm

Sample Type: Unknown

Correction Factor: 1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Sn	.23808	ppb	.18378	77.191
Sr	<.00000	ppb	1.8849	50.627
Ti	<.00000	ppb	1.1498	63.642
Tl	18.753	ppb	.663	3.5329
V_	94.530	ppb	.483	.51081
Zn	44.721	ppb	.016	.03643
Zr	.43936	ppb	.86427	196.71

ICSA-2

Acquire Date: 19-Aug-2019 4:56 pm

Sample Type: Unknown

Correction Factor: 1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	8.7052	ppb	1.6937	19.456
Ag	<.00000	ppb	.499	.93942
Al	504740.	ppb	2,630	.52112
As	<.00000	ppb	.81	.39457
Au	125.34	ppb	.14	.11364
B_	<.00000	ppb	.19	.08943
Ba	<.00000	ppb	.33043	473.01
Be	2.9554	ppb	.0447	1.5111
Ca	429730.	ppb	3,071	.71463
Cd	<.00000	ppb	.00627	.64847
Co	.15560	ppb	.06853	44.045
Cr	<.00000	ppb	5.793	31.475
Cu	<.00000	ppb	.778	2.9095
Fe	120050.	ppb	134	.11202
K_	3.8794	ppb	2.8051	72.309
Li	<.00000	ppb	114.7	9.5483
Mg	531250.	ppb	1,257	.23663
Mn	<.00000	ppb	.028	.16221
Mo	<.00000	ppb	.1314	2.7128
Na	14.218	ppb	8.116	57.085
Ni	<.00000	ppb	.042	.19855
Pb	<.00000	ppb	1.128	1.5584
Pd	<.00000	ppb	13.304	94.277
Sb	<.00000	ppb	3.7689	102.04
Se	<.00000	ppb	2.235	4.7744
Si	1.0580	ppb	8.1676	772.00
Sn	.69276	ppb	.64302	92.820
Sr	12.361	ppb	2.765	22.366

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

ICSA-2

Acquire Date: 19-Aug-2019 4:56 pm

Sample Type: Unknown

Correction Factor: 1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ti	<.00000	ppb	1.192	7.0068
Tl	<.00000	ppb	.378	2.0110
V_	<.00000	ppb	2.414	9.8433
Zn	<.00000	ppb	.055	.29582
Zr	<.00000	ppb	.1730	10.721

ICSAB-2

Acquire Date: 19-Aug-2019 5:00 pm

Sample Type: Unknown

Correction Factor: 1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	10.236	ppb	.262	2.5636
Ag	1160.9	ppb	10.9	.94214
Al	513160.	ppb	4,373	.85207
As	<.00000	ppb	2.698	3.6586
Au	132.41	ppb	.38	.28715
B_	<.00000	ppb	.84	.37218
Ba	514.80	ppb	3.84	.74672
Be	496.29	ppb	4.12	.83099
Ca	436960.	ppb	3,945	.90284
Cd	912.40	ppb	1.98	.21692
Co	443.36	ppb	.24	.05518
Cr	491.61	ppb	1.53	.31068
Cu	578.84	ppb	3.31	.57222
Fe	121150.	ppb	449	.37090
K_	5.5082	ppb	.4197	7.6197
Li	<.00000	ppb	165.7	13.968
Mg	540900.	ppb	3,671	.67868
Mn	350.75	ppb	.28	.08005
Mo	<.00000	ppb	.2487	6.9875
Na	15.046	ppb	9.754	64.829
Ni	877.70	ppb	1.32	.15060
Pb	860.67	ppb	1.60	.18555
Pd	<.00000	ppb	4.358	10.787
Sb	.70885	ppb	.82923	116.98
Se	<.00000	ppb	3.181	6.4175
Si	<.00000	ppb	31.319	100.85
Sn	<.00000	ppb	.06124	21.765
Sr	<.00000	ppb	7.16309	1,019.7
Ti	<.00000	ppb	.425	2.1902
Tl	<.00000	ppb	1.410	6.6908

Color Legend: Pass/Unchecked Internal Standard Check Fail Check Warn

ICSAB-2

Acquire Date: 19-Aug-2019 5:00 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
V_	463.13	ppb	3.72	.80368
Zn	856.44	ppb	.05	.00559
Zr	<.00000	ppb	2.0594	141.72

CCV-5

Acquire Date: 19-Aug-2019 5:04 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1915.2	ppb	14.6	.76093
Ag	525.52	ppb	5.78	1.1007
Al	1961.9	ppb	4.8	.24563
As	2087.1	ppb	14.6	.69998
Au	3.0357	ppb	.2252	7.4194
B_	2069.1	ppb	14.0	.67568
Ba	2068.6	ppb	12.9	.62496
Be	2020.6	ppb	12.7	.63046
Ca	1997.0	ppb	12.3	.61749
Cd	2074.6	ppb	8.4	.40482
Co	1977.3	ppb	4.1	.20973
Cr	2033.4	ppb	10.8	.53141
Cu	2091.4	ppb	17.2	.82430
Fe	2043.4	ppb	5.3	.25797
K_	9399.5	ppb	40.2	.42773
Li	1984.9	ppb	40.6	2.0435
Mg	1970.7	ppb	15.7	.79525
Mn	1970.2	ppb	3.9	.19632
Mo	2063.0	ppb	9.3	.44849
Na	1968.2	ppb	14.8	.75122
Ni	2059.2	ppb	8.0	.39043
Pb	2114.6	ppb	3.5	.16766
Pd	<.00000	ppb	8.427	23.994
Sb	2020.5	ppb	11.3	.55901
Se	1993.7	ppb	7.5	.37610
Si	4768.6	ppb	69.6	1.4585
Sn	1997.7	ppb	6.2	.31168
Sr	2044.4	ppb	17.1	.83757
Ti	<.00000	ppb	.2557	9.1320
Tl	2000.1	ppb	3.9	.19396
V_	2009.4	ppb	19.8	.98719
Zn	2068.8	ppb	6.7	.32594

Color Legend: Pass/Unchecked Internal Standard Check Fail Check Warn

CCV-5

Acquire Date: 19-Aug-2019 5:04 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Zr	1.9304	ppb	1.1754	60.889

CCB-5

Acquire Date: 19-Aug-2019 5:08 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	<.00000	ppb	.2477	7.4662
Ag	<.00000	ppb	4.48110	635.90
Al	<.00000	ppb	11.952	60.427
As	<.00000	ppb	.0009	.06331
Au	.04056	ppb	.79413	1,958.1
B_	.86136	ppb	.82407	95.670
Ba	<.00000	ppb	.24635	35.916
Be	.26234	ppb	.08674	33.063
Ca	<.00000	ppb	6.5110	90.652
Cd	.06564	ppb	.08225	125.31
Co	<.00000	ppb	.00858	3.5409
Cr	<.00000	ppb	.4052	4.6605
Cu	.30016	ppb	.73663	245.41
Fe	<.00000	ppb	.1542	4.9408
K_	4.4425	ppb	6.7833	152.69
Li	11.150	ppb	1.458	13.080
Mg	<.00000	ppb	4.926	18.289
Mn	<.00000	ppb	.02458	4.7729
Mo	.76563	ppb	.55591	72.608
Na	4.6473	ppb	10.0164	215.53
Ni	<.00000	ppb	.08111	8.2535
Pb	.08833	ppb	1.16623	1,320.3
Pd	14.424	ppb	8.426	58.417
Sb	<.00000	ppb	1.76614	3,259.2
Se	.85328	ppb	.00021	.02483
Si	2.1111	ppb	2.2284	105.56
Sn	.82262	ppb	.27557	33.499
Sr	3.8303	ppb	14.5786	380.61
Ti	<.00000	ppb	.5536	34.045
Tl	.94217	ppb	.32564	34.563
V_	<.00000	ppb	.279	2.4672
Zn	<.00000	ppb	.03048	46.940
Zr	.43905	ppb	.38007	86.567

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Sample Report

Printed: 8/20/2019 9:09 am

Color Legend: Pass/Unchecked Internal Standard Check Fail Check Warn

Sample Report

Printed: 8/20/2019 9:09 am

Adirondack Environmental Services, Inc

PREP BATCH REPORT

Prep Start Date: **8/6/2019 10:50:02**

Prep End Date: **8/6/2019 2:50:00 P**

Comments: Temp:95 Start Time: 1310 End Time:1450

Page 1 of 2

Prep Factor Units:
mL / g

Prep Batch **74859** Prep Code: **HG PREP_S** Technician: **Ashlyn VanBuren**

Sample ID	Matrix	pH	ResCl	SampAmt	Sol Added	Fin Vol	factor	PrepStart	PrepEnd	ExPos	TareWt	CleanUp
190806001-001A	Soil			0.2	0	100	500.000	8/6/2019	8/6/2019		0	
190806001-002A	Soil			0.2	0	100	500.000	8/6/2019	8/6/2019		0	
190806001-003A	Soil			0.2	0	100	500.000	8/6/2019	8/6/2019		0	
190806001-004A	Soil			0.2	0	100	500.000	8/6/2019	8/6/2019		0	
190806001-004ADP	Soil			0.2	0	100	500.000	8/6/2019	8/6/2019		0	
190806001-004AMS	Soil			0.2	0	100	500.000	8/6/2019	8/6/2019		0	
190806001-005A	Soil			0.2	0	100	500.000	8/6/2019	8/6/2019		0	
190806001-006A	Soil			0.2	0	100	500.000	8/6/2019	8/6/2019		0	
190806001-007A	Soil			0.2	0	100	500.000	8/6/2019	8/6/2019		0	
190806001-008A	Soil			0.2	0	100	500.000	8/6/2019	8/6/2019		0	
190806001-009A	Soil			0.2	0	100	500.000	8/6/2019	8/6/2019		0	
190806001-010A	Soil			0.2	0	100	500.000	8/6/2019	8/6/2019		0	
LCS-74859				0.2	0	100	500.000	8/6/2019	8/6/2019		0	
MB-74859				0.2	0	100	500.000	8/6/2019	8/6/2019		0	

Prep Start Date: **8/6/2019 10:50:02**

Prep End Date: **8/6/2019 2:50:00 P**

Comments: Temp:95 Start Time: 1310 End Time:1450

Page 2 of 2

Prep Factor Units:

mL / g

Prep Batch **74859** Prep Code: **HG_PREP_S** Technician: **Ashlyn VanBuren**

Sample ID	Matrix	pH	ResCl	SampAmt	Sol Added	Fin Vol	factor	PrepStart	PrepEnd	ExPos	TareWt	CleanUp
Number	Reagent Name				Solution ID		Solution Name			SampType	AmtAdd	units
5429	Hot Block Digestion Vessels - 100m				5618		M-Metals in Soil 540				0.2g	
5694	Hydrochoric Acid				MR-HYDROXYL		Hydroxlamine, 12%				3ml	
5766	Nitric Acid				MR-KMNO4 5%-		Potassium Permanganate				7.5ml	
					MSP-HG 0.1 PP		0.1 PPM Hg				2ml	

Adirondack Environmental Services, Inc

PREP BATCH REPORT

Prep Start Date: **8/6/2019 2:43:52 P**

Prep End Date: **8/6/2019 2:46:58 P**

Comments: Temp:95 Start Time:1200 End Time:1400

Page:1 of 1

Prep Factor Units:

mL / mL

Prep Batch **74866** Prep Code: **HG_PREP** Technician: **Ashlyn VanBuren**

Sample ID	Matrix	pH	ResCl	SampAmt	Sol Added	Fin Vol	factor	PrepStart	PrepEnd	ExPos	TareWt	CleanUp
MB-74866				50	0	50	1.000	8/6/2019	8/6/2019		0	
LCS-74866				50	0	50	1.000	8/6/2019	8/6/2019		0	
190806001-011B	Water			50	0	50	1.000	8/6/2019	8/6/2019		0	

Number	Reagent Name	Solution ID	Solution Name	SampType	AmtAdd	units
5429	Hot Block Digestion Vessels - 100m	MR-HYDROXYL	Hydroxylamine, 12%		3	ml
5433	Sulfuric Acid	MR-KMNO4 5%-	Potassium Permanganate		7.5	ml
5766	Nitric Acid	MR-POTASSIUM	Potassium Persulfate, 5%		4	ml
		MSP-HG 0.1 PP	0.1 PPM Hg		1	ml

Adirondack Environmental Services, Inc

PREP BATCH REPORT

Prep Start Date: **8/6/2019 10:49:59 A**

Prep End Date: **8/6/2019 3:00:00 P**

Comments: Temp:95 Start Time:1200 End Time:1500

Page:1 of 2

Prep Factor Units:

mL / g

Prep Batch **74858** Prep Code: **3050CLP** Technician: **Ashlyn VanBuren**

Sample ID	Matrix	pH	ResCl	SampAmt	Sol Added	Fin Vol	factor	PrepStart	PrepEnd	ExPos	TareWt	CleanUp
MB-74858				1	0	200	200.000	8/6/2019	8/6/2019		0	
LCS-74858				1	0	200	200.000	8/6/2019	8/6/2019		0	
190806001-001A	Soil			1	0	200	200.000	8/6/2019	8/6/2019		0	
190806001-002A	Soil			1	0	200	200.000	8/6/2019	8/6/2019		0	
190806001-003A	Soil			1	0	200	200.000	8/6/2019	8/6/2019		0	
190806001-004A	Soil			1	0	200	200.000	8/6/2019	8/6/2019		0	
190806001-004ADP	Soil			1	0	200	200.000	8/6/2019	8/6/2019		0	
190806001-004AMS	Soil			1	0	200	200.000	8/6/2019	8/6/2019		0	
190806001-005A	Soil			1	0	200	200.000	8/6/2019	8/6/2019		0	
190806001-006A	Soil			1	0	200	200.000	8/6/2019	8/6/2019		0	
190806001-007A	Soil			1	0	200	200.000	8/6/2019	8/6/2019		0	
190806001-008A	Soil			1	0	200	200.000	8/6/2019	8/6/2019		0	
190806001-009A	Soil			1	0	200	200.000	8/6/2019	8/6/2019		0	
190806001-010A	Soil			1	0	200	200.000	8/6/2019	8/6/2019		0	

Prep Start Date: **8/6/2019 10:49:59 A**

Prep End Date: **8/6/2019 3:00:00 P**

Comments: Temp:95 Start Time:1200 End Time:1500

Page:2 of 2

Prep Factor Units:

mL / g

Prep Batch **74858**

Prep Code: **3050CLP**

Technician: **Ashlyn VanBuren**

Sample ID	Matrix	pH	ResCl	SampAmt	Sol Added	Fin Vol	factor	PrepStart	PrepEnd	ExPos	TareWt	CleanUp
Number	Reagent Name					Solution ID	Solution Name	SampType	AmtAdd	units		
5095	Hydrogen Peroxide					5794	M-ICP-SSWS-M			1 ml		
5430	Hot Block Digestion Vessels - 50mL					5618	M-Metals in Soil 540			0.5 g		
5694	Hydrochoric Acid											
5766	Nitric Acid											

Adirondack Environmental Services, Inc

PREP BATCH REPORT

Prep Start Date: **8/6/2019 2:43:50 P**

Prep End Date: **8/6/2019 2:45:59 P**

Comments: Temp:95 Start Time:1300 End Time:1415

Page:1 of 1

Prep Factor Units:

mL / mL

Prep Batch **74865** Prep Code: **3010CLP** Technician: **Ashlyn VanBuren**

Sample ID	Matrix	pH	ResCl	SampAmt	Sol Added	Fin Vol	factor	PrepStart	PrepEnd	ExPos	TareWt	CleanUp
MB-74865				50	0	50	1.000	8/6/2019	8/6/2019		0	
LCS-74865				50	0	50	1.000	8/6/2019	8/6/2019		0	
190806001-011B	Water	1		50	0	50	1.000	8/6/2019	8/6/2019		0	

Number	Reagent Name	Solution ID	Solution Name	SampType	AmtAdd	units
5766	Nitric Acid	5794	M-ICP-SSWS-M		0.5	ml
5694	Hydrochoric Acid	MWS-200.7-6-84	200.7-6		50	ml
5430	Hot Block Digestion Vessels - 50mL					

Adirondack Environmental Services, Inc**Date:** 20-Aug-19**CLIENT:** Arcadis**Client Sample ID:** B35-SS1-08052019**Work Order:** 190806001**Collection Date:** 8/5/2019 1:10:00 PM**Reference:** Watervliet Arsenal / Soil Sampling**Lab Sample ID:** 190806001-001**PO#:****Matrix:** SOIL**Project# :** 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW 7196A (3060A)						Analyst: DAA
(Prep: SW3060A - 8/7/2019)						
Chromium, Hexavalent	ND	1.1		µg/g-dry	1	8/7/2019 2:40:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	7.3	0.1		wt%	1	8/7/2019

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: B35-SS2-08052019
Collection Date: 8/5/2019 1:20:00 PM
Lab Sample ID: 190806001-002
Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW 7196A (3060A)						Analyst: DAA
(Prep: SW3060A - 8/7/2019)						
Chromium, Hexavalent	ND	1.1		µg/g-dry	1	8/7/2019 2:40:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	5.6	0.1		wt%	1	8/7/2019

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: B35-SS3-08052019
Collection Date: 8/5/2019 1:30:00 PM
Lab Sample ID: 190806001-003
Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW 7196A (3060A) (Prep: SW3060A - 8/7/2019)						Analyst: DAA
Chromium, Hexavalent	ND	1.1		µg/g-dry	1	8/7/2019 2:40:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	5.6	0.1		wt%	1	8/7/2019

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: B35-SS4-08052019
Collection Date: 8/5/2019 2:00:00 PM
Lab Sample ID: 190806001-004
Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW 7196A (3060A) (Prep: SW3060A - 8/7/2019)						Analyst: DAA
Chromium, Hexavalent	ND	1.0	NZ	µg/g-dry	1	8/7/2019 2:40:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	4.5	0.1		wt%	1	8/7/2019

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: B35-SS5-08052019
Collection Date: 8/5/2019 2:10:00 PM
Lab Sample ID: 190806001-005
Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW 7196A (3060A) (Prep: SW3060A - 8/7/2019)						Analyst: DAA
Chromium, Hexavalent	ND	1.1		µg/g-dry	1	8/7/2019 2:40:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	5.9	0.1		wt%	1	8/7/2019

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 20-Aug-19**CLIENT:** Arcadis**Client Sample ID:** B35-DUP-1-SS-08052019**Work Order:** 190806001**Collection Date:** 8/5/2019**Reference:** Watervliet Arsenal / Soil Sampling**Lab Sample ID:** 190806001-006**PO#:****Matrix:** SOIL**Project# :** 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW 7196A (3060A)						Analyst: DAA
(Prep: SW3060A - 8/13/2019)						
Chromium, Hexavalent	ND	1.1		µg/g-dry	1	8/13/2019 5:15:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	6.6	0.1		wt%	1	8/7/2019

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentitively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 20-Aug-19**CLIENT:** Arcadis**Client Sample ID:** B35-SS6-08052019**Work Order:** 190806001**Collection Date:** 8/5/2019 3:00:00 PM**Reference:** Watervliet Arsenal / Soil Sampling**Lab Sample ID:** 190806001-007**PO#:****Matrix:** SOIL**Project# :** 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW 7196A (3060A)						Analyst: DAA
(Prep: SW3060A - 8/13/2019)						
Chromium, Hexavalent	ND	1.2		µg/g-dry	1	8/13/2019 5:15:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	17.1	0.1		wt%	1	8/7/2019

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentitively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 20-Aug-19**CLIENT:** Arcadis**Client Sample ID:** B35-SS7-08052019**Work Order:** 190806001**Collection Date:** 8/5/2019 3:15:00 PM**Reference:** Watervliet Arsenal / Soil Sampling**Lab Sample ID:** 190806001-008**PO#:****Matrix:** SOIL**Project# :** 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW 7196A (3060A)						Analyst: DAA
(Prep: SW3060A - 8/13/2019)						
Chromium, Hexavalent	ND	1.1		µg/g-dry	1	8/13/2019 5:15:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	12.4	0.1		wt%	1	8/7/2019

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 20-Aug-19**CLIENT:** Arcadis**Client Sample ID:** B35-SS8-08052019**Work Order:** 190806001**Collection Date:** 8/5/2019 3:20:00 PM**Reference:** Watervliet Arsenal / Soil Sampling**Lab Sample ID:** 190806001-009**PO#:****Matrix:** SOIL**Project# :** 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW 7196A (3060A)						Analyst: DAA
(Prep: SW3060A - 8/13/2019)						
Chromium, Hexavalent	ND	1.1		µg/g-dry	1	8/13/2019 5:15:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	7.7	0.1		wt%	1	8/7/2019

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 20-Aug-19

CLIENT: Arcadis
Work Order: 190806001
Reference: Watervliet Arsenal / Soil Sampling
PO#:

Client Sample ID: B35-SS9-08052019
Collection Date: 8/5/2019 3:30:00 PM
Lab Sample ID: 190806001-010
Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW 7196A (3060A)						Analyst: DAA
(Prep: SW3060A - 8/13/2019)						
Chromium, Hexavalent	2.0	1.2	NZ	µg/g-dry	1	8/13/2019 5:15:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	14.7	0.1		wt%	1	8/7/2019

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentitively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 20-Aug-19**CLIENT:** Arcadis**Client Sample ID:** Field Blank-B3555-08052019**Work Order:** 190806001**Collection Date:** 8/5/2019 2:35:00 PM**Reference:** Watervliet Arsenal / Soil Sampling**Lab Sample ID:** 190806001-011**PO#:****Matrix:** WATER**Project# :** 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	8/6/2019 8:50:00 AM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

CLIENT: Arcadis
 Work Order: 190806001
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74877

MBLK	SeqNo: 2673518	PrepDate:	TestNo: SW7196A Mo	RunNo: 174013
	Samp ID: MB-R174013	PrepRef:(SW3060A)	Units: µg/g	Analysis Date: 8/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	1.00									

LCS	SeqNo: 2673519	PrepDate:	TestNo: SW7196A Mo	RunNo: 174013
	Samp ID: LCS-R174013	PrepRef:(SW3060A)	Units: µg/g	Analysis Date: 8/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	136.4	10.0	140	0	97.4	53.2	146.2	0	0		

MS	SeqNo: 2673525	PrepDate:8/7/2019 8:	TestNo: SW7196A Mo	RunNo: 174013
	Samp ID: 190806001-004 (B35-SS4-080520)	PrepRef:(SW3060A)	Units: µg/g-dry	Analysis Date: 8/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	1.00	20.94	0	0	58	129	0	0		S

MS	SeqNo: 2673526	PrepDate:8/7/2019 8:	TestNo: SW7196A Mo	RunNo: 174013
	Samp ID: 190806001-004 (B35-SS4-080520)	PrepRef:(SW3060A)	Units: µg/g-dry	Analysis Date: 8/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	11270	1000	13480	0	83.6	58	129	0	0		

DUP	SeqNo: 2673524	PrepDate:8/7/2019 8:	TestNo: SW7196A Mo	RunNo: 174013
	Samp ID: 190806001-004	PrepRef:	Units: µg/g-dry	Analysis Date: 8/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	1.591	1.00	0	0	0	0	0	0	200	21.6	Z

CCB	SeqNo: 2673529	PrepDate:	TestNo: SW7196A Mo	RunNo: 174013
	Samp ID: CCB	PrepRef:	Units: mg/L	Analysis Date: 8/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.005	0.0200	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
 Work Order: 190806001
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74877

ICB	SeqNo: 2673503	PrepDate:	TestNo: SW7196A Mo	RunNo: 174013
	Samp ID: ICB	PrepRef:	Units: mg/L	Analysis Date: 8/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.0200	0	0	0	0	0	0	0		

CCV	SeqNo: 2673528	PrepDate:	TestNo: SM3500-Cr D	RunNo: 174013
	Samp ID: CCV	PrepRef:	Units: mg/L	Analysis Date: 8/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.197	0.020	0.2	0	98.5	90	110	0	0		

ICV	SeqNo: 2673510	PrepDate:	TestNo: SM3500-Cr D	RunNo: 174013
	Samp ID: ICV	PrepRef:	Units: mg/L	Analysis Date: 8/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.198	0.020	0.2	0	99	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
 Work Order: 190806001
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74986

MBLK	SeqNo: 2678520	PrepDate:	TestNo: SW7196A Mo	RunNo: 174249
	Samp ID: MB-R174249	PrepRef:(SW3060A)	Units: µg/g	Analysis Date: 8/13/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	1.00									

LCS	SeqNo: 2678521	PrepDate:	TestNo: SW7196A Mo	RunNo: 174249
	Samp ID: LCS-R174249	PrepRef:(SW3060A)	Units: µg/g	Analysis Date: 8/13/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	134	10.0	140	0	95.7	53.2	146.2	0	0		

MS	SeqNo: 2678532	PrepDate:8/13/2019	TestNo: SW7196A Mo	RunNo: 174249
	Samp ID: 190806001-010 (B35-SS9-080520)	PrepRef:(SW3060A)	Units: µg/g-dry	Analysis Date: 8/13/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	1.20	23.45	2.016	-8.6	58	129	0	0		S

MS	SeqNo: 2678533	PrepDate:8/13/2019	TestNo: SW7196A Mo	RunNo: 174249
	Samp ID: 190806001-010 (B35-SS9-080520)	PrepRef:(SW3060A)	Units: µg/g-dry	Analysis Date: 8/13/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	16980	1200	15090	2.016	112	58	129	0	0		

DUP	SeqNo: 2678529	PrepDate:8/13/2019	TestNo: SW7196A Mo	RunNo: 174249
	Samp ID: 190806001-010	PrepRef:	Units: µg/g-dry	Analysis Date: 8/13/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	5.158	1.20	0	0	0	0	0	2.016	87.6	21.6	Z

CCB	SeqNo: 2678536	PrepDate:	TestNo: SW7196A Mo	RunNo: 174249
	Samp ID: CCB	PrepRef:	Units: mg/L	Analysis Date: 8/13/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.0200	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
 Work Order: 190806001
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 74986

ICB	SeqNo: 2678514	PrepDate:	TestNo: SW7196A Mo	RunNo: 174249
	Samp ID: ICB	PrepRef:	Units: mg/L	Analysis Date: 8/13/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.0200	0	0	0	0	0	0	0		

CCV	SeqNo: 2678535	PrepDate:	TestNo: SM3500-Cr D	RunNo: 174249
	Samp ID: CCV	PrepRef:	Units: mg/L	Analysis Date: 8/13/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.192	0.020	0.2	0	96	90	110	0	0		

ICV	SeqNo: 2678515	PrepDate:	TestNo: SM3500-Cr D	RunNo: 174249
	Samp ID: ICV	PrepRef:	Units: mg/L	Analysis Date: 8/13/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.197	0.020	0.2	0	98.5	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: R173967

MBLK	SeqNo: 2672439	TestNo: SM3500-Cr D	RunNo: 173967
	Samp ID: MB-R173967	Units: mg/L	Analysis Date: 8/6/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	0.020									

LCS	SeqNo: 2672440	TestNo: SM3500-Cr D	RunNo: 173967
	Samp ID: LCS-R173967	Units: mg/L	Analysis Date: 8/6/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.202	0.020	0.2	0	101	91.7	108	0	0		

MS	SeqNo: 2672442	TestNo: SM3500-Cr D	RunNo: 173967
	Samp ID: 190806001-011 (Field Blank-B355)	Units: mg/L	Analysis Date: 8/6/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.199	0.020	0.2	0	99.5	75	125	0	0		

MSD	SeqNo: 2672443	TestNo: SM3500-Cr D	RunNo: 173967
	Samp ID: 190806001-011 (Field Blank-B355)	Units: mg/L	Analysis Date: 8/6/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.206	0.020	0.2	0	103	75	125	0.199	3.46	14.5	

CCB	SeqNo: 2672445	TestNo: SM3500-Cr D	RunNo: 173967
	Samp ID: CCB	Units: mg/L	Analysis Date: 8/6/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.002	0.020	0	0	0	0	0	0	0		

CCB	SeqNo: 2672590	TestNo: SM3500-Cr D	RunNo: 173967
	Samp ID: CCB	Units: mg/L	Analysis Date: 8/6/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.020	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: R173967

CCV	SeqNo: 2672444	TestNo: SM3500-Cr D	RunNo: 173967
	Samp ID: CCV	Units: mg/L	Analysis Date: 8/6/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.2	0.020	0.2	0	100	90	110	0	0		

CCV	SeqNo: 2672589	TestNo: SM3500-Cr D	RunNo: 173967
	Samp ID: CCV	Units: mg/L	Analysis Date: 8/6/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.202	0.020	0.2	0	101	90	110	0	0		

ICB	SeqNo: 2672437	TestNo: SM3500-Cr D	RunNo: 173967
	Samp ID: ICB	Units: mg/L	Analysis Date: 8/6/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.020	0	0	0	0	0	0	0		

ICV	SeqNo: 2672438	TestNo: SM3500-Cr D	RunNo: 173967
	Samp ID: ICV	Units: mg/L	Analysis Date: 8/6/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.202	0.020	0.2	0	101	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

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CLIENT: Arcadis
Work Order: 190806001
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: R174052

DUP	SeqNo: 2674374	TestNo: D2216	RunNo: 174052
	Samp ID: 190807051-001	Units: wt%	Analysis Date: 8/7/2019

<u>Analyte</u>	<u>Result</u>	<u>PQL</u>	<u>SPK value</u>	<u>SPK Ref Val</u>	<u>%REC</u>	<u>LowLimit</u>	<u>HighLimit</u>	<u>RPD Ref Val</u>	<u>%RPD</u>	<u>RPDLimit</u>	<u>Qual</u>
Percent Moisture	75.34	0.100	0	0	0	0	0	75.29	0.0701	10	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

Page 7 of 7

WorkSheet Report

Date: 8/19/2019

RunID: GEN10S_190807A

Run Start Date: 8/7/2019

Analyst: Darnell Avent

Comments:

SeqNo	SampleID	SmpType	Analyte	Units	Smp Vol(mL)	Smp Abs	Smp Blk Abs	Blk Rslt (mg/L)	Smp Rslt (mg/L)	FinalVal	Qual	%Recovery	RPD(dups)
2673503	ICB	ICB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004		0.00%	0.00%
2673510	ICV	ICV	Chromium, Hexavalent	mg/L	50	0	0.167	0	0.198	0.2		99.00%	0.00%
2673518	MB-R174013	MBLK	Chromium, Hexavalent	µg/g	50	0	0	0	-0.004	0		0.00%	0.00%
2673519	LCS-R174013	LCS	Chromium, Hexavalent	µg/g	5	0	0.286	0	0.341	136		97.43%	0.00%
2673520	190806001-001A	SAMP	Chromium, Hexavalent	µg/g-	50	0.057	0.074	0.065	0.086	0		0.00%	0.00%
2673521	190806001-002A	SAMP	Chromium, Hexavalent	µg/g-	50	0.083	0.069	0.097	0.08	0		0.00%	0.00%
2673522	190806001-003A	SAMP	Chromium, Hexavalent	µg/g-	50	0.033	0.028	0.036	0.03	0		0.00%	0.00%
2673523	190806001-004A	SAMP	Chromium, Hexavalent	µg/g-	50	0.082	0.05	0.095	0.057	0	NZ	0.00%	0.00%
2673524	190806001-004ADUP	DUP	Chromium, Hexavalent	µg/g-	50	0.076	0.107	0.088	0.126	1.59	Z	0.00%	0.00%
2673525	190806001-004AMSL	MS	Chromium, Hexavalent	µg/g-	50	0.066	0.048	0.076	0.054	0	S	0.00%	0.00%
2673526	190806001-004AMSS	MS	Chromium, Hexavalent	µg/g-	0.05	0	0.226	0	0.269	11300		83.60%	0.00%
2673527	190806001-005A	SAMP	Chromium, Hexavalent	µg/g-	50	0.083	0.087	0.097	0.101	0		0.00%	0.00%
2673528	CCV	CCV	Chromium, Hexavalent	mg/L	50	0	0.166	0	0.197	0.2		98.50%	0.00%
2673529	CCB	CCB	Chromium, Hexavalent	mg/L	50	0	-0.001	0	-0.005	-0.005		0.00%	0.00%

Run standards

5785

W-Hex Cr In Soil

WC6-28-T

Cr(+6) Standard

1ml= 50 ug

ICV

WorkSheet Report

Date: 8/19/2019

RunID: GEN10S_190813D

Run Start Date: 8/13/2019

Analyst: Darnell Avent

Comments:

SeqNo	SamplID	SmpType	Analyte	Units	Smp Vol(mL)	Smp Abs	Smp Blk Abs	Blk Rslt (mg/L)	Smp Rslt (mg/L)	FinalVal	Qual	%Recovery	RPD(dups)
2678514	ICB	ICB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004		0.00%	0.00%
2678515	ICV	ICV	Chromium, Hexavalent	mg/L	50	0	0.166	0	0.197	0.2		98.50%	0.00%
2678520	MB-R174249	MBLK	Chromium, Hexavalent	µg/g	50	0	0	0	-0.004	0		0.00%	0.00%
2678521	LCS-R174249	LCS	Chromium, Hexavalent	µg/g	5	0	0.281	0	0.335	134		95.71%	0.00%
2678522	190806001-006A	SAMP	Chromium, Hexavalent	µg/g-	50	0.086	0.058	0.1	0.066	0		0.00%	0.00%
2678523	190806001-007A	SAMP	Chromium, Hexavalent	µg/g-	50	0.14	0.114	0.165	0.134	0		0.00%	0.00%
2678524	190806001-008A	SAMP	Chromium, Hexavalent	µg/g-	50	0.093	0.06	0.109	0.069	0		0.00%	0.00%
2678525	190806001-009A	SAMP	Chromium, Hexavalent	µg/g-	50	0.027	0.026	0.029	0.028	0		0.00%	0.00%
2678526	190806001-010A	SAMP	Chromium, Hexavalent	µg/g-	50	0.095	0.131	0.111	0.154	2.02	NZ	0.00%	0.00%
2678529	190806001-010ADUP	DUP	Chromium, Hexavalent	µg/g-	50	0	0.094	0	0.11	5.16	Z	0.00%	37.58%
2678532	190806001-010AMSL	MS	Chromium, Hexavalent	µg/g-	50	0.013	0.013	0.012	0.012	0	S	-8.60%	0.00%
2678533	190806001-010AMSS	MS	Chromium, Hexavalent	µg/g-	0.05	0	0.303	0	0.362	17000		112.49%	0.00%
2678534	190808011-001A	SAMP	Chromium, Hexavalent	µg/g	50	0.019	0.018	0.019	0.018	0		0.00%	0.00%
2678535	CCV	CCV	Chromium, Hexavalent	mg/L	50	0	0.162	0	0.192	0.19		96.00%	0.00%

Run standards

5785

W-Hex Cr In Soil

WC6-28-T

Cr(+6) Standard

1ml= 50 ug

ICV

Date: 8/19/2019

Run Start Date: 8/13/2019

Comments:

SeqNo	SampID	SmpType Analyte		Units	Smp Vol(mL)		Smp Abs	Smp Rslt (mg/L)			%Recovery	
					Smp Blk Abs	Blk Rslt (mg/L)		FinalVal	Qual	RPD(dups)		
2678536	CCB	CCB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004	0.00%	0.00%

Run standards				
5785	W-Hex Cr In Soil			
WC6-28-T	Cr(+6) Standard	1ml= 50 ug	ICV	

WorkSheet Report

Date: 8/19/2019

RunID: GEN10S_190806A

Run Start Date: 8/6/2019

Analyst: Darnell Avent

Comments:

SeqNo	SamplID	SmpType	Analyte	Units	Smp Vol(mL)	Smp Abs	Smp Blk Abs	Blk Rslt (mg/L)	Smp Rslt (mg/L)	FinalVal	Qual	%Recovery	RPD(dups)
2672437	ICB	ICB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004		0.00%	0.00%
2672438	ICV	ICV	Chromium, Hexavalent	mg/L	50	0	0.17	0	0.202	0.2		101.00%	0.00%
2672439	MB-R173967	MBLK	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	0		0.00%	0.00%
2672440	LCS-R173967	LCS	Chromium, Hexavalent	mg/L	50	0	0.17	0	0.202	0.2		101.00%	0.00%
2672441	190806001-011A	SAMP	Chromium, Hexavalent	mg/L	50	0	0.001	0	-0.002	0		0.00%	0.00%
2672442	190806001-011AMS	MS	Chromium, Hexavalent	mg/L	50	0	0.168	0	0.199	0.2		99.50%	0.00%
2672443	190806001-011AMSD	MSD	Chromium, Hexavalent	mg/L	50	0	0.174	0	0.206	0.21		103.00%	3.46%
2672444	CCV	CCV	Chromium, Hexavalent	mg/L	50	0	0.169	0	0.2	0.2		100.00%	0.00%
2672445	CCB	CCB	Chromium, Hexavalent	mg/L	50	0	0.001	0	-0.002	-0.002		0.00%	0.00%
2672589	CCV	CCV	Chromium, Hexavalent	mg/L	50	0	0.17	0	0.202	0.2		101.00%	0.00%
2672590	CCB	CCB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004		0.00%	0.00%

Run standards

WC6-28-T Cr(+6) Standard 1ml= 50 ug ICV

WC6-28-U Cr(+6) LCS 1ml= 50 ug LCS

Adirondack Environmental Services, Inc

PREP BATCH REPORT

Prep Start Date: **8/7/2019 8:24:54 A**

Prep End Date: **8/7/2019 2:40:00 P**

Comments:

Page: 1 of 1

Prep Factor Units:

mL / g

Prep Batch **74877** Prep Code: **3060A**

Technician: **Darnell Avent**

Sample ID	Matrix	pH	ResCl	SampAmt	Sol Added	Fin Vol	factor	PrepStart	PrepEnd	ExPos	TareWt	CleanUp
MB-74877				2.5	0	100	40.000	8/7/2019	8/7/2019		0	
LCS-74877				2.5	0	100	40.000	8/7/2019	8/7/2019		0	
190806001-001A	Soil			2.5	0	100	40.000	8/7/2019	8/7/2019		0	
190806001-002A	Soil			2.5	0	100	40.000	8/7/2019	8/7/2019		0	
190806001-003A	Soil			2.5	0	100	40.000	8/7/2019	8/7/2019		0	
190806001-004A	Soil			2.5	0	100	40.000	8/7/2019	8/7/2019		0	
190806001-004Adup	Soil			2.5	0	100	40.000	8/7/2019	8/7/2019		0	
190806001-004Amsl	Soil			2.5	0	100	40.000	8/7/2019	8/7/2019		0	
190806001-004Amss	Soil			2.5	0	100	40.000	8/7/2019	8/7/2019		0	
190806001-005A	Soil			2.5	0	100	40.000	8/7/2019	8/7/2019		0	

Number	Reagent Name	Solution ID	Solution Name	SampType	AmtAdd	units
4891	Magnesium Chloride	WC6-28-T	Cr(+6) Standard 1ml= 50 ug			1 ml
5785	W-Hex Cr In Soil	WC7-25-G	0.5M Phosphate Buffer			0.5 ml
		WC7-26-L	Dipheynylcarbazine reagent for Cr+6			1 ml
		WC7-27-I	Cr+6 Soil digestion solution			50 ml
		WC7-85-C	1:1 Sulfuric Acid			0 ml
		WC7-27-J	Cr+6 Soil digestion solution			50 ml

Adirondack Environmental Services, Inc

PREP BATCH REPORT

Prep Start Date: **8/13/2019 9:12:38**

Prep End Date: **8/13/2019 5:15:00**

Comments:

Page: 1 of 1

Prep Factor Units:

mL / g

Prep Batch **74986**

Prep Code: **3060A**

Technician: **Darnell Avent**

Sample ID	Matrix	pH	ResCl	SampAmt	Sol Added	Fin Vol	factor	PrepStart	PrepEnd	ExPos	TareWt	CleanUp
MB-74986				2.5	0	100	40.000	8/13/2019	8/13/2019		0	
LCS-74986				2.5	0	100	40.000	8/13/2019	8/13/2019		0	
190806001-006A	Soil			2.5	0	100	40.000	8/13/2019	8/13/2019		0	
190806001-007A	Soil			2.5	0	100	40.000	8/13/2019	8/13/2019		0	
190806001-008A	Soil			2.5	0	100	40.000	8/13/2019	8/13/2019		0	
190806001-009A	Soil			2.5	0	100	40.000	8/13/2019	8/13/2019		0	
190806001-010A	Soil			2.5	0	100	40.000	8/13/2019	8/13/2019		0	
190806001-010Adup	Soil			2.5	0	100	40.000	8/13/2019	8/13/2019		0	
190806001-010Amsl	Soil			2.5	0	100	40.000	8/13/2019	8/13/2019		0	
190806001-010Amss	Soil			2.5	0	100	40.000	8/13/2019	8/13/2019		0	
190808011-001A	Soil			2.5	0	100	40.000	8/13/2019	8/13/2019		0	

Number	Reagent Name	Solution ID	Solution Name	SampType	AmtAdd	units
4891	Magnesium Chloride	WC6-28-T	Cr(+6) Standard 1ml= 50 ug			1 ml
5785	W-Hex Cr In Soil	WC7-26-O	0.5M Phosphate Buffer			0.5 ml
		WC7-26-N	Dipheynylcarbazide reagent for Cr+6			1 ml
		WC7-27-I	Cr+6 Soil digestion solution			50 ml
		WC7-85-C	1:1 Sulfuric Acid			0 ml
		WC7-27-J	Cr+6 Soil digestion solution			50 ml



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TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

- (a) Neither **Adirondack Environmental Services, Inc.**, nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.**'s performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.
- (b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.
- (c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.
- (d) In no event shall **Adirondack Environmental Services, Inc.**, its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.
- (e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**
- (f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.
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September 10, 2019

Stefan Bagnato

Arcadis

855 Route 146, Suite 210

Clifton Park, NY 12065

TEL: (518) 250-7382

Work Order No: 190821067

RE: Watervliet Arsenal

WVA

Dear Stefan Bagnato:

"I certify that this data package is in compliance with the terms and conditions of the protocol, both technically and for completeness, to the best of my knowledge, for other than the conditions detailed in the Case Narrative. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Director or his designee, as verified by the following signature."

A handwritten signature in black ink, appearing to read "Tara Daniels", written in a cursive style.

Tara Daniels

Laboratory Director

Workorder Sample Summary

Client: Arcadis

Work Order: 190821067

ProjectName: Watervliet Arsenal

ProjLocation: WVA

AES Sample No	ClientSampID	Matrix	CollectionDate	DateReceived
190821067-001	WVA-AW-35-MW-9 (9-11) 081919	Soil	8/19/2019 4:45:00 PM	8/21/2019 4:12:00 PM
190821067-002	WVA-AW-35-MW-10 (3-4) 082019	Soil	8/20/2019 9:45:00 AM	8/21/2019 4:12:00 PM
190821067-003	WVA-AW-35-MW-11 (8-9) 082119	Soil	8/21/2019 8:45:00 AM	8/21/2019 4:12:00 PM
190821067-004	WVA-AW-35-DUP 1	Soil	8/21/2019	8/21/2019 4:12:00 PM
190821067-005	WVA-AW-35-FB-082119	Water	8/21/2019 2:15:00 PM	8/21/2019 4:12:00 PM
190821067-006	WVA-AW-35-MW-12 (10-11)	Soil	8/21/2019 3:30:00 PM	8/21/2019 4:12:00 PM



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Case Narrative

Client: Arcadis – Watervliet Arsenal

Case: 190821067

SDG: B35-SS1-05052019

Conventionals

- 1) The soil samples were analyzed for Hexavalent Chromium using EPA Method 3060A/7196A.
- 2) The samples received on 8/21/19 had a temperature of 23 °C.
- 3) Sample WVA-AW-35-MW-11 (8-9) 082119 (AES sample number 190821067-003) was used as the soil matrix spike sample for Hexavalent Chromium. The recovery for the soluble Hexavalent Chromium spike was below the acceptable limits. The recovery for the insoluble Hexavalent Chromium spike was within the acceptable limits. The result for Hexavalent Chromium for sample WVA-AW-35-MW-11 (8-9) 082119 (AES sample number 190821067-003) is flagged with an “N” to denote the low recovery.
- 4) Sample WVA-AW-35-FB-082119 (AES sample number 190821067-005) was inadvertently used for the matrix spike sample. All recoveries were within acceptable limits.
- 5) Sample WVA-AW-35-MW-11 (8-9) 082119 (AES sample number 190821067-003) was used for the duplicate sample. All recoveries were within acceptable limits.
- 6) Sample WVA-AW-35-FB-082119 (AES sample number 190821067-005) was inadvertently used for the duplicate sample. All recoveries were within acceptable limits.
- 7) AES sample number 190905083-001 was used as the soil duplicate sample for Percent Moisture. All recoveries were within acceptable limits.

“I certify that this data package is in compliance with the terms and conditions of the protocol, both technically and for completeness, to the best of my knowledge, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.”

A handwritten signature in black ink, appearing to read "Tara Daniel", is written over a horizontal line.

Laboratory Director

Date: 9/10/19



ARCADIS
855 ROUTE 146, SUITE 210
CLIFTON PARK, NEW YORK 12065

190821067

[illegible]

Adirondack Environmental Services, Inc**Date:** 09-Sep-19**CLIENT:** Arcadis**Client Sample ID:** WVA-AW-35-MW-9 (9-11) 081**Work Order:** 190821067**Collection Date:** 8/19/2019 4:45:00 PM**Reference:** Watervliet Arsenal / WVA**Lab Sample ID:** 190821067-001**PO#:****Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW 7196A (3060A)						Analyst: DAA
(Prep: SW3060A - 9/3/2019)						
Chromium, Hexavalent	ND	1.1		µg/g-dry	1	9/3/2019 12:30:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	8.2	0.1		wt%	1	9/6/2019

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentitively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 09-Sep-19**CLIENT:** Arcadis**Work Order:** 190821067**Reference:** Watervliet Arsenal / WVA**PO#:****Client Sample ID:** WVA-AW-35-MW-10 (3-4) 082**Collection Date:** 8/20/2019 9:45:00 AM**Lab Sample ID:** 190821067-002**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW 7196A (3060A)						Analyst: DAA
(Prep: SW3060A - 9/3/2019)						
Chromium, Hexavalent	1.3	1.1		µg/g-dry	1	9/3/2019 12:30:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	9.8	0.1		wt%	1	9/6/2019

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentitively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 09-Sep-19**CLIENT:** Arcadis**Work Order:** 190821067**Reference:** Watervliet Arsenal / WVA**PO#:****Client Sample ID:** WVA-AW-35-MW-11 (8-9) 082**Collection Date:** 8/21/2019 8:45:00 AM**Lab Sample ID:** 190821067-003**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW 7196A (3060A) (Prep: SW3060A - 9/3/2019)						Analyst: DAA
Chromium, Hexavalent	ND	1.1	N	µg/g-dry	1	9/3/2019 12:30:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	9.3	0.1		wt%	1	9/6/2019

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentitively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 09-Sep-19**CLIENT:** Arcadis**Client Sample ID:** WVA-AW-35-DUP 1**Work Order:** 190821067**Collection Date:** 8/21/2019**Reference:** Watervliet Arsenal / WVA**Lab Sample ID:** 190821067-004**PO#:****Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW 7196A (3060A)						Analyst: DAA
(Prep: SW3060A - 9/4/2019)						
Chromium, Hexavalent	ND	1.1		µg/g-dry	1	9/4/2019 5:10:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	9.5	0.1		wt%	1	9/6/2019

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 09-Sep-19**CLIENT:** Arcadis**Client Sample ID:** WVA-AW-35-FB-082119**Work Order:** 190821067**Collection Date:** 8/21/2019 2:15:00 PM**Reference:** Watervliet Arsenal / WVA**Lab Sample ID:** 190821067-005**PO#:****Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	8/22/2019 12:30:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 09-Sep-19**CLIENT:** Arcadis**Work Order:** 190821067**Reference:** Watervliet Arsenal / WVA**PO#:****Client Sample ID:** WVA-AW-35-MW-12 (10-11)**Collection Date:** 8/21/2019 3:30:00 PM**Lab Sample ID:** 190821067-006**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW 7196A (3060A)						Analyst: DAA
(Prep: SW3060A - 9/4/2019)						
Chromium, Hexavalent	ND	1.1		µg/g-dry	1	9/4/2019 5:10:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	6.4	0.1		wt%	1	9/6/2019

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 09-Sep-19**CLIENT:** Arcadis**Client Sample ID:** WVA-AW-35-MW-9 (9-11) 081**Work Order:** 190821067**Collection Date:** 8/19/2019 4:45:00 PM**Reference:** Watervliet Arsenal / WVA**Lab Sample ID:** 190821067-001**PO#:****Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW 7196A (3060A)						Analyst: DAA
(Prep: SW3060A - 9/3/2019)						
Chromium, Hexavalent	ND	1.1		µg/g-dry	1	9/3/2019 12:30:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	8.2	0.1		wt%	1	9/6/2019

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 09-Sep-19**CLIENT:** Arcadis**Work Order:** 190821067**Reference:** Watervliet Arsenal / WVA**PO#:****Client Sample ID:** WVA-AW-35-MW-10 (3-4) 082**Collection Date:** 8/20/2019 9:45:00 AM**Lab Sample ID:** 190821067-002**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW 7196A (3060A)						Analyst: DAA
(Prep: SW3060A - 9/3/2019)						
Chromium, Hexavalent	1.3	1.1		µg/g-dry	1	9/3/2019 12:30:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	9.8	0.1		wt%	1	9/6/2019

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentitively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 09-Sep-19**CLIENT:** Arcadis**Client Sample ID:** WVA-AW-35-MW-11 (8-9) 082**Work Order:** 190821067**Collection Date:** 8/21/2019 8:45:00 AM**Reference:** Watervliet Arsenal / WVA**Lab Sample ID:** 190821067-003**PO#:****Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW 7196A (3060A)						Analyst: DAA
(Prep: SW3060A - 9/3/2019)						
Chromium, Hexavalent	ND	1.1	N	µg/g-dry	1	9/3/2019 12:30:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	9.3	0.1		wt%	1	9/6/2019

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentitively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 09-Sep-19**CLIENT:** Arcadis**Work Order:** 190821067**Reference:** Watervliet Arsenal / WVA**PO#:****Client Sample ID:** WVA-AW-35-DUP 1**Collection Date:** 8/21/2019**Lab Sample ID:** 190821067-004**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW 7196A (3060A)						Analyst: DAA
(Prep: SW3060A - 9/4/2019)						
Chromium, Hexavalent	ND	1.1		µg/g-dry	1	9/4/2019 5:10:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	9.5	0.1		wt%	1	9/6/2019

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentitively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 09-Sep-19**CLIENT:** Arcadis**Client Sample ID:** WVA-AW-35-FB-082119**Work Order:** 190821067**Collection Date:** 8/21/2019 2:15:00 PM**Reference:** Watervliet Arsenal / WVA**Lab Sample ID:** 190821067-005**PO#:****Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	8/22/2019 12:30:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 09-Sep-19**CLIENT:** Arcadis**Work Order:** 190821067**Reference:** Watervliet Arsenal / WVA**PO#:****Client Sample ID:** WVA-AW-35-MW-12 (10-11)**Collection Date:** 8/21/2019 3:30:00 PM**Lab Sample ID:** 190821067-006**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW 7196A (3060A)						Analyst: DAA
(Prep: SW3060A - 9/4/2019)						
Chromium, Hexavalent	ND	1.1		µg/g-dry	1	9/4/2019 5:10:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	6.4	0.1		wt%	1	9/6/2019

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

CLIENT: Arcadis
 Work Order: 190821067
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75359

MBLK	SeqNo: 2691515	PrepDate:	TestNo: SW7196A Mo	RunNo: 174919
	Samp ID: MB-R174919	PrepRef:(SW3060A)	Units: µg/g	Analysis Date: 9/3/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	1.00									

LCS	SeqNo: 2691516	PrepDate:	TestNo: SW7196A Mo	RunNo: 174919
	Samp ID: LCS-R174919	PrepRef:(SW3060A)	Units: µg/g	Analysis Date: 9/3/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	118.8	10.0	140	0	84.9	53.2	146.2	0	0		

MS	SeqNo: 2691523	PrepDate:9/3/2019 9:	TestNo: SW7196A Mo	RunNo: 174919
	Samp ID: 190821067-003 (WVA-AW-35-MW)	PrepRef:(SW3060A)	Units: µg/g-dry	Analysis Date: 9/3/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	1.147	1.10	22.06	0	5.2	58	129	0	0		S

MS	SeqNo: 2691524	PrepDate:9/3/2019 9:	TestNo: SW7196A Mo	RunNo: 174919
	Samp ID: 190821067-003 (WVA-AW-35-MW)	PrepRef:(SW3060A)	Units: µg/g-dry	Analysis Date: 9/3/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	16720	1100	14200	0	118	58	129	0	0		

DUP	SeqNo: 2691522	PrepDate:9/3/2019 9:	TestNo: SW7196A Mo	RunNo: 174919
	Samp ID: 190821067-003	PrepRef:	Units: µg/g-dry	Analysis Date: 9/3/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	1.10	0	0	0	0	0	0	0	21.6	

CCB	SeqNo: 2691526	PrepDate:	TestNo: SW7196A Mo	RunNo: 174919
	Samp ID: CCB	PrepRef:	Units: mg/L	Analysis Date: 9/3/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	0.0200	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190821067
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75359

ICB	SeqNo: 2691513	PrepDate:	TestNo: SW7196A Mo	RunNo: 174919
	Samp ID: ICB	PrepRef:	Units: mg/L	Analysis Date: 9/3/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	0.0200	0	0	0	0	0	0	0		

CCV	SeqNo: 2691525	PrepDate:	TestNo: SM3500-Cr D	RunNo: 174919
	Samp ID: CCV	PrepRef:	Units: mg/L	Analysis Date: 9/3/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.204	0.020	0.2	0	102	90	110	0	0		

ICV	SeqNo: 2691514	PrepDate:	TestNo: SM3500-Cr D	RunNo: 174919
	Samp ID: ICV	PrepRef:	Units: mg/L	Analysis Date: 9/3/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.197	0.020	0.2	0	98.5	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190821067
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75394

MBLK	SeqNo: 2693135	PrepDate:	TestNo: SW7196A Mo	RunNo: 174991
	Samp ID: MB-R174991	PrepRef:(SW3060A)	Units: µg/g	Analysis Date: 9/4/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	1.00									

LCS	SeqNo: 2693136	PrepDate:	TestNo: SW7196A Mo	RunNo: 174991
	Samp ID: LCS-R174991	PrepRef:(SW3060A)	Units: µg/g	Analysis Date: 9/4/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	130	10.0	140	0	92.9	53.2	146.2	0	0		

MS	SeqNo: 2693141	PrepDate:9/4/2019 1	TestNo: SW7196A Mo	RunNo: 174991
	Samp ID: 190830057-001	PrepRef:(SW3060A)	Units: µg/g	Analysis Date: 9/4/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	1.00	20	0	0	58	129	0	0		S

MS	SeqNo: 2693142	PrepDate:9/4/2019 1	TestNo: SW7196A Mo	RunNo: 174991
	Samp ID: 190830057-001	PrepRef:(SW3060A)	Units: µg/g	Analysis Date: 9/4/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	16360	1000	12870	0	127	58	129	0	0		

DUP	SeqNo: 2693140	PrepDate:9/4/2019 1	TestNo: SW7196A Mo	RunNo: 174991
	Samp ID: 190830057-001	PrepRef:	Units: µg/g	Analysis Date: 9/4/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	1.00	0	0	0	0	0	0	0	21.6	

CCB	SeqNo: 2693146	PrepDate:	TestNo: SW7196A Mo	RunNo: 174991
	Samp ID: CCB	PrepRef:	Units: mg/L	Analysis Date: 9/4/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	0.0200	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190821067
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75394

ICB	SeqNo: 2693133	PrepDate:	TestNo: SW7196A Mo	RunNo: 174991
	Samp ID: ICB	PrepRef:	Units: mg/L	Analysis Date: 9/4/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	0.0200	0	0	0	0	0	0	0		

CCV	SeqNo: 2693145	PrepDate:	TestNo: SM3500-Cr D	RunNo: 174991
	Samp ID: CCV	PrepRef:	Units: mg/L	Analysis Date: 9/4/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.209	0.020	0.2	0	104	90	110	0	0		

ICV	SeqNo: 2693134	PrepDate:	TestNo: SM3500-Cr D	RunNo: 174991
	Samp ID: ICV	PrepRef:	Units: mg/L	Analysis Date: 9/4/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.198	0.020	0.2	0	99	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190821067
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: R174554

MBLK	SeqNo: 2684651	TestNo: SM3500-Cr D	RunNo: 174554
	Samp ID: MB-R174554	Units: mg/L	Analysis Date: 8/22/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	0.020									

LCS	SeqNo: 2684652	TestNo: SM3500-Cr D	RunNo: 174554
	Samp ID: LCS-R174554	Units: mg/L	Analysis Date: 8/22/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.202	0.020	0.2	0	101	91.7	108	0	0		

MS	SeqNo: 2684654	TestNo: SM3500-Cr D	RunNo: 174554
	Samp ID: 190821067-005 (WVA-AW-35-FB-	Units: mg/L	Analysis Date: 8/22/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.2	0.020	0.2	0	100	75	125	0	0		

MSD	SeqNo: 2684655	TestNo: SM3500-Cr D	RunNo: 174554
	Samp ID: 190821067-005 (WVA-AW-35-FB-	Units: mg/L	Analysis Date: 8/22/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.199	0.020	0.2	0	99.5	75	125	0.2	0.501	14.5	

CCB	SeqNo: 2684658	TestNo: SM3500-Cr D	RunNo: 174554
	Samp ID: CCB	Units: mg/L	Analysis Date: 8/22/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	0.020	0	0	0	0	0	0	0		

CCV	SeqNo: 2684657	TestNo: SM3500-Cr D	RunNo: 174554
	Samp ID: CCV	Units: mg/L	Analysis Date: 8/22/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.2	0.020	0.2	0	100	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190821067
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: R174554

ICB	SeqNo: 2684649	TestNo: SM3500-Cr D	RunNo: 174554
	Samp ID: ICB	Units: mg/L	Analysis Date: 8/22/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	0.020	0	0	0	0	0	0	0		

ICV	SeqNo: 2684650	TestNo: SM3500-Cr D	RunNo: 174554
	Samp ID: ICV	Units: mg/L	Analysis Date: 8/22/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.205	0.020	0.2	0	103	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

Page 6 of 7

CLIENT: Arcadis
Work Order: 190821067
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: R175064

DUP	SeqNo: 2694187	TestNo: D2216	RunNo: 175064
	Samp ID: 190905083-001	Units: wt%	Analysis Date: 9/6/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	7.635	0.100	0	0	0	0	0	8.224	7.43	10	

DUP	SeqNo: 2695046	TestNo: D2216	RunNo: 175064
	Samp ID: 190906067-001	Units: wt%	Analysis Date: 9/6/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	11	0.100	0	0	0	0	0	12.69	14.3	10	Z

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

WorkSheet Report

Date: 9/9/2019

RunID: GEN10S_190903A

Run Start Date: 9/3/2019

Analyst: Darnell Avent

Comments:

SeqNo	SamplID	SmpType	Analyte	Units	Smp Vol(mL)	Smp Abs	Smp Blk Abs	Blk Rslt (mg/L)	Smp Rslt (mg/L)	FinalVal	Qual	%Recovery	RPD(dups)
2691513	ICB	ICB	Chromium, Hexavalent	µg/g	50	0	0	0	-0.004	-0.004		0.00%	0.00%
2691514	ICV	ICV	Chromium, Hexavalent	mg/L	50	0	0.166	0	0.197	0.2		98.50%	0.00%
2691515	MB-R174919	MBLK	Chromium, Hexavalent	µg/g	50	0	0	0	-0.004	0		0.00%	0.00%
2691516	LCS-R174919	LCS	Chromium, Hexavalent	µg/g	5	0	0.249	0	0.297	119		84.86%	0.00%
2691517	190826040-001A	SAMP	Chromium, Hexavalent	µg/g	50	0.204	0.198	0.243	0.235	0		0.00%	0.00%
2691518	190827026-001A	SAMP	Chromium, Hexavalent	µg/g-	50	0.072	0.055	0.083	0.063	0		0.00%	0.00%
2691519	190821067-001A	SAMP	Chromium, Hexavalent	µg/g-	50	0	0.002	0	-0.001	0		0.00%	0.00%
2691520	190821067-002A	SAMP	Chromium, Hexavalent	µg/g-	50	0	0.027	0	0.029	1.29		0.00%	0.00%
2691521	190821067-003A	SAMP	Chromium, Hexavalent	µg/g-	50	0.013	0.011	0.012	0.01	0		0.00%	0.00%
2691522	190821067-003ADUP	DUP	Chromium, Hexavalent	µg/g-	50	0.008	0.008	0.006	0.006	0		0.00%	0.00%
2691523	190821067-003AMS	MS	Chromium, Hexavalent	µg/g-	50	0.007	0.029	0.005	0.031	1.15		0.00%	0.00%
2691524	190821067-003AMSD	MSD	Chromium, Hexavalent	µg/g-	50	0	0.317	0	0.379	16700	Z	117.78%	99.97%
2691525	CCV	CCV	Chromium, Hexavalent	mg/L	50	0	0.172	0	0.204	0.2		102.00%	0.00%
2691526	CCB	CCB	Chromium, Hexavalent	µg/g	50	0	0	0	-0.004	-0.004		0.00%	0.00%

Run standards

WC6-28-T Cr(+6) Standard 1ml= 50 ug

WC7-26-O 0.5M Phosphate Buffer

WorkSheet Report

Date: 9/9/2019

RunID: GEN10S_190904C

Run Start Date: 9/4/2019

Analyst: Darnell Avent

Comments:

SeqNo	SamplID	SmpType	Analyte	Units	Smp Vol(mL)	Smp Abs	Smp Blk Abs	Blk Rslt (mg/L)	Smp Rslt (mg/L)	FinalVal	Qual	%Recovery	RPD(dups)
2693133	ICB	ICB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004		0.00%	0.00%
2693134	ICV	ICV	Chromium, Hexavalent	mg/L	50	0	0.167	0	0.198	0.2		99.00%	0.00%
2693135	MB-R174991	MBLK	Chromium, Hexavalent	µg/g	50	0	0	0	-0.004	0		0.00%	0.00%
2693136	LCS-R174991	LCS	Chromium, Hexavalent	µg/g	5	0	0.272	0	0.325	130		92.86%	0.00%
2693137	190821067-004A	SAMP	Chromium, Hexavalent	µg/g-	50	0.036	0.015	0.04	0.015	0		0.00%	0.00%
2693138	190821067-006A	SAMP	Chromium, Hexavalent	µg/g-	50	0	0.002	0	-0.001	0		0.00%	0.00%
2693139	190830057-001A	SAMP	Chromium, Hexavalent	µg/g	50	0.024	0.024	0.025	0.025	0	N	0.00%	0.00%
2693140	190830057-001ADUP	DUP	Chromium, Hexavalent	µg/g	50	0.014	0.017	0.013	0.017	0.16		0.00%	0.00%
2693141	190830057-001AMSL	MS	Chromium, Hexavalent	µg/g	50	0.24	0.017	0.025	0.017	0	S	0.00%	0.00%
2693142	190830057-001AMSS	MS	Chromium, Hexavalent	µg/g	0.05	0	0.342	0	0.409	16400		127.11%	0.00%
2693143	190828002-001A	SAMP	Chromium, Hexavalent	µg/g-	50	0	0.002	0	-0.001	0		0.00%	0.00%
2693144	190828002-002A	SAMP	Chromium, Hexavalent	µg/g-	5	0	0.146	0	0.173	70.7		0.00%	0.00%
2693145	CCV	CCV	Chromium, Hexavalent	mg/L	50	0	0.176	0	0.209	0.21		104.50%	0.00%
2693146	CCB	CCB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004		0.00%	0.00%

Run standards

WC6-28-T Cr(+6) Standard 1ml= 50 ug

WC7-26-O 0.5M Phosphate Buffer

WorkSheet Report

Date: 9/9/2019

RunID: GEN10S_190822C

Run Start Date: 8/22/2019

Analyst: Darnell Avent

Comments:

SeqNo	SamplID	SmpType	Analyte	Units	Smp Vol(mL)	Smp Abs	Smp Blk Abs	Blk Rslt (mg/L)	Smp Rslt (mg/L)	FinalVal	Qual	%Recovery	RPD(dups)
2684649	ICB	ICB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004		0.00%	0.00%
2684650	ICV	ICV	Chromium, Hexavalent	mg/L	50	0	0.173	0	0.205	0.21		102.50%	0.00%
2684651	MB-R174554	MBLK	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	0		0.00%	0.00%
2684652	LCS-R174554	LCS	Chromium, Hexavalent	mg/L	50	0	0.17	0	0.202	0.2		101.00%	0.00%
2684653	190821067-005A	SAMP	Chromium, Hexavalent	mg/L	50	0	-0.003	0	-0.007	0		0.00%	0.00%
2684654	190821067-005AMS	MS	Chromium, Hexavalent	mg/L	50	0	0.169	0	0.2	0.2		100.00%	0.00%
2684655	190821067-005AMSD	MSD	Chromium, Hexavalent	mg/L	50	0	0.168	0	0.199	0.2		99.50%	0.50%
2684656	190822050-001B	SAMP	Chromium, Hexavalent	mg/L	50	0	-0.003	0	-0.007	0		0.00%	0.00%
2684657	CCV	CCV	Chromium, Hexavalent	mg/L	50	0	0.169	0	0.2	0.2		100.00%	0.00%
2684658	CCB	CCB	Chromium, Hexavalent	mg/L	50	0	-0.004	0	-0.008	-0.008		0.00%	0.00%

Run standards

5501

W-Hex Cr In Soil

WC6-28-T

Cr(+6) Standard

1ml= 50 ug

ICV

WorkSheet Report

Date: 9/9/2019

RunID: PMOIST_190906A

Run Start Date: 9/6/2019

Analyst: Tara Szucs

Comments:

SeqNo	SampID	SmpType	Analyte	Units	Tare Wt		Final Wt		%Recovery	
						Tare+Sample		FinalVal	Qual	RPD(dups)
2694186	190905083-001A	SAMP	Percent Moisture	wt%	1.74	10.13	9.44	8.22	0.00%	0.00%
2694187	190905083-001ADUP	DUP	Percent Moisture	wt%	1.74	7.11	6.7	7.64	0.00%	7.43%
2695017	190821067-001A	SAMP	Percent Moisture	wt%	1.75	11.62	10.81	8.21	0.00%	0.00%
2695018	190821067-002A	SAMP	Percent Moisture	wt%	1.74	6.15	5.72	9.75	0.00%	0.00%
2695019	190821067-003A	SAMP	Percent Moisture	wt%	1.74	6.13	5.72	9.34	0.00%	0.00%
2695020	190821067-004A	SAMP	Percent Moisture	wt%	1.73	8.12	7.51	9.55	0.00%	0.00%
2695021	190821067-006A	SAMP	Percent Moisture	wt%	1.73	5.46	5.22	6.43	0.00%	0.00%
2695022	190904029-004A	SAMP	Percent Moisture	wt%	1.72	8.02	1.81	98.6	0.00%	0.00%
2695023	190904071-001A	SAMP	Percent Moisture	wt%	1.73	9.69	7.23	30.9	0.00%	0.00%
2695024	190904071-002A	SAMP	Percent Moisture	wt%	1.75	11.59	8.83	28	0.00%	0.00%
2695025	190904071-003A	SAMP	Percent Moisture	wt%	1.74	7.88	6.26	26.4	0.00%	0.00%
2695026	190904071-004A	SAMP	Percent Moisture	wt%	1.74	5.82	4.79	25.2	0.00%	0.00%
2695027	190904071-005A	SAMP	Percent Moisture	wt%	1.75	9.57	7.83	22.3	0.00%	0.00%
2695028	190904071-006A	SAMP	Percent Moisture	wt%	1.73	14.99	11.42	26.9	0.00%	0.00%
2695029	190904071-007A	SAMP	Percent Moisture	wt%	1.72	10.09	7.76	27.8	0.00%	0.00%
2695030	190905084-006A	SAMP	Percent Moisture	wt%	1.74	8.83	6.79	28.8	0.00%	0.00%
2695031	190905084-012A	SAMP	Percent Moisture	wt%	1.74	10.22	5.57	54.8	0.00%	0.00%
2695032	190906061-001A	SAMP	Percent Moisture	wt%	1.73	6.01	5.67	7.94	0.00%	0.00%
2695033	190906061-002A	SAMP	Percent Moisture	wt%	1.71	7.18	6.73	8.23	0.00%	0.00%
2695034	190906061-003A	SAMP	Percent Moisture	wt%	1.69	5.95	5.6	8.22	0.00%	0.00%

WorkSheet Report

Date: 9/9/2019

RunID: PMOIST_190906A

Run Start Date: 9/6/2019

Analyst: Tara Szucs

Comments:

SeqNo	SampID	SmpType	Analyte	Units	Tare Wt		Final Wt		%Recovery	
						Tare+Sample		FinalVal	Qual	RPD(dups)
2695035	190906061-004A	SAMP	Percent Moisture	wt%	1.73	4.37	4.05	12.1	0.00%	0.00%
2695036	190906061-005A	SAMP	Percent Moisture	wt%	1.72	9.37	8.78	7.71	0.00%	0.00%
2695037	190906063-001A	SAMP	Percent Moisture	wt%	1.72	2.43	2.39	5.63	0.00%	0.00%
2695038	190906063-003A	SAMP	Percent Moisture	wt%	1.71	2.76	2.32	41.9	0.00%	0.00%
2695039	190906063-005A	SAMP	Percent Moisture	wt%	1.72	3.2	3.02	12.2	0.00%	0.00%
2695040	190906063-007A	SAMP	Percent Moisture	wt%	1.73	2.94	2.83	9.09	0.00%	0.00%
2695041	190906063-009A	SAMP	Percent Moisture	wt%	1.72	2.66	2.58	8.51	0.00%	0.00%
2695042	190906063-011A	SAMP	Percent Moisture	wt%	1.7	2.79	2.67	11	0.00%	0.00%
2695043	190906063-013A	SAMP	Percent Moisture	wt%	1.72	2.41	2.23	26.1	0.00%	0.00%
2695044	190906063-015A	SAMP	Percent Moisture	wt%	1.73	2.81	2.75	5.56	0.00%	0.00%
2695045	190906067-001A	SAMP	Percent Moisture	wt%	1.71	6.91	6.25	12.7	Z	0.00% 0.00%
2695046	190906067-001ADUP	DUP	Percent Moisture	wt%	1.73	5.73	5.29	11	Z	0.00% 14.29%

Adirondack Environmental Services, Inc

PREP BATCH REPORT

Prep Start Date: **9/3/2019 9:04:49 A**

Prep End Date: **9/3/2019 12:30:00**

Comments:

Page 1 of 1

Prep Factor Units:

mL / g

Prep Batch **75359**

Prep Code: **3060A**

Technician: **Darnell Avent**

Sample ID	Matrix	pH	ResCl	SampAmt	Sol Added	Fin Vol	factor	PrepStart	PrepEnd	ExPos	TareWt	CleanUp
190821067-001A	Soil			2.5	0	100	40.000	9/3/2019	9/3/2019		0	
190821067-002A	Soil			2.5	0	100	40.000	9/3/2019	9/3/2019		0	
190821067-003A	Soil			2.5	0	100	40.000	9/3/2019	9/3/2019		0	
190821067-003ADUP	Soil			2.5	0	100	40.000	9/3/2019	9/3/2019		0	
190821067-003AMS	Soil			2.5	0	100	40.000	9/3/2019	9/3/2019		0	
190821067-003AMSD	Soil			2.5	0	100	40.000	9/3/2019	9/3/2019		0	
190826040-001A	Soil			2.5	0	100	40.000	9/3/2019	9/3/2019		0	
190827026-001A	Soil			2.5	0	100	40.000	9/3/2019	9/3/2019		0	
LCS-75359				2.5	0	100	40.000	9/3/2019	9/3/2019		0	
MB-75359				2.5	0	100	40.000	9/3/2019	9/3/2019		0	

Number	Reagent Name	Solution ID	Solution Name	SampType	AmtAdd	units
4891	Magnesium Chloride	WC6-28-T	Cr(+6) Standard 1ml= 50 ug			1 ml
5785	W-Hex Cr In Soil	WC7-26-O	0.5M Phosphate Buffer			0.5 ml
		WC7-26-P	Dipheynylcarbazine reagent for Cr+6			1 ml
		WC7-26-R	Cr+6 Soil digestion solution			50 ml
		WC7-85-C	1:1 Sulfuric Acid			0 ml

Adirondack Environmental Services, Inc

PREP BATCH REPORT

Prep Start Date: **9/4/2019 12:21:37**

Prep End Date: **9/4/2019 5:10:00 P**

Comments:

Page 1 of 1

Prep Factor Units:

mL / g

Prep Batch **75394** Prep Code: **3060A**

Technician: **Darnell Avent**

Sample ID	Matrix	pH	ResCl	SampAmt	Sol Added	Fin Vol	factor	PrepStart	PrepEnd	ExPos	TareWt	CleanUp
MB-75394				2.5	0	100	40.000	9/4/2019	9/4/2019		0	
LCS-75394				2.5	0	100	40.000	9/4/2019	9/4/2019		0	
190821067-004A	Soil			2.5	0	100	40.000	9/4/2019	9/4/2019		0	
190821067-006A	Soil			2.5	0	100	40.000	9/4/2019	9/4/2019		0	
190830057-001A	Soil			2.5	0	100	40.000	9/4/2019	9/4/2019		0	
190830057-001ADUP	Soil			2.5	0	100	40.000	9/4/2019	9/4/2019		0	
190830057-001AMSL	Soil			2.5	0	100	40.000	9/4/2019	9/4/2019		0	
190830057-001AMSS	Soil			2.5	0	100	40.000	9/4/2019	9/4/2019		0	
190828002-001A	Soil			2.5	0	100	40.000	9/4/2019	9/4/2019		0	
190828002-002A	Solid			2.5	0	100	40.000	9/4/2019	9/4/2019		0	

Number	Reagent Name	Solution ID	Solution Name	SampType	AmtAdd	units
4891	Magnesium Chloride	WC6-28-T	Cr(+6) Standard 1ml= 50 ug			1 ml
5785	W-Hex Cr In Soil	WC7-26-O	0.5M Phosphate Buffer			0.5 ml
		WC7-26-P	Dipheynylcarbazine reagent for Cr+6			1 ml
		WC7-26-R	Cr+6 Soil digestion solution			50 ml
		WC7-85-C	1:1 Sulfuric Acid			0 ml
		WC7-26-S	Dipheynylcarbazine reagent for Cr+6			1 ml



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TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

- (a) Neither **Adirondack Environmental Services, Inc.**, nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.**'s performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.
- (b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.
- (c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.
- (d) In no event shall **Adirondack Environmental Services, Inc.**, its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.
- (e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**
- (f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.
- (g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.



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September 30, 2019

Katie Bidwell

Arcadis

855 Route 146, Suite 210

Clifton Park, NY 12065

TEL: (518) 250-7382

Work Order No: 190917059

PO#: W912DR18D0004/W912DR18F0736

Project# : 30001988.0002P

RE: Watervliet Arsenal

Dear Katie Bidwell:

"I certify that this data package is in compliance with the terms and conditions of the protocol, both technically and for completeness, to the best of my knowledge, for other than the conditions detailed in the Case Narrative. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Director or his designee, as verified by the following signature."

A handwritten signature in black ink, appearing to read "Tara Daniels", written over a horizontal line.

Tara Daniels

Laboratory Director

Workorder Sample Summary

Client: Arcadis

Work Order: 190917059

ProjectName: Watervliet Arsenal

ProjLocation:

AES Sample No	ClientSampID	Matrix	CollectionDate	DateReceived
190917059-001	WVA-AW-35-MW-10-091719	Water	9/17/2019 2:00:00 PM	9/17/2019 3:56:00 PM
190917059-002	WVA-AW-35-MW-11-091719	Water	9/17/2019 1:55:00 PM	9/17/2019 3:56:00 PM
190917059-003	DUP-01-091719	Water	9/17/2019	9/17/2019 3:56:00 PM
190917059-004	93-EM-SP-11-091819	Water	9/18/2019 9:35:00 AM	9/18/2019 1:12:00 PM
190917059-005	WVA-AW-35-MW-38-091819	Water	9/18/2019 9:40:00 AM	9/18/2019 1:12:00 PM
190917059-006	WVA-AW-35-MW-5-091819	Water	9/18/2019 11:20:00 AM	9/18/2019 1:12:00 PM



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Case Narrative

Client: Arcadis – Watervliet Arsenal

Case: 190917059

SDG: WVA-AW-35-MW-5-091819

Inorganics – Metals

- 1) The samples were analyzed for TAL Metals as specified on the chain of custody.
- 2) The samples received on 9/17/19 had a temperature of 5 °C. The samples received on 9/18/19 had a temperature of 12 °C.
- 3) The recovery for Aluminum, Calcium, Iron and Magnesium in the ICSA and the ICSAB check standards may be outside the required limit. The required concentration for these analytes in the check standards is 500,000 ug/L, 500,000 ug/L, 200,000 ug/L and 500,000 ug/L, respectively. The linear range on this instrument for Aluminum, Calcium, Iron and Magnesium is 250,000 ug/L, 250,000 ug/L, 100,000 ug/L and 250,000 ug/L, respectively. At this level accurate recovery of Aluminum, Calcium, Iron and Magnesium in the check standards is not possible. No further action is required.
- 4) The digested spike recoveries for the element Iron, Selenium and Thallium for WVA-AW-35-MW-11-091719 (AES sample number 190917059-002) were outside the required 75-125 % limits. A post digestion spike was performed and the recoveries for Iron and Selenium were within acceptable limits. The recovery for Iron was higher than the specified limits, but the sample concentration was greater than four (4) times the spike level. At this level, accurate recovery of the spike is not possible. The result for the element Iron for sample WVA-AW-35-MW-11-091719 (AES sample number 190917059-002) is not required to be flagged with an “N+” to denote the high recovery. The results for Selenium and Thallium for sample WVA-AW-35-MW-11-091719 (AES sample number 190917059-002) are flagged with an “N” to denote the low recovery. All other recoveries were within acceptable limits
- 5) Sample WVA-AW-35-MW-11-091719 (AES sample number 190917059-002) was used as the Mercury matrix spike sample. All recoveries were within acceptable limits.
- 6) Sample WVA-AW-35-MW-11-091719 (AES sample number 190917059-002) was used as the duplicate sample. All recoveries were within acceptable limits.
- 7) Sample WVA-AW-35-MW-11-091719 (AES sample number 190917059-002) was used as the Mercury duplicate sample. All recoveries were within acceptable limits.



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- 8) The elements Potassium and Sodium for sample WVA-AW-35-MW-11-091719 (AES sample number 190917059-002) did not meet the serial dilution criteria of 10 %. This indicates a possible chemical or physical interference.

Conventionals

- 1) The samples were analyzed for Hexavalent Chromium using Standard Methods 3500 Cr-B -2011.
- 2) Sample WVA-AW-35-MW-11-091719 (AES sample number 190917059-002) was used as the matrix spike sample. All recoveries were within acceptable limits.
- 3) Sample WVA-AW-35-MW-11-091719 (AES sample number 190917059-002) was used as the duplicate sample. All recoveries were within acceptable limits.

"I certify that this data package is in compliance with the terms and conditions of the protocol, both technically and for completeness, to the best of my knowledge, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature."

A handwritten signature in black ink, appearing to read "Tara Davis", is written over a horizontal line.

Laboratory Director

Date: 9/30/19

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Albany, New York 12207
518-434-4546/434-0891 FAX

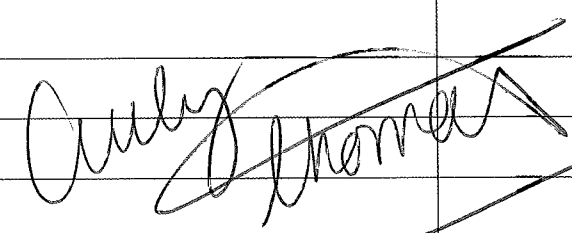
CHAIN OF CUSTODY RECORD

AES Work Order #

190917059

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Client Name: Arcadis U.S., Inc.		Address: 865 Route 146, Suite 210, Clifton Park, NY 12065						
Send Report To: Katie Bidwell		Project Name (Location): WaterNet A-3000			Samplers: (Names) Ashley Thomas & Kim Stilson			
Client Phone No: 518-250-7387		Client Email: Katie.Bidwell@arcadis.com		PO Number:		Samplers: (Signatures) 		
AES Sample Number	Client Sample Identification & Location	Date Sampled	Time A=a.m. P=p.m.	Sample Type Matrix	Comp	Grab	Number of Cont's	Analysis Required
001	WA-AW-35-MW-10-091719	9-17-19	1400	A P	AG	✓	2	TAL Metals USEPA Methods 600 and 7470.1
002	WA-AW-35-MW-11-091719	9-17-19	1355	A P	1	✓	2	Hexavalent Chromium by USEPA Method 8330.1
003	DUP-01-091719	9-17-19	-	A P	1	✓	2	TAL Metals & Hexchrome
004	WA-AW-35-MW-11-091719-MD	9-17-19	1335	A P	1	✓	2	TAL Metals Hexchrome
005	WA-AW-35-MW-11-091719-MD	9-17-19	1355	A P	1	✓	2	TAL Metals Hexchrome
 9-17-2019				A				
				P				
				A				
				P				
				A				
				P				
				A				
				P				
				A				
				P				

Shipment Arrived Via:

FedEx UPS Client AES Other:

Turnaround Time Request:

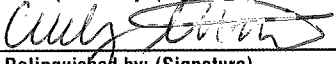
☐ 1 Day ☐ 3 Day ☒ Normal
☐ 2 Day ☐ 5 Day

Note: Samples received after 3:30 pm are considered next business day

CC Report To / Special Instructions/Remarks:

Analysis:
- TAL Metals USEPA Methods 600 and 7470.1
- Hexavalent Chromium by USEPA Method 8330.1
Perform MS/MSD for sample WA-AW-35-MW-11-091719

Relinquished by: (Signature)

 / Arcadis

Received by: (Signature)

Date/Time

Relinquished by: (Signature)

Received by: (Signature)

Date/Time

Relinquished by: (Signature)

Received for Laboratory by:

Date/Time

9/17/19

3:56 PM

TEMPERATURE

Ambient or Chilled

Notes:

AES Bottles

Y

N

Notes:

PROPERLY PRESERVED

Y N

RECEIVED WITHIN HOLDING TIMES

Y

N

WHITE - Lab Copy

YELLOW - Sampler Copy

Adironack Environmental Service



190917059



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CHAIN OF CUSTODY RECORD

AES Work Order #

190917059

Experience is the solution

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Client Name: Arcadis		Address: 855 Route 146, Suite 210 Clifton Park NY 12065						
Send Report To: Kate.Bidwell@arcadis.com stefan.Bugnato@arcadis.com		Project Name (Location): WV Arsenal						
Client Phone No.: 518-250-7387		Client Email: Kate.Bidwell@arcadis.com						
PO Number: 30001988		Samplers: (Names) K Stilson A. Thomas						
Samplers: (Signature) <i>[Signature]</i>								
AES Sample Number	Client Sample Identification & Location	Date Sampled	Time A=a.m. P=p.m.	Sample Type Matrix	Comp	Grab	Number of Cont's	Analysis Required
004	93-EM-SP-11-091819	9/18/19	0935	A P W		X	2	TAL Metals Hexavalent Chromium
005	WVA-AW-35-MW-38-091819	L	0940	A P W		X	2	SEE SPECIAL INSTRUCTIONS
006	WVA-AW-35-MW-5-091819	L	1120	A P W		X	2	↓ for analysis
<i>[Signature]</i> 9-18-19				A				
				P				
				A				
				P				
				A				
				P				
				A				
				P				
				A				
				P				
				A				
				P				

Shipment Arrived Via:

FedEx UPS ☒ Client AES Other: _____

Turnaround Time Request:

☐ 1 Day ☐ 3 Day ☒ Normal
☐ 2 Day ☐ 5 Day

Note: Samples received after 3:30 pm are considered next business day

CC Report To / Special Instructions/Remarks:

TAL Metals USEPA Method 6010 and 7470.
Hexavalent Chromium by USEPA method SM3500

Relinquished by: (Signature)

[Signature] / Arcadis

Received by: (Signature)

Date/Time

Relinquished by: (Signature)

Received by: (Signature)

Date/Time

Relinquished by: (Signature)

Received for Laboratory by:

Date/Time

[Signature]

9/18/19 1:12 PM

TEMPERATURE

Ambient or ☒ Chilled

Notes: **12°C**

AES Bottles

Y

N

☒

☐

PROPERLY PRESERVED

☒

N

Notes: _____

RECEIVED WITHIN HOLDING TIMES

☒

N

Notes: _____

WHITE - Lab Copy

YELLOW - Sampler Copy

PINK - Generator Copy

Adirondack Environmental Services, Inc.

Adirondack Environmental Services, Inc

Date: 24-Sep-19

CLIENT: Arcadis
Work Order: 190917059
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: WVA-AW-35-MW-10-091719
Collection Date: 9/17/2019 2:00:00 PM
Lab Sample ID: 190917059-001
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 9/19/2019)						
Mercury	ND	0.20		µg/L	1	9/19/2019 5:11:36 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 9/19/2019)						
Aluminum	ND	100		µg/L	1	9/20/2019 4:54:00 PM
Antimony	1.72	60.0	J	µg/L	1	9/20/2019 4:54:00 PM
Arsenic	ND	5.00		µg/L	1	9/20/2019 4:54:00 PM
Barium	2610	10.0		µg/L	1	9/20/2019 4:54:00 PM
Beryllium	0.73	5.00	J	µg/L	1	9/20/2019 4:54:00 PM
Cadmium	ND	5.00		µg/L	1	9/20/2019 4:54:00 PM
Calcium	17900	50.0		µg/L	1	9/20/2019 4:54:00 PM
Chromium	ND	5.00		µg/L	1	9/20/2019 4:54:00 PM
Cobalt	0.26	50.0	J	µg/L	1	9/20/2019 4:54:00 PM
Copper	ND	5.00		µg/L	1	9/20/2019 4:54:00 PM
Iron	1000	50.0		µg/L	1	9/20/2019 4:54:00 PM
Lead	6.49	5.00		µg/L	1	9/20/2019 4:54:00 PM
Magnesium	4650	50.0		µg/L	1	9/20/2019 4:54:00 PM
Manganese	166	20.0		µg/L	1	9/20/2019 4:54:00 PM
Nickel	0.29	20.0	J	µg/L	1	9/20/2019 4:54:00 PM
Potassium	17700	50.0		µg/L	1	9/20/2019 4:54:00 PM
Selenium	ND	5.00		µg/L	1	9/20/2019 4:54:00 PM
Silver	ND	10.0		µg/L	1	9/20/2019 4:54:00 PM
Sodium	269000	500		µg/L	10	9/20/2019 4:58:00 PM
Thallium	ND	10.0		µg/L	1	9/20/2019 4:54:00 PM
Vanadium	ND	20.0		µg/L	1	9/20/2019 4:54:00 PM
Zinc	5.78	10.0	J	µg/L	1	9/20/2019 4:54:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	9/17/2019 4:50:00 PM

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 24-Sep-19

CLIENT: Arcadis
Work Order: 190917059
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: WVA-AW-35-MW-11-091719
Collection Date: 9/17/2019 1:55:00 PM
Lab Sample ID: 190917059-002
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 9/19/2019)						
Mercury	ND	0.20		µg/L	1	9/19/2019 5:13:18 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 9/19/2019)						
Aluminum	ND	100		µg/L	1	9/20/2019 5:02:00 PM
Antimony	ND	60.0		µg/L	1	9/20/2019 5:02:00 PM
Arsenic	ND	5.00		µg/L	1	9/20/2019 5:02:00 PM
Barium	1640	10.0		µg/L	1	9/20/2019 5:02:00 PM
Beryllium	0.49	5.00	J	µg/L	1	9/20/2019 5:02:00 PM
Cadmium	ND	5.00		µg/L	1	9/20/2019 5:02:00 PM
Calcium	46200	50.0		µg/L	1	9/20/2019 5:02:00 PM
Chromium	ND	5.00		µg/L	1	9/20/2019 5:02:00 PM
Cobalt	0.35	50.0	J	µg/L	1	9/20/2019 5:02:00 PM
Copper	ND	5.00		µg/L	1	9/20/2019 5:02:00 PM
Iron	8080	50.0		µg/L	1	9/20/2019 5:02:00 PM
Lead	0.67	5.00	J	µg/L	1	9/20/2019 5:02:00 PM
Magnesium	14000	50.0		µg/L	1	9/20/2019 5:02:00 PM
Manganese	258	20.0		µg/L	1	9/20/2019 5:02:00 PM
Nickel	ND	20.0		µg/L	1	9/20/2019 5:02:00 PM
Potassium	16600	50.0		µg/L	1	9/20/2019 5:02:00 PM
Selenium	ND	5.00	N	µg/L	1	9/20/2019 5:02:00 PM
Silver	ND	10.0		µg/L	1	9/20/2019 5:02:00 PM
Sodium	145000	500		µg/L	10	9/20/2019 5:06:00 PM
Thallium	ND	10.0	N	µg/L	1	9/20/2019 5:02:00 PM
Vanadium	ND	20.0		µg/L	1	9/20/2019 5:02:00 PM
Zinc	3.49	10.0	J	µg/L	1	9/20/2019 5:02:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	9/17/2019 4:50:00 PM

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate
S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 24-Sep-19

CLIENT: Arcadis
Work Order: 190917059
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: DUP-01-091719
Collection Date: 9/17/2019
Lab Sample ID: 190917059-003
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 9/19/2019)						Analyst: AVB
Mercury	ND	0.20		µg/L	1	9/19/2019 5:58:17 PM
ICP METALS - EPA 200.7						
(Prep: SW3010A - 9/19/2019)						Analyst: KH
Aluminum	ND	100		µg/L	1	9/20/2019 5:29:00 PM
Antimony	2.25	60.0	J	µg/L	1	9/20/2019 5:29:00 PM
Arsenic	ND	5.00		µg/L	1	9/20/2019 5:29:00 PM
Barium	2700	10.0		µg/L	1	9/20/2019 5:29:00 PM
Beryllium	0.94	5.00	J	µg/L	1	9/20/2019 5:29:00 PM
Cadmium	ND	5.00		µg/L	1	9/20/2019 5:29:00 PM
Calcium	19000	50.0		µg/L	1	9/20/2019 5:29:00 PM
Chromium	ND	5.00		µg/L	1	9/20/2019 5:29:00 PM
Cobalt	0.21	50.0	J	µg/L	1	9/20/2019 5:29:00 PM
Copper	ND	5.00		µg/L	1	9/20/2019 5:29:00 PM
Iron	839	50.0		µg/L	1	9/20/2019 5:29:00 PM
Lead	4.35	5.00	J	µg/L	1	9/20/2019 5:29:00 PM
Magnesium	4970	50.0		µg/L	1	9/20/2019 5:29:00 PM
Manganese	172	20.0		µg/L	1	9/20/2019 5:29:00 PM
Nickel	ND	20.0		µg/L	1	9/20/2019 5:29:00 PM
Potassium	17900	50.0		µg/L	1	9/20/2019 5:29:00 PM
Selenium	ND	5.00		µg/L	1	9/20/2019 5:29:00 PM
Silver	ND	10.0		µg/L	1	9/20/2019 5:29:00 PM
Sodium	265000	500		µg/L	10	9/20/2019 5:46:00 PM
Thallium	1.03	10.0	J	µg/L	1	9/20/2019 5:29:00 PM
Vanadium	ND	20.0		µg/L	1	9/20/2019 5:29:00 PM
Zinc	3.67	10.0	J	µg/L	1	9/20/2019 5:29:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						
						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	9/17/2019 4:50:00 PM

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 24-Sep-19

CLIENT: Arcadis
Work Order: 190917059
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: 93-EM-SP-11-091819
Collection Date: 9/18/2019 9:35:00 AM
Lab Sample ID: 190917059-004
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 9/19/2019)						
Mercury	ND	0.20		µg/L	1	9/19/2019 5:59:59 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 9/19/2019)						
Aluminum	232	100		µg/L	1	9/20/2019 5:51:00 PM
Antimony	1.31	60.0	J	µg/L	1	9/20/2019 5:51:00 PM
Arsenic	8.84	5.00		µg/L	1	9/20/2019 5:51:00 PM
Barium	99.5	10.0		µg/L	1	9/20/2019 5:51:00 PM
Beryllium	ND	5.00		µg/L	1	9/20/2019 5:51:00 PM
Cadmium	ND	5.00		µg/L	1	9/20/2019 5:51:00 PM
Calcium	71100	50.0		µg/L	1	9/20/2019 5:51:00 PM
Chromium	9.48	5.00		µg/L	1	9/20/2019 5:51:00 PM
Cobalt	2.87	50.0	J	µg/L	1	9/20/2019 5:51:00 PM
Copper	ND	5.00		µg/L	1	9/20/2019 5:51:00 PM
Iron	1410	50.0		µg/L	1	9/20/2019 5:51:00 PM
Lead	4.91	5.00	J	µg/L	1	9/20/2019 5:51:00 PM
Magnesium	26000	50.0		µg/L	1	9/20/2019 5:51:00 PM
Manganese	660	20.0		µg/L	1	9/20/2019 5:51:00 PM
Nickel	1.14	20.0	J	µg/L	1	9/20/2019 5:51:00 PM
Potassium	7810	50.0		µg/L	1	9/20/2019 5:51:00 PM
Selenium	ND	5.00		µg/L	1	9/20/2019 5:51:00 PM
Silver	ND	10.0		µg/L	1	9/20/2019 5:51:00 PM
Sodium	143000	500		µg/L	10	9/20/2019 5:57:00 PM
Thallium	ND	10.0		µg/L	1	9/20/2019 5:51:00 PM
Vanadium	ND	20.0		µg/L	1	9/20/2019 5:51:00 PM
Zinc	23.3	10.0		µg/L	1	9/20/2019 5:51:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	9/18/2019 4:28:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 24-Sep-19

CLIENT: Arcadis
Work Order: 190917059
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: WVA-AW-35-MW-38-091819
Collection Date: 9/18/2019 9:40:00 AM
Lab Sample ID: 190917059-005
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 9/19/2019)						
Mercury	ND	0.20		µg/L	1	9/19/2019 6:01:41 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 9/19/2019)						
Aluminum	ND	100		µg/L	1	9/20/2019 6:04:00 PM
Antimony	ND	60.0		µg/L	1	9/20/2019 6:04:00 PM
Arsenic	ND	5.00		µg/L	1	9/20/2019 6:04:00 PM
Barium	358	10.0		µg/L	1	9/20/2019 6:04:00 PM
Beryllium	ND	5.00		µg/L	1	9/20/2019 6:04:00 PM
Cadmium	ND	5.00		µg/L	1	9/20/2019 6:04:00 PM
Calcium	76300	50.0		µg/L	1	9/20/2019 6:04:00 PM
Chromium	ND	5.00		µg/L	1	9/20/2019 6:04:00 PM
Cobalt	0.40	50.0	J	µg/L	1	9/20/2019 6:04:00 PM
Copper	4.69	5.00	J	µg/L	1	9/20/2019 6:04:00 PM
Iron	64.6	50.0		µg/L	1	9/20/2019 6:04:00 PM
Lead	1.78	5.00	J	µg/L	1	9/20/2019 6:04:00 PM
Magnesium	30000	50.0		µg/L	1	9/20/2019 6:04:00 PM
Manganese	29.9	20.0		µg/L	1	9/20/2019 6:04:00 PM
Nickel	1.57	20.0	J	µg/L	1	9/20/2019 6:04:00 PM
Potassium	20900	50.0		µg/L	1	9/20/2019 6:04:00 PM
Selenium	ND	5.00		µg/L	1	9/20/2019 6:04:00 PM
Silver	ND	10.0		µg/L	1	9/20/2019 6:04:00 PM
Sodium	188000	500		µg/L	10	9/20/2019 6:09:00 PM
Thallium	ND	10.0		µg/L	1	9/20/2019 6:04:00 PM
Vanadium	ND	20.0		µg/L	1	9/20/2019 6:04:00 PM
Zinc	9.81	10.0	J	µg/L	1	9/20/2019 6:04:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	9/18/2019 4:28:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 24-Sep-19

CLIENT: Arcadis
Work Order: 190917059
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: WVA-AW-35-MW-5-091819
Collection Date: 9/18/2019 11:20:00 AM
Lab Sample ID: 190917059-006
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 9/19/2019)						Analyst: AVB
Mercury	ND	0.20		µg/L	1	9/19/2019 6:03:24 PM
ICP METALS - EPA 200.7						
(Prep: SW3010A - 9/19/2019)						Analyst: KH
Aluminum	ND	100		µg/L	1	9/20/2019 6:13:00 PM
Antimony	1.57	60.0	J	µg/L	1	9/20/2019 6:13:00 PM
Arsenic	ND	5.00		µg/L	1	9/20/2019 6:13:00 PM
Barium	2940	10.0		µg/L	1	9/20/2019 6:13:00 PM
Beryllium	0.97	5.00	J	µg/L	1	9/20/2019 6:13:00 PM
Cadmium	ND	5.00		µg/L	1	9/20/2019 6:13:00 PM
Calcium	17300	50.0		µg/L	1	9/20/2019 6:13:00 PM
Chromium	ND	5.00		µg/L	1	9/20/2019 6:13:00 PM
Cobalt	0.19	50.0	J	µg/L	1	9/20/2019 6:13:00 PM
Copper	ND	5.00		µg/L	1	9/20/2019 6:13:00 PM
Iron	13.1	50.0	J	µg/L	1	9/20/2019 6:13:00 PM
Lead	0.89	5.00	J	µg/L	1	9/20/2019 6:13:00 PM
Magnesium	5330	50.0		µg/L	1	9/20/2019 6:13:00 PM
Manganese	73.4	20.0		µg/L	1	9/20/2019 6:13:00 PM
Nickel	ND	20.0		µg/L	1	9/20/2019 6:13:00 PM
Potassium	15400	50.0		µg/L	1	9/20/2019 6:13:00 PM
Selenium	ND	5.00		µg/L	1	9/20/2019 6:13:00 PM
Silver	ND	10.0		µg/L	1	9/20/2019 6:13:00 PM
Sodium	282000	500		µg/L	10	9/20/2019 6:19:00 PM
Thallium	ND	10.0		µg/L	1	9/20/2019 6:13:00 PM
Vanadium	ND	20.0		µg/L	1	9/20/2019 6:13:00 PM
Zinc	5.07	10.0	J	µg/L	1	9/20/2019 6:13:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						
						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	9/18/2019 4:28:00 PM

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 24-Sep-19

CLIENT: Arcadis
Work Order: 190917059
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: WVA-AW-35-MW-10-091719
Collection Date: 9/17/2019 2:00:00 PM
Lab Sample ID: 190917059-001
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 9/19/2019)						
Mercury	ND	0.20		µg/L	1	9/19/2019 5:11:36 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 9/19/2019)						
Aluminum	ND	100		µg/L	1	9/20/2019 4:54:00 PM
Antimony	1.72	60.0	J	µg/L	1	9/20/2019 4:54:00 PM
Arsenic	ND	5.00		µg/L	1	9/20/2019 4:54:00 PM
Barium	2610	10.0		µg/L	1	9/20/2019 4:54:00 PM
Beryllium	0.73	5.00	J	µg/L	1	9/20/2019 4:54:00 PM
Cadmium	ND	5.00		µg/L	1	9/20/2019 4:54:00 PM
Calcium	17900	50.0		µg/L	1	9/20/2019 4:54:00 PM
Chromium	ND	5.00		µg/L	1	9/20/2019 4:54:00 PM
Cobalt	0.26	50.0	J	µg/L	1	9/20/2019 4:54:00 PM
Copper	ND	5.00		µg/L	1	9/20/2019 4:54:00 PM
Iron	1000	50.0		µg/L	1	9/20/2019 4:54:00 PM
Lead	6.49	5.00		µg/L	1	9/20/2019 4:54:00 PM
Magnesium	4650	50.0		µg/L	1	9/20/2019 4:54:00 PM
Manganese	166	20.0		µg/L	1	9/20/2019 4:54:00 PM
Nickel	0.29	20.0	J	µg/L	1	9/20/2019 4:54:00 PM
Potassium	17700	50.0		µg/L	1	9/20/2019 4:54:00 PM
Selenium	ND	5.00		µg/L	1	9/20/2019 4:54:00 PM
Silver	ND	10.0		µg/L	1	9/20/2019 4:54:00 PM
Sodium	269000	500		µg/L	10	9/20/2019 4:58:00 PM
Thallium	ND	10.0		µg/L	1	9/20/2019 4:54:00 PM
Vanadium	ND	20.0		µg/L	1	9/20/2019 4:54:00 PM
Zinc	5.78	10.0	J	µg/L	1	9/20/2019 4:54:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 24-Sep-19

CLIENT: Arcadis
Work Order: 190917059
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: WVA-AW-35-MW-11-091719
Collection Date: 9/17/2019 1:55:00 PM
Lab Sample ID: 190917059-002
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 9/19/2019)						
Mercury	ND	0.20		µg/L	1	9/19/2019 5:13:18 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 9/19/2019)						
Aluminum	ND	100		µg/L	1	9/20/2019 5:02:00 PM
Antimony	ND	60.0		µg/L	1	9/20/2019 5:02:00 PM
Arsenic	ND	5.00		µg/L	1	9/20/2019 5:02:00 PM
Barium	1640	10.0		µg/L	1	9/20/2019 5:02:00 PM
Beryllium	0.49	5.00	J	µg/L	1	9/20/2019 5:02:00 PM
Cadmium	ND	5.00		µg/L	1	9/20/2019 5:02:00 PM
Calcium	46200	50.0		µg/L	1	9/20/2019 5:02:00 PM
Chromium	ND	5.00		µg/L	1	9/20/2019 5:02:00 PM
Cobalt	0.35	50.0	J	µg/L	1	9/20/2019 5:02:00 PM
Copper	ND	5.00		µg/L	1	9/20/2019 5:02:00 PM
Iron	8080	50.0		µg/L	1	9/20/2019 5:02:00 PM
Lead	0.67	5.00	J	µg/L	1	9/20/2019 5:02:00 PM
Magnesium	14000	50.0		µg/L	1	9/20/2019 5:02:00 PM
Manganese	258	20.0		µg/L	1	9/20/2019 5:02:00 PM
Nickel	ND	20.0		µg/L	1	9/20/2019 5:02:00 PM
Potassium	16600	50.0		µg/L	1	9/20/2019 5:02:00 PM
Selenium	ND	5.00	N	µg/L	1	9/20/2019 5:02:00 PM
Silver	ND	10.0		µg/L	1	9/20/2019 5:02:00 PM
Sodium	145000	500		µg/L	10	9/20/2019 5:06:00 PM
Thallium	ND	10.0	N	µg/L	1	9/20/2019 5:02:00 PM
Vanadium	ND	20.0		µg/L	1	9/20/2019 5:02:00 PM
Zinc	3.49	10.0	J	µg/L	1	9/20/2019 5:02:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 24-Sep-19

CLIENT: Arcadis
Work Order: 190917059
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: DUP-01-091719
Collection Date: 9/17/2019
Lab Sample ID: 190917059-003
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 9/19/2019)						
Mercury	ND	0.20		µg/L	1	9/19/2019 5:58:17 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 9/19/2019)						
Aluminum	ND	100		µg/L	1	9/20/2019 5:29:00 PM
Antimony	2.25	60.0	J	µg/L	1	9/20/2019 5:29:00 PM
Arsenic	ND	5.00		µg/L	1	9/20/2019 5:29:00 PM
Barium	2700	10.0		µg/L	1	9/20/2019 5:29:00 PM
Beryllium	0.94	5.00	J	µg/L	1	9/20/2019 5:29:00 PM
Cadmium	ND	5.00		µg/L	1	9/20/2019 5:29:00 PM
Calcium	19000	50.0		µg/L	1	9/20/2019 5:29:00 PM
Chromium	ND	5.00		µg/L	1	9/20/2019 5:29:00 PM
Cobalt	0.21	50.0	J	µg/L	1	9/20/2019 5:29:00 PM
Copper	ND	5.00		µg/L	1	9/20/2019 5:29:00 PM
Iron	839	50.0		µg/L	1	9/20/2019 5:29:00 PM
Lead	4.35	5.00	J	µg/L	1	9/20/2019 5:29:00 PM
Magnesium	4970	50.0		µg/L	1	9/20/2019 5:29:00 PM
Manganese	172	20.0		µg/L	1	9/20/2019 5:29:00 PM
Nickel	ND	20.0		µg/L	1	9/20/2019 5:29:00 PM
Potassium	17900	50.0		µg/L	1	9/20/2019 5:29:00 PM
Selenium	ND	5.00		µg/L	1	9/20/2019 5:29:00 PM
Silver	ND	10.0		µg/L	1	9/20/2019 5:29:00 PM
Sodium	265000	500		µg/L	10	9/20/2019 5:46:00 PM
Thallium	1.03	10.0	J	µg/L	1	9/20/2019 5:29:00 PM
Vanadium	ND	20.0		µg/L	1	9/20/2019 5:29:00 PM
Zinc	3.67	10.0	J	µg/L	1	9/20/2019 5:29:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 24-Sep-19

CLIENT: Arcadis
Work Order: 190917059
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: 93-EM-SP-11-091819
Collection Date: 9/18/2019 9:35:00 AM
Lab Sample ID: 190917059-004
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 9/19/2019)						
Mercury	ND	0.20		µg/L	1	9/19/2019 5:59:59 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 9/19/2019)						
Aluminum	232	100		µg/L	1	9/20/2019 5:51:00 PM
Antimony	1.31	60.0	J	µg/L	1	9/20/2019 5:51:00 PM
Arsenic	8.84	5.00		µg/L	1	9/20/2019 5:51:00 PM
Barium	99.5	10.0		µg/L	1	9/20/2019 5:51:00 PM
Beryllium	ND	5.00		µg/L	1	9/20/2019 5:51:00 PM
Cadmium	ND	5.00		µg/L	1	9/20/2019 5:51:00 PM
Calcium	71100	50.0		µg/L	1	9/20/2019 5:51:00 PM
Chromium	9.48	5.00		µg/L	1	9/20/2019 5:51:00 PM
Cobalt	2.87	50.0	J	µg/L	1	9/20/2019 5:51:00 PM
Copper	ND	5.00		µg/L	1	9/20/2019 5:51:00 PM
Iron	1410	50.0		µg/L	1	9/20/2019 5:51:00 PM
Lead	4.91	5.00	J	µg/L	1	9/20/2019 5:51:00 PM
Magnesium	26000	50.0		µg/L	1	9/20/2019 5:51:00 PM
Manganese	660	20.0		µg/L	1	9/20/2019 5:51:00 PM
Nickel	1.14	20.0	J	µg/L	1	9/20/2019 5:51:00 PM
Potassium	7810	50.0		µg/L	1	9/20/2019 5:51:00 PM
Selenium	ND	5.00		µg/L	1	9/20/2019 5:51:00 PM
Silver	ND	10.0		µg/L	1	9/20/2019 5:51:00 PM
Sodium	143000	500		µg/L	10	9/20/2019 5:57:00 PM
Thallium	ND	10.0		µg/L	1	9/20/2019 5:51:00 PM
Vanadium	ND	20.0		µg/L	1	9/20/2019 5:51:00 PM
Zinc	23.3	10.0		µg/L	1	9/20/2019 5:51:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 24-Sep-19

CLIENT: Arcadis
Work Order: 190917059
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: WVA-AW-35-MW-38-091819
Collection Date: 9/18/2019 9:40:00 AM
Lab Sample ID: 190917059-005
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 9/19/2019)						
Mercury	ND	0.20		µg/L	1	9/19/2019 6:01:41 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 9/19/2019)						
Aluminum	ND	100		µg/L	1	9/20/2019 6:04:00 PM
Antimony	ND	60.0		µg/L	1	9/20/2019 6:04:00 PM
Arsenic	ND	5.00		µg/L	1	9/20/2019 6:04:00 PM
Barium	358	10.0		µg/L	1	9/20/2019 6:04:00 PM
Beryllium	ND	5.00		µg/L	1	9/20/2019 6:04:00 PM
Cadmium	ND	5.00		µg/L	1	9/20/2019 6:04:00 PM
Calcium	76300	50.0		µg/L	1	9/20/2019 6:04:00 PM
Chromium	ND	5.00		µg/L	1	9/20/2019 6:04:00 PM
Cobalt	0.40	50.0	J	µg/L	1	9/20/2019 6:04:00 PM
Copper	4.69	5.00	J	µg/L	1	9/20/2019 6:04:00 PM
Iron	64.6	50.0		µg/L	1	9/20/2019 6:04:00 PM
Lead	1.78	5.00	J	µg/L	1	9/20/2019 6:04:00 PM
Magnesium	30000	50.0		µg/L	1	9/20/2019 6:04:00 PM
Manganese	29.9	20.0		µg/L	1	9/20/2019 6:04:00 PM
Nickel	1.57	20.0	J	µg/L	1	9/20/2019 6:04:00 PM
Potassium	20900	50.0		µg/L	1	9/20/2019 6:04:00 PM
Selenium	ND	5.00		µg/L	1	9/20/2019 6:04:00 PM
Silver	ND	10.0		µg/L	1	9/20/2019 6:04:00 PM
Sodium	188000	500		µg/L	10	9/20/2019 6:09:00 PM
Thallium	ND	10.0		µg/L	1	9/20/2019 6:04:00 PM
Vanadium	ND	20.0		µg/L	1	9/20/2019 6:04:00 PM
Zinc	9.81	10.0	J	µg/L	1	9/20/2019 6:04:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 24-Sep-19

CLIENT: Arcadis
Work Order: 190917059
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: WVA-AW-35-MW-5-091819
Collection Date: 9/18/2019 11:20:00 AM
Lab Sample ID: 190917059-006
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 9/19/2019)						
Mercury	ND	0.20		µg/L	1	9/19/2019 6:03:24 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 9/19/2019)						
Aluminum	ND	100		µg/L	1	9/20/2019 6:13:00 PM
Antimony	1.57	60.0	J	µg/L	1	9/20/2019 6:13:00 PM
Arsenic	ND	5.00		µg/L	1	9/20/2019 6:13:00 PM
Barium	2940	10.0		µg/L	1	9/20/2019 6:13:00 PM
Beryllium	0.97	5.00	J	µg/L	1	9/20/2019 6:13:00 PM
Cadmium	ND	5.00		µg/L	1	9/20/2019 6:13:00 PM
Calcium	17300	50.0		µg/L	1	9/20/2019 6:13:00 PM
Chromium	ND	5.00		µg/L	1	9/20/2019 6:13:00 PM
Cobalt	0.19	50.0	J	µg/L	1	9/20/2019 6:13:00 PM
Copper	ND	5.00		µg/L	1	9/20/2019 6:13:00 PM
Iron	13.1	50.0	J	µg/L	1	9/20/2019 6:13:00 PM
Lead	0.89	5.00	J	µg/L	1	9/20/2019 6:13:00 PM
Magnesium	5330	50.0		µg/L	1	9/20/2019 6:13:00 PM
Manganese	73.4	20.0		µg/L	1	9/20/2019 6:13:00 PM
Nickel	ND	20.0		µg/L	1	9/20/2019 6:13:00 PM
Potassium	15400	50.0		µg/L	1	9/20/2019 6:13:00 PM
Selenium	ND	5.00		µg/L	1	9/20/2019 6:13:00 PM
Silver	ND	10.0		µg/L	1	9/20/2019 6:13:00 PM
Sodium	282000	500		µg/L	10	9/20/2019 6:19:00 PM
Thallium	ND	10.0		µg/L	1	9/20/2019 6:13:00 PM
Vanadium	ND	20.0		µg/L	1	9/20/2019 6:13:00 PM
Zinc	5.07	10.0	J	µg/L	1	9/20/2019 6:13:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

CLIENT: Arcadis
 Work Order: 190917059
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75689

mbk	SeqNo: 2703605	PrepDate:9/19/2019	TestNo: E245.1	RunNo: 175529
	Samp ID: MB-75689	PrepRef:(E245.1)	Units: µg/L	Analysis Date: 9/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.200									

lcs	SeqNo: 2703606	PrepDate:9/19/2019	TestNo: E245.1	RunNo: 175529
	Samp ID: LCS-75689	PrepRef:(E245.1)	Units: µg/L	Analysis Date: 9/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	1.917	0.200	2	0	95.8	85	115	0	0		

ms	SeqNo: 2703610	PrepDate:9/19/2019	TestNo: E245.1	RunNo: 175529
	Samp ID: 190917059-002 (WVA-AW-35-MW)	PrepRef:(E245.1)	Units: µg/L	Analysis Date: 9/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	1.813	0.200	2	0	90.7	80.8	119	0	0		

dup	SeqNo: 2703609	PrepDate:9/19/2019	TestNo: E245.1	RunNo: 175529
	Samp ID: 190917059-002	PrepRef:	Units: µg/L	Analysis Date: 9/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	-0.0192	0.200	0	0	0	0	0	0	0	16.5	

CCB	SeqNo: 2703620	PrepDate:	TestNo: E245.1	RunNo: 175529
	Samp ID: CCB	PrepRef:	Units: µg/L	Analysis Date: 9/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	-0.1	0.200	0	0	0	0	0	0	0		

CCV	SeqNo: 2703619	PrepDate:	TestNo: E245.1	RunNo: 175529
	Samp ID: CCV	PrepRef:	Units: µg/L	Analysis Date: 9/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	1.895	0.200	2	0	94.8	85	115	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75689

ICB	SeqNo: 2703614	PrepDate:	TestNo: E245.1	RunNo: 175529
	Samp ID: ICB	PrepRef:	Units: µg/L	Analysis Date: 9/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	-0.098	0.200	0	0	0	0	0	0	0		

ICV	SeqNo: 2703613	PrepDate:	TestNo: E245.1	RunNo: 175529
	Samp ID: ICV	PrepRef:	Units: µg/L	Analysis Date: 9/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	1.818	0.200	2	0	90.9	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

PS	SeqNo: 2705024	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: 190917059-002 (WVA-AW-35-MW)	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	4303	200	4000	0	108	75	125	0	0		
Antimony	981	60.0	1000	0	98.1	75	125	0	0		
Arsenic	79.95	10.0	80	0	99.9	75	125	0	0		
Barium	5772	200	4000	1642	103	75	125	0	0		
Beryllium	110	5.00	100	0.4872	110	75	125	0	0		
Cadmium	96.08	5.00	100	0	96.1	75	125	0	0		
Chromium	474	10.0	400	0	118	75	125	0	0		
Cobalt	927.6	50.0	1000	0.3496	92.7	75	125	0	0		
Copper	587.4	25.0	500	0	117	75	125	0	0		
Iron	9803	100	2000	8081	86.1	75	125	0	0		
Lead	37.49	3.00	40	0.6679	92.1	75	125	0	0		
Manganese	1211	15.0	1000	258.2	95.3	75	125	0	0		
Nickel	932	40.0	1000	0	93.2	75	125	0	0		
Selenium	18.74	5.00	20	0	93.7	75	125	0	0		
Silver	112.2	10.0	100	0	112	75	125	0	0		
Thallium	74.04	10.0	100	0	74	75	125	0	0		S
Vanadium	1059	50.0	1000	0	106	75	125	0	0		
Zinc	983.1	20.0	1000	3.488	98	75	125	0	0		

SD	SeqNo: 2705025	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: 190917059-002 (WVA-AW-35-MW)	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	1000	0	0	0	0	0	0	0	0	
Antimony	ND	300	0	0	0	0	0	0	0	0	
Arsenic	ND	50.0	0	0	0	0	0	0	0	0	
Barium	1758	1000	0	0	0	0	0	1642	6.85	0	
Beryllium	ND	25.0	0	0	0	0	0	0.4872	0	0	
Cadmium	ND	25.0	0	0	0	0	0	0	0	0	
Calcium	50070	25000	0	0	0	0	0	46220	8.01	0	
Chromium	ND	50.0	0	0	0	0	0	0	0	0	
Cobalt	ND	250	0	0	0	0	0	0.3496	0	0	
Copper	ND	120	0	0	0	0	0	0	0	0	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

SD	SeqNo: 2705025	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: 190917059-002 (WVA-AW-35-MW)	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	8692	500	0	0	0	0	0	8081	7.28	0	
Lead	ND	15.0	0	0	0	0	0	0.6679	0	0	
Magnesium	14370	25000	0	0	0	0	0	13960	0	0	J
Manganese	276.1	75.0	0	0	0	0	0	258.2	6.72	0	
Nickel	ND	200	0	0	0	0	0	0	0	0	
Potassium	12950	25000	0	0	0	0	0	16600	0	0	J
Selenium	ND	25.0	0	0	0	0	0	0	0	0	
Silver	ND	50.0	0	0	0	0	0	0	0	0	
Sodium	174900	25000	0	0	0	0	0	126700	32.0	0	
Thallium	ND	50.0	0	0	0	0	0	0	0	0	
Vanadium	ND	250	0	0	0	0	0	0	0	0	
Zinc	ND	100	0	0	0	0	0	3.488	0	0	

MBLK	SeqNo: 2705013	PrepDate:9/19/2019	TestNo: E200.7	RunNo: 175605
	Samp ID: MB-75695	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200									
Antimony	ND	60.0									
Arsenic	ND	10.0									
Barium	5.808	200									J
Beryllium	ND	5.00									
Cadmium	ND	5.00									
Calcium	ND	5000									
Chromium	ND	10.0									
Cobalt	ND	50.0									
Copper	ND	25.0									
Iron	ND	100									
Lead	ND	3.00									
Magnesium	ND	5000									
Manganese	ND	15.0									
Nickel	ND	40.0									
Potassium	ND	5000									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

MBLK	SeqNo: 2705013	PrepDate:9/19/2019	TestNo: E200.7	RunNo: 175605
	Samp ID: MB-75695	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	ND	5.00									
Silver	ND	10.0									
Sodium	ND	5000									
Thallium	ND	10.0									
Vanadium	ND	50.0									
Zinc	ND	20.0									

LCS	SeqNo: 2705014	PrepDate:9/19/2019	TestNo: E200.7	RunNo: 175605
	Samp ID: LCS-75695	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	2084	200	2000	0	104	80	120	0	0		
Antimony	1929	60.0	2000	0	96.4	80	120	0	0		
Arsenic	2120	10.0	2000	0	106	80	120	0	0		
Barium	1986	200	2000	0	99.3	80	120	0	0		
Beryllium	1984	5.00	2000	0	99.2	80	120	0	0		
Cadmium	1992	5.00	2000	0	99.6	80	120	0	0		
Calcium	1850	5000	2000	0	92.5	80	120	0	0		J
Chromium	1832	10.0	2000	0	91.6	80	120	0	0		
Cobalt	2144	50.0	2000	0	107	80	120	0	0		
Copper	1920	25.0	2000	0	96	80	120	0	0		
Iron	1979	100	2000	0	98.9	80	120	0	0		
Lead	2014	3.00	2000	0	101	80	120	0	0		
Magnesium	1935	5000	2000	0	96.7	80	120	0	0		J
Manganese	2144	15.0	2000	0	107	80	120	0	0		
Nickel	2173	40.0	2000	0	109	80	120	0	0		
Potassium	9637	5000	10000	0	96.4	80	120	0	0		
Selenium	2169	5.00	2000	0	108	80	120	0	0		
Silver	484.8	10.0	500	0	97	80	120	0	0		
Sodium	1973	5000	2000	0	98.7	80	120	0	0		J
Thallium	2016	10.0	2000	0	101	80	120	0	0		
Vanadium	2102	50.0	2000	0	105	80	120	0	0		
Zinc	2118	20.0	2000	0	106	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

MS	SeqNo: 2705023	PrepDate:9/19/2019	TestNo: E200.7	RunNo: 175605
	Samp ID: 190917059-002 (WVA-AW-35-MW)	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	2019	200	2000	0	101	75	125	0	0		
Antimony	475.3	60.0	500	0	95.1	75	125	0	0		
Arsenic	38.88	10.0	40	0	97.2	75	125	0	0		
Barium	3664	200	2000	1642	101	75	121	0	0		
Beryllium	53.07	5.00	50	0.4872	105	75	120	0	0		
Cadmium	46.12	5.00	50	0	92.2	75	114	0	0		
Chromium	224	10.0	200	0	112	75	125	0	0		
Cobalt	443.2	50.0	500	0.3496	88.6	75	117	0	0		
Copper	282.9	25.0	250	0	113	75	123	0	0		
Iron	11620	100	1000	8081	354	75	125	0	0		S
Lead	17.19	3.00	20	0.6679	82.6	75	125	0	0		
Manganese	772.1	15.0	500	258.2	103	75	125	0	0		
Nickel	444.5	40.0	500	0	88.9	75	120	0	0		
Selenium	7.188	5.00	10	0	71.9	75	125	0	0		S
Silver	52.41	10.0	50	0	105	75	125	0	0		
Thallium	34.56	10.0	50	0	69.1	75	125	0	0		S
Vanadium	497.7	50.0	500	0	99.5	75	125	0	0		
Zinc	480.4	20.0	500	3.488	95.4	78.5	123	0	0		

DUP	SeqNo: 2705021	PrepDate:9/19/2019	TestNo: E200.7	RunNo: 175605
	Samp ID: 190917059-002	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0	20	
Antimony	0.8856	60.0	0	0	0	0	0	0	0	20	
Arsenic	ND	10.0	0	0	0	0	0	0	0	20	
Barium	1647	200	0	0	0	0	0	1642	0.310	20	
Beryllium	0.4053	5.00	0	0	0	0	0	0.4872	0	20	
Cadmium	ND	5.00	0	0	0	0	0	0	0	20	
Calcium	47410	5000	0	0	0	0	0	46220	2.55	20	
Chromium	6.159	10.0	0	0	0	0	0	0	0	20	
Cobalt	0.2183	50.0	0	0	0	0	0	0.3496	0	20	
Copper	ND	25.0	0	0	0	0	0	0	0	20	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

DUP	SeqNo: 2705021	PrepDate:9/19/2019	TestNo: E200.7	RunNo: 175605
	Samp ID: 190917059-002	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9521	100	0	0	0	0	0	8081	16.4	20	
Lead	ND	3.00	0	0	0	0	0	0.6679	0	20	
Magnesium	14120	5000	0	0	0	0	0	13960	1.17	20	
Manganese	286.5	15.0	0	0	0	0	0	258.2	10.4	20	
Nickel	ND	40.0	0	0	0	0	0	0	0	20	
Potassium	16930	5000	0	0	0	0	0	16600	1.99	20	
Selenium	ND	5.00	0	0	0	0	0	0	0	20	
Silver	ND	10.0	0	0	0	0	0	0	0	20	
Thallium	ND	10.0	0	0	0	0	0	0	0	20	
Vanadium	ND	50.0	0	0	0	0	0	0	0	20	
Zinc	4.061	20.0	0	0	0	0	0	3.488	0	20	

DUP	SeqNo: 2705022	PrepDate:9/19/2019	TestNo: E200.7	RunNo: 175605
	Samp ID: 190917059-002	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	170800	50000	0	0	0	0	0	144600	16.7	20	

CCB	SeqNo: 2704950	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCB-1	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	9.711	200	0	0	0	0	0	0	0		
Antimony	ND	60.0	0	0	0	0	0	0	0		
Arsenic	ND	10.0	0	0	0	0	0	0	0		
Barium	0.227	200	0	0	0	0	0	0	0		
Beryllium	0.05465	5.00	0	0	0	0	0	0	0		
Boron	1.602	50.0	0	0	0	0	0	0	0		
Cadmium	0.1668	5.00	0	0	0	0	0	0	0		
Calcium	1.874	5000	0	0	0	0	0	0	0		
Chromium	3.956	10.0	0	0	0	0	0	0	0		
Cobalt	0.01242	50.0	0	0	0	0	0	0	0		
Copper	0.1174	25.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

CCB	SeqNo: 2704950	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCB-1	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	1.12	100	0	0	0	0	0	0	0		
Lead	0.5001	3.00	0	0	0	0	0	0	0		
Lithium	ND	100	0	0	0	0	0	0	0		
Magnesium	ND	5000	0	0	0	0	0	0	0		
Manganese	0.02664	15.0	0	0	0	0	0	0	0		
Molybdenum	0.02281	50.0	0	0	0	0	0	0	0		
Nickel	ND	40.0	0	0	0	0	0	0	0		
Potassium	7.736	5000	0	0	0	0	0	0	0		
Selenium	1.155	5.00	0	0	0	0	0	0	0		
Silver	1.247	10.0	0	0	0	0	0	0	0		
Sodium	ND	5000	0	0	0	0	0	0	0		
Strontium	ND	20.0	0	0	0	0	0	0	0		
Thallium	ND	10.0	0	0	0	0	0	0	0		
Tin	0.1598	50.0	0	0	0	0	0	0	0		
Titanium	ND	50.0	0	0	0	0	0	0	0		
Vanadium	6.559	50.0	0	0	0	0	0	0	0		
Zinc	0.02812	20.0	0	0	0	0	0	0	0		

CCB	SeqNo: 2704962	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCB-2	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0		
Antimony	0.3288	60.0	0	0	0	0	0	0	0		
Arsenic	0.9037	10.0	0	0	0	0	0	0	0		
Barium	ND	200	0	0	0	0	0	0	0		
Beryllium	ND	5.00	0	0	0	0	0	0	0		
Boron	2.228	50.0	0	0	0	0	0	0	0		
Cadmium	0.1721	5.00	0	0	0	0	0	0	0		
Calcium	2.811	5000	0	0	0	0	0	0	0		
Chromium	ND	10.0	0	0	0	0	0	0	0		
Cobalt	0.03195	50.0	0	0	0	0	0	0	0		
Copper	2.014	25.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

CCB	SeqNo: 2704962	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCB-2	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	0.3976	100	0	0	0	0	0	0	0		
Lead	0.948	3.00	0	0	0	0	0	0	0		
Lithium	ND	100	0	0	0	0	0	0	0		
Magnesium	ND	5000	0	0	0	0	0	0	0		
Manganese	0.05931	15.0	0	0	0	0	0	0	0		
Molybdenum	1.576	50.0	0	0	0	0	0	0	0		
Nickel	ND	40.0	0	0	0	0	0	0	0		
Potassium	12.03	5000	0	0	0	0	0	0	0		
Selenium	ND	5.00	0	0	0	0	0	0	0		
Silver	6.467	10.0	0	0	0	0	0	0	0		
Sodium	ND	5000	0	0	0	0	0	0	0		
Strontium	6.16	20.0	0	0	0	0	0	0	0		
Thallium	ND	10.0	0	0	0	0	0	0	0		
Tin	0.6483	50.0	0	0	0	0	0	0	0		
Titanium	0.3948	50.0	0	0	0	0	0	0	0		
Vanadium	0.08972	50.0	0	0	0	0	0	0	0		
Zinc	0.07216	20.0	0	0	0	0	0	0	0		

CCB	SeqNo: 2704977	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCB-3	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	15.47	200	0	0	0	0	0	0	0		
Antimony	ND	60.0	0	0	0	0	0	0	0		
Arsenic	ND	10.0	0	0	0	0	0	0	0		
Barium	0.6082	200	0	0	0	0	0	0	0		
Beryllium	ND	5.00	0	0	0	0	0	0	0		
Boron	0.686	50.0	0	0	0	0	0	0	0		
Cadmium	0.03416	5.00	0	0	0	0	0	0	0		
Calcium	6.403	5000	0	0	0	0	0	0	0		
Chromium	0.7553	10.0	0	0	0	0	0	0	0		
Cobalt	ND	50.0	0	0	0	0	0	0	0		
Copper	0.04193	25.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

CCB	SeqNo: 2704977	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCB-3	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	0.6028	100	0	0	0	0	0	0	0		
Lead	0.566	3.00	0	0	0	0	0	0	0		
Lithium	ND	100	0	0	0	0	0	0	0		
Magnesium	10.68	5000	0	0	0	0	0	0	0		
Manganese	ND	15.0	0	0	0	0	0	0	0		
Molybdenum	ND	50.0	0	0	0	0	0	0	0		
Nickel	ND	40.0	0	0	0	0	0	0	0		
Potassium	12.2	5000	0	0	0	0	0	0	0		
Selenium	ND	5.00	0	0	0	0	0	0	0		
Silver	5.876	10.0	0	0	0	0	0	0	0		
Sodium	ND	5000	0	0	0	0	0	0	0		
Strontium	ND	20.0	0	0	0	0	0	0	0		
Thallium	ND	10.0	0	0	0	0	0	0	0		
Tin	0.4074	50.0	0	0	0	0	0	0	0		
Titanium	ND	50.0	0	0	0	0	0	0	0		
Vanadium	ND	50.0	0	0	0	0	0	0	0		
Zinc	ND	20.0	0	0	0	0	0	0	0		

CCB	SeqNo: 2704992	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCB-4	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	12.67	200	0	0	0	0	0	0	0		
Antimony	0.6063	60.0	0	0	0	0	0	0	0		
Arsenic	ND	10.0	0	0	0	0	0	0	0		
Barium	0.0435	200	0	0	0	0	0	0	0		
Beryllium	ND	5.00	0	0	0	0	0	0	0		
Boron	2.02	50.0	0	0	0	0	0	0	0		
Cadmium	0.01181	5.00	0	0	0	0	0	0	0		
Calcium	5.779	5000	0	0	0	0	0	0	0		
Chromium	ND	10.0	0	0	0	0	0	0	0		
Cobalt	ND	50.0	0	0	0	0	0	0	0		
Copper	1.52	25.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

CCB	SeqNo: 2704992	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCB-4	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	0.4822	100	0	0	0	0	0	0	0		
Lead	0.4484	3.00	0	0	0	0	0	0	0		
Lithium	ND	100	0	0	0	0	0	0	0		
Magnesium	ND	5000	0	0	0	0	0	0	0		
Manganese	0.01526	15.0	0	0	0	0	0	0	0		
Molybdenum	0.5343	50.0	0	0	0	0	0	0	0		
Nickel	ND	40.0	0	0	0	0	0	0	0		
Potassium	13.49	5000	0	0	0	0	0	0	0		
Selenium	0.5131	5.00	0	0	0	0	0	0	0		
Silver	3.332	10.0	0	0	0	0	0	0	0		
Sodium	2.295	5000	0	0	0	0	0	0	0		
Strontium	10.76	20.0	0	0	0	0	0	0	0		
Thallium	ND	10.0	0	0	0	0	0	0	0		
Tin	0.9801	50.0	0	0	0	0	0	0	0		
Titanium	ND	50.0	0	0	0	0	0	0	0		
Vanadium	1.784	50.0	0	0	0	0	0	0	0		
Zinc	0.0083	20.0	0	0	0	0	0	0	0		

CCB	SeqNo: 2705004	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCB-5	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0		
Antimony	ND	60.0	0	0	0	0	0	0	0		
Arsenic	ND	10.0	0	0	0	0	0	0	0		
Barium	0.5785	200	0	0	0	0	0	0	0		
Beryllium	ND	5.00	0	0	0	0	0	0	0		
Boron	3.409	50.0	0	0	0	0	0	0	0		
Cadmium	0.1104	5.00	0	0	0	0	0	0	0		
Calcium	ND	5000	0	0	0	0	0	0	0		
Chromium	3.395	10.0	0	0	0	0	0	0	0		
Cobalt	0.09584	50.0	0	0	0	0	0	0	0		
Copper	0.1329	25.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

CCB	SeqNo: 2705004	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCB-5	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	0.3507	100	0	0	0	0	0	0	0		
Lead	0.9484	3.00	0	0	0	0	0	0	0		
Lithium	ND	100	0	0	0	0	0	0	0		
Magnesium	ND	5000	0	0	0	0	0	0	0		
Manganese	0.03504	15.0	0	0	0	0	0	0	0		
Molybdenum	1.023	50.0	0	0	0	0	0	0	0		
Nickel	0.06086	40.0	0	0	0	0	0	0	0		
Potassium	15.94	5000	0	0	0	0	0	0	0		
Selenium	ND	5.00	0	0	0	0	0	0	0		
Silver	1.822	10.0	0	0	0	0	0	0	0		
Sodium	9.908	5000	0	0	0	0	0	0	0		
Strontium	1.826	20.0	0	0	0	0	0	0	0		
Thallium	ND	10.0	0	0	0	0	0	0	0		
Tin	0.925	50.0	0	0	0	0	0	0	0		
Titanium	0.3949	50.0	0	0	0	0	0	0	0		
Vanadium	0.1331	50.0	0	0	0	0	0	0	0		
Zinc	0.06421	20.0	0	0	0	0	0	0	0		

CCB	SeqNo: 2705016	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCB-6	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	3.293	200	0	0	0	0	0	0	0		
Antimony	ND	60.0	0	0	0	0	0	0	0		
Arsenic	ND	10.0	0	0	0	0	0	0	0		
Barium	ND	200	0	0	0	0	0	0	0		
Beryllium	0.04847	5.00	0	0	0	0	0	0	0		
Boron	2.682	50.0	0	0	0	0	0	0	0		
Cadmium	0.1773	5.00	0	0	0	0	0	0	0		
Calcium	3.28	5000	0	0	0	0	0	0	0		
Chromium	ND	10.0	0	0	0	0	0	0	0		
Cobalt	0.02307	50.0	0	0	0	0	0	0	0		
Copper	ND	25.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

CCB	SeqNo: 2705016	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCB-6	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	0.4727	100	0	0	0	0	0	0	0		
Lead	ND	3.00	0	0	0	0	0	0	0		
Lithium	ND	100	0	0	0	0	0	0	0		
Magnesium	13.45	5000	0	0	0	0	0	0	0		
Manganese	0.03023	15.0	0	0	0	0	0	0	0		
Molybdenum	0.03651	50.0	0	0	0	0	0	0	0		
Nickel	ND	40.0	0	0	0	0	0	0	0		
Potassium	26.42	5000	0	0	0	0	0	0	0		
Selenium	ND	5.00	0	0	0	0	0	0	0		
Silver	ND	10.0	0	0	0	0	0	0	0		
Sodium	ND	5000	0	0	0	0	0	0	0		
Strontium	ND	20.0	0	0	0	0	0	0	0		
Thallium	ND	10.0	0	0	0	0	0	0	0		
Tin	0.3318	50.0	0	0	0	0	0	0	0		
Titanium	ND	50.0	0	0	0	0	0	0	0		
Vanadium	ND	50.0	0	0	0	0	0	0	0		
Zinc	ND	20.0	0	0	0	0	0	0	0		

CCB	SeqNo: 2705028	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCB-7	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0		
Antimony	0.1516	60.0	0	0	0	0	0	0	0		
Arsenic	2.472	10.0	0	0	0	0	0	0	0		
Barium	ND	200	0	0	0	0	0	0	0		
Beryllium	0.1957	5.00	0	0	0	0	0	0	0		
Boron	1.701	50.0	0	0	0	0	0	0	0		
Cadmium	0.2837	5.00	0	0	0	0	0	0	0		
Calcium	1.874	5000	0	0	0	0	0	0	0		
Chromium	0.1286	10.0	0	0	0	0	0	0	0		
Cobalt	0.1775	50.0	0	0	0	0	0	0	0		
Copper	ND	25.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

CCB	SeqNo: 2705028	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCB-7	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	0.606	100	0	0	0	0	0	0	0		
Lead	0.4479	3.00	0	0	0	0	0	0	0		
Lithium	ND	100	0	0	0	0	0	0	0		
Magnesium	11.96	5000	0	0	0	0	0	0	0		
Manganese	0.1566	15.0	0	0	0	0	0	0	0		
Molybdenum	1.58	50.0	0	0	0	0	0	0	0		
Nickel	0.1106	40.0	0	0	0	0	0	0	0		
Potassium	ND	5000	0	0	0	0	0	0	0		
Selenium	2.182	5.00	0	0	0	0	0	0	0		
Silver	ND	10.0	0	0	0	0	0	0	0		
Sodium	6.062	5000	0	0	0	0	0	0	0		
Strontium	ND	20.0	0	0	0	0	0	0	0		
Thallium	ND	10.0	0	0	0	0	0	0	0		
Tin	0.508	50.0	0	0	0	0	0	0	0		
Titanium	ND	50.0	0	0	0	0	0	0	0		
Vanadium	ND	50.0	0	0	0	0	0	0	0		
Zinc	0.1883	20.0	0	0	0	0	0	0	0		

CCB	SeqNo: 2705041	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCB-8	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0		
Antimony	0.02613	60.0	0	0	0	0	0	0	0		
Arsenic	ND	10.0	0	0	0	0	0	0	0		
Barium	ND	200	0	0	0	0	0	0	0		
Beryllium	0.1701	5.00	0	0	0	0	0	0	0		
Boron	1.847	50.0	0	0	0	0	0	0	0		
Cadmium	0.3717	5.00	0	0	0	0	0	0	0		
Calcium	ND	5000	0	0	0	0	0	0	0		
Chromium	1.277	10.0	0	0	0	0	0	0	0		
Cobalt	0.2626	50.0	0	0	0	0	0	0	0		
Copper	ND	25.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

CCB	SeqNo: 2705041	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCB-8	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	2.181	100	0	0	0	0	0	0	0	0	
Lead	0.8101	3.00	0	0	0	0	0	0	0	0	
Lithium	ND	100	0	0	0	0	0	0	0	0	
Magnesium	2.989	5000	0	0	0	0	0	0	0	0	
Manganese	0.2383	15.0	0	0	0	0	0	0	0	0	
Molybdenum	1.356	50.0	0	0	0	0	0	0	0	0	
Nickel	0.1744	40.0	0	0	0	0	0	0	0	0	
Potassium	ND	5000	0	0	0	0	0	0	0	0	
Selenium	ND	5.00	0	0	0	0	0	0	0	0	
Silver	ND	10.0	0	0	0	0	0	0	0	0	
Sodium	4.972	5000	0	0	0	0	0	0	0	0	
Strontium	ND	20.0	0	0	0	0	0	0	0	0	
Thallium	ND	10.0	0	0	0	0	0	0	0	0	
Tin	0.7805	50.0	0	0	0	0	0	0	0	0	
Titanium	ND	50.0	0	0	0	0	0	0	0	0	
Vanadium	ND	50.0	0	0	0	0	0	0	0	0	
Zinc	0.2538	20.0	0	0	0	0	0	0	0	0	

CCV	SeqNo: 2704949	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCV-1	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1979	200	2000	0	98.9	90	110	0	0	0	
Antimony	2019	60.0	2000	0	101	90	110	0	0	0	
Arsenic	2085	10.0	2000	0	104	90	110	0	0	0	
Barium	2063	200	2000	0	103	90	110	0	0	0	
Beryllium	2026	5.00	2000	0	101	90	110	0	0	0	
Boron	2135	50.0	2000	0	107	90	110	0	0	0	
Cadmium	2026	5.00	2000	0	101	90	110	0	0	0	
Calcium	1987	5000	2000	0	99.3	90	110	0	0	0	
Chromium	2029	10.0	2000	0	101	90	110	0	0	0	
Cobalt	1985	50.0	2000	0	99.2	90	110	0	0	0	
Copper	2090	25.0	2000	0	105	90	110	0	0	0	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

CCV	SeqNo: 2704949	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCV-1	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	2035	100	2000	0	102	90	110	0	0		
Lead	2069	3.00	2000	0	103	90	110	0	0		
Lithium	2028	100	2000	0	101	90	110	0	0		
Magnesium	1962	5000	2000	0	98.1	90	110	0	0		
Manganese	1962	15.0	2000	0	98.1	90	110	0	0		
Molybdenum	2060	50.0	2000	0	103	90	110	0	0		
Nickel	2025	40.0	2000	0	101	90	110	0	0		
Potassium	10240	5000	10000	0	102	90	110	0	0		
Selenium	1997	5.00	2000	0	99.9	90	110	0	0		
Silver	499	10.0	500	0	99.8	90	110	0	0		
Sodium	1905	5000	2000	0	95.3	90	110	0	0		
Strontium	2074	20.0	2000	0	104	90	110	0	0		
Thallium	2058	10.0	2000	0	103	90	110	0	0		
Tin	2067	50.0	2000	0	103	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	2034	50.0	2000	0	102	90	110	0	0		
Zinc	2018	20.0	2000	0	101	90	110	0	0		

CCV	SeqNo: 2704961	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCV-2	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1950	200	2000	0	97.5	90	110	0	0		
Antimony	2011	60.0	2000	0	101	90	110	0	0		
Arsenic	2082	10.0	2000	0	104	90	110	0	0		
Barium	2036	200	2000	0	102	90	110	0	0		
Beryllium	2010	5.00	2000	0	100	90	110	0	0		
Boron	2120	50.0	2000	0	106	90	110	0	0		
Cadmium	2026	5.00	2000	0	101	90	110	0	0		
Calcium	1978	5000	2000	0	98.9	90	110	0	0		
Chromium	2016	10.0	2000	0	101	90	110	0	0		
Cobalt	1986	50.0	2000	0	99.3	90	110	0	0		
Copper	2066	25.0	2000	0	103	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

CCV	SeqNo: 2704961	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCV-2	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	2020	100	2000	0	101	90	110	0	0		
Lead	2072	3.00	2000	0	104	90	110	0	0		
Lithium	2020	100	2000	0	101	90	110	0	0		
Magnesium	1918	5000	2000	0	95.9	90	110	0	0		
Manganese	1971	15.0	2000	0	98.5	90	110	0	0		
Molybdenum	2056	50.0	2000	0	103	90	110	0	0		
Nickel	2026	40.0	2000	0	101	90	110	0	0		
Potassium	9191	5000	10000	0	91.9	90	110	0	0		
Selenium	2162	5.00	2000	0	108	90	110	0	0		
Silver	492.4	10.0	500	0	98.5	90	110	0	0		
Sodium	1910	5000	2000	0	95.5	90	110	0	0		
Strontium	2066	20.0	2000	0	103	90	110	0	0		
Thallium	2048	10.0	2000	0	102	90	110	0	0		
Tin	2058	50.0	2000	0	103	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	2007	50.0	2000	0	100	90	110	0	0		
Zinc	2017	20.0	2000	0	101	90	110	0	0		

CCV	SeqNo: 2704975	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCV-3	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1872	200	2000	0	93.6	90	110	0	0		
Antimony	1923	60.0	2000	0	96.2	90	110	0	0		
Arsenic	1997	10.0	2000	0	99.9	90	110	0	0		
Barium	1916	200	2000	0	95.8	90	110	0	0		
Beryllium	1934	5.00	2000	0	96.7	90	110	0	0		
Boron	2021	50.0	2000	0	101	90	110	0	0		
Cadmium	1976	5.00	2000	0	98.8	90	110	0	0		
Calcium	1944	5000	2000	0	97.2	90	110	0	0		
Chromium	1879	10.0	2000	0	94	90	110	0	0		
Cobalt	1929	50.0	2000	0	96.5	90	110	0	0		
Copper	1946	25.0	2000	0	97.3	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

CCV	SeqNo: 2704975	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCV-3	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	1953	100	2000	0	97.6	90	110	0	0		
Lead	2018	3.00	2000	0	101	90	110	0	0		
Lithium	1914	100	2000	0	95.7	90	110	0	0		
Magnesium	2045	5000	2000	0	102	90	110	0	0		
Manganese	1922	15.0	2000	0	96.1	90	110	0	0		
Molybdenum	1985	50.0	2000	0	99.2	90	110	0	0		
Nickel	1977	40.0	2000	0	98.8	90	110	0	0		
Potassium	9418	5000	10000	0	94.2	90	110	0	0		
Selenium	2045	5.00	2000	0	102	90	110	0	0		
Silver	472.8	10.0	500	0	94.6	90	110	0	0		
Sodium	1848	5000	2000	0	92.4	90	110	0	0		
Strontium	2007	20.0	2000	0	100	90	110	0	0		
Thallium	1995	10.0	2000	0	99.7	90	110	0	0		
Tin	1986	50.0	2000	0	99.3	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	1902	50.0	2000	0	95.1	90	110	0	0		
Zinc	1957	20.0	2000	0	97.9	90	110	0	0		

CCV	SeqNo: 2704991	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCV-4	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1917	200	2000	0	95.8	90	110	0	0		
Antimony	2019	60.0	2000	0	101	90	110	0	0		
Arsenic	2092	10.0	2000	0	105	90	110	0	0		
Barium	1983	200	2000	0	99.2	90	110	0	0		
Beryllium	1993	5.00	2000	0	99.6	90	110	0	0		
Boron	2105	50.0	2000	0	105	90	110	0	0		
Cadmium	2042	5.00	2000	0	102	90	110	0	0		
Calcium	1990	5000	2000	0	99.5	90	110	0	0		
Chromium	1949	10.0	2000	0	97.4	90	110	0	0		
Cobalt	1995	50.0	2000	0	99.8	90	110	0	0		
Copper	2018	25.0	2000	0	101	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

CCV	SeqNo: 2704991	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCV-4	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	2021	100	2000	0	101	90	110	0	0		
Lead	2087	3.00	2000	0	104	90	110	0	0		
Lithium	1983	100	2000	0	99.1	90	110	0	0		
Magnesium	2122	5000	2000	0	106	90	110	0	0		
Manganese	1993	15.0	2000	0	99.6	90	110	0	0		
Molybdenum	2059	50.0	2000	0	103	90	110	0	0		
Nickel	2043	40.0	2000	0	102	90	110	0	0		
Potassium	9973	5000	10000	0	99.7	90	110	0	0		
Selenium	2148	5.00	2000	0	107	90	110	0	0		
Silver	478.3	10.0	500	0	95.7	90	110	0	0		
Sodium	1898	5000	2000	0	94.9	90	110	0	0		
Strontium	2062	20.0	2000	0	103	90	110	0	0		
Thallium	2054	10.0	2000	0	103	90	110	0	0		
Tin	2058	50.0	2000	0	103	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	1959	50.0	2000	0	98	90	110	0	0		
Zinc	2023	20.0	2000	0	101	90	110	0	0		

CCV	SeqNo: 2705003	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCV-5	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1961	200	2000	0	98	90	110	0	0		
Antimony	1964	60.0	2000	0	98.2	90	110	0	0		
Arsenic	2037	10.0	2000	0	102	90	110	0	0		
Barium	1951	200	2000	0	97.5	90	110	0	0		
Beryllium	1964	5.00	2000	0	98.2	90	110	0	0		
Boron	2055	50.0	2000	0	103	90	110	0	0		
Cadmium	2000	5.00	2000	0	100	90	110	0	0		
Calcium	1966	5000	2000	0	98.3	90	110	0	0		
Chromium	1922	10.0	2000	0	96.1	90	110	0	0		
Cobalt	1964	50.0	2000	0	98.2	90	110	0	0		
Copper	1983	25.0	2000	0	99.2	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
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S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

CCV	SeqNo: 2705003	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCV-5	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	1986	100	2000	0	99.3	90	110	0	0		
Lead	2056	3.00	2000	0	103	90	110	0	0		
Lithium	1948	100	2000	0	97.4	90	110	0	0		
Magnesium	2094	5000	2000	0	105	90	110	0	0		
Manganese	1947	15.0	2000	0	97.4	90	110	0	0		
Molybdenum	2024	50.0	2000	0	101	90	110	0	0		
Nickel	2004	40.0	2000	0	100	90	110	0	0		
Potassium	9470	5000	10000	0	94.7	90	110	0	0		
Selenium	2084	5.00	2000	0	104	90	110	0	0		
Silver	480	10.0	500	0	96	90	110	0	0		
Sodium	1896	5000	2000	0	94.8	90	110	0	0		
Strontium	2048	20.0	2000	0	102	90	110	0	0		
Thallium	2025	10.0	2000	0	101	90	110	0	0		
Tin	2031	50.0	2000	0	102	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	1948	50.0	2000	0	97.4	90	110	0	0		
Zinc	1987	20.0	2000	0	99.4	90	110	0	0		

CCV	SeqNo: 2705015	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCV-6	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1894	200	2000	0	94.7	90	110	0	0		
Antimony	1945	60.0	2000	0	97.2	90	110	0	0		
Arsenic	1991	10.0	2000	0	99.5	90	110	0	0		
Barium	1979	200	2000	0	98.9	90	110	0	0		
Beryllium	1916	5.00	2000	0	95.8	90	110	0	0		
Boron	2026	50.0	2000	0	101	90	110	0	0		
Cadmium	1948	5.00	2000	0	97.4	90	110	0	0		
Calcium	1873	5000	2000	0	93.7	90	110	0	0		
Chromium	1975	10.0	2000	0	98.7	90	110	0	0		
Cobalt	1870	50.0	2000	0	93.5	90	110	0	0		
Copper	2014	25.0	2000	0	101	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
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R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

CCV	SeqNo: 2705015	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCV-6	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	1918	100	2000	0	95.9	90	110	0	0		
Lead	1935	3.00	2000	0	96.8	90	110	0	0		
Lithium	1985	100	2000	0	99.2	90	110	0	0		
Magnesium	1860	5000	2000	0	93	90	110	0	0		
Manganese	1906	15.0	2000	0	95.3	90	110	0	0		
Molybdenum	1950	50.0	2000	0	97.5	90	110	0	0		
Nickel	1912	40.0	2000	0	95.6	90	110	0	0		
Potassium	9980	5000	10000	0	99.8	90	110	0	0		
Selenium	2013	5.00	2000	0	101	90	110	0	0		
Silver	469.2	10.0	500	0	93.8	90	110	0	0		
Sodium	1887	5000	2000	0	94.4	90	110	0	0		
Strontium	1975	20.0	2000	0	98.8	90	110	0	0		
Thallium	1925	10.0	2000	0	96.3	90	110	0	0		
Tin	1894	50.0	2000	0	94.7	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	1883	50.0	2000	0	94.2	90	110	0	0		
Zinc	1911	20.0	2000	0	95.5	90	110	0	0		

CCV	SeqNo: 2705027	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCV-7	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1934	200	2000	0	96.7	90	110	0	0		
Antimony	2002	60.0	2000	0	100	90	110	0	0		
Arsenic	2054	10.0	2000	0	103	90	110	0	0		
Barium	2025	200	2000	0	101	90	110	0	0		
Beryllium	1970	5.00	2000	0	98.5	90	110	0	0		
Boron	2088	50.0	2000	0	104	90	110	0	0		
Cadmium	1997	5.00	2000	0	99.8	90	110	0	0		
Calcium	1917	5000	2000	0	95.9	90	110	0	0		
Chromium	2011	10.0	2000	0	101	90	110	0	0		
Cobalt	1948	50.0	2000	0	97.4	90	110	0	0		
Copper	2071	25.0	2000	0	104	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
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R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

CCV	SeqNo: 2705027	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCV-7	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	1986	100	2000	0	99.3	90	110	0	0		
Lead	2017	3.00	2000	0	101	90	110	0	0		
Lithium	2003	100	2000	0	100	90	110	0	0		
Magnesium	1894	5000	2000	0	94.7	90	110	0	0		
Manganese	1962	15.0	2000	0	98.1	90	110	0	0		
Molybdenum	2010	50.0	2000	0	100	90	110	0	0		
Nickel	1974	40.0	2000	0	98.7	90	110	0	0		
Potassium	9150	5000	10000	0	91.5	90	110	0	0		
Selenium	2075	5.00	2000	0	104	90	110	0	0		
Silver	548.9	10.0	500	0	110	90	110	0	0		
Sodium	2023	5000	2000	0	101	90	110	0	0		
Strontium	2042	20.0	2000	0	102	90	110	0	0		
Thallium	2016	10.0	2000	0	101	90	110	0	0		
Tin	1963	50.0	2000	0	98.2	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	1942	50.0	2000	0	97.1	90	110	0	0		
Zinc	1963	20.0	2000	0	98.2	90	110	0	0		

CCV	SeqNo: 2705040	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCV-8	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1925	200	2000	0	96.2	90	110	0	0		
Antimony	1986	60.0	2000	0	99.3	90	110	0	0		
Arsenic	2030	10.0	2000	0	102	90	110	0	0		
Barium	1997	200	2000	0	99.8	90	110	0	0		
Beryllium	1943	5.00	2000	0	97.1	90	110	0	0		
Boron	2064	50.0	2000	0	103	90	110	0	0		
Cadmium	1988	5.00	2000	0	99.4	90	110	0	0		
Calcium	1901	5000	2000	0	95	90	110	0	0		
Chromium	1977	10.0	2000	0	98.9	90	110	0	0		
Cobalt	1927	50.0	2000	0	96.4	90	110	0	0		
Copper	2041	25.0	2000	0	102	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
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R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

CCV	SeqNo: 2705040	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CCV-8	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	1984	100	2000	0	99.2	90	110	0	0		
Lead	1998	3.00	2000	0	99.9	90	110	0	0		
Lithium	1979	100	2000	0	98.9	90	110	0	0		
Magnesium	1872	5000	2000	0	93.6	90	110	0	0		
Manganese	1950	15.0	2000	0	97.5	90	110	0	0		
Molybdenum	1995	50.0	2000	0	99.7	90	110	0	0		
Nickel	1957	40.0	2000	0	97.8	90	110	0	0		
Potassium	9973	5000	10000	0	99.7	90	110	0	0		
Selenium	2052	5.00	2000	0	103	90	110	0	0		
Silver	546.5	10.0	500	0	109	90	110	0	0		
Sodium	1960	5000	2000	0	98	90	110	0	0		
Strontium	2013	20.0	2000	0	101	90	110	0	0		
Thallium	1992	10.0	2000	0	99.6	90	110	0	0		
Tin	1944	50.0	2000	0	97.2	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	1912	50.0	2000	0	95.6	90	110	0	0		
Zinc	1948	20.0	2000	0	97.4	90	110	0	0		

CRI	SeqNo: 2704946	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CRI-1	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	12.67	200	0	0	0	50	150	0	0		
Antimony	119.1	60.0	120	0	99.2	50	150	0	0		
Arsenic	22.18	10.0	20	0	111	50	150	0	0		
Barium	ND	200	0	0	0	50	150	0	0		
Beryllium	10.05	5.00	10	0	100	50	150	0	0		
Cadmium	10.02	5.00	10	0	100	50	150	0	0		
Calcium	5.779	5000	0	0	0	50	150	0	0		
Chromium	17.83	10.0	20	0	89.2	50	150	0	0		
Cobalt	98.7	50.0	100	0	98.7	50	150	0	0		
Copper	53.94	25.0	50	0	108	50	150	0	0		
Iron	0.3788	100	0	0	0	50	150	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
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B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

CRI	SeqNo: 2704946	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CRI-1	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.604	3.00	6	0	93.4	50	150	0	0		
Magnesium	12.6	5000	0	0	0	50	150	0	0		
Manganese	29.29	15.0	30	0	97.6	50	150	0	0		
Nickel	80.54	40.0	80	0	101	50	150	0	0		
Potassium	ND	5000	0	0	0	50	150	0	0		
Selenium	11.81	5.00	10	0	118	50	150	0	0		
Silver	21.71	10.0	20	0	109	50	150	0	0		
Sodium	ND	5000	0	0	0	50	150	0	0		
Thallium	20.23	10.0	20	0	101	50	150	0	0		
Vanadium	96.78	50.0	100	0	96.8	50	150	0	0		
Zinc	41.8	20.0	40	0	105	50	150	0	0		

CRI	SeqNo: 2705037	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CRI-2	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	50	150	0	0		
Antimony	118.2	60.0	120	0	98.5	50	150	0	0		
Arsenic	19.01	10.0	20	0	95.1	50	150	0	0		
Barium	0.1718	200	0	0	0	50	150	0	0		
Beryllium	9.774	5.00	10	0	97.7	50	150	0	0		
Cadmium	10.09	5.00	10	0	101	50	150	0	0		
Calcium	0.3126	5000	0	0	0	50	150	0	0		
Chromium	17.55	10.0	20	0	87.7	50	150	0	0		
Cobalt	97.72	50.0	100	0	97.7	50	150	0	0		
Copper	48.91	25.0	50	0	97.8	50	150	0	0		
Iron	0.1744	100	0	0	0	50	150	0	0		
Lead	6.86	3.00	6	0	114	50	150	0	0		
Magnesium	ND	5000	0	0	0	50	150	0	0		
Manganese	29.48	15.0	30	0	98.3	50	150	0	0		
Nickel	79.12	40.0	80	0	98.9	50	150	0	0		
Potassium	12.52	5000	0	0	0	50	150	0	0		
Selenium	9.243	5.00	10	0	92.4	50	150	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
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B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

CRI	SeqNo: 2705037	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: CRI-2	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Silver	16.61	10.0	20	0	83	50	150	0	0		
Sodium	44.57	5000	0	0	0	50	150	0	0		
Thallium	19.72	10.0	20	0	98.6	50	150	0	0		
Vanadium	82.24	50.0	100	0	82.2	50	150	0	0		
Zinc	41.33	20.0	40	0	103	50	150	0	0		

ICB	SeqNo: 2704945	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: ICB-1	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	5.763	200	0	0	0	0	0	0	0		
Antimony	0.2779	60.0	0	0	0	0	0	0	0		
Arsenic	0.2726	10.0	0	0	0	0	0	0	0		
Barium	ND	200	0	0	0	0	0	0	0		
Beryllium	ND	5.00	0	0	0	0	0	0	0		
Cadmium	0.06435	5.00	0	0	0	0	0	0	0		
Calcium	4.06	5000	0	0	0	0	0	0	0		
Chromium	1.406	10.0	0	0	0	0	0	0	0		
Cobalt	0.07098	50.0	0	0	0	0	0	0	0		
Copper	ND	25.0	0	0	0	0	0	0	0		
Iron	0.00992	100	0	0	0	0	0	0	0		
Lead	0.3799	3.00	0	0	0	0	0	0	0		
Magnesium	ND	5000	0	0	0	0	0	0	0		
Manganese	0.0398	15.0	0	0	0	0	0	0	0		
Nickel	ND	40.0	0	0	0	0	0	0	0		
Potassium	7.09	5000	0	0	0	0	0	0	0		
Selenium	ND	5.00	0	0	0	0	0	0	0		
Silver	1.445	10.0	0	0	0	0	0	0	0		
Sodium	ND	5000	0	0	0	0	0	0	0		
Thallium	ND	10.0	0	0	0	0	0	0	0		
Vanadium	ND	50.0	0	0	0	0	0	0	0		
Zinc	0.04544	20.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
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B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

ICV	SeqNo: 2704944	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: ICV-1	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1976	200	2000	0	98.8	90	110	0	0		
Antimony	1995	60.0	2000	0	99.7	90	110	0	0		
Arsenic	2065	10.0	2000	0	103	90	110	0	0		
Barium	2063	200	2000	0	103	90	110	0	0		
Beryllium	2004	5.00	2000	0	100	90	110	0	0		
Cadmium	2003	5.00	2000	0	100	90	110	0	0		
Calcium	1960	5000	2000	0	98	90	110	0	0		
Chromium	2028	10.0	2000	0	101	90	110	0	0		
Cobalt	1961	50.0	2000	0	98.1	90	110	0	0		
Copper	2088	25.0	2000	0	104	90	110	0	0		
Iron	2007	100	2000	0	100	90	110	0	0		
Lead	2042	3.00	2000	0	102	90	110	0	0		
Magnesium	1938	5000	2000	0	96.9	90	110	0	0		
Manganese	1937	15.0	2000	0	96.8	90	110	0	0		
Nickel	2002	40.0	2000	0	100	90	110	0	0		
Potassium	9643	5000	10000	0	96.4	90	110	0	0		
Selenium	1980	5.00	2000	0	99	90	110	0	0		
Silver	499.2	10.0	500	0	99.8	90	110	0	0		
Sodium	1975	5000	2000	0	98.8	90	110	0	0		
Thallium	2042	10.0	2000	0	102	90	110	0	0		
Vanadium	2007	50.0	2000	0	100	90	110	0	0		
Zinc	1998	20.0	2000	0	99.9	90	110	0	0		

ICSA	SeqNo: 2704947	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: ICSA-1	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	493600	200	500000	0	98.7	80	120	0	0		
Antimony	ND	60.0	0	0	0	80	120	0	0		
Arsenic	ND	10.0	0	0	0	80	120	0	0		
Barium	2.755	200	0	0	0	80	120	0	0		
Beryllium	2.268	5.00	0	0	0	80	120	0	0		
Cadmium	ND	5.00	0	0	0	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

ICSA	SeqNo: 2704947	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: ICSA-1	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	423100	5000	500000	0	84.6	80	120	0	0		
Chromium	ND	10.0	0	0	0	80	120	0	0		
Cobalt	0.1278	50.0	0	0	0	80	120	0	0		
Copper	ND	25.0	0	0	0	80	120	0	0		
Iron	121300	100	200000	0	60.6	80	120	0	0		S
Lead	ND	3.00	0	0	0	80	120	0	0		
Magnesium	520100	5000	500000	0	104	80	120	0	0		
Manganese	ND	15.0	0	0	0	80	120	0	0		
Nickel	ND	40.0	0	0	0	80	120	0	0		
Potassium	1.168	5000	0	0	0	80	120	0	0		
Selenium	ND	5.00	0	0	0	80	120	0	0		
Silver	ND	10.0	0	0	0	80	120	0	0		
Sodium	ND	5000	0	0	0	80	120	0	0		
Thallium	ND	10.0	0	0	0	80	120	0	0		
Vanadium	ND	50.0	0	0	0	80	120	0	0		
Zinc	ND	20.0	0	0	0	80	120	0	0		

ICSA	SeqNo: 2705038	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: ICSA-2	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	478900	200	500000	0	95.8	80	120	0	0		
Antimony	ND	60.0	0	0	0	80	120	0	0		
Arsenic	ND	10.0	0	0	0	80	120	0	0		
Barium	0.2824	200	0	0	0	80	120	0	0		
Beryllium	2.1	5.00	0	0	0	80	120	0	0		
Cadmium	ND	5.00	0	0	0	80	120	0	0		
Calcium	407500	5000	500000	0	81.5	80	120	0	0		
Chromium	ND	10.0	0	0	0	80	120	0	0		
Cobalt	0.1313	50.0	0	0	0	80	120	0	0		
Copper	ND	25.0	0	0	0	80	120	0	0		
Iron	117500	100	200000	0	58.8	80	120	0	0		S
Lead	ND	3.00	0	0	0	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
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R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

ICSA	SeqNo: 2705038	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: ICSA-2	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Magnesium	502300	5000	500000	0	100	80	120	0	0		
Manganese	ND	15.0	0	0	0	80	120	0	0		
Nickel	ND	40.0	0	0	0	80	120	0	0		
Potassium	2.947	5000	0	0	0	80	120	0	0		
Selenium	ND	5.00	0	0	0	80	120	0	0		
Silver	ND	10.0	0	0	0	80	120	0	0		
Sodium	40.75	5000	0	0	0	80	120	0	0		
Thallium	ND	10.0	0	0	0	80	120	0	0		
Vanadium	ND	50.0	0	0	0	80	120	0	0		
Zinc	ND	20.0	0	0	0	80	120	0	0		

ICSAB	SeqNo: 2704948	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: ICSAB-1	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	485000	200	500000	0	97	80	120	0	0		
Antimony	2.288	60.0	0	0	0	80	120	0	0		
Arsenic	ND	10.0	0	0	0	80	120	0	0		
Barium	499.3	200	500	0	99.9	80	120	0	0		
Beryllium	480.8	5.00	500	0	96.2	80	120	0	0		
Cadmium	862.3	5.00	1000	0	86.2	80	120	0	0		
Calcium	414500	5000	500000	0	82.9	80	120	0	0		
Chromium	528	10.0	500	0	106	80	120	0	0		
Cobalt	452.2	50.0	500	0	90.4	80	120	0	0		
Copper	559.1	25.0	500	0	112	80	120	0	0		
Iron	119500	100	200000	0	59.7	80	120	0	0		S
Lead	822.3	3.00	1000	0	82.2	80	120	0	0		
Magnesium	511400	5000	500000	0	102	80	120	0	0		
Manganese	473.9	15.0	500	0	94.8	80	120	0	0		
Nickel	813.6	40.0	1000	0	81.4	80	120	0	0		
Potassium	6.168	5000	0	0	0	80	120	0	0		
Selenium	ND	5.00	0	0	0	80	120	0	0		
Silver	1038	10.0	1000	0	104	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
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B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 75695

ICSAB	SeqNo: 2704948	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: ICSAB-1	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	ND	5000	0	0	0	80	120	0	0		
Thallium	ND	10.0	0	0	0	80	120	0	0		
Vanadium	452.2	50.0	500	0	90.4	80	120	0	0		
Zinc	820.6	20.0	1000	0	82.1	80	120	0	0		

ICSAB	SeqNo: 2705039	PrepDate:	TestNo: E200.7	RunNo: 175605
	Samp ID: ICSAB-2	PrepRef:	Units: µg/L	Analysis Date: 9/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	478900	200	500000	0	95.8	80	120	0	0		
Antimony	0.8727	60.0	0	0	0	80	120	0	0		
Arsenic	ND	10.0	0	0	0	80	120	0	0		
Barium	490	200	500	0	98	80	120	0	0		
Beryllium	469.3	5.00	500	0	93.9	80	120	0	0		
Cadmium	867.8	5.00	1000	0	86.8	80	120	0	0		
Calcium	406400	5000	500000	0	81.3	80	120	0	0		
Chromium	583.9	10.0	500	0	117	80	120	0	0		
Cobalt	435.9	50.0	500	0	87.2	80	120	0	0		
Copper	551.3	25.0	500	0	110	80	120	0	0		
Iron	117200	100	200000	0	58.6	80	120	0	0		S
Lead	989.6	3.00	1000	0	99	80	120	0	0		
Magnesium	499500	5000	500000	0	99.9	80	120	0	0		
Manganese	469.6	15.0	500	0	93.9	80	120	0	0		
Nickel	1034	40.0	1000	0	103	80	120	0	0		
Potassium	11.48	5000	0	0	0	80	120	0	0		
Selenium	ND	5.00	0	0	0	80	120	0	0		
Silver	1145	10.0	1000	0	114	80	120	0	0		
Sodium	64.69	5000	0	0	0	80	120	0	0		
Thallium	ND	10.0	0	0	0	80	120	0	0		
Vanadium	434.1	50.0	500	0	86.8	80	120	0	0		
Zinc	813.7	20.0	1000	0	81.4	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
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B - Analyte detected in the associated Method Blank

Test Code: CLPHG

Test Number: E245.1

Test Name: Mercury

Matrix: Water **Units:** µg/L

**METHOD DETECTION /
REPORTING LIMITS**

Updated: 12-Dec-18

Type	Analyte	MDL	PQL
A	Mercury	0.1	0.2

Test Code: CLPW

Test Number: E200.7

Test Name: ICP Metals Water

Matrix: Water Units: µg/L

**METHOD DETECTION /
REPORTING LIMITS**

Updated: 03-Sep-19

Type	Analyte	MDL	PQL
A	Aluminum	29.4	200
A	Antimony	6.7	60
A	Arsenic	5.3	10
A	Barium	4.8	200
A	Beryllium	1	5
A	Boron	8.6	50
A	Cadmium	1	5
A	Calcium	24.5	5000
A	Chromium	4	10
A	Cobalt	1	50
A	Copper	2.1	25
A	Iron	11.1	100
A	Lead	2.8	3
A	Lithium	40.7	100
A	Magnesium	34.7	5000
A	Manganese	3	15
A	Molybdenum	3.5	50
A	Nickel	2.7	40
A	Potassium	19	5000
A	Selenium	3.5	5
A	Silver	8	10
A	Sodium	185	5000
A	Strontium	10.2	20
A	Thallium	5.1	10
A	Tin	2.6	50
A	Titanium	0	50
A	Vanadium	8	50
A	Zinc	4.6	20

9/20/2019 9:52:51 AM HG3-D-23

Seq. No.	70	AS Loc:	1	Date:	9/19/2019			
Sample ID:	Blank							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[0.00] µg/L		0.0002	0.0015		0.0002		4:08:00PM
	[0.00] µg/L		0.0001	0.0006		0.0001		4:08:30PM
Mean:	[0.00] µg/L		0.0002	0.0011		0.0002		
SD:	0.00 µg/L							
%RSD:	48.49							

Seq. No.	71	AS Loc:	2	Date:	9/19/2019			
Sample ID:	0.2ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[0.200] µg/L		0.0033	0.0150		0.0034		4:09:40PM
	[0.200] µg/L		0.0033	0.0141		0.0035		4:10:10PM
Mean:	[0.200] µg/L		0.0033	0.0146		0.0034		
SD:	0.00 µg/L							
%RSD:	0.69							

Seq. No.	72	AS Loc:	3	Date:	9/19/2019			
Sample ID:	0.5ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[0.500] µg/L		0.0074	0.0317		0.0076		4:11:21PM
	[0.500] µg/L		0.0074	0.0314		0.0076		4:11:51PM
Mean:	[0.500] µg/L		0.0074	0.0316		0.0076		
SD:	0.00 µg/L							
%RSD:	0.05							

Seq. No.	73	AS Loc:	4	Date:	9/19/2019			
Sample ID:	1.00ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[1.000] µg/L		0.0129	0.0538		0.0131		4:13:03PM
	[1.000] µg/L		0.0129	0.0535		0.0131		4:13:33PM
Mean:	[1.000] µg/L		0.0129	0.0537		0.0131		
SD:	0.00 µg/L							
%RSD:	0.01							

Seq. No.	74	AS Loc:	5	Date:	9/19/2019			
Sample ID:	2.00ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[2.000] µg/L		0.0255	0.1050		0.0256		4:14:45PM
	[2.000] µg/L		0.0257	0.1060		0.0259		4:15:15PM
Mean:	[2.000] µg/L		0.0256	0.1055		0.0258		
SD:	0.00 µg/L							
%RSD:	0.79							

Seq. No.	75	AS Loc:	6	Date:	9/19/2019			
Sample ID:	5.00ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[5.000] µg/L		0.0629	0.2657		0.0630		4:16:26PM
	[5.000] µg/L		0.0617	0.2622		0.0619		4:16:56PM
Mean:	[5.000] µg/L		0.0623	0.2640		0.0624		
SD:	0.00 µg/L							
%RSD:	1.33							

Seq. No.	76	AS Loc:	7	Date:	9/19/2019			
Sample ID:	10.00ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[10.000] µg/L		0.1205	0.5063		0.1206		4:18:06PM
	[10.000] µg/L		0.1188	0.4989		0.1189		4:18:36PM
Mean:	[10.000] µg/L		0.1196	0.5026		0.1198		
SD:	0.00 µg/L							
%RSD:	1.00							

Seq. No.	77	AS Loc:	5	Date:	9/19/2019			
Sample ID:	ICV							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
		9/19/2019 4:20:20PM	All analyte(s) passed QC.					
	2.029 µg/L	2.029 µg/L	0.0254	0.1046		0.0255		4:19:47PM
	2.014 µg/L	2.014 µg/L	0.0252	0.1025		0.0253		4:20:17PM
Mean:	2.022 µg/L	2.022 µg/L	0.0253	0.1035		0.0254		
SD:	0.0105 µg/L	µg/L						
%RSD:	0.52							

9/19/2019 4:20:20PM QC value within limits for Hg 253.7 Recovery = 101.08%

Seq. No.	78	AS Loc:	1	Date:	9/19/2019				
Sample ID:	ICB								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7	9/19/2019 4:22:01PM All analyte(s) passed QC.								
	-0.0968 µg/L	-0.0968 µg/L	0.0000	0.0003		0.0002		4:21:29PM	
	-0.0908 µg/L	-0.0908 µg/L	0.0001	0.0009		0.0002		4:21:59PM	
Mean:	-0.0938 µg/L	-0.0938 µg/L	0.0000	0.0006		0.0002			
SD:	0.00422 µg/L		µg/L						
%RSD:	4.50								

9/19/2019 4:22:01PM QC value within limits for Hg 253.7 Recovery = Not calculated

Seq. No.	79	AS Loc:	52	Date:	9/19/2019				
Sample ID:	MB-75687								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7									
	-0.0937 µg/L	-0.0937 µg/L	0.0000	0.0012		0.0002		4:23:09PM	
	-0.1004 µg/L	-0.1004 µg/L	-0.0001	0.0001		0.0001		4:23:39PM	
Mean:	-0.0971 µg/L	-0.0971 µg/L	0.0000	0.0007		0.0001			
SD:	0.00475 µg/L	0.00475 µg/L							
%RSD:	4.90								

Seq. No.	80	AS Loc:		53	Date:	9/19/2019			
Sample ID:	LCS-75687								
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7									
	2.150 µg/L	2.150 µg/L		0.0268	0.1098		0.0270		4:24:51PM
	2.093 µg/L	2.093 µg/L		0.0261	0.1057		0.0263		4:25:21PM
Mean:	2.121 µg/L	2.121 µg/L		0.0265	0.1078		0.0266		
SD:	0.0403 µg/L	0.0403 µg/L							
%RSD:	1.90								

Seq. No.	81	AS Loc:	54	Date:	9/19/2019				
Sample ID:	190913042-001F								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7									
	0.0678 µg/L	0.0678 µg/L	0.0019	0.0082		0.0021		4:26:32PM	
	0.0634 µg/L	0.0634 µg/L	0.0019	0.0078		0.0021		4:27:02PM	
Mean:	0.0656 µg/L	0.0656 µg/L	0.0019	0.0080		0.0021			
SD:	0.00309 µg/L	0.00309 µg/L							
%RSD:	4.71								

Seq. No.	82	AS Loc:	55	Date:	9/19/2019			
Sample ID:	190913042-001FDP							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.0574 µg/L	0.0574 µg/L	0.0018	0.0079		0.0020		4:28:13PM
	0.0578 µg/L	0.0578 µg/L	0.0018	0.0083		0.0020		4:28:44PM
Mean:	0.0576 µg/L	0.0576 µg/L	0.0018	0.0081		0.0020		
SD:	0.00030 µg/L	0.00030 µg/L						
%RSD:	0.53							

Seq. No.	86	AS Loc:	59	Date:	9/19/2019			
Sample ID:	190913042-004F							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.0522 µg/L	0.0522 µg/L	0.0018	0.0075		0.0019		4:35:01PM
	0.0505 µg/L	0.0505 µg/L	0.0017	0.0077		0.0019		4:35:31PM
Mean:	0.0514 µg/L	0.0514 µg/L	0.0018	0.0076		0.0019		
SD:	0.00124 µg/L	0.00124 µg/L						
%RSD:	2.41							

Seq. No.	87	AS Loc:	60	Date:	9/19/2019			
Sample ID:	MB-75688							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	-0.1034 µg/L	-0.1034 µg/L	-0.0001	-0.0001		0.0001		4:36:43PM
	-0.0984 µg/L	-0.0984 µg/L	0.0000	0.0008		0.0001		4:37:13PM
Mean:	-0.1009 µg/L	-0.1009 µg/L	-0.0001	0.0003		0.0001		
SD:	0.00358 µg/L	0.00358 µg/L						
%RSD:	3.55							

Seq. No.	88	AS Loc:	61	Date:	9/19/2019			
Sample ID:	LCS-75688							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	2.011 µg/L	2.011 µg/L	0.0251	0.1023		0.0253		4:38:25PM
	1.993 µg/L	1.993 µg/L	0.0249	0.1020		0.0251		4:38:55PM
Mean:	2.002 µg/L	2.002 µg/L	0.0250	0.1021		0.0252		
SD:	0.0130 µg/L	0.0130 µg/L						
%RSD:	0.65							

Seq. No.	89	AS Loc:	5	Date:	9/19/2019			
Sample ID:	CCV							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	9/19/2019 4:40:41PM All analyte(s) passed QC.							
	1.983 µg/L	1.983 µg/L	0.0248	0.1029		0.0250		4:40:08PM
	1.995 µg/L	1.995 µg/L	0.0249	0.1023		0.0251		4:40:38PM
Mean:	1.989 µg/L	1.989 µg/L	0.0249	0.1026		0.0250		
SD:	0.0085 µg/L	µg/L						
%RSD:	0.43							

9/19/2019 4:40:41PM QC value within limits for Hg 253.7 Recovery = 99.45%

Seq. No.	90	AS Loc:	1	Date:	9/19/2019				
Sample ID:	CCB								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7	9/19/2019 4:42:22PM All analyte(s) passed QC.								
	-0.0992 µg/L	-0.0992 µg/L	0.0000	0.0002		0.0001		4:41:49PM	
	-0.1039 µg/L	-0.1039 µg/L	-0.0001	-0.0005		0.0001		4:42:20PM	
Mean:	-0.1016 µg/L	-0.1016 µg/L	-0.0001	-0.0001		0.0001			
SD:	0.00336 µg/L		µg/L						
%RSD:	3.30								

9/19/2019 4:42:22PM QC value within limits for Hg 253.7 Recovery = Not calculated

Seq. No.	91	AS Loc:	62	Date:	9/19/2019				
Sample ID:	190917015-001F								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7									
	-0.0143 µg/L	-0.0143 µg/L	0.0010	0.0042		0.0011		4:43:30PM	
	-0.0124 µg/L	-0.0124 µg/L	0.0010	0.0041		0.0012		4:44:00PM	
Mean:	-0.0133 µg/L	-0.0133 µg/L	0.0010	0.0042		0.0011			
SD:	0.00130 µg/L	0.00130 µg/L							
%RSD:	9.75								

Seq. No.	92	AS Loc:	63	Date:	9/19/2019				
Sample ID:	190917015-002F								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7									
	0.0027 µg/L	0.0027 µg/L	0.0012	0.0051		0.0013		4:45:12PM	
	0.0006 µg/L	0.0006 µg/L	0.0011	0.0054		0.0013		4:45:42PM	
Mean:	0.0016 µg/L	0.0016 µg/L	0.0012	0.0053		0.0013			
SD:	0.00148 µg/L	0.00148 µg/L							
%RSD:	91.54								

Seq. No.	93	AS Loc:	64	Date:	9/19/2019				
Sample ID:	190917015-003F								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7									
	-0.0087 µg/L	-0.0087 µg/L	0.0010	0.0039		0.0012		4:46:54PM	
	-0.0004 µg/L	-0.0004 µg/L	0.0011	0.0053		0.0013		4:47:24PM	
Mean:	-0.0046 µg/L	-0.0046 µg/L	0.0011	0.0046		0.0013			
SD:	0.00591 µg/L	0.00591 µg/L							
%RSD:	129.32								

Seq. No.	94	AS Loc:	65	Date:	9/19/2019			
Sample ID:	190917015-004F							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	-0.0013 µg/L	-0.0013 µg/L	0.0011	0.0044		0.0013		4:48:36PM
	0.0059 µg/L	0.0059 µg/L	0.0012	0.0054		0.0014		4:49:06PM
Mean:	0.0023 µg/L	0.0023 µg/L	0.0012	0.0049		0.0013		
SD:	0.00505 µg/L	0.00505 µg/L						
%RSD:	220.81							

Seq. No.	95	AS Loc:	66	Date:	9/19/2019			
Sample ID:	190917015-006F							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.0073 µg/L	0.0073 µg/L	0.0012	0.0058		0.0014		4:50:18PM
	-0.0041 µg/L	-0.0041 µg/L	0.0011	0.0043		0.0013		4:50:48PM
Mean:	0.0016 µg/L	0.0016 µg/L	0.0012	0.0050		0.0013		
SD:	0.00806 µg/L	0.00806 µg/L						
%RSD:	516.48							

Seq. No.	96	AS Loc:	67	Date:	9/19/2019			
Sample ID:	190917015-006FDP							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.0020 µg/L	0.0020 µg/L	0.0012	0.0040		0.0013		4:52:00PM
	0.0093 µg/L	0.0093 µg/L	0.0013	0.0069		0.0014		4:52:30PM
Mean:	0.0057 µg/L	0.0057 µg/L	0.0012	0.0055		0.0014		
SD:	0.00514 µg/L	0.00514 µg/L						
%RSD:	90.89							

Seq. No.	97	AS Loc:	68	Date:	9/19/2019			
Sample ID:	190917015-006FMS							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	1.997 µg/L	1.997 µg/L	0.0250	0.1003		0.0251		4:53:42PM
	1.970 µg/L	1.970 µg/L	0.0246	0.0991		0.0248		4:54:12PM
Mean:	1.983 µg/L	1.983 µg/L	0.0248	0.0997		0.0250		
SD:	0.0190 µg/L	0.0190 µg/L						
%RSD:	0.96							

Seq. No.	98	AS Loc:	69	Date:	9/19/2019			
Sample ID:	190917015-007F							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	-0.0394 µg/L	-0.0394 µg/L	0.0007	0.0044		0.0008		4:55:24PM
	-0.0392 µg/L	-0.0392 µg/L	0.0007	0.0028		0.0008		4:55:54PM
Mean:	-0.0393 µg/L	-0.0393 µg/L	0.0007	0.0036		0.0008		
SD:	0.00013 µg/L	0.00013 µg/L						
%RSD:	0.33							

Seq. No.	99	AS Loc:	70	Date:	9/19/2019			
Sample ID:	190917015-008F							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	-0.0007 µg/L	-0.0007 µg/L	0.0011	0.0050		0.0013		4:57:06PM
	-0.0028 µg/L	-0.0028 µg/L	0.0011	0.0053		0.0013		4:57:36PM
Mean:	-0.0017 µg/L	-0.0017 µg/L	0.0011	0.0052		0.0013		
SD:	0.00154 µg/L	0.00154 µg/L						
%RSD:	88.19							

Seq. No.	100	AS Loc:	71	Date:	9/19/2019			
Sample ID:	190917015-010F							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	-0.0433 µg/L	-0.0433 µg/L	0.0006	0.0041		0.0008		4:58:48PM
	-0.0431 µg/L	-0.0431 µg/L	0.0006	0.0032		0.0008		4:59:19PM
Mean:	-0.0432 µg/L	-0.0432 µg/L	0.0006	0.0036		0.0008		
SD:	0.00013 µg/L	0.00013 µg/L						
%RSD:	0.30							

Seq. No.	101	AS Loc:	5	Date:	9/19/2019			
Sample ID:	CCV							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
		9/19/2019 5:01:04PM	All analyte(s) passed QC.					
	1.960 µg/L	1.960 µg/L	0.0245	0.1008		0.0247		5:00:31PM
	1.986 µg/L	1.986 µg/L	0.0248	0.1018		0.0250		5:01:01PM
Mean:	1.973 µg/L	1.973 µg/L	0.0247	0.1013		0.0248		
SD:	0.0184 µg/L	µg/L						
%RSD:	0.93							

9/19/2019 5:01:04PM QC value within limits for Hg 253.7 Recovery = 98.64%

Seq. No.	102	AS Loc:	1	Date:	9/19/2019				
Sample ID:	CCB								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7	9/19/2019	5:02:45PM	All analyte(s) passed QC.						
	-0.1016 µg/L	-0.1016 µg/L	-0.0001	-0.0002		0.0001		5:02:12PM	
	-0.0999 µg/L	-0.0999 µg/L	-0.0001	0.0001		0.0001		5:02:43PM	
Mean:	-0.1007 µg/L	-0.1007 µg/L	-0.0001	-0.0001		0.0001			
SD:	0.00117 µg/L		µg/L						
%RSD:	1.16								

9/19/2019 5:02:45PM QC value within limits for Hg 253.7 Recovery = Not calculated

Seq. No.	103	AS Loc:	72	Date:	9/19/2019				
Sample ID:	190917015-011F								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7									
	-0.0172 µg/L	-0.0172 µg/L	0.0009	0.0040		0.0011		5:03:54PM	
	-0.0180 µg/L	-0.0180 µg/L	0.0009	0.0037		0.0011		5:04:24PM	
Mean:	-0.0176 µg/L	-0.0176 µg/L	0.0009	0.0038		0.0011			
SD:	0.00060 µg/L	0.00060 µg/L							
%RSD:	3.43								

Seq. No.	104		AS Loc:	73		Date:	9/19/2019		
Sample ID:	190917015-012F								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance		Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7									
	-0.0168 µg/L	-0.0168 µg/L	0.0009		0.0038		0.0011		5:05:37PM
	-0.0197 µg/L	-0.0197 µg/L	0.0009		0.0040		0.0011		5:06:07PM
Mean:	-0.0182 µg/L	-0.0182 µg/L	0.0009		0.0039		0.0011		
SD:	0.00208 µg/L	0.00208 µg/L							
%RSD:	11.42								

Seq. No.	105	AS Loc:	74	Date:	9/19/2019				
Sample ID:	190917015-013F								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7									
	-0.0226 µg/L	-0.0226 µg/L	0.0009	0.0036		0.0010		5:07:20PM	
	-0.0146 µg/L	-0.0146 µg/L	0.0010	0.0041		0.0011		5:07:50PM	
Mean:	-0.0186 µg/L	-0.0186 µg/L	0.0009	0.0038		0.0011			
SD:	0.00560 µg/L	0.00560 µg/L							
%RSD:	30.14								

Seq. No.	106	AS Loc:	75	Date:	9/19/2019			
Sample ID:	MB-75689							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	-0.1001 µg/L	-0.1001 µg/L	-0.0001	0.0001		0.0001		5:09:02PM
	-0.1079 µg/L	-0.1079 µg/L	-0.0001	-0.0010		0.0000		5:09:33PM
Mean:	-0.1040 µg/L	-0.1040 µg/L	-0.0001	-0.0005		0.0001		
SD:	0.00551 µg/L	0.00551 µg/L						
%RSD:	5.30							

Seq. No.	107	AS Loc:	76	Date:	9/19/2019			
Sample ID:	LCS-75689							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	1.931 µg/L	1.931 µg/L	0.0242	0.0996		0.0243		5:10:45PM
	1.903 µg/L	1.903 µg/L	0.0239	0.0980		0.0240		5:11:15PM
Mean:	1.917 µg/L	1.917 µg/L	0.0240	0.0988		0.0242		
SD:	0.0194 µg/L	0.0194 µg/L						
%RSD:	1.01							

Seq. No.	108	AS Loc:	77	Date:	9/19/2019			
Sample ID:	190917059-001A							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	-0.0164 µg/L	-0.0164 µg/L	0.0009	0.0047		0.0011		5:12:27PM
	-0.0143 µg/L	-0.0143 µg/L	0.0010	0.0044		0.0011		5:12:57PM
Mean:	-0.0154 µg/L	-0.0154 µg/L	0.0010	0.0046		0.0011		
SD:	0.00150 µg/L	0.00150 µg/L						
%RSD:	9.74							

Seq. No.	109	AS Loc:	78	Date:	9/19/2019			
Sample ID:	190917059-002A							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	-0.0178 µg/L	-0.0178 µg/L	0.0009	0.0044		0.0011		5:14:09PM
	-0.0201 µg/L	-0.0201 µg/L	0.0009	0.0039		0.0011		5:14:40PM
Mean:	-0.0189 µg/L	-0.0189 µg/L	0.0009	0.0041		0.0011		
SD:	0.00162 µg/L	0.00162 µg/L						
%RSD:	8.55							

Seq. No.	110	AS Loc:	79	Date:	9/19/2019			
Sample ID:	190917059-002ADP							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	-0.0182 µg/L	-0.0182 µg/L	0.0009	0.0045		0.0011		5:15:52PM
	-0.0202 µg/L	-0.0202 µg/L	0.0009	0.0041		0.0011		5:16:22PM
Mean:	-0.0192 µg/L	-0.0192 µg/L	0.0009	0.0043		0.0011		
SD:	0.00140 µg/L	0.00140 µg/L						
%RSD:	7.31							

Seq. No.	111	AS Loc:	80	Date:	9/19/2019			
Sample ID:	190917059-002AMS							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	1.810 µg/L	1.810 µg/L	0.0227	0.0913		0.0229		5:17:34PM
	1.816 µg/L	1.816 µg/L	0.0228	0.0933		0.0230		5:18:04PM
Mean:	1.813 µg/L	1.813 µg/L	0.0228	0.0923		0.0229		
SD:	0.0045 µg/L	0.0045 µg/L						
%RSD:	0.25							

Seq. No.	112	AS Loc:	5	Date:	9/19/2019			
Sample ID:	CCV							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
		9/19/2019 5:19:49PM	All analyte(s) passed QC.					
	1.940 µg/L	1.940 µg/L	0.0243	0.1009		0.0245		5:19:17PM
	1.956 µg/L	1.956 µg/L	0.0245	0.1010		0.0246		5:19:47PM
Mean:	1.948 µg/L	1.948 µg/L	0.0244	0.1010		0.0246		
SD:	0.0112 µg/L	µg/L						
%RSD:	0.58							

9/19/2019 5:19:49PM QC value within limits for Hg 253.7 Recovery = 97.42%

Seq. No.	113	AS Loc:	1	Date:	9/19/2019			
Sample ID:	CCB							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
		9/19/2019 5:21:31PM	All analyte(s) passed QC.					
	-0.1038 µg/L	-0.1038 µg/L	-0.0001	0.0000		0.0001		5:20:58PM
	-0.0999 µg/L	-0.0999 µg/L	-0.0001	-0.0001		0.0001		5:21:28PM
Mean:	-0.1018 µg/L	-0.1018 µg/L	-0.0001	-0.0001		0.0001		
SD:	0.00277 µg/L	µg/L						
%RSD:	2.72							

9/19/2019 5:21:31PM QC value within limits for Hg 253.7 Recovery = Not calculated

Seq. No.	114	AS Loc:		5	Date:		9/19/2019			
Sample ID:	ICV									
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance		Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7	9/19/2019 5:56:18PM All analyte(s) passed QC.									
	1.819	µg/L	1.819	µg/L	0.0228	0.0984		0.0230		5:55:45PM
	1.817	µg/L	1.817	µg/L	0.0228	0.0983		0.0230		5:56:15PM
Mean:	1.818	µg/L	1.818	µg/L	0.0228	0.0983		0.0230		
SD:	0.0014	µg/L		µg/L						
%RSD:	0.08									

9/19/2019 5:56:18PM QC value within limits for Hg 253.7 Recovery = 90.90%

Seq. No.	115	AS Loc:	1	Date:	9/19/2019			
Sample ID:	ICB							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7	9/19/2019 5:57:59PM All analyte(s) passed QC.							
	-0.0979 µg/L	-0.0979 µg/L	0.0000	0.0006		0.0001		5:57:26PM
	-0.0981 µg/L	-0.0981 µg/L	0.0000	0.0011		0.0001		5:57:57PM
Mean:	-0.0980 µg/L	-0.0980 µg/L	0.0000	0.0009		0.0001		
SD:	0.00010 µg/L	µg/L						
%RSD:	0.10							

9/19/2019 5:57:59PM QC value within limits for Hg 253.7 Recovery = Not calculated

Seq. No.	116		AS Loc:	81		Date:	9/19/2019			
Sample ID:	190917059-003A									
Analyte	Conc (Calib)		Conc (Sample)		Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7										
	0.0343	µg/L	0.0343	µg/L	0.0016	0.0074		0.0017		5:59:07PM
	0.0360	µg/L	0.0360	µg/L	0.0016	0.0079		0.0017		5:59:37PM
Mean:	0.0352	µg/L	0.0352	µg/L	0.0016	0.0077		0.0017		
SD:	0.00118	µg/L	0.00118	µg/L						
%RSD:	3.37									

Seq. No.	117		AS Loc:	82		Date:	9/19/2019		
Sample ID:	190917059-004A								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance		Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7									
	0.0303 µg/L	0.0303 µg/L	0.0015		0.0075		0.0017		6:00:49PM
	0.0236 µg/L	0.0236 µg/L	0.0014		0.0071		0.0016		6:01:20PM
Mean:	0.0269 µg/L	0.0269 µg/L	0.0015		0.0073		0.0016		
SD:	0.00478 µg/L	0.00478 µg/L							
%RSD:	17.75								

Seq. No.	118	AS Loc:	83	Date:	9/19/2019			
Sample ID:	190917059-005A							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.0112 µg/L	0.0112 µg/L	0.0013	0.0063		0.0014		6:02:32PM
	0.0082 µg/L	0.0082 µg/L	0.0012	0.0059		0.0014		6:03:02PM
Mean:	0.0097 µg/L	0.0097 µg/L	0.0013	0.0061		0.0014		
SD:	0.00210 µg/L	0.00210 µg/L						
%RSD:	21.68							

Seq. No.	119	AS Loc:	84	Date:	9/19/2019			
Sample ID:	190917059-006A							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.0050 µg/L	0.0050 µg/L	0.0012	0.0060		0.0014		6:04:14PM
	0.0000 µg/L	0.0000 µg/L	0.0011	0.0059		0.0013		6:04:45PM
Mean:	0.0025 µg/L	0.0025 µg/L	0.0012	0.0059		0.0013		
SD:	0.00353 µg/L	0.00353 µg/L						
%RSD:	140.11							

Seq. No.	126	AS Loc:	5	Date:	9/19/2019			
Sample ID:	CCV							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
		9/19/2019 6:16:46PM	All analyte(s) passed QC.					
	1.889 µg/L	1.889 µg/L	0.0237	0.1000		0.0238		6:16:13PM
	1.902 µg/L	1.902 µg/L	0.0238	0.1000		0.0240		6:16:43PM
Mean:	1.895 µg/L	1.895 µg/L	0.0238	0.1000		0.0239		
SD:	0.0095 µg/L	µg/L						
%RSD:	0.50							

9/19/2019 6:16:46PM QC value within limits for Hg 253.7 Recovery = 94.77%

Seq. No.	127	AS Loc:	1	Date:	9/19/2019			
Sample ID:	CCB							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
		9/19/2019 6:18:27PM	All analyte(s) passed QC.					
	-0.1004 µg/L	-0.1004 µg/L	-0.0001	0.0007		0.0001		6:17:54PM
	-0.0995 µg/L	-0.0995 µg/L	0.0000	0.0005		0.0001		6:18:24PM
Mean:	-0.1000 µg/L	-0.1000 µg/L	-0.0001	0.0006		0.0001		
SD:	0.00064 µg/L	µg/L						
%RSD:	0.64							

9/19/2019 6:18:27PM QC value within limits for Hg 253.7 Recovery = Not calculated

Sample Report

Report Author

Printed: 9/23/2019 12:14 pm

Ag - 1ppm

Acquire Date: 20-Sep-2019 9:58 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ag	21.035	Cts/S	.022	.10309

200.7-6

Acquire Date: 20-Sep-2019 10:00 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
As	13.016	Cts/S	.057	.44117
Cr	21.554	Cts/S	.095	.44306
Li	86.452	Cts/S	.019	.02214
Se	14.448	Cts/S	.063	.43654
Si	28.044	Cts/S	.072	.25590
Sn	32.488	Cts/S	.160	.49353
V_	15.644	Cts/S	.024	.15383

200.7-1

Acquire Date: 20-Sep-2019 10:03 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1492.1	Cts/S	4.2	.28200
Al	84.036	Cts/S	.089	.10588
Ca	88.762	Cts/S	.109	.12319
K_	476.22	Cts/S	.64	.13371
Mg	64.833	Cts/S	.233	.35926
Na	2775.4	Cts/S	10.7	.38477
Ni	557.88	Cts/S	4.15	.74375
Zn	1478.6	Cts/S	10.4	.70516

200.7-2

Acquire Date: 20-Sep-2019 10:07 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ba	1022.3	Cts/S	1.4	.13870
Be	916.39	Cts/S	1.60	.17433
Co	347.77	Cts/S	1.70	.48835
Cu	39.126	Cts/S	.094	.23951
Fe	4388.2	Cts/S	6.4	.14479

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

200.7-2

Acquire Date: 20-Sep-2019 10:07 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mn	1030.6	Cts/S	3.7	.36134
Sr	91.287	Cts/S	.082	.08941

200.7-3

Acquire Date: 20-Sep-2019 10:15 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
B_	18.276	Cts/S	.007	.03685
Cd	117.48	Cts/S	.23	.19941
Pb	17.867	Cts/S	.007	.04001
Tl	6.0057	Cts/S	.0305	.50723

200.7-4

Acquire Date: 20-Sep-2019 10:20 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mo	675.72	Cts/S	.16	.02413
Sb	122.11	Cts/S	.16	.12987
Ti	491.88	Cts/S	.27	.05549

Blank

Acquire Date: 20-Sep-2019 10:28 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	-4.7594	Cts/S	.2335	4.9063
Ag	-.09433	Cts/S	.02354	24.958
Al	-.24692	Cts/S	.14517	58.794
As	.03302	Cts/S	.00480	14.545
Au	.24133	Cts/S	.00086	.35572
B_	.09814	Cts/S	.01048	10.679
Ba	8.9901	Cts/S	.9530	10.601
Be	2.7647	Cts/S	.0019	.06965
Ca	-.04855	Cts/S	.09220	189.91
Cd	.01913	Cts/S	.00000	.00597
Co	.00494	Cts/S	.01135	229.80
Cr	-.18623	Cts/S	.14076	75.584
Cu	.97124	Cts/S	.07695	7.9228
Fe	.52881	Cts/S	.03248	6.1428
K_	1.0556	Cts/S	.0569	5.3906

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Blank

Acquire Date: 20-Sep-2019 10:28 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Li	-48.299	Cts/S	.099	.20439
Mg	-.13456	Cts/S	.01766	13.123
Mn	.15276	Cts/S	.00481	3.1487
Mo	.03055	Cts/S	.01266	41.421
Na	-95.273	Cts/S	2.239	2.3497
Ni	.04382	Cts/S	.02008	45.818
Pb	-.03518	Cts/S	.00873	24.805
Pd	.02497	Cts/S	.03924	157.13
Sb	.00988	Cts/S	.01309	132.58
Se	.02592	Cts/S	.00262	10.096
Si	.29408	Cts/S	.07455	25.350
Sn	-.01446	Cts/S	.00547	37.857
Sr	.19729	Cts/S	.04185	21.212
Ti	-.03884	Cts/S	.11771	303.04
Tl	-.00339	Cts/S	.00218	64.287
V_	.10022	Cts/S	.05150	51.380
Zn	.16727	Cts/S	.01832	10.953
Zr	-.65198	Cts/S	.03532	5.4174

ICV-1

Acquire Date: 20-Sep-2019 10:34 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1887.0	ppb	8.4	.44624
Ag	499.19	ppb	5.45	1.0923
Al	1976.4	ppb	11.5	.58129
As	2065.1	ppb	12.7	.61426
Au	<.00000	ppb	.13251	13.369
B_	1964.5	ppb	4.1	.20998
Ba	2062.6	ppb	8.3	.40162
Be	2003.6	ppb	11.2	.55829
Ca	1960.4	ppb	2.8	.14217
Cd	2002.9	ppb	5.9	.29470
Co	1961.1	ppb	4.2	.21575
Cr	2028.3	ppb	18.0	.88953
Cu	2088.2	ppb	17.9	.85659
Fe	2006.8	ppb	4.8	.23785
K_	9642.6	ppb	73.2	.75920
Li	2018.7	ppb	16.7	.82674
Mg	1938.4	ppb	13.4	.68965

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

ICV-1

Acquire Date: 20-Sep-2019 10:34 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mn	1936.8	ppb	6.3	.32485
Mo	2041.8	ppb	1.3	.06187
Na	1975.2	ppb	8.8	.44544
Ni	2001.8	ppb	7.8	.39085
Pb	2042.3	ppb	8.0	.39407
Pd	<.00000	ppb	3.106	8.1849
Sb	1994.6	ppb	10.0	.50077
Se	1980.0	ppb	6.3	.31996
Si	4789.0	ppb	34.8	.72768
Sn	2047.7	ppb	6.5	.31680
Sr	2036.8	ppb	21.6	1.0617
Ti	<.00000	ppb	.1992	6.4820
Tl	2042.0	ppb	.9	.04172
V_	2007.0	ppb	9.4	.46963
Zn	1998.2	ppb	3.4	.17000
Zr	<.00000	ppb	.31145	116.30

ICB-1

Acquire Date: 20-Sep-2019 10:37 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	<.00000	ppb	.8575	54.592
Ag	1.4449	ppb	1.2992	89.912
Al	5.7632	ppb	10.4767	181.79
As	.27256	ppb	.28590	104.90
Au	<.00000	ppb	.07588	33.242
B_	2.0504	ppb	.8547	41.686
Ba	<.00000	ppb	.47583	581.21
Be	<.00000	ppb	.13045	469.67
Ca	4.0605	ppb	8.6139	212.14
Cd	.06435	ppb	.02043	31.746
Co	.07098	ppb	.07027	99.007
Cr	1.4058	ppb	2.9349	208.77
Cu	<.00000	ppb	.58882	72.789
Fe	.00992	ppb	.13442	1,355.3
K_	7.0896	ppb	2.2241	31.372
Li	<.00000	ppb	4.4317	115.14
Mg	<.00000	ppb	9.365	64.523
Mn	.03980	ppb	.04998	125.56
Mo	.91785	ppb	.85254	92.884

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

ICB-1

Acquire Date: 20-Sep-2019 10:37 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Na	<.00000	ppb	9.232	67.479
Ni	<.00000	ppb	.02733	46.990
Pb	.37987	ppb	.58518	154.05
Pd	10.033	ppb	4.432	44.173
Sb	.27786	ppb	1.17960	424.53
Se	<.00000	ppb	1.08917	200,810
Si	.98483	ppb	8.50029	863.12
Sn	.59885	ppb	1.06273	177.46
Sr	<.00000	ppb	8.90424	12,717
Ti	<.00000	ppb	1.1557	41.408
Tl	<.00000	ppb	1.1618	83.807
V_	<.00000	ppb	2.52667	5,426.2
Zn	.04544	ppb	.04038	88.862
Zr	.39264	ppb	1.31091	333.87

CRI-1

Acquire Date: 20-Sep-2019 10:42 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	<.00000	ppb	1.3119	83.822
Ag	21.714	ppb	6.568	30.248
Al	12.674	ppb	2.560	20.196
As	22.176	ppb	.368	1.6589
Au	<.00000	ppb	.62492	465.23
B_	.72306	ppb	.09110	12.600
Ba	<.00000	ppb	.79080	17,942
Be	10.049	ppb	.085	.84958
Ca	5.7792	ppb	.4418	7.6444
Cd	10.024	ppb	.090	.90113
Co	98.700	ppb	.055	.05522
Cr	17.834	ppb	4.422	24.792
Cu	53.945	ppb	3.752	6.9559
Fe	.37883	ppb	.05956	15.723
K_	<.00000	ppb	6.23313	5,297.3
Li	7.5806	ppb	1.2214	16.112
Mg	12.598	ppb	4.227	33.553
Mn	29.292	ppb	.048	.16453
Mo	<.00000	ppb	.14854	37.817
Na	<.00000	ppb	8.1892	107.21
Ni	80.539	ppb	.182	.22550

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CRI-1

Acquire Date: 20-Sep-2019 10:42 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Pb	5.6043	ppb	1.6028	28.600
Pd	<.00000	ppb	6.2087	70.708
Sb	119.09	ppb	1.58	1.3276
Se	11.811	ppb	.001	.00901
Si	<.00000	ppb	2.1247	60.658
Sn	<.00000	ppb	.24326	4,500.8
Sr	10.286	ppb	16.462	160.03
Ti	<.00000	ppb	.1596	10.885
Tl	20.233	ppb	.071	.35222
V_	96.782	ppb	2.907	3.0035
Zn	41.805	ppb	.025	.06048
Zr	1.1243	ppb	.2069	18.404

ICSA-1

Acquire Date: 20-Sep-2019 10:47 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	14.327	ppb	1.271	8.8734
Ag	<.00000	ppb	.487	2.7679
Al	493620.	ppb	164	.03314
As	<.00000	ppb	5.01	3.0857
Au	155.83	ppb	.39	.24822
B_	<.00000	ppb	.40	.16659
Ba	2.7548	ppb	.1693	6.1455
Be	2.2684	ppb	.0537	2.3667
Ca	423060.	ppb	367	.08667
Cd	<.00000	ppb	.07983	8.7437
Co	.12777	ppb	.05520	43.206
Cr	<.00000	ppb	1.152	9.0516
Cu	<.00000	ppb	3.279	14.481
Fe	121290.	ppb	444	.36646
K_	1.1679	ppb	2.1056	180.29
Li	<.00000	ppb	5.1	.46048
Mg	520080.	ppb	598	.11507
Mn	<.00000	ppb	.0341	.86861
Mo	<.00000	ppb	.1224	2.3974
Na	<.00000	ppb	4.43702	620.56
Ni	<.00000	ppb	.055	.26982
Pb	<.00000	ppb	.270	.32989
Pd	<.00000	ppb	16.410	121.69

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

ICSA-1

Acquire Date: 20-Sep-2019 10:47 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Sb	<.00000	ppb	.9270	47.866
Se	<.00000	ppb	.910	2.4527
Si	5.9993	ppb	26.8640	447.79
Sn	.42126	ppb	.17716	42.056
Sr	11.033	ppb	6.413	58.130
Ti	<.00000	ppb	2.353	11.903
Tl	<.00000	ppb	.507	3.1062
V_	<.00000	ppb	.325	1.5160
Zn	<.00000	ppb	.020	.10700
Zr	<.00000	ppb	.41462	847.08

ICSAB-1

Acquire Date: 20-Sep-2019 10:52 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	16.628	ppb	.189	1.1354
Ag	1038.3	ppb	8.7	.83321
Al	485010.	ppb	2,072	.42712
As	<.00000	ppb	.32	.19777
Au	154.92	ppb	1.17	.75632
B_	<.00000	ppb	.33	.13588
Ba	499.27	ppb	2.98	.59742
Be	480.76	ppb	2.98	.62034
Ca	414470.	ppb	1,664	.40157
Cd	862.29	ppb	2.27	.26276
Co	452.21	ppb	1.01	.22360
Cr	527.98	ppb	3.58	.67837
Cu	559.08	ppb	3.19	.56997
Fe	119490.	ppb	1,143	.95613
K_	6.1677	ppb	3.8468	62.371
Li	<.00000	ppb	8.4	.74633
Mg	511430.	ppb	2,865	.56015
Mn	473.94	ppb	1.58	.33265
Mo	<.00000	ppb	.2002	4.8079
Na	<.00000	ppb	10.2166	342.54
Ni	813.64	ppb	1.91	.23514
Pb	822.26	ppb	2.15	.26088
Pd	<.00000	ppb	3.978	11.646
Sb	2.2884	ppb	.4392	19.192
Se	<.00000	ppb	.000	.00092

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

ICSAB-1

Acquire Date: 20-Sep-2019 10:52 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Si	<.00000	ppb	17.693	140.80
Sn	.58096	ppb	1.39553	240.21
Sr	12.564	ppb	7.664	60.999
Ti	<.00000	ppb	1.522	7.5641
Tl	<.00000	ppb	.653	3.4957
V_	452.25	ppb	7.14	1.5790
Zn	820.60	ppb	2.21	.26963
Zr	.03319	ppb	.79820	2,405.2

CCV-1

Acquire Date: 20-Sep-2019 10:57 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1890.5	ppb	22.1	1.1673
Ag	498.98	ppb	1.98	.39739
Al	1978.6	ppb	16.7	.84434
As	2084.7	ppb	10.7	.51095
Au	<.00000	ppb	.39737	42,802
B_	2135.1	ppb	2.7	.12659
Ba	2062.8	ppb	24.6	1.1911
Be	2025.6	ppb	23.2	1.1448
Ca	1986.8	ppb	7.7	.38646
Cd	2025.9	ppb	5.0	.24568
Co	1985.0	ppb	8.1	.40994
Cr	2028.6	ppb	25.7	1.2651
Cu	2090.4	ppb	29.4	1.4083
Fe	2035.3	ppb	3.2	.15484
K_	10241.	ppb	78	.76366
Li	2028.0	ppb	23.8	1.1751
Mg	1962.4	ppb	17.5	.88979
Mn	1962.3	ppb	1.4	.07034
Mo	2060.5	ppb	1.5	.07168
Na	1905.4	ppb	27.1	1.4205
Ni	2024.6	ppb	1.1	.05278
Pb	2069.4	ppb	8.9	.42893
Pd	<.00000	ppb	11.973	29.597
Sb	2019.4	ppb	4.7	.23443
Se	1997.1	ppb	8.4	.42175
Si	4857.7	ppb	47.9	.98684
Sn	2067.4	ppb	2.7	.13057

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCV-1

Acquire Date: 20-Sep-2019 10:57 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Sr	2073.6	ppb	32.4	1.5621
Ti	<.00000	ppb	.3590	15.717
Tl	2058.5	ppb	11.5	.55643
V_	2033.6	ppb	28.2	1.3874
Zn	2017.8	ppb	6.9	.33990
Zr	1.7838	ppb	.0343	1.9224

CCB-1

Acquire Date: 20-Sep-2019 11:00 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	4.8099	ppb	1.3895	28.888
Ag	1.2474	ppb	.0928	7.4409
Al	9.7108	ppb	18.3879	189.35
As	<.00000	ppb	.43647	53.974
Au	<.00000	ppb	.58612	273.05
B_	1.6024	ppb	.3364	20.995
Ba	.22700	ppb	.06251	27.538
Be	.05465	ppb	.07518	137.55
Ca	1.8743	ppb	3.3134	176.78
Cd	.16682	ppb	.06499	38.959
Co	.01242	ppb	.03765	303.14
Cr	3.9561	ppb	8.8881	224.67
Cu	.11741	ppb	.71197	606.42
Fe	1.1198	ppb	.1346	12.023
K_	7.7363	ppb	2.3949	30.956
Li	<.00000	ppb	7.0692	498.05
Mg	<.00000	ppb	6.3409	185.61
Mn	.02664	ppb	.02458	92.284
Mo	.02281	ppb	.27132	1,189.3
Na	<.00000	ppb	7.0034	148.17
Ni	<.00000	ppb	.13688	290.70
Pb	.50007	ppb	.95032	190.04
Pd	<.00000	ppb	.887	6.7348
Sb	<.00000	ppb	1.03629	117.14
Se	1.1550	ppb	1.2703	109.98
Si	<.00000	ppb	18.3812	229.81
Sn	.15976	ppb	.23934	149.81
Sr	<.00000	ppb	10.1463	325.89
Ti	<.00000	ppb	1.47558	227.51

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCB-1

Acquire Date: 20-Sep-2019 11:00 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Tl	<.00000	ppb	1.52524	212.15
V_	6.5590	ppb	8.4552	128.91
Zn	.02812	ppb	.01586	56.413
Zr	.65970	ppb	2.52223	382.33

CCV-2

Acquire Date: 20-Sep-2019 12:03 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1898.1	ppb	4.9	.26054
Ag	492.42	ppb	5.23	1.0619
Al	1949.6	ppb	.8	.03970
As	2082.2	ppb	7.1	.34040
Au	.49409	ppb	.37834	76.573
B_	2120.4	ppb	10.9	.51626
Ba	2035.8	ppb	8.2	.40132
Be	2009.6	ppb	5.1	.25136
Ca	1978.1	ppb	4.1	.20915
Cd	2026.0	ppb	12.0	.59043
Co	1986.1	ppb	13.5	.68183
Cr	2016.2	ppb	21.0	1.0397
Cu	2066.3	ppb	10.7	.51817
Fe	2019.8	ppb	10.8	.53591
K_	9191.1	ppb	29.9	.32526
Li	2020.0	ppb	1.9	.09369
Mg	1917.9	ppb	7.7	.40123
Mn	1970.7	ppb	12.2	.61789
Mo	2056.2	ppb	12.4	.60445
Na	1909.8	ppb	3.4	.17670
Ni	2025.5	ppb	16.6	.81775
Pb	2071.7	ppb	15.2	.73148
Pd	<.00000	ppb	9.758	37.948
Sb	2010.9	ppb	13.1	.65143
Se	2162.2	ppb	21.4	.98810
Si	4781.1	ppb	26.6	.55542
Sn	2058.2	ppb	16.8	.81613
Sr	2066.3	ppb	10.7	.51781
Ti	<.00000	ppb	.3991	15.383
Tl	2048.1	ppb	15.1	.73486
V_	2007.2	ppb	9.4	.47036

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCV-2

Acquire Date: 20-Sep-2019 12:03 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Zn	2016.7	ppb	10.9	.53930
Zr	1.4177	ppb	2.0031	141.29

CCB-2

Acquire Date: 20-Sep-2019 12:07 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	17.293	ppb	1.586	9.1708
Ag	6.4669	ppb	.1393	2.1537
Al	<.00000	ppb	1.1639	30.742
As	.90372	ppb	.40351	44.650
Au	.00038	ppb	.24615	64,269
B_	2.2277	ppb	1.4023	62.949
Ba	<.00000	ppb	.25805	3,304.5
Be	<.00000	ppb	.06012	172.39
Ca	2.8114	ppb	2.4299	86.429
Cd	.17212	ppb	.12821	74.488
Co	.03195	ppb	.13053	408.54
Cr	<.00000	ppb	9.4751	175.72
Cu	2.0141	ppb	1.1153	55.374
Fe	.39764	ppb	.24300	61.109
K_	12.028	ppb	1.362	11.327
Li	<.00000	ppb	5.095	25.896
Mg	<.00000	ppb	11.4747	597.02
Mn	.05931	ppb	.06650	112.12
Mo	1.5759	ppb	1.5762	100.02
Na	<.00000	ppb	5.3015	86.064
Ni	<.00000	ppb	.07824	64.302
Pb	.94803	ppb	.17094	18.031
Pd	<.00000	ppb	13.3054	707.12
Sb	.32875	ppb	.46473	141.36
Se	<.00000	ppb	3.08699	481.02
Si	<.00000	ppb	6.363	34.403
Sn	.64834	ppb	.25698	39.637
Sr	6.1597	ppb	8.3276	135.20
Ti	.39480	ppb	.07976	20.203
Tl	<.00000	ppb	.29055	80.808
V_	.08972	ppb	3.34474	3,728.0
Zn	.07216	ppb	.10239	141.90
Zr	<.00000	ppb	.13822	17.675

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCV-3

Acquire Date: 20-Sep-2019 1:11 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1937.9	ppb	1.7	.08960
Ag	472.85	ppb	4.44	.93829
Al	1871.5	ppb	6.9	.36626
As	1997.1	ppb	5.0	.24867
Au	.92236	ppb	.07562	8.1986
B_	2020.9	ppb	6.9	.34292
Ba	1915.5	ppb	8.2	.43018
Be	1933.6	ppb	7.9	.40843
Ca	1943.5	ppb	10.1	.51715
Cd	1976.2	ppb	12.1	.61204
Co	1929.1	ppb	11.2	.58048
Cr	1879.4	ppb	.2	.01283
Cu	1946.4	ppb	2.9	.15082
Fe	1952.7	ppb	3.9	.20035
K_	9417.7	ppb	13.1	.13888
Li	1914.4	ppb	.3	.01606
Mg	2045.2	ppb	16.4	.80286
Mn	1921.5	ppb	11.2	.58467
Mo	1984.6	ppb	1.0	.05284
Na	1848.1	ppb	.2	.01351
Ni	1977.0	ppb	14.7	.74184
Pb	2018.1	ppb	12.4	.61361
Pd	<.00000	ppb	10.203	21.546
Sb	1923.2	ppb	.5	.02660
Se	2045.3	ppb	2.0	.09637
Si	4584.3	ppb	33.5	.73057
Sn	1986.0	ppb	3.7	.18561
Sr	2007.0	ppb	7.8	.38726
Ti	<.00000	ppb	.4389	15.410
Tl	1994.6	ppb	32.8	1.6468
V_	1902.1	ppb	4.7	.24788
Zn	1957.4	ppb	8.8	.44721
Zr	1.2952	ppb	.7262	56.064

CCB-3

Acquire Date: 20-Sep-2019 1:17 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
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Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCB-3

Acquire Date: 20-Sep-2019 1:17 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	23.290	ppb	1.414	6.0733
Ag	5.8759	ppb	1.8104	30.811
Al	15.474	ppb	11.170	72.187
As	<.00000	ppb	1.7987	166.33
Au	<.00000	ppb	.34085	510.95
B_	.68596	ppb	.00005	.00661
Ba	.60825	ppb	.33959	55.831
Be	<.00000	ppb	.04910	69.931
Ca	6.4032	ppb	13.2519	206.96
Cd	.03416	ppb	.05945	174.04
Co	<.00000	ppb	.07279	132.30
Cr	.75528	ppb	2.44624	323.89
Cu	.04193	ppb	.83046	1,980.7
Fe	.60285	ppb	.02364	3.9214
K_	12.199	ppb	.286	2.3420
Li	<.00000	ppb	5.169	14.367
Mg	10.677	ppb	3.322	31.115
Mn	<.00000	ppb	.01652	78.797
Mo	<.00000	ppb	.21962	49.573
Na	<.00000	ppb	12.401	105.29
Ni	<.00000	ppb	.04691	36.855
Pb	.56597	ppb	.50147	88.604
Pd	<.00000	ppb	3.9909	97.881
Sb	<.00000	ppb	.14287	141.13
Se	<.00000	ppb	1.27117	330.15
Si	<.00000	ppb	7.766	62.086
Sn	.40745	ppb	.16547	40.610
Sr	<.00000	ppb	1.07466	569.18
Ti	<.00000	ppb	.43853	172.90
Tl	<.00000	ppb	1.7432	161.62
V_	<.00000	ppb	1.3880	32.053
Zn	<.00000	ppb	.02223	108.55
Zr	1.3207	ppb	1.5192	115.03

CCV-4

Acquire Date: 20-Sep-2019 2:13 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1839.4	ppb	15.3	.83255
Ag	478.27	ppb	.12	.02456

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCV-4

Acquire Date: 20-Sep-2019 2:13 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Al	1917.0	ppb	15.5	.80616
As	2091.6	ppb	6.0	.28896
Au	2.0064	ppb	.2460	12.263
B_	2105.0	ppb	.2	.00811
Ba	1983.1	ppb	15.6	.78438
Be	1993.0	ppb	14.3	.71757
Ca	1990.5	ppb	10.0	.50181
Cd	2042.3	ppb	13.1	.64023
Co	1995.2	ppb	13.0	.64984
Cr	1948.7	ppb	17.8	.91583
Cu	2017.5	ppb	20.7	1.0257
Fe	2021.1	ppb	9.3	.46062
K_	9972.7	ppb	19.8	.19848
Li	1982.9	ppb	10.3	.52196
Mg	2122.4	ppb	29.2	1.3747
Mn	1992.8	ppb	12.4	.62418
Mo	2058.6	ppb	10.1	.48874
Na	1898.2	ppb	28.0	1.4734
Ni	2043.4	ppb	10.7	.52401
Pb	2087.3	ppb	14.6	.69919
Pd	<.00000	ppb	39.472	124.62
Sb	2019.2	ppb	6.8	.33778
Se	2148.5	ppb	8.5	.39742
Si	4710.0	ppb	69.0	1.4658
Sn	2058.1	ppb	9.0	.43654
Sr	2061.6	ppb	19.7	.95503
Ti	<.00000	ppb	1.6358	98.290
Tl	2054.3	ppb	3.3	.16232
V_	1959.3	ppb	16.5	.83999
Zn	2022.7	ppb	12.6	.62173
Zr	.38952	ppb	1.10362	283.33

CCB-4

Acquire Date: 20-Sep-2019 2:18 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	23.586	ppb	1.232	5.2232
Ag	3.3319	ppb	5.2689	158.13
Al	12.674	ppb	7.215	56.929
As	<.00000	ppb	1.79804	212.93

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCB-4

Acquire Date: 20-Sep-2019 2:18 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Au	.14661	ppb	.18962	129.33
B_	2.0200	ppb	1.2438	61.573
Ba	.04350	ppb	.12737	292.78
Be	<.00000	ppb	.12025	239.37
Ca	5.7792	ppb	.0000	.00002
Cd	.01181	ppb	.07244	613.39
Co	<.00000	ppb	.04267	96.155
Cr	<.00000	ppb	6.4967	473.84
Cu	1.5202	ppb	1.6454	108.24
Fe	.48216	ppb	.31390	65.102
K_	13.486	ppb	1.610	11.940
Li	<.00000	ppb	.346	1.2293
Mg	<.00000	ppb	7.5488	252.62
Mn	.01526	ppb	.02796	183.28
Mo	.53430	ppb	.85258	159.57
Na	2.2950	ppb	5.6107	244.47
Ni	<.00000	ppb	.00783	5.6587
Pb	.44841	ppb	.74110	165.27
Pd	10.348	ppb	16.409	158.57
Sb	.60631	ppb	.85779	141.48
Se	.51306	ppb	1.45217	283.04
Si	3.4941	ppb	10.6032	303.46
Sn	.98009	ppb	.23943	24.429
Sr	10.760	ppb	5.264	48.922
Ti	<.00000	ppb	.0399	3.1422
Tl	<.00000	ppb	1.6702	162.65
V_	1.7835	ppb	.6938	38.898
Zn	.00830	ppb	.11250	1,356.0
Zr	.04938	ppb	.06905	139.85

CCV-5

Acquire Date: 20-Sep-2019 3:19 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1824.6	ppb	3.3	.17893
Ag	480.05	ppb	7.29	1.5195
Al	1960.6	ppb	11.2	.56926
As	2037.4	ppb	6.1	.29886
Au	1.2704	ppb	.3028	23.837
B_	2054.7	ppb	5.9	.28657

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCV-5

Acquire Date: 20-Sep-2019 3:19 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ba	1950.6	ppb	10.3	.52567
Be	1964.5	ppb	9.6	.49031
Ca	1965.8	ppb	14.7	.74925
Cd	1999.8	ppb	9.1	.45697
Co	1964.2	ppb	11.5	.58793
Cr	1922.4	ppb	1.9	.09978
Cu	1983.1	ppb	6.6	.33260
Fe	1985.7	ppb	5.7	.28623
K_	9469.5	ppb	1.1	.01200
Li	1947.7	ppb	1.5	.07895
Mg	2093.5	ppb	19.3	.91954
Mn	1947.2	ppb	9.2	.47455
Mo	2023.8	ppb	5.2	.25755
Na	1896.5	ppb	.3	.01446
Ni	2004.3	ppb	4.8	.24011
Pb	2055.5	ppb	9.9	.48287
Pd	<.00000	ppb	9.312	23.756
Sb	1964.3	ppb	5.2	.26590
Se	2083.9	ppb	.5	.02639
Si	4649.7	ppb	47.9	1.0302
Sn	2031.0	ppb	7.9	.38656
Sr	2047.7	ppb	.6	.03168
Ti	<.00000	ppb	1.9539	77.859
Tl	2024.8	ppb	9.4	.46648
V_	1947.8	ppb	16.2	.83219
Zn	1987.0	ppb	9.8	.49352
Zr	.73338	ppb	.55320	75.432

CCB-5

Acquire Date: 20-Sep-2019 3:25 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	10.094	ppb	.237	2.3522
Ag	1.8219	ppb	4.4798	245.89
Al	<.00000	ppb	5.8209	272.26
As	<.00000	ppb	2.65630	558.91
Au	.41495	ppb	.03724	8.9735
B_	3.4092	ppb	1.4411	42.271
Ba	.57849	ppb	.71695	123.94
Be	<.00000	ppb	.03671	133.52

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCB-5

Acquire Date: 20-Sep-2019 3:25 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ca	<.00000	ppb	6.40599	2,050.8
Cd	.11036	ppb	.11150	101.03
Co	.09584	ppb	.02009	20.966
Cr	3.3950	ppb	2.9198	86.001
Cu	.13290	ppb	1.54030	1,159.0
Fe	.35068	ppb	.22397	63.865
K_	15.938	ppb	4.750	29.805
Li	<.00000	ppb	4.082	12.677
Mg	<.00000	ppb	30.197	266.86
Mn	.03504	ppb	.04746	135.42
Mo	1.0232	ppb	1.3631	133.22
Na	9.9084	ppb	4.2578	42.972
Ni	.06086	ppb	.00789	12.970
Pb	.94837	ppb	.26885	28.349
Pd	<.00000	ppb	2.6606	141.37
Sb	<.00000	ppb	.50032	141.40
Se	<.00000	ppb	.18125	28.235
Si	<.00000	ppb	2.1277	32.713
Sn	.92502	ppb	.21608	23.359
Sr	1.8257	ppb	13.3025	728.62
Ti	.39492	ppb	2.63192	666.44
Tl	<.00000	ppb	.94404	102.13
V_	.13312	ppb	5.67795	4,265.4
Zn	.06421	ppb	.16538	257.57
Zr	1.2954	ppb	1.1409	88.069

MB-W

Acquire Date: 20-Sep-2019 3:59 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1.8543	ppb	3.1071	167.56
Ag	<.00000	ppb	.0699	2.7119
Al	4.9387	ppb	17.0678	345.59
As	<.00000	ppb	.70592	329.94
Au	7.9904	ppb	.5680	7.1083
B_	1.3820	ppb	.1488	10.770
Ba	5.8083	ppb	.3597	6.1927
Be	<.00000	ppb	.01297	2.6444
Ca	19.212	ppb	5.743	29.892
Cd	<.00000	ppb	.11147	69.551

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

MB-W

Acquire Date: 20-Sep-2019 3:59 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Co	.26622	ppb	.05020	18.855
Cr	<.00000	ppb	.7227	23.358
Cu	<.00000	ppb	1.93441	281.49
Fe	.52758	ppb	.01482	2.8097
K_	15.472	ppb	2.435	15.735
Li	3.0932	ppb	23.5376	760.95
Mg	<.00000	ppb	9.35977	1,096.9
Mn	<.00000	ppb	.02075	15.821
Mo	<.00000	ppb	.0904	6.0555
Na	<.00000	ppb	36.017	52.726
Ni	.22680	ppb	.25042	110.41
Pb	.55555	ppb	.40346	72.622
Pd	<.00000	ppb	6.209	39.599
Sb	2.6792	ppb	.7147	26.677
Se	<.00000	ppb	.90785	141.42
Si	<.00000	ppb	6.360	14.624
Sn	.22713	ppb	1.10573	486.83
Sr	<.00000	ppb	4.5133	250.60
Ti	<.00000	ppb	.9968	32.432
Tl	<.00000	ppb	1.8158	73.658
V_	<.00000	ppb	.1268	6.3149
Zn	.52189	ppb	.03192	6.1165
Zr	<.00000	ppb	.5533	19.526

LCS-W

Acquire Date: 20-Sep-2019 4:13 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2021.5	ppb	9.8	.48634
Ag	484.76	ppb	1.10	.22713
Al	2083.5	ppb	1.2	.05541
As	2120.5	ppb	28.8	1.3558
Au	11.842	ppb	.341	2.8758
B_	1820.3	ppb	24.9	1.3698
Ba	1986.4	ppb	25.8	1.3003
Be	1983.7	ppb	12.3	.61766
Ca	1850.5	ppb	18.6	1.0072
Cd	1991.8	ppb	24.6	1.2365
Co	2144.2	ppb	26.3	1.2277
Cr	1831.5	ppb	18.5	1.0093

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

LCS-W

Acquire Date: 20-Sep-2019 4:13 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Cu	1919.6	ppb	20.0	1.0441
Fe	1978.9	ppb	26.5	1.3401
K_	9636.8	ppb	44.5	.46134
Li	1915.3	ppb	19.1	.99892
Mg	1934.8	ppb	31.3	1.6191
Mn	2144.2	ppb	23.9	1.1131
Mo	2132.3	ppb	32.9	1.5436
Na	1973.3	ppb	9.7	.49205
Ni	2173.0	ppb	24.0	1.1067
Pb	2013.9	ppb	24.0	1.1921
Pd	<.00000	ppb	2.223	4.0055
Sb	1928.7	ppb	24.4	1.2647
Se	2168.8	ppb	34.6	1.5952
Si	10646.	ppb	107	1.0012
Sn	3104.8	ppb	31.5	1.0154
Sr	2122.8	ppb	12.7	.59623
Ti	<.00000	ppb	.3991	23.588
Tl	2016.4	ppb	8.5	.42028
V_	2101.6	ppb	20.0	.95013
Zn	2117.6	ppb	26.1	1.2320
Zr	<.00000	ppb	2.0713	78.535

CCV-6

Acquire Date: 20-Sep-2019 4:41 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1824.6	ppb	11.5	.63147
Ag	469.24	ppb	7.18	1.5296
Al	1893.5	ppb	9.9	.52474
As	1990.6	ppb	2.7	.13530
Au	2.2339	ppb	.2271	10.167
B_	2026.4	ppb	6.1	.29970
Ba	1978.9	ppb	16.6	.83917
Be	1915.6	ppb	15.5	.80835
Ca	1873.4	ppb	21.4	1.1399
Cd	1948.1	ppb	2.7	.13727
Co	1869.5	ppb	1.7	.08894
Cr	1974.9	ppb	9.8	.49647
Cu	2013.9	ppb	15.9	.78905
Fe	1917.9	ppb	1.0	.05299

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCV-6

Acquire Date: 20-Sep-2019 4:41 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
K_	9980.3	ppb	32.2	.32254
Li	1984.7	ppb	4.3	.21506
Mg	1860.5	ppb	3.9	.20714
Mn	1906.1	ppb	2.4	.12479
Mo	1949.9	ppb	3.5	.17903
Na	1887.4	ppb	14.5	.76765
Ni	1912.2	ppb	4.2	.22183
Pb	1935.0	ppb	3.7	.18873
Pd	<.00000	ppb	7.539	30.429
Sb	1944.9	ppb	.9	.04799
Se	2012.6	ppb	4.7	.23475
Si	4645.2	ppb	54.2	1.1678
Sn	1893.9	ppb	4.2	.22052
Sr	1975.3	ppb	24.5	1.2414
Ti	<.00000	ppb	1.5153	55.976
Tl	1925.1	ppb	2.8	.14733
V_	1883.3	ppb	14.8	.78345
Zn	1910.8	ppb	2.3	.12251
Zr	<.00000	ppb	.41416	283.30

CCB-6

Acquire Date: 20-Sep-2019 4:51 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	8.1285	ppb	.1054	1.2962
Ag	<.00000	ppb	1.2068	32.536
Al	3.2929	ppb	6.5165	197.90
As	<.00000	ppb	.94106	152.17
Au	<.00000	ppb	.35943	121.91
B_	2.6822	ppb	.9701	36.167
Ba	<.00000	ppb	.2883	24.842
Be	.04847	ppb	.01939	40.005
Ca	3.2801	ppb	3.9760	121.22
Cd	.17734	ppb	.09847	55.528
Co	.02307	ppb	.00251	10.888
Cr	<.00000	ppb	.7665	23.107
Cu	<.00000	ppb	.3553	23.002
Fe	.47271	ppb	.11652	24.649
K_	26.418	ppb	1.320	4.9967
Li	<.00000	ppb	1.879	8.9086

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCB-6

Acquire Date: 20-Sep-2019 4:51 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mg	13.452	ppb	13.890	103.26
Mn	.03023	ppb	.02372	78.461
Mo	.03651	ppb	.35525	972.89
Na	<.00000	ppb	10.84889	1,954.9
Ni	<.00000	ppb	.05082	40.814
Pb	<.00000	ppb	.32019	1,828.2
Pd	<.00000	ppb	4.8783	172.83
Sb	<.00000	ppb	.9293	83.555
Se	<.00000	ppb	1.08949	212.06
Si	<.00000	ppb	4.946	36.639
Sn	.33179	ppb	.25303	76.262
Sr	<.00000	ppb	2.2968	33.267
Ti	<.00000	ppb	.51846	73.548
Tl	<.00000	ppb	.2904	16.158
V_	<.00000	ppb	4.4170	70.199
Zn	<.00000	ppb	.04073	5,481.8
Zr	2.6634	ppb	.3803	14.277

190917059-001A

Acquire Date: 20-Sep-2019 4:54 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	243080.	ppb	801	.32951
Ag	<.00000	ppb	3.4122	244.57
Al	<.00000	ppb	11.1728	154.28
As	2.1381	ppb	2.5546	119.48
Au	1.2034	ppb	.1326	11.016
B_	361.58	ppb	1.89	.52169
Ba	2612.2	ppb	3.5	.13374
Be	.73035	ppb	.01720	2.3550
Ca	17869.	ppb	17	.09709
Cd	<.00000	ppb	.00557	2.4800
Co	.25729	ppb	.02761	10.730
Cr	.91352	ppb	.13558	14.842
Cu	1.6357	ppb	.5931	36.258
Fe	1003.1	ppb	5.1	.50853
K_	17707.	ppb	14	.07703
Li	<.00000	ppb	1.1	.08191
Mg	4647.5	ppb	4.0	.08504
Mn	166.21	ppb	1.21	.72801

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190917059-001A

Acquire Date: 20-Sep-2019 4:54 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mo	<.00000	ppb	.13562	148.37
Na	170190.	ppb	652	.38328
Ni	.29034	ppb	.05862	20.190
Pb	6.4926	ppb	.4870	7.5008
Pd	<.00000	ppb	2.6611	212.13
Sb	1.7184	ppb	.2861	16.648
Se	<.00000	ppb	.1815	4.5614
Si	6930.4	ppb	1.5	.02098
Sn	.82042	ppb	.37175	45.312
Sr	2616.4	ppb	2.1	.07991
Ti	<.00000	ppb	.27917	110.00
Tl	<.00000	ppb	.58093	1,134.0
V_	<.00000	ppb	4.1026	135.23
Zn	5.7848	ppb	.1678	2.9007
Zr	1.1238	ppb	1.3822	122.99

190917059-001A

Acquire Date: 20-Sep-2019 4:58 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	28357.	ppb	149	.52616
Ag	1.8074	ppb	.0027	.14910
Al	<.00000	ppb	6.71493	1,433.6
As	1.1880	ppb	.8059	67.837
Au	<.00000	ppb	.41706	124.51
B_	36.455	ppb	.308	.84383
Ba	254.13	ppb	1.26	.49727
Be	.10698	ppb	.07192	67.225
Ca	1758.3	ppb	.0	.00068
Cd	<.00000	ppb	.05388	195.31
Co	.04969	ppb	.03515	70.735
Cr	4.4703	ppb	2.4926	55.760
Cu	<.00000	ppb	3.3909	168.18
Fe	101.01	ppb	.23	.23032
K_	1144.7	ppb	31.2	2.7258
Li	<.00000	ppb	11.10	1.3547
Mg	434.64	ppb	13.70	3.1512
Mn	17.036	ppb	.121	.71230
Mo	<.00000	ppb	.12275	18.159
Na	26880.	ppb	258	.95847

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190917059-001A

Acquire Date: 20-Sep-2019 4:58 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ni	<.00000	ppb	.05480	18.009
Pb	2.6669	ppb	.2921	10.952
Pd	<.00000	ppb	1.3273	16.935
Sb	.85932	ppb	.28625	33.312
Se	<.00000	ppb	.1818	9.4387
Si	681.77	ppb	21.29	3.1220
Sn	<.00000	ppb	.00013	.11372
Sr	258.21	ppb	9.09	3.5203
Ti	<.00000	ppb	.5157	33.292
Tl	<.00000	ppb	1.2349	100.19
V_	<.00000	ppb	3.0306	34.470
Zn	.41371	ppb	.00819	1.9804
Zr	1.4004	ppb	.6458	46.116

190917059-002A

Acquire Date: 20-Sep-2019 5:02 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	167680.	ppb	220	.13115
Ag	<.00000	ppb	1.9729	56.974
Al	<.00000	ppb	7.91	6.3940
As	<.00000	ppb	.60506	316.67
Au	8.2958	ppb	.0188	.22630
B_	304.78	ppb	4.22	1.3858
Ba	1641.5	ppb	8.7	.53269
Be	.48723	ppb	.11165	22.916
Ca	46215.	ppb	187	.40506
Cd	<.00000	ppb	.06501	29.637
Co	.34957	ppb	.00753	2.1549
Cr	<.00000	ppb	3.88465	1,531.3
Cu	<.00000	ppb	.1891	13.978
Fe	8081.1	ppb	103.7	1.2837
K_	16599.	ppb	104	.62681
Li	<.00000	ppb	5.7	.37273
Mg	13956.	ppb	74	.52796
Mn	258.15	ppb	3.37	1.3038
Mo	<.00000	ppb	.05812	20.524
Na	126680.	ppb	272	.21463
Ni	<.00000	ppb	.1056	10.519
Pb	.66791	ppb	.69417	103.93

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190917059-002A

Acquire Date: 20-Sep-2019 5:02 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Pd	<.00000	ppb	2.21743	235.63
Sb	.96173	ppb	.64339	66.899
Se	<.00000	ppb	.7262	10.878
Si	3171.6	ppb	7.8	.24525
Sn	.25890	ppb	.42236	163.14
Sr	4437.3	ppb	4.2	.09484
Ti	.64861	ppb	.67793	104.52
Tl	<.00000	ppb	1.67019	1,628.3
V_	<.00000	ppb	5.2380	80.488
Zn	3.4875	ppb	.0342	.98076
Zr	.73344	ppb	1.93485	263.81

190917059-002A

Acquire Date: 20-Sep-2019 5:06 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	14660.	ppb	2	.01186
Ag	<.00000	ppb	1.0682	31.910
Al	<.00000	ppb	6.986	21.662
As	.61789	ppb	.13507	21.860
Au	.13370	ppb	.09407	70.359
B_	27.204	ppb	.448	1.6482
Ba	147.79	ppb	.93	.62883
Be	.21982	ppb	.00882	4.0114
Ca	4190.0	ppb	17.2	.40937
Cd	<.00000	ppb	.04274	154.91
Co	.04792	ppb	.02260	47.159
Cr	7.8175	ppb	.1358	1.7370
Cu	<.00000	ppb	.61885	636.91
Fe	741.43	ppb	3.44	.46372
K_	978.18	ppb	7.81	.79883
Li	<.00000	ppb	4.42	1.0288
Mg	1186.6	ppb	8.1	.68005
Mn	23.391	ppb	.189	.80958
Mo	<.00000	ppb	.05164	7.2022
Na	14455.	ppb	41	.28210
Ni	<.00000	ppb	.17993	40.662
Pb	.30518	ppb	.04835	15.842
Pd	<.00000	ppb	17.295	134.51
Sb	<.00000	ppb	1.03648	215.99

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190917059-002A

Acquire Date: 20-Sep-2019 5:06 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Se	<.00000	ppb	1.2710	39.599
Si	287.39	ppb	4.98	1.7314
Sn	.37448	ppb	.74552	199.08
Sr	412.01	ppb	5.39	1.3083
Ti	<.00000	ppb	.7977	56.582
Tl	<.00000	ppb	.29065	37.731
V_	<.00000	ppb	2.0183	29.568
Zn	.06166	ppb	.04807	77.952
Zr	<.00000	ppb	1.2774	121.75

190917059-002ADP

Acquire Date: 20-Sep-2019 5:09 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	171370.	ppb	182	.10600
Ag	<.00000	ppb	.0008	.01495
Al	<.00000	ppb	30.733	30.917
As	<.00000	ppb	2.42003	1,014.3
Au	9.6876	ppb	.5488	5.6654
B_	316.02	ppb	1.87	.59109
Ba	1646.6	ppb	.4	.02162
Be	.40525	ppb	.07273	17.947
Ca	47410.	ppb	70	.14777
Cd	<.00000	ppb	.07802	36.662
Co	.21826	ppb	.01255	5.7489
Cr	6.1594	ppb	7.8990	128.24
Cu	<.00000	ppb	1.25937	210.07
Fe	9521.0	ppb	66.9	.70228
K_	16933.	ppb	15	.08751
Li	<.00000	ppb	12.0	.79337
Mg	14120.	ppb	52	.36932
Mn	286.47	ppb	2.78	.96902
Mo	<.00000	ppb	.02583	26.917
Na	129300.	ppb	350	.27034
Ni	<.00000	ppb	.0275	2.4184
Pb	<.00000	ppb	.00830	15.496
Pd	3.4490	ppb	6.6516	192.86
Sb	.88562	ppb	.39352	44.434
Se	<.00000	ppb	.9077	11.984
Si	3703.0	ppb	6.0	.16089

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190917059-002ADP

Acquire Date: 20-Sep-2019 5:09 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Sn	<.00000	ppb	.04282	24.520
Sr	4554.1	ppb	28.7	.63095
Ti	1.1280	ppb	.6380	56.565
Tl	<.00000	ppb	1.3797	134.36
V_	<.00000	ppb	8.2059	211.70
Zn	4.0610	ppb	.0211	.52026
Zr	2.6146	ppb	.8631	33.009

190917059-002ADP

Acquire Date: 20-Sep-2019 5:13 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	17549.	ppb	150	.85473
Ag	<.00000	ppb	1.0453	23.679
Al	<.00000	ppb	.240	.54589
As	.00020	ppb	1.27788	627.510
Au	1.0576	ppb	.5295	50.072
B_	32.021	ppb	.362	1.1321
Ba	168.84	ppb	1.65	.97452
Be	.09085	ppb	.16133	177.58
Ca	4940.4	ppb	28.9	.58491
Cd	<.00000	ppb	.01115	16.317
Co	.11182	ppb	.01254	11.215
Cr	2.9257	ppb	9.4731	323.79
Cu	<.00000	ppb	1.4027	128.88
Fe	999.29	ppb	6.23	.62321
K_	1151.3	ppb	24.8	2.1559
Li	<.00000	ppb	6.82	1.3284
Mg	1394.4	ppb	34.9	2.5023
Mn	29.721	ppb	.276	.93021
Mo	<.00000	ppb	.09688	14.730
Na	17082.	ppb	66	.38538
Ni	<.00000	ppb	.07434	25.608
Pb	1.3589	ppb	.0716	5.2677
Pd	.31213	ppb	19.06858	6,109.2
Sb	.93582	ppb	.67906	72.563
Se	<.00000	ppb	1.8158	70.710
Si	400.86	ppb	12.77	3.1864
Sn	.50104	ppb	.24337	48.573
Sr	485.52	ppb	1.86	.38411

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190917059-002ADP

Acquire Date: 20-Sep-2019 5:13 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ti	<.00000	ppb	2.6720	178.79
Tl	<.00000	ppb	1.01696	132.00
V_	<.00000	ppb	5.9939	95.974
Zn	.08460	ppb	.00362	4.2777
Zr	<.00000	ppb	1.34858	425.82

190917059-002AMS

Acquire Date: 20-Sep-2019 5:17 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	172480.	ppb	25	.01431
Ag	52.411	ppb	4.192	7.9975
Al	2018.9	ppb	18.4	.91045
As	38.882	ppb	.067	.17261
Au	11.681	ppb	.076	.64767
B_	318.89	ppb	2.53	.79469
Ba	3664.3	ppb	35.9	.97971
Be	53.069	ppb	.357	.67305
Ca	49930.	ppb	356	.71381
Cd	46.119	ppb	.371	.80529
Co	443.21	ppb	4.14	.93399
Cr	223.98	ppb	1.43	.63794
Cu	282.92	ppb	4.47	1.5811
Fe	11622.	ppb	84	.72522
K_	17362.	ppb	152	.87575
Li	<.00000	ppb	2.5	.16999
Mg	14737.	ppb	117	.79249
Mn	772.11	ppb	6.87	.89001
Mo	.26022	ppb	.02583	9.9265
Na	130270.	ppb	1,463	1.1227
Ni	444.54	ppb	3.05	.68689
Pb	17.190	ppb	.086	.49800
Pd	<.00000	ppb	7.080	36.436
Sb	475.33	ppb	2.36	.49594
Se	7.1881	ppb	2.1786	30.308
Si	4037.4	ppb	68.4	1.6941
Sn	.08962	ppb	.32310	360.53
Sr	4811.0	ppb	14.1	.29319
Ti	<.00000	ppb	.99777	107.30
Tl	34.557	ppb	1.452	4.2025

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190917059-002AMS

Acquire Date: 20-Sep-2019 5:17 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
V_	497.71	ppb	2.42	.48620
Zn	480.35	ppb	3.37	.70231
Zr	2.0343	ppb	.5793	28.475

190917059-002AA

Acquire Date: 20-Sep-2019 5:21 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	168300.	ppb	356	.21136
Ag	112.15	ppb	.58	.51562
Al	4302.7	ppb	16.8	.39133
As	79.949	ppb	.065	.08136
Au	9.9549	ppb	.8512	8.5507
B_	304.01	ppb	.65	.21419
Ba	5772.2	ppb	24.5	.42447
Be	110.03	ppb	.33	.30445
Ca	46988.	ppb	65	.13900
Cd	96.079	ppb	.041	.04316
Co	927.57	ppb	2.60	.28083
Cr	473.95	ppb	7.93	1.6735
Cu	587.35	ppb	3.48	.59186
Fe	9803.1	ppb	12.5	.12714
K_	16813.	ppb	33	.19748
Li	<.00000	ppb	.8	.05920
Mg	14174.	ppb	62	.43910
Mn	1210.8	ppb	.3	.02645
Mo	1.0182	ppb	.1162	11.412
Na	127890.	ppb	806	.63024
Ni	932.05	ppb	.57	.06126
Pb	37.488	ppb	1.217	3.2455
Pd	<.00000	ppb	1.330	9.4267
Sb	981.05	ppb	.65	.06663
Se	18.741	ppb	.363	1.9343
Si	3262.0	ppb	7.0	.21477
Sn	<.00000	ppb	.21607	187.17
Sr	4533.6	ppb	12.1	.26789
Ti	<.00000	ppb	1.2361	35.641
Tl	74.043	ppb	.071	.09553
V_	1059.1	ppb	2.0	.18650
Zn	983.08	ppb	2.09	.21213

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190917059-002AA

Acquire Date: 20-Sep-2019 5:21 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Zr	.95345	ppb	.72576	76.119

190917059-002AL

Acquire Date: 20-Sep-2019 5:25 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	37938.	ppb	77	.20400
Ag	<.00000	ppb	1.2537	81.283
Al	<.00000	ppb	10.002	12.583
As	<.00000	ppb	1.41214	247.67
Au	1.2051	ppb	.1705	14.149
B_	63.620	ppb	.496	.77977
Ba	351.60	ppb	.27	.07767
Be	.17281	ppb	.09214	53.321
Ca	10014.	ppb	24	.23943
Cd	<.00000	ppb	.04273	35.745
Co	.09230	ppb	.19579	212.13
Cr	<.00000	ppb	10.87126	1,204.7
Cu	1.5491	ppb	.6867	44.328
Fe	1738.3	ppb	8.5	.48692
K_	2590.6	ppb	14.4	.55706
Li	<.00000	ppb	2.0	.18305
Mg	2873.9	ppb	4.4	.15268
Mn	55.221	ppb	.302	.54683
Mo	<.00000	ppb	.10335	15.393
Na	34982.	ppb	37	.10556
Ni	<.00000	ppb	.32077	87.916
Pb	.77718	ppb	.34234	44.049
Pd	2.1950	ppb	17.2957	787.96
Sb	1.3914	ppb	.2502	17.980
Se	<.00000	ppb	.1816	4.2861
Si	678.77	ppb	24.08	3.5473
Sn	.67725	ppb	.16937	25.009
Sr	968.26	ppb	5.89	.60873
Ti	<.00000	ppb	1.15650	195.33
Tl	<.00000	ppb	.94428	918.87
V_	<.00000	ppb	.69401	97.706
Zn	1.2174	ppb	.0084	.68949
Zr	.97820	ppb	.20789	21.252

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190917059-003A

Acquire Date: 20-Sep-2019 5:29 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	245400.	ppb	908	.37006
Ag	<.00000	ppb	4.6421	208.00
Al	<.00000	ppb	6.98230	708.57
As	.09416	ppb	1.81499	1,927.6
Au	1.1901	ppb	.5299	44.523
B_	363.86	ppb	1.34	.36737
Ba	2700.7	ppb	8.4	.31216
Be	.93655	ppb	.04725	5.0446
Ca	19018.	ppb	14	.07108
Cd	<.00000	ppb	.00557	2.5708
Co	.21471	ppb	.07278	33.896
Cr	<.00000	ppb	5.5492	219.90
Cu	<.00000	ppb	.1660	9.8161
Fe	838.53	ppb	1.32	.15742
K_	17865.	ppb	126	.70343
Li	<.00000	ppb	19.0	1.4206
Mg	4970.4	ppb	8.2	.16425
Mn	172.50	ppb	.76	.44292
Mo	<.00000	ppb	.27770	64.682
Na	172490.	ppb	1,850	1.0728
Ni	<.00000	ppb	.10167	102.04
Pb	4.3464	ppb	.0243	.55850
Pd	<.00000	ppb	7.096	56.567
Sb	2.2491	ppb	.1073	4.7718
Se	<.00000	ppb	.9077	24.379
Si	7161.8	ppb	5.6	.07873
Sn	<.00000	ppb	.46517	90.400
Sr	2796.7	ppb	12.7	.45494
Ti	<.00000	ppb	2.07364	3,681.2
Tl	1.0271	ppb	.9440	91.914
V_	<.00000	ppb	8.9600	177.68
Zn	3.6660	ppb	.0446	1.2171
Zr	1.0268	ppb	1.0365	100.94

CCV-7

Acquire Date: 20-Sep-2019 5:37 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
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Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCV-7

Acquire Date: 20-Sep-2019 5:37 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1974.3	ppb	15.2	.76752
Ag	548.86	ppb	2.08	.37903
Al	1934.1	ppb	2.1	.10673
As	2054.3	ppb	15.5	.75267
Au	1.8592	ppb	.0379	2.0360
B_	2088.4	ppb	4.1	.19721
Ba	2025.4	ppb	8.1	.40186
Be	1970.1	ppb	10.4	.52673
Ca	1917.2	ppb	8.6	.44776
Cd	1996.6	ppb	4.4	.21870
Co	1947.8	ppb	9.0	.46303
Cr	2010.6	ppb	1.7	.08591
Cu	2070.8	ppb	3.3	.15766
Fe	1985.9	ppb	7.0	.35156
K_	9149.9	ppb	7.5	.08225
Li	2003.0	ppb	1.1	.05374
Mg	1893.7	ppb	13.9	.73191
Mn	1962.4	ppb	5.4	.27653
Mo	2009.8	ppb	7.1	.35308
Na	2023.2	ppb	17.0	.83986
Ni	1974.3	ppb	2.9	.14620
Pb	2016.9	ppb	9.8	.48460
Pd	<.00000	ppb	6.653	19.112
Sb	2002.4	ppb	6.3	.31594
Se	2074.9	ppb	2.0	.09628
Si	4749.4	ppb	52.9	1.1147
Sn	1963.3	ppb	5.3	.27187
Sr	2042.0	ppb	4.8	.23599
Ti	<.00000	ppb	.1596	5.1446
Tl	2016.4	ppb	6.9	.34217
V_	1941.6	ppb	16.4	.84342
Zn	1963.2	ppb	6.6	.33614
Zr	.63518	ppb	.75998	119.65

CCB-7

Acquire Date: 20-Sep-2019 5:41 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	12.813	ppb	2.328	18.166
Ag	<.00000	ppb	1.20698	1,845.3

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCB-7

Acquire Date: 20-Sep-2019 5:41 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Al	<.00000	ppb	9.5425	446.37
As	2.4715	ppb	.8736	35.347
Au	<.00000	ppb	.49233	282.29
B_	1.7009	ppb	1.0418	61.251
Ba	<.00000	ppb	.32636	132.68
Be	.19569	ppb	.05155	26.343
Ca	1.8745	ppb	.6626	35.350
Cd	.28373	ppb	.19690	69.398
Co	.17746	ppb	.26602	149.91
Cr	.12861	ppb	4.91749	3,823.5
Cu	<.00000	ppb	.78305	93.177
Fe	.60605	ppb	.37652	62.126
K_	<.00000	ppb	9.121	67.029
Li	<.00000	ppb	7.0215	155.62
Mg	11.958	ppb	12.984	108.58
Mn	.15660	ppb	.19225	122.77
Mo	1.5801	ppb	2.1636	136.93
Na	6.0623	ppb	2.8526	47.055
Ni	.11060	ppb	.04688	42.387
Pb	.44791	ppb	.38971	87.005
Pd	<.00000	ppb	11.53057	3,601,800
Sb	.15162	ppb	.71469	471.38
Se	2.1822	ppb	2.7231	124.79
Si	9.4914	ppb	3.5338	37.231
Sn	.50795	ppb	.96161	189.31
Sr	<.00000	ppb	17.2284	318.13
Ti	<.00000	ppb	1.03682	122.57
Tl	<.00000	ppb	.36307	70.710
V_	<.00000	ppb	9.5910	164.07
Zn	.18826	ppb	.26347	139.95
Zr	1.6131	ppb	.8292	51.402

190917059-003A

Acquire Date: 20-Sep-2019 5:46 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	27688.	ppb	9	.03104
Ag	<.00000	ppb	1.2538	18.191
Al	<.00000	ppb	1.398	11.483
As	<.00000	ppb	.67239	67.309

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190917059-003A

Acquire Date: 20-Sep-2019 5:46 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Au	<.00000	ppb	.17016	79.202
B_	35.526	ppb	.193	.54411
Ba	258.24	ppb	.15	.05834
Be	.28052	ppb	.09004	32.098
Ca	1835.4	ppb	3.2	.17654
Cd	.01181	ppb	.05759	487.57
Co	.03903	ppb	.05521	141.44
Cr	.95557	ppb	2.48066	259.60
Cu	<.00000	ppb	.3333	23.817
Fe	82.231	ppb	.537	.65318
K_	1035.8	ppb	5.7	.54592
Li	<.00000	ppb	17.24	2.1880
Mg	455.17	ppb	16.59	3.6445
Mn	17.196	ppb	.012	.06799
Mo	<.00000	ppb	.02584	4.3855
Na	26513.	ppb	20	.07672
Ni	<.00000	ppb	.14080	106.04
Pb	.22075	ppb	.78046	353.55
Pd	6.2709	ppb	9.7565	155.58
Sb	.22752	ppb	.03579	15.732
Se	<.00000	ppb	.1816	7.4434
Si	684.25	ppb	9.22	1.3475
Sn	.19831	ppb	.31340	158.03
Sr	270.23	ppb	1.64	.60639
Ti	<.00000	ppb	.07968	8.8324
Tl	<.00000	ppb	.0001	.00490
V_	<.00000	ppb	2.4605	46.727
Zn	.20887	ppb	.00382	1.8307
Zr	<.00000	ppb	1.58970	544.59

190917059-004A

Acquire Date: 20-Sep-2019 5:51 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	169510.	ppb	973	.57413
Ag	<.00000	ppb	1.9731	47.893
Al	232.07	ppb	.47	.20127
As	8.8403	ppb	1.0082	11.405
Au	<.00000	ppb	.4164	15.474
B_	118.35	ppb	1.20	1.0134

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190917059-004A

Acquire Date: 20-Sep-2019 5:51 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ba	99.480	ppb	.344	.34554
Be	.06531	ppb	.04297	65.788
Ca	71073.	ppb	743	1.0452
Cd	.10375	ppb	.00186	1.7918
Co	2.8694	ppb	.0527	1.8358
Cr	9.4760	ppb	2.5260	26.657
Cu	2.2778	ppb	1.4965	65.699
Fe	1409.2	ppb	14.4	1.0194
K_	7811.4	ppb	31.7	.40544
Li	<.00000	ppb	3.9	.19985
Mg	25988.	ppb	180	.69095
Mn	659.75	ppb	7.11	1.0777
Mo	10.503	ppb	.007	.06231
Na	129110.	ppb	547	.42330
Ni	1.1413	ppb	.0195	1.7122
Pb	4.9062	ppb	.0551	1.1237
Pd	<.00000	ppb	11.088	75.224
Sb	1.3112	ppb	.2145	16.357
Se	<.00000	ppb	.0000	.00014
Si	10332.	ppb	63	.60973
Sn	.25477	ppb	.61116	239.89
Sr	956.71	ppb	7.00	.73116
Ti	.00001	ppb	.00001	66.898
Tl	<.00000	ppb	.43570	850.39
V_	4.9842	ppb	.4419	8.8651
Zn	23.280	ppb	.253	1.0855
Zr	1.4414	ppb	1.4166	98.276

190917059-004A

Acquire Date: 20-Sep-2019 5:57 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	14348.	ppb	79	.55344
Ag	<.00000	ppb	1.9500	72.450
Al	<.00000	ppb	17.459	53.850
As	<.00000	ppb	.80680	564.23
Au	<.00000	ppb	.00003	.00433
B_	10.159	ppb	.038	.37732
Ba	8.7913	ppb	.3704	4.2131
Be	.18966	ppb	.06883	36.294

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190917059-004A

Acquire Date: 20-Sep-2019 5:57 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ca	6507.9	ppb	47.5	.73020
Cd	<.00000	ppb	.02601	44.993
Co	.34783	ppb	.02510	7.2163
Cr	2.3245	ppb	.3605	15.507
Cu	<.00000	ppb	.54690	63.614
Fe	126.23	ppb	1.09	.86189
K_	455.52	ppb	11.21	2.4602
Li	<.00000	ppb	1.27	.28714
Mg	2171.4	ppb	6.3	.28819
Mn	59.991	ppb	.917	1.5291
Mo	.15982	ppb	.06459	40.415
Na	14255.	ppb	12	.08464
Ni	<.00000	ppb	.01962	12.451
Pb	1.8932	ppb	.1951	10.304
Pd	<.00000	ppb	5.3220	282.82
Sb	<.00000	ppb	1.32228	1,049.4
Se	<.00000	ppb	1.2709	31.932
Si	960.23	ppb	16.30	1.6975
Sn	.22167	ppb	.07008	31.615
Sr	91.841	ppb	4.303	4.6850
Ti	<.00000	ppb	.6780	51.160
Tl	<.00000	ppb	.2179	11.784
V_	<.00000	ppb	3.1566	202.32
Zn	2.0016	ppb	.1347	6.7282
Zr	.97772	ppb	.89873	91.921

190917059-005A

Acquire Date: 20-Sep-2019 6:04 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	171960.	ppb	55	.03211
Ag	<.00000	ppb	.2553	5.7820
Al	<.00000	ppb	10.71	5.9254
As	<.00000	ppb	.2688	16.158
Au	<.00000	ppb	.0566	5.2919
B_	144.32	ppb	1.38	.95493
Ba	358.45	ppb	2.79	.77743
Be	.10169	ppb	.10308	101.37
Ca	76321.	ppb	980	1.2837
Cd	<.00000	ppb	.09104	630.26

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190917059-005A

Acquire Date: 20-Sep-2019 6:04 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Co	.40113	ppb	.01505	3.7510
Cr	<.00000	ppb	8.2116	309.99
Cu	4.6925	ppb	1.8248	38.888
Fe	64.648	ppb	1.317	2.0372
K_	20936.	ppb	89	.42575
Li	<.00000	ppb	2.5	.13140
Mg	30045.	ppb	292	.97139
Mn	29.873	ppb	.282	.94521
Mo	<.00000	ppb	.01939	23.595
Na	129290.	ppb	1,251	.96738
Ni	1.5664	ppb	.0469	2.9953
Pb	1.7806	ppb	.0322	1.8078
Pd	4.7040	ppb	17.2966	367.70
Sb	<.00000	ppb	.1071	10.358
Se	<.00000	ppb	.1817	2.5730
Si	4623.3	ppb	67.2	1.4531
Sn	<.00000	ppb	.04475	45.126
Sr	5113.4	ppb	50.1	.97956
Ti	<.00000	ppb	1.4756	46.307
Tl	<.00000	ppb	.79901	388.85
V_	<.00000	ppb	2.2080	77.602
Zn	9.8125	ppb	.0982	1.0007
Zr	2.1013	ppb	1.3130	62.487

190917059-005A

Acquire Date: 20-Sep-2019 6:09 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	19243.	ppb	1,285	6.6804
Ag	<.00000	ppb	.2092	5.9835
Al	<.00000	ppb	12.107	15.199
As	1.1405	ppb	2.4873	218.09
Au	<.00000	ppb	.18910	42.781
B_	17.282	ppb	1.200	6.9424
Ba	39.693	ppb	2.279	5.7427
Be	.13662	ppb	.10510	76.932
Ca	8887.5	ppb	535.1	6.0207
Cd	<.00000	ppb	.05573	111.63
Co	.12600	ppb	.03263	25.899
Cr	4.1481	ppb	1.0374	25.008

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190917059-005A

Acquire Date: 20-Sep-2019 6:09 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Cu	1.5981	ppb	3.0381	190.11
Fe	7.1802	ppb	.5940	8.2733
K_	1562.3	ppb	118.3	7.5720
Li	<.00000	ppb	35.95	6.0394
Mg	3252.3	ppb	181.6	5.5834
Mn	3.6926	ppb	.2760	7.4741
Mo	<.00000	ppb	.17438	26.514
Na	18766.	ppb	1,035	5.5148
Ni	<.00000	ppb	.21517	8,509.6
Pb	1.3590	ppb	.0050	.36595
Pd	<.00000	ppb	15.0791	218.55
Sb	<.00000	ppb	.17857	21.434
Se	<.00000	ppb	1.2709	43.037
Si	520.37	ppb	20.52	3.9438
Sn	.60846	ppb	.44186	72.620
Sr	596.02	ppb	49.99	8.3867
Ti	<.00000	ppb	1.2362	56.932
Tl	.25681	ppb	.43576	169.68
V_	<.00000	ppb	1.0738	20.763
Zn	2.3657	ppb	.5139	21.723
Zr	1.5638	ppb	1.5200	97.197

190917059-006A

Acquire Date: 20-Sep-2019 6:13 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	224540.	ppb	20	.00911
Ag	<.00000	ppb	.2167	4.7738
Al	<.00000	ppb	2.21	2.1056
As	1.0459	ppb	1.0090	96.472
Au	<.00000	ppb	.05717	9.2863
B_	487.07	ppb	3.87	.79520
Ba	2935.4	ppb	16.8	.57260
Be	.97195	ppb	.14451	14.868
Ca	17283.	ppb	88	.50651
Cd	<.00000	ppb	.00744	3.1482
Co	.19168	ppb	.11046	57.625
Cr	<.00000	ppb	13.4617	268.20
Cu	<.00000	ppb	2.0901	76.955
Fe	13.133	ppb	.015	.11793

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190917059-006A

Acquire Date: 20-Sep-2019 6:13 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
K_	15402.	ppb	115	.74819
Li	<.00000	ppb	26.9	2.3417
Mg	5329.0	ppb	25.5	.47790
Mn	73.385	ppb	.752	1.0254
Mo	1.2332	ppb	.1487	12.058
Na	161340.	ppb	1,337	.82875
Ni	.11654	ppb	.16434	141.01
Pb	.88824	ppb	.29332	33.022
Pd	6.2729	ppb	20.3978	325.17
Sb	1.5685	ppb	.5721	36.475
Se	<.00000	ppb	.1816	4.8769
Si	4610.6	ppb	21.2	.46087
Sn	<.00000	ppb	.16150	838.83
Sr	2378.6	ppb	2.6	.10755
Ti	<.00000	ppb	.4019	13.455
Tl	<.00000	ppb	.72640	128.58
V_	<.00000	ppb	2.7072	33.713
Zn	5.0721	ppb	.0893	1.7611
Zr	1.4729	ppb	.1983	13.463

190917059-006A

Acquire Date: 20-Sep-2019 6:19 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	29817.	ppb	137	.45819
Ag	<.00000	ppb	1.50880	187.59
Al	<.00000	ppb	2.5603	26.365
As	.23725	ppb	1.88271	793.54
Au	.07981	ppb	.39714	497.64
B_	59.477	ppb	.563	.94663
Ba	340.18	ppb	.24	.07060
Be	.12758	ppb	.06227	48.804
Ca	2019.2	ppb	4.0	.19677
Cd	<.00000	ppb	.03716	58.921
Co	.11357	ppb	.05019	44.189
Cr	7.0826	ppb	5.8204	82.178
Cu	<.00000	ppb	3.89202	1,089.6
Fe	1.1570	ppb	.0397	3.4339
K_	1166.7	ppb	21.4	1.8365
Li	<.00000	ppb	5.73	.68473

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

190917059-006A

Acquire Date: 20-Sep-2019 6:19 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mg	572.45	ppb	13.89	2.4263
Mn	9.1983	ppb	.1417	1.5410
Mo	<.00000	ppb	.11626	19.432
Na	28169.	ppb	47	.16593
Ni	<.00000	ppb	.08215	48.687
Pb	1.1739	ppb	.7073	60.250
Pd	<.00000	ppb	.8870	10.879
Sb	.68245	ppb	.53608	78.552
Se	<.00000	ppb	3.2682	181.81
Si	531.38	ppb	4.95	.93110
Sn	3.0516	ppb	.6853	22.457
Sr	287.93	ppb	15.31	5.3189
Ti	<.00000	ppb	2.9113	82.590
Tl	<.00000	ppb	.7261	45.614
V_	<.00000	ppb	6.3739	80.255
Zn	.48740	ppb	.07458	15.301
Zr	1.1970	ppb	1.2784	106.80

CRI-2

Acquire Date: 20-Sep-2019 6:29 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	65.631	ppb	13.696	20.868
Ag	16.610	ppb	3.667	22.078
Al	<.00000	ppb	2.7922	70.719
As	19.014	ppb	2.219	11.671
Au	<.00000	ppb	.60551	180.65
B_	.02703	ppb	.00963	35.625
Ba	.17184	ppb	.53940	313.90
Be	9.7744	ppb	.1356	1.3871
Ca	.31261	ppb	2.87136	918.52
Cd	10.088	ppb	.316	3.1280
Co	97.722	ppb	1.124	1.1507
Cr	17.547	ppb	4.467	25.454
Cu	48.910	ppb	4.080	8.3411
Fe	.17436	ppb	.01270	7.2811
K_	12.522	ppb	.990	7.9057
Li	<.00000	ppb	6.91770	854.76
Mg	<.00000	ppb	4.5297	353.86
Mn	29.479	ppb	.469	1.5921

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CRI-2

Acquire Date: 20-Sep-2019 6:29 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mo	<.00000	ppb	.32292	48.099
Na	44.566	ppb	9.952	22.330
Ni	79.122	ppb	1.230	1.5548
Pb	6.8603	ppb	.3413	4.9745
Pd	<.00000	ppb	1.330	12.120
Sb	118.23	ppb	2.07	1.7509
Se	9.2429	ppb	.0003	.00338
Si	<.00000	ppb	19.7958	658.93
Sn	<.00000	ppb	.07394	55.430
Sr	<.00000	ppb	1.6267	45.336
Ti	<.00000	ppb	.8374	33.367
Tl	19.719	ppb	.799	4.0535
V_	82.235	ppb	3.153	3.8341
Zn	41.334	ppb	.498	1.2050
Zr	<.00000	ppb	.38034	1,593.2

ICSA-2

Acquire Date: 20-Sep-2019 6:34 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	65.037	ppb	.642	.98737
Ag	<.00000	ppb	.325	1.5324
Al	478880.	ppb	1,046	.21837
As	<.00000	ppb	2.96	1.5703
Au	144.92	ppb	1.53	1.0590
B_	<.00000	ppb	1.00	.44064
Ba	.28244	ppb	.68471	242.42
Be	2.0995	ppb	.0558	2.6589
Ca	407510.	ppb	1,069	.26222
Cd	<.00000	ppb	.11520	12.012
Co	.13133	ppb	.00502	3.8210
Cr	<.00000	ppb	.081	.43413
Cu	<.00000	ppb	3.254	12.362
Fe	117530.	ppb	12	.01047
K_	2.9471	ppb	2.7247	92.455
Li	<.00000	ppb	5.4	.44642
Mg	502300.	ppb	2,185	.43502
Mn	<.00000	ppb	.0352	.83051
Mo	<.00000	ppb	.3552	6.5354
Na	40.753	ppb	6.779	16.635

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

ICSA-2

Acquire Date: 20-Sep-2019 6:34 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ni	<.00000	ppb	.004	.02246
Pb	<.00000	ppb	.232	.30083
Pd	<.00000	ppb	16.4087	275.38
Sb	<.00000	ppb	1.1568	41.827
Se	<.00000	ppb	1.453	3.8231
Si	<.00000	ppb	11.3104	1,124.1
Sn	<.00000	ppb	.54702	264.97
Sr	9.2708	ppb	6.4128	69.172
Ti	<.00000	ppb	1.595	7.7918
Tl	<.00000	ppb	1.888	12.296
V_	<.00000	ppb	4.290	15.134
Zn	<.00000	ppb	.182	.98494
Zr	<.00000	ppb	1.3820	117.92

ICSAB-2

Acquire Date: 20-Sep-2019 6:39 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	91.764	ppb	15.111	16.467
Ag	1144.8	ppb	.4	.03458
Al	478890.	ppb	2,607	.54446
As	<.00000	ppb	1.81	.93484
Au	145.77	ppb	1.10	.75240
B_	<.00000	ppb	1.70	.77326
Ba	489.97	ppb	3.21	.65595
Be	469.33	ppb	3.30	.70228
Ca	406440.	ppb	2,584	.63585
Cd	867.82	ppb	.60	.06872
Co	435.93	ppb	.43	.09958
Cr	583.88	ppb	1.57	.26964
Cu	551.28	ppb	.15	.02737
Fe	117220.	ppb	42	.03609
K_	11.475	ppb	6.848	59.674
Li	<.00000	ppb	12.2	.98723
Mg	499540.	ppb	3,165	.63364
Mn	469.55	ppb	.65	.13880
Mo	<.00000	ppb	.0904	2.1001
Na	64.688	ppb	21.007	32.474
Ni	1033.7	ppb	.7	.07119
Pb	989.55	ppb	1.70	.17141

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

ICSAB-2

Acquire Date: 20-Sep-2019 6:39 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Pd	<.00000	ppb	1.769	4.9467
Sb	.87274	ppb	1.61184	184.69
Se	<.00000	ppb	4.539	11.369
Si	<.00000	ppb	9.208	59.451
Sn	.21211	ppb	.24719	116.54
Sr	13.201	ppb	1.238	9.3781
Ti	<.00000	ppb	.961	4.6942
Tl	<.00000	ppb	.290	1.5242
V_	434.08	ppb	2.14	.49361
Zn	813.66	ppb	.02	.00190
Zr	.56092	ppb	.86590	154.37

CCV-8

Acquire Date: 20-Sep-2019 6:47 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1903.8	ppb	15.9	.83777
Ag	546.50	ppb	3.57	.65291
Al	1924.8	ppb	5.9	.30537
As	2030.3	ppb	6.4	.31333
Au	2.9563	ppb	.1891	6.3956
B_	2064.0	ppb	4.6	.22052
Ba	1996.6	ppb	25.1	1.2593
Be	1942.6	ppb	24.2	1.2473
Ca	1900.7	ppb	7.6	.39823
Cd	1987.8	ppb	1.6	.07865
Co	1927.0	ppb	5.6	.29316
Cr	1977.1	ppb	29.3	1.4841
Cu	2040.7	ppb	26.0	1.2741
Fe	1983.9	ppb	2.1	.10567
K_	9973.0	ppb	107.7	1.0799
Li	1978.7	ppb	22.2	1.1244
Mg	1872.5	ppb	4.6	.24496
Mn	1949.7	ppb	2.4	.12505
Mo	1994.8	ppb	5.7	.28634
Na	1960.3	ppb	20.2	1.0326
Ni	1956.8	ppb	6.6	.33893
Pb	1998.2	ppb	3.8	.18873
Pd	<.00000	ppb	3.993	7.1937
Sb	1985.5	ppb	3.2	.15869

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCV-8

Acquire Date: 20-Sep-2019 6:47 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Se	2051.6	ppb	7.7	.37375
Si	4671.3	ppb	129.5	2.7726
Sn	1944.0	ppb	4.2	.21855
Sr	2013.0	ppb	8.9	.44060
Ti	<.00000	ppb	.1995	6.7384
Tl	1992.1	ppb	8.4	.42130
V_	1912.5	ppb	29.0	1.5143
Zn	1948.1	ppb	4.4	.22730
Zr	1.9060	ppb	1.5200	79.748

CCB-8

Acquire Date: 20-Sep-2019 6:52 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	12.796	ppb	1.184	9.2515
Ag	<.00000	ppb	2.2749	52.499
Al	<.00000	ppb	5.079	6.5360
As	<.00000	ppb	.20170	70.518
Au	<.00000	ppb	.13250	14.132
B_	1.8467	ppb	1.5076	81.637
Ba	<.00000	ppb	.03619	7.3314
Be	.17006	ppb	.07089	41.684
Ca	<.00000	ppb	2.20900	1,413.4
Cd	.37172	ppb	.39196	105.45
Co	.26263	ppb	.29613	112.76
Cr	1.2768	ppb	2.7521	215.55
Cu	<.00000	ppb	3.44092	789.71
Fe	2.1811	ppb	.8985	41.193
K_	<.00000	ppb	9.461	60.100
Li	<.00000	ppb	3.63291	391.09
Mg	2.9894	ppb	32.3097	1,080.8
Mn	.23833	ppb	.28330	118.87
Mo	1.3562	ppb	1.8858	139.05
Na	4.9715	ppb	1.5814	31.809
Ni	.17444	ppb	.42635	244.41
Pb	.81006	ppb	.07215	8.9066
Pd	<.00000	ppb	8.8702	707.11
Sb	.02613	ppb	.82196	3,145.2
Se	<.00000	ppb	.3631	23.561
Si	6.4987	ppb	2.1198	32.619

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCB-8

Acquire Date: 20-Sep-2019 6:52 pm

Sample Type: Unknown

Correction Factor: 1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Sn	.78051	ppb	.83306	106.73
Sr	<.00000	ppb	2.1056	70.707
Ti	<.00000	ppb	1.5154	122.14
Tl	<.00000	ppb	.43571	56.575
V_	<.00000	ppb	2.7763	152.13
Zn	.25375	ppb	.29511	116.30
Zr	1.1971	ppb	1.3476	112.57

Color Legend: Pass/Unchecked Internal Standard Check Fail Check Warn

Adirondack Environmental Services, Inc

PREP BATCH REPORT

Prep Start Date: **9/19/2019 3:36:56 P**

Prep End Date: **9/19/2019 5:36:00 P**

Comments: Temp:95 Start Time:1536 End Time:1736

Page:1 of 1

Prep Factor Units:

mL / mL

Prep Batch **75689** Prep Code: **HG_PREP** Technician: **Ashlyn VanBuren**

Sample ID	Matrix	pH	ResCl	SampAmt	Sol Added	Fin Vol	factor	PrepStart	PrepEnd	ExPos	TareWt	CleanUp
MB-75689				50	0	50	1.000	9/19/2019	9/19/2019		0	
LCS-75689				50	0	50	1.000	9/19/2019	9/19/2019		0	
190917059-001A	Water			50	0	50	1.000	9/19/2019	9/19/2019		0	
190917059-002A	Water			50	0	50	1.000	9/19/2019	9/19/2019		0	
190917059-002ADP	Water			50	0	50	1.000	9/19/2019	9/19/2019		0	
190917059-002AMS	Water			50	0	50	1.000	9/19/2019	9/19/2019		0	
190917059-003A	Water			50	0	50	1.000	9/19/2019	9/19/2019		0	
190917059-004A	Water			50	0	50	1.000	9/19/2019	9/19/2019		0	
190917059-005A	Water			50	0	50	1.000	9/19/2019	9/19/2019		0	
190917059-006A	Water			50	0	50	1.000	9/19/2019	9/19/2019		0	

Number	Reagent Name	Solution ID	Solution Name	SampType	AmtAdd	units
5433	Sulfuric Acid	MR-HYDROXYL	Hydroxylamine, 12%		3	ml
5766	Nitric Acid	MR-KMNO4 5%-	Potassium Permanganate		7.5	ml
5870	Hot Block Digestion Vessels - 100m	MR-POTASSIUM	Potassium Persulfate, 5%		4	ml
		MSP-HG 0.1 PP	0.1 PPM Hg		1	ml

Adirondack Environmental Services, Inc

PREP BATCH REPORT

Prep Start Date: **9/19/2019 2:46:59 P**

Prep End Date: **9/19/2019 4:05:00 P**

Comments: Temp:95 Start Time:1446 End Time:1605

Page:1 of 1

Prep Factor Units:

mL / mL

Prep Batch **75695** Prep Code: **3010CLP** Technician: **Ashlyn VanBuren**

Sample ID	Matrix	pH	ResCl	SampAmt	Sol Added	Fin Vol	factor	PrepStart	PrepEnd	ExPos	TareWt	CleanUp
MB-75695				50	0	50	1.000	9/19/2019	9/19/2019		0	
LCS-75695				50	0	50	1.000	9/19/2019	9/19/2019		0	
190917059-001A	Water	1		50	0	50	1.000	9/19/2019	9/19/2019		0	
190917059-002A	Water	1		50	0	50	1.000	9/19/2019	9/19/2019		0	
190917059-002ADP	Water	1		50	0	50	1.000	9/19/2019	9/19/2019		0	
190917059-002AMS	Water	1		50	0	50	1.000	9/19/2019	9/19/2019		0	
190917059-003A	Water	1		50	0	50	1.000	9/19/2019	9/19/2019		0	
190917059-004A	Water	1		50	0	50	1.000	9/19/2019	9/19/2019		0	
190917059-005A	Water	1		50	0	50	1.000	9/19/2019	9/19/2019		0	
190917059-006A	Water	1		50	0	50	1.000	9/19/2019	9/19/2019		0	

Number	Reagent Name	Solution ID	Solution Name	SampType	AmtAdd	units
5766	Nitric Acid	5794	M-ICP-SSWS-M		0.5	ml
5694	Hydrochoric Acid	MWS-200.7-6-85	200.7-6		50	ml
5871	Hot Block Digestion Vessels - 50mL					

Adirondack Environmental Services, Inc**Date:** 24-Sep-19**CLIENT:** Arcadis**Work Order:** 190917059**Reference:** Watervliet Arsenal /**PO#:****Client Sample ID:** WVA-AW-35-MW-10-091719**Collection Date:** 9/17/2019 2:00:00 PM**Lab Sample ID:** 190917059-001**Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	9/17/2019 4:50:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 24-Sep-19**CLIENT:** Arcadis**Work Order:** 190917059**Reference:** Watervliet Arsenal /**PO#:****Client Sample ID:** WVA-AW-35-MW-11-091719**Collection Date:** 9/17/2019 1:55:00 PM**Lab Sample ID:** 190917059-002**Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	9/17/2019 4:50:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 24-Sep-19**CLIENT:** Arcadis**Client Sample ID:** DUP-01-091719**Work Order:** 190917059**Collection Date:** 9/17/2019**Reference:** Watervliet Arsenal /**Lab Sample ID:** 190917059-003**PO#:****Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	9/17/2019 4:50:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentitively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 24-Sep-19**CLIENT:** Arcadis**Client Sample ID:** 93-EM-SP-11-091819**Work Order:** 190917059**Collection Date:** 9/18/2019 9:35:00 AM**Reference:** Watervliet Arsenal /**Lab Sample ID:** 190917059-004**PO#:****Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	9/18/2019 4:28:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 24-Sep-19**CLIENT:** Arcadis**Work Order:** 190917059**Reference:** Watervliet Arsenal /**PO#:****Client Sample ID:** WVA-AW-35-MW-38-091819**Collection Date:** 9/18/2019 9:40:00 AM**Lab Sample ID:** 190917059-005**Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	9/18/2019 4:28:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 24-Sep-19**CLIENT:** Arcadis**Client Sample ID:** WVA-AW-35-MW-5-091819**Work Order:** 190917059**Collection Date:** 9/18/2019 11:20:00 AM**Reference:** Watervliet Arsenal /**Lab Sample ID:** 190917059-006**PO#:****Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	9/18/2019 4:28:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

CLIENT: Arcadis
 Work Order: 190917059
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: R175384

MBLK	SeqNo: 2700682					TestNo: SM3500-Cr D		RunNo: 175384	
	Samp ID: MB-R175384					Units: mg/L		Analysis Date: 9/17/2019	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	0.020									

LCS	SeqNo: 2700683					TestNo: SM3500-Cr D		RunNo: 175384	
	Samp ID: LCS-R175384					Units: mg/L		Analysis Date: 9/17/2019	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.199	0.020	0.2	0	99.5	91.7	108	0	0		

MS	SeqNo: 2701121					TestNo: SM3500-Cr D		RunNo: 175384	
	Samp ID: 190917015-004					Units: mg/L		Analysis Date: 9/17/2019	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.192	0.020	0.2	0	96	75	125	0	0		

MS	SeqNo: 2701461					TestNo: SM3500-Cr D		RunNo: 175384	
	Samp ID: 190917059-002 (WVA-AW-35-MW)					Units: mg/L		Analysis Date: 9/17/2019	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.185	0.020	0.2	0	92.5	75	125	0	0		

MSD	SeqNo: 2701122					TestNo: SM3500-Cr D		RunNo: 175384	
	Samp ID: 190917015-004					Units: mg/L		Analysis Date: 9/17/2019	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.194	0.020	0.2	0	97	75	125	0.192	1.04	14.5	

MSD	SeqNo: 2701462					TestNo: SM3500-Cr D		RunNo: 175384	
	Samp ID: 190917059-002 (WVA-AW-35-MW)					Units: mg/L		Analysis Date: 9/17/2019	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.182	0.020	0.2	0	91	75	125	0.185	1.63	14.5	

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: R175384

CCB	SeqNo: 2700691	TestNo: SM3500-Cr D	RunNo: 175384
	Samp ID: CCB	Units: mg/L	Analysis Date: 9/17/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.020	0	0	0	0	0	0	0		

CCB	SeqNo: 2701124	TestNo: SM3500-Cr D	RunNo: 175384
	Samp ID: CCB	Units: mg/L	Analysis Date: 9/17/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.020	0	0	0	0	0	0	0		

CCB	SeqNo: 2701465	TestNo: SM3500-Cr D	RunNo: 175384
	Samp ID: CCB	Units: mg/L	Analysis Date: 9/17/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.020	0	0	0	0	0	0	0		

CCV	SeqNo: 2700690	TestNo: SM3500-Cr D	RunNo: 175384
	Samp ID: CCV	Units: mg/L	Analysis Date: 9/17/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.197	0.020	0.2	0	98.5	90	110	0	0		

CCV	SeqNo: 2701123	TestNo: SM3500-Cr D	RunNo: 175384
	Samp ID: CCV	Units: mg/L	Analysis Date: 9/17/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.194	0.020	0.2	0	97	90	110	0	0		

CCV	SeqNo: 2701464	TestNo: SM3500-Cr D	RunNo: 175384
	Samp ID: CCV	Units: mg/L	Analysis Date: 9/17/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.197	0.020	0.2	0	98.5	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: R175384

CRI	SeqNo: 2701116	TestNo: SM3500-Cr D	RunNo: 175384
	Samp ID: CRI	Units: mg/L	Analysis Date: 9/17/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.021	0.020	0.02	0	105	50	150	0	0		

ICB	SeqNo: 2700680	TestNo: SM3500-Cr D	RunNo: 175384
	Samp ID: ICB	Units: mg/L	Analysis Date: 9/17/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.020	0	0	0	0	0	0	0		

ICV	SeqNo: 2700681	TestNo: SM3500-Cr D	RunNo: 175384
	Samp ID: ICV	Units: mg/L	Analysis Date: 9/17/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.194	0.020	0.2	0	97	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: R175451

MBLK	SeqNo: 2701856	TestNo: SM3500-Cr D	RunNo: 175451
	Samp ID: MB-R175451	Units: mg/L	Analysis Date: 9/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	0.020									

LCS	SeqNo: 2701857	TestNo: SM3500-Cr D	RunNo: 175451
	Samp ID: LCS-R175451	Units: mg/L	Analysis Date: 9/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.198	0.020	0.2	0	99	91.7	108	0	0		

MS	SeqNo: 2701859	TestNo: SM3500-Cr D	RunNo: 175451
	Samp ID: 190918010-001	Units: mg/L	Analysis Date: 9/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.151	0.020	0.2	0	75.5	75	125	0	0		

MS	SeqNo: 2702058	TestNo: SM3500-Cr D	RunNo: 175451
	Samp ID: 190917015-006	Units: mg/L	Analysis Date: 9/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.195	0.020	0.2	0	97.5	75	125	0	0		

MSD	SeqNo: 2701860	TestNo: SM3500-Cr D	RunNo: 175451
	Samp ID: 190918010-001	Units: mg/L	Analysis Date: 9/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.163	0.020	0.2	0	81.5	75	125	0.151	7.64	14.5	

MSD	SeqNo: 2702059	TestNo: SM3500-Cr D	RunNo: 175451
	Samp ID: 190917015-006	Units: mg/L	Analysis Date: 9/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.205	0.020	0.2	0	103	75	125	0.195	5.00	14.5	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: R175451

CCB	SeqNo: 2701862	TestNo: SM3500-Cr D	RunNo: 175451
	Samp ID: CCB	Units: mg/L	Analysis Date: 9/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.020	0	0	0	0	0	0	0		

CCB	SeqNo: 2702063	TestNo: SM3500-Cr D	RunNo: 175451
	Samp ID: CCB	Units: mg/L	Analysis Date: 9/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.020	0	0	0	0	0	0	0		

CCB	SeqNo: 2702304	TestNo: SM3500-Cr D	RunNo: 175451
	Samp ID: CCB	Units: mg/L	Analysis Date: 9/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.020	0	0	0	0	0	0	0		

CCV	SeqNo: 2701861	TestNo: SM3500-Cr D	RunNo: 175451
	Samp ID: CCV	Units: mg/L	Analysis Date: 9/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.193	0.020	0.2	0	96.5	90	110	0	0		

CCV	SeqNo: 2702062	TestNo: SM3500-Cr D	RunNo: 175451
	Samp ID: CCV	Units: mg/L	Analysis Date: 9/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.189	0.020	0.2	0	94.5	90	110	0	0		

CCV	SeqNo: 2702303	TestNo: SM3500-Cr D	RunNo: 175451
	Samp ID: CCV	Units: mg/L	Analysis Date: 9/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.192	0.020	0.2	0	96	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 190917059
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: R175451

CRI	SeqNo: 2702056	TestNo: SM3500-Cr D	RunNo: 175451
	Samp ID: CRI	Units: mg/L	Analysis Date: 9/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.022	0.020	0.02	0	110	50	150	0	0		

ICB	SeqNo: 2701854	TestNo: SM3500-Cr D	RunNo: 175451
	Samp ID: ICB	Units: mg/L	Analysis Date: 9/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.020	0	0	0	0	0	0	0		

ICV	SeqNo: 2701855	TestNo: SM3500-Cr D	RunNo: 175451
	Samp ID: ICV	Units: mg/L	Analysis Date: 9/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.192	0.020	0.2	0	96	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

WorkSheet Report

Date: 9/24/2019

RunID: GEN10S_190917A

Run Start Date: 9/17/2019

Analyst: Darnell Avent

Comments:

SeqNo	SamplID	SmpType	Analyte	Units	Smp Vol(mL)	Smp Abs	Smp Blk Abs	Blk Rslt (mg/L)	Smp Rslt (mg/L)	FinalVal	Qual	%Recovery	RPD(dups)
2700680	ICB	ICB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004		0.00%	0.00%
2700681	ICV	ICV	Chromium, Hexavalent	mg/L	50	0	0.164	0	0.194	0.19		97.00%	0.00%
2700682	MB-R175384	MBLK	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	0		0.00%	0.00%
2700683	LCS-R175384	LCS	Chromium, Hexavalent	mg/L	50	0	0.168	0	0.199	0.2		99.50%	0.00%
2700684	190911047-003A	SAMP	Chromium, Hexavalent	mg/L	50	0	0.001	0	-0.002	0		0.00%	0.00%
2700685	190911047-004A	SAMP	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	0		0.00%	0.00%
2700686	190911047-005A	SAMP	Chromium, Hexavalent	mg/L	50	0	0.001	0	-0.002	0		0.00%	0.00%
2700687	190911047-006A	SAMP	Chromium, Hexavalent	mg/L	50	0	0.001	0	-0.002	0		0.00%	0.00%
2700688	190911047-007A	SAMP	Chromium, Hexavalent	mg/L	50	0	0.002	0	-0.001	0		0.00%	0.00%
2700689	190911047-008A	SAMP	Chromium, Hexavalent	mg/L	50	0	0.001	0	-0.002	0		0.00%	0.00%
2700690	CCV	CCV	Chromium, Hexavalent	mg/L	50	0	0.166	0	0.197	0.2		98.50%	0.00%
2700691	CCB	CCB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004		0.00%	0.00%
2701116	CRI	CRI	Chromium, Hexavalent	mg/L	50	0	0.02	0	0.021	0.021		105.00%	0.00%
2701117	190917015-001A	SAMP	Chromium, Hexavalent	mg/L	50	0.139	0.124	0.164	0.146	0		0.00%	0.00%

Run standards

WC6-28-T Cr(+6) Standard 1ml= 50 ug ICV

WC6-28-U Cr(+6) LCS 1ml= 50 ug LCS

WorkSheet Report

Date: 9/24/2019

RunID: GEN10S_190917A

Run Start Date: 9/17/2019

Analyst: Darnell Avent

Comments:

SeqNo	SamplID	SmpType	Analyte	Units	Smp Vol(mL)		Smp Abs		Smp Rslt (mg/L)		%Recovery	RPD(dups)
						Smp Blk Abs		Blk Rslt (mg/L)	FinalVal		Qual	
2701118	190917015-002A	SAMP	Chromium, Hexavalent	mg/L	50	0	-0.002	0	-0.006	0	0.00%	0.00%
2701119	190917015-003A	SAMP	Chromium, Hexavalent	mg/L	50	0.057	0.048	0.065	0.054	0	0.00%	0.00%
2701120	190917015-004A	SAMP	Chromium, Hexavalent	mg/L	50	0	-0.002	0	-0.006	0	0.00%	0.00%
2701121	190917015-004AMS	MS	Chromium, Hexavalent	mg/L	50	0	0.162	0	0.192	0.19	96.00%	0.00%
2701122	190917015-004AMSD	MSD	Chromium, Hexavalent	mg/L	50	0	0.164	0	0.194	0.19	97.00%	1.04%
2701123	CCV	CCV	Chromium, Hexavalent	mg/L	50	0	0.164	0	0.194	0.19	97.00%	0.00%
2701124	CCB	CCB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004	0.00%	0.00%
2701457	190917049-002A	SAMP	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	0	0.00%	0.00%
2701458	190917059-001B	SAMP	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	0	0.00%	0.00%
2701460	190917059-002B	SAMP	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	0	0.00%	0.00%
2701461	190917059-002BMS	MS	Chromium, Hexavalent	mg/L	50	0	0.156	0	0.185	0.18	92.50%	0.00%
2701462	190917059-002BMSD	MSD	Chromium, Hexavalent	mg/L	50	0	0.154	0	0.182	0.18	91.00%	1.63%
2701463	190917059-003B	SAMP	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	0	0.00%	0.00%
2701464	CCV	CCV	Chromium, Hexavalent	mg/L	50	0	0.166	0	0.197	0.2	98.50%	0.00%

Run standards

WC6-28-T Cr(+6) Standard 1ml= 50 ug ICV

WC6-28-U Cr(+6) LCS 1ml= 50 ug LCS

Date: 9/24/2019

Run Start Date: 9/17/2019

Comments:

SeqNo	SampID	SmpType Analyte		Units	Smp Vol(mL)		Smp Abs	Smp Rslt (mg/L)			%Recovery	
								Blk Rslt (mg/L)	FinalVal	Qual	RPD(dups)	
2701465	CCB	CCB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004		0.00% 0.00%

WC6-28-T	Cr(+6) Standard	1ml= 50 ug	ICV
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WC6-28-U Cr(+6) LCS 1ml= 50 ug LCS

Date: 9/24/2019

Run Start Date: 9/18/2019

Comments:

Run standards			
WC6-28-T	Cr(+6) Standard	1ml= 50 ug	ICV
WC6-28-U	Cr(+6) LCS	1ml= 50 ug	LCS

WorkSheet Report

Date: 9/24/2019

RunID: GEN10S_190918B

Run Start Date: 9/18/2019

Analyst: Darnell Avent

Comments:

SeqNo	SamplID	SmpType	Analyte	Units	Smp Vol(mL)		Smp Abs	Smp Rslt (mg/L)			%Recovery		
						Smp Blk Abs		Blk Rslt (mg/L)	FinalVal		Qual	RPD(dups)	
2702061	190917015-008A	SAMP	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	0		0.00%	0.00%
2702062	CCV	CCV	Chromium, Hexavalent	mg/L	50	0	0.16	0	0.189	0.19		94.50%	0.00%
2702063	CCB	CCB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004		0.00%	0.00%
2702300	190917059-004B	SAMP	Chromium, Hexavalent	mg/L	50	0	0.003	0	0	0		0.00%	0.00%
2702301	190917059-005B	SAMP	Chromium, Hexavalent	mg/L	50	0	0.004	0	0.001	0		0.00%	0.00%
2702302	190917059-006B	SAMP	Chromium, Hexavalent	mg/L	50	0	0.002	0	-0.001	0		0.00%	0.00%
2702303	CCV	CCV	Chromium, Hexavalent	mg/L	50	0	0.162	0	0.192	0.19		96.00%	0.00%
2702304	CCB	CCB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004		0.00%	0.00%

Run standards

WC6-28-T Cr(+6) Standard 1ml= 50 ug ICV

WC6-28-U Cr(+6) LCS 1ml= 50 ug LCS



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TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

- (a) Neither **Adirondack Environmental Services, Inc.**, nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.**'s performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.
- (b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.
- (c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.
- (d) In no event shall **Adirondack Environmental Services, Inc.**, its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.
- (e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**
- (f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.
- (g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.



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January 06, 2020

Stefan Bagnato

Arcadis

855 Route 146, Suite 210

Clifton Park, NY 12065

TEL: (518) 250-7382

Work Order No: 191218077

RE: Watervliet Arsenal

Dear Stefan Bagnato:

"I certify that this data package is in compliance with the terms and conditions of the protocol, both technically and for completeness, to the best of my knowledge, for other than the conditions detailed in the Case Narrative. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Director or his designee, as verified by the following signature."

A handwritten signature in black ink, appearing to read "Tara Daniels", is written over a horizontal line.

Tara Daniels

Laboratory Director

Workorder Sample Summary

Client: Arcadis

Work Order: 191218077

ProjectName: Watervliet Arsenal

ProjLocation:

AES Sample No	ClientSampID	Matrix	CollectionDate	DateReceived
191218077-001	WVA-AW-35-MW-38-20191218	Water	12/18/2019 12:45:00 PM	12/18/2019 4:03:00 PM
191218077-002	WVA-AW-35-10-20191218	Water	12/18/2109 2:05:00 PM	12/18/2019 4:03:00 PM
191218077-003	93-EM-SP-11-20191218	Water	12/18/2019 2:40:00 PM	12/18/2019 4:03:00 PM
191218077-004	WVA-AW-35-MW-12-20191219	Water	12/19/2019 8:00:00 AM	12/19/2019 4:37:00 PM
191218077-005	120 Pit-20191219	Water	12/19/2019 9:17:00 AM	12/19/2019 4:37:00 PM
191218077-006	Commercial Pit-20191219	Water	12/19/2019 9:41:00 AM	12/19/2019 4:37:00 PM
191218077-007	NMT Pit-20191219	Water	12/19/2019 9:57:00 AM	12/19/2019 4:37:00 PM
191218077-008	Excav. Sump-20191219	Water	12/19/2019 11:14:00 AM	12/19/2019 4:37:00 PM
191218077-009	WVA-AW-35-MW-5-20191219	Water	12/19/2019 2:05:00 PM	12/19/2019 4:37:00 PM
191218077-010	WVA-AW-35-MW-11-20191219	Water	12/19/2019 2:35:00 PM	12/19/2019 4:37:00 PM
191218077-011	Duplicate-01-20191219	Water	12/19/2019 2:05:00 PM	12/19/2019 4:37:00 PM



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Case Narrative

Client: Arcadis – Watervliet Arsenal

Case: 191218077

SDG: 93-EM-SP-11-20191218

Inorganics – Metals

- 1) The samples were analyzed for TAL Metals as specified on the chain of custody.
- 2) The samples received on 12/18/19 had a temperature of 8 °C. The samples received on 12/19/19 had a temperature of 2 °C.
- 3) The recovery for Aluminum, Calcium, Iron and Magnesium in the ICSA and the ICSAB check standards may be outside the required limit. The required concentration for these analytes in the check standards is 500,000 ug/L, 500,000 ug/L, 200,000 ug/L and 500,000 ug/L, respectively. The linear range on this instrument for Aluminum, Calcium, Iron and Magnesium is 250,000 ug/L, 250,000 ug/L, 100,000 ug/L and 250,000 ug/L, respectively. At this level accurate recovery of Aluminum, Calcium, Iron and Magnesium in the check standards is not possible. No further action is required.
- 4) The digested spike recoveries for the elements Iron and Selenium for WVA-AW-35-MW-10-20191218 (AES sample number 191218077-002) were outside the required 75-125 % limits. A post digestion spike was performed and the recoveries for Iron and Selenium were within acceptable limits. The results for Iron and Selenium for sample WVA-AW-35-MW-10-20191218 (AES sample number 191218077-002) are flagged with an “N” to denote the low recovery. All other recoveries were within acceptable limits
- 5) The digested spike recovery for Mercury on sample WVA-AW-35-MW-10-20191218 (AES sample number 191218077-002) was outside the required 75-125 % limits. The result for Mercury for sample WVA-AW-35-MW-10-20191218 (AES sample number 191218077-002) is flagged with an “N” to denote the low recovery.
- 6) Sample WVA-AW-35-MW-10-20191218 (AES sample number 191218077-002) was used as the duplicate sample. All recoveries were within acceptable limits.
- 7) Sample WVA-AW-35-MW-10-20191218 (AES sample number 191218077-002) was used as the Mercury duplicate sample. All recoveries were within acceptable limits.



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- 8) The elements Potassium and Sodium for sample WVA-AW-35-MW-10-20191218 (AES sample number 191218077-002) did not meet the serial dilution criteria of 10 %. This indicates a possible chemical or physical interference.

Inorganics – Dissolved Metals

- 1) The samples were analyzed for TAL Metals as specified on the chain of custody.
- 2) The recovery for Aluminum, Calcium, Iron and Magnesium in the ICSA and the ICSAB check standards may be outside the required limit. The required concentration for these analytes in the check standards is 500,000 ug/L, 500,000 ug/L, 200,000 ug/L and 500,000 ug/L, respectively. The linear range on this instrument for Aluminum, Calcium, Iron and Magnesium is 250,000 ug/L, 250,000 ug/L, 100,000 ug/L and 250,000 ug/L, respectively. At this level accurate recovery of Aluminum, Calcium, Iron and Magnesium in the check standards is not possible. No further action is required.
- 3) The digested spike recovery for the element Arsenic for 120 Pit-20191219 (AES sample number 191218077-005) was outside the required 75-125 % limits. A post digestion spike was performed and the recovery for Arsenic was within acceptable limits. The result for Arsenic for sample 120Pit-20191219 (AES sample number 191218077-005) is flagged with an “N” to denote the low recovery. All other recoveries were within acceptable limits
- 4) Sample WVA-AW-35-MW-12-20191219 (AES sample number 191218077-004) was used as the Mercury matrix spike sample. All recoveries were within acceptable limits.
- 5) The recovery between sample 120 Pit-20191219 (AES sample number 191218077-005) and the duplicate sample for the element Manganese was outside the required limits for sample duplication. This element for sample 120 Pit-20191219 (AES sample number 191218077-005) is flagged with a “Z” to denote the duplicate outside of acceptable limits.
- 6) Sample WVA-AW-35-MW-12-20191219 (AES sample number 191218077-004) was used as the Mercury duplicate sample. All recoveries were within acceptable limits.
- 7) The elements Manganese, Potassium and Sodium for sample 120 Pit-20191219 (AES sample number 191218077-005) did not meet the serial dilution criteria of 10 %. This indicates a possible chemical or physical interference.

Conventionals

- 1) The samples were analyzed for Hexavalent Chromium using Standard Methods 3500 Cr-B -2011.



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- 2) The digested spike recovery for the analyte Hexavalent Chromium on sample WVA-AW-35-MW-10-20191218 (AES sample number 191218077-002) was outside the required 75-125 % limits. The result for Hexavalent Chromium on sample WVA-AW-35-MW-10-20191218 (AES sample number 191218077-002) is flagged with an "N" to denote the low recovery.
- 3) Sample WVA-AW-35-MW-10-20191218 (AES sample number 191218077-002) was used as the duplicate sample. All recoveries were within acceptable limits.

"I certify that this data package is in compliance with the terms and conditions of the protocol, both technically and for completeness, to the best of my knowledge, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature."

A handwritten signature in black ink, appearing to read "Tara Davis", is written above a horizontal line.

Laboratory Director

Date: 1/6/2020

EXPERIENCE IS THE SOLUTION

AES Work Order#:

AES Work Order#:
191218077

COC Reference:

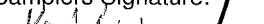
[illegible]

191218077

EXPERIENCE IS THE SOLUTION

AES Work Order#:

COC Reference:

Client Name: Ariadis	Address: 855 RT 146-547 210 Clifton Park NY 12065	
Send Report to: Kate.Brownell@ariadis	Project Name (Location): 3000180	Samplers Name: Kim Stilson / Anna Leloe
Client Phone #: 518 2405201	Client PO #:	Samplers Signature: 
Client Email:		

Shipment Arrived Via: _____ **Special Instructions/Remarks:** _____
 FedEx UPS Client AES Other: _____

Turnaround Time Requested:

1 Day 2 Day 3 Day 5 Day **Standard**

NOTE: Samples received after 3:30pm are considered next business day.

Relinquished by: (Signature)

Relinquished by: (Signature)

Relinquished by: (Signature)

Received by: (Signature)

Received by: (Signature)

Received for Laboratory by:

Date	Time
------	------

Date	Time
------	------

Date	Time
------	------

Sample Temperature

Ambient ~ Chilled ~ Chilling Begun

Notes:

Custody Seal Intact: Y / N

Bottles AES: Y / N

Properly Preserved: ☒ Y ☐ N

0=None
1=H₂SO₄ pH<2
2=HNO₃ pH<2
3=HCl pH<2
4=Na₂S₂O₃
5=NH₄Cl
6=Ascorbic Acid
7=FAS
8=ZnAc/NaOH pH>9
9=NaOH pH>10
10=Other

Received Within Holding

Times: Y / N

Notes:

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: WVA-AW-35-MW-38-2019121
Collection Date: 12/18/2019 12:45:00 PM
Lab Sample ID: 191218077-001
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 12/20/2019)						Analyst: AVB
Mercury	0.14	0.20	J	µg/L	1	12/20/2019 1:32:43 PM
ICP METALS - EPA 200.7						
(Prep: SW3010A - 12/20/2019)						Analyst: KH
Aluminum	ND	100		µg/L	1	1/2/2020 12:47:00 PM
Antimony	ND	60.0		µg/L	1	1/2/2020 12:47:00 PM
Arsenic	ND	5.00		µg/L	1	1/2/2020 12:47:00 PM
Barium	443	10.0		µg/L	1	1/2/2020 12:47:00 PM
Beryllium	ND	5.00		µg/L	1	1/2/2020 12:47:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 12:47:00 PM
Calcium	80700	50.0		µg/L	1	1/2/2020 12:47:00 PM
Chromium	ND	5.00		µg/L	1	1/2/2020 12:47:00 PM
Cobalt	ND	50.0		µg/L	1	1/2/2020 12:47:00 PM
Copper	3.36	5.00	J	µg/L	1	1/2/2020 12:47:00 PM
Iron	91.6	50.0		µg/L	1	1/2/2020 12:47:00 PM
Lead	ND	5.00		µg/L	1	1/2/2020 12:47:00 PM
Magnesium	33000	50.0		µg/L	1	1/2/2020 12:47:00 PM
Manganese	39.2	20.0		µg/L	1	1/2/2020 12:47:00 PM
Nickel	ND	20.0		µg/L	1	1/2/2020 12:47:00 PM
Potassium	21500	50.0		µg/L	1	1/2/2020 12:47:00 PM
Selenium	ND	5.00		µg/L	1	1/2/2020 12:47:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 12:47:00 PM
Sodium	189000	500		µg/L	10	1/2/2020 12:53:00 PM
Thallium	ND	10.0		µg/L	1	1/2/2020 12:47:00 PM
Vanadium	ND	20.0		µg/L	1	1/2/2020 12:47:00 PM
Zinc	ND	10.0		µg/L	1	1/2/2020 12:47:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						
						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	12/18/2019 2:40:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: WVA-AW-35-10-20191218
Collection Date: 12/18/2109 2:05:00 PM
Lab Sample ID: 191218077-002
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 12/20/2019)						Analyst: AVB
Mercury	0.16	0.20	JN	µg/L	1	12/20/2019 1:34:26 PM
ICP METALS - EPA 200.7						
(Prep: SW3010A - 12/20/2019)						Analyst: KH
Aluminum	91.1	100	J	µg/L	1	1/2/2020 1:00:00 PM
Antimony	ND	60.0		µg/L	1	1/2/2020 1:00:00 PM
Arsenic	ND	5.00		µg/L	1	1/2/2020 1:00:00 PM
Barium	2600	10.0		µg/L	1	1/2/2020 1:00:00 PM
Beryllium	ND	5.00		µg/L	1	1/2/2020 1:00:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 1:00:00 PM
Calcium	34800	50.0		µg/L	1	1/2/2020 1:00:00 PM
Chromium	6.58	5.00		µg/L	1	1/2/2020 1:00:00 PM
Cobalt	ND	50.0		µg/L	1	1/2/2020 1:00:00 PM
Copper	ND	5.00		µg/L	1	1/2/2020 1:00:00 PM
Iron	3740	50.0	N	µg/L	1	1/2/2020 1:00:00 PM
Lead	ND	5.00		µg/L	1	1/2/2020 1:00:00 PM
Magnesium	9020	50.0		µg/L	1	1/2/2020 1:00:00 PM
Manganese	258	20.0		µg/L	1	1/2/2020 1:00:00 PM
Nickel	ND	20.0		µg/L	1	1/2/2020 1:00:00 PM
Potassium	18100	50.0		µg/L	1	1/2/2020 1:00:00 PM
Selenium	ND	5.00	N	µg/L	1	1/2/2020 1:00:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 1:00:00 PM
Sodium	254000	500		µg/L	10	1/2/2020 1:04:00 PM
Thallium	ND	10.0		µg/L	1	1/2/2020 1:00:00 PM
Vanadium	ND	20.0		µg/L	1	1/2/2020 1:00:00 PM
Zinc	ND	10.0		µg/L	1	1/2/2020 1:00:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						
						Analyst: DAA
Chromium, Hexavalent	ND	0.02	N	mg/L	1	12/18/2019 2:40:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: 93-EM-SP-11-20191218
Collection Date: 12/18/2019 2:40:00 PM
Lab Sample ID: 191218077-003
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 12/20/2019)						Analyst: AVB
Mercury	0.15	0.20	J	µg/L	1	12/20/2019 1:39:28 PM
ICP METALS - EPA 200.7						
(Prep: SW3010A - 12/20/2019)						Analyst: KH
Aluminum	ND	100		µg/L	1	1/2/2020 1:46:00 PM
Antimony	ND	60.0		µg/L	1	1/2/2020 1:46:00 PM
Arsenic	5.59	5.00		µg/L	1	1/2/2020 1:46:00 PM
Barium	115	10.0		µg/L	1	1/2/2020 1:46:00 PM
Beryllium	ND	5.00		µg/L	1	1/2/2020 1:46:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 1:46:00 PM
Calcium	84100	50.0		µg/L	1	1/2/2020 1:46:00 PM
Chromium	ND	5.00		µg/L	1	1/2/2020 1:46:00 PM
Cobalt	2.27	50.0	J	µg/L	1	1/2/2020 1:46:00 PM
Copper	ND	5.00		µg/L	1	1/2/2020 1:46:00 PM
Iron	148	50.0		µg/L	1	1/2/2020 1:46:00 PM
Lead	6.86	5.00		µg/L	1	1/2/2020 1:46:00 PM
Magnesium	23100	50.0		µg/L	1	1/2/2020 1:46:00 PM
Manganese	627	20.0		µg/L	1	1/2/2020 1:46:00 PM
Nickel	ND	20.0		µg/L	1	1/2/2020 1:46:00 PM
Potassium	8950	50.0		µg/L	1	1/2/2020 1:46:00 PM
Selenium	ND	5.00		µg/L	1	1/2/2020 1:46:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 1:46:00 PM
Sodium	318000	500		µg/L	10	1/2/2020 1:52:00 PM
Thallium	ND	10.0		µg/L	1	1/2/2020 1:46:00 PM
Vanadium	ND	20.0		µg/L	1	1/2/2020 1:46:00 PM
Zinc	22.6	10.0		µg/L	1	1/2/2020 1:46:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						
						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	12/18/2019 2:40:00 PM

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate
S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: WVA-AW-35-MW-12-2019121
Collection Date: 12/19/2019 8:00:00 AM
Lab Sample ID: 191218077-004
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 12/20/2019)						Analyst: AVB
Mercury	0.20	0.20		µg/L	1	12/20/2019 1:41:08 PM
DISSOLVED MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 12/24/2019)						Analyst: AVB
Dissolved Mercury	ND	0.20		µg/L	1	12/24/2019 10:29:58 AM
ICP METALS - EPA 200.7						
(Prep: SW3010A - 12/20/2019)						Analyst: KH
Aluminum	13400	100		µg/L	1	1/2/2020 2:08:00 PM
Antimony	ND	60.0		µg/L	1	1/2/2020 2:08:00 PM
Arsenic	10.1	5.00		µg/L	1	1/2/2020 2:08:00 PM
Barium	316	10.0		µg/L	1	1/2/2020 2:08:00 PM
Beryllium	ND	5.00		µg/L	1	1/2/2020 2:08:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 2:08:00 PM
Calcium	106000	50.0		µg/L	1	1/2/2020 2:08:00 PM
Chromium	572	5.00		µg/L	1	1/2/2020 2:08:00 PM
Cobalt	12.2	50.0	J	µg/L	1	1/2/2020 2:08:00 PM
Copper	39.7	5.00		µg/L	1	1/2/2020 2:08:00 PM
Iron	22200	50.0		µg/L	1	1/2/2020 2:08:00 PM
Lead	10.7	5.00		µg/L	1	1/2/2020 2:08:00 PM
Magnesium	24300	50.0		µg/L	1	1/2/2020 2:08:00 PM
Manganese	755	20.0		µg/L	1	1/2/2020 2:08:00 PM
Nickel	18.7	20.0	J	µg/L	1	1/2/2020 2:08:00 PM
Potassium	33500	50.0		µg/L	1	1/2/2020 2:08:00 PM
Selenium	ND	5.00		µg/L	1	1/2/2020 2:08:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 2:08:00 PM
Sodium	743000	5000		µg/L	100	1/2/2020 2:20:00 PM
Thallium	ND	10.0		µg/L	1	1/2/2020 2:08:00 PM
Vanadium	17.1	20.0	J	µg/L	1	1/2/2020 2:08:00 PM
Zinc	90.7	10.0		µg/L	1	1/2/2020 2:08:00 PM
ICP DISSOLVED METAL - EPA 200.7						
(Prep: SW3005A - 12/20/2019)						Analyst: KH
Aluminum, Dissolved	ND	200		µg/L	1	1/2/2020 4:17:00 PM
Antimony, Dissolved	ND	60.0		µg/L	1	1/2/2020 4:17:00 PM
Arsenic, Dissolved	ND	10.0		µg/L	1	1/2/2020 4:17:00 PM
Barium, Dissolved	104	200	J	µg/L	1	1/2/2020 4:17:00 PM
Beryllium, Dissolved	ND	5.00		µg/L	1	1/2/2020 4:17:00 PM

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: WVA-AW-35-MW-12-2019121
Collection Date: 12/19/2019 8:00:00 AM
Lab Sample ID: 191218077-004
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP DISSOLVED METAL - EPA 200.7						Analyst: KH
(Prep: SW3005A - 12/20/2019)						
Cadmium, Dissolved	ND	5.00		µg/L	1	1/2/2020 4:17:00 PM
Calcium, Dissolved	99900	5000		µg/L	1	1/2/2020 4:17:00 PM
Chromium, Dissolved	539	10.0		µg/L	1	1/2/2020 4:17:00 PM
Cobalt, Dissolved	ND	50.0		µg/L	1	1/2/2020 4:17:00 PM
Copper, Dissolved	2.49	25.0	J	µg/L	1	1/2/2020 4:17:00 PM
Iron, Dissolved	257	100		µg/L	1	1/2/2020 4:17:00 PM
Lead, Dissolved	ND	3.00		µg/L	1	1/2/2020 4:17:00 PM
Magnesium, Dissolved	18200	5000		µg/L	1	1/2/2020 4:17:00 PM
Manganese, Dissolved	13.4	15.0	J	µg/L	1	1/2/2020 4:17:00 PM
Nickel, Dissolved	ND	40.0		µg/L	1	1/2/2020 4:17:00 PM
Potassium, Dissolved	28600	5000		µg/L	1	1/2/2020 4:17:00 PM
Selenium, Dissolved	ND	5.00		µg/L	1	1/2/2020 4:17:00 PM
Silver, Dissolved	ND	10.0		µg/L	1	1/2/2020 4:17:00 PM
Sodium, Dissolved	699000	500000		µg/L	100	1/2/2020 4:22:00 PM
Thallium, Dissolved	ND	10.0		µg/L	1	1/2/2020 4:17:00 PM
Vanadium, Dissolved	ND	50.0		µg/L	1	1/2/2020 4:17:00 PM
Zinc, Dissolved	ND	20.0		µg/L	1	1/2/2020 4:17:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	0.40	0.02		mg/L	1	12/19/2019 5:40:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: 120 Pit-20191219
Collection Date: 12/19/2019 9:17:00 AM
Lab Sample ID: 191218077-005
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 12/20/2019)						Analyst: AVB
Mercury	0.20	0.20	J	µg/L	1	12/20/2019 1:46:12 PM
DISSOLVED MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 12/24/2019)						Analyst: AVB
Dissolved Mercury	ND	0.20		µg/L	1	12/24/2019 10:35:03 AM
ICP METALS - EPA 200.7						
(Prep: SW3010A - 12/20/2019)						Analyst: KH
Aluminum	5070	100		µg/L	1	1/2/2020 2:47:00 PM
Antimony	ND	60.0		µg/L	1	1/2/2020 2:47:00 PM
Arsenic	ND	5.00		µg/L	1	1/2/2020 2:47:00 PM
Barium	11100	10.0		µg/L	1	1/2/2020 2:47:00 PM
Beryllium	3.17	5.00	J	µg/L	1	1/2/2020 2:47:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 2:47:00 PM
Calcium	19000	50.0		µg/L	1	1/2/2020 2:47:00 PM
Chromium	106	5.00		µg/L	1	1/2/2020 2:47:00 PM
Cobalt	10.2	50.0	J	µg/L	1	1/2/2020 2:47:00 PM
Copper	1320	5.00		µg/L	1	1/2/2020 2:47:00 PM
Iron	61800	50.0		µg/L	1	1/2/2020 2:47:00 PM
Lead	218	5.00		µg/L	1	1/2/2020 2:47:00 PM
Magnesium	5180	50.0		µg/L	1	1/2/2020 2:47:00 PM
Manganese	32700	20.0		µg/L	1	1/2/2020 2:47:00 PM
Nickel	13.0	20.0	J	µg/L	1	1/2/2020 2:47:00 PM
Potassium	16800	50.0		µg/L	1	1/2/2020 2:47:00 PM
Selenium	ND	5.00		µg/L	1	1/2/2020 2:47:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 2:47:00 PM
Sodium	262000	500		µg/L	10	1/2/2020 2:51:00 PM
Thallium	50.7	10.0		µg/L	1	1/2/2020 2:47:00 PM
Vanadium	ND	20.0		µg/L	1	1/2/2020 2:47:00 PM
Zinc	1130	10.0		µg/L	1	1/2/2020 2:47:00 PM
ICP DISSOLVED METAL - EPA 200.7						
(Prep: SW3005A - 12/20/2019)						Analyst: KH
Aluminum, Dissolved	ND	200		µg/L	1	1/2/2020 4:25:00 PM
Antimony, Dissolved	ND	60.0		µg/L	1	1/2/2020 4:25:00 PM
Arsenic, Dissolved	ND	10.0	N	µg/L	1	1/2/2020 4:25:00 PM
Barium, Dissolved	837	200		µg/L	1	1/2/2020 4:25:00 PM
Beryllium, Dissolved	ND	5.00		µg/L	1	1/2/2020 4:25:00 PM

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: 120 Pit-20191219
Collection Date: 12/19/2019 9:17:00 AM
Lab Sample ID: 191218077-005
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP DISSOLVED METAL - EPA 200.7						Analyst: KH
(Prep: SW3005A - 12/20/2019)						
Cadmium, Dissolved	ND	5.00		µg/L	1	1/2/2020 4:25:00 PM
Calcium, Dissolved	11500	5000		µg/L	1	1/2/2020 4:25:00 PM
Chromium, Dissolved	7.27	10.0	J	µg/L	1	1/2/2020 4:25:00 PM
Cobalt, Dissolved	ND	50.0		µg/L	1	1/2/2020 4:25:00 PM
Copper, Dissolved	ND	25.0		µg/L	1	1/2/2020 4:25:00 PM
Iron, Dissolved	48.0	100	J	µg/L	1	1/2/2020 4:25:00 PM
Lead, Dissolved	ND	3.00		µg/L	1	1/2/2020 4:25:00 PM
Magnesium, Dissolved	3680	5000	J	µg/L	1	1/2/2020 4:25:00 PM
Manganese, Dissolved	138	15.0	Z	µg/L	1	1/2/2020 4:25:00 PM
Nickel, Dissolved	ND	40.0		µg/L	1	1/2/2020 4:25:00 PM
Potassium, Dissolved	15700	5000		µg/L	1	1/2/2020 4:25:00 PM
Selenium, Dissolved	ND	5.00		µg/L	1	1/2/2020 4:25:00 PM
Silver, Dissolved	ND	10.0		µg/L	1	1/2/2020 4:25:00 PM
Sodium, Dissolved	281000	50000		µg/L	10	1/2/2020 4:29:00 PM
Thallium, Dissolved	ND	10.0		µg/L	1	1/2/2020 4:25:00 PM
Vanadium, Dissolved	ND	50.0		µg/L	1	1/2/2020 4:25:00 PM
Zinc, Dissolved	ND	20.0		µg/L	1	1/2/2020 4:25:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	12/19/2019 5:40:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: Commercial Pit-20191219
Collection Date: 12/19/2019 9:41:00 AM
Lab Sample ID: 191218077-006
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 12/20/2019)						
Mercury	0.16	0.20	J	µg/L	1	12/20/2019 1:47:53 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 12/20/2019)						
Aluminum	ND	100		µg/L	1	1/2/2020 2:55:00 PM
Antimony	15.4	60.0	J	µg/L	1	1/2/2020 2:55:00 PM
Arsenic	ND	5.00		µg/L	1	1/2/2020 2:55:00 PM
Barium	88.1	10.0		µg/L	1	1/2/2020 2:55:00 PM
Beryllium	ND	5.00		µg/L	1	1/2/2020 2:55:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 2:55:00 PM
Calcium	72800	50.0		µg/L	1	1/2/2020 2:55:00 PM
Chromium	1390	5.00		µg/L	1	1/2/2020 2:55:00 PM
Cobalt	ND	50.0		µg/L	1	1/2/2020 2:55:00 PM
Copper	ND	5.00		µg/L	1	1/2/2020 2:55:00 PM
Iron	61.0	50.0		µg/L	1	1/2/2020 2:55:00 PM
Lead	ND	5.00		µg/L	1	1/2/2020 2:55:00 PM
Magnesium	19600	50.0		µg/L	1	1/2/2020 2:55:00 PM
Manganese	71.6	20.0		µg/L	1	1/2/2020 2:55:00 PM
Nickel	ND	20.0		µg/L	1	1/2/2020 2:55:00 PM
Potassium	13700	50.0		µg/L	1	1/2/2020 2:55:00 PM
Selenium	ND	5.00		µg/L	1	1/2/2020 2:55:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 2:55:00 PM
Sodium	154000	500		µg/L	10	1/2/2020 2:59:00 PM
Thallium	ND	10.0		µg/L	1	1/2/2020 2:55:00 PM
Vanadium	ND	20.0		µg/L	1	1/2/2020 2:55:00 PM
Zinc	ND	10.0		µg/L	1	1/2/2020 2:55:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	1.2	0.20		mg/L	10	12/19/2019 5:40:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: NMT Pit-20191219
Collection Date: 12/19/2019 9:57:00 AM
Lab Sample ID: 191218077-007
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 12/20/2019)						Analyst: AVB
Mercury	0.18	0.20	J	µg/L	1	12/20/2019 1:49:34 PM
ICP METALS - EPA 200.7						
(Prep: SW3010A - 12/20/2019)						Analyst: KH
Aluminum	1110	100		µg/L	1	1/2/2020 3:02:00 PM
Antimony	3270	60.0		µg/L	1	1/2/2020 3:02:00 PM
Arsenic	162	5.00		µg/L	1	1/2/2020 3:02:00 PM
Barium	275	10.0		µg/L	1	1/2/2020 3:02:00 PM
Beryllium	ND	5.00		µg/L	1	1/2/2020 3:02:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 3:02:00 PM
Calcium	90300	50.0		µg/L	1	1/2/2020 3:02:00 PM
Chromium	244000	50.0		µg/L	10	1/2/2020 3:10:00 PM
Cobalt	ND	50.0		µg/L	1	1/2/2020 3:02:00 PM
Copper	282	5.00		µg/L	1	1/2/2020 3:02:00 PM
Iron	1980	50.0		µg/L	1	1/2/2020 3:02:00 PM
Lead	ND	5.00		µg/L	1	1/2/2020 3:02:00 PM
Magnesium	17900	50.0		µg/L	1	1/2/2020 3:02:00 PM
Manganese	30.6	20.0		µg/L	1	1/2/2020 3:02:00 PM
Nickel	68.9	20.0		µg/L	1	1/2/2020 3:02:00 PM
Potassium	12400	50.0		µg/L	1	1/2/2020 3:02:00 PM
Selenium	ND	5.00		µg/L	1	1/2/2020 3:02:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 3:02:00 PM
Sodium	95900	500		µg/L	10	1/2/2020 3:10:00 PM
Thallium	85.7	10.0		µg/L	1	1/2/2020 3:02:00 PM
Vanadium	ND	20.0		µg/L	1	1/2/2020 3:02:00 PM
Zinc	131	10.0		µg/L	1	1/2/2020 3:02:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						
						Analyst: DAA
Chromium, Hexavalent	260	20		mg/L	1000	12/19/2019 5:40:00 PM

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: Excav. Sump-20191219
Collection Date: 12/19/2019 11:14:00 AM
Lab Sample ID: 191218077-008
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 12/20/2019)						
Mercury	0.17	0.20	J	µg/L	1	12/20/2019 1:51:16 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 12/20/2019)						
Aluminum	ND	100		µg/L	1	1/2/2020 3:14:00 PM
Antimony	ND	60.0		µg/L	1	1/2/2020 3:14:00 PM
Arsenic	ND	5.00		µg/L	1	1/2/2020 3:14:00 PM
Barium	61.2	10.0		µg/L	1	1/2/2020 3:14:00 PM
Beryllium	ND	5.00		µg/L	1	1/2/2020 3:14:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 3:14:00 PM
Calcium	46900	50.0		µg/L	1	1/2/2020 3:14:00 PM
Chromium	14.5	5.00		µg/L	1	1/2/2020 3:14:00 PM
Cobalt	ND	50.0		µg/L	1	1/2/2020 3:14:00 PM
Copper	ND	5.00		µg/L	1	1/2/2020 3:14:00 PM
Iron	920	50.0		µg/L	1	1/2/2020 3:14:00 PM
Lead	ND	5.00		µg/L	1	1/2/2020 3:14:00 PM
Magnesium	10400	50.0		µg/L	1	1/2/2020 3:14:00 PM
Manganese	7.80	20.0	J	µg/L	1	1/2/2020 3:14:00 PM
Nickel	ND	20.0		µg/L	1	1/2/2020 3:14:00 PM
Potassium	5810	50.0		µg/L	1	1/2/2020 3:14:00 PM
Selenium	ND	5.00		µg/L	1	1/2/2020 3:14:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 3:14:00 PM
Sodium	130000	500		µg/L	10	1/2/2020 3:18:00 PM
Thallium	ND	10.0		µg/L	1	1/2/2020 3:14:00 PM
Vanadium	ND	20.0		µg/L	1	1/2/2020 3:14:00 PM
Zinc	ND	10.0		µg/L	1	1/2/2020 3:14:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	12/19/2019 5:40:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: WVA-AW-35-MW-5-20191219
Collection Date: 12/19/2019 2:05:00 PM
Lab Sample ID: 191218077-009
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 12/20/2019)						Analyst: AVB
Mercury	0.17	0.20	J	µg/L	1	12/20/2019 1:52:57 PM
ICP METALS - EPA 200.7						
(Prep: SW3010A - 12/20/2019)						Analyst: KH
Aluminum	ND	100		µg/L	1	1/2/2020 3:29:00 PM
Antimony	ND	60.0		µg/L	1	1/2/2020 3:29:00 PM
Arsenic	ND	5.00		µg/L	1	1/2/2020 3:29:00 PM
Barium	3240	10.0		µg/L	1	1/2/2020 3:29:00 PM
Beryllium	1.03	5.00	J	µg/L	1	1/2/2020 3:29:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 3:29:00 PM
Calcium	18700	50.0		µg/L	1	1/2/2020 3:29:00 PM
Chromium	5.06	5.00		µg/L	1	1/2/2020 3:29:00 PM
Cobalt	ND	50.0		µg/L	1	1/2/2020 3:29:00 PM
Copper	ND	5.00		µg/L	1	1/2/2020 3:29:00 PM
Iron	60.5	50.0		µg/L	1	1/2/2020 3:29:00 PM
Lead	ND	5.00		µg/L	1	1/2/2020 3:29:00 PM
Magnesium	5680	50.0		µg/L	1	1/2/2020 3:29:00 PM
Manganese	90.5	20.0		µg/L	1	1/2/2020 3:29:00 PM
Nickel	ND	20.0		µg/L	1	1/2/2020 3:29:00 PM
Potassium	16100	50.0		µg/L	1	1/2/2020 3:29:00 PM
Selenium	ND	5.00		µg/L	1	1/2/2020 3:29:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 3:29:00 PM
Sodium	237000	500		µg/L	10	1/2/2020 3:33:00 PM
Thallium	ND	10.0		µg/L	1	1/2/2020 3:29:00 PM
Vanadium	ND	20.0		µg/L	1	1/2/2020 3:29:00 PM
Zinc	ND	10.0		µg/L	1	1/2/2020 3:29:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						
						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	12/19/2019 5:40:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: WVA-AW-35-MW-11-2019121
Collection Date: 12/19/2019 2:35:00 PM
Lab Sample ID: 191218077-010
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 12/20/2019)						Analyst: AVB
Mercury	0.16	0.20	J	µg/L	1	12/20/2019 1:54:40 PM
ICP METALS - EPA 200.7						
(Prep: SW3010A - 12/20/2019)						Analyst: KH
Aluminum	ND	100		µg/L	1	1/2/2020 3:47:00 PM
Antimony	ND	60.0		µg/L	1	1/2/2020 3:47:00 PM
Arsenic	ND	5.00		µg/L	1	1/2/2020 3:47:00 PM
Barium	1630	10.0		µg/L	1	1/2/2020 3:47:00 PM
Beryllium	ND	5.00		µg/L	1	1/2/2020 3:47:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 3:47:00 PM
Calcium	30800	50.0		µg/L	1	1/2/2020 3:47:00 PM
Chromium	10.1	5.00		µg/L	1	1/2/2020 3:47:00 PM
Cobalt	ND	50.0		µg/L	1	1/2/2020 3:47:00 PM
Copper	ND	5.00		µg/L	1	1/2/2020 3:47:00 PM
Iron	10900	50.0		µg/L	1	1/2/2020 3:47:00 PM
Lead	ND	5.00		µg/L	1	1/2/2020 3:47:00 PM
Magnesium	12000	50.0		µg/L	1	1/2/2020 3:47:00 PM
Manganese	336	20.0		µg/L	1	1/2/2020 3:47:00 PM
Nickel	ND	20.0		µg/L	1	1/2/2020 3:47:00 PM
Potassium	16800	50.0		µg/L	1	1/2/2020 3:47:00 PM
Selenium	ND	5.00		µg/L	1	1/2/2020 3:47:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 3:47:00 PM
Sodium	198000	500		µg/L	10	1/2/2020 3:52:00 PM
Thallium	ND	10.0		µg/L	1	1/2/2020 3:47:00 PM
Vanadium	ND	20.0		µg/L	1	1/2/2020 3:47:00 PM
Zinc	ND	10.0		µg/L	1	1/2/2020 3:47:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						
						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	12/19/2019 5:40:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: Duplicate-01-20191219
Collection Date: 12/19/2019 2:05:00 PM
Lab Sample ID: 191218077-011
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 12/20/2019)						
Mercury	0.16	0.20	J	µg/L	1	12/20/2019 1:56:23 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 12/20/2019)						
Aluminum	ND	100		µg/L	1	1/2/2020 4:00:00 PM
Antimony	ND	60.0		µg/L	1	1/2/2020 4:00:00 PM
Arsenic	ND	5.00		µg/L	1	1/2/2020 4:00:00 PM
Barium	1580	10.0		µg/L	1	1/2/2020 4:00:00 PM
Beryllium	ND	5.00		µg/L	1	1/2/2020 4:00:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 4:00:00 PM
Calcium	29500	50.0		µg/L	1	1/2/2020 4:00:00 PM
Chromium	5.62	5.00		µg/L	1	1/2/2020 4:00:00 PM
Cobalt	ND	50.0		µg/L	1	1/2/2020 4:00:00 PM
Copper	ND	5.00		µg/L	1	1/2/2020 4:00:00 PM
Iron	11600	50.0		µg/L	1	1/2/2020 4:00:00 PM
Lead	ND	5.00		µg/L	1	1/2/2020 4:00:00 PM
Magnesium	11600	50.0		µg/L	1	1/2/2020 4:00:00 PM
Manganese	332	20.0		µg/L	1	1/2/2020 4:00:00 PM
Nickel	ND	20.0		µg/L	1	1/2/2020 4:00:00 PM
Potassium	16000	50.0		µg/L	1	1/2/2020 4:00:00 PM
Selenium	ND	5.00		µg/L	1	1/2/2020 4:00:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 4:00:00 PM
Sodium	139000	500		µg/L	10	1/2/2020 4:05:00 PM
Thallium	ND	10.0		µg/L	1	1/2/2020 4:00:00 PM
Vanadium	ND	20.0		µg/L	1	1/2/2020 4:00:00 PM
Zinc	ND	10.0		µg/L	1	1/2/2020 4:00:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	12/19/2019 5:40:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: WVA-AW-35-MW-38-2019121
Collection Date: 12/18/2019 12:45:00 PM
Lab Sample ID: 191218077-001
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 12/20/2019)						
Mercury	0.14	0.20	J	µg/L	1	12/20/2019 1:32:43 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 12/20/2019)						
Aluminum	ND	100		µg/L	1	1/2/2020 12:47:00 PM
Antimony	ND	60.0		µg/L	1	1/2/2020 12:47:00 PM
Arsenic	ND	5.00		µg/L	1	1/2/2020 12:47:00 PM
Barium	443	10.0		µg/L	1	1/2/2020 12:47:00 PM
Beryllium	ND	5.00		µg/L	1	1/2/2020 12:47:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 12:47:00 PM
Calcium	80700	50.0		µg/L	1	1/2/2020 12:47:00 PM
Chromium	ND	5.00		µg/L	1	1/2/2020 12:47:00 PM
Cobalt	ND	50.0		µg/L	1	1/2/2020 12:47:00 PM
Copper	3.36	5.00	J	µg/L	1	1/2/2020 12:47:00 PM
Iron	91.6	50.0		µg/L	1	1/2/2020 12:47:00 PM
Lead	ND	5.00		µg/L	1	1/2/2020 12:47:00 PM
Magnesium	33000	50.0		µg/L	1	1/2/2020 12:47:00 PM
Manganese	39.2	20.0		µg/L	1	1/2/2020 12:47:00 PM
Nickel	ND	20.0		µg/L	1	1/2/2020 12:47:00 PM
Potassium	21500	50.0		µg/L	1	1/2/2020 12:47:00 PM
Selenium	ND	5.00		µg/L	1	1/2/2020 12:47:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 12:47:00 PM
Sodium	189000	500		µg/L	10	1/2/2020 12:53:00 PM
Thallium	ND	10.0		µg/L	1	1/2/2020 12:47:00 PM
Vanadium	ND	20.0		µg/L	1	1/2/2020 12:47:00 PM
Zinc	ND	10.0		µg/L	1	1/2/2020 12:47:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: WVA-AW-35-10-20191218
Collection Date: 12/18/2109 2:05:00 PM
Lab Sample ID: 191218077-002
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 12/20/2019)						
Mercury	0.16	0.20	JN	µg/L	1	12/20/2019 1:34:26 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 12/20/2019)						
Aluminum	91.1	100	J	µg/L	1	1/2/2020 1:00:00 PM
Antimony	ND	60.0		µg/L	1	1/2/2020 1:00:00 PM
Arsenic	ND	5.00		µg/L	1	1/2/2020 1:00:00 PM
Barium	2600	10.0		µg/L	1	1/2/2020 1:00:00 PM
Beryllium	ND	5.00		µg/L	1	1/2/2020 1:00:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 1:00:00 PM
Calcium	34800	50.0		µg/L	1	1/2/2020 1:00:00 PM
Chromium	6.58	5.00		µg/L	1	1/2/2020 1:00:00 PM
Cobalt	ND	50.0		µg/L	1	1/2/2020 1:00:00 PM
Copper	ND	5.00		µg/L	1	1/2/2020 1:00:00 PM
Iron	3740	50.0	N	µg/L	1	1/2/2020 1:00:00 PM
Lead	ND	5.00		µg/L	1	1/2/2020 1:00:00 PM
Magnesium	9020	50.0		µg/L	1	1/2/2020 1:00:00 PM
Manganese	258	20.0		µg/L	1	1/2/2020 1:00:00 PM
Nickel	ND	20.0		µg/L	1	1/2/2020 1:00:00 PM
Potassium	18100	50.0		µg/L	1	1/2/2020 1:00:00 PM
Selenium	ND	5.00	N	µg/L	1	1/2/2020 1:00:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 1:00:00 PM
Sodium	254000	500		µg/L	10	1/2/2020 1:04:00 PM
Thallium	ND	10.0		µg/L	1	1/2/2020 1:00:00 PM
Vanadium	ND	20.0		µg/L	1	1/2/2020 1:00:00 PM
Zinc	ND	10.0		µg/L	1	1/2/2020 1:00:00 PM

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: 93-EM-SP-11-20191218
Collection Date: 12/18/2019 2:40:00 PM
Lab Sample ID: 191218077-003
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 12/20/2019)						
Mercury	0.15	0.20	J	µg/L	1	12/20/2019 1:39:28 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 12/20/2019)						
Aluminum	ND	100		µg/L	1	1/2/2020 1:46:00 PM
Antimony	ND	60.0		µg/L	1	1/2/2020 1:46:00 PM
Arsenic	5.59	5.00		µg/L	1	1/2/2020 1:46:00 PM
Barium	115	10.0		µg/L	1	1/2/2020 1:46:00 PM
Beryllium	ND	5.00		µg/L	1	1/2/2020 1:46:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 1:46:00 PM
Calcium	84100	50.0		µg/L	1	1/2/2020 1:46:00 PM
Chromium	ND	5.00		µg/L	1	1/2/2020 1:46:00 PM
Cobalt	2.27	50.0	J	µg/L	1	1/2/2020 1:46:00 PM
Copper	ND	5.00		µg/L	1	1/2/2020 1:46:00 PM
Iron	148	50.0		µg/L	1	1/2/2020 1:46:00 PM
Lead	6.86	5.00		µg/L	1	1/2/2020 1:46:00 PM
Magnesium	23100	50.0		µg/L	1	1/2/2020 1:46:00 PM
Manganese	627	20.0		µg/L	1	1/2/2020 1:46:00 PM
Nickel	ND	20.0		µg/L	1	1/2/2020 1:46:00 PM
Potassium	8950	50.0		µg/L	1	1/2/2020 1:46:00 PM
Selenium	ND	5.00		µg/L	1	1/2/2020 1:46:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 1:46:00 PM
Sodium	318000	500		µg/L	10	1/2/2020 1:52:00 PM
Thallium	ND	10.0		µg/L	1	1/2/2020 1:46:00 PM
Vanadium	ND	20.0		µg/L	1	1/2/2020 1:46:00 PM
Zinc	22.6	10.0		µg/L	1	1/2/2020 1:46:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: WVA-AW-35-MW-12-2019121
Collection Date: 12/19/2019 8:00:00 AM
Lab Sample ID: 191218077-004
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 12/20/2019)						Analyst: AVB
Mercury	0.20	0.20		µg/L	1	12/20/2019 1:41:08 PM
DISSOLVED MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 12/24/2019)						Analyst: AVB
Dissolved Mercury	ND	0.20		µg/L	1	12/24/2019 10:29:58 AM
ICP METALS - EPA 200.7						
(Prep: SW3010A - 12/20/2019)						Analyst: KH
Aluminum	13400	100		µg/L	1	1/2/2020 2:08:00 PM
Antimony	ND	60.0		µg/L	1	1/2/2020 2:08:00 PM
Arsenic	10.1	5.00		µg/L	1	1/2/2020 2:08:00 PM
Barium	316	10.0		µg/L	1	1/2/2020 2:08:00 PM
Beryllium	ND	5.00		µg/L	1	1/2/2020 2:08:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 2:08:00 PM
Calcium	106000	50.0		µg/L	1	1/2/2020 2:08:00 PM
Chromium	572	5.00		µg/L	1	1/2/2020 2:08:00 PM
Cobalt	12.2	50.0	J	µg/L	1	1/2/2020 2:08:00 PM
Copper	39.7	5.00		µg/L	1	1/2/2020 2:08:00 PM
Iron	22200	50.0		µg/L	1	1/2/2020 2:08:00 PM
Lead	10.7	5.00		µg/L	1	1/2/2020 2:08:00 PM
Magnesium	24300	50.0		µg/L	1	1/2/2020 2:08:00 PM
Manganese	755	20.0		µg/L	1	1/2/2020 2:08:00 PM
Nickel	18.7	20.0	J	µg/L	1	1/2/2020 2:08:00 PM
Potassium	33500	50.0		µg/L	1	1/2/2020 2:08:00 PM
Selenium	ND	5.00		µg/L	1	1/2/2020 2:08:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 2:08:00 PM
Sodium	743000	5000		µg/L	100	1/2/2020 2:20:00 PM
Thallium	ND	10.0		µg/L	1	1/2/2020 2:08:00 PM
Vanadium	17.1	20.0	J	µg/L	1	1/2/2020 2:08:00 PM
Zinc	90.7	10.0		µg/L	1	1/2/2020 2:08:00 PM
ICP DISSOLVED METAL - EPA 200.7						
(Prep: SW3005A - 12/20/2019)						Analyst: KH
Aluminum, Dissolved	ND	200		µg/L	1	1/2/2020 4:17:00 PM
Antimony, Dissolved	ND	60.0		µg/L	1	1/2/2020 4:17:00 PM
Arsenic, Dissolved	ND	10.0		µg/L	1	1/2/2020 4:17:00 PM
Barium, Dissolved	104	200	J	µg/L	1	1/2/2020 4:17:00 PM
Beryllium, Dissolved	ND	5.00		µg/L	1	1/2/2020 4:17:00 PM

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
 Work Order: 191218077
 Reference: Watervliet Arsenal /
 PO#:

Client Sample ID: WVA-AW-35-MW-12-2019121
 Collection Date: 12/19/2019 8:00:00 AM
 Lab Sample ID: 191218077-004
 Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP DISSOLVED METAL - EPA 200.7						Analyst: KH
(Prep: SW3005A - 12/20/2019)						
Cadmium, Dissolved	ND	5.00		µg/L	1	1/2/2020 4:17:00 PM
Calcium, Dissolved	99900	5000		µg/L	1	1/2/2020 4:17:00 PM
Chromium, Dissolved	539	10.0		µg/L	1	1/2/2020 4:17:00 PM
Cobalt, Dissolved	ND	50.0		µg/L	1	1/2/2020 4:17:00 PM
Copper, Dissolved	2.49	25.0	J	µg/L	1	1/2/2020 4:17:00 PM
Iron, Dissolved	257	100		µg/L	1	1/2/2020 4:17:00 PM
Lead, Dissolved	ND	3.00		µg/L	1	1/2/2020 4:17:00 PM
Magnesium, Dissolved	18200	5000		µg/L	1	1/2/2020 4:17:00 PM
Manganese, Dissolved	13.4	15.0	J	µg/L	1	1/2/2020 4:17:00 PM
Nickel, Dissolved	ND	40.0		µg/L	1	1/2/2020 4:17:00 PM
Potassium, Dissolved	28600	5000		µg/L	1	1/2/2020 4:17:00 PM
Selenium, Dissolved	ND	5.00		µg/L	1	1/2/2020 4:17:00 PM
Silver, Dissolved	ND	10.0		µg/L	1	1/2/2020 4:17:00 PM
Sodium, Dissolved	699000	500000		µg/L	100	1/2/2020 4:22:00 PM
Thallium, Dissolved	ND	10.0		µg/L	1	1/2/2020 4:17:00 PM
Vanadium, Dissolved	ND	50.0		µg/L	1	1/2/2020 4:17:00 PM
Zinc, Dissolved	ND	20.0		µg/L	1	1/2/2020 4:17:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 B - Analyte detected in the associated Method Blank
 X - Value exceeds Maximum Contaminant Level
 E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
 Z - RPD outside accepted recovery limits
 N - Matrix Spike below accepted limits (+ above)
 T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: 120 Pit-20191219
Collection Date: 12/19/2019 9:17:00 AM
Lab Sample ID: 191218077-005
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 12/20/2019)						Analyst: AVB
Mercury	0.20	0.20	J	µg/L	1	12/20/2019 1:46:12 PM
DISSOLVED MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 12/24/2019)						Analyst: AVB
Dissolved Mercury	ND	0.20		µg/L	1	12/24/2019 10:35:03 AM
ICP METALS - EPA 200.7						
(Prep: SW3010A - 12/20/2019)						Analyst: KH
Aluminum	5070	100		µg/L	1	1/2/2020 2:47:00 PM
Antimony	ND	60.0		µg/L	1	1/2/2020 2:47:00 PM
Arsenic	ND	5.00		µg/L	1	1/2/2020 2:47:00 PM
Barium	11100	10.0		µg/L	1	1/2/2020 2:47:00 PM
Beryllium	3.17	5.00	J	µg/L	1	1/2/2020 2:47:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 2:47:00 PM
Calcium	19000	50.0		µg/L	1	1/2/2020 2:47:00 PM
Chromium	106	5.00		µg/L	1	1/2/2020 2:47:00 PM
Cobalt	10.2	50.0	J	µg/L	1	1/2/2020 2:47:00 PM
Copper	1320	5.00		µg/L	1	1/2/2020 2:47:00 PM
Iron	61800	50.0		µg/L	1	1/2/2020 2:47:00 PM
Lead	218	5.00		µg/L	1	1/2/2020 2:47:00 PM
Magnesium	5180	50.0		µg/L	1	1/2/2020 2:47:00 PM
Manganese	32700	20.0		µg/L	1	1/2/2020 2:47:00 PM
Nickel	13.0	20.0	J	µg/L	1	1/2/2020 2:47:00 PM
Potassium	16800	50.0		µg/L	1	1/2/2020 2:47:00 PM
Selenium	ND	5.00		µg/L	1	1/2/2020 2:47:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 2:47:00 PM
Sodium	262000	500		µg/L	10	1/2/2020 2:51:00 PM
Thallium	50.7	10.0		µg/L	1	1/2/2020 2:47:00 PM
Vanadium	ND	20.0		µg/L	1	1/2/2020 2:47:00 PM
Zinc	1130	10.0		µg/L	1	1/2/2020 2:47:00 PM
ICP DISSOLVED METAL - EPA 200.7						
(Prep: SW3005A - 12/20/2019)						Analyst: KH
Aluminum, Dissolved	ND	200		µg/L	1	1/2/2020 4:25:00 PM
Antimony, Dissolved	ND	60.0		µg/L	1	1/2/2020 4:25:00 PM
Arsenic, Dissolved	ND	10.0	N	µg/L	1	1/2/2020 4:25:00 PM
Barium, Dissolved	837	200		µg/L	1	1/2/2020 4:25:00 PM
Beryllium, Dissolved	ND	5.00		µg/L	1	1/2/2020 4:25:00 PM

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: 120 Pit-20191219
Collection Date: 12/19/2019 9:17:00 AM
Lab Sample ID: 191218077-005
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP DISSOLVED METAL - EPA 200.7						Analyst: KH
(Prep: SW3005A - 12/20/2019)						
Cadmium, Dissolved	ND	5.00		µg/L	1	1/2/2020 4:25:00 PM
Calcium, Dissolved	11500	5000		µg/L	1	1/2/2020 4:25:00 PM
Chromium, Dissolved	7.27	10.0	J	µg/L	1	1/2/2020 4:25:00 PM
Cobalt, Dissolved	ND	50.0		µg/L	1	1/2/2020 4:25:00 PM
Copper, Dissolved	ND	25.0		µg/L	1	1/2/2020 4:25:00 PM
Iron, Dissolved	48.0	100	J	µg/L	1	1/2/2020 4:25:00 PM
Lead, Dissolved	ND	3.00		µg/L	1	1/2/2020 4:25:00 PM
Magnesium, Dissolved	3680	5000	J	µg/L	1	1/2/2020 4:25:00 PM
Manganese, Dissolved	138	15.0	Z	µg/L	1	1/2/2020 4:25:00 PM
Nickel, Dissolved	ND	40.0		µg/L	1	1/2/2020 4:25:00 PM
Potassium, Dissolved	15700	5000		µg/L	1	1/2/2020 4:25:00 PM
Selenium, Dissolved	ND	5.00		µg/L	1	1/2/2020 4:25:00 PM
Silver, Dissolved	ND	10.0		µg/L	1	1/2/2020 4:25:00 PM
Sodium, Dissolved	281000	50000		µg/L	10	1/2/2020 4:29:00 PM
Thallium, Dissolved	ND	10.0		µg/L	1	1/2/2020 4:25:00 PM
Vanadium, Dissolved	ND	50.0		µg/L	1	1/2/2020 4:25:00 PM
Zinc, Dissolved	ND	20.0		µg/L	1	1/2/2020 4:25:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: Commercial Pit-20191219
Collection Date: 12/19/2019 9:41:00 AM
Lab Sample ID: 191218077-006
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 12/20/2019)						
Mercury	0.16	0.20	J	µg/L	1	12/20/2019 1:47:53 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 12/20/2019)						
Aluminum	ND	100		µg/L	1	1/2/2020 2:55:00 PM
Antimony	15.4	60.0	J	µg/L	1	1/2/2020 2:55:00 PM
Arsenic	ND	5.00		µg/L	1	1/2/2020 2:55:00 PM
Barium	88.1	10.0		µg/L	1	1/2/2020 2:55:00 PM
Beryllium	ND	5.00		µg/L	1	1/2/2020 2:55:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 2:55:00 PM
Calcium	72800	50.0		µg/L	1	1/2/2020 2:55:00 PM
Chromium	1390	5.00		µg/L	1	1/2/2020 2:55:00 PM
Cobalt	ND	50.0		µg/L	1	1/2/2020 2:55:00 PM
Copper	ND	5.00		µg/L	1	1/2/2020 2:55:00 PM
Iron	61.0	50.0		µg/L	1	1/2/2020 2:55:00 PM
Lead	ND	5.00		µg/L	1	1/2/2020 2:55:00 PM
Magnesium	19600	50.0		µg/L	1	1/2/2020 2:55:00 PM
Manganese	71.6	20.0		µg/L	1	1/2/2020 2:55:00 PM
Nickel	ND	20.0		µg/L	1	1/2/2020 2:55:00 PM
Potassium	13700	50.0		µg/L	1	1/2/2020 2:55:00 PM
Selenium	ND	5.00		µg/L	1	1/2/2020 2:55:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 2:55:00 PM
Sodium	154000	500		µg/L	10	1/2/2020 2:59:00 PM
Thallium	ND	10.0		µg/L	1	1/2/2020 2:55:00 PM
Vanadium	ND	20.0		µg/L	1	1/2/2020 2:55:00 PM
Zinc	ND	10.0		µg/L	1	1/2/2020 2:55:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: NMT Pit-20191219
Collection Date: 12/19/2019 9:57:00 AM
Lab Sample ID: 191218077-007
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 12/20/2019)						
Mercury	0.18	0.20	J	µg/L	1	12/20/2019 1:49:34 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 12/20/2019)						
Aluminum	1110	100		µg/L	1	1/2/2020 3:02:00 PM
Antimony	3270	60.0		µg/L	1	1/2/2020 3:02:00 PM
Arsenic	162	5.00		µg/L	1	1/2/2020 3:02:00 PM
Barium	275	10.0		µg/L	1	1/2/2020 3:02:00 PM
Beryllium	ND	5.00		µg/L	1	1/2/2020 3:02:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 3:02:00 PM
Calcium	90300	50.0		µg/L	1	1/2/2020 3:02:00 PM
Chromium	244000	50.0		µg/L	10	1/2/2020 3:10:00 PM
Cobalt	ND	50.0		µg/L	1	1/2/2020 3:02:00 PM
Copper	282	5.00		µg/L	1	1/2/2020 3:02:00 PM
Iron	1980	50.0		µg/L	1	1/2/2020 3:02:00 PM
Lead	ND	5.00		µg/L	1	1/2/2020 3:02:00 PM
Magnesium	17900	50.0		µg/L	1	1/2/2020 3:02:00 PM
Manganese	30.6	20.0		µg/L	1	1/2/2020 3:02:00 PM
Nickel	68.9	20.0		µg/L	1	1/2/2020 3:02:00 PM
Potassium	12400	50.0		µg/L	1	1/2/2020 3:02:00 PM
Selenium	ND	5.00		µg/L	1	1/2/2020 3:02:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 3:02:00 PM
Sodium	95900	500		µg/L	10	1/2/2020 3:10:00 PM
Thallium	85.7	10.0		µg/L	1	1/2/2020 3:02:00 PM
Vanadium	ND	20.0		µg/L	1	1/2/2020 3:02:00 PM
Zinc	131	10.0		µg/L	1	1/2/2020 3:02:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: Excav. Sump-20191219
Collection Date: 12/19/2019 11:14:00 AM
Lab Sample ID: 191218077-008
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 12/20/2019)						
Mercury	0.17	0.20	J	µg/L	1	12/20/2019 1:51:16 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 12/20/2019)						
Aluminum	ND	100		µg/L	1	1/2/2020 3:14:00 PM
Antimony	ND	60.0		µg/L	1	1/2/2020 3:14:00 PM
Arsenic	ND	5.00		µg/L	1	1/2/2020 3:14:00 PM
Barium	61.2	10.0		µg/L	1	1/2/2020 3:14:00 PM
Beryllium	ND	5.00		µg/L	1	1/2/2020 3:14:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 3:14:00 PM
Calcium	46900	50.0		µg/L	1	1/2/2020 3:14:00 PM
Chromium	14.5	5.00		µg/L	1	1/2/2020 3:14:00 PM
Cobalt	ND	50.0		µg/L	1	1/2/2020 3:14:00 PM
Copper	ND	5.00		µg/L	1	1/2/2020 3:14:00 PM
Iron	920	50.0		µg/L	1	1/2/2020 3:14:00 PM
Lead	ND	5.00		µg/L	1	1/2/2020 3:14:00 PM
Magnesium	10400	50.0		µg/L	1	1/2/2020 3:14:00 PM
Manganese	7.80	20.0	J	µg/L	1	1/2/2020 3:14:00 PM
Nickel	ND	20.0		µg/L	1	1/2/2020 3:14:00 PM
Potassium	5810	50.0		µg/L	1	1/2/2020 3:14:00 PM
Selenium	ND	5.00		µg/L	1	1/2/2020 3:14:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 3:14:00 PM
Sodium	130000	500		µg/L	10	1/2/2020 3:18:00 PM
Thallium	ND	10.0		µg/L	1	1/2/2020 3:14:00 PM
Vanadium	ND	20.0		µg/L	1	1/2/2020 3:14:00 PM
Zinc	ND	10.0		µg/L	1	1/2/2020 3:14:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: WVA-AW-35-MW-5-20191219
Collection Date: 12/19/2019 2:05:00 PM
Lab Sample ID: 191218077-009
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 12/20/2019)						
Mercury	0.17	0.20	J	µg/L	1	12/20/2019 1:52:57 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 12/20/2019)						
Aluminum	ND	100		µg/L	1	1/2/2020 3:29:00 PM
Antimony	ND	60.0		µg/L	1	1/2/2020 3:29:00 PM
Arsenic	ND	5.00		µg/L	1	1/2/2020 3:29:00 PM
Barium	3240	10.0		µg/L	1	1/2/2020 3:29:00 PM
Beryllium	1.03	5.00	J	µg/L	1	1/2/2020 3:29:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 3:29:00 PM
Calcium	18700	50.0		µg/L	1	1/2/2020 3:29:00 PM
Chromium	5.06	5.00		µg/L	1	1/2/2020 3:29:00 PM
Cobalt	ND	50.0		µg/L	1	1/2/2020 3:29:00 PM
Copper	ND	5.00		µg/L	1	1/2/2020 3:29:00 PM
Iron	60.5	50.0		µg/L	1	1/2/2020 3:29:00 PM
Lead	ND	5.00		µg/L	1	1/2/2020 3:29:00 PM
Magnesium	5680	50.0		µg/L	1	1/2/2020 3:29:00 PM
Manganese	90.5	20.0		µg/L	1	1/2/2020 3:29:00 PM
Nickel	ND	20.0		µg/L	1	1/2/2020 3:29:00 PM
Potassium	16100	50.0		µg/L	1	1/2/2020 3:29:00 PM
Selenium	ND	5.00		µg/L	1	1/2/2020 3:29:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 3:29:00 PM
Sodium	237000	500		µg/L	10	1/2/2020 3:33:00 PM
Thallium	ND	10.0		µg/L	1	1/2/2020 3:29:00 PM
Vanadium	ND	20.0		µg/L	1	1/2/2020 3:29:00 PM
Zinc	ND	10.0		µg/L	1	1/2/2020 3:29:00 PM

Qualifiers:

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J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: WVA-AW-35-MW-11-2019121
Collection Date: 12/19/2019 2:35:00 PM
Lab Sample ID: 191218077-010
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 12/20/2019)						
Mercury	0.16	0.20	J	µg/L	1	12/20/2019 1:54:40 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 12/20/2019)						
Aluminum	ND	100		µg/L	1	1/2/2020 3:47:00 PM
Antimony	ND	60.0		µg/L	1	1/2/2020 3:47:00 PM
Arsenic	ND	5.00		µg/L	1	1/2/2020 3:47:00 PM
Barium	1630	10.0		µg/L	1	1/2/2020 3:47:00 PM
Beryllium	ND	5.00		µg/L	1	1/2/2020 3:47:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 3:47:00 PM
Calcium	30800	50.0		µg/L	1	1/2/2020 3:47:00 PM
Chromium	10.1	5.00		µg/L	1	1/2/2020 3:47:00 PM
Cobalt	ND	50.0		µg/L	1	1/2/2020 3:47:00 PM
Copper	ND	5.00		µg/L	1	1/2/2020 3:47:00 PM
Iron	10900	50.0		µg/L	1	1/2/2020 3:47:00 PM
Lead	ND	5.00		µg/L	1	1/2/2020 3:47:00 PM
Magnesium	12000	50.0		µg/L	1	1/2/2020 3:47:00 PM
Manganese	336	20.0		µg/L	1	1/2/2020 3:47:00 PM
Nickel	ND	20.0		µg/L	1	1/2/2020 3:47:00 PM
Potassium	16800	50.0		µg/L	1	1/2/2020 3:47:00 PM
Selenium	ND	5.00		µg/L	1	1/2/2020 3:47:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 3:47:00 PM
Sodium	198000	500		µg/L	10	1/2/2020 3:52:00 PM
Thallium	ND	10.0		µg/L	1	1/2/2020 3:47:00 PM
Vanadium	ND	20.0		µg/L	1	1/2/2020 3:47:00 PM
Zinc	ND	10.0		µg/L	1	1/2/2020 3:47:00 PM

Qualifiers:

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J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 06-Jan-20

CLIENT: Arcadis
Work Order: 191218077
Reference: Watervliet Arsenal /
PO#:

Client Sample ID: Duplicate-01-20191219
Collection Date: 12/19/2019 2:05:00 PM
Lab Sample ID: 191218077-011
Matrix: WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 12/20/2019)						
Mercury	0.16	0.20	J	µg/L	1	12/20/2019 1:56:23 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 12/20/2019)						
Aluminum	ND	100		µg/L	1	1/2/2020 4:00:00 PM
Antimony	ND	60.0		µg/L	1	1/2/2020 4:00:00 PM
Arsenic	ND	5.00		µg/L	1	1/2/2020 4:00:00 PM
Barium	1580	10.0		µg/L	1	1/2/2020 4:00:00 PM
Beryllium	ND	5.00		µg/L	1	1/2/2020 4:00:00 PM
Cadmium	ND	5.00		µg/L	1	1/2/2020 4:00:00 PM
Calcium	29500	50.0		µg/L	1	1/2/2020 4:00:00 PM
Chromium	5.62	5.00		µg/L	1	1/2/2020 4:00:00 PM
Cobalt	ND	50.0		µg/L	1	1/2/2020 4:00:00 PM
Copper	ND	5.00		µg/L	1	1/2/2020 4:00:00 PM
Iron	11600	50.0		µg/L	1	1/2/2020 4:00:00 PM
Lead	ND	5.00		µg/L	1	1/2/2020 4:00:00 PM
Magnesium	11600	50.0		µg/L	1	1/2/2020 4:00:00 PM
Manganese	332	20.0		µg/L	1	1/2/2020 4:00:00 PM
Nickel	ND	20.0		µg/L	1	1/2/2020 4:00:00 PM
Potassium	16000	50.0		µg/L	1	1/2/2020 4:00:00 PM
Selenium	ND	5.00		µg/L	1	1/2/2020 4:00:00 PM
Silver	ND	10.0		µg/L	1	1/2/2020 4:00:00 PM
Sodium	139000	500		µg/L	10	1/2/2020 4:05:00 PM
Thallium	ND	10.0		µg/L	1	1/2/2020 4:00:00 PM
Vanadium	ND	20.0		µg/L	1	1/2/2020 4:00:00 PM
Zinc	ND	10.0		µg/L	1	1/2/2020 4:00:00 PM

Qualifiers:

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X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

CLIENT: Arcadis
 Work Order: 191218077
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77260

mbk	SeqNo: 2761582	PrepDate:12/20/2019	TestNo: E245.1	RunNo: 178479
	Samp ID: MB-77260	PrepRef:(E245.1)	Units: µg/L	Analysis Date: 12/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.200									

lcs	SeqNo: 2761583	PrepDate:12/20/2019	TestNo: E245.1	RunNo: 178479
	Samp ID: LCS-77260	PrepRef:(E245.1)	Units: µg/L	Analysis Date: 12/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	1.86	0.200	2	0	93	85	115	0	0		

ms	SeqNo: 2761587	PrepDate:12/20/2019	TestNo: E245.1	RunNo: 178479
	Samp ID: 191218077-002 (WVA-AW-35-10-2	PrepRef:(E245.1)	Units: µg/L	Analysis Date: 12/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	1.776	0.200	2	0.1605	80.8	80.8	119	0	0		S

dup	SeqNo: 2761586	PrepDate:12/20/2019	TestNo: E245.1	RunNo: 178479
	Samp ID: 191218077-002	PrepRef:	Units: µg/L	Analysis Date: 12/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.1594	0.200	0	0	0	0	0	0.1605	0	16.5	

CCB	SeqNo: 2761591	PrepDate:	TestNo: E245.1	RunNo: 178479
	Samp ID: CCB	PrepRef:	Units: µg/L	Analysis Date: 12/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0164	0.200	0	0	0	0	0	0	0		

CCB	SeqNo: 2761603	PrepDate:	TestNo: E245.1	RunNo: 178479
	Samp ID: CCB	PrepRef:	Units: µg/L	Analysis Date: 12/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0078	0.200	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
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S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77260

CCB	SeqNo: 2761608	PrepDate:	TestNo: E245.1	RunNo: 178479
	Samp ID: CCB	PrepRef:	Units: µg/L	Analysis Date: 12/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0111	0.200	0	0	0	0	0	0	0		

CCV	SeqNo: 2761590	PrepDate:	TestNo: E245.1	RunNo: 178479
	Samp ID: CCV	PrepRef:	Units: µg/L	Analysis Date: 12/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	1.968	0.200	2	0	98.4	85	115	0	0		

CCV	SeqNo: 2761602	PrepDate:	TestNo: E245.1	RunNo: 178479
	Samp ID: CCV	PrepRef:	Units: µg/L	Analysis Date: 12/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	2.19	0.200	2	0	110	85	115	0	0		

CCV	SeqNo: 2761607	PrepDate:	TestNo: E245.1	RunNo: 178479
	Samp ID: CCV	PrepRef:	Units: µg/L	Analysis Date: 12/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	2.215	0.200	2	0	111	85	115	0	0		

cra	SeqNo: 2761580	PrepDate:	TestNo: E245.1	RunNo: 178479
	Samp ID: 0.2ppb	PrepRef:	Units: µg/L	Analysis Date: 12/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.1232	0.200	0.2	0	61.6	70	130	0	0		S

ICB	SeqNo: 2761579	PrepDate:	TestNo: E245.1	RunNo: 178479
	Samp ID: ICB	PrepRef:	Units: µg/L	Analysis Date: 12/20/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.007	0.200	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77260

ICV	SeqNo: 2761578	PrepDate:	TestNo: E245.1	RunNo: 178479
	Samp ID: ICV	PrepRef:	Units: µg/L	Analysis Date: 12/20/2019

<u>Analyte</u>	<u>Result</u>	<u>PQL</u>	<u>SPK value</u>	<u>SPK Ref Val</u>	<u>%REC</u>	<u>LowLimit</u>	<u>HighLimit</u>	<u>RPD Ref Val</u>	<u>%RPD</u>	<u>RPDLimit</u>	<u>Qual</u>
Mercury	2.024	0.200	2	0	101	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
 Work Order: 191218077
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77262

mbk	SeqNo: 2762904	PrepDate:12/24/2019	TestNo: E245.1F	RunNo: 178550
	Samp ID: MB-77262	PrepRef:(E245.1)	Units: µg/L	Analysis Date: 12/24/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dissolved Mercury	ND	0.200									

lcs	SeqNo: 2762905	PrepDate:12/24/2019	TestNo: E245.1F	RunNo: 178550
	Samp ID: LCS-77262	PrepRef:(E245.1)	Units: µg/L	Analysis Date: 12/24/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dissolved Mercury	2.095	0.200	2	0	105	85	115	0	0		

ms	SeqNo: 2762908	PrepDate:12/24/2019	TestNo: E245.1F	RunNo: 178550
	Samp ID: 191218077-004 (WVA-AW-35-MW)	PrepRef:(E245.1)	Units: µg/L	Analysis Date: 12/24/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dissolved Mercury	1.934	0.200	2	0	96.7	80.8	119	0	0		

dup	SeqNo: 2762907	PrepDate:12/24/2019	TestNo: E245.1F	RunNo: 178550
	Samp ID: 191218077-004	PrepRef:	Units: µg/L	Analysis Date: 12/24/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dissolved Mercury	-0.0336	0.200	0	0	0	0	0	0	0	10.1	

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

PS	SeqNo: 2766556	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: 191218077-002 (WVA-AW-35-10-2)	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	4730	200	4000	91.06	116	75	125	0	0		
Antimony	990.9	60.0	1000	0	99.1	75	125	0	0		
Arsenic	60.93	10.0	80	0	76.2	75	125	0	0		
Barium	6729	200	4000	2604	103	75	125	0	0		
Beryllium	114.2	5.00	100	0	114	75	125	0	0		
Cadmium	104.3	5.00	100	0	104	75	125	0	0		
Chromium	482.9	10.0	400	6.578	119	75	125	0	0		
Cobalt	956.7	50.0	1000	0	95.7	75	125	0	0		
Copper	582.1	25.0	500	0	116	75	125	0	0		
Iron	5523	100	2000	3742	89.1	75	125	0	0		
Lead	39.33	3.00	40	0	98.3	75	125	0	0		
Manganese	1219	15.0	1000	258.1	96.1	75	125	0	0		
Nickel	975.2	40.0	1000	0	97.5	75	125	0	0		
Selenium	18.61	5.00	20	0	93.1	75	125	0	0		
Silver	104.5	10.0	100	0	105	75	125	0	0		
Thallium	84.89	10.0	100	0	84.9	75	125	0	0		
Vanadium	1025	50.0	1000	0	102	75	125	0	0		
Zinc	1055	20.0	1000	0	105	75	125	0	0		

SD	SeqNo: 2766557	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: 191218077-002 (WVA-AW-35-10-2)	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	1000	0	0	0	0	0	91.06	0	0	
Antimony	ND	300	0	0	0	0	0	0	0	0	
Arsenic	ND	50.0	0	0	0	0	0	0	0	0	
Barium	2640	1000	0	0	0	0	0	2604	1.38	0	
Beryllium	ND	25.0	0	0	0	0	0	0	0	0	
Cadmium	ND	25.0	0	0	0	0	0	0	0	0	
Calcium	35360	25000	0	0	0	0	0	34760	1.70	0	
Chromium	ND	50.0	0	0	0	0	0	6.578	0	0	
Cobalt	ND	250	0	0	0	0	0	0	0	0	
Copper	ND	120	0	0	0	0	0	0	0	0	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

SD	SeqNo: 2766557	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: 191218077-002 (WVA-AW-35-10-2)	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	3707	500	0	0	0	0	0	3742	0.938	0	
Lead	ND	15.0	0	0	0	0	0	0	0	0	
Magnesium	8722	25000	0	0	0	0	0	9023	0	0	J
Manganese	280	75.0	0	0	0	0	0	258.1	8.13	0	
Nickel	ND	200	0	0	0	0	0	0	0	0	
Potassium	13000	25000	0	0	0	0	0	18130	0	0	J
Selenium	ND	25.0	0	0	0	0	0	0	0	0	
Silver	ND	50.0	0	0	0	0	0	0	0	0	
Sodium	243100	25000	0	0	0	0	0	165400	38.1	0	
Thallium	ND	50.0	0	0	0	0	0	0	0	0	
Vanadium	ND	250	0	0	0	0	0	0	0	0	
Zinc	ND	100	0	0	0	0	0	0	0	0	

MBLK	SeqNo: 2766545	PrepDate:12/20/2019	TestNo: E200.7	RunNo: 178751
	Samp ID: MB-77263	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200									
Antimony	ND	60.0									
Arsenic	ND	10.0									
Barium	ND	200									
Beryllium	ND	5.00									
Cadmium	ND	5.00									
Calcium	ND	5000									
Chromium	6.328	10.0									J
Cobalt	ND	50.0									
Copper	ND	25.0									
Iron	ND	100									
Lead	ND	3.00									
Magnesium	ND	5000									
Manganese	ND	15.0									
Nickel	ND	40.0									
Potassium	ND	5000									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

MBLK	SeqNo: 2766545	PrepDate:12/20/2019	TestNo: E200.7	RunNo: 178751
	Samp ID: MB-77263	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	ND	5.00									
Silver	ND	10.0									
Sodium	ND	5000									
Thallium	ND	10.0									
Vanadium	ND	50.0									
Zinc	ND	20.0									

LCS	SeqNo: 2766546	PrepDate:12/20/2019	TestNo: E200.7	RunNo: 178751
	Samp ID: LCS-77263	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	2018	200	2000	0	101	80	120	0	0		
Antimony	1951	60.0	2000	0	97.6	80	120	0	0		
Arsenic	1970	10.0	2000	0	98.5	80	120	0	0		
Barium	2047	200	2000	0	102	80	120	0	0		
Beryllium	2102	5.00	2000	0	105	80	120	0	0		
Cadmium	2033	5.00	2000	0	102	80	120	0	0		
Calcium	2147	5000	2000	0	107	80	120	0	0		J
Chromium	1973	10.0	2000	0	98.7	80	120	0	0		
Cobalt	1986	50.0	2000	0	99.3	80	120	0	0		
Copper	2153	25.0	2000	0	108	80	120	0	0		
Iron	2063	100	2000	0	103	80	120	0	0		
Lead	2063	3.00	2000	0	103	80	120	0	0		
Magnesium	1964	5000	2000	0	98.2	80	120	0	0		J
Manganese	1999	15.0	2000	0	99.9	80	120	0	0		
Nickel	2041	40.0	2000	0	102	80	120	0	0		
Potassium	10340	5000	10000	0	103	80	120	0	0		
Selenium	1955	5.00	2000	0	97.8	80	120	0	0		
Silver	510.9	10.0	500	0	102	80	120	0	0		
Sodium	2030	5000	2000	0	102	80	120	0	0		J
Thallium	2018	10.0	2000	0	101	80	120	0	0		
Vanadium	1963	50.0	2000	0	98.2	80	120	0	0		
Zinc	2012	20.0	2000	0	101	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

MS	SeqNo: 2766555	PrepDate:12/20/2019	TestNo: E200.7	RunNo: 178751
	Samp ID: 191218077-002 (WVA-AW-35-10-2)	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	2186	200	2000	91.06	105	75	125	0	0		
Antimony	484.6	60.0	500	0	96.9	75	125	0	0		
Arsenic	31.38	10.0	40	0	78.5	75	125	0	0		
Barium	4650	200	2000	2604	102	75	121	0	0		
Beryllium	56.18	5.00	50	0	112	75	120	0	0		
Cadmium	50.56	5.00	50	0	101	75	114	0	0		
Chromium	231.5	10.0	200	6.578	112	75	125	0	0		
Cobalt	465.9	50.0	500	0	93.2	75	117	0	0		
Copper	288.2	25.0	250	0	115	75	123	0	0		
Iron	3693	100	1000	3742	-4.93	75	125	0	0		S
Lead	20	3.00	20	0	100	75	125	0	0		
Manganese	720	15.0	500	258.1	92.4	75	125	0	0		
Nickel	479.4	40.0	500	0	95.9	75	120	0	0		
Selenium	6.778	5.00	10	0	67.8	75	125	0	0		S
Silver	47.61	10.0	50	0	95.2	75	125	0	0		
Thallium	42.01	10.0	50	0	84	75	125	0	0		
Vanadium	504.7	50.0	500	0	101	75	125	0	0		
Zinc	531.7	20.0	500	0	106	78.5	123	0	0		

DUP	SeqNo: 2766553	PrepDate:12/20/2019	TestNo: E200.7	RunNo: 178751
	Samp ID: 191218077-002	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	91.06	0	20	
Antimony	0.4364	60.0	0	0	0	0	0	0	0	20	
Arsenic	2.974	10.0	0	0	0	0	0	0	0	20	
Barium	2691	200	0	0	0	0	0	2604	3.29	20	
Beryllium	0.8449	5.00	0	0	0	0	0	0	0	20	
Cadmium	ND	5.00	0	0	0	0	0	0	0	20	
Calcium	36090	5000	0	0	0	0	0	34760	3.76	20	
Chromium	0.6933	10.0	0	0	0	0	0	6.578	0	20	
Cobalt	0.8463	50.0	0	0	0	0	0	0	0	20	
Copper	2.083	25.0	0	0	0	0	0	0	0	20	

Qualifiers: ND - Not Detected at the Reporting Limit
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S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

DUP	SeqNo: 2766553	PrepDate: 12/20/2019	TestNo: E200.7	RunNo: 178751
	Samp ID: 191218077-002	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	3113	100	0	0	0	0	0	3742	18.4	20	
Lead	1.321	3.00	0	0	0	0	0	0	0	20	
Magnesium	9286	5000	0	0	0	0	0	9023	2.86	20	
Manganese	257.5	15.0	0	0	0	0	0	258.1	0.260	20	
Nickel	0.1949	40.0	0	0	0	0	0	0	0	20	
Potassium	18910	5000	0	0	0	0	0	18130	4.19	20	
Selenium	ND	5.00	0	0	0	0	0	0	0	20	
Silver	ND	10.0	0	0	0	0	0	0	0	20	
Thallium	2.471	10.0	0	0	0	0	0	0	0	20	
Vanadium	ND	50.0	0	0	0	0	0	0	0	20	
Zinc	10.73	20.0	0	0	0	0	0	0	0	20	

DUP	SeqNo: 2766554	PrepDate: 12/20/2019	TestNo: E200.7	RunNo: 178751
	Samp ID: 191218077-002	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	269700	50000	0	0	0	0	0	253700	6.11	20	

CCB	SeqNo: 2766161	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCB-1	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0		
Antimony	ND	60.0	0	0	0	0	0	0	0		
Arsenic	0.6698	10.0	0	0	0	0	0	0	0		
Barium	ND	200	0	0	0	0	0	0	0		
Beryllium	0.1077	5.00	0	0	0	0	0	0	0		
Boron	ND	50.0	0	0	0	0	0	0	0		
Cadmium	0.02348	5.00	0	0	0	0	0	0	0		
Calcium	12.07	5000	0	0	0	0	0	0	0		
Chromium	3.105	10.0	0	0	0	0	0	0	0		
Cobalt	0.02027	50.0	0	0	0	0	0	0	0		
Copper	0.5787	25.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
 Work Order: 191218077
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

CCB	SeqNo: 2766161	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCB-1	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	ND	100	0	0	0	0	0	0	0		
Lead	0.2853	3.00	0	0	0	0	0	0	0		
Lithium	12.79	100	0	0	0	0	0	0	0		
Magnesium	ND	5000	0	0	0	0	0	0	0		
Manganese	ND	15.0	0	0	0	0	0	0	0		
Molybdenum	ND	50.0	0	0	0	0	0	0	0		
Nickel	ND	40.0	0	0	0	0	0	0	0		
Potassium	4.322	5000	0	0	0	0	0	0	0		
Selenium	ND	5.00	0	0	0	0	0	0	0		
Silver	ND	10.0	0	0	0	0	0	0	0		
Sodium	ND	5000	0	0	0	0	0	0	0		
Strontium	ND	20.0	0	0	0	0	0	0	0		
Thallium	ND	10.0	0	0	0	0	0	0	0		
Tin	ND	50.0	0	0	0	0	0	0	0		
Titanium	1.315	50.0	0	0	0	0	0	0	0		
Vanadium	ND	50.0	0	0	0	0	0	0	0		
Zinc	ND	20.0	0	0	0	0	0	0	0		

CCB	SeqNo: 2766173	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCB-2	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0		
Antimony	0.3852	60.0	0	0	0	0	0	0	0		
Arsenic	0.2494	10.0	0	0	0	0	0	0	0		
Barium	ND	200	0	0	0	0	0	0	0		
Beryllium	0.1619	5.00	0	0	0	0	0	0	0		
Boron	0.9558	50.0	0	0	0	0	0	0	0		
Cadmium	0.06829	5.00	0	0	0	0	0	0	0		
Calcium	8.323	5000	0	0	0	0	0	0	0		
Chromium	ND	10.0	0	0	0	0	0	0	0		
Cobalt	0.04132	50.0	0	0	0	0	0	0	0		
Copper	ND	25.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

CCB	SeqNo: 2766173	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCB-2	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	ND	100	0	0	0	0	0	0	0		
Lead	ND	3.00	0	0	0	0	0	0	0		
Lithium	ND	100	0	0	0	0	0	0	0		
Magnesium	ND	5000	0	0	0	0	0	0	0		
Manganese	0.00227	15.0	0	0	0	0	0	0	0		
Molybdenum	0.229	50.0	0	0	0	0	0	0	0		
Nickel	ND	40.0	0	0	0	0	0	0	0		
Potassium	6.06	5000	0	0	0	0	0	0	0		
Selenium	0.4312	5.00	0	0	0	0	0	0	0		
Silver	ND	10.0	0	0	0	0	0	0	0		
Sodium	41.29	5000	0	0	0	0	0	0	0		
Strontium	ND	20.0	0	0	0	0	0	0	0		
Thallium	0.2873	10.0	0	0	0	0	0	0	0		
Tin	ND	50.0	0	0	0	0	0	0	0		
Titanium	0.192	50.0	0	0	0	0	0	0	0		
Vanadium	1.916	50.0	0	0	0	0	0	0	0		
Zinc	ND	20.0	0	0	0	0	0	0	0		

CCB	SeqNo: 2766552	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCB-3	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	18.18	200	0	0	0	0	0	0	0		
Antimony	1.411	60.0	0	0	0	0	0	0	0		
Arsenic	ND	10.0	0	0	0	0	0	0	0		
Barium	ND	200	0	0	0	0	0	0	0		
Beryllium	0.2656	5.00	0	0	0	0	0	0	0		
Boron	0.7055	50.0	0	0	0	0	0	0	0		
Cadmium	0.2661	5.00	0	0	0	0	0	0	0		
Calcium	42.33	5000	0	0	0	0	0	0	0		
Chromium	3.784	10.0	0	0	0	0	0	0	0		
Cobalt	0.08418	50.0	0	0	0	0	0	0	0		
Copper	ND	25.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

CCB	SeqNo: 2766552	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCB-3	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	6.162	100	0	0	0	0	0	0	0		
Lead	ND	3.00	0	0	0	0	0	0	0		
Lithium	14.53	100	0	0	0	0	0	0	0		
Magnesium	21.79	5000	0	0	0	0	0	0	0		
Manganese	0.2042	15.0	0	0	0	0	0	0	0		
Molybdenum	0.4727	50.0	0	0	0	0	0	0	0		
Nickel	0.07969	40.0	0	0	0	0	0	0	0		
Potassium	4.293	5000	0	0	0	0	0	0	0		
Selenium	ND	5.00	0	0	0	0	0	0	0		
Silver	ND	10.0	0	0	0	0	0	0	0		
Sodium	40.84	5000	0	0	0	0	0	0	0		
Strontium	ND	20.0	0	0	0	0	0	0	0		
Thallium	ND	10.0	0	0	0	0	0	0	0		
Tin	ND	50.0	0	0	0	0	0	0	0		
Titanium	ND	50.0	0	0	0	0	0	0	0		
Vanadium	ND	50.0	0	0	0	0	0	0	0		
Zinc	ND	20.0	0	0	0	0	0	0	0		

CCB	SeqNo: 2766564	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCB-4	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0		
Antimony	ND	60.0	0	0	0	0	0	0	0		
Arsenic	ND	10.0	0	0	0	0	0	0	0		
Barium	ND	200	0	0	0	0	0	0	0		
Beryllium	0.1894	5.00	0	0	0	0	0	0	0		
Boron	ND	50.0	0	0	0	0	0	0	0		
Cadmium	0.00427	5.00	0	0	0	0	0	0	0		
Calcium	15.4	5000	0	0	0	0	0	0	0		
Chromium	2.049	10.0	0	0	0	0	0	0	0		
Cobalt	ND	50.0	0	0	0	0	0	0	0		
Copper	ND	25.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

CCB	SeqNo: 2766564	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCB-4	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	ND	100	0	0	0	0	0	0	0		
Lead	ND	3.00	0	0	0	0	0	0	0		
Lithium	ND	100	0	0	0	0	0	0	0		
Magnesium	ND	5000	0	0	0	0	0	0	0		
Manganese	ND	15.0	0	0	0	0	0	0	0		
Molybdenum	ND	50.0	0	0	0	0	0	0	0		
Nickel	ND	40.0	0	0	0	0	0	0	0		
Potassium	12.7	5000	0	0	0	0	0	0	0		
Selenium	ND	5.00	0	0	0	0	0	0	0		
Silver	ND	10.0	0	0	0	0	0	0	0		
Sodium	48	5000	0	0	0	0	0	0	0		
Strontium	ND	20.0	0	0	0	0	0	0	0		
Thallium	0.6896	10.0	0	0	0	0	0	0	0		
Tin	ND	50.0	0	0	0	0	0	0	0		
Titanium	1.617	50.0	0	0	0	0	0	0	0		
Vanadium	ND	50.0	0	0	0	0	0	0	0		
Zinc	ND	20.0	0	0	0	0	0	0	0		

CCB	SeqNo: 2766576	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCB-5	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0		
Antimony	ND	60.0	0	0	0	0	0	0	0		
Arsenic	ND	10.0	0	0	0	0	0	0	0		
Barium	ND	200	0	0	0	0	0	0	0		
Beryllium	0.1955	5.00	0	0	0	0	0	0	0		
Boron	1.69	50.0	0	0	0	0	0	0	0		
Cadmium	0.07839	5.00	0	0	0	0	0	0	0		
Calcium	11.24	5000	0	0	0	0	0	0	0		
Chromium	4.525	10.0	0	0	0	0	0	0	0		
Cobalt	0.01247	50.0	0	0	0	0	0	0	0		
Copper	ND	25.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

CCB	SeqNo: 2766576	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCB-5	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	ND	100	0	0	0	0	0	0	0		
Lead	ND	3.00	0	0	0	0	0	0	0		
Lithium	ND	100	0	0	0	0	0	0	0		
Magnesium	ND	5000	0	0	0	0	0	0	0		
Manganese	0.00287	15.0	0	0	0	0	0	0	0		
Molybdenum	ND	50.0	0	0	0	0	0	0	0		
Nickel	0.0325	40.0	0	0	0	0	0	0	0		
Potassium	5.655	5000	0	0	0	0	0	0	0		
Selenium	ND	5.00	0	0	0	0	0	0	0		
Silver	ND	10.0	0	0	0	0	0	0	0		
Sodium	58.65	5000	0	0	0	0	0	0	0		
Strontium	ND	20.0	0	0	0	0	0	0	0		
Thallium	0.2299	10.0	0	0	0	0	0	0	0		
Tin	ND	50.0	0	0	0	0	0	0	0		
Titanium	2.357	50.0	0	0	0	0	0	0	0		
Vanadium	4.353	50.0	0	0	0	0	0	0	0		
Zinc	ND	20.0	0	0	0	0	0	0	0		

CCB	SeqNo: 2766588	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCB-6	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0		
Antimony	0.1029	60.0	0	0	0	0	0	0	0		
Arsenic	0.5139	10.0	0	0	0	0	0	0	0		
Barium	ND	200	0	0	0	0	0	0	0		
Beryllium	0.1744	5.00	0	0	0	0	0	0	0		
Boron	0.6981	50.0	0	0	0	0	0	0	0		
Cadmium	0.00855	5.00	0	0	0	0	0	0	0		
Calcium	13.26	5000	0	0	0	0	0	0	0		
Chromium	ND	10.0	0	0	0	0	0	0	0		
Cobalt	0.04131	50.0	0	0	0	0	0	0	0		
Copper	ND	25.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

CCB	SeqNo: 2766588	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCB-6	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	ND	100	0	0	0	0	0	0	0		
Lead	0.09565	3.00	0	0	0	0	0	0	0		
Lithium	ND	100	0	0	0	0	0	0	0		
Magnesium	ND	5000	0	0	0	0	0	0	0		
Manganese	ND	15.0	0	0	0	0	0	0	0		
Molybdenum	ND	50.0	0	0	0	0	0	0	0		
Nickel	ND	40.0	0	0	0	0	0	0	0		
Potassium	5.626	5000	0	0	0	0	0	0	0		
Selenium	ND	5.00	0	0	0	0	0	0	0		
Silver	0.1748	10.0	0	0	0	0	0	0	0		
Sodium	66.4	5000	0	0	0	0	0	0	0		
Strontium	ND	20.0	0	0	0	0	0	0	0		
Thallium	0.8621	10.0	0	0	0	0	0	0	0		
Tin	0.2761	50.0	0	0	0	0	0	0	0		
Titanium	0.7673	50.0	0	0	0	0	0	0	0		
Vanadium	1.219	50.0	0	0	0	0	0	0	0		
Zinc	ND	20.0	0	0	0	0	0	0	0		

CCB	SeqNo: 2766599	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCB-7	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0		
Antimony	0.4622	60.0	0	0	0	0	0	0	0		
Arsenic	0.4762	10.0	0	0	0	0	0	0	0		
Barium	ND	200	0	0	0	0	0	0	0		
Beryllium	0.1032	5.00	0	0	0	0	0	0	0		
Boron	ND	50.0	0	0	0	0	0	0	0		
Cadmium	0.01654	5.00	0	0	0	0	0	0	0		
Calcium	16.88	5000	0	0	0	0	0	0	0		
Chromium	0.3258	10.0	0	0	0	0	0	0	0		
Cobalt	ND	50.0	0	0	0	0	0	0	0		
Copper	ND	25.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

CCB	SeqNo: 2766599	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCB-7	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	ND	100	0	0	0	0	0	0	0		
Lead	0.05837	3.00	0	0	0	0	0	0	0		
Lithium	9.826	100	0	0	0	0	0	0	0		
Magnesium	ND	5000	0	0	0	0	0	0	0		
Manganese	ND	15.0	0	0	0	0	0	0	0		
Molybdenum	ND	50.0	0	0	0	0	0	0	0		
Nickel	ND	40.0	0	0	0	0	0	0	0		
Potassium	5.917	5000	0	0	0	0	0	0	0		
Selenium	ND	5.00	0	0	0	0	0	0	0		
Silver	ND	10.0	0	0	0	0	0	0	0		
Sodium	60.79	5000	0	0	0	0	0	0	0		
Strontium	ND	20.0	0	0	0	0	0	0	0		
Thallium	ND	10.0	0	0	0	0	0	0	0		
Tin	ND	50.0	0	0	0	0	0	0	0		
Titanium	0.9865	50.0	0	0	0	0	0	0	0		
Vanadium	3.657	50.0	0	0	0	0	0	0	0		
Zinc	ND	20.0	0	0	0	0	0	0	0		

CCV	SeqNo: 2766160	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCV-1	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1970	200	2000	0	98.5	90	110	0	0		
Antimony	1979	60.0	2000	0	99	90	110	0	0		
Arsenic	1943	10.0	2000	0	97.1	90	110	0	0		
Barium	2045	200	2000	0	102	90	110	0	0		
Beryllium	2058	5.00	2000	0	103	90	110	0	0		
Boron	2173	50.0	2000	0	109	90	110	0	0		
Cadmium	2087	5.00	2000	0	104	90	110	0	0		
Calcium	2029	5000	2000	0	101	90	110	0	0		
Chromium	1929	10.0	2000	0	96.5	90	110	0	0		
Cobalt	1994	50.0	2000	0	99.7	90	110	0	0		
Copper	2062	25.0	2000	0	103	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

CCV	SeqNo: 2766160	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCV-1	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	2022	100	2000	0	101	90	110	0	0		
Lead	2086	3.00	2000	0	104	90	110	0	0		
Lithium	1947	100	2000	0	97.4	90	110	0	0		
Magnesium	1955	5000	2000	0	97.7	90	110	0	0		
Manganese	1985	15.0	2000	0	99.3	90	110	0	0		
Molybdenum	2062	50.0	2000	0	103	90	110	0	0		
Nickel	2043	40.0	2000	0	102	90	110	0	0		
Potassium	9269	5000	10000	0	92.7	90	110	0	0		
Selenium	1965	5.00	2000	0	98.3	90	110	0	0		
Silver	515.4	10.0	500	0	103	90	110	0	0		
Sodium	1886	5000	2000	0	94.3	90	110	0	0		
Strontium	2054	20.0	2000	0	103	90	110	0	0		
Thallium	2120	10.0	2000	0	106	90	110	0	0		
Tin	1969	50.0	2000	0	98.5	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	1932	50.0	2000	0	96.6	90	110	0	0		
Zinc	2062	20.0	2000	0	103	90	110	0	0		

CCV	SeqNo: 2766172	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCV-2	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1976	200	2000	0	98.8	90	110	0	0		
Antimony	1975	60.0	2000	0	98.8	90	110	0	0		
Arsenic	1942	10.0	2000	0	97.1	90	110	0	0		
Barium	2070	200	2000	0	103	90	110	0	0		
Beryllium	2061	5.00	2000	0	103	90	110	0	0		
Boron	2175	50.0	2000	0	109	90	110	0	0		
Cadmium	2078	5.00	2000	0	104	90	110	0	0		
Calcium	2023	5000	2000	0	101	90	110	0	0		
Chromium	1949	10.0	2000	0	97.4	90	110	0	0		
Cobalt	1990	50.0	2000	0	99.5	90	110	0	0		
Copper	2084	25.0	2000	0	104	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

CCV	SeqNo: 2766172	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCV-2	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	2008	100	2000	0	100	90	110	0	0		
Lead	2069	3.00	2000	0	103	90	110	0	0		
Lithium	1968	100	2000	0	98.4	90	110	0	0		
Magnesium	1971	5000	2000	0	98.6	90	110	0	0		
Manganese	1972	15.0	2000	0	98.6	90	110	0	0		
Molybdenum	2056	50.0	2000	0	103	90	110	0	0		
Nickel	2032	40.0	2000	0	102	90	110	0	0		
Potassium	9401	5000	10000	0	94	90	110	0	0		
Selenium	1969	5.00	2000	0	98.4	90	110	0	0		
Silver	517.6	10.0	500	0	104	90	110	0	0		
Sodium	2061	5000	2000	0	103	90	110	0	0		
Strontium	2049	20.0	2000	0	102	90	110	0	0		
Thallium	2110	10.0	2000	0	106	90	110	0	0		
Tin	1948	50.0	2000	0	97.4	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	1926	50.0	2000	0	96.3	90	110	0	0		
Zinc	2047	20.0	2000	0	102	90	110	0	0		

CCV	SeqNo: 2766551	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCV-3	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1971	200	2000	0	98.6	90	110	0	0		
Antimony	1970	60.0	2000	0	98.5	90	110	0	0		
Arsenic	1935	10.0	2000	0	96.8	90	110	0	0		
Barium	2050	200	2000	0	103	90	110	0	0		
Beryllium	2045	5.00	2000	0	102	90	110	0	0		
Boron	2159	50.0	2000	0	108	90	110	0	0		
Cadmium	2063	5.00	2000	0	103	90	110	0	0		
Calcium	2005	5000	2000	0	100	90	110	0	0		
Chromium	1937	10.0	2000	0	96.9	90	110	0	0		
Cobalt	1976	50.0	2000	0	98.8	90	110	0	0		
Copper	2070	25.0	2000	0	104	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

CCV	SeqNo: 2766551	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCV-3	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	2004	100	2000	0	100	90	110	0	0		
Lead	2065	3.00	2000	0	103	90	110	0	0		
Lithium	1960	100	2000	0	98	90	110	0	0		
Magnesium	1971	5000	2000	0	98.6	90	110	0	0		
Manganese	1969	15.0	2000	0	98.5	90	110	0	0		
Molybdenum	2046	50.0	2000	0	102	90	110	0	0		
Nickel	2025	40.0	2000	0	101	90	110	0	0		
Potassium	9321	5000	10000	0	93.2	90	110	0	0		
Selenium	1964	5.00	2000	0	98.2	90	110	0	0		
Silver	514.4	10.0	500	0	103	90	110	0	0		
Sodium	1981	5000	2000	0	99.1	90	110	0	0		
Strontium	2030	20.0	2000	0	102	90	110	0	0		
Thallium	2105	10.0	2000	0	105	90	110	0	0		
Tin	1947	50.0	2000	0	97.4	90	110	0	0		
Titanium	0.1918	50.0	0	0	0	90	110	0	0		
Vanadium	1926	50.0	2000	0	96.3	90	110	0	0		
Zinc	2040	20.0	2000	0	102	90	110	0	0		

CCV	SeqNo: 2766563	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCV-4	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1976	200	2000	0	98.8	90	110	0	0		
Antimony	1972	60.0	2000	0	98.6	90	110	0	0		
Arsenic	1926	10.0	2000	0	96.3	90	110	0	0		
Barium	2053	200	2000	0	103	90	110	0	0		
Beryllium	2048	5.00	2000	0	102	90	110	0	0		
Boron	2151	50.0	2000	0	108	90	110	0	0		
Cadmium	2047	5.00	2000	0	102	90	110	0	0		
Calcium	1991	5000	2000	0	99.5	90	110	0	0		
Chromium	1943	10.0	2000	0	97.2	90	110	0	0		
Cobalt	1952	50.0	2000	0	97.6	90	110	0	0		
Copper	2077	25.0	2000	0	104	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

CCV	SeqNo: 2766563	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCV-4	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	2010	100	2000	0	101	90	110	0	0		
Lead	2056	3.00	2000	0	103	90	110	0	0		
Lithium	1964	100	2000	0	98.2	90	110	0	0		
Magnesium	1959	5000	2000	0	98	90	110	0	0		
Manganese	1974	15.0	2000	0	98.7	90	110	0	0		
Molybdenum	2041	50.0	2000	0	102	90	110	0	0		
Nickel	2013	40.0	2000	0	101	90	110	0	0		
Potassium	9359	5000	10000	0	93.6	90	110	0	0		
Selenium	1952	5.00	2000	0	97.6	90	110	0	0		
Silver	515.2	10.0	500	0	103	90	110	0	0		
Sodium	1990	5000	2000	0	99.5	90	110	0	0		
Strontium	2010	20.0	2000	0	101	90	110	0	0		
Thallium	2086	10.0	2000	0	104	90	110	0	0		
Tin	1948	50.0	2000	0	97.4	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	1938	50.0	2000	0	96.9	90	110	0	0		
Zinc	2032	20.0	2000	0	102	90	110	0	0		

CCV	SeqNo: 2766575	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCV-5	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1959	200	2000	0	98	90	110	0	0		
Antimony	1979	60.0	2000	0	98.9	90	110	0	0		
Arsenic	1944	10.0	2000	0	97.2	90	110	0	0		
Barium	2052	200	2000	0	103	90	110	0	0		
Beryllium	2048	5.00	2000	0	102	90	110	0	0		
Boron	2159	50.0	2000	0	108	90	110	0	0		
Cadmium	2054	5.00	2000	0	103	90	110	0	0		
Calcium	2002	5000	2000	0	100	90	110	0	0		
Chromium	1938	10.0	2000	0	96.9	90	110	0	0		
Cobalt	1966	50.0	2000	0	98.3	90	110	0	0		
Copper	2078	25.0	2000	0	104	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

CCV	SeqNo: 2766575	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCV-5	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	2016	100	2000	0	101	90	110	0	0		
Lead	2070	3.00	2000	0	103	90	110	0	0		
Lithium	1956	100	2000	0	97.8	90	110	0	0		
Magnesium	1978	5000	2000	0	98.9	90	110	0	0		
Manganese	1979	15.0	2000	0	99	90	110	0	0		
Molybdenum	2046	50.0	2000	0	102	90	110	0	0		
Nickel	2026	40.0	2000	0	101	90	110	0	0		
Potassium	9320	5000	10000	0	93.2	90	110	0	0		
Selenium	1965	5.00	2000	0	98.2	90	110	0	0		
Silver	515.9	10.0	500	0	103	90	110	0	0		
Sodium	2013	5000	2000	0	101	90	110	0	0		
Strontium	2036	20.0	2000	0	102	90	110	0	0		
Thallium	2096	10.0	2000	0	105	90	110	0	0		
Tin	1961	50.0	2000	0	98	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	1931	50.0	2000	0	96.5	90	110	0	0		
Zinc	2041	20.0	2000	0	102	90	110	0	0		

CCV	SeqNo: 2766587	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCV-6	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1976	200	2000	0	98.8	90	110	0	0		
Antimony	1994	60.0	2000	0	99.7	90	110	0	0		
Arsenic	1964	10.0	2000	0	98.2	90	110	0	0		
Barium	2050	200	2000	0	102	90	110	0	0		
Beryllium	2060	5.00	2000	0	103	90	110	0	0		
Boron	2172	50.0	2000	0	109	90	110	0	0		
Cadmium	2069	5.00	2000	0	103	90	110	0	0		
Calcium	2003	5000	2000	0	100	90	110	0	0		
Chromium	1927	10.0	2000	0	96.4	90	110	0	0		
Cobalt	1980	50.0	2000	0	99	90	110	0	0		
Copper	2079	25.0	2000	0	104	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

CCV	SeqNo: 2766587	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCV-6	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	2033	100	2000	0	102	90	110	0	0		
Lead	2092	3.00	2000	0	105	90	110	0	0		
Lithium	1948	100	2000	0	97.4	90	110	0	0		
Magnesium	1958	5000	2000	0	97.9	90	110	0	0		
Manganese	2000	15.0	2000	0	100	90	110	0	0		
Molybdenum	2063	50.0	2000	0	103	90	110	0	0		
Nickel	2047	40.0	2000	0	102	90	110	0	0		
Potassium	9286	5000	10000	0	92.9	90	110	0	0		
Selenium	1986	5.00	2000	0	99.3	90	110	0	0		
Silver	517	10.0	500	0	103	90	110	0	0		
Sodium	2035	5000	2000	0	102	90	110	0	0		
Strontium	2025	20.0	2000	0	101	90	110	0	0		
Thallium	2111	10.0	2000	0	106	90	110	0	0		
Tin	1985	50.0	2000	0	99.2	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	1940	50.0	2000	0	97	90	110	0	0		
Zinc	2062	20.0	2000	0	103	90	110	0	0		

CCV	SeqNo: 2766598	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCV-7	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1967	200	2000	0	98.4	90	110	0	0		
Antimony	1985	60.0	2000	0	99.2	90	110	0	0		
Arsenic	1938	10.0	2000	0	96.9	90	110	0	0		
Barium	2044	200	2000	0	102	90	110	0	0		
Beryllium	2047	5.00	2000	0	102	90	110	0	0		
Boron	2155	50.0	2000	0	108	90	110	0	0		
Cadmium	2047	5.00	2000	0	102	90	110	0	0		
Calcium	1988	5000	2000	0	99.4	90	110	0	0		
Chromium	1926	10.0	2000	0	96.3	90	110	0	0		
Cobalt	1945	50.0	2000	0	97.3	90	110	0	0		
Copper	2079	25.0	2000	0	104	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

CCV	SeqNo: 2766598	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CCV-7	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	2026	100	2000	0	101	90	110	0	0		
Lead	2068	3.00	2000	0	103	90	110	0	0		
Lithium	1941	100	2000	0	97.1	90	110	0	0		
Magnesium	1952	5000	2000	0	97.6	90	110	0	0		
Manganese	1991	15.0	2000	0	99.5	90	110	0	0		
Molybdenum	2049	50.0	2000	0	102	90	110	0	0		
Nickel	2016	40.0	2000	0	101	90	110	0	0		
Potassium	9276	5000	10000	0	92.8	90	110	0	0		
Selenium	1963	5.00	2000	0	98.2	90	110	0	0		
Silver	514.8	10.0	500	0	103	90	110	0	0		
Sodium	1982	5000	2000	0	99.1	90	110	0	0		
Strontium	2016	20.0	2000	0	101	90	110	0	0		
Thallium	2094	10.0	2000	0	105	90	110	0	0		
Tin	1967	50.0	2000	0	98.4	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	1932	50.0	2000	0	96.6	90	110	0	0		
Zinc	2040	20.0	2000	0	102	90	110	0	0		

CRI	SeqNo: 2766156	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CRI-1	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	8.15	200	0	0	0	50	150	0	0		
Antimony	121.4	60.0	120	0	101	50	150	0	0		
Arsenic	19.2	10.0	20	0	96	50	150	0	0		
Barium	ND	200	0	0	0	50	150	0	0		
Beryllium	10.45	5.00	10	0	104	50	150	0	0		
Cadmium	10.83	5.00	10	0	108	50	150	0	0		
Calcium	10.88	5000	0	0	0	50	150	0	0		
Chromium	16.03	10.0	20	0	80.2	50	150	0	0		
Cobalt	101.9	50.0	100	0	102	50	150	0	0		
Copper	51.44	25.0	50	0	103	50	150	0	0		
Iron	ND	100	0	0	0	50	150	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

CRI	SeqNo: 2766156	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CRI-1	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	6.309	3.00	6	0	105	50	150	0	0		
Magnesium	ND	5000	0	0	0	50	150	0	0		
Manganese	30.05	15.0	30	0	100	50	150	0	0		
Nickel	84.34	40.0	80	0	105	50	150	0	0		
Potassium	4.322	5000	0	0	0	50	150	0	0		
Selenium	10.43	5.00	10	0	104	50	150	0	0		
Silver	16.53	10.0	20	0	82.6	50	150	0	0		
Sodium	ND	5000	0	0	0	50	150	0	0		
Thallium	18.62	10.0	20	0	93.1	50	150	0	0		
Vanadium	102.9	50.0	100	0	103	50	150	0	0		
Zinc	45.67	20.0	40	0	114	50	150	0	0		

CRI	SeqNo: 2766595	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CRI-2	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	5.172	200	0	0	0	50	150	0	0		
Antimony	124.2	60.0	120	0	103	50	150	0	0		
Arsenic	17.69	10.0	20	0	88.4	50	150	0	0		
Barium	ND	200	0	0	0	50	150	0	0		
Beryllium	10.43	5.00	10	0	104	50	150	0	0		
Cadmium	10.66	5.00	10	0	107	50	150	0	0		
Calcium	22.83	5000	0	0	0	50	150	0	0		
Chromium	17.95	10.0	20	0	89.7	50	150	0	0		
Cobalt	99.56	50.0	100	0	99.6	50	150	0	0		
Copper	49.2	25.0	50	0	98.4	50	150	0	0		
Iron	ND	100	0	0	0	50	150	0	0		
Lead	6.195	3.00	6	0	103	50	150	0	0		
Magnesium	ND	5000	0	0	0	50	150	0	0		
Manganese	30.4	15.0	30	0	101	50	150	0	0		
Nickel	83.2	40.0	80	0	104	50	150	0	0		
Potassium	12.24	5000	0	0	0	50	150	0	0		
Selenium	8.393	5.00	10	0	83.9	50	150	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

CRI	SeqNo: 2766595	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: CRI-2	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Silver	20.37	10.0	20	0	102	50	150	0	0		
Sodium	80.49	5000	0	0	0	50	150	0	0		
Thallium	20.12	10.0	20	0	101	50	150	0	0		
Vanadium	98.38	50.0	100	0	98.4	50	150	0	0		
Zinc	45.36	20.0	40	0	113	50	150	0	0		

ICB	SeqNo: 2766155	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: ICB-1	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0		
Antimony	ND	60.0	0	0	0	0	0	0	0		
Arsenic	ND	10.0	0	0	0	0	0	0	0		
Barium	ND	200	0	0	0	0	0	0	0		
Beryllium	0.03476	5.00	0	0	0	0	0	0	0		
Cadmium	0.07627	5.00	0	0	0	0	0	0	0		
Calcium	11.95	5000	0	0	0	0	0	0	0		
Chromium	1.568	10.0	0	0	0	0	0	0	0		
Cobalt	ND	50.0	0	0	0	0	0	0	0		
Copper	ND	25.0	0	0	0	0	0	0	0		
Iron	ND	100	0	0	0	0	0	0	0		
Lead	ND	3.00	0	0	0	0	0	0	0		
Magnesium	ND	5000	0	0	0	0	0	0	0		
Manganese	ND	15.0	0	0	0	0	0	0	0		
Nickel	ND	40.0	0	0	0	0	0	0	0		
Potassium	6.67	5000	0	0	0	0	0	0	0		
Selenium	ND	5.00	0	0	0	0	0	0	0		
Silver	ND	10.0	0	0	0	0	0	0	0		
Sodium	ND	5000	0	0	0	0	0	0	0		
Thallium	ND	10.0	0	0	0	0	0	0	0		
Vanadium	ND	50.0	0	0	0	0	0	0	0		
Zinc	ND	20.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

ICV	SeqNo: 2766154	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: ICV-1	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1974	200	2000	0	98.7	90	110	0	0		
Antimony	1981	60.0	2000	0	99.1	90	110	0	0		
Arsenic	1941	10.0	2000	0	97	90	110	0	0		
Barium	2056	200	2000	0	103	90	110	0	0		
Beryllium	2059	5.00	2000	0	103	90	110	0	0		
Cadmium	2085	5.00	2000	0	104	90	110	0	0		
Calcium	2013	5000	2000	0	101	90	110	0	0		
Chromium	1945	10.0	2000	0	97.2	90	110	0	0		
Cobalt	1992	50.0	2000	0	99.6	90	110	0	0		
Copper	2084	25.0	2000	0	104	90	110	0	0		
Iron	2018	100	2000	0	101	90	110	0	0		
Lead	2082	3.00	2000	0	104	90	110	0	0		
Magnesium	1960	5000	2000	0	98	90	110	0	0		
Manganese	1981	15.0	2000	0	99	90	110	0	0		
Nickel	2040	40.0	2000	0	102	90	110	0	0		
Potassium	9931	5000	10000	0	99.3	90	110	0	0		
Selenium	1960	5.00	2000	0	98	90	110	0	0		
Silver	517	10.0	500	0	103	90	110	0	0		
Sodium	1902	5000	2000	0	95.1	90	110	0	0		
Thallium	1955	10.0	2000	0	97.7	90	110	0	0		
Vanadium	1942	50.0	2000	0	97.1	90	110	0	0		
Zinc	2058	20.0	2000	0	103	90	110	0	0		

ICSA	SeqNo: 2766157	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: ICSA-1	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	507200	200	500000	0	101	80	120	0	0		
Antimony	ND	60.0	0	0	0	0	0	0	0		
Arsenic	ND	10.0	0	0	0	0	0	0	0		
Barium	1.114	200	0	0	0	0	0	0	0		
Beryllium	2.782	5.00	0	0	0	0	0	0	0		
Cadmium	ND	5.00	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

ICSA	SeqNo: 2766157	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: ICSA-1	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	437200	5000	500000	0	87.4	80	120	0	0		
Chromium	ND	10.0	0	0	0	0	0	0	0		
Cobalt	0.2042	50.0	0	0	0	0	0	0	0		
Copper	ND	25.0	0	0	0	0	0	0	0		
Iron	128900	100	200000	0	64.5	80	120	0	0		S
Lead	ND	3.00	0	0	0	0	0	0	0		
Magnesium	530700	5000	500000	0	106	80	120	0	0		
Manganese	ND	15.0	0	0	0	0	0	0	0		
Nickel	ND	40.0	0	0	0	0	0	0	0		
Potassium	1.392	5000	0	0	0	0	0	0	0		
Selenium	ND	5.00	0	0	0	0	0	0	0		
Silver	ND	10.0	0	0	0	0	0	0	0		
Sodium	35.07	5000	0	0	0	0	0	0	0		
Thallium	ND	10.0	0	0	0	0	0	0	0		
Vanadium	ND	50.0	0	0	0	0	0	0	0		
Zinc	ND	20.0	0	0	0	0	0	0	0		

ICSA	SeqNo: 2766596	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: ICSA-2	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	503800	200	500000	0	101	80	120	0	0		
Antimony	ND	60.0	0	0	0	0	0	0	0		
Arsenic	ND	10.0	0	0	0	0	0	0	0		
Barium	ND	200	0	0	0	0	0	0	0		
Beryllium	2.93	5.00	0	0	0	0	0	0	0		
Cadmium	ND	5.00	0	0	0	0	0	0	0		
Calcium	427300	5000	500000	0	85.5	80	120	0	0		
Chromium	ND	10.0	0	0	0	0	0	0	0		
Cobalt	0.1185	50.0	0	0	0	0	0	0	0		
Copper	ND	25.0	0	0	0	0	0	0	0		
Iron	129800	100	200000	0	64.9	80	120	0	0		S
Lead	ND	3.00	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

ICSA	SeqNo: 2766596	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: ICSA-2	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Magnesium	527000	5000	500000	0	105	80	120	0	0		
Manganese	ND	15.0	0	0	0	0	0	0	0		
Nickel	ND	40.0	0	0	0	0	0	0	0		
Potassium	5.102	5000	0	0	0	0	0	0	0		
Selenium	ND	5.00	0	0	0	0	0	0	0		
Silver	ND	10.0	0	0	0	0	0	0	0		
Sodium	269.8	5000	0	0	0	0	0	0	0		
Thallium	ND	10.0	0	0	0	0	0	0	0		
Vanadium	ND	50.0	0	0	0	0	0	0	0		
Zinc	ND	20.0	0	0	0	0	0	0	0		

ICSAB	SeqNo: 2766159	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: ICSAB-1	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	485200	200	500000	0	97	80	120	0	0		
Antimony	3.029	60.0	0	0	0	0	0	0	0		
Arsenic	ND	10.0	0	0	0	0	0	0	0		
Barium	494.6	200	500	0	98.9	80	120	0	0		
Beryllium	494.8	5.00	500	0	99	80	120	0	0		
Cadmium	953	5.00	1000	0	95.3	80	120	0	0		
Calcium	421600	5000	500000	0	84.3	80	120	0	0		
Chromium	558.8	10.0	500	0	112	80	120	0	0		
Cobalt	487	50.0	500	0	97.4	80	120	0	0		
Copper	537.8	25.0	500	0	108	80	120	0	0		
Iron	125400	100	200000	0	62.7	80	120	0	0		S
Lead	894.1	3.00	1000	0	89.4	80	120	0	0		
Magnesium	506500	5000	500000	0	101	80	120	0	0		
Manganese	475.6	15.0	500	0	95.1	80	120	0	0		
Nickel	924	40.0	1000	0	92.4	80	120	0	0		
Potassium	ND	5000	0	0	0	0	0	0	0		
Selenium	ND	5.00	0	0	0	0	0	0	0		
Silver	1042	10.0	1000	0	104	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77263

ICSAB	SeqNo: 2766159	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: ICSAB-1	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	32.96	5000	0	0	0	0	0	0	0		
Thallium	ND	10.0	0	0	0	0	0	0	0		
Vanadium	429	50.0	500	0	85.8	80	120	0	0		
Zinc	899.2	20.0	1000	0	89.9	80	120	0	0		

ICSAB	SeqNo: 2766597	PrepDate:	TestNo: E200.7	RunNo: 178751
	Samp ID: ICSAB-2	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	488200	200	500000	0	97.6	80	120	0	0		
Antimony	ND	60.0	0	0	0	0	0	0	0		
Arsenic	ND	10.0	0	0	0	0	0	0	0		
Barium	498.9	200	500	0	99.8	80	120	0	0		
Beryllium	498.2	5.00	500	0	99.6	80	120	0	0		
Cadmium	946.2	5.00	1000	0	94.6	80	120	0	0		
Calcium	418200	5000	500000	0	83.6	80	120	0	0		
Chromium	565.6	10.0	500	0	113	80	120	0	0		
Cobalt	489	50.0	500	0	97.8	80	120	0	0		
Copper	543.7	25.0	500	0	109	80	120	0	0		
Iron	126400	100	200000	0	63.2	80	120	0	0		S
Lead	896.1	3.00	1000	0	89.6	80	120	0	0		
Magnesium	509800	5000	500000	0	102	80	120	0	0		
Manganese	475.7	15.0	500	0	95.1	80	120	0	0		
Nickel	937.8	40.0	1000	0	93.8	80	120	0	0		
Potassium	7.222	5000	0	0	0	0	0	0	0		
Selenium	ND	5.00	0	0	0	0	0	0	0		
Silver	1047	10.0	1000	0	105	80	120	0	0		
Sodium	204.5	5000	0	0	0	0	0	0	0		
Thallium	ND	10.0	0	0	0	0	0	0	0		
Vanadium	437.1	50.0	500	0	87.4	80	120	0	0		
Zinc	900.4	20.0	1000	0	90	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77264

PS	SeqNo: 2766592	PrepDate:	TestNo: E200.7F	RunNo: 178751
	Samp ID: 191218077-005 (120 Pit-20191219)	PrepRef:(SW3005A)	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum, Dissolved	4612	200	4000	0	115	75	125	0	0		
Antimony, Dissolved	1008	60.0	1000	0	101	75	125	0	0		
Arsenic, Dissolved	60.99	10.0	80	0	76.2	75	125	0	0		
Barium, Dissolved	5082	200	4000	836.7	106	75	125	0	0		
Beryllium, Dissolved	116	5.00	100	0	116	75	125	0	0		
Cadmium, Dissolved	105.2	5.00	100	0	105	75	125	0	0		
Chromium, Dissolved	483.3	10.0	400	7.272	119	75	125	0	0		
Cobalt, Dissolved	960	50.0	1000	0	96	75	125	0	0		
Copper, Dissolved	595.3	25.0	500	0	119	75	125	0	0		
Iron, Dissolved	2050	100	2000	47.97	100	75	125	0	0		
Lead, Dissolved	39.69	3.00	40	0	99.2	75	125	0	0		
Manganese, Dissolved	1125	15.0	1000	138	98.7	75	125	0	0		
Nickel, Dissolved	992.8	40.0	1000	0	99.3	75	125	0	0		
Selenium, Dissolved	22.75	5.00	20	0	114	75	125	0	0		
Silver, Dissolved	108.1	10.0	100	0	108	75	125	0	0		
Thallium, Dissolved	86.79	10.0	100	0	86.8	75	125	0	0		
Vanadium, Dissolved	1063	50.0	1000	0	106	75	125	0	0		
Zinc, Dissolved	1075	20.0	1000	0	107	75	125	0	0		

SD	SeqNo: 2766593	PrepDate:	TestNo: E200.7F	RunNo: 178751
	Samp ID: 191218077-005 (120 Pit-20191219)	PrepRef:(SW3005A)	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum, Dissolved	ND	1000	0	0	0	0	0	0	0	0	
Antimony, Dissolved	ND	300	0	0	0	0	0	0	0	0	
Arsenic, Dissolved	ND	50.0	0	0	0	0	0	0	0	0	
Barium, Dissolved	857.4	1000	0	0	0	0	0	836.7	0	0	J
Beryllium, Dissolved	ND	25.0	0	0	0	0	0	0	0	0	
Cadmium, Dissolved	ND	25.0	0	0	0	0	0	0	0	0	
Calcium, Dissolved	11930	25000	0	0	0	0	0	11520	0	0	J
Chromium, Dissolved	ND	50.0	0	0	0	0	0	7.272	0	0	
Cobalt, Dissolved	ND	250	0	0	0	0	0	0	0	0	
Copper, Dissolved	14.14	120	0	0	0	0	0	0	0	0	J

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77264

SD	SeqNo: 2766593	PrepDate:	TestNo: E200.7F	RunNo: 178751
	Samp ID: 191218077-005 (120 Pit-20191219)	PrepRef:(SW3005A)	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron, Dissolved	ND	500	0	0	0	0	0	47.97	0	0	
Lead, Dissolved	ND	15.0	0	0	0	0	0	0	0	0	
Magnesium, Dissolved	3563	25000	0	0	0	0	0	3676	0	0	J
Manganese, Dissolved	168.8	75.0	0	0	0	0	0	138	20.1	0	
Nickel, Dissolved	ND	200	0	0	0	0	0	0	0	0	
Potassium, Dissolved	11390	25000	0	0	0	0	0	15690	0	0	J
Selenium, Dissolved	ND	25.0	0	0	0	0	0	0	0	0	
Silver, Dissolved	ND	50.0	0	0	0	0	0	0	0	0	
Sodium, Dissolved	260900	25000	0	0	0	0	0	171100	41.6	0	
Thallium, Dissolved	ND	50.0	0	0	0	0	0	0	0	0	
Vanadium, Dissolved	ND	250	0	0	0	0	0	0	0	0	
Zinc, Dissolved	ND	100	0	0	0	0	0	0	0	0	

MBLK	SeqNo: 2766581	PrepDate:12/20/2019	TestNo: E200.7F	RunNo: 178751
	Samp ID: MB-77264	PrepRef:(SW3005A)	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum, Dissolved	ND	200									
Antimony, Dissolved	ND	60.0									
Arsenic, Dissolved	ND	10.0									
Barium, Dissolved	ND	200									
Beryllium, Dissolved	ND	5.00									
Cadmium, Dissolved	ND	5.00									
Calcium, Dissolved	ND	5000									
Chromium, Dissolved	ND	10.0									
Cobalt, Dissolved	ND	50.0									
Copper, Dissolved	ND	25.0									
Iron, Dissolved	ND	100									
Lead, Dissolved	ND	3.00									
Magnesium, Dissolved	ND	5000									
Manganese, Dissolved	ND	15.0									
Nickel, Dissolved	ND	40.0									
Potassium, Dissolved	ND	5000									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
 Work Order: 191218077
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77264

MBLK	SeqNo: 2766581	PrepDate:12/20/2019	TestNo: E200.7F	RunNo: 178751
	Samp ID: MB-77264	PrepRef:(SW3005A)	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium, Dissolved	ND	5.00									
Silver, Dissolved	ND	10.0									
Sodium, Dissolved	ND	5000									
Thallium, Dissolved	ND	10.0									
Vanadium, Dissolved	ND	50.0									
Zinc, Dissolved	ND	20.0									

LCS	SeqNo: 2766582	PrepDate:12/20/2019	TestNo: E200.7F	RunNo: 178751
	Samp ID: LCS-77264	PrepRef:(SW3005A)	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum, Dissolved	1990	200	2000	0	99.5	80	120	0	0		
Antimony, Dissolved	1925	60.0	2000	0	96.2	80	120	0	0		
Arsenic, Dissolved	1920	10.0	2000	0	96	80	120	0	0		
Barium, Dissolved	2021	200	2000	0	101	80	120	0	0		
Beryllium, Dissolved	2073	5.00	2000	0	104	80	120	0	0		
Cadmium, Dissolved	1989	5.00	2000	0	99.5	80	120	0	0		
Calcium, Dissolved	2073	5000	2000	0	104	80	120	0	0		J
Chromium, Dissolved	1945	10.0	2000	0	97.3	80	120	0	0		
Cobalt, Dissolved	1925	50.0	2000	0	96.2	80	120	0	0		
Copper, Dissolved	2142	25.0	2000	0	107	80	120	0	0		
Iron, Dissolved	2042	100	2000	0	102	80	120	0	0		
Lead, Dissolved	2021	3.00	2000	0	101	80	120	0	0		
Magnesium, Dissolved	1919	5000	2000	0	96	80	120	0	0		J
Manganese, Dissolved	1986	15.0	2000	0	99.3	80	120	0	0		
Nickel, Dissolved	1999	40.0	2000	0	100	80	120	0	0		
Potassium, Dissolved	9880	5000	10000	0	98.8	80	120	0	0		
Selenium, Dissolved	1907	5.00	2000	0	95.4	80	120	0	0		
Silver, Dissolved	509.2	10.0	500	0	102	80	120	0	0		
Sodium, Dissolved	2053	5000	2000	0	103	80	120	0	0		J
Thallium, Dissolved	1983	10.0	2000	0	99.1	80	120	0	0		
Vanadium, Dissolved	1956	50.0	2000	0	97.8	80	120	0	0		
Zinc, Dissolved	1979	20.0	2000	0	98.9	92	112	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
 Work Order: 191218077
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77264

MS	SeqNo: 2766591	PrepDate:12/20/2019	TestNo: E200.7F	RunNo: 178751
	Samp ID: 191218077-005 (120 Pit-20191219)	PrepRef:(SW3005A)	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum, Dissolved	2186	200	2000	0	109	75	125	0	0		
Antimony, Dissolved	492.8	60.0	500	0	98.6	75	125	0	0		
Arsenic, Dissolved	29.79	10.0	40	0	74.5	75	125	0	0		S
Barium, Dissolved	2901	200	2000	836.7	103	75	125	0	0		
Beryllium, Dissolved	56.07	5.00	50	0	112	75	125	0	0		
Cadmium, Dissolved	50.86	5.00	50	0	102	75	125	0	0		
Chromium, Dissolved	253.6	10.0	200	7.272	123	75	125	0	0		
Cobalt, Dissolved	467.6	50.0	500	0	93.5	75	125	0	0		
Copper, Dissolved	283.9	25.0	250	0	114	75	125	0	0		
Iron, Dissolved	1107	100	1000	47.97	106	75	125	0	0		
Lead, Dissolved	19.42	3.00	20	0	97.1	75	125	0	0		
Manganese, Dissolved	624.4	15.0	500	138	97.3	75	125	0	0		
Nickel, Dissolved	504.4	40.0	500	0	101	75	125	0	0		
Selenium, Dissolved	9.575	5.00	10	0	95.8	75	125	0	0		
Silver, Dissolved	45.39	10.0	50	0	90.8	75	125	0	0		
Thallium, Dissolved	40.52	10.0	50	0	81	75	125	0	0		
Vanadium, Dissolved	507.4	50.0	500	0	101	75	125	0	0		
Zinc, Dissolved	528.6	20.0	500	0	106	75	125	0	0		

DUP	SeqNo: 2766589	PrepDate:12/20/2019	TestNo: E200.7F	RunNo: 178751
	Samp ID: 191218077-005	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum, Dissolved	ND	200	0	0	0	0	0	0	0	20	
Antimony, Dissolved	1.233	60.0	0	0	0	0	0	0	0	20	
Arsenic, Dissolved	1.149	10.0	0	0	0	0	0	0	0	20	
Barium, Dissolved	829.3	200	0	0	0	0	0	836.7	0.896	20	
Beryllium, Dissolved	0.3705	5.00	0	0	0	0	0	0	0	20	
Cadmium, Dissolved	ND	5.00	0	0	0	0	0	0	0	20	
Calcium, Dissolved	11240	5000	0	0	0	0	0	11520	2.52	20	
Chromium, Dissolved	7.423	10.0	0	0	0	0	0	7.272	0	20	
Cobalt, Dissolved	0.1816	50.0	0	0	0	0	0	0	0	20	
Copper, Dissolved	ND	25.0	0	0	0	0	0	0	0	20	

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 77264

DUP	SeqNo: 2766589	PrepDate:12/20/2019	TestNo: E200.7F	RunNo: 178751
	Samp ID: 191218077-005	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron, Dissolved	63.94	100	0	0	0	0	0	47.97	0	20	
Lead, Dissolved	ND	3.00	0	0	0	0	0	0	0	20	
Magnesium, Dissolved	3593	5000	0	0	0	0	0	3676	0	20	
Manganese, Dissolved	108.5	15.0	0	0	0	0	0	138	24.0	20	Z
Nickel, Dissolved	2.472	40.0	0	0	0	0	0	0	0	20	
Potassium, Dissolved	15560	5000	0	0	0	0	0	15690	0.819	20	
Selenium, Dissolved	ND	5.00	0	0	0	0	0	0	0	20	
Silver, Dissolved	ND	10.0	0	0	0	0	0	0	0	20	
Thallium, Dissolved	2.702	10.0	0	0	0	0	0	0	0	20	
Vanadium, Dissolved	ND	50.0	0	0	0	0	0	0	0	20	
Zinc, Dissolved	0.4684	20.0	0	0	0	0	0	0	0	20.7	

DUP	SeqNo: 2766590	PrepDate:12/20/2019	TestNo: E200.7F	RunNo: 178751
	Samp ID: 191218077-005	PrepRef:	Units: µg/L	Analysis Date: 1/2/2020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium, Dissolved	276100	50000	0	0	0	0	0	281300	1.86	20	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

Test Code: CLPHG

Test Number: E245.1

Test Name: Mercury

Matrix: Water **Units:** µg/L

**METHOD DETECTION /
REPORTING LIMITS**

Updated: 12-Dec-18

Type	Analyte	MDL	PQL
A	Mercury	0.1	0.2

Test Code: CLPW

Test Number: E200.7

Test Name: ICP Metals Water

Matrix: Water Units: µg/L

**METHOD DETECTION /
REPORTING LIMITS**

Updated: 03-Sep-19

Type	Analyte	MDL	PQL
A	Aluminum	29.4	200
A	Antimony	6.7	60
A	Arsenic	5.3	10
A	Barium	4.8	200
A	Beryllium	1	5
A	Boron	8.6	50
A	Cadmium	1	5
A	Calcium	24.5	5000
A	Chromium	4	10
A	Cobalt	1	50
A	Copper	2.1	25
A	Iron	11.1	100
A	Lead	2.8	3
A	Lithium	36.8	100
A	Magnesium	34.7	5000
A	Manganese	3	15
A	Molybdenum	3.5	50
A	Nickel	2.7	40
A	Potassium	19	5000
A	Selenium	3.5	5
A	Silver	8	10
A	Sodium	185	5000
A	Strontium	10.2	20
A	Thallium	5.1	10
A	Tin	2.6	50
A	Titanium	0	50
A	Vanadium	8	50
A	Zinc	4.6	20

12/20/2019 2:33:44 PM HG3-D-76

Seq. No.	51	AS Loc:	1	Date:	12/20/2019			
Sample ID:	Blank							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[0.00] µg/L		0.0000	-0.0003		0.0000		1:09:52PM
	[0.00] µg/L		0.0000	-0.0001		0.0000		1:10:22PM
Mean:	[0.00] µg/L		0.0000	-0.0002		0.0000		
SD:	0.00 µg/L							
%RSD:	44.16							

Seq. No.	52	AS Loc:	2	Date:	12/20/2019			
Sample ID:	0.2ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[0.200] µg/L		0.0023	0.0104		0.0024		1:11:32PM
	[0.200] µg/L		0.0023	0.0100		0.0024		1:12:03PM
Mean:	[0.200] µg/L		0.0023	0.0102		0.0024		
SD:	0.00 µg/L							
%RSD:	0.52							

Seq. No.	53	AS Loc:	3	Date:	12/20/2019			
Sample ID:	0.5ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[0.500] µg/L		0.0059	0.0260		0.0059		1:13:14PM
	[0.500] µg/L		0.0059	0.0259		0.0059		1:13:44PM
Mean:	[0.500] µg/L		0.0059	0.0259		0.0059		
SD:	0.00 µg/L							
%RSD:	0.36							

Seq. No.	54	AS Loc:	4	Date:	12/20/2019			
Sample ID:	1.00ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[1.000]	µg/L	0.0122	0.0532		0.0122		1:14:55PM
	[1.000]	µg/L	0.0122	0.0531		0.0122		1:15:25PM
Mean:	[1.000]	µg/L	0.0122	0.0531		0.0122		
SD:	0.00	µg/L						
%RSD:	0.07							

Seq. No.	55	AS Loc:	5	Date:	12/20/2019			
Sample ID:	2.00ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[2.000] µg/L		0.0238	0.1053		0.0238		1:16:37PM
	[2.000] µg/L		0.0236	0.1034		0.0236		1:17:08PM
Mean:	[2.000] µg/L		0.0237	0.1044		0.0237		
SD:	0.00 µg/L							
%RSD:	0.46							

Seq. No.	56	AS Loc:	6	Date:	12/20/2019			
Sample ID:	5.00ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[5.000] µg/L		0.0609	0.2720		0.0609		1:18:19PM
	[5.000] µg/L		0.0622	0.2701		0.0623		1:18:49PM
Mean:	[5.000] µg/L		0.0615	0.2711		0.0616		
SD:	0.00 µg/L							
%RSD:	1.55							

Seq. No.	57	AS Loc:	7	Date:	12/20/2019			
Sample ID:	10.00ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[10.000] µg/L		0.1204	0.5464		0.1204		1:19:59PM
	[10.000] µg/L		0.1224	0.5465		0.1224		1:20:30PM
Mean:	[10.000] µg/L		0.1214	0.5464		0.1214		
SD:	0.00 µg/L							
%RSD:	1.16							

Seq. No.	58	AS Loc:	5	Date:	12/20/2019			
Sample ID:	ICV							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
		12/20/2019 1:22:14PM	All analyte(s) passed QC.					
	1.961 µg/L	1.961 µg/L	0.0238	0.1052		0.0238		1:21:41PM
	2.087 µg/L	2.087 µg/L	0.0253	0.1098		0.0254		1:22:12PM
Mean:	2.024 µg/L	2.024 µg/L	0.0246	0.1075		0.0246		
SD:	0.0897 µg/L	µg/L						
%RSD:	4.43							

12/20/2019 1:22:14PM QC value within limits for Hg 253.7 Recovery = 101.20%

Seq. No.	59		AS Loc:	1		Date:	12/20/2019			
Sample ID:	ICB									
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance		Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7	12/20/2019 1:23:55PM All analyte(s) passed QC.									
	0.0060	µg/L	0.0060	µg/L	0.0000	-0.0004		0.0000		1:23:22PM
	0.0080	µg/L	0.0080	µg/L	0.0000	-0.0005		0.0000		1:23:53PM
Mean:	0.0070	µg/L	0.0070	µg/L	0.0000	-0.0005		0.0000		
SD:	0.00143	µg/L		µg/L						
%RSD:	20.41									
12/20/2019 1:23:55PM QC value within limits for Hg 253.7 Recovery = Not calculated										

Seq. No.	60	AS Loc:		9	Date:	12/20/2019			
Sample ID:	0.2ppb								
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7									
	0.2170 µg/L	0.2170 µg/L		0.0026	0.0114		0.0026		1:25:03PM
	0.0293 µg/L	0.0293 µg/L		0.0003	0.0004		0.0003		1:25:33PM
Mean:	0.1232 µg/L	0.1232 µg/L		0.0014	0.0059		0.0014		
SD:	0.13272 µg/L	0.13272 µg/L							
%RSD:	107.77								

Seq. No.	61	AS Loc:	10	Date:	12/20/2019				
Sample ID:	2.0ppb								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7									
	1.967 µg/L	1.967 µg/L	0.0239	0.1062		0.0239		1:26:45PM	
	0.2612 µg/L	0.2612 µg/L	0.0031	0.0100		0.0031		1:27:15PM	
Mean:	1.114 µg/L	1.114 µg/L	0.0135	0.0581		0.0135			
SD:	1.2062 µg/L	1.2062 µg/L							
%RSD:	108.27								

Seq. No.	62	AS Loc:		10	Date:	12/20/2019			
Sample ID:	2.0ppb								
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7									
	1.909 µg/L	1.909 µg/L		0.0231	0.1029		0.0232		1:28:27PM
	1.883 µg/L	1.883 µg/L		0.0228	0.1020		0.0229		1:28:57PM
Mean:	1.896 µg/L	1.896 µg/L		0.0230	0.1025		0.0230		
SD:	0.0179 µg/L	0.0179 µg/L							
%RSD:	0.94								

Seq. No.	63	AS Loc:	11	Date:	12/20/2019			
Sample ID:	MB-77260							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.0048 µg/L	0.0048 µg/L	0.0000	-0.0011		0.0000		1:30:09PM
	0.0115 µg/L	0.0115 µg/L	0.0000	0.0003		0.0001		1:30:39PM
Mean:	0.0081 µg/L	0.0081 µg/L	0.0000	-0.0004		0.0000		
SD:	0.00474 µg/L	0.00474 µg/L						
%RSD:	58.31							

Seq. No.	64	AS Loc:	12	Date:	12/20/2019			
Sample ID:	LCS-77260							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	1.872 µg/L	1.872 µg/L	0.0227	0.1021		0.0227		1:31:51PM
	1.849 µg/L	1.849 µg/L	0.0224	0.1008		0.0225		1:32:21PM
Mean:	1.860 µg/L	1.860 µg/L	0.0226	0.1014		0.0226		
SD:	0.0159 µg/L	0.0159 µg/L						
%RSD:	0.85							

Seq. No.	65	AS Loc:	13	Date:	12/20/2019			
Sample ID:	191218077-001A							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.1562 µg/L	0.1562 µg/L	0.0018	0.0084		0.0018		1:33:34PM
	0.1155 µg/L	0.1155 µg/L	0.0013	0.0032		0.0013		1:34:04PM
Mean:	0.1358 µg/L	0.1358 µg/L	0.0016	0.0058		0.0016		
SD:	0.02876 µg/L	0.02876 µg/L						
%RSD:	21.17							

Seq. No.	66	AS Loc:	14	Date:	12/20/2019			
Sample ID:	191218077-002A							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.1674 µg/L	0.1674 µg/L	0.0019	0.0098		0.0020		1:35:16PM
	0.1536 µg/L	0.1536 µg/L	0.0018	0.0082		0.0018		1:35:46PM
Mean:	0.1605 µg/L	0.1605 µg/L	0.0019	0.0090		0.0019		
SD:	0.00979 µg/L	0.00979 µg/L						
%RSD:	6.10							

Seq. No.	67	AS Loc:	15	Date:	12/20/2019			
Sample ID:	191218077-002ADP							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.1638 µg/L	0.1638 µg/L	0.0019	0.0097		0.0019		1:36:56PM
	0.1550 µg/L	0.1550 µg/L	0.0018	0.0089		0.0018		1:37:27PM
Mean:	0.1594 µg/L	0.1594 µg/L	0.0019	0.0093		0.0019		
SD:	0.00618 µg/L	0.00618 µg/L						
%RSD:	3.88							

Seq. No.	68	AS Loc:	16	Date:	12/20/2019			
Sample ID:	191218077-002AMS							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	1.762 µg/L	1.762 µg/L	0.0214	0.0960		0.0214		1:38:37PM
	1.745 µg/L	1.745 µg/L	0.0212	0.0957		0.0212		1:39:07PM
Mean:	1.753 µg/L	1.753 µg/L	0.0213	0.0959		0.0213		
SD:	0.0118 µg/L	0.0118 µg/L						
%RSD:	0.67							

Seq. No.	69	AS Loc:	17	Date:	12/20/2019			
Sample ID:	191218077-003A							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.1492 µg/L	0.1492 µg/L	0.0017	0.0079		0.0018		1:40:18PM
	0.1516 µg/L	0.1516 µg/L	0.0018	0.0085		0.0018		1:40:48PM
Mean:	0.1504 µg/L	0.1504 µg/L	0.0017	0.0082		0.0018		
SD:	0.00170 µg/L	0.00170 µg/L						
%RSD:	1.13							

Seq. No.	70	AS Loc:	18	Date:	12/20/2019			
Sample ID:	191218077-004B							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.2072 µg/L	0.2072 µg/L	0.0024	0.0113		0.0025		1:41:58PM
	0.1993 µg/L	0.1993 µg/L	0.0023	0.0103		0.0024		1:42:28PM
Mean:	0.2032 µg/L	0.2032 µg/L	0.0024	0.0108		0.0024		
SD:	0.00558 µg/L	0.00558 µg/L						
%RSD:	2.75							

Seq. No.	71	AS Loc:	5	Date:	12/20/2019				
Sample ID:	CCV								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7	12/20/2019 1:44:13PM All analyte(s) passed QC.								
	1.970 µg/L	1.970 µg/L	0.0239	0.1066		0.0239		1:43:40PM	
	1.966 µg/L	1.966 µg/L	0.0238	0.1052		0.0239		1:44:10PM	
Mean:	1.968 µg/L	1.968 µg/L	0.0239	0.1059		0.0239			
SD:	0.0028 µg/L	µg/L							
%RSD:	0.14								
12/20/2019 1:44:13PM QC value within limits for Hg 253.7 Recovery = 98.39%									

Seq. No.	72	AS Loc:	1	Date:	12/20/2019				
Sample ID:	CCB								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7	12/20/2019	1:45:54PM	All analyte(s) passed QC.						
	0.0150 µg/L	0.0150 µg/L	0.0001	0.0007		0.0001		1:45:21PM	
	0.0178 µg/L	0.0178 µg/L	0.0001	0.0008		0.0002		1:45:52PM	
Mean:	0.0164 µg/L	0.0164 µg/L	0.0001	0.0007		0.0001			
SD:	0.00198 µg/L	µg/L							
%RSD:	12.06								
12/20/2019 1:45:54PM QC value within limits for Hg 253.7 Recovery = Not calculated									

Seq. No.	73	AS Loc:	19	Date:	12/20/2019				
Sample ID:	191218077-005B								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7									
	0.2025 µg/L	0.2025 µg/L	0.0024	0.0107		0.0024		1:47:02PM	
	0.1949 µg/L	0.1949 µg/L	0.0023	0.0102		0.0023		1:47:32PM	
Mean:	0.1987 µg/L	0.1987 µg/L	0.0023	0.0104		0.0024			
SD:	0.00534 µg/L	0.00534 µg/L							
%RSD:	2.69								

Seq. No.	74	AS Loc:	20	Date:	12/20/2019				
Sample ID:	191218077-006B								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7									
	0.1564 µg/L	0.1564 µg/L	0.0018	0.0076		0.0018		1:48:43PM	
	0.1604 µg/L	0.1604 µg/L	0.0019	0.0086		0.0019		1:49:13PM	
Mean:	0.1584 µg/L	0.1584 µg/L	0.0018	0.0081		0.0019			
SD:	0.00281 µg/L	0.00281 µg/L							
%RSD:	1.77								

Seq. No.	75	AS Loc:	21	Date:	12/20/2019			
Sample ID:	191218077-007B							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.1794 µg/L	0.1794 µg/L	0.0021	0.0099		0.0021		1:50:24PM
	0.1839 µg/L	0.1839 µg/L	0.0021	0.0103		0.0022		1:50:54PM
Mean:	0.1816 µg/L	0.1816 µg/L	0.0021	0.0101		0.0022		
SD:	0.00317 µg/L	0.00317 µg/L						
%RSD:	1.75							

Seq. No.	76	AS Loc:	22	Date:	12/20/2019			
Sample ID:	191218077-008B							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.1683 µg/L	0.1683 µg/L	0.0020	0.0093		0.0020		1:52:06PM
	0.1626 µg/L	0.1626 µg/L	0.0019	0.0087		0.0019		1:52:36PM
Mean:	0.1655 µg/L	0.1655 µg/L	0.0019	0.0090		0.0020		
SD:	0.00408 µg/L	0.00408 µg/L						
%RSD:	2.47							

Seq. No.	77	AS Loc:	23	Date:	12/20/2019			
Sample ID:	191218077-009B							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.1653 µg/L	0.1653 µg/L	0.0019	0.0089		0.0020		1:53:48PM
	0.1679 µg/L	0.1679 µg/L	0.0020	0.0092		0.0020		1:54:19PM
Mean:	0.1666 µg/L	0.1666 µg/L	0.0019	0.0090		0.0020		
SD:	0.00183 µg/L	0.00183 µg/L						
%RSD:	1.10							

Seq. No.	78	AS Loc:	24	Date:	12/20/2019			
Sample ID:	191218077-010B							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.1677 µg/L	0.1677 µg/L	0.0020	0.0082		0.0020		1:55:31PM
	0.1624 µg/L	0.1624 µg/L	0.0019	0.0077		0.0019		1:56:01PM
Mean:	0.1650 µg/L	0.1650 µg/L	0.0019	0.0080		0.0019		
SD:	0.00378 µg/L	0.00378 µg/L						
%RSD:	2.29							

Seq. No.	79	AS Loc:	25	Date:	12/20/2019			
Sample ID:	191218077-011B							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.1628 µg/L	0.1628 µg/L	0.0019	0.0078		0.0019		1:57:14PM
	0.1612 µg/L	0.1612 µg/L	0.0019	0.0077		0.0019		1:57:44PM
Mean:	0.1620 µg/L	0.1620 µg/L	0.0019	0.0078		0.0019		
SD:	0.00116 µg/L	0.00116 µg/L						
%RSD:	0.72							

Seq. No.	80	AS Loc:		26	Date:	12/20/2019			
Sample ID:	MB-77261								
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7									
	0.0048 µg/L	0.0048 µg/L		0.0000	-0.0009		0.0000		1:58:56PM
	0.0051 µg/L	0.0051 µg/L		0.0000	-0.0011		0.0000		1:59:26PM
Mean:	0.0050 µg/L	0.0050 µg/L		0.0000	-0.0010		0.0000		
SD:	0.00017 µg/L	0.00017 µg/L							
%RSD:	3.47								

Seq. No.	81	AS Loc:	27	Date:	12/20/2019			
Sample ID:	LCS-77261							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	1.976 µg/L	1.976 µg/L	0.0240	0.1061		0.0240		2:00:36PM
	2.008 µg/L	2.008 µg/L	0.0244	0.1066		0.0244		2:01:06PM
Mean:	1.992 µg/L	1.992 µg/L	0.0242	0.1064		0.0242		
SD:	0.0229 µg/L	0.0229 µg/L						
%RSD:	1.15							

Seq. No.	82	AS Loc:	28	Date:	12/20/2019			
Sample ID:	191217032-016A							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.1686 µg/L	0.1686 µg/L	0.0020	0.0079		0.0020		2:02:17PM
	0.1750 µg/L	0.1750 µg/L	0.0020	0.0086		0.0021		2:02:47PM
Mean:	0.1718 µg/L	0.1718 µg/L	0.0020	0.0082		0.0020		
SD:	0.00457 µg/L	0.00457 µg/L						
%RSD:	2.66							

Seq. No.	83	AS Loc:	5	Date:	12/20/2019			
Sample ID:	CCV							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7	12/20/2019 2:04:31PM All analyte(s) passed QC.							
	2.205 µg/L	2.205 µg/L	0.0268	0.1178		0.0268		2:03:59PM
	2.175 µg/L	2.175 µg/L	0.0264	0.1141		0.0264		2:04:29PM
Mean:	2.190 µg/L	2.190 µg/L	0.0266	0.1160		0.0266		
SD:	0.0211 µg/L	µg/L						
%RSD:	0.96							

12/20/2019 2:04:31PM QC value within limits for Hg 253.7 Recovery = 109.50%

Seq. No.	84	AS Loc:	1	Date:	12/20/2019			
Sample ID:	CCB							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7	12/20/2019 2:06:13PM All analyte(s) passed QC.							
	0.0048 µg/L	0.0048 µg/L	0.0000	-0.0009		0.0000		2:05:40PM
	0.0107 µg/L	0.0107 µg/L	0.0000	-0.0005		0.0001		2:06:10PM
Mean:	0.0078 µg/L	0.0078 µg/L	0.0000	-0.0007		0.0000		
SD:	0.00424 µg/L	µg/L						
%RSD:	54.67							

12/20/2019 2:06:13PM QC value within limits for Hg 253.7 Recovery = Not calculated

Seq. No.	85		AS Loc:	29		Date:	12/20/2019		
Sample ID:	191219015-001A								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance		Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7									
	0.1746 µg/L	0.1746 µg/L	0.0020		0.0086		0.0021		2:07:20PM
	0.1745 µg/L	0.1745 µg/L	0.0020		0.0083		0.0021		2:07:50PM
Mean:	0.1745 µg/L	0.1745 µg/L	0.0020		0.0085		0.0021		
SD:	0.00009 µg/L	0.00009 µg/L							
%RSD:	0.05								

Seq. No.	86	AS Loc:	30	Date:	12/20/2019			
Sample ID:	191219015-001ADP							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.1644 µg/L	0.1644 µg/L	0.0019	0.0075		0.0019		2:09:01PM
	0.1711 µg/L	0.1711 µg/L	0.0020	0.0084		0.0020		2:09:31PM
Mean:	0.1678 µg/L	0.1678 µg/L	0.0020	0.0079		0.0020		
SD:	0.00470 µg/L	0.00470 µg/L						
%RSD:	2.80							

Seq. No.	87		AS Loc:	31		Date:	12/20/2019			
Sample ID:	191219015-001AMS									
Analyte	Conc (Calib)		Conc (Sample)		Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7										
	1.946	µg/L	1.946	µg/L	0.0236	0.1033		0.0236		2:10:41PM
	1.956	µg/L	1.956	µg/L	0.0237	0.1038		0.0237		2:11:11PM
Mean:	1.951	µg/L	1.951	µg/L	0.0237	0.1036		0.0237		
SD:	0.0064	µg/L	0.0064	µg/L						
%RSD:	0.33									

Seq. No.	88	AS Loc:		5	Date:	12/20/2019			
Sample ID:	CCV								
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7									
	12/20/2019 2:12:56PM All analyte(s) passed QC.								
	2.144	µg/L	2.144	µg/L	0.0260		0.0260		2:12:23PM
	2.285	µg/L	2.285	µg/L	0.0277		0.0278		2:12:53PM
Mean:	2.215	µg/L	2.215	µg/L	0.0269		0.0269		
SD:	0.1001	µg/L		µg/L					
%RSD:	4.52								

12/20/2019 2:12:56PM QC value within limits for Hg 253.7 Recovery = 110.73%

Seq. No.	89	AS Loc:		1	Date:	12/20/2019			
Sample ID:	CCB								
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7									
	12/20/2019 2:14:37PM All analyte(s) passed QC.								
	0.0103	µg/L	0.0103	µg/L	0.0000	-0.0002	0.0001		2:14:04PM
	0.0120	µg/L	0.0120	µg/L	0.0001	0.0004	0.0001		2:14:35PM
Mean:	0.0111	µg/L	0.0111	µg/L	0.0000	0.0001	0.0001		
SD:	0.00122	µg/L		µg/L					
%RSD:	10.95								

12/20/2019 2:14:37PM QC value within limits for Hg 253.7 Recovery = Not calculated

Seq. No.	90	AS Loc:	5	Date:	12/20/2019			
Sample ID:	ICV							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7	12/20/2019 2:26:04PM All analyte(s) passed QC.							
	2.020 µg/L	2.020 µg/L	0.0245	0.1084		0.0245		2:25:31PM
	2.005 µg/L	2.005 µg/L	0.0243	0.1087		0.0243		2:26:02PM
Mean:	2.013 µg/L	2.013 µg/L	0.0244	0.1085		0.0244		
SD:	0.0110 µg/L	µg/L						
%RSD:	0.55							

12/20/2019 2:26:04PM QC value within limits for Hg 253.7 Recovery = 100.63%

Seq. No.	91	AS Loc:	1	Date:	12/20/2019			
Sample ID:	ICB							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7	12/20/2019	2:27:45PM	All analyte(s) passed QC.					
	0.0133 µg/L	0.0133 µg/L	0.0001	0.0003		0.0001		2:27:13PM
	0.0095 µg/L	0.0095 µg/L	0.0000	-0.0001		0.0001		2:27:43PM
Mean:	0.0114 µg/L	0.0114 µg/L	0.0000	0.0001		0.0001		
SD:	0.00272 µg/L	µg/L						
%RSD:	23.86							
12/20/2019 2:27:45PM QC value within limits for Hg 253.7 Recovery = Not calculated								

Seq. No.	93	AS Loc:	5	Date:	12/20/2019			
Sample ID:	CCV							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7	12/20/2019	2:31:07PM	All analyte(s) passed QC.					
	1.982 µg/L	1.982 µg/L	0.0240	0.1091		0.0241		2:30:34PM
	2.032 µg/L	2.032 µg/L	0.0246	0.1081		0.0247		2:31:04PM
Mean:	2.007 µg/L	2.007 µg/L	0.0243	0.1086		0.0244		
SD:	0.0348 µg/L		µg/L					
%RSD:	1.73							
12/20/2019 2:31:07PM QC value within limits for Hg 253.7 Recovery = 100.35%								

12/24/2019 11:04:52 AM HG3-D-78

Seq. No.	8	AS Loc:	1	Date:	12/24/2019			
Sample ID:	Blank							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[0.00] µg/L		0.0004	0.0017		0.0004		9:51:59AM
	[0.00] µg/L		0.0004	0.0025		0.0004		9:52:29AM
Mean:	[0.00] µg/L		0.0004	0.0021		0.0004		
SD:	0.00 µg/L							
%RSD:	8.49							

Seq. No.	9	AS Loc:	2	Date:	12/24/2019			
Sample ID:	0.2ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[0.200] µg/L		0.0021	0.0106		0.0025		9:53:40AM
	[0.200] µg/L		0.0021	0.0107		0.0025		9:54:10AM
Mean:	[0.200] µg/L		0.0021	0.0106		0.0025		
SD:	0.00 µg/L							
%RSD:	0.79							

Seq. No.	10	AS Loc:	3	Date:	12/24/2019			
Sample ID:	0.5ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[0.500] µg/L		0.0056	0.0270		0.0060		9:55:21AM
	[0.500] µg/L		0.0057	0.0268		0.0061		9:55:51AM
Mean:	[0.500] µg/L		0.0057	0.0269		0.0061		
SD:	0.00 µg/L							
%RSD:	1.02							

Seq. No.	11	AS Loc:	4	Date:	12/24/2019			
Sample ID:	1.00ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[1.000] µg/L		0.0119	0.0545		0.0123		9:57:02AM
	[1.000] µg/L		0.0119	0.0542		0.0123		9:57:33AM
Mean:	[1.000] µg/L		0.0119	0.0544		0.0123		
SD:	0.00 µg/L							
%RSD:	0.39							

Seq. No.	12	AS Loc:	5	Date:	12/24/2019			
Sample ID:	2.00ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[2.000] µg/L		0.0273	0.1218		0.0277		9:58:45AM
	[2.000] µg/L		0.0269	0.1202		0.0273		9:59:15AM
Mean:	[2.000] µg/L		0.0271	0.1210		0.0275		
SD:	0.00 µg/L							
%RSD:	0.85							

Seq. No.	13	AS Loc:	6	Date:	12/24/2019			
Sample ID:	5.00ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[5.000] µg/L		0.0595	0.2700		0.0599		10:00:27AM
	[5.000] µg/L		0.0594	0.2690		0.0598		10:00:57AM
Mean:	[5.000] µg/L		0.0594	0.2695		0.0599		
SD:	0.00 µg/L							
%RSD:	0.11							

Seq. No.	14	AS Loc:	7	Date:	12/24/2019			
Sample ID:	10.00ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[10.000] µg/L		0.1157	0.5273		0.1161		10:02:07AM
	[10.000] µg/L		0.1163	0.5280		0.1167		10:02:37AM
Mean:	[10.000] µg/L		0.1160	0.5276		0.1164		
SD:	0.00 µg/L							
%RSD:	0.35							

Seq. No.	15	AS Loc:	5	Date:	12/24/2019			
Sample ID:	ICV							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
		12/24/2019 10:04:21AM	All analyte(s) passed QC.					
	2.213 µg/L	2.213 µg/L	0.0264	0.1187		0.0268		10:03:48AM
	2.188 µg/L	2.188 µg/L	0.0261	0.1178		0.0265		10:04:18AM
Mean:	2.200 µg/L	2.200 µg/L	0.0263	0.1183		0.0267		
SD:	0.0179 µg/L	µg/L						
%RSD:	0.82							

12/24/2019 10:04:21AM QC value within limits for Hg 253.7 Recovery = 110.02%

Seq. No.	16	AS Loc:	1	Date:	12/24/2019			
Sample ID:	ICB							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7	12/24/2019 10:06:02AM All analyte(s) passed QC.							
	-0.0662 µg/L	-0.0662 µg/L	-0.0001	0.0014		0.0004		10:05:29AM
	-0.0677 µg/L	-0.0677 µg/L	-0.0001	0.0013		0.0003		10:06:00AM
Mean:	-0.0669 µg/L	-0.0669 µg/L	-0.0001	0.0013		0.0003		
SD:	0.00102 µg/L		µg/L					
%RSD:	1.52							

12/24/2019 10:06:02AM QC value within limits for Hg 253.7 Recovery = Not calculated

Seq. No.	17	AS Loc:		9	Date:	12/24/2019			
Sample ID:	0.2ppb								
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7									
	0.1185 µg/L	0.1185 µg/L		0.0021	0.0111		0.0025		10:07:10AM
	0.1186 µg/L	0.1186 µg/L		0.0021	0.0110		0.0025		10:07:40AM
Mean:	0.1186 µg/L	0.1186 µg/L		0.0021	0.0110		0.0025		
SD:	0.00005 µg/L	0.00005 µg/L							
%RSD:	0.04								

Seq. No.	18	AS Loc:	10	Date:	12/24/2019			
Sample ID:	2.0ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	2.112 µg/L	2.112 µg/L	0.0252	0.1139		0.0257		10:08:52AM
	2.073 µg/L	2.073 µg/L	0.0248	0.1119		0.0252		10:09:22AM
Mean:	2.092 µg/L	2.092 µg/L	0.0250	0.1129		0.0254		
SD:	0.0276 µg/L	0.0276 µg/L						
%RSD:	1.32							

Seq. No.	19		AS Loc:	11		Date:	12/24/2019			
Sample ID:	MB-77301									
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance		Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7										
	0.2345	µg/L	0.2345	µg/L	0.0034	0.0168		0.0038		10:10:34AM
	0.2307	µg/L	0.2307	µg/L	0.0034	0.0169		0.0038		10:11:04AM
Mean:	0.2326	µg/L	0.2326	µg/L	0.0034	0.0169		0.0038		
SD:	0.00268	µg/L	0.00268	µg/L						
%RSD:	1.15									

Seq. No.	20	AS Loc:	12	Date:	12/24/2019			
Sample ID:	LCS-77301							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	1.992 µg/L	1.992 µg/L	0.0238	0.1079		0.0243		10:12:16AM
	1.987 µg/L	1.987 µg/L	0.0238	0.1076		0.0242		10:12:47AM
Mean:	1.989 µg/L	1.989 µg/L	0.0238	0.1077		0.0242		
SD:	0.0031 µg/L	0.0031 µg/L						
%RSD:	0.16							

Seq. No.	21	AS Loc:	13	Date:	12/24/2019			
Sample ID:	191218028-001F							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.0604 µg/L	0.0604 µg/L	0.0014	0.0083		0.0018		10:14:00AM
	0.0629 µg/L	0.0629 µg/L	0.0014	0.0086		0.0019		10:14:30AM
Mean:	0.0616 µg/L	0.0616 µg/L	0.0014	0.0085		0.0018		
SD:	0.00180 µg/L	0.00180 µg/L						
%RSD:	2.92							

Seq. No.	22	AS Loc:	14	Date:	12/24/2019			
Sample ID:	191218028-002F							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.0211 µg/L	0.0211 µg/L	0.0010	0.0057		0.0014		10:15:41AM
	0.0200 µg/L	0.0200 µg/L	0.0009	0.0058		0.0014		10:16:11AM
Mean:	0.0206 µg/L	0.0206 µg/L	0.0010	0.0058		0.0014		
SD:	0.00075 µg/L	0.00075 µg/L						
%RSD:	3.67							

Seq. No.	23	AS Loc:	15	Date:	12/24/2019			
Sample ID:	191218028-003F							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.0046 µg/L	0.0046 µg/L	0.0008	0.0049		0.0012		10:17:22AM
	0.0018 µg/L	0.0018 µg/L	0.0007	0.0046		0.0011		10:17:52AM
Mean:	0.0032 µg/L	0.0032 µg/L	0.0008	0.0047		0.0012		
SD:	0.00201 µg/L	0.00201 µg/L						
%RSD:	63.35							

Seq. No.	24		AS Loc:	16		Date:	12/24/2019			
Sample ID:	191218028-004F									
Analyte	Conc (Calib)		Conc (Sample)		Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7										
	-0.0040	µg/L	-0.0040	µg/L	0.0007	0.0040		0.0011		10:19:02AM
	-0.0077	µg/L	-0.0077	µg/L	0.0006	0.0038		0.0010		10:19:32AM
Mean:	-0.0058	µg/L	-0.0058	µg/L	0.0006	0.0039		0.0011		
SD:	0.00261	µg/L	0.00261	µg/L						
%RSD:	44.80									

Seq. No.	25		AS Loc:	17		Date:	12/24/2019		
Sample ID:	191218028-004FDP								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance		Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7									
	-0.0181 µg/L	-0.0181 µg/L	0.0005		0.0033		0.0009		10:20:42AM
	-0.0156 µg/L	-0.0156 µg/L	0.0005		0.0034		0.0009		10:21:12AM
Mean:	-0.0168 µg/L	-0.0168 µg/L	0.0005		0.0034		0.0009		
SD:	0.00179 µg/L	0.00179 µg/L							
%RSD:	10.65								

Seq. No.	26		AS Loc:	18	Date:	12/24/2019			
Sample ID:	191218028-004FMS								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance		Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7									
	1.953 µg/L	1.953 µg/L	0.0234		0.1047		0.0238		10:22:22AM
	1.928 µg/L	1.928 µg/L	0.0231		0.1034		0.0235		10:22:52AM
Mean:	1.941 µg/L	1.941 µg/L	0.0233		0.1040		0.0237		
SD:	0.0180 µg/L	0.0180 µg/L							
%RSD:	0.93								

Seq. No.	27		AS Loc:	5		Date:	12/24/2019			
Sample ID:	CCV									
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance		Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7										
	12/24/2019 10:24:36AM All analyte(s) passed QC.									
	2.196	µg/L	2.196	µg/L	0.0262	0.1187		0.0266		10:24:04AM
	2.175	µg/L	2.175	µg/L	0.0260	0.1173		0.0264		10:24:34AM
Mean:	2.185	µg/L	2.185	µg/L	0.0261	0.1180		0.0265		
SD:	0.0147	µg/L		µg/L						
%RSD:	0.67									

12/24/2019 10:24:36AM QC value within limits for Hg 253.7 Recovery = 109.27%

Seq. No.	28		AS Loc:	1		Date:	12/24/2019			
Sample ID:	CCB									
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance		Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7	12/24/2019 10:26:18AM All analyte(s) passed QC.									
	-0.0655	µg/L	-0.0655	µg/L	0.0000	0.0012		0.0004		10:25:46AM
	-0.0650	µg/L	-0.0650	µg/L	0.0000	0.0012		0.0004		10:26:16AM
Mean:	-0.0652	µg/L	-0.0652	µg/L	0.0000	0.0012		0.0004		
SD:	0.00038	µg/L		µg/L						
%RSD:	0.58									
12/24/2019 10:26:18AM QC value within limits for Hg 253.7 Recovery = Not calculated										

Seq. No.	29	AS Loc:	19	Date:	12/24/2019				
Sample ID:	MB-77262								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7									
	0.0072 µg/L	0.0072 µg/L	0.0008	0.0050		0.0012		10:27:26AM	
	0.0035 µg/L	0.0035 µg/L	0.0008	0.0050		0.0012		10:27:56AM	
Mean:	0.0054 µg/L	0.0054 µg/L	0.0008	0.0050		0.0012			
SD:	0.00258 µg/L	0.00258 µg/L							
%RSD:	48.08								

Seq. No.	30	AS Loc:	20	Date:	12/24/2019				
Sample ID:	LCS-77262								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7									
	2.147 µg/L	2.147 µg/L	0.0257	0.1149		0.0261		10:29:07AM	
	2.043 µg/L	2.043 µg/L	0.0244	0.1108		0.0249		10:29:37AM	
Mean:	2.095 µg/L	2.095 µg/L	0.0251	0.1128		0.0255			
SD:	0.0736 µg/L	0.0736 µg/L							
%RSD:	3.51								

Seq. No.	31	AS Loc:	21	Date:	12/24/2019				
Sample ID:	191218077-004C								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7									
	-0.0304 µg/L	-0.0304 µg/L	0.0004	0.0031		0.0008		10:30:48AM	
	-0.0322 µg/L	-0.0322 µg/L	0.0003	0.0029		0.0007		10:31:18AM	
Mean:	-0.0313 µg/L	-0.0313 µg/L	0.0004	0.0030		0.0008			
SD:	0.00128 µg/L	0.00128 µg/L							
%RSD:	4.07								

Seq. No.	32		AS Loc:	22		Date:	12/24/2019			
Sample ID:	191218077-004CDP									
Analyte	Conc (Calib)		Conc (Sample)		Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7										
	-0.0318	µg/L	-0.0318	µg/L	0.0003	0.0030		0.0008		10:32:29AM
	-0.0354	µg/L	-0.0354	µg/L	0.0003	0.0028		0.0007		10:33:00AM
Mean:	-0.0336	µg/L	-0.0336	µg/L	0.0003	0.0029		0.0007		
SD:	0.00261	µg/L	0.00261	µg/L						
%RSD:	7.77									

Seq. No.	33	AS Loc:	23	Date:	12/24/2019			
Sample ID:	191218077-004CMS							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	1.978 µg/L	1.978 µg/L	0.0237	0.1061		0.0241		10:34:12AM
	1.891 µg/L	1.891 µg/L	0.0227	0.1025		0.0231		10:34:42AM
Mean:	1.934 µg/L	1.934 µg/L	0.0232	0.1043		0.0236		
SD:	0.0619 µg/L	0.0619 µg/L						
%RSD:	3.20							

Seq. No.	34		AS Loc:	24		Date:	12/24/2019			
Sample ID:	191218077-005C									
Analyte	Conc (Calib)		Conc (Sample)		Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7										
	-0.0399	µg/L	-0.0399	µg/L	0.0003	0.0028		0.0007		10:35:54AM
	-0.0366	µg/L	-0.0366	µg/L	0.0003	0.0034		0.0007		10:36:24AM
Mean:	-0.0382	µg/L	-0.0382	µg/L	0.0003	0.0031		0.0007		
SD:	0.00232	µg/L	0.00232	µg/L						
%RSD:	6.06									

Seq. No.	35	AS Loc:			11	Date:		12/24/2019		
Sample ID:	MB-77301									
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance		Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7										
	-0.0135	µg/L	-0.0135	µg/L	0.0006	0.0042		0.0010		10:37:37AM
	-0.0145	µg/L	-0.0145	µg/L	0.0005	0.0039		0.0010		10:38:07AM
Mean:	-0.0140	µg/L	-0.0140	µg/L	0.0006	0.0040		0.0010		
SD:	0.00072	µg/L	0.00072	µg/L						
%RSD:	5.13									

Seq. No.	36	AS Loc:	5	Date:	12/24/2019				
Sample ID:	CCV								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7	12/24/2019 10:39:52AM All analyte(s) passed QC.								
	2.209 µg/L	2.209 µg/L	0.0264	0.1189		0.0268		10:39:19AM	
	2.215 µg/L	2.215 µg/L	0.0264	0.1187		0.0268		10:39:49AM	
Mean:	2.212 µg/L	2.212 µg/L	0.0264	0.1188		0.0268			
SD:	0.0042 µg/L	µg/L							
%RSD:	0.19								

12/24/2019 10:39:52AM QC value within limits for Hg 253.7 Recovery = 110.59%

Seq. No.	37	AS Loc:		1	Date:		12/24/2019			
Sample ID:	CCB									
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance		Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7	12/24/2019 10:41:33AM All analyte(s) passed QC.									
	-0.0666	µg/L	-0.0666	µg/L	-0.0001	0.0009		0.0003		10:41:00AM
	-0.0697	µg/L	-0.0697	µg/L	-0.0001	0.0005		0.0003		10:41:31AM
Mean:	-0.0681	µg/L	-0.0681	µg/L	-0.0001	0.0007		0.0003		
SD:	0.00217	µg/L		µg/L						
%RSD:	3.19									

12/24/2019 10:41:33AM QC value within limits for Hg 253.7 Recovery = Not calculated

Seq. No.	50	AS Loc:	5	Date:	12/24/2019				
Sample ID:	CCV								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7	12/24/2019 11:04:46AM All analyte(s) passed QC.								
	2.329 µg/L	2.329 µg/L	0.0278	0.1243		0.0282		11:04:14AM	
	2.334 µg/L	2.334 µg/L	0.0278	0.1237		0.0282		11:04:44AM	
Mean:	2.331 µg/L	2.331 µg/L	0.0278	0.1240		0.0282			
SD:	0.0038 µg/L	µg/L							
%RSD:	0.16								

12/24/2019 11:04:46AM QC value within limits for Hg 253.7 Recovery = 116.57%

Sample Report

Report Author

Printed: 1/3/2020 8:51 am

Ag - 1ppm

Acquire Date: 02-Jan-2020 9:14 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ag	23.709	Cts/S	.161	.67832

200.7-3

Acquire Date: 02-Jan-2020 9:51 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
B_	11.784	Cts/S	.002	.01894
Cd	133.57	Cts/S	.17	.12502
Pb	16.278	Cts/S	.001	.00764
Tl	5.3648	Cts/S	.0313	.58327

200.7-4

Acquire Date: 02-Jan-2020 9:55 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mo	620.30	Cts/S	.93	.15014
Sb	120.27	Cts/S	.10	.08374
Ti	506.12	Cts/S	.78	.15395

Blank

Acquire Date: 02-Jan-2020 10:24 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Al	-.12623	Cts/S	.14713	116.56
Cr	-.21051	Cts/S	.04169	19.806
Fe	3.2565	Cts/S	2.3091	70.909
Mg	-.11236	Cts/S	.02158	19.207

200.7-6

Acquire Date: 02-Jan-2020 10:27 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Cr	23.248	Cts/S	.085	.36747

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

200.7-1

Acquire Date: 02-Jan-2020 10:30 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Al	88.386	Cts/S	.375	.42468
Mg	64.187	Cts/S	.508	.79095

200.7-2

Acquire Date: 02-Jan-2020 10:33 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Fe	3117.3	Cts/S	4.6	.14834

ICV-1

Acquire Date: 02-Jan-2020 10:39 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1914.2	ppb	9.4	.49002
Ag	516.99	ppb	3.54	.68538
Al	1973.5	ppb	.2	.01195
As	1940.9	ppb	2.3	.11750
Au	7.3599	ppb	.4542	6.1710
B_	2071.9	ppb	3.8	.18318
Ba	2056.1	ppb	4.5	.21974
Be	2058.7	ppb	8.2	.39752
Ca	2013.3	ppb	11.8	.58390
Cd	2085.4	ppb	7.8	.37356
Co	1992.0	ppb	5.9	.29846
Cr	1944.6	ppb	4.4	.22507
Cu	2084.3	ppb	8.8	.42169
Fe	2017.6	ppb	3.2	.15720
K_	9931.1	ppb	33.9	.34149
Li	1957.6	ppb	51.9	2.6519
Mg	1960.0	ppb	13.4	.68565
Mn	1980.7	ppb	5.1	.25771
Mo	2060.6	ppb	4.5	.21736
Na	1901.5	ppb	2.0	.10406
Ni	2039.6	ppb	4.0	.19703
Pb	2081.9	ppb	4.0	.19434
Pd	<.00000	ppb	.887	1.9105
Sb	1981.4	ppb	4.6	.23270
Se	1960.4	ppb	3.8	.19414
Si	4580.2	ppb	37.1	.80923

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

ICV-1

Acquire Date: 02-Jan-2020 10:39 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Sn	1962.4	ppb	4.6	.23489
Sr	2039.3	ppb	11.3	.55579
Ti	<.00000	ppb	1.0463	65.831
Tl	1954.6	ppb	7.9	.40265
V_	1942.3	ppb	7.9	.40499
Zn	2058.4	ppb	5.0	.24490
Zr	<.00000	ppb	.24200	38.074

ICB-1

Acquire Date: 02-Jan-2020 10:44 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	<.00000	ppb	.6994	30.962
Ag	<.00000	ppb	4.9386	217.59
Al	<.00000	ppb	3.767	23.570
As	<.00000	ppb	.29272	319.01
Au	<.00000	ppb	.45336	425.61
B_	.06362	ppb	.14277	224.40
Ba	<.00000	ppb	.10840	1,404.8
Be	.03476	ppb	.01718	49.440
Ca	11.949	ppb	2.102	17.589
Cd	.07627	ppb	.06181	81.034
Co	<.00000	ppb	.05513	39.965
Cr	1.5685	ppb	2.7594	175.93
Cu	<.00000	ppb	1.6192	83.179
Fe	<.00000	ppb	.1471	1.8864
K_	6.6703	ppb	5.9478	89.168
Li	2.8190	ppb	63.4710	2,251.5
Mg	<.00000	ppb	33.2544	1,285.1
Mn	<.00000	ppb	.02836	75.651
Mo	.19907	ppb	.28153	141.42
Na	<.00000	ppb	8.0910	123.76
Ni	<.00000	ppb	.08773	749.31
Pb	<.00000	ppb	.26894	158.46
Pd	<.00000	ppb	10.64570	3,545,400
Sb	<.00000	ppb	.94373	306.91
Se	<.00000	ppb	1.0656	79.260
Si	<.00000	ppb	26.979	235.64
Sn	<.00000	ppb	.41664	188.54
Sr	<.00000	ppb	.527	5.1432

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

ICB-1

Acquire Date: 02-Jan-2020 10:44 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ti	1.1783	ppb	.0775	6.5768
Tl	<.00000	ppb	.0003	.02723
V_	<.00000	ppb	.0003	.00955
Zn	<.00000	ppb	.03865	12.513
Zr	<.00000	ppb	1.62410	174.99

CRI-1

Acquire Date: 02-Jan-2020 10:48 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	<.00000	ppb	1.5074	110.50
Ag	16.530	ppb	.083	.49961
Al	8.1496	ppb	1.1083	13.600
As	19.200	ppb	1.585	8.2532
Au	.48276	ppb	.00040	.08235
B_	<.00000	ppb	.15297	316.97
Ba	<.00000	ppb	.67822	325.54
Be	10.447	ppb	.095	.90664
Ca	10.879	ppb	3.279	30.139
Cd	10.829	ppb	.045	.41811
Co	101.89	ppb	.42	.41168
Cr	16.033	ppb	4.046	25.235
Cu	51.439	ppb	1.590	3.0908
Fe	<.00000	ppb	.0504	.63238
K_	4.3219	ppb	.8209	18.994
Li	10.840	ppb	56.170	518.16
Mg	<.00000	ppb	7.322	35.724
Mn	30.052	ppb	.014	.04824
Mo	<.00000	ppb	.00704	1.6653
Na	<.00000	ppb	7.220	62.444
Ni	84.345	ppb	.490	.58141
Pb	6.3090	ppb	.3748	5.9415
Pd	<.00000	ppb	30.6076	336.47
Sb	121.44	ppb	.44	.36580
Se	10.434	ppb	1.476	14.145
Si	<.00000	ppb	.673	3.4417
Sn	<.00000	ppb	.28636	517.96
Sr	<.00000	ppb	8.686	86.420
Ti	.76726	ppb	.19379	25.258
Tl	18.625	ppb	1.625	8.7230

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CRI-1

Acquire Date: 02-Jan-2020 10:48 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
V_	102.91	ppb	2.96	2.8739
Zn	45.672	ppb	.008	.01702
Zr	<.00000	ppb	.13797	43.429

ICSA-1

Acquire Date: 02-Jan-2020 10:53 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	15.756	ppb	.060	.38165
Ag	<.00000	ppb	.495	1.0364
Al	507230.	ppb	67	.01321
As	<.00000	ppb	1.130	1.8180
Au	135.70	ppb	1.23	.90799
B_	<.00000	ppb	3.93	1.8772
Ba	1.1143	ppb	.2046	18.360
Be	2.7821	ppb	.0109	.39106
Ca	437200.	ppb	261	.05971
Cd	<.00000	ppb	.01811	2.3763
Co	.20421	ppb	.09149	44.802
Cr	<.00000	ppb	2.297	20.176
Cu	<.00000	ppb	.599	2.0129
Fe	128930.	ppb	76	.05907
K_	1.3923	ppb	5.7834	415.38
Li	<.00000	ppb	118.1	5.9847
Mg	530730.	ppb	64	.01208
Mn	<.00000	ppb	.0372	.54266
Mo	<.00000	ppb	.2393	4.6877
Na	35.073	ppb	6.508	18.555
Ni	<.00000	ppb	.401	2.1366
Pb	<.00000	ppb	1.333	1.5994
Pd	<.00000	ppb	12.865	29.507
Sb	<.00000	ppb	1.3074	61.013
Se	<.00000	ppb	.990	1.2076
Si	6.6778	ppb	13.4878	201.98
Sn	.73632	ppb	.57276	77.788
Sr	5.9562	ppb	10.2650	172.34
Ti	<.00000	ppb	1.898	11.742
Tl	<.00000	ppb	.082	.43919
V_	<.00000	ppb	1.235	3.9877
Zn	<.00000	ppb	.2250	2.6983

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

ICSA-1

Acquire Date: 02-Jan-2020 10:53 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Zr	<.00000	ppb	.1034	5.5648

ICSAB-1

Acquire Date: 02-Jan-2020 10:57 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	15.909	ppb	.012	.07618
Ag	1041.7	ppb	4.8	.45933
Al	485150.	ppb	1,424	.29358
As	<.00000	ppb	2.902	3.9635
Au	134.78	ppb	.00	.00190
B_	<.00000	ppb	.39	.18902
Ba	494.60	ppb	1.43	.28945
Be	494.83	ppb	2.10	.42416
Ca	421560.	ppb	1,319	.31299
Cd	952.97	ppb	2.15	.22574
Co	487.00	ppb	1.45	.29677
Cr	558.82	ppb	2.92	.52230
Cu	537.85	ppb	1.74	.32319
Fe	125420.	ppb	617	.49231
K_	<.00000	ppb	.8613	25.598
Li	<.00000	ppb	147.5	7.7078
Mg	506500.	ppb	2,149	.42431
Mn	475.57	ppb	1.41	.29608
Mo	<.00000	ppb	.1969	5.2781
Na	32.957	ppb	5.707	17.317
Ni	924.04	ppb	2.45	.26561
Pb	894.14	ppb	2.25	.25139
Pd	<.00000	ppb	5.767	15.988
Sb	3.0289	ppb	2.5590	84.485
Se	<.00000	ppb	3.501	4.4362
Si	<.00000	ppb	7.420	28.287
Sn	.49698	ppb	.70281	141.42
Sr	<.00000	ppb	5.528	26.998
Ti	<.00000	ppb	.698	4.0226
Tl	<.00000	ppb	.894	3.8970
V_	428.98	ppb	6.08	1.4166
Zn	899.24	ppb	2.45	.27193
Zr	<.00000	ppb	.7256	25.163

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCV-1

Acquire Date: 02-Jan-2020 11:02 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1902.4	ppb	9.8	.51331
Ag	515.45	ppb	2.40	.46566
Al	1970.1	ppb	19.0	.96492
As	1942.8	ppb	1.1	.05653
Au	7.3063	ppb	.2651	3.6281
B_	2173.1	ppb	2.0	.09344
Ba	2045.2	ppb	8.7	.42456
Be	2057.9	ppb	9.1	.44353
Ca	2029.2	ppb	10.4	.51115
Cd	2087.1	ppb	4.5	.21327
Co	1994.3	ppb	3.9	.19405
Cr	1929.3	ppb	4.8	.24747
Cu	2062.3	ppb	12.9	.62707
Fe	2022.4	ppb	2.0	.09751
K_	9269.2	ppb	26.3	.28411
Li	1947.2	ppb	71.4	3.6647
Mg	1954.8	ppb	11.0	.56444
Mn	1985.3	ppb	1.9	.09386
Mo	2062.5	ppb	.6	.03088
Na	1886.2	ppb	10.6	.56388
Ni	2043.0	ppb	1.9	.09128
Pb	2085.7	ppb	1.4	.06532
Pd	<.00000	ppb	27.944	64.096
Sb	1979.1	ppb	3.2	.16060
Se	1965.4	ppb	5.0	.25270
Si	4567.1	ppb	44.4	.97208
Sn	1969.2	ppb	.6	.03283
Sr	2054.4	ppb	11.8	.57393
Ti	<.00000	ppb	2.6352	157.66
Tl	2119.7	ppb	3.6	.17145
V_	1932.3	ppb	19.9	1.0296
Zn	2061.7	ppb	.6	.02871
Zr	<.00000	ppb	1.14011	122.81

CCB-1

Acquire Date: 02-Jan-2020 11:14 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
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Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCB-1

Acquire Date: 02-Jan-2020 11:14 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	<.00000	ppb	1.9293	71.834
Ag	<.00000	ppb	2.1403	43.259
Al	<.00000	ppb	3.5464	41.142
As	.66979	ppb	.32083	47.900
Au	<.00000	ppb	.35994	2,827.2
B_	<.00000	ppb	.29023	58.491
Ba	<.00000	ppb	.70022	77.303
Be	.10774	ppb	.02572	23.871
Ca	12.068	ppb	.420	3.4834
Cd	.02348	ppb	.00225	9.5920
Co	.02027	ppb	.00110	5.4290
Cr	3.1050	ppb	10.5371	339.36
Cu	.57868	ppb	.09394	16.234
Fe	<.00000	ppb	.1268	1.6739
K_	4.3221	ppb	5.5790	129.08
Li	12.785	ppb	57.017	445.97
Mg	<.00000	ppb	12.815	73.331
Mn	<.00000	ppb	.02067	68.499
Mo	<.00000	ppb	.10554	29.063
Na	<.00000	ppb	7.0080	343.58
Ni	<.00000	ppb	.05008	130.70
Pb	.28526	ppb	.16042	56.237
Pd	<.00000	ppb	4.879	24.692
Sb	<.00000	ppb	.58076	94.344
Se	<.00000	ppb	.22804	70.745
Si	<.00000	ppb	16.8632	392.94
Sn	<.00000	ppb	.26041	37.223
Sr	<.00000	ppb	7.3702	80.813
Ti	1.3153	ppb	1.4339	109.01
Tl	<.00000	ppb	.4879	35.362
V_	<.00000	ppb	4.4324	282.91
Zn	<.00000	ppb	.06488	22.632
Zr	<.00000	ppb	1.86627	195.80

CCV-2

Acquire Date: 02-Jan-2020 12:13 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2079.0	ppb	10.1	.48341
Ag	517.65	ppb	3.90	.75345

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCV-2

Acquire Date: 02-Jan-2020 12:13 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Al	1976.2	ppb	8.3	.42109
As	1941.9	ppb	22.1	1.1383
Au	6.7042	ppb	.2839	4.2344
B_	2175.0	ppb	17.4	.79858
Ba	2069.7	ppb	17.7	.85434
Be	2061.2	ppb	10.5	.50814
Ca	2023.2	ppb	1.8	.08942
Cd	2078.5	ppb	13.2	.63294
Co	1990.3	ppb	12.8	.64403
Cr	1948.9	ppb	14.8	.75696
Cu	2084.4	ppb	17.9	.85779
Fe	2007.7	ppb	18.5	.92201
K_	9401.0	ppb	100.2	1.0654
Li	1967.6	ppb	64.7	3.2864
Mg	1971.1	ppb	7.4	.37759
Mn	1971.9	ppb	17.6	.89449
Mo	2056.1	ppb	19.9	.96969
Na	2060.6	ppb	16.7	.81073
Ni	2031.9	ppb	16.8	.82526
Pb	2069.3	ppb	16.9	.81781
Pd	<.00000	ppb	19.958	40.530
Sb	1975.4	ppb	19.3	.97530
Se	1968.9	ppb	15.4	.78424
Si	4679.0	ppb	65.7	1.4045
Sn	1948.3	ppb	18.7	.96186
Sr	2048.6	ppb	9.6	.46880
Ti	<.00000	ppb	.6586	52.253
Tl	2110.3	ppb	18.0	.85499
V_	1926.5	ppb	12.4	.64522
Zn	2047.1	ppb	14.7	.71975
Zr	<.00000	ppb	.3464	16.296

CCB-2

Acquire Date: 02-Jan-2020 12:17 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	75.892	ppb	8.061	10.622
Ag	<.00000	ppb	.82406	473.46
Al	<.00000	ppb	1.54846	247.79
As	.24944	ppb	1.05852	424.35

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCB-2

Acquire Date: 02-Jan-2020 12:17 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Au	.33553	ppb	.47271	140.88
B_	.95575	ppb	.41192	43.099
Ba	<.00000	ppb	.5065	49.320
Be	.16193	ppb	.09071	56.020
Ca	8.3232	ppb	3.6982	44.432
Cd	.06829	ppb	.00375	5.4948
Co	.04132	ppb	.03748	90.726
Cr	<.00000	ppb	3.4651	43.429
Cu	<.00000	ppb	1.06674	182.52
Fe	<.00000	ppb	.0004	.00567
K_	6.0596	ppb	1.1526	19.021
Li	<.00000	ppb	44.615	275.75
Mg	<.00000	ppb	2.448	11.700
Mn	.00227	ppb	.03780	1,665.4
Mo	.22896	ppb	.50667	221.29
Na	41.294	ppb	3.941	9.5426
Ni	<.00000	ppb	.32155	209.53
Pb	<.00000	ppb	.45539	404.97
Pd	<.00000	ppb	14.637	141.39
Sb	.38525	ppb	.39938	103.67
Se	.43118	ppb	1.14174	264.79
Si	7.6212	ppb	9.4588	124.11
Sn	<.00000	ppb	.15616	84.798
Sr	<.00000	ppb	16.0586	287.54
Ti	.19205	ppb	.15465	80.528
Tl	.28728	ppb	.56912	198.11
V_	1.9160	ppb	1.4766	77.067
Zn	<.00000	ppb	.03708	8.9868
Zr	<.00000	ppb	3.3841	338.35

MB-W

Acquire Date: 02-Jan-2020 12:39 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	59.937	ppb	5.740	9.5767
Ag	<.00000	ppb	2.6340	96.294
Al	<.00000	ppb	1.7730	75.443
As	<.00000	ppb	2.5746	93.656
Au	.04126	ppb	.05674	137.52
B_	<.00000	ppb	.0106	.91882

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

MB-W

Acquire Date: 02-Jan-2020 12:39 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ba	<.00000	ppb	.64873	118.90
Be	.13034	ppb	.05792	44.439
Ca	16.288	ppb	1.849	11.355
Cd	<.00000	ppb	.06411	66.802
Co	.01637	ppb	.08598	525.19
Cr	6.3283	ppb	19.9441	315.16
Cu	.87933	ppb	.92439	105.13
Fe	<.00000	ppb	.0079	.10479
K_	7.9466	ppb	1.6818	21.163
Li	16.600	ppb	52.093	313.81
Mg	<.00000	ppb	2.1356	35.361
Mn	<.00000	ppb	.00944	34.588
Mo	<.00000	ppb	.12666	19.584
Na	32.161	ppb	1.459	4.5356
Ni	.10934	ppb	.11692	106.93
Pb	.56906	ppb	.61610	108.27
Pd	<.00000	ppb	12.420	89.993
Sb	<.00000	ppb	.68964	899.81
Se	<.00000	ppb	.68480	319.40
Si	<.00000	ppb	14.8384	518.00
Sn	<.00000	ppb	.78108	192.81
Sr	<.00000	ppb	12.8975	133.25
Ti	1.8086	ppb	.5038	27.855
Tl	1.9544	ppb	.1626	8.3189
V_	5.9204	ppb	6.1562	103.98
Zn	<.00000	ppb	.13497	83.150
Zr	<.00000	ppb	.13823	33.307

LCS-W

Acquire Date: 02-Jan-2020 12:42 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2051.8	ppb	7.5	.36439
Ag	510.93	ppb	8.64	1.6909
Al	2018.0	ppb	11.3	.55938
As	1969.7	ppb	6.5	.32964
Au	7.1725	ppb	.2650	3.6941
B_	2135.4	ppb	16.5	.77156
Ba	2047.3	ppb	5.5	.26987
Be	2102.3	ppb	5.2	.24656

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

LCS-W

Acquire Date: 02-Jan-2020 12:42 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ca	2147.0	ppb	5.4	.24984
Cd	2032.6	ppb	18.6	.91717
Co	1985.9	ppb	16.7	.84279
Cr	1973.4	ppb	9.3	.47170
Cu	2153.1	ppb	7.3	.33949
Fe	2062.6	ppb	11.3	.54705
K_	10335.	ppb	16	.15261
Li	1984.0	ppb	27.7	1.3944
Mg	1964.1	ppb	7.6	.38912
Mn	1998.9	ppb	11.3	.56684
Mo	2079.5	ppb	18.8	.90469
Na	2030.2	ppb	3.6	.17619
Ni	2041.4	ppb	12.5	.61051
Pb	2063.1	ppb	15.4	.74786
Pd	<.00000	ppb	18.631	34.940
Sb	1951.3	ppb	13.8	.70678
Se	1955.4	ppb	4.1	.21020
Si	9820.4	ppb	20.2	.20527
Sn	1947.2	ppb	11.2	.57494
Sr	2078.7	ppb	2.4	.11318
Ti	.71245	ppb	.19378	27.199
Tl	2018.1	ppb	19.4	.96272
V_	1963.2	ppb	2.0	.09954
Zn	2012.1	ppb	13.1	.65019
Zr	.29313	ppb	4.45803	1,520.8

191218077-001A

Acquire Date: 02-Jan-2020 12:47 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	179640.	ppb	443	.24684
Ag	<.00000	ppb	2.1404	126.81
Al	<.00000	ppb	14.20	5.2513
As	5.1089	ppb	.4222	8.2640
Au	<.00000	ppb	.5299	49.526
B_	197.48	ppb	1.45	.73272
Ba	443.14	ppb	5.64	1.2718
Be	.15166	ppb	.02373	15.648
Ca	80739.	ppb	911	1.1282
Cd	<.00000	ppb	.12445	124.15

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-001A

Acquire Date: 02-Jan-2020 12:47 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Co	.66175	ppb	.00222	.33545
Cr	2.3050	ppb	1.5466	67.095
Cu	3.3569	ppb	2.5612	76.298
Fe	91.643	ppb	.074	.08113
K_	21541.	ppb	117	.54095
Li	<.00000	ppb	47.64	6.2163
Mg	32966.	ppb	321	.97310
Mn	39.181	ppb	.025	.06430
Mo	.53241	ppb	.23217	43.608
Na	130850.	ppb	176	.13444
Ni	1.6929	ppb	.1920	11.341
Pb	.72441	ppb	.50029	69.062
Pd	<.00000	ppb	12.420	58.230
Sb	<.00000	ppb	1.01599	2,126.7
Se	<.00000	ppb	.0000	.00050
Si	5284.9	ppb	30.6	.57849
Sn	.22085	ppb	.20828	94.308
Sr	5472.3	ppb	63.9	1.1682
Ti	<.00000	ppb	.89142	116.18
Tl	3.4490	ppb	.9755	28.283
V_	3.6726	ppb	.4917	13.389
Zn	4.4695	ppb	.0172	.38482
Zr	<.00000	ppb	2.90243	565.78

191218077-001A

Acquire Date: 02-Jan-2020 12:53 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	19810.	ppb	95	.47716
Ag	<.00000	ppb	1.9754	37.295
Al	<.00000	ppb	.89	.85765
As	1.7086	ppb	.9458	55.359
Au	<.00000	ppb	.17042	26.003
B_	21.593	ppb	.032	.14856
Ba	49.552	ppb	.106	.21294
Be	.23514	ppb	.02151	9.1466
Ca	9404.9	ppb	44.8	.47662
Cd	<.00000	ppb	.01357	16.639
Co	.18237	ppb	.12234	67.083
Cr	.14884	ppb	6.18808	4,157.5

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-001A

Acquire Date: 02-Jan-2020 12:53 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Cu	<.00000	ppb	2.8618	236.42
Fe	3.6243	ppb	.0884	2.4387
K_	1584.5	ppb	4.7	.29867
Li	<.00000	ppb	74.62	45.262
Mg	3589.9	ppb	8.3	.23109
Mn	4.4964	ppb	.0235	.52191
Mo	<.00000	ppb	.06333	8.6597
Na	18933.	ppb	105	.55602
Ni	.14210	ppb	.04592	32.318
Pb	1.0196	ppb	.0534	5.2326
Pd	<.00000	ppb	3.549	20.952
Sb	<.00000	ppb	.25403	31.990
Se	<.00000	ppb	1.6738	115.26
Si	611.92	ppb	3.36	.54929
Sn	<.00000	ppb	.31238	106.05
Sr	635.25	ppb	10.01	1.5763
Ti	.54804	ppb	.81384	148.50
Tl	<.00000	ppb	.56901	329.89
V_	2.9663	ppb	5.4176	182.64
Zn	.08151	ppb	.00200	2.4582
Zr	<.00000	ppb	1.4513	126.36

191218077-002A

Acquire Date: 02-Jan-2020 1:00 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	243840.	ppb	1,455	.59658
Ag	<.00000	ppb	1.0697	31.687
Al	91.055	ppb	1.326	1.4564
As	3.3148	ppb	.5532	16.688
Au	4.8575	ppb	.2461	5.0668
B_	488.84	ppb	2.62	.53536
Ba	2604.1	ppb	51.3	1.9707
Be	.84489	ppb	.00448	.53011
Ca	34761.	ppb	436	1.2532
Cd	<.00000	ppb	.00151	.53620
Co	.48551	ppb	.05290	10.895
Cr	6.5780	ppb	5.4787	83.289
Cu	2.0064	ppb	1.7642	87.927
Fe	3741.8	ppb	17.7	.47395

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-002A

Acquire Date: 02-Jan-2020 1:00 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
K_	18134.	ppb	468	2.5783
Li	<.00000	ppb	12.75	6.2870
Mg	9023.4	ppb	187.8	2.0814
Mn	258.14	ppb	1.12	.43318
Mo	.08456	ppb	.09145	108.15
Na	165350.	ppb	238	.14418
Ni	1.0064	ppb	.1169	11.614
Pb	<.00000	ppb	.21753	33.506
Pd	<.00000	ppb	9.7588	141.42
Sb	.15281	ppb	.72570	474.91
Se	<.00000	ppb	2.0540	48.953
Si	6523.0	ppb	127.2	1.9495
Sn	.14725	ppb	.15619	106.06
Sr	4426.8	ppb	71.1	1.6066
Ti	1.5893	ppb	.4263	26.822
Tl	1.6668	ppb	.2438	14.629
V_	2.7806	ppb	.7388	26.569
Zn	1.3736	ppb	.0811	5.9072
Zr	<.00000	ppb	.17331	44.342

191218077-002A

Acquire Date: 02-Jan-2020 1:04 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	27142.	ppb	75	.27531
Ag	<.00000	ppb	2.2226	173.59
Al	<.00000	ppb	13.299	54.050
As	1.5860	ppb	1.7012	107.27
Au	.66913	ppb	.41615	62.193
B_	46.261	ppb	.345	.74496
Ba	262.86	ppb	.32	.12120
Be	.14706	ppb	.03011	20.472
Ca	3571.0	ppb	6.1	.17197
Cd	<.00000	ppb	.10030	113.31
Co	<.00000	ppb	.01323	565.64
Cr	1.4633	ppb	3.8053	260.05
Cu	2.5593	ppb	1.4944	58.390
Fe	365.57	ppb	2.72	.74475
K_	1138.1	ppb	2.8	.25002
Li	<.00000	ppb	62.25	55.351

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-002A

Acquire Date: 02-Jan-2020 1:04 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mg	876.31	ppb	2.15	.24591
Mn	25.443	ppb	.242	.95239
Mo	<.00000	ppb	.20401	39.817
Na	25368.	ppb	20	.07934
Ni	.13589	ppb	.00411	3.0268
Pb	.16583	ppb	.02642	15.935
Pd	<.00000	ppb	.8870	35.348
Sb	.05165	ppb	.79854	1,546.2
Se	<.00000	ppb	2.6626	145.58
Si	659.11	ppb	13.47	2.0441
Sn	<.00000	ppb	.36445	4,048,300
Sr	441.11	ppb	3.96	.89745
Ti	.93169	ppb	1.66636	178.85
Tl	.11496	ppb	.65025	565.63
V_	1.9169	ppb	3.4481	179.88
Zn	<.00000	ppb	.05595	15.451
Zr	<.00000	ppb	.65634	83.966

CCV-3

Acquire Date: 02-Jan-2020 1:09 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1995.3	ppb	16.0	.80204
Ag	514.42	ppb	2.90	.56284
Al	1971.1	ppb	9.3	.46947
As	1935.4	ppb	2.1	.10871
Au	7.3730	ppb	.2086	2.8292
B_	2159.4	ppb	2.9	.13260
Ba	2050.1	ppb	10.3	.50384
Be	2044.7	ppb	12.8	.62750
Ca	2005.4	ppb	10.5	.52542
Cd	2063.1	ppb	2.2	.10558
Co	1975.9	ppb	1.8	.08929
Cr	1937.2	ppb	20.1	1.0367
Cu	2070.5	ppb	16.3	.78725
Fe	2004.1	ppb	3.5	.17689
K_	9321.4	ppb	48.5	.52039
Li	1960.4	ppb	65.3	3.3297
Mg	1971.0	ppb	21.1	1.0709
Mn	1969.4	ppb	1.8	.09088

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCV-3

Acquire Date: 02-Jan-2020 1:09 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mo	2046.4	ppb	6.2	.30503
Na	1981.2	ppb	8.0	.40244
Ni	2025.3	ppb	.3	.01606
Pb	2065.0	ppb	1.5	.07087
Pd	<.00000	ppb	4.435	14.140
Sb	1969.6	ppb	1.4	.07165
Se	1963.5	ppb	6.4	.32505
Si	4562.5	ppb	39.3	.86033
Sn	1947.2	ppb	.5	.02620
Sr	2030.3	ppb	23.0	1.1308
Ti	.19180	ppb	.07756	40.436
Tl	2104.9	ppb	3.6	.17030
V_	1926.4	ppb	9.7	.50137
Zn	2040.5	ppb	.5	.02579
Zr	.34202	ppb	1.34808	394.15

CCB-3

Acquire Date: 02-Jan-2020 1:13 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	73.051	ppb	.519	.70993
Ag	<.00000	ppb	1.3994	34.344
Al	18.180	ppb	1.108	6.0958
As	<.00000	ppb	.62496	748.75
Au	<.00000	ppb	.18910	64.334
B_	.70548	ppb	.22687	32.158
Ba	<.00000	ppb	.58802	560.62
Be	.26556	ppb	.10727	40.396
Ca	42.327	ppb	.168	.39741
Cd	.26613	ppb	.02563	9.6302
Co	.08418	ppb	.01213	14.408
Cr	3.7840	ppb	2.0489	54.146
Cu	<.00000	ppb	5.01534	1,290.7
Fe	6.1621	ppb	.0465	.75408
K_	4.2933	ppb	3.8149	88.857
Li	14.530	ppb	50.017	344.22
Mg	21.790	ppb	12.204	56.009
Mn	.20416	ppb	.01482	7.2612
Mo	.47266	ppb	.35880	75.910
Na	40.844	ppb	3.804	9.3131

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCB-3

Acquire Date: 02-Jan-2020 1:13 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ni	.07969	ppb	.03338	41.895
Pb	<.00000	ppb	.45500	170.75
Pd	<.00000	ppb	12.421	58.233
Sb	1.4113	ppb	.1088	7.7062
Se	<.00000	ppb	3.04344	377.34
Si	<.00000	ppb	2.6982	31.437
Sn	<.00000	ppb	.05204	12.849
Sr	<.00000	ppb	3.159	14.261
Ti	<.00000	ppb	.23252	846.85
Tl	<.00000	ppb	1.3008	39.016
V_	<.00000	ppb	.00005	.01009
Zn	<.00000	ppb	.04549	119.80
Zr	<.00000	ppb	.3110	18.713

191218077-002ADP

Acquire Date: 02-Jan-2020 1:17 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	248230.	ppb	961	.38724
Ag	<.00000	ppb	.00036	.03620
Al	<.00000	ppb	.002	.01161
As	2.9741	ppb	.2737	9.2014
Au	4.0814	ppb	.1325	3.2457
B_	498.22	ppb	.70	.13986
Ba	2691.3	ppb	24.0	.89086
Be	.84491	ppb	.10703	12.668
Ca	36094.	ppb	453	1.2559
Cd	<.00000	ppb	.10256	47.489
Co	.84634	ppb	.01653	1.9533
Cr	.69330	ppb	6.31249	910.50
Cu	2.0826	ppb	.2034	9.7684
Fe	3112.6	ppb	5.5	.17632
K_	18910.	ppb	106	.56215
Li	<.00000	ppb	40.68	19.961
Mg	9285.5	ppb	114.0	1.2281
Mn	257.47	ppb	.16	.06333
Mo	<.00000	ppb	.26733	158.06
Na	167910.	ppb	93	.05561
Ni	.19489	ppb	.07097	36.418
Pb	1.3213	ppb	.4054	30.684

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-002ADP

Acquire Date: 02-Jan-2020 1:17 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Pd	<.00000	ppb	3.548	20.948
Sb	.43636	ppb	.39915	91.474
Se	<.00000	ppb	.7608	22.448
Si	6634.7	ppb	65.8	.99199
Sn	<.00000	ppb	.41649	66.552
Sr	4595.3	ppb	53.4	1.1629
Ti	1.8359	ppb	1.6276	88.654
Tl	2.4714	ppb	.2438	9.8665
V_	<.00000	ppb	3.2017	131.38
Zn	10.732	ppb	.002	.01976
Zr	<.00000	ppb	1.7632	94.942

191218077-002ADP

Acquire Date: 02-Jan-2020 1:24 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	28880.	ppb	52	.18100
Ag	<.00000	ppb	2.0583	52.007
Al	<.00000	ppb	16.177	70.704
As	<.00000	ppb	2.3555	186.10
Au	.40211	ppb	.26432	65.732
B_	49.192	ppb	.506	1.0284
Ba	277.22	ppb	.44	.15887
Be	<.00000	ppb	.03415	89.841
Ca	3774.4	ppb	3.5	.09240
Cd	<.00000	ppb	.03923	144.34
Co	.10600	ppb	.00773	7.2922
Cr	.04602	ppb	13.08811	28,442
Cu	1.5585	ppb	4.0420	259.35
Fe	316.40	ppb	3.54	1.1179
K_	1210.8	ppb	2.0	.16491
Li	<.00000	ppb	57.88	54.318
Mg	905.21	ppb	21.10	2.3311
Mn	26.489	ppb	.342	1.2901
Mo	<.00000	ppb	.20408	29.512
Na	26968.	ppb	18	.06681
Ni	<.00000	ppb	.10855	3,841.4
Pb	<.00000	ppb	.26817	59,263
Pd	<.00000	ppb	2.218	17.248
Sb	.89868	ppb	.83479	92.891

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-002ADP

Acquire Date: 02-Jan-2020 1:24 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Se	<.00000	ppb	.0759	3.5270
Si	669.60	ppb	25.59	3.8214
Sn	.33136	ppb	.72895	219.99
Sr	475.91	ppb	2.60	.54715
Ti	<.00000	ppb	.4261	27.767
Tl	<.00000	ppb	1.21949	706.53
V_	<.00000	ppb	1.4761	65.254
Zn	.58456	ppb	.05841	9.9921
Zr	<.00000	ppb	.72634	123.91

191218077-002AMS

Acquire Date: 02-Jan-2020 1:28 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	242770.	ppb	227	.09356
Ag	47.612	ppb	2.388	5.0158
Al	2185.5	ppb	10.1	.46420
As	31.382	ppb	1.541	4.9103
Au	5.6069	ppb	.0947	1.6882
B_	482.03	ppb	1.67	.34734
Ba	4649.6	ppb	18.7	.40171
Be	56.184	ppb	.282	.50158
Ca	35624.	ppb	277	.77709
Cd	50.562	ppb	.019	.03700
Co	465.88	ppb	1.21	.25957
Cr	231.47	ppb	4.69	2.0256
Cu	288.22	ppb	.31	.10634
Fe	3692.5	ppb	12.3	.33392
K_	18474.	ppb	10	.05591
Li	<.00000	ppb	43.42	27.552
Mg	9133.5	ppb	32.4	.35512
Mn	719.96	ppb	3.34	.46347
Mo	.15918	ppb	.02814	17.677
Na	165430.	ppb	1,555	.93969
Ni	479.35	ppb	2.13	.44534
Pb	19.996	ppb	.212	1.0611
Pd	<.00000	ppb	2.661	21.212
Sb	484.59	ppb	1.49	.30728
Se	6.7779	ppb	2.0540	30.304
Si	6451.6	ppb	11.3	.17538

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-002AMS

Acquire Date: 02-Jan-2020 1:28 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Sn	.38654	ppb	.54664	141.42
Sr	4523.3	ppb	30.2	.66689
Ti	.49325	ppb	.81378	164.98
Tl	42.014	ppb	1.870	4.4499
V_	504.66	ppb	2.97	.58795
Zn	531.74	ppb	2.06	.38832
Zr	.46426	ppb	.89876	193.59

191218077-002AA

Acquire Date: 02-Jan-2020 1:34 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	241050.	ppb	436	.18089
Ag	104.51	ppb	3.68	3.5169
Al	4730.2	ppb	13.5	.28545
As	60.930	ppb	.363	.59592
Au	8.3367	ppb	1.2679	15.209
B_	480.59	ppb	.36	.07496
Ba	6728.9	ppb	25.0	.37199
Be	114.17	ppb	.49	.42504
Ca	35368.	ppb	209	.59091
Cd	104.34	ppb	.09	.08283
Co	956.71	ppb	.29	.02999
Cr	482.88	ppb	10.04	2.0783
Cu	582.07	ppb	2.81	.48299
Fe	5523.3	ppb	20.3	.36704
K_	18381.	ppb	58	.31599
Li	<.00000	ppb	45.601	52.349
Mg	9152.4	ppb	54.4	.59439
Mn	1219.1	ppb	4.2	.34845
Mo	1.3133	ppb	.0563	4.2859
Na	162470.	ppb	1,458	.89730
Ni	975.17	ppb	3.83	.39291
Pb	39.333	ppb	.619	1.5749
Pd	<.00000	ppb	9.316	54.002
Sb	990.90	ppb	4.10	.41408
Se	18.613	ppb	.685	3.6789
Si	6910.4	ppb	72.8	1.0528
Sn	<.00000	ppb	.62473	565.70
Sr	4484.8	ppb	15.7	.35078

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-002AA

Acquire Date: 02-Jan-2020 1:34 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ti	8.0275	ppb	1.3964	17.395
Tl	84.891	ppb	2.195	2.5855
V_	1024.9	ppb	8.7	.84439
Zn	1054.8	ppb	2.6	.24819
Zr	.41814	ppb	.34833	83.304

191218077-002AL

Acquire Date: 02-Jan-2020 1:40 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	55380.	ppb	134	.24124
Ag	<.00000	ppb	8.56070	2,941.4
Al	<.00000	ppb	19.283	104.27
As	1.5448	ppb	.1321	8.5491
Au	1.0980	ppb	.4912	44.738
B_	93.809	ppb	.721	.76824
Ba	528.05	ppb	.87	.16431
Be	.36713	ppb	.09651	26.288
Ca	7071.7	ppb	4.6	.06500
Cd	<.00000	ppb	.11465	231.28
Co	.14497	ppb	.01651	11.390
Cr	3.1908	ppb	3.8469	120.56
Cu	1.5075	ppb	1.9964	132.43
Fe	741.37	ppb	.73	.09901
K_	2599.4	ppb	11.1	.42843
Li	<.00000	ppb	46.26	41.413
Mg	1744.3	ppb	11.6	.66549
Mn	56.004	ppb	.124	.22213
Mo	<.00000	ppb	.02813	6.1459
Na	48616.	ppb	39	.08048
Ni	.18907	ppb	.09618	50.869
Pb	1.2779	ppb	1.0444	81.724
Pd	<.00000	ppb	4.879	29.351
Sb	.64193	ppb	.18092	28.183
Se	<.00000	ppb	.6849	23.579
Si	1339.7	ppb	4.7	.35157
Sn	.29449	ppb	.15621	53.046
Sr	901.79	ppb	5.78	.64133
Ti	.73985	ppb	.85258	115.24
Tl	2.2417	ppb	.2437	10.869

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-002AL

Acquire Date: 02-Jan-2020 1:40 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
V_	<.00000	ppb	2.95395	1,706.4
Zn	.55228	ppb	.01741	3.1517
Zr	<.00000	ppb	.93300	1,023,100

191218077-003A

Acquire Date: 02-Jan-2020 1:46 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	275550.	ppb	1,426	.51765
Ag	<.00000	ppb	2.0580	160.73
Al	<.00000	ppb	9.76	5.9803
As	5.5919	ppb	.9876	17.662
Au	<.00000	ppb	.1135	4.8771
B_	44.806	ppb	.085	.18887
Ba	114.90	ppb	.45	.39493
Be	.07729	ppb	.05569	72.059
Ca	84123.	ppb	695	.82637
Cd	.00268	ppb	.01961	731.91
Co	2.2680	ppb	.1268	5.5892
Cr	2.3312	ppb	17.2269	738.98
Cu	.83391	ppb	.15719	18.850
Fe	147.63	ppb	.24	.16541
K_	8952.4	ppb	48.4	.54036
Li	<.00000	ppb	58.8	4.9249
Mg	23071.	ppb	103	.44558
Mn	626.94	ppb	.57	.09055
Mo	.42788	ppb	.07035	16.442
Na	178040.	ppb	983	.55187
Ni	1.4414	ppb	.0125	.86719
Pb	6.8589	ppb	.0240	.34983
Pd	<.00000	ppb	10.202	72.280
Sb	<.00000	ppb	1.01625	500.25
Se	<.00000	ppb	.1522	3.5805
Si	4704.4	ppb	31.1	.66213
Sn	.23927	ppb	.07810	32.640
Sr	737.05	ppb	11.86	1.6097
Ti	<.00000	ppb	.1163	9.6496
Tl	1.0346	ppb	.1626	15.715
V_	<.00000	ppb	5.91031	1,153.1
Zn	22.610	ppb	.055	.24167

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-003A

Acquire Date: 02-Jan-2020 1:46 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Zr	<.00000	ppb	.96790	233.13

191218077-003A

Acquire Date: 02-Jan-2020 1:52 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	34944.	ppb	33	.09358
Ag	<.00000	ppb	2.7164	259.29
Al	<.00000	ppb	2.660	2.6647
As	1.1825	ppb	.0593	5.0165
Au	<.00000	ppb	.35970	158.28
B_	3.6871	ppb	.0740	2.0070
Ba	11.705	ppb	.439	3.7515
Be	.26845	ppb	.12873	47.954
Ca	9556.1	ppb	24.1	.25197
Cd	<.00000	ppb	.01131	9.7318
Co	.37799	ppb	.18957	50.151
Cr	<.00000	ppb	6.02093	1,200.3
Cu	.23393	ppb	4.66891	1,995.9
Fe	9.1522	ppb	.0432	.47221
K_	608.35	ppb	.20	.03318
Li	<.00000	ppb	57.60	26.135
Mg	2393.6	ppb	22.0	.91722
Mn	70.743	ppb	.328	.46304
Mo	<.00000	ppb	.03519	4.9460
Na	31799.	ppb	29	.09138
Ni	.19817	ppb	.01668	8.4170
Pb	1.5818	ppb	.6435	40.678
Pd	<.00000	ppb	.444	3.0087
Sb	<.00000	ppb	.18139	54.587
Se	<.00000	ppb	.6086	11.201
Si	527.49	ppb	12.14	2.3022
Sn	<.00000	ppb	.59875	295.67
Sr	74.263	ppb	7.370	9.9237
Ti	1.3153	ppb	.2713	20.623
Tl	1.9542	ppb	1.1380	58.234
V_	2.2695	ppb	5.4173	238.70
Zn	2.0857	ppb	.0486	2.3325
Zr	.22008	ppb	.96757	439.65

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-004B

Acquire Date: 02-Jan-2020 2:08 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	465730.	ppb	2,980	.63981
Ag	<.00000	ppb	.2479	3.1313
Al	13358.	ppb	237	1.7724
As	10.054	ppb	.005	.05408
Au	18.829	ppb	.512	2.7177
B_	103.39	ppb	.11	.10517
Ba	315.70	ppb	5.82	1.8424
Be	.79324	ppb	.14560	18.355
Ca	105870.	ppb	3,405	3.2162
Cd	.16691	ppb	.01356	8.1272
Co	12.155	ppb	.298	2.4512
Cr	572.43	ppb	15.96	2.7888
Cu	39.682	ppb	4.291	10.814
Fe	22156.	ppb	79	.35674
K_	33470.	ppb	488	1.4591
Li	<.00000	ppb	94.6	5.2917
Mg	24252.	ppb	470	1.9368
Mn	754.59	ppb	1.15	.15264
Mo	4.8851	ppb	.0424	.86734
Na	s 233760.	ppb	443	.18942
Ni	18.716	ppb	.209	1.1142
Pb	10.658	ppb	.113	1.0641
Pd	<.00000	ppb	4.89	4.1112
Sb	6.1220	ppb	.1788	2.9199
Se	<.00000	ppb	1.750	16.768
Si	19755.	ppb	369	1.8678
Sn	1.0124	ppb	.7549	74.569
Sr	740.58	ppb	31.64	4.2723
Ti	83.931	ppb	3.028	3.6082
Tl	.28735	ppb	1.86954	650.63
V_	17.147	ppb	4.419	25.774
Zn	90.673	ppb	.620	.68410
Zr	2.5172	ppb	.4832	19.197

191218077-004B

Acquire Date: 02-Jan-2020 2:13 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
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Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-004B

Acquire Date: 02-Jan-2020 2:13 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	92331.	ppb	1,244	1.3469
Ag	<.00000	ppb	2.5516	78.281
Al	1263.4	ppb	25.7	2.0334
As	2.6751	ppb	.7437	27.799
Au	2.5155	ppb	.5678	22.570
B_	11.220	ppb	.301	2.6803
Ba	34.754	ppb	.335	.96386
Be	.23669	ppb	.07944	33.561
Ca	12397.	ppb	167	1.3472
Cd	<.00000	ppb	.05806	120.98
Co	1.5383	ppb	.0518	3.3676
Cr	55.924	ppb	10.666	19.072
Cu	4.3161	ppb	2.1866	50.660
Fe	2850.0	ppb	53.2	1.8660
K_	2268.5	ppb	49.7	2.1917
Li	<.00000	ppb	59.59	21.562
Mg	2553.5	ppb	43.6	1.7069
Mn	91.325	ppb	1.872	2.0502
Mo	<.00000	ppb	.20401	455.55
Na	76347.	ppb	1,282	1.6791
Ni	2.2717	ppb	.0417	1.8334
Pb	1.4932	ppb	.8236	55.158
Pd	<.00000	ppb	4.435	13.093
Sb	1.2673	ppb	.0003	.02585
Se	<.00000	ppb	.8368	18.971
Si	2232.6	ppb	38.4	1.7203
Sn	<.00000	ppb	.46853	318.23
Sr	79.478	ppb	.002	.00232
Ti	10.495	ppb	1.162	11.076
Tl	.17245	ppb	.08128	47.134
V_	3.5821	ppb	.4910	13.708
Zn	10.682	ppb	.344	3.2242
Zr	.14647	ppb	.38033	259.67

191218077-004B

Acquire Date: 02-Jan-2020 2:20 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	7501.0	ppb	129.4	1.7250
Ag	<.00000	ppb	5.02111	862.61

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-004B

Acquire Date: 02-Jan-2020 2:20 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Al	105.48	ppb	10.64	10.085
As	<.00000	ppb	1.91005	494.23
Au	.49558	ppb	.20802	41.975
B_	<.00000	ppb	.17948	104.63
Ba	1.9482	ppb	1.0523	54.010
Be	.26097	ppb	.07945	30.445
Ca	1142.4	ppb	9.4	.82646
Cd	<.00000	ppb	.01508	31.782
Co	.15276	ppb	.10471	68.543
Cr	11.816	ppb	1.798	15.221
Cu	.67605	ppb	3.09809	458.26
Fe	231.30	ppb	11.45	4.9525
K_	138.79	ppb	3.03	2.1846
Li	<.00000	ppb	62.663	91.266
Mg	219.19	ppb	6.40	2.9210
Mn	8.2596	ppb	.0730	.88434
Mo	<.00000	ppb	.02112	3.0106
Na	7431.7	ppb	143.6	1.9320
Ni	.01739	ppb	.40499	2,329.4
Pb	1.1066	ppb	.8853	80.001
Pd	<.00000	ppb	2.218	20.203
Sb	<.00000	ppb	.39930	47.088
Se	<.00000	ppb	1.0651	48.294
Si	202.23	ppb	17.53	8.6689
Sn	<.00000	ppb	.62477	424.20
Sr	.37276	ppb	10.79292	2,895.4
Ti	1.1235	ppb	1.0851	96.586
Tl	.17237	ppb	.89420	518.76
V_	<.00000	ppb	.0005	.03010
Zn	1.0655	ppb	.0163	1.5286
Zr	<.00000	ppb	1.07158	219.17

CCV-4

Acquire Date: 02-Jan-2020 2:32 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2023.5	ppb	20.6	1.0162
Ag	515.22	ppb	4.88	.94734
Al	1976.5	ppb	17.6	.89060
As	1925.9	ppb	10.0	.51788

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCV-4

Acquire Date: 02-Jan-2020 2:32 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Au	7.8416	ppb	.1135	1.4472
B_	2150.9	ppb	14.2	.66031
Ba	2053.4	ppb	19.2	.93545
Be	2048.1	ppb	21.4	1.0444
Ca	1990.9	ppb	22.4	1.1238
Cd	2046.7	ppb	18.9	.92458
Co	1952.1	ppb	18.1	.92763
Cr	1943.3	ppb	19.2	.98582
Cu	2077.2	ppb	20.0	.96077
Fe	2010.3	ppb	12.3	.61301
K_	9359.0	ppb	82.5	.88168
Li	1963.6	ppb	71.5	3.6430
Mg	1959.1	ppb	22.1	1.1260
Mn	1974.4	ppb	13.9	.70325
Mo	2041.2	ppb	19.3	.94590
Na	1990.3	ppb	18.3	.92044
Ni	2012.6	ppb	14.3	.71002
Pb	2056.3	ppb	14.7	.71416
Pd	<.00000	ppb	10.648	23.906
Sb	1971.7	ppb	16.2	.81943
Se	1951.6	ppb	11.9	.60859
Si	4566.6	ppb	46.8	1.0240
Sn	1948.0	ppb	11.2	.57372
Sr	2010.3	ppb	26.4	1.3142
Ti	<.00000	ppb	2.67402	487.91
Tl	2086.5	ppb	22.0	1.0562
V_	1937.9	ppb	23.5	1.2119
Zn	2031.9	ppb	14.4	.71095
Zr	<.00000	ppb	.3105	30.257

CCB-4

Acquire Date: 02-Jan-2020 2:43 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	63.574	ppb	1.644	2.5865
Ag	<.00000	ppb	1.1517	63.848
Al	<.00000	ppb	13.9639	318.26
As	<.00000	ppb	.94556	416.39
Au	.14728	ppb	.39711	269.64
B_	<.00000	ppb	.53837	360.78

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCB-4

Acquire Date: 02-Jan-2020 2:43 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ba	<.00000	ppb	.9045	58.078
Be	.18941	ppb	.08981	47.418
Ca	15.396	ppb	1.597	10.372
Cd	.00427	ppb	.09277	2,172.0
Co	<.00000	ppb	.02866	26.458
Cr	2.0494	ppb	1.8336	89.472
Cu	<.00000	ppb	1.34925	547.20
Fe	<.00000	ppb	.0702	.91907
K_	12.703	ppb	.039	.30344
Li	<.00000	ppb	58.140	262.10
Mg	<.00000	ppb	10.6759	225.04
Mn	<.00000	ppb	.00541	21.001
Mo	<.00000	ppb	.03518	14.434
Na	48.003	ppb	5.526	11.511
Ni	<.00000	ppb	.03347	66.711
Pb	<.00000	ppb	1.23172	383.68
Pd	<.00000	ppb	3.549	22.631
Sb	<.00000	ppb	1.30657	149.78
Se	<.00000	ppb	1.3693	49.911
Si	<.00000	ppb	8.773	40.870
Sn	<.00000	ppb	.44258	114.49
Sr	<.00000	ppb	5.2657	68.994
Ti	1.6168	ppb	.3100	19.176
Tl	.68964	ppb	2.27595	330.02
V_	<.00000	ppb	4.6784	167.96
Zn	<.00000	ppb	.03249	6.5162
Zr	.92912	ppb	1.90143	204.65

191218077-005B

Acquire Date: 02-Jan-2020 2:47 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	259890.	ppb	1,233	.47461
Ag	<.00000	ppb	3.200	18.567
Al	5067.7	ppb	.8	.01579
As	<.00000	ppb	1.2019	66.906
Au	185.32	ppb	2.60	1.4035
B_	469.28	ppb	1.36	.28908
Ba	11133.	ppb	8	.07141
Be	3.1708	ppb	.0117	.36982

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-005B

Acquire Date: 02-Jan-2020 2:47 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ca	19007.	ppb	112	.58984
Cd	.59667	ppb	.04829	8.0939
Co	10.153	ppb	.011	.10413
Cr	106.19	ppb	6.41	6.0329
Cu	1315.1	ppb	3.0	.22741
Fe	61751.	ppb	81	.13129
K_	16751.	ppb	1	.00766
Li	163.61	ppb	56.86	34.755
Mg	5175.0	ppb	14.2	.27456
Mn	32707.	ppb	271	.82944
Mo	5.5564	ppb	.1058	1.9038
Na	171560.	ppb	233	.13558
Ni	13.028	ppb	.166	1.2773
Pb	217.86	ppb	.73	.33569
Pd	<.00000	ppb	10.73	6.1523
Sb	.60464	ppb	1.23382	204.06
Se	<.00000	ppb	.9129	20.950
Si	18073.	ppb	58	.31940
Sn	14.412	ppb	.443	3.0747
Sr	2372.0	ppb	12.8	.53780
Ti	14.308	ppb	.033	.22795
Tl	50.692	ppb	.327	.64571
V_	<.00000	ppb	2.46052	518.87
Zn	1129.0	ppb	5.0	.44265
Zr	<.00000	ppb	1.9300	167.60

191218077-005B

Acquire Date: 02-Jan-2020 2:51 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	28226.	ppb	39	.13991
Ag	<.00000	ppb	3.62292	891.12
Al	436.51	ppb	7.03	1.6102
As	<.00000	ppb	2.4390	232.81
Au	20.808	ppb	.625	3.0037
B_	48.689	ppb	.075	.15378
Ba	1098.6	ppb	3.9	.35579
Be	.49956	ppb	.11230	22.480
Ca	1856.6	ppb	6.0	.32281
Cd	<.00000	ppb	.07239	590.07

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-005B

Acquire Date: 02-Jan-2020 2:51 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Co	1.2765	ppb	.0937	7.3367
Cr	11.382	ppb	4.723	41.496
Cu	112.29	ppb	.23	.20268
Fe	7494.7	ppb	40.0	.53351
K_	969.35	ppb	6.52	.67303
Li	<.00000	ppb	65.794	86.188
Mg	461.12	ppb	9.90	2.1464
Mn	4168.0	ppb	33.3	.79966
Mo	<.00000	ppb	.02814	8.0810
Na	26159.	ppb	81	.31056
Ni	1.2738	ppb	.1878	14.744
Pb	22.870	ppb	.218	.95408
Pd	<.00000	ppb	10.204	51.643
Sb	<.00000	ppb	.03618	5.5935
Se	<.00000	ppb	1.9019	65.472
Si	1744.2	ppb	37.1	2.1273
Sn	1.5093	ppb	.1041	6.8971
Sr	232.40	ppb	15.16	6.5254
Ti	.41133	ppb	.77544	188.52
Tl	5.9199	ppb	1.0565	17.848
V_	1.5435	ppb	5.4141	350.78
Zn	121.74	ppb	.80	.65405
Zr	<.00000	ppb	1.4466	121.17

191218077-006B

Acquire Date: 02-Jan-2020 2:55 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	157060.	ppb	545	.34732
Ag	<.00000	ppb	3.7865	114.13
Al	<.00000	ppb	6.87	2.4228
As	4.3895	ppb	1.1185	25.482
Au	<.00000	ppb	.1703	7.8102
B_	244.63	ppb	1.22	.49731
Ba	88.138	ppb	.780	.88461
Be	.22910	ppb	.09008	39.320
Ca	72842.	ppb	279	.38344
Cd	<.00000	ppb	.14180	169.39
Co	.45053	ppb	.05401	11.988
Cr	1389.7	ppb	1.0	.06856

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-006B

Acquire Date: 02-Jan-2020 2:55 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Cu	.54484	ppb	3.53637	649.07
Fe	61.038	ppb	4.300	7.0447
K_	13674.	ppb	136	.99623
Li	<.00000	ppb	72.92	10.988
Mg	19643.	ppb	90	.45603
Mn	71.602	ppb	.004	.00607
Mo	1.7066	ppb	.1196	7.0077
Na	117060.	ppb	481	.41085
Ni	.38488	ppb	.22128	57.494
Pb	<.00000	ppb	.24397	286.64
Pd	<.00000	ppb	2.6616	30.305
Sb	15.350	ppb	.072	.47117
Se	.00064	ppb	.07605	11,809
Si	4486.6	ppb	46.5	1.0367
Sn	.34972	ppb	.18225	52.112
Sr	2988.3	ppb	2.1	.06983
Ti	<.00000	ppb	.38755	83.187
Tl	2.0119	ppb	1.3821	68.695
V_	3.6733	ppb	8.8648	241.33
Zn	<.00000	ppb	.05448	22.777
Zr	<.00000	ppb	1.00214	128.13

191218077-006B

Acquire Date: 02-Jan-2020 2:59 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	15803.	ppb	35	.21966
Ag	<.00000	ppb	2.8813	190.40
Al	<.00000	ppb	5.092	5.4886
As	1.1614	ppb	1.7193	148.03
Au	<.00000	ppb	.32179	96.255
B_	25.693	ppb	.311	1.2107
Ba	9.1865	ppb	.2748	2.9911
Be	.21230	ppb	.00198	.93049
Ca	8198.1	ppb	24.3	.29633
Cd	<.00000	ppb	.10181	280.82
Co	.11768	ppb	.04629	39.337
Cr	138.66	ppb	11.16	8.0466
Cu	3.8832	ppb	.2062	5.3106
Fe	<.00000	ppb	.0741	6.0341

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-006B

Acquire Date: 02-Jan-2020 2:59 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
K_	958.93	ppb	5.63	.58694
Li	<.00000	ppb	46.99	28.401
Mg	2035.7	ppb	3.9	.18978
Mn	7.7996	ppb	.0507	.65027
Mo	<.00000	ppb	.14071	30.091
Na	15384.	ppb	11	.06867
Ni	.03576	ppb	.12941	361.86
Pb	.85394	ppb	.88380	103.50
Pd	<.00000	ppb	11.5331	183.85
Sb	3.0804	ppb	.2904	9.4281
Se	<.00000	ppb	.2282	8.8389
Si	480.27	ppb	3.40	.70816
Sn	.57061	ppb	.39048	68.432
Sr	332.04	ppb	10.25	3.0861
Ti	1.7264	ppb	1.5501	89.786
Tl	1.6668	ppb	.4064	24.383
V_	<.00000	ppb	3.9407	107.93
Zn	<.00000	ppb	.07240	10.825
Zr	<.00000	ppb	1.07187	156.70

191218077-007B

Acquire Date: 02-Jan-2020 3:02 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	123110.	ppb	638	.51826
Ag	<.00000	ppb	.0020	.02994
Al	1109.9	ppb	10.8	.97517
As	162.28	ppb	.59	.36124
Au	<.00000	ppb	.475	2.8303
B_	298.19	ppb	1.48	.49726
Ba	274.73	ppb	3.76	1.3694
Be	.06637	ppb	.02734	41.197
Ca	90347.	ppb	1,738	1.9232
Cd	<.00000	ppb	.00376	1.6870
Co	<.00000	ppb	.132	.45630
Cr	227250.	ppb	3,176	1.3976
Cu	282.21	ppb	2.60	.92047
Fe	1977.7	ppb	2.4	.12194
K_	12426.	ppb	118	.94779
Li	<.00000	ppb	42.95	5.7361

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-007B

Acquire Date: 02-Jan-2020 3:02 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mg	17881.	ppb	262	1.4637
Mn	30.559	ppb	.145	.47308
Mo	11.801	ppb	.350	2.9683
Na	96978.	ppb	94	.09719
Ni	68.895	ppb	.222	.32162
Pb	<.00000	ppb	2.32	2.2331
Pd	17.877	ppb	9.319	52.127
Sb	3270.2	ppb	13.8	.42148
Se	<.00000	ppb	.9128	17.862
Si	3034.4	ppb	80.8	2.6623
Sn	58.998	ppb	.190	.32122
Sr	2231.4	ppb	37.5	1.6803
Ti	<.00000	ppb	.391	1.8868
Tl	85.704	ppb	3.018	3.5218
V_	<.00000	ppb	10.73	1.3254
Zn	130.66	ppb	.27	.20626
Zr	<.00000	ppb	.116	.19218

191218077-007B

Acquire Date: 02-Jan-2020 3:10 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	9692.5	ppb	38.4	.39628
Ag	<.00000	ppb	.7411	19.895
Al	32.754	ppb	9.309	28.421
As	18.344	ppb	1.381	7.5260
Au	<.00000	ppb	.2272	13.922
B_	27.696	ppb	.169	.61007
Ba	24.174	ppb	.246	1.0160
Be	.30934	ppb	.08376	27.078
Ca	8572.7	ppb	47.3	.55206
Cd	<.00000	ppb	.01735	16.108
Co	<.00000	ppb	.0606	2.3949
Cr	24436.	ppb	149	.60858
Cu	25.630	ppb	.080	.31343
Fe	188.32	ppb	1.05	.55579
K_	736.14	ppb	4.04	.54869
Li	<.00000	ppb	61.76	46.064
Mg	1581.3	ppb	11.9	.74958
Mn	2.9246	ppb	.0094	.32277

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-007B

Acquire Date: 02-Jan-2020 3:10 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mo	.57728	ppb	.11259	19.503
Na	9590.9	ppb	49.3	.51402
Ni	7.0634	ppb	.3884	5.4987
Pb	<.00000	ppb	.6693	6.9926
Pd	<.00000	ppb	11.977	66.989
Sb	341.78	ppb	6.64	1.9433
Se	.91568	ppb	.60875	66.481
Si	268.03	ppb	21.59	8.0563
Sn	5.2287	ppb	.1042	1.9920
Sr	211.62	ppb	15.27	7.2174
Ti	<.00000	ppb	1.0077	36.411
Tl	10.176	ppb	.081	.79916
V_	<.00000	ppb	10.838	14.576
Zn	13.243	ppb	.102	.77142
Zr	<.00000	ppb	.1387	2.2799

191218077-008B

Acquire Date: 02-Jan-2020 3:14 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	141210.	ppb	1,281	.90714
Ag	<.00000	ppb	3.0456	93.436
Al	<.00000	ppb	4.21	1.6256
As	2.3436	ppb	.3213	13.711
Au	<.00000	ppb	.5299	43.048
B_	49.980	ppb	.153	.30676
Ba	61.207	ppb	.978	1.5986
Be	.17751	ppb	.01290	7.2696
Ca	46923.	ppb	48	.10331
Cd	<.00000	ppb	.02715	83.480
Co	.36240	ppb	.03747	10.340
Cr	14.539	ppb	3.262	22.434
Cu	<.00000	ppb	.26711	61.037
Fe	920.22	ppb	2.67	.29032
K_	5811.6	ppb	18.5	.31786
Li	<.00000	ppb	55.84	11.509
Mg	10350.	ppb	55	.52864
Mn	7.7998	ppb	.0351	.45021
Mo	3.3381	ppb	.0211	.63171
Na	107550.	ppb	7	.00607

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-008B

Acquire Date: 02-Jan-2020 3:14 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ni	<.00000	ppb	.00836	3.3452
Pb	<.00000	ppb	.45655	121.49
Pd	<.00000	ppb	.8872	11.785
Sb	<.00000	ppb	.90717	325.15
Se	<.00000	ppb	1.4455	43.341
Si	4076.4	ppb	4.7	.11483
Sn	<.00000	ppb	.46857	159.09
Sr	623.53	ppb	9.73	1.5610
Ti	<.00000	ppb	1.4726	88.096
Tl	1.5519	ppb	.5690	36.666
V_	6.9803	ppb	3.2015	45.865
Zn	<.00000	ppb	.07956	48.234
Zr	<.00000	ppb	.65672	149.28

191218077-008B

Acquire Date: 02-Jan-2020 3:18 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	13273.	ppb	37	.27657
Ag	<.00000	ppb	.4117	7.5246
Al	<.00000	ppb	13.299	20.448
As	1.1958	ppb	.2435	20.360
Au	.04085	ppb	.05646	138.23
B_	4.3033	ppb	.0260	.60494
Ba	6.2602	ppb	.0941	1.5038
Be	.22293	ppb	.03436	15.413
Ca	5070.5	ppb	4.4	.08729
Cd	.00322	ppb	.01583	491.89
Co	.18706	ppb	.02534	13.546
Cr	.76594	ppb	3.38688	442.18
Cu	1.7909	ppb	.3463	19.335
Fe	91.142	ppb	.332	.36401
K_	408.27	ppb	5.21	1.2771
Li	<.00000	ppb	55.11	36.176
Mg	1067.5	ppb	5.8	.54410
Mn	.72854	ppb	.00905	1.2427
Mo	<.00000	ppb	.07740	27.298
Na	12964.	ppb	2	.01329
Ni	<.00000	ppb	.12938	169.12
Pb	.45400	ppb	.08058	17.748

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-008B

Acquire Date: 02-Jan-2020 3:18 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Pd	<.00000	ppb	14.638	67.636
Sb	<.00000	ppb	.87079	141.61
Se	<.00000	ppb	.53282	165.33
Si	440.21	ppb	15.52	3.5253
Sn	<.00000	ppb	.54675	988.81
Sr	60.117	ppb	7.371	12.261
Ti	<.00000	ppb	2.2088	201.53
Tl	1.7243	ppb	2.2762	132.00
V_	7.6653	ppb	5.1720	67.472
Zn	<.00000	ppb	.05318	8.2993
Zr	<.00000	ppb	1.3131	131.09

191218077-009B

Acquire Date: 02-Jan-2020 3:29 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	228880.	ppb	1,896	.82846
Ag	<.00000	ppb	1.31730	133.15
Al	<.00000	ppb	2.00	1.2783
As	3.7108	ppb	.6387	17.213
Au	.80310	ppb	.45299	56.405
B_	565.51	ppb	.07	.01312
Ba	3241.8	ppb	22.0	.67997
Be	1.0284	ppb	.0667	6.4870
Ca	18689.	ppb	141	.75204
Cd	<.00000	ppb	.00525	2.0107
Co	.46294	ppb	.00762	1.6455
Cr	5.0552	ppb	.0843	1.6671
Cu	<.00000	ppb	.70924	178.91
Fe	60.497	ppb	.212	.35039
K_	16136.	ppb	68	.41862
Li	109.09	ppb	55.18	50.585
Mg	5676.6	ppb	17.4	.30670
Mn	90.534	ppb	.020	.02213
Mo	1.2686	ppb	.2184	17.218
Na	158820.	ppb	583	.36692
Ni	.31057	ppb	.20890	67.265
Pb	<.00000	ppb	.13419	67.689
Pd	<.00000	ppb	9.758	57.613
Sb	1.0541	ppb	.6900	65.460

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-009B

Acquire Date: 02-Jan-2020 3:29 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Se	<.00000	ppb	.3806	13.607
Si	4816.0	ppb	11.9	.24696
Sn	.25765	ppb	.36447	141.46
Sr	2514.5	ppb	23.3	.92655
Ti	.65772	ppb	1.27875	194.42
Tl	.97719	ppb	.89421	91.508
V_	1.9247	ppb	1.4774	76.759
Zn	4.0194	ppb	.0613	1.5247
Zr	<.00000	ppb	.6226	52.011

191218077-009B

Acquire Date: 02-Jan-2020 3:33 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	25287.	ppb	29	.11359
Ag	.93124	ppb	4.52738	486.17
Al	<.00000	ppb	17.290	43.605
As	.38372	ppb	.90430	235.67
Au	.32185	ppb	.60559	188.16
B_	57.635	ppb	.439	.76155
Ba	327.53	ppb	.73	.22252
Be	.11677	ppb	.04302	36.846
Ca	1912.2	ppb	1.4	.07547
Cd	<.00000	ppb	.00302	29.807
Co	.01403	ppb	.00331	23.565
Cr	4.0513	ppb	10.3699	255.97
Cu	<.00000	ppb	4.13368	3,242.6
Fe	<.00000	ppb	.0180	1.2289
K_	1024.0	ppb	1.1	.10390
Li	<.00000	ppb	61.12	55.432
Mg	546.89	ppb	20.77	3.7971
Mn	9.3911	ppb	.0766	.81552
Mo	<.00000	ppb	.31662	61.792
Na	23707.	ppb	6	.02584
Ni	.14781	ppb	.06269	42.410
Pb	.55344	ppb	.34879	63.022
Pd	<.00000	ppb	.0001	.00369
Sb	<.00000	ppb	.10907	28.385
Se	<.00000	ppb	1.9783	118.65
Si	476.46	ppb	8.79	1.8447

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-009B

Acquire Date: 02-Jan-2020 3:33 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Sn	.12882	ppb	.07810	60.628
Sr	249.59	ppb	2.12	.84776
Ti	.49329	ppb	1.74381	353.50
Tl	.97712	ppb	1.05681	108.16
V_	1.3953	ppb	2.2154	158.77
Zn	<.00000	ppb	.04743	20.750
Zr	<.00000	ppb	1.55471	397.80

CCV-5

Acquire Date: 02-Jan-2020 3:39 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2044.6	ppb	2.1	.10138
Ag	515.86	ppb	4.75	.92130
Al	1959.0	ppb	29.0	1.4779
As	1943.7	ppb	11.0	.56354
Au	8.2030	ppb	.4353	5.3071
B_	2159.1	ppb	16.4	.75797
Ba	2051.5	ppb	4.9	.23823
Be	2047.8	ppb	8.8	.43105
Ca	2001.7	ppb	2.9	.14701
Cd	2054.0	ppb	16.7	.81114
Co	1965.9	ppb	15.6	.79127
Cr	1937.6	ppb	9.5	.48782
Cu	2077.7	ppb	1.1	.05120
Fe	2016.0	ppb	9.9	.48872
K_	9320.5	ppb	17.3	.18532
Li	1956.0	ppb	48.4	2.4764
Mg	1977.6	ppb	18.8	.95232
Mn	1979.0	ppb	12.2	.61689
Mo	2046.4	ppb	11.2	.54578
Na	2012.8	ppb	2.8	.13765
Ni	2026.1	ppb	14.7	.72743
Pb	2069.7	ppb	10.7	.51702
Pd	<.00000	ppb	26.613	53.701
Sb	1978.8	ppb	7.3	.36987
Se	1964.6	ppb	8.4	.42927
Si	4592.4	ppb	2.2	.04835
Sn	1960.8	ppb	8.2	.41630
Sr	2035.8	ppb	6.5	.31897

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCV-5

Acquire Date: 02-Jan-2020 3:39 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ti	<.00000	ppb	.1164	11.177
Tl	2096.3	ppb	11.8	.56168
V_	1930.7	ppb	5.5	.28488
Zn	2041.3	ppb	9.3	.45526
Zr	1.1242	ppb	2.5231	224.44

CCB-5

Acquire Date: 02-Jan-2020 3:44 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	77.965	ppb	4.533	5.8136
Ag	<.00000	ppb	1.8108	163.78
Al	<.00000	ppb	6.8703	274.08
As	<.00000	ppb	.24397	25.897
Au	<.00000	ppb	.49210	460.55
B_	1.6905	ppb	.8286	49.013
Ba	<.00000	ppb	.1959	14.051
Be	.19554	ppb	.06010	30.736
Ca	11.235	ppb	1.765	15.713
Cd	.07839	ppb	.02413	30.785
Co	.01247	ppb	.02755	220.96
Cr	4.5249	ppb	8.9474	197.74
Cu	<.00000	ppb	1.7610	161.44
Fe	<.00000	ppb	.0467	.60903
K_	5.6551	ppb	2.2968	40.614
Li	<.00000	ppb	56.516	384.73
Mg	<.00000	ppb	7.3219	679.50
Mn	.00287	ppb	.02968	1,033.8
Mo	<.00000	ppb	.45027	4,532.6
Na	58.653	ppb	3.913	6.6712
Ni	.03250	ppb	.04173	128.40
Pb	<.00000	ppb	.66981	444.38
Pd	<.00000	ppb	4.8793	119.66
Sb	<.00000	ppb	1.19761	133.36
Se	<.00000	ppb	.68469	127.31
Si	<.00000	ppb	11.4651	184.81
Sn	<.00000	ppb	.23428	97.900
Sr	<.00000	ppb	3.9484	50.503
Ti	2.3566	ppb	.8138	34.532
Tl	.22988	ppb	.48772	212.16

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCB-5

Acquire Date: 02-Jan-2020 3:44 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
V_	4.3533	ppb	2.9553	67.886
Zn	<.00000	ppb	.03332	8.5748
Zr	.63580	ppb	.38002	59.770

191218077-010B

Acquire Date: 02-Jan-2020 3:47 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	181710.	ppb	1,156	.63597
Ag	<.00000	ppb	.6592	9.3603
Al	<.00000	ppb	18.63	8.8383
As	2.4398	ppb	.1606	6.5810
Au	10.076	ppb	.246	2.4405
B_	331.59	ppb	.29	.08843
Ba	1632.9	ppb	.3	.01839
Be	.59599	ppb	.00408	.68454
Ca	30836.	ppb	5	.01723
Cd	<.00000	ppb	.11085	73.719
Co	.19561	ppb	.08376	42.820
Cr	10.115	ppb	2.049	20.258
Cu	<.00000	ppb	.6271	29.390
Fe	10859.	ppb	15	.13529
K_	16814.	ppb	6	.03729
Li	<.00000	ppb	58.07	28.757
Mg	12028.	ppb	5	.04371
Mn	336.41	ppb	.26	.07742
Mo	<.00000	ppb	.25326	45.457
Na	131980.	ppb	506	.38322
Ni	<.00000	ppb	.0459	3.1457
Pb	.61960	ppb	1.01913	164.48
Pd	<.00000	ppb	16.856	158.05
Sb	<.00000	ppb	.43522	171.34
Se	<.00000	ppb	1.8258	21.897
Si	1297.2	ppb	12.1	.92985
Sn	<.00000	ppb	.20825	51.428
Sr	3733.5	ppb	12.7	.33974
Ti	<.00000	ppb	.03890	7.0986
Tl	<.00000	ppb	.89411	222.24
V_	.18676	ppb	.98416	526.95
Zn	.64247	ppb	.03011	4.6871

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-010B

Acquire Date: 02-Jan-2020 3:47 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Zr	.00049	ppb	.24250	49,979

191218077-010B

Acquire Date: 02-Jan-2020 3:52 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	20814.	ppb	171	.81943
Ag	<.00000	ppb	.1574	8.2167
Al	<.00000	ppb	13.432	21.131
As	<.00000	ppb	.48161	477.26
Au	1.7798	ppb	.4350	24.439
B_	36.790	ppb	.556	1.5105
Ba	186.86	ppb	1.20	.63979
Be	.16152	ppb	.00315	1.9487
Ca	3611.0	ppb	1.4	.03936
Cd	<.00000	ppb	.02790	20.125
Co	.17379	ppb	.08597	49.470
Cr	9.2083	ppb	3.5008	38.017
Cu	.96559	ppb	.25302	26.204
Fe	1258.0	ppb	5.8	.46103
K_	1257.0	ppb	3.7	.29317
Li	<.00000	ppb	50.26	45.397
Mg	1320.3	ppb	5.3	.39903
Mn	38.225	ppb	.181	.47242
Mo	<.00000	ppb	.15476	24.691
Na	19825.	ppb	113	.56819
Ni	<.00000	ppb	.11694	61.010
Pb	.59217	ppb	.45607	77.017
Pd	<.00000	ppb	15.5118	329.01
Sb	<.00000	ppb	.65332	67.057
Se	<.00000	ppb	.1521	5.3353
Si	140.07	ppb	12.35	8.8204
Sn	<.00000	ppb	.39049	192.85
Sr	421.82	ppb	4.02	.95371
Ti	<.00000	ppb	.0418	4.0195
Tl	.74717	ppb	.56898	76.151
V_	6.0952	ppb	4.9216	80.746
Zn	<.00000	ppb	.01680	3.0991
Zr	<.00000	ppb	.23086	80.872

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-011B

Acquire Date: 02-Jan-2020 4:00 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	176010.	ppb	1,716	.97475
Ag	<.00000	ppb	4.5269	117.85
Al	<.00000	ppb	7.09	3.7592
As	4.5558	ppb	.1309	2.8731
Au	10.558	ppb	.019	.17937
B_	319.21	ppb	1.57	.49092
Ba	1580.8	ppb	12.0	.75610
Be	.60516	ppb	.03442	5.6872
Ca	29494.	ppb	278	.94170
Cd	<.00000	ppb	.01131	5.6119
Co	.23847	ppb	.09809	41.132
Cr	5.6192	ppb	6.6092	117.62
Cu	<.00000	ppb	2.1851	73.205
Fe	11576.	ppb	59	.51142
K_	15989.	ppb	62	.39060
Li	<.00000	ppb	46.14	24.901
Mg	11575.	ppb	90	.77479
Mn	332.19	ppb	1.42	.42847
Mo	<.00000	ppb	.13367	23.365
Na	128940.	ppb	213	.16496
Ni	<.00000	ppb	.1712	12.447
Pb	<.00000	ppb	1.02631	189.92
Pd	<.00000	ppb	6.210	49.496
Sb	<.00000	ppb	.83468	112.52
Se	<.00000	ppb	1.0651	18.164
Si	1286.3	ppb	25.0	1.9428
Sn	.01841	ppb	1.22344	6,645.4
Sr	3592.9	ppb	41.9	1.1674
Ti	<.00000	ppb	1.20138	156.59
Tl	<.00000	ppb	.16257	17.678
V_	<.00000	ppb	.24567	35.853
Zn	.52854	ppb	.00814	1.5398
Zr	<.00000	ppb	.44898	230.04

191218077-011B

Acquire Date: 02-Jan-2020 4:05 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
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Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-011B

Acquire Date: 02-Jan-2020 4:05 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	14317.	ppb	265	1.8534
Ag	<.00000	ppb	.8227	18.357
Al	<.00000	ppb	4.874	13.822
As	.61086	ppb	1.36949	224.19
Au	1.3389	ppb	.0009	.06660
B_	25.770	ppb	.579	2.2470
Ba	132.82	ppb	2.47	1.8580
Be	.35800	ppb	.00628	1.7538
Ca	2571.1	ppb	40.9	1.5904
Cd	<.00000	ppb	.03320	480.10
Co	.10521	ppb	.10359	98.461
Cr	1.9377	ppb	2.0924	107.98
Cu	<.00000	ppb	.85025	336.13
Fe	1007.3	ppb	22.7	2.2569
K_	845.14	ppb	22.76	2.6935
Li	<.00000	ppb	70.73	69.159
Mg	939.32	ppb	15.60	1.6610
Mn	28.232	ppb	.718	2.5433
Mo	<.00000	ppb	.06339	7.5397
Na	13911.	ppb	232	1.6654
Ni	<.00000	ppb	.26723	135.21
Pb	<.00000	ppb	.93461	236.96
Pd	<.00000	ppb	24.8408	282.86
Sb	<.00000	ppb	1.88716	230.02
Se	<.00000	ppb	1.90170	220.99
Si	105.88	ppb	2.71	2.5562
Sn	<.00000	ppb	.31228	60.583
Sr	308.60	ppb	10.81	3.5021
Ti	.79470	ppb	1.16253	146.29
Tl	<.00000	ppb	.89431	1,552.2
V_	3.8326	ppb	9.6041	250.59
Zn	<.00000	ppb	.04216	7.6014
Zr	<.00000	ppb	.3807	16.935

MB-F

Acquire Date: 02-Jan-2020 4:09 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	72.579	ppb	2.220	3.0587
Ag	2.5033	ppb	.8226	32.860

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

MB-F

Acquire Date: 02-Jan-2020 4:09 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Al	<.00000	ppb	8.647	61.322
As	<.00000	ppb	.3450	30.971
Au	.84406	ppb	.01877	2.2235
B_	<.00000	ppb	.01585	1.7626
Ba	<.00000	ppb	.19002	27.093
Be	.12085	ppb	.07132	59.010
Ca	12.959	ppb	2.017	15.565
Cd	<.00000	ppb	.11314	218.80
Co	.06625	ppb	.14550	219.62
Cr	3.1373	ppb	1.9626	62.556
Cu	.92868	ppb	.13112	14.119
Fe	<.00000	ppb	.2203	2.9540
K_	5.2174	ppb	3.1546	60.462
Li	1.7320	ppb	46.8694	2,706.1
Mg	5.1811	ppb	13.7253	264.91
Mn	<.00000	ppb	.00405	3.7924
Mo	<.00000	ppb	.09851	20.627
Na	44.872	ppb	5.937	13.231
Ni	.01192	ppb	.10441	876.25
Pb	<.00000	ppb	.21398	161.97
Pd	<.00000	ppb	11.973	58.733
Sb	<.00000	ppb	.14510	94.496
Se	<.00000	ppb	1.0652	60.015
Si	5.7076	ppb	22.9149	401.48
Sn	<.00000	ppb	.28636	50.172
Sr	<.00000	ppb	.792	5.7465
Ti	.76747	ppb	.11604	15.120
Tl	2.2418	ppb	1.3820	61.647
V_	2.9615	ppb	1.9698	66.514
Zn	<.00000	ppb	.00263	.57496
Zr	<.00000	ppb	1.65671	272.03

LCS-F

Acquire Date: 02-Jan-2020 4:14 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2077.5	ppb	27.5	1.3226
Ag	509.15	ppb	8.68	1.7051
Al	1989.8	ppb	17.0	.85420
As	1919.7	ppb	22.4	1.1691

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

LCS-F

Acquire Date: 02-Jan-2020 4:14 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Au	7.3998	ppb	.3972	5.3671
B_	2093.7	ppb	30.1	1.4364
Ba	2020.8	ppb	28.4	1.4035
Be	2072.7	ppb	26.2	1.2651
Ca	2073.2	ppb	16.4	.79030
Cd	1989.3	ppb	34.8	1.7498
Co	1924.6	ppb	32.9	1.7076
Cr	1945.4	ppb	26.7	1.3702
Cu	2142.4	ppb	32.1	1.4982
Fe	2041.7	ppb	21.2	1.0394
K_	9879.5	ppb	119.2	1.2068
Li	1968.4	ppb	53.5	2.7168
Mg	1919.3	ppb	15.4	.80245
Mn	1986.0	ppb	22.2	1.1169
Mo	2047.2	ppb	27.8	1.3561
Na	2053.3	ppb	19.1	.93053
Ni	1999.0	ppb	26.3	1.3148
Pb	2021.4	ppb	27.2	1.3480
Pd	<.00000	ppb	24.400	37.948
Sb	1924.7	ppb	23.9	1.2406
Se	1907.0	ppb	17.7	.92750
Si	9621.7	ppb	132.3	1.3747
Sn	1923.4	ppb	23.0	1.1984
Sr	2034.8	ppb	.7	.03372
Ti	<.00000	ppb	3.4098	254.01
Tl	1982.6	ppb	31.9	1.6091
V_	1956.2	ppb	19.1	.97690
Zn	1978.8	ppb	25.8	1.3045
Zr	.85584	ppb	.06987	8.1636

191218077-004C

Acquire Date: 02-Jan-2020 4:17 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	450210.	ppb	5,517	1.2253
Ag	<.00000	ppb	3.1283	145.26
Al	<.00000	ppb	6.42	4.4523
As	2.9545	ppb	.3640	12.318
Au	<.00000	ppb	.1323	3.9084
B_	127.18	ppb	.82	.64119

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-004C

Acquire Date: 02-Jan-2020 4:17 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ba	104.32	ppb	.83	.79136
Be	.17289	ppb	.07525	43.525
Ca	99914.	ppb	962	.96262
Cd	.01335	ppb	.05731	429.27
Co	.63289	ppb	.23913	37.784
Cr	538.74	ppb	4.62	.85664
Cu	2.4904	ppb	.8023	32.214
Fe	257.41	ppb	.04	.01605
K_	28640.	ppb	163	.57029
Li	<.00000	ppb	30.4	1.7053
Mg	18230.	ppb	136	.74644
Mn	13.436	ppb	.050	.36854
Mo	7.0749	ppb	.1837	2.5965
Na	s 230980.	ppb	2,901	1.2559
Ni	.77708	ppb	.00821	1.0571
Pb	.16027	ppb	1.20176	749.81
Pd	<.00000	ppb	8.428	54.838
Sb	6.4176	ppb	.1443	2.2482
Se	<.00000	ppb	1.5976	92.820
Si	5507.2	ppb	30.6	.55624
Sn	.58904	ppb	.10412	17.676
Sr	702.81	ppb	13.99	1.9902
Ti	.79468	ppb	.15507	19.513
Tl	2.6443	ppb	3.0894	116.83
V_	<.00000	ppb	.9857	81.442
Zn	1.7489	ppb	.0229	1.3096
Zr	<.00000	ppb	2.41962	582.58

191218077-004C

Acquire Date: 02-Jan-2020 4:22 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	7098.0	ppb	55.3	.77840
Ag	<.00000	ppb	1.48162	509.19
Al	<.00000	ppb	4.654	29.699
As	1.1027	ppb	.6360	57.678
Au	.33495	ppb	.13207	39.431
B_	.56736	ppb	.07404	13.050
Ba	<.00000	ppb	.31478	77.133
Be	.15622	ppb	.04289	27.457

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-004C

Acquire Date: 02-Jan-2020 4:22 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ca	1072.7	ppb	.7	.06305
Cd	<.00000	ppb	.03696	128.41
Co	.01559	ppb	.03637	233.33
Cr	4.8793	ppb	1.1708	23.995
Cu	<.00000	ppb	.97482	335.38
Fe	<.00000	ppb	.0128	.19217
K_	123.36	ppb	6.89	5.5868
Li	<.00000	ppb	69.329	90.776
Mg	162.45	ppb	6.71	4.1321
Mn	.02355	ppb	.00227	9.6280
Mo	<.00000	ppb	.02108	3.2353
Na	6990.8	ppb	41.9	.59940
Ni	.02075	ppb	.16706	805.00
Pb	.71599	ppb	1.09803	153.36
Pd	<.00000	ppb	8.4281	127.95
Sb	.46216	ppb	.87075	188.41
Se	<.00000	ppb	.07631	10.136
Si	44.355	ppb	10.117	22.809
Sn	<.00000	ppb	.33836	59.292
Sr	<.00000	ppb	5.0011	53.738
Ti	1.4523	ppb	1.3951	96.059
Tl	1.9543	ppb	.8130	41.600
V_	3.3093	ppb	3.9403	119.07
Zn	<.00000	ppb	.01099	2.4010
Zr	<.00000	ppb	.3801	25.926

191218077-005C

Acquire Date: 02-Jan-2020 4:25 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	255730.	ppb	259	.10117
Ag	<.00000	ppb	3.3748	289.92
Al	<.00000	ppb	8.200	8.8981
As	.43819	ppb	.77839	177.64
Au	<.00000	ppb	.05748	22.654
B_	470.56	ppb	1.56	.33100
Ba	836.73	ppb	3.67	.43864
Be	.30793	ppb	.04722	15.335
Ca	11523.	ppb	166	1.4431
Cd	<.00000	ppb	.05881	113.72

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-005C

Acquire Date: 02-Jan-2020 4:25 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Co	.09041	ppb	.05179	57.285
Cr	7.2724	ppb	3.8885	53.469
Cu	<.00000	ppb	1.03790	444.90
Fe	47.969	ppb	.211	.43949
K_	15690.	ppb	24	.14995
Li	15.223	ppb	66.949	439.80
Mg	3675.5	ppb	8.5	.23167
Mn	138.00	ppb	.23	.16548
Mo	.96022	ppb	.02092	2.1785
Na	171120.	ppb	1,265	.73952
Ni	.00035	ppb	.03760	10,594
Pb	<.00000	ppb	.29474	281.25
Pd	<.00000	ppb	7.541	24.285
Sb	.54018	ppb	.03648	6.7537
Se	<.00000	ppb	.9890	30.642
Si	6317.1	ppb	24.9	.39430
Sn	<.00000	ppb	.15606	26.492
Sr	1387.4	ppb	20.8	1.4981
Ti	.98649	ppb	.65881	66.783
Tl	.11486	ppb	.48783	424.72
V_	<.00000	ppb	3.2007	115.11
Zn	.43323	ppb	.01981	4.5716
Zr	<.00000	ppb	.00008	.03712

191218077-005C

Acquire Date: 02-Jan-2020 4:29 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	30494.	ppb	93	.30646
Ag	<.00000	ppb	1.4826	51.968
Al	<.00000	ppb	6.876	24.923
As	1.4009	ppb	.9161	65.390
Au	.26768	ppb	.37859	141.44
B_	49.138	ppb	.400	.81448
Ba	87.664	ppb	.669	.76321
Be	.07311	ppb	.04108	56.185
Ca	1242.7	ppb	4.3	.34215
Cd	<.00000	ppb	.01357	15.062
Co	.12859	ppb	.01102	8.5692
Cr	<.00000	ppb	1.0055	53.945

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-005C

Acquire Date: 02-Jan-2020 4:29 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Cu	.61087	ppb	4.25763	696.98
Fe	<.00000	ppb	.0305	1.1915
K_	1033.3	ppb	8.5	.82382
Li	<.00000	ppb	48.06	47.877
Mg	385.34	ppb	13.08	3.3956
Mn	14.788	ppb	.112	.75843
Mo	<.00000	ppb	.27437	64.888
Na	28129.	ppb	102	.36260
Ni	<.00000	ppb	.00003	.06505
Pb	.00873	ppb	1.23172	14,116
Pd	<.00000	ppb	20.407	147.85
Sb	1.2320	ppb	1.2336	100.14
Se	<.00000	ppb	1.3693	77.138
Si	670.17	ppb	1.95	.29101
Sn	<.00000	ppb	.20826	43.517
Sr	135.89	ppb	5.02	3.6924
Ti	<.00000	ppb	.58108	81.534
Tl	<.00000	ppb	.89414	91.510
V_	<.00000	ppb	5.41788	3,136.2
Zn	<.00000	ppb	.02662	4.2732
Zr	<.00000	ppb	.9665	62.740

CCV-6

Acquire Date: 02-Jan-2020 4:33 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2085.6	ppb	6.2	.29923
Ag	517.02	ppb	1.01	.19439
Al	1975.6	ppb	2.1	.10433
As	1964.4	ppb	3.3	.16835
Au	8.0155	ppb	.2461	3.0698
B_	2172.1	ppb	7.8	.35870
Ba	2049.8	ppb	4.0	.19671
Be	2059.5	ppb	5.2	.25094
Ca	2003.2	ppb	14.5	.72520
Cd	2068.7	ppb	7.4	.35887
Co	1979.9	ppb	8.9	.44963
Cr	1927.0	ppb	4.2	.21579
Cu	2078.7	ppb	7.2	.34447
Fe	2032.6	ppb	6.6	.32637

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCV-6

Acquire Date: 02-Jan-2020 4:33 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
K_	9286.2	ppb	8.9	.09572
Li	1947.6	ppb	54.6	2.8058
Mg	1958.0	ppb	12.0	.61105
Mn	1999.5	ppb	4.5	.22716
Mo	2062.8	ppb	5.3	.25681
Na	2035.4	ppb	5.3	.26069
Ni	2046.8	ppb	8.6	.41781
Pb	2092.2	ppb	5.5	.26207
Pd	<.00000	ppb	3.107	5.7251
Sb	1994.0	ppb	3.1	.15435
Se	1985.5	ppb	3.5	.17592
Si	4610.9	ppb	10.6	.23060
Sn	1984.9	ppb	5.8	.29342
Sr	2025.0	ppb	10.2	.50351
Ti	<.00000	ppb	1.0852	57.396
Tl	2111.3	ppb	4.0	.18830
V_	1939.6	ppb	.7	.03472
Zn	2061.6	ppb	7.5	.36297
Zr	<.00000	ppb	.65698	84.050

CCB-6

Acquire Date: 02-Jan-2020 4:37 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	80.690	ppb	6.013	7.4514
Ag	.17478	ppb	.49349	282.34
Al	<.00000	ppb	19.0587	282.87
As	.51390	ppb	1.20717	234.91
Au	.62951	ppb	.20768	32.991
B_	.69806	ppb	.75492	108.15
Ba	<.00000	ppb	.18989	34.904
Be	.17435	ppb	.12417	71.221
Ca	13.257	ppb	.925	6.9745
Cd	.00855	ppb	.00378	44.273
Co	.04131	ppb	.05953	144.09
Cr	<.00000	ppb	16.388	123.47
Cu	<.00000	ppb	1.34958	275.41
Fe	<.00000	ppb	.0107	.13788
K_	5.6264	ppb	.7777	13.822
Li	<.00000	ppb	58.3987	918.60

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCB-6

Acquire Date: 02-Jan-2020 4:37 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mg	<.00000	ppb	15.2564	214.31
Mn	<.00000	ppb	.03329	129.39
Mo	<.00000	ppb	.24627	183.40
Na	66.402	ppb	2.746	4.1358
Ni	<.00000	ppb	.14201	283.21
Pb	.09565	ppb	.75037	784.53
Pd	<.00000	ppb	17.743	166.37
Sb	.10290	ppb	.58056	564.19
Se	<.00000	ppb	.7610	48.792
Si	<.00000	ppb	24.961	158.58
Sn	.27610	ppb	.28636	103.71
Sr	<.00000	ppb	10.0008	124.94
Ti	.76730	ppb	.19385	25.264
Tl	.86212	ppb	.73160	84.861
V_	1.2192	ppb	3.9413	323.26
Zn	<.00000	ppb	.02792	6.9874
Zr	<.00000	ppb	.5193	39.362

191218077-005CDP

Acquire Date: 02-Jan-2020 4:41 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	254290.	ppb	3,297	1.2965
Ag	<.00000	ppb	.74342	79.982
Al	<.00000	ppb	28.986	41.490
As	1.1493	ppb	.5947	51.745
Au	.25486	ppb	.01911	7.4977
B_	464.80	ppb	.06	.01361
Ba	829.27	ppb	5.74	.69226
Be	.37053	ppb	.01877	5.0659
Ca	11236.	ppb	122	1.0847
Cd	<.00000	ppb	.05129	39.256
Co	.18160	ppb	.00001	.00359
Cr	7.4234	ppb	3.1717	42.725
Cu	<.00000	ppb	.48824	59.477
Fe	63.937	ppb	.304	.47519
K_	15562.	ppb	104	.66771
Li	27.280	ppb	26.421	96.853
Mg	3593.0	ppb	37.7	1.0490
Mn	108.47	ppb	.29	.26541

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-005CDP

Acquire Date: 02-Jan-2020 4:41 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mo	1.3334	ppb	.1267	9.5024
Na	170240.	ppb	386	.22697
Ni	2.4715	ppb	.1251	5.0604
Pb	<.00000	ppb	1.42081	151.53
Pd	<.00000	ppb	25.283	116.81
Sb	1.2328	ppb	.8714	70.687
Se	<.00000	ppb	.8370	38.902
Si	6250.2	ppb	12.6	.20124
Sn	.23926	ppb	.80705	337.31
Sr	1341.3	ppb	.9	.07052
Ti	1.1789	ppb	1.2393	105.13
Tl	2.7016	ppb	1.3819	51.152
V_	<.00000	ppb	9.84225	1,141.5
Zn	.46844	ppb	.03848	8.2147
Zr	<.00000	ppb	1.37681	334.54

191218077-005CDP

Acquire Date: 02-Jan-2020 4:45 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	29877.	ppb	83	.27654
Ag	<.00000	ppb	.3364	18.703
Al	<.00000	ppb	1.058	3.2811
As	.79647	ppb	.00050	.06246
Au	.10804	ppb	.64390	595.98
B_	47.807	ppb	.410	.85692
Ba	86.038	ppb	.126	.14681
Be	.19426	ppb	.05436	27.985
Ca	1206.9	ppb	5.0	.41122
Cd	.00162	ppb	.01508	927.76
Co	.05846	ppb	.00441	7.5501
Cr	9.7390	ppb	7.3439	75.407
Cu	.18036	ppb	1.18086	654.74
Fe	<.00000	ppb	.02096	2.4443
K_	1007.1	ppb	1.4	.14020
Li	<.00000	ppb	55.257	59.241
Mg	352.01	ppb	10.72	3.0450
Mn	11.530	ppb	.070	.60351
Mo	<.00000	ppb	.16886	30.857
Na	27612.	ppb	110	.39692

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-005CDP

Acquire Date: 02-Jan-2020 4:45 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ni	.26297	ppb	.09182	34.919
Pb	<.00000	ppb	.13372	67.179
Pd	<.00000	ppb	12.4055	328.72
Sb	<.00000	ppb	.00006	.00888
Se	<.00000	ppb	.8370	25.095
Si	654.19	ppb	.11	.01623
Sn	<.00000	ppb	.10408	20.189
Sr	131.09	ppb	12.79	9.7571
Ti	<.00000	ppb	.4680	38.037
Tl	1.6095	ppb	.9755	60.611
V_	1.0519	ppb	2.7017	256.84
Zn	<.00000	ppb	.01498	2.5415
Zr	<.00000	ppb	2.9486	126.22

191218077-005CMS

Acquire Date: 02-Jan-2020 4:48 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	252500.	ppb	2,326	.92133
Ag	45.394	ppb	.582	1.2813
Al	2185.5	ppb	23.3	1.0682
As	29.787	ppb	2.880	9.6671
Au	2.4354	ppb	.6435	26.422
B_	479.64	ppb	2.60	.54292
Ba	2901.1	ppb	35.8	1.2325
Be	56.066	ppb	.746	1.3306
Ca	11594.	ppb	181	1.5623
Cd	50.856	ppb	.005	.00988
Co	467.63	ppb	.78	.16642
Cr	253.55	ppb	8.81	3.4752
Cu	283.93	ppb	5.48	1.9308
Fe	1106.8	ppb	4.8	.43458
K_	15751.	ppb	140	.89156
Li	13.210	ppb	56.042	424.25
Mg	3688.4	ppb	33.5	.90691
Mn	624.39	ppb	4.02	.64308
Mo	1.8704	ppb	.1266	6.7696
Na	169880.	ppb	355	.20898
Ni	504.45	ppb	1.75	.34643
Pb	19.425	ppb	.055	.28250

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-005CMS

Acquire Date: 02-Jan-2020 4:48 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Pd	<.00000	ppb	23.067	73.543
Sb	492.80	ppb	1.71	.34652
Se	9.5751	ppb	1.4454	15.095
Si	6406.8	ppb	65.0	1.0139
Sn	<.00000	ppb	.26031	70.713
Sr	1381.6	ppb	23.1	1.6713
Ti	.13728	ppb	.15473	112.72
Tl	40.520	ppb	.894	2.2071
V_	507.38	ppb	2.04	.40155
Zn	528.55	ppb	1.78	.33748
Zr	<.00000	ppb	1.07275	115.71

191218077-005CA

Acquire Date: 02-Jan-2020 4:52 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	252460.	ppb	483	.19133
Ag	108.09	ppb	.17	.15402
Al	4612.0	ppb	25.4	.55086
As	60.988	ppb	.577	.94611
Au	5.1384	ppb	.8327	16.205
B_	472.83	ppb	1.63	.34495
Ba	5082.1	ppb	39.8	.78271
Be	115.97	ppb	.92	.79361
Ca	11391.	ppb	100	.87499
Cd	105.17	ppb	.58	.55146
Co	959.98	ppb	4.34	.45208
Cr	483.25	ppb	2.60	.53831
Cu	595.29	ppb	5.98	1.0043
Fe	2049.8	ppb	9.8	.48027
K_	15655.	ppb	98	.62698
Li	50.281	ppb	49.162	97.774
Mg	3639.9	ppb	13.1	.35864
Mn	1125.2	ppb	4.5	.40153
Mo	2.4027	ppb	.0352	1.4641
Na	169490.	ppb	347	.20472
Ni	992.78	ppb	6.85	.69018
Pb	39.689	ppb	.240	.60398
Pd	<.00000	ppb	4.880	17.882
Sb	1007.8	ppb	6.4	.63736

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-005CA

Acquire Date: 02-Jan-2020 4:52 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Se	22.754	ppb	.152	.66857
Si	6356.2	ppb	45.1	.70916
Sn	<.00000	ppb	.20824	40.406
Sr	1363.8	ppb	20.0	1.4651
Ti	.49323	ppb	.65883	133.57
Tl	86.787	ppb	2.276	2.6225
V_	1063.1	ppb	9.3	.87827
Zn	1074.8	ppb	6.3	.58657
Zr	<.00000	ppb	.41490	188.63

191218077-005CL

Acquire Date: 02-Jan-2020 4:56 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	59678.	ppb	21	.03547
Ag	1.6879	ppb	3.2927	195.08
Al	<.00000	ppb	.001	.00291
As	.65384	ppb	1.19035	182.05
Au	.40278	ppb	.34056	84.554
B_	95.436	ppb	.652	.68326
Ba	171.48	ppb	.63	.36801
Be	.20179	ppb	.01722	8.5334
Ca	2386.5	ppb	5.9	.24841
Cd	<.00000	ppb	.02791	113.89
Co	.03898	ppb	.15103	387.45
Cr	1.3011	ppb	.6269	48.185
Cu	2.8288	ppb	4.6699	165.08
Fe	4.0865	ppb	.1374	3.3615
K_	2277.4	ppb	8.1	.35656
Li	<.00000	ppb	55.901	72.696
Mg	712.59	ppb	17.10	2.3994
Mn	33.753	ppb	.171	.50792
Mo	<.00000	ppb	.17592	95.602
Na	52174.	ppb	275	.52633
Ni	<.00000	ppb	.11692	158.70
Pb	<.00000	ppb	.50850	242.84
Pd	<.00000	ppb	1.775	10.103
Sb	.05195	ppb	1.01633	1,956.4
Se	<.00000	ppb	.6087	22.190
Si	1305.9	ppb	4.0	.30809

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191218077-005CL

Acquire Date: 02-Jan-2020 4:56 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Sn	<.00000	ppb	.13017	54.366
Sr	282.54	ppb	18.16	6.4264
Ti	<.00000	ppb	.27123	54.986
Tl	1.3221	ppb	.2439	18.447
V_	4.3543	ppb	4.4326	101.80
Zn	.25922	ppb	.09877	38.105
Zr	.31757	ppb	.41488	130.64

CRI-2

Acquire Date: 02-Jan-2020 5:09 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	109.35	ppb	10.26	9.3820
Ag	20.372	ppb	3.375	16.566
Al	5.1718	ppb	18.6180	359.99
As	17.688	ppb	.875	4.9453
Au	.77672	ppb	.15143	19.497
B_	<.00000	ppb	.14778	21.293
Ba	<.00000	ppb	1.0535	59.349
Be	10.429	ppb	.124	1.1912
Ca	22.828	ppb	7.566	33.145
Cd	10.657	ppb	.003	.02867
Co	99.564	ppb	.287	.28819
Cr	17.947	ppb	3.011	16.776
Cu	49.195	ppb	.992	2.0159
Fe	<.00000	ppb	.1257	1.5990
K_	12.241	ppb	.944	7.7109
Li	<.00000	ppb	51.310	352.23
Mg	<.00000	ppb	16.781	111.12
Mn	30.395	ppb	.144	.47527
Mo	<.00000	ppb	.09146	15.195
Na	80.491	ppb	1.306	1.6224
Ni	83.195	ppb	.464	.55753
Pb	6.1948	ppb	.2683	4.3313
Pd	<.00000	ppb	19.0747	264.40
Sb	124.18	ppb	1.05	.84808
Se	8.3930	ppb	.5325	6.3450
Si	<.00000	ppb	9.444	38.082
Sn	.01837	ppb	.49463	2,692.0
Sr	<.00000	ppb	5.001	39.515

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CRI-2

Acquire Date: 02-Jan-2020 5:09 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ti	1.0687	ppb	.1550	14.504
Tl	20.118	ppb	1.138	5.6572
V_	98.383	ppb	5.417	5.5064
Zn	45.359	ppb	.271	.59710
Zr	<.00000	ppb	.44912	183.59

ICSA-2

Acquire Date: 02-Jan-2020 5:13 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	291.59	ppb	10.19	3.4961
Ag	<.00000	ppb	.336	.63739
Al	503770.	ppb	514	.10201
As	<.00000	ppb	.711	1.0327
Au	131.22	ppb	.83	.62968
B_	<.00000	ppb	3.08	1.5666
Ba	<.00000	ppb	.07188	14.982
Be	2.9297	ppb	.0701	2.3929
Ca	427260.	ppb	1,733	.40552
Cd	<.00000	ppb	.00984	1.1348
Co	.11848	ppb	.01432	12.090
Cr	<.00000	ppb	14.0252	222.59
Cu	<.00000	ppb	2.938	8.6534
Fe	129790.	ppb	396	.30530
K_	5.1016	ppb	2.8323	55.517
Li	<.00000	ppb	116.2	5.4514
Mg	527050.	ppb	632	.11985
Mn	<.00000	ppb	.1431	1.9274
Mo	<.00000	ppb	.1827	3.6361
Na	269.82	ppb	12.44	4.6112
Ni	<.00000	ppb	.162	.86712
Pb	<.00000	ppb	1.292	1.5980
Pd	<.00000	ppb	20.399	59.131
Sb	<.00000	ppb	.3565	7.3953
Se	<.00000	ppb	3.580	4.6987
Si	<.00000	ppb	4.7297	327.55
Sn	.25765	ppb	.67694	262.73
Sr	<.00000	ppb	15.7889	166.27
Ti	<.00000	ppb	.893	5.6208
Tl	<.00000	ppb	1.871	10.266

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

ICSA-2

Acquire Date: 02-Jan-2020 5:13 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
V_	<.00000	ppb	2.679	8.7067
Zn	<.00000	ppb	.0428	.49418
Zr	<.00000	ppb	1.0004	26.952

ICSAB-2

Acquire Date: 02-Jan-2020 5:18 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	207.88	ppb	10.16	4.8891
Ag	1047.1	ppb	12.1	1.1540
Al	488180.	ppb	2,180	.44655
As	<.00000	ppb	1.903	2.7135
Au	133.23	ppb	.38	.28359
B_	<.00000	ppb	1.41	.71704
Ba	498.89	ppb	3.02	.60464
Be	498.21	ppb	2.92	.58625
Ca	418250.	ppb	2,604	.62258
Cd	946.20	ppb	1.98	.20924
Co	488.96	ppb	.05	.00927
Cr	565.56	ppb	1.31	.23168
Cu	543.71	ppb	2.17	.39999
Fe	126420.	ppb	252	.19954
K_	7.2215	ppb	1.4782	20.469
Li	<.00000	ppb	149.8	7.6208
Mg	509750.	ppb	3,194	.62660
Mn	475.69	ppb	.95	.19883
Mo	<.00000	ppb	.5487	15.895
Na	204.51	ppb	6.02	2.9432
Ni	937.75	ppb	4.10	.43732
Pb	896.12	ppb	2.48	.27627
Pd	<.00000	ppb	6.212	15.972
Sb	<.00000	ppb	.55369	75.978
Se	<.00000	ppb	1.902	2.5765
Si	<.00000	ppb	10.1220	235.65
Sn	.03682	ppb	.57267	1,555.4
Sr	<.00000	ppb	2.1042	75.339
Ti	<.00000	ppb	.076	.47301
Tl	<.00000	ppb	3.170	15.363
V_	437.14	ppb	12.16	2.7829
Zn	900.45	ppb	1.49	.16556

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

ICSAB-2

Acquire Date: 02-Jan-2020 5:18 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Zr	<.00000	ppb	.4847	14.695

CCV-7

Acquire Date: 02-Jan-2020 5:22 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2027.9	ppb	4.0	.19486
Ag	514.75	ppb	2.75	.53435
Al	1967.1	ppb	5.8	.29315
As	1937.5	ppb	3.5	.18089
Au	8.3901	ppb	.6245	7.4434
B_	2154.9	ppb	7.8	.36007
Ba	2043.7	ppb	14.7	.71705
Be	2046.6	ppb	15.0	.73476
Ca	1988.4	ppb	10.0	.50051
Cd	2047.1	ppb	5.7	.28014
Co	1945.3	ppb	7.0	.35959
Cr	1926.5	ppb	14.6	.75621
Cu	2078.8	ppb	18.2	.87626
Fe	2026.2	ppb	3.2	.15840
K_	9276.2	ppb	46.3	.49957
Li	1941.1	ppb	64.1	3.3008
Mg	1952.0	ppb	5.9	.30404
Mn	1990.8	ppb	3.8	.18947
Mo	2048.7	ppb	4.9	.23847
Na	1981.6	ppb	6.6	.33441
Ni	2016.1	ppb	7.7	.38069
Pb	2068.0	ppb	9.3	.44813
Pd	<.00000	ppb	.437	1.1504
Sb	1985.0	ppb	6.5	.32909
Se	1963.4	ppb	5.5	.27901
Si	4564.2	ppb	34.1	.74737
Sn	1967.0	ppb	6.2	.31763
Sr	2015.5	ppb	16.5	.81979
Ti	<.00000	ppb	.0008	.05039
Tl	2094.5	ppb	5.5	.26393
V_	1932.3	ppb	10.8	.55804
Zn	2039.9	ppb	6.0	.29468
Zr	<.00000	ppb	3.07273	485.04

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCB-7

Acquire Date: 02-Jan-2020 5:28 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	82.598	ppb	7.605	9.2072
Ag	<.00000	ppb	1.9759	59.556
Al	<.00000	ppb	10.1961	722.75
As	.47621	ppb	.19157	40.228
Au	.20137	ppb	.43618	216.61
B_	<.00000	ppb	.02660	15.854
Ba	<.00000	ppb	.11469	38.879
Be	.10316	ppb	.07923	76.803
Ca	16.883	ppb	5.717	33.863
Cd	.01654	ppb	.06333	382.81
Co	<.00000	ppb	.06391	55.788
Cr	.32580	ppb	.16655	51.121
Cu	<.00000	ppb	.64594	6,073.5
Fe	<.00000	ppb	.0881	1.1996
K_	5.9172	ppb	1.5187	25.666
Li	9.8259	ppb	47.1382	479.73
Mg	<.00000	ppb	16.473	45.182
Mn	<.00000	ppb	.01166	34.298
Mo	<.00000	ppb	.07037	24.390
Na	60.787	ppb	2.402	3.9520
Ni	<.00000	ppb	.07107	200.87
Pb	.05837	ppb	1.28635	2,203.8
Pd	<.00000	ppb	1.774	9.1212
Sb	.46219	ppb	1.08918	235.66
Se	<.00000	ppb	.9895	61.324
Si	<.00000	ppb	3.370	19.095
Sn	<.00000	ppb	.28626	91.467
Sr	<.00000	ppb	3.685	19.605
Ti	.98648	ppb	.03871	3.9238
Tl	<.00000	ppb	2.19502	1,271.0
V_	3.6567	ppb	1.4780	40.419
Zn	<.00000	ppb	.03919	7.4754
Zr	<.00000	ppb	.38063	111.25

Color Legend: Pass/Unchecked Internal Standard Check Fail Check Warn

Adirondack Environmental Services, Inc

PREP BATCH REPORT

Prep Start Date: **12/20/2019 9:26:29**
 Prep End Date: **12/20/2019 11:26:00**

Comments: Temp:95 Start Time:926 End Time:1126

Page:1 of 2

Prep Factor Units:
 mL / mL

Prep Batch **77260** Prep Code: **HG_PREP** Technician: **Ashlyn VanBuren**

Sample ID	Matrix	pH	ResCl	SampAmt	Sol Added	Fin Vol	factor	PrepStart	PrepEnd	ExPos	TareWt	CleanUp
191218077-001A	Water			50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-002ADP	Water			50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-002AMS	Water			50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-003A	Water			50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-004B	Water			50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-005B	Water			50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-006B	Water			50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-007B	Water			50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-008B	Water			50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-009B	Water			50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-010B	Water			50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-011B	Water			50	0	50	1.000	12/20/2019	12/20/2019		0	
MB-77260				50	0	50	1.000	12/20/2019	12/20/2019		0	
LCS-77260				50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-002A	Water			50	0	50	1.000	12/20/2019	12/20/2019		0	

Prep Start Date: **12/20/2019 9:26:29**

Prep End Date: **12/20/2019 11:26:00**

Comments: Temp:95 Start Time:926 End Time:1126

Page:2 of 2

Prep Factor Units:

mL / mL

Prep Batch **77260** Prep Code: **HG_PREP** Technician: **Ashlyn VanBuren**

Sample ID	Matrix	pH	ResCl	SampAmt	Sol Added	Fin Vol	factor	PrepStart	PrepEnd	ExPos	TareWt	CleanUp
Number	Reagent Name				Solution ID	Solution Name		SampType	AmtAdd	units		
5803	Sulfuric Acid				MR-HYDROXYL	Hydroxylamine, 12%				3 ml		
6052	Nitric Acid				MR-KMNO4 5%-	Potassium Permanganate				7.5 ml		
6043	Hot Block Digestion Vessels - 100m				MR-POTASSIUM	Potassium Persulfate, 5%				4 ml		
					MSP-HG 0.1 PP	0.1 PPM Hg				1 ml		

Adirondack Environmental Services, Inc

PREP BATCH REPORT

Prep Start Date: **12/24/2019 8:03:33**
 Prep End Date: **12/24/2019 10:03:00**

Comments: Temp:95 Start Time:803 End Time:1003

Page:1 of 1

Prep Factor Units:
mL / ml

Prep Batch **77262** Prep Code: **HG_PREP_D** Technician: **Ashlyn VanBuren**

Sample ID	Matrix	pH	ResCl	SampAmt	Sol Added	Fin Vol	factor	PrepStart	PrepEnd	ExPos	TareWt	CleanUp
191218077-005C	Water			50	0	50	1.000	12/24/2019	12/24/2019		0	
191218077-004C	Water			50	0	50	1.000	12/24/2019	12/24/2019		0	
191218077-004CDP	Water			50	0	50	1.000	12/24/2019	12/24/2019		0	
191218077-004CMS	Water			50	0	50	1.000	12/24/2019	12/24/2019		0	
MB-77262				50	0	50	1.000	12/24/2019	12/24/2019		0	
LCS-77262				50	0	50	1.000	12/24/2019	12/24/2019		0	

Number	Reagent Name	Solution ID	Solution Name	SampType	AmtAdd	units
5803	Sulfuric Acid	MR-HYDROXYL	Hydroxylamine, 12%		3	ml
6052	Nitric Acid	MR-KMNO4 5%-	Potassium Permanganate		7.5	ml
6043	Hot Block Digestion Vessels - 100m	MR-POTASSIUM	Potassium Persulfate, 5%		4	ml
6040	M-Flipmate 100, 0.45um filter	MSP-HG 0.1 PP	0.1 PPM Hg		1	ml

Adirondack Environmental Services, Inc

PREP BATCH REPORT

Prep Start Date: **12/20/2019 9:26:38**
 Prep End Date: **12/20/2019 10:45:00**

Comments: Temp:95 Start Time:926 End Time:1045

Page:1 of 2

Prep Factor Units:
 mL / mL

Prep Batch **77263** Prep Code: **3010CLP** Technician: **Ashlyn VanBuren**

Sample ID	Matrix	pH	ResCl	SampAmt	Sol Added	Fin Vol	factor	PrepStart	PrepEnd	ExPos	TareWt	CleanUp
191218077-004B	Water	1		50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-005B	Water	1		50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-006B	Water	1		50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-007B	Water	1		50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-008B	Water	1		50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-009B	Water	1		50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-010B	Water	1		50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-011B	Water	1		50	0	50	1.000	12/20/2019	12/20/2019		0	
MB-77263				50	0	50	1.000	12/20/2019	12/20/2019		0	
LCS-77263				50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-001A	Water	1		50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-002A	Water	1		50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-002ADP	Water	1		50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-002AMS	Water	1		50	0	50	1.000	12/20/2019	12/20/2019		0	
191218077-003A	Water	1		50	0	50	1.000	12/20/2019	12/20/2019		0	

Prep Start Date: **12/20/2019 9:26:38**

Prep End Date: **12/20/2019 10:45:00**

Comments: Temp:95 Start Time:926 End Time:1045

Page:2 of 2

Prep Factor Units:

mL / mL

Prep Batch **77263**

Prep Code: **3010CLP**

Technician: **Ashlyn VanBuren**

Sample ID Matrix pH ResCl SampAmt Sol Added Fin Vol factor PrepStart PrepEnd ExPos TareWt CleanUp

Number	Reagent Name	Solution ID	Solution Name	SampType	AmtAdd	units
6052	Nitric Acid	5794	M-ICP-SSWS-M		0.5	ml
6042	Hot Block Digestion Vessels - 50mL	MWS-200.7-6-87	200.7-6		50	ml
5945	Hydrochoric Acid					

Adirondack Environmental Services, Inc

PREP BATCH REPORT

Prep Start Date: **12/20/2019 9:32:57**
 Prep End Date: **12/20/2019 10:32:00**

Comments: Temp:95 Start Time:932 End Time:1032

Page:1 of 1

Prep Factor Units:
 mL / mL

Prep Batch **77264** Prep Code: **3005CLP** Technician: **Ashlyn VanBuren**

Sample ID	Matrix	pH	ResCl	SampAmt	Sol Added	Fin Vol	factor	PrepStart	PrepEnd	ExPos	TareWt	CleanUp
191218077-004C	Water	7		50	0	50	1.000	12/20/2019	12/20/2019		0	filtered
191218077-005C	Water	7		50	0	50	1.000	12/20/2019	12/20/2019		0	filtered
191218077-005CDP	Water	7		50	0	50	1.000	12/20/2019	12/20/2019		0	filtered
191218077-005CMS	Water	7		50	0	50	1.000	12/20/2019	12/20/2019		0	filtered
MB-77264				50	0	50	1.000	12/20/2019	12/20/2019		0	
LCS-77264				50	0	50	1.000	12/20/2019	12/20/2019		0	

Number	Reagent Name	Solution ID	Solution Name	SampType	AmtAdd	units
6052	Nitric Acid	5794	M-ICP-SSWS-M		0.5	ml
6042	Hot Block Digestion Vessels - 50mL	MWS-200.7-6-87	200.7-6		50	ml
5945	Hydrochoric Acid					
6038	M-Flipmate 50, 0.45um filter					

Adirondack Environmental Services, Inc**Date:** 03-Jan-20**CLIENT:** Arcadis**Work Order:** 191218077**Reference:** Watervliet Arsenal /**PO#:****Client Sample ID:** WVA-AW-35-MW-38-2019121**Collection Date:** 12/18/2019 12:45:00 PM**Lab Sample ID:** 191218077-001**Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	12/18/2019 2:40:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 03-Jan-20**CLIENT:** Arcadis**Client Sample ID:** WVA-AW-35-10-20191218**Work Order:** 191218077**Collection Date:** 12/18/2109 2:05:00 PM**Reference:** Watervliet Arsenal /**Lab Sample ID:** 191218077-002**PO#:****Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02	N	mg/L	1	12/18/2019 2:40:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 03-Jan-20**CLIENT:** Arcadis**Client Sample ID:** 93-EM-SP-11-20191218**Work Order:** 191218077**Collection Date:** 12/18/2019 2:40:00 PM**Reference:** Watervliet Arsenal /**Lab Sample ID:** 191218077-003**PO#:****Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	12/18/2019 2:40:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 03-Jan-20**CLIENT:** Arcadis**Client Sample ID:** WVA-AW-35-MW-12-2019121**Work Order:** 191218077**Collection Date:** 12/19/2019 8:00:00 AM**Reference:** Watervliet Arsenal /**Lab Sample ID:** 191218077-004**PO#:****Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	0.40	0.02		mg/L	1	12/19/2019 5:40:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 03-Jan-20**CLIENT:** Arcadis**Client Sample ID:** 120 Pit-20191219**Work Order:** 191218077**Collection Date:** 12/19/2019 9:17:00 AM**Reference:** Watervliet Arsenal /**Lab Sample ID:** 191218077-005**PO#:****Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	12/19/2019 5:40:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 03-Jan-20**CLIENT:** Arcadis**Client Sample ID:** Commercial Pit-20191219**Work Order:** 191218077**Collection Date:** 12/19/2019 9:41:00 AM**Reference:** Watervliet Arsenal /**Lab Sample ID:** 191218077-006**PO#:****Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	1.2	0.20		mg/L	10	12/19/2019 5:40:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 03-Jan-20**CLIENT:** Arcadis**Client Sample ID:** NMT Pit-20191219**Work Order:** 191218077**Collection Date:** 12/19/2019 9:57:00 AM**Reference:** Watervliet Arsenal /**Lab Sample ID:** 191218077-007**PO#:****Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	260	20		mg/L	1000	12/19/2019 5:40:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 03-Jan-20**CLIENT:** Arcadis**Work Order:** 191218077**Reference:** Watervliet Arsenal /**PO#:****Client Sample ID:** Excav. Sump-20191219**Collection Date:** 12/19/2019 11:14:00 AM**Lab Sample ID:** 191218077-008**Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	12/19/2019 5:40:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 03-Jan-20**CLIENT:** Arcadis**Work Order:** 191218077**Reference:** Watervliet Arsenal /**PO#:****Client Sample ID:** WVA-AW-35-MW-5-20191219**Collection Date:** 12/19/2019 2:05:00 PM**Lab Sample ID:** 191218077-009**Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	12/19/2019 5:40:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 03-Jan-20**CLIENT:** Arcadis**Work Order:** 191218077**Reference:** Watervliet Arsenal /**PO#:****Client Sample ID:** WVA-AW-35-MW-11-2019121**Collection Date:** 12/19/2019 2:35:00 PM**Lab Sample ID:** 191218077-010**Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	12/19/2019 5:40:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 03-Jan-20**CLIENT:** Arcadis**Client Sample ID:** Duplicate-01-20191219**Work Order:** 191218077**Collection Date:** 12/19/2019 2:05:00 PM**Reference:** Watervliet Arsenal /**Lab Sample ID:** 191218077-011**PO#:****Matrix:** WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	12/19/2019 5:40:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

CLIENT: Arcadis
 Work Order: 191218077
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: R178384

MBLK	SeqNo: 2759753	TestNo: SM3500-Cr D	RunNo: 178384
	Samp ID: MB-R178384	Units: mg/L	Analysis Date: 12/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	0.020									

LCS	SeqNo: 2759754	TestNo: SM3500-Cr D	RunNo: 178384
	Samp ID: LCS-R178384	Units: mg/L	Analysis Date: 12/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.192	0.020	0.2	0	96	91.7	108	0	0		

MS	SeqNo: 2759759	TestNo: SM3500-Cr D	RunNo: 178384
	Samp ID: 191218028-003	Units: mg/L	Analysis Date: 12/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.189	0.020	0.2	0	94.5	75	125	0	0		

MS	SeqNo: 2760059	TestNo: SM3500-Cr D	RunNo: 178384
	Samp ID: 191218077-002 (WVA-AW-35-10-2)	Units: mg/L	Analysis Date: 12/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.146	0.020	0.2	0	73	75	125	0	0		S

MSD	SeqNo: 2759760	TestNo: SM3500-Cr D	RunNo: 178384
	Samp ID: 191218028-003	Units: mg/L	Analysis Date: 12/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.195	0.020	0.2	0	97.5	75	125	0.189	3.12	14.5	

MSD	SeqNo: 2760060	TestNo: SM3500-Cr D	RunNo: 178384
	Samp ID: 191218077-002 (WVA-AW-35-10-2)	Units: mg/L	Analysis Date: 12/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.147	0.020	0.2	0	73.5	75	125	0.146	0.683	14.5	S

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: R178384

CCB	SeqNo: 2759763	TestNo: SM3500-Cr D	RunNo: 178384
	Samp ID: CCB	Units: mg/L	Analysis Date: 12/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.020	0	0	0	0	0	0	0		

CCB	SeqNo: 2760063	TestNo: SM3500-Cr D	RunNo: 178384
	Samp ID: CCB	Units: mg/L	Analysis Date: 12/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.020	0	0	0	0	0	0	0		

CCV	SeqNo: 2759762	TestNo: SM3500-Cr D	RunNo: 178384
	Samp ID: CCV	Units: mg/L	Analysis Date: 12/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.194	0.020	0.2	0	97	90	110	0	0		

CCV	SeqNo: 2760062	TestNo: SM3500-Cr D	RunNo: 178384
	Samp ID: CCV	Units: mg/L	Analysis Date: 12/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.188	0.020	0.2	0	94	90	110	0	0		

CRI	SeqNo: 2759755	TestNo: SM3500-Cr D	RunNo: 178384
	Samp ID: CRI	Units: mg/L	Analysis Date: 12/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.019	0.020	0.02	0	95	50	150	0	0		

ICB	SeqNo: 2759751	TestNo: SM3500-Cr D	RunNo: 178384
	Samp ID: ICB	Units: mg/L	Analysis Date: 12/18/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.020	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: R178384

ICV	SeqNo: 2759752	TestNo: SM3500-Cr D	RunNo: 178384
	Samp ID: ICV	Units: mg/L	Analysis Date: 12/18/2019

<u>Analyte</u>	<u>Result</u>	<u>PQL</u>	<u>SPK value</u>	<u>SPK Ref Val</u>	<u>%REC</u>	<u>LowLimit</u>	<u>HighLimit</u>	<u>RPD Ref Val</u>	<u>%RPD</u>	<u>RPDLimit</u>	<u>Qual</u>
Chromium, Hexavalent	0.192	0.020	0.2	0	96	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: R178412

MBLK	SeqNo: 2760354	TestNo: SM3500-Cr D	RunNo: 178412
	Samp ID: MB-R178412	Units: mg/L	Analysis Date: 12/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	0.020									

LCS	SeqNo: 2760355	TestNo: SM3500-Cr D	RunNo: 178412
	Samp ID: LCS-R178412	Units: mg/L	Analysis Date: 12/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.193	0.020	0.2	0	96.5	91.7	108	0	0		

MS	SeqNo: 2760362	TestNo: SM3500-Cr D	RunNo: 178412
	Samp ID: 191219003-006	Units: mg/L	Analysis Date: 12/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.197	0.020	0.2	0	98.5	75	125	0	0		

MSD	SeqNo: 2760363	TestNo: SM3500-Cr D	RunNo: 178412
	Samp ID: 191219003-006	Units: mg/L	Analysis Date: 12/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.195	0.020	0.2	0	97.5	75	125	0.197	1.02	14.5	

CCB	SeqNo: 2760365	TestNo: SM3500-Cr D	RunNo: 178412
	Samp ID: CCB	Units: mg/L	Analysis Date: 12/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.020	0	0	0	0	0	0	0		

CCB	SeqNo: 2760788	TestNo: SM3500-Cr D	RunNo: 178412
	Samp ID: CCB	Units: mg/L	Analysis Date: 12/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.020	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191218077
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: R178412

CCB	SeqNo: 2760900	TestNo: SM3500-Cr D	RunNo: 178412
	Samp ID: CCB	Units: mg/L	Analysis Date: 12/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.020	0	0	0	0	0	0	0		

CCV	SeqNo: 2760364	TestNo: SM3500-Cr D	RunNo: 178412
	Samp ID: CCV	Units: mg/L	Analysis Date: 12/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.192	0.020	0.2	0	96	90	110	0	0		

CCV	SeqNo: 2760787	TestNo: SM3500-Cr D	RunNo: 178412
	Samp ID: CCV	Units: mg/L	Analysis Date: 12/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.183	0.020	0.2	0	91.5	90	110	0	0		

CCV	SeqNo: 2760899	TestNo: SM3500-Cr D	RunNo: 178412
	Samp ID: CCV	Units: mg/L	Analysis Date: 12/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.186	0.020	0.2	0	93	90	110	0	0		

ICB	SeqNo: 2760352	TestNo: SM3500-Cr D	RunNo: 178412
	Samp ID: ICB	Units: mg/L	Analysis Date: 12/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.020	0	0	0	0	0	0	0		

ICV	SeqNo: 2760353	TestNo: SM3500-Cr D	RunNo: 178412
	Samp ID: ICV	Units: mg/L	Analysis Date: 12/19/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.191	0.020	0.2	0	95.5	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

WorkSheet Report

Date: 1/2/2020

RunID: GEN10S_191218B

Run Start Date: 12/18/2019

Analyst: Darnell Avent

Comments:

SeqNo	SampID	SmpType Analyte		Units	Smp Vol(mL)		Smp Abs	Smp Rslt (mg/L)			%Recovery		
								Smp Blk Abs	Blk Rslt (mg/L)	FinalVal	Qual	RPD(dups)	
2759751	ICB	ICB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004		0.00%	0.00%
2759752	ICV	ICV	Chromium, Hexavalent	mg/L	50	0	0.162	0	0.192	0.19		96.00%	0.00%
2759753	MB-R178384	MBLK	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	0		0.00%	0.00%
2759754	LCS-R178384	LCS	Chromium, Hexavalent	mg/L	50	0	0.162	0	0.192	0.19		96.00%	0.00%
2759755	CRI	CRI	Chromium, Hexavalent	mg/L	50	0	0.019	0	0.019	0.019		95.00%	0.00%
2759756	191218028-001A	SAMP	Chromium, Hexavalent	mg/L	50	0	0.003	0	0	0		0.00%	0.00%
2759757	191218028-002A	SAMP	Chromium, Hexavalent	mg/L	50	0	0.003	0	0	0		0.00%	0.00%
2759758	191218028-003A	SAMP	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	0		0.00%	0.00%
2759759	191218028-003AMS	MS	Chromium, Hexavalent	mg/L	50	0	0.16	0	0.189	0.19		94.50%	0.00%
2759760	191218028-003AMSD	MSD	Chromium, Hexavalent	mg/L	50	0	0.165	0	0.195	0.2		97.50%	3.13%
2759761	191218028-004A	SAMP	Chromium, Hexavalent	mg/L	50	0	0.003	0	0	0		0.00%	0.00%
2759762	CCV	CCV	Chromium, Hexavalent	mg/L	50	0	0.164	0	0.194	0.19		97.00%	0.00%
2759763	CCB	CCB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004		0.00%	0.00%
2760056	191218061-001B	SAMP	Chromium, Hexavalent	mg/L	50	0	0.012	0	0.011	0.011	J	0.00%	0.00%

WorkSheet Report

Date: 1/2/2020

RunID: GEN10S_191218B

Run Start Date: 12/18/2019

Analyst: Darnell Avent

Comments:

SeqNo	SampleID	SmpType	Analyte	Units	Smp Vol(mL)		Smp Abs		Smp Rslt (mg/L)		%Recovery	
						Smp Blk Abs		Blk Rslt (mg/L)	FinalVal		Qual	RPD(dups)
2760057	191218077-001B	SAMP	Chromium, Hexavalent	mg/L	50	0	-0.001	0	-0.005	0		0.00% 0.00%
2760058	191218077-002B	SAMP	Chromium, Hexavalent	mg/L	50	0	-0.003	0	-0.007	0	N	0.00% 0.00%
2760059	191218077-002BMS	MS	Chromium, Hexavalent	mg/L	50	0	0.124	0	0.146	0.15	S	73.00% 0.00%
2760060	191218077-002BMDS	MSD	Chromium, Hexavalent	mg/L	50	0	0.125	0	0.147	0.15	S	73.50% 0.68%
2760061	191218077-003B	SAMP	Chromium, Hexavalent	mg/L	50	0	0.003	0	0	0		0.00% 0.00%
2760062	CCV	CCV	Chromium, Hexavalent	mg/L	50	0	0.159	0	0.188	0.19		94.00% 0.00%
2760063	CCB	CCB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004		0.00% 0.00%

WorkSheet Report

Date: 1/2/2020

RunID: GEN10S_191219A

Run Start Date: 12/19/2019

Analyst: Darnell Avent

Comments:

SeqNo	SampleID	SmpType	Analyte	Units	Smp Vol(mL)		Smp Abs		Smp Rslt (mg/L)		%Recovery	
						Smp Blk Abs		Blk Rslt (mg/L)	FinalVal		Qual	RPD(dups)
2760352	ICB	ICB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004	0.00%	0.00%
2760353	ICV	ICV	Chromium, Hexavalent	mg/L	50	0	0.161	0	0.191	0.19	95.50%	0.00%
2760354	MB-R178412	MBLK	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	0	0.00%	0.00%
2760355	LCS-R178412	LCS	Chromium, Hexavalent	mg/L	50	0	0.163	0	0.193	0.19	96.50%	0.00%
2760356	191219003-001A	SAMP	Chromium, Hexavalent	mg/L	50	0	0.001	0	-0.002	0	0.00%	0.00%
2760357	191219003-002A	SAMP	Chromium, Hexavalent	mg/L	50	0	0.001	0	-0.002	0	0.00%	0.00%
2760358	191219003-003A	SAMP	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	0	0.00%	0.00%
2760359	191219003-004A	SAMP	Chromium, Hexavalent	mg/L	50	0	0.001	0	-0.002	0	0.00%	0.00%
2760360	191219003-005A	SAMP	Chromium, Hexavalent	mg/L	50	0	0.001	0	-0.002	0	0.00%	0.00%
2760361	191219003-006A	SAMP	Chromium, Hexavalent	mg/L	50	0	0.001	0	-0.002	0	0.00%	0.00%
2760362	191219003-006AMS	MS	Chromium, Hexavalent	mg/L	50	0	0.166	0	0.197	0.2	98.50%	0.00%
2760363	191219003-006AMSD	MSD	Chromium, Hexavalent	mg/L	50	0	0.165	0	0.195	0.2	97.50%	1.02%
2760364	CCV	CCV	Chromium, Hexavalent	mg/L	50	0	0.162	0	0.192	0.19	96.00%	0.00%
2760365	CCB	CCB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004	0.00%	0.00%

WorkSheet Report

Date: 1/2/2020

RunID: GEN10S_191219A

Run Start Date: 12/19/2019

Analyst: Darnell Avent

Comments:

SeqNo	SampleID	SmpType	Analyte	Units	Smp Vol(mL)		Smp Abs		Smp Rslt (mg/L)		%Recovery	RPD(dups)
						Smp Blk Abs		Blk Rslt (mg/L)	FinalVal		Qual	
2760786	191219035-010A	SAMP	Chromium, Hexavalent	mg/L	0	0	0	0	-0.004	0	0.00%	0.00%
2760787	CCV	CCV	Chromium, Hexavalent	mg/L	0	0	0.155	0	0.183	0.18	91.50%	0.00%
2760788	CCB	CCB	Chromium, Hexavalent	mg/L	0	0	0	0	-0.004	-0.004	0.00%	0.00%
2760878	191219059-001B	SAMP	Chromium, Hexavalent	mg/L	50	0	0.002	0	-0.001	0	0.00%	0.00%
2760879	191219061-001B	SAMP	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	0	0.00%	0.00%
2760880	191218077-004A	SAMP	Chromium, Hexavalent	mg/L	50	0	0.335	0	0.401	0.4	0.00%	0.00%
2760881	191218077-005A	SAMP	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	0	0.00%	0.00%
2760882	191218077-006A	SAMP	Chromium, Hexavalent	mg/L	5	0	0.098	0	0.115	1.2	0.00%	0.00%
2760883	191218077-007A	SAMP	Chromium, Hexavalent	mg/L	0.05	0	0.216	0	0.257	260	0.00%	0.00%
2760884	191218077-008A	SAMP	Chromium, Hexavalent	mg/L	50	0	0.001	0	-0.002	0	0.00%	0.00%
2760885	191218077-009A	SAMP	Chromium, Hexavalent	mg/L	50	0	0.001	0	-0.002	0	0.00%	0.00%
2760886	191218077-010A	SAMP	Chromium, Hexavalent	mg/L	50	0	0.001	0	-0.002	0	0.00%	0.00%
2760887	191218077-011A	SAMP	Chromium, Hexavalent	mg/L	50	0	0.003	0	0	0	0.00%	0.00%
2760899	CCV	CCV	Chromium, Hexavalent	mg/L	50	0	0.157	0	0.186	0.19	93.00%	0.00%

WorkSheet Report

Date: 1/2/2020

RunID: GEN10S_191219A

Run Start Date: 12/19/2019

Analyst: Darnell Avent

Comments:

SeqNo	SampID	SmpType	Analyte	Units	Smp Vol(mL)		Smp Abs		Smp Rslt (mg/L)		%Recovery	
					Smp Blk Abs		Blk Rslt (mg/L)		FinalVal	Qual	RPD(dups)	
2760900	CCB	CCB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004	0.00%	0.00%



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TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

- (a) Neither **Adirondack Environmental Services, Inc.**, nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.**'s performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.
- (b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.
- (c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.
- (d) In no event shall **Adirondack Environmental Services, Inc.**, its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.
- (e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**
- (f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.
- (g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.



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(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

November 14, 2019

Stefan Bagnato

Arcadis

855 Route 146, Suite 210

Clifton Park, NY 12065

TEL: (518) 250-7382

Work Order No: 191024057

RE: Watervliet Arsenal

WVA

Dear Stefan Bagnato:

"I certify that this data package is in compliance with the terms and conditions of the protocol, both technically and for completeness, to the best of my knowledge, for other than the conditions detailed in the Case Narrative. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Director or his designee, as verified by the following signature."

A handwritten signature in black ink, appearing to read "Chris Hess", written over a horizontal line.

Christopher Hess

QA Manager

Workorder Sample Summary

Client: Arcadis

Work Order: 191024057

ProjectName: Watervliet Arsenal

ProjLocation: WVA

AES Sample No	ClientSampID	Matrix	CollectionDate	DateReceived
191024057-001	NMT Pit-20191024	Aqueous	10/24/2019 9:20:00 AM	10/24/2019 3:54:00 PM
191024057-002	120 Pit-20191024	Aqueous	10/24/2019 10:10:00 AM	10/24/2019 3:54:00 PM
191024057-003	DUP-1-20191024	Aqueous	10/24/2019 9:00:00 AM	10/24/2019 3:54:00 PM
191024057-004	Commercial Pit-20191024	Aqueous	10/24/2019 11:20:00 AM	10/24/2019 3:54:00 PM
191024057-005	Excav. Sump-20191024	Aqueous	10/24/2019 12:25:00 PM	10/24/2019 3:54:00 PM
191024057-006	WVA-AW-35-MW-12-20191024	Aqueous	10/24/2019 1:30:00 PM	10/24/2019 3:54:00 PM
191024057-007	93EM-SP-9-20191024	Aqueous	10/24/2019 1:55:00 PM	10/24/2019 3:54:00 PM



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Case Narrative

Client: Arcadis – Watervliet Arsenal

Case: 191024057

SDG: WVA-AW-35-MW-5-091819

Inorganics – Metals

- 1) The samples were analyzed for TAL Metals as specified on the chain of custody.
- 2) The samples received on 10/24/19 had a temperature of 8 °C.
- 3) The recovery for Aluminum, Calcium, Iron and Magnesium in the ICSA and the ICSAB check standards may be outside the required limit. The required concentration for these analytes in the check standards is 500,000 ug/L, 500,000 ug/L, 200,000 ug/L and 500,000 ug/L, respectively. The linear range on this instrument for Aluminum, Calcium, Iron and Magnesium is 250,000 ug/L, 250,000 ug/L, 100,000 ug/L and 250,000 ug/L, respectively. At this level accurate recovery of Aluminum, Calcium, Iron and Magnesium in the check standards is not possible. No further action is required.
- 4) The digested spike recovery for the element Arsenic for NMTPit-20191024 (AES sample number 191024057-001) was outside the required 75-125 % limits. A post digestion spike was performed and the recovery for Arsenic was within acceptable limits. The result for Arsenic for sample NMTPit-20191024 (AES sample number 191024057-001) is flagged with an “N” to denote the low recovery. All other recoveries were within acceptable limits
- 5) Sample NMTPit-20191024 (AES sample number 191024057-001) was used as the Mercury matrix spike sample. All recoveries were within acceptable limits.
- 6) Sample NMTPit-20191024 (AES sample number 191024057-001) was used as the duplicate sample. All recoveries were within acceptable limits.
- 7) Sample NMTPit-20191024 (AES sample number 191024057-001) was used as the Mercury duplicate sample. All recoveries were within acceptable limits.
- 8) The elements Calcium, Chromium, Potassium and Sodium for sample NMTPit-20191024 (AES sample number 191024057-001) did not meet the serial dilution criteria of 10 %. This indicates a possible chemical or physical interference.



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Inorganics – Dissolved Metals

- 1) The samples were analyzed for TAL Metals as specified on the chain of custody.
- 2) The recovery for Aluminum, Calcium, Iron and Magnesium in the ICSA and the ICSAB check standards may be outside the required limit. The required concentration for these analytes in the check standards is 500,000 ug/L, 500,000 ug/L, 200,000 ug/L and 500,000 ug/L, respectively. The linear range on this instrument for Aluminum, Calcium, Iron and Magnesium is 250,000 ug/L, 250,000 ug/L, 100,000 ug/L and 250,000 ug/L, respectively. At this level accurate recovery of Aluminum, Calcium, Iron and Magnesium in the check standards is not possible. No further action is required.
- 3) Insufficient sample was received for the matrix spike and duplicate. A Laboratory Control Sample was analyzed and all recoveries were within acceptable limits.

Conventionals

- 1) The samples were analyzed for Hexavalent Chromium using Standard Methods 3500 Cr-B -2011.
- 2) Sample NMTPit-20191024 (AES sample number 191024057-001) was used as the matrix spike sample. All recoveries were within acceptable limits.
- 3) Sample NMTPit-20191024 (AES sample number 191024057-001) was used as the duplicate sample. All recoveries were within acceptable limits.

"I certify that this data package is in compliance with the terms and conditions of the protocol, both technically and for completeness, to the best of my knowledge, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature."

A handwritten signature in black ink, appearing to read "O. Thomas", is written over a horizontal line.

Laboratory QA Manager

Date: 11/14/19



314 North Pearl Street
Albany, New York 12207
518-434-4546/434-0891 FAX

CHAIN OF CUSTODY RECORD

AES Work Order #

191024057

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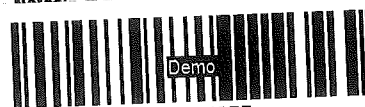
Client Name: Arcadis US, Inc		Address: 855 RTE 146 STE 210, Clifton Park, NY 12065						
Send Report To: Katie Bidwell		Project Name (Location): WVA		Samplers: (Names) ES / AL				
Client Phone No: 518-250-7300		Client Email: Katie.Bidwell@arcadis.com		PO Number: 30001988		Samplers: (Signature) <i>[Signature]</i>		
AES Sample Number	Client Sample Identification & Location	Date Sampled	Time A=a.m. P=p.m.	Sample Type Matrix	Comp	Grab	Number of Cont's	Analysis Required
001	NMT Pit-20191024	10/24/19	0920	AQ		X	2	- TAL Metals 6010 + 7470 - Hex Chrome SM 3500 CRB-2011
	NMT Pit-MS-20191024							
	NMT Pit-MSP-20191024							
002	120 Pit-20191024		1010					
003	DUP-1-20191024		1000					
004	Commercial Pit-20191024		1120					
005	Excav. Sump-20191024		1225					
006	WVA-AW-35-MW-12-20191024		1330	ES			3	- TAL Metals 6010 + 7470 - Hex Chrome SM 3500 CRB-2011 * - unpreserved dissolved Metals
007	93EM-SP-9-20191024		1355				2	- TAL Metals 6010 + 7470 - Hex Chrome SM 3500 CRB-2011

Shipment Arrived Via: FedEx ☒ UPS ☐ Client ☐ AES ☐ Other: _____		CC Report To / Special Instructions/Remarks: * Unpreserved Dissolved Metals Analysis to be filtered by lab * Hexchrome <i>(ES)</i> to be filtered by also *	
Turnaround Time Request: ☐ 1 Day ☐ 3 Day ☒ Normal ☐ 2 Day ☐ 5 Day Note: Samples received after 3:30 pm are considered next business day			
Relinquished by: (Signature) <i>Arcadis</i>		Received by: (Signature)	
Relinquished by: (Signature)		Received by: (Signature)	
Relinquished by: (Signature)		Received for Laboratory by: <i>Kraig</i>	
Temperature Ambient or <u>Chilled</u> Notes: <u>8°C</u>		PROPERLY PRESERVED ☒ Y ☐ N Notes:	
		RECEIVED WITHIN HOLDING TIMES ☒ Y ☐ N	

WHITE - Lab Copy

YELLOW - Sampler Copy

Adirondack Environmental Services



191024057

Adirondack Environmental Services, Inc

Date: 11-Nov-19

CLIENT: Arcadis
Work Order: 191024057
Reference: Watervliet Arsenal / WVA
PO#:

Client Sample ID: NMT Pit-20191024
Collection Date: 10/24/2019 9:20:00 AM
Lab Sample ID: 191024057-001
Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 10/31/2019)						
Mercury	ND	0.20		µg/L	1	10/31/2019 1:48:43 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 10/31/2019)						
Aluminum	ND	100		µg/L	1	11/7/2019 10:59:00 AM
Antimony	18.7	60.0	J	µg/L	1	11/7/2019 10:59:00 AM
Arsenic	5.33	5.00	N	µg/L	1	11/7/2019 10:59:00 AM
Barium	104	10.0		µg/L	1	11/7/2019 10:59:00 AM
Beryllium	ND	5.00		µg/L	1	11/7/2019 10:59:00 AM
Cadmium	ND	5.00		µg/L	1	11/7/2019 10:59:00 AM
Calcium	66000	50.0		µg/L	1	11/7/2019 10:59:00 AM
Chromium	1290	5.00		µg/L	1	11/7/2019 10:59:00 AM
Cobalt	ND	50.0		µg/L	1	11/7/2019 10:59:00 AM
Copper	5.16	5.00		µg/L	1	11/7/2019 10:59:00 AM
Iron	39.9	50.0	J	µg/L	1	11/7/2019 10:59:00 AM
Lead	15.0	5.00		µg/L	1	11/7/2019 10:59:00 AM
Magnesium	15600	50.0		µg/L	1	11/7/2019 10:59:00 AM
Manganese	4.37	20.0	J	µg/L	1	11/7/2019 10:59:00 AM
Nickel	ND	20.0		µg/L	1	11/7/2019 10:59:00 AM
Potassium	13000	50.0		µg/L	1	11/7/2019 10:59:00 AM
Selenium	ND	5.00		µg/L	1	11/7/2019 10:59:00 AM
Silver	ND	10.0		µg/L	1	11/7/2019 10:59:00 AM
Sodium	113000	500		µg/L	10	11/7/2019 11:04:00 AM
Thallium	ND	10.0		µg/L	1	11/7/2019 10:59:00 AM
Vanadium	ND	20.0		µg/L	1	11/7/2019 10:59:00 AM
Zinc	ND	10.0		µg/L	1	11/7/2019 10:59:00 AM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	1.2	0.20		mg/L	10	10/24/2019 5:14:00 PM

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 11-Nov-19

CLIENT:	Arcadis	Client Sample ID:	120 Pit-20191024
Work Order:	191024057	Collection Date:	10/24/2019 10:10:00 AM
Reference:	Watervliet Arsenal / WVA	Lab Sample ID:	191024057-002
PO#:		Matrix:	AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 10/31/2019)						Analyst: AVB
Mercury	ND	0.20		µg/L	1	10/31/2019 1:53:46 PM
ICP METALS - EPA 200.7						
(Prep: SW3010A - 10/31/2019)						Analyst: KH
Aluminum	144	100		µg/L	1	11/7/2019 11:37:00 AM
Antimony	ND	60.0		µg/L	1	11/7/2019 11:37:00 AM
Arsenic	ND	5.00		µg/L	1	11/7/2019 11:37:00 AM
Barium	1360	10.0		µg/L	1	11/7/2019 11:37:00 AM
Beryllium	ND	5.00		µg/L	1	11/7/2019 11:37:00 AM
Cadmium	ND	5.00		µg/L	1	11/7/2019 11:37:00 AM
Calcium	15000	50.0		µg/L	1	11/7/2019 11:37:00 AM
Chromium	ND	5.00		µg/L	1	11/7/2019 11:37:00 AM
Cobalt	ND	50.0		µg/L	1	11/7/2019 11:37:00 AM
Copper	32.8	5.00		µg/L	1	11/7/2019 11:37:00 AM
Iron	1900	50.0		µg/L	1	11/7/2019 11:37:00 AM
Lead	3.32	5.00	J	µg/L	1	11/7/2019 11:37:00 AM
Magnesium	4690	50.0		µg/L	1	11/7/2019 11:37:00 AM
Manganese	1330	20.0		µg/L	1	11/7/2019 11:37:00 AM
Nickel	ND	20.0		µg/L	1	11/7/2019 11:37:00 AM
Potassium	16500	50.0		µg/L	1	11/7/2019 11:37:00 AM
Selenium	ND	5.00		µg/L	1	11/7/2019 11:37:00 AM
Silver	ND	10.0		µg/L	1	11/7/2019 11:37:00 AM
Sodium	264000	500		µg/L	10	11/7/2019 12:05:00 PM
Thallium	ND	10.0		µg/L	1	11/7/2019 11:37:00 AM
Vanadium	ND	20.0		µg/L	1	11/7/2019 11:37:00 AM
Zinc	54.5	10.0		µg/L	1	11/7/2019 11:37:00 AM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						
						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	10/24/2019 5:14:00 PM

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 11-Nov-19

CLIENT: Arcadis
Work Order: 191024057
Reference: Watervliet Arsenal / WVA
PO#:

Client Sample ID: DUP-1-20191024
Collection Date: 10/24/2019 9:00:00 AM
Lab Sample ID: 191024057-003
Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 10/31/2019)						
Mercury	ND	0.20		µg/L	1	10/31/2019 1:55:28 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 10/31/2019)						
Aluminum	ND	100		µg/L	1	11/7/2019 12:12:00 PM
Antimony	16.9	60.0	J	µg/L	1	11/7/2019 12:12:00 PM
Arsenic	ND	5.00		µg/L	1	11/7/2019 12:12:00 PM
Barium	107	10.0		µg/L	1	11/7/2019 12:12:00 PM
Beryllium	ND	5.00		µg/L	1	11/7/2019 12:12:00 PM
Cadmium	ND	5.00		µg/L	1	11/7/2019 12:12:00 PM
Calcium	66000	50.0		µg/L	1	11/7/2019 12:12:00 PM
Chromium	1280	5.00		µg/L	1	11/7/2019 12:12:00 PM
Cobalt	ND	50.0		µg/L	1	11/7/2019 12:12:00 PM
Copper	5.69	5.00		µg/L	1	11/7/2019 12:12:00 PM
Iron	52.7	50.0		µg/L	1	11/7/2019 12:12:00 PM
Lead	14.2	5.00		µg/L	1	11/7/2019 12:12:00 PM
Magnesium	15500	50.0		µg/L	1	11/7/2019 12:12:00 PM
Manganese	4.42	20.0	J	µg/L	1	11/7/2019 12:12:00 PM
Nickel	ND	20.0		µg/L	1	11/7/2019 12:12:00 PM
Potassium	12800	50.0		µg/L	1	11/7/2019 12:12:00 PM
Selenium	ND	5.00		µg/L	1	11/7/2019 12:12:00 PM
Silver	ND	10.0		µg/L	1	11/7/2019 12:12:00 PM
Sodium	120000	500		µg/L	10	11/7/2019 12:16:00 PM
Thallium	ND	10.0		µg/L	1	11/7/2019 12:12:00 PM
Vanadium	ND	20.0		µg/L	1	11/7/2019 12:12:00 PM
Zinc	ND	10.0		µg/L	1	11/7/2019 12:12:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	1.2	0.20		mg/L	10	10/24/2019 5:14:00 PM

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 11-Nov-19

CLIENT: Arcadis
Work Order: 191024057
Reference: Watervliet Arsenal / WVA
PO#:

Client Sample ID: Commercial Pit-20191024
Collection Date: 10/24/2019 11:20:00 AM
Lab Sample ID: 191024057-004
Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 10/31/2019)						
Mercury	ND	0.20		µg/L	1	10/31/2019 1:57:10 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 10/31/2019)						
Aluminum	ND	100		µg/L	1	11/7/2019 12:22:00 PM
Antimony	15.6	60.0	J	µg/L	1	11/7/2019 12:22:00 PM
Arsenic	5.99	5.00		µg/L	1	11/7/2019 12:22:00 PM
Barium	141	10.0		µg/L	1	11/7/2019 12:22:00 PM
Beryllium	ND	5.00		µg/L	1	11/7/2019 12:22:00 PM
Cadmium	ND	5.00		µg/L	1	11/7/2019 12:22:00 PM
Calcium	91900	50.0		µg/L	1	11/7/2019 12:22:00 PM
Chromium	1400	5.00		µg/L	1	11/7/2019 12:22:00 PM
Cobalt	ND	50.0		µg/L	1	11/7/2019 12:22:00 PM
Copper	5.64	5.00		µg/L	1	11/7/2019 12:22:00 PM
Iron	994	50.0		µg/L	1	11/7/2019 12:22:00 PM
Lead	ND	5.00		µg/L	1	11/7/2019 12:22:00 PM
Magnesium	23800	50.0		µg/L	1	11/7/2019 12:22:00 PM
Manganese	76.0	20.0		µg/L	1	11/7/2019 12:22:00 PM
Nickel	ND	20.0		µg/L	1	11/7/2019 12:22:00 PM
Potassium	17200	50.0		µg/L	1	11/7/2019 12:22:00 PM
Selenium	ND	5.00		µg/L	1	11/7/2019 12:22:00 PM
Silver	ND	10.0		µg/L	1	11/7/2019 12:22:00 PM
Sodium	146000	500		µg/L	10	11/7/2019 12:27:00 PM
Thallium	ND	10.0		µg/L	1	11/7/2019 12:22:00 PM
Vanadium	ND	20.0		µg/L	1	11/7/2019 12:22:00 PM
Zinc	7.41	10.0	J	µg/L	1	11/7/2019 12:22:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	1.1	0.20		mg/L	10	10/24/2019 5:14:00 PM

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 11-Nov-19

CLIENT: Arcadis
Work Order: 191024057
Reference: Watervliet Arsenal / WVA
PO#:

Client Sample ID: Excav. Sump-20191024
Collection Date: 10/24/2019 12:25:00 PM
Lab Sample ID: 191024057-005
Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 10/31/2019)						
Mercury	ND	0.20		µg/L	1	10/31/2019 1:58:53 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 10/31/2019)						
Aluminum	ND	100		µg/L	1	11/7/2019 12:34:00 PM
Antimony	ND	60.0		µg/L	1	11/7/2019 12:34:00 PM
Arsenic	ND	5.00		µg/L	1	11/7/2019 12:34:00 PM
Barium	62.2	10.0		µg/L	1	11/7/2019 12:34:00 PM
Beryllium	ND	5.00		µg/L	1	11/7/2019 12:34:00 PM
Cadmium	ND	5.00		µg/L	1	11/7/2019 12:34:00 PM
Calcium	44700	50.0		µg/L	1	11/7/2019 12:34:00 PM
Chromium	24.6	5.00		µg/L	1	11/7/2019 12:34:00 PM
Cobalt	ND	50.0		µg/L	1	11/7/2019 12:34:00 PM
Copper	4.75	5.00	J	µg/L	1	11/7/2019 12:34:00 PM
Iron	3200	50.0		µg/L	1	11/7/2019 12:34:00 PM
Lead	ND	5.00		µg/L	1	11/7/2019 12:34:00 PM
Magnesium	9700	50.0		µg/L	1	11/7/2019 12:34:00 PM
Manganese	12.8	20.0	J	µg/L	1	11/7/2019 12:34:00 PM
Nickel	ND	20.0		µg/L	1	11/7/2019 12:34:00 PM
Potassium	6120	50.0		µg/L	1	11/7/2019 12:34:00 PM
Selenium	ND	5.00		µg/L	1	11/7/2019 12:34:00 PM
Silver	ND	10.0		µg/L	1	11/7/2019 12:34:00 PM
Sodium	119000	500		µg/L	10	11/7/2019 2:08:00 PM
Thallium	ND	10.0		µg/L	1	11/7/2019 12:34:00 PM
Vanadium	ND	20.0		µg/L	1	11/7/2019 12:34:00 PM
Zinc	ND	10.0		µg/L	1	11/7/2019 12:34:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	10/24/2019 5:14:00 PM

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 11-Nov-19

CLIENT:	Arcadis	Client Sample ID:	WVA-AW-35-MW-12-2019102
Work Order:	191024057	Collection Date:	10/24/2019 1:30:00 PM
Reference:	Watervliet Arsenal / WVA	Lab Sample ID:	191024057-006
PO#:		Matrix:	AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 10/31/2019)						Analyst: AVB
Mercury	ND	0.20		µg/L	1	10/31/2019 2:00:36 PM
DISSOLVED MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 10/31/2019)						Analyst: AVB
Dissolved Mercury	ND	0.20		µg/L	1	10/31/2019 2:10:42 PM
ICP METALS - EPA 200.7						
(Prep: SW3010A - 10/31/2019)						Analyst: KH
Aluminum	4710	100		µg/L	1	11/7/2019 12:39:00 PM
Antimony	ND	60.0		µg/L	1	11/7/2019 12:39:00 PM
Arsenic	6.18	5.00		µg/L	1	11/7/2019 12:39:00 PM
Barium	418	10.0		µg/L	1	11/7/2019 12:39:00 PM
Beryllium	ND	5.00		µg/L	1	11/7/2019 12:39:00 PM
Cadmium	ND	5.00		µg/L	1	11/7/2019 12:39:00 PM
Calcium	336000	500		µg/L	10	11/7/2019 1:09:00 PM
Chromium	383	5.00		µg/L	1	11/7/2019 12:39:00 PM
Cobalt	10.0	50.0	J	µg/L	1	11/7/2019 12:39:00 PM
Copper	34.1	5.00		µg/L	1	11/7/2019 12:39:00 PM
Iron	7480	50.0		µg/L	1	11/7/2019 12:39:00 PM
Lead	22.3	5.00		µg/L	1	11/7/2019 12:39:00 PM
Magnesium	65400	50.0		µg/L	1	11/7/2019 12:39:00 PM
Manganese	1340	20.0		µg/L	1	11/7/2019 12:39:00 PM
Nickel	15.1	20.0	J	µg/L	1	11/7/2019 12:39:00 PM
Potassium	67300	50.0		µg/L	1	11/7/2019 12:39:00 PM
Selenium	ND	5.00		µg/L	1	11/7/2019 12:39:00 PM
Silver	ND	10.0		µg/L	1	11/7/2019 12:39:00 PM
Sodium	1140000	5000		µg/L	100	11/7/2019 1:17:00 PM
Thallium	ND	10.0		µg/L	1	11/7/2019 12:39:00 PM
Vanadium	ND	20.0		µg/L	1	11/7/2019 12:39:00 PM
Zinc	432	10.0		µg/L	1	11/7/2019 12:39:00 PM
ICP DISSOLVED METAL - EPA 200.7						
(Prep: SW3005A - 10/31/2019)						Analyst: KH
Aluminum, Dissolved	ND	200		µg/L	1	11/7/2019 1:48:00 PM
Antimony, Dissolved	ND	60.0		µg/L	1	11/7/2019 1:48:00 PM
Arsenic, Dissolved	5.48	10.0	J	µg/L	1	11/7/2019 1:48:00 PM
Barium, Dissolved	377	200		µg/L	1	11/7/2019 1:48:00 PM
Beryllium, Dissolved	ND	5.00		µg/L	1	11/7/2019 1:48:00 PM

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 11-Nov-19

CLIENT: Arcadis
Work Order: 191024057
Reference: Watervliet Arsenal / WVA
PO#:

Client Sample ID: WVA-AW-35-MW-12-2019102
Collection Date: 10/24/2019 1:30:00 PM
Lab Sample ID: 191024057-006
Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP DISSOLVED METAL - EPA 200.7						Analyst: KH
(Prep: SW3005A - 10/31/2019)						
Cadmium, Dissolved	ND	5.00		µg/L	1	11/7/2019 1:48:00 PM
Calcium, Dissolved	344000	50000		µg/L	10	11/7/2019 1:53:00 PM
Chromium, Dissolved	375	10.0		µg/L	1	11/7/2019 1:48:00 PM
Cobalt, Dissolved	1.37	50.0	J	µg/L	1	11/7/2019 1:48:00 PM
Copper, Dissolved	ND	25.0		µg/L	1	11/7/2019 1:48:00 PM
Iron, Dissolved	286	100		µg/L	1	11/7/2019 1:48:00 PM
Lead, Dissolved	ND	3.00		µg/L	1	11/7/2019 1:48:00 PM
Magnesium, Dissolved	62400	5000		µg/L	1	11/7/2019 1:48:00 PM
Manganese, Dissolved	406	15.0		µg/L	1	11/7/2019 1:48:00 PM
Nickel, Dissolved	3.35	40.0	J	µg/L	1	11/7/2019 1:48:00 PM
Potassium, Dissolved	68000	5000		µg/L	1	11/7/2019 1:48:00 PM
Selenium, Dissolved	ND	5.00		µg/L	1	11/7/2019 1:48:00 PM
Silver, Dissolved	ND	10.0		µg/L	1	11/7/2019 1:48:00 PM
Sodium, Dissolved	1450000	500000		µg/L	100	11/7/2019 2:00:00 PM
Thallium, Dissolved	8.96	10.0	J	µg/L	1	11/7/2019 1:48:00 PM
Vanadium, Dissolved	ND	50.0		µg/L	1	11/7/2019 1:48:00 PM
Zinc, Dissolved	58.8	20.0		µg/L	1	11/7/2019 1:48:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	0.20	0.02		mg/L	1	10/24/2019 5:14:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 11-Nov-19

CLIENT: Arcadis
Work Order: 191024057
Reference: Watervliet Arsenal / WVA
PO#:

Client Sample ID: 93EM-SP-9-20191024
Collection Date: 10/24/2019 1:55:00 PM
Lab Sample ID: 191024057-007
Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 10/31/2019)						
Mercury	ND	0.20		µg/L	1	10/31/2019 2:02:17 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 10/31/2019)						
Aluminum	ND	100		µg/L	1	11/7/2019 1:22:00 PM
Antimony	ND	60.0		µg/L	1	11/7/2019 1:22:00 PM
Arsenic	ND	5.00		µg/L	1	11/7/2019 1:22:00 PM
Barium	12.2	10.0		µg/L	1	11/7/2019 1:22:00 PM
Beryllium	ND	5.00		µg/L	1	11/7/2019 1:22:00 PM
Cadmium	ND	5.00		µg/L	1	11/7/2019 1:22:00 PM
Calcium	15800	50.0		µg/L	1	11/7/2019 1:22:00 PM
Chromium	12.7	5.00		µg/L	1	11/7/2019 1:22:00 PM
Cobalt	ND	50.0		µg/L	1	11/7/2019 1:22:00 PM
Copper	7.85	5.00		µg/L	1	11/7/2019 1:22:00 PM
Iron	180	50.0		µg/L	1	11/7/2019 1:22:00 PM
Lead	ND	5.00		µg/L	1	11/7/2019 1:22:00 PM
Magnesium	635	50.0		µg/L	1	11/7/2019 1:22:00 PM
Manganese	4.53	20.0	J	µg/L	1	11/7/2019 1:22:00 PM
Nickel	ND	20.0		µg/L	1	11/7/2019 1:22:00 PM
Potassium	733	50.0		µg/L	1	11/7/2019 1:22:00 PM
Selenium	ND	5.00		µg/L	1	11/7/2019 1:22:00 PM
Silver	ND	10.0		µg/L	1	11/7/2019 1:22:00 PM
Sodium	2270	50.0		µg/L	1	11/7/2019 1:22:00 PM
Thallium	ND	10.0		µg/L	1	11/7/2019 1:22:00 PM
Vanadium	ND	20.0		µg/L	1	11/7/2019 1:22:00 PM
Zinc	18.4	10.0		µg/L	1	11/7/2019 1:22:00 PM
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	10/24/2019 5:14:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 11-Nov-19

CLIENT: Arcadis
Work Order: 191024057
Reference: Watervliet Arsenal / WVA
PO#:

Client Sample ID: NMT Pit-20191024
Collection Date: 10/24/2019 9:20:00 AM
Lab Sample ID: 191024057-001
Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 10/31/2019)						
Mercury	ND	0.20		µg/L	1	10/31/2019 1:48:43 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 10/31/2019)						
Aluminum	ND	100		µg/L	1	11/7/2019 10:59:00 AM
Antimony	18.7	60.0	J	µg/L	1	11/7/2019 10:59:00 AM
Arsenic	5.33	5.00	N	µg/L	1	11/7/2019 10:59:00 AM
Barium	104	10.0		µg/L	1	11/7/2019 10:59:00 AM
Beryllium	ND	5.00		µg/L	1	11/7/2019 10:59:00 AM
Cadmium	ND	5.00		µg/L	1	11/7/2019 10:59:00 AM
Calcium	66000	50.0		µg/L	1	11/7/2019 10:59:00 AM
Chromium	1290	5.00		µg/L	1	11/7/2019 10:59:00 AM
Cobalt	ND	50.0		µg/L	1	11/7/2019 10:59:00 AM
Copper	5.16	5.00		µg/L	1	11/7/2019 10:59:00 AM
Iron	39.9	50.0	J	µg/L	1	11/7/2019 10:59:00 AM
Lead	15.0	5.00		µg/L	1	11/7/2019 10:59:00 AM
Magnesium	15600	50.0		µg/L	1	11/7/2019 10:59:00 AM
Manganese	4.37	20.0	J	µg/L	1	11/7/2019 10:59:00 AM
Nickel	ND	20.0		µg/L	1	11/7/2019 10:59:00 AM
Potassium	13000	50.0		µg/L	1	11/7/2019 10:59:00 AM
Selenium	ND	5.00		µg/L	1	11/7/2019 10:59:00 AM
Silver	ND	10.0		µg/L	1	11/7/2019 10:59:00 AM
Sodium	113000	500		µg/L	10	11/7/2019 11:04:00 AM
Thallium	ND	10.0		µg/L	1	11/7/2019 10:59:00 AM
Vanadium	ND	20.0		µg/L	1	11/7/2019 10:59:00 AM
Zinc	ND	10.0		µg/L	1	11/7/2019 10:59:00 AM

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 11-Nov-19

CLIENT:	Arcadis	Client Sample ID:	120 Pit-20191024
Work Order:	191024057	Collection Date:	10/24/2019 10:10:00 AM
Reference:	Watervliet Arsenal / WVA	Lab Sample ID:	191024057-002
PO#:		Matrix:	AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 10/31/2019)						
Mercury	ND	0.20		µg/L	1	10/31/2019 1:53:46 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 10/31/2019)						
Aluminum	144	100		µg/L	1	11/7/2019 11:37:00 AM
Antimony	ND	60.0		µg/L	1	11/7/2019 11:37:00 AM
Arsenic	ND	5.00		µg/L	1	11/7/2019 11:37:00 AM
Barium	1360	10.0		µg/L	1	11/7/2019 11:37:00 AM
Beryllium	ND	5.00		µg/L	1	11/7/2019 11:37:00 AM
Cadmium	ND	5.00		µg/L	1	11/7/2019 11:37:00 AM
Calcium	15000	50.0		µg/L	1	11/7/2019 11:37:00 AM
Chromium	ND	5.00		µg/L	1	11/7/2019 11:37:00 AM
Cobalt	ND	50.0		µg/L	1	11/7/2019 11:37:00 AM
Copper	32.8	5.00		µg/L	1	11/7/2019 11:37:00 AM
Iron	1900	50.0		µg/L	1	11/7/2019 11:37:00 AM
Lead	3.32	5.00	J	µg/L	1	11/7/2019 11:37:00 AM
Magnesium	4690	50.0		µg/L	1	11/7/2019 11:37:00 AM
Manganese	1330	20.0		µg/L	1	11/7/2019 11:37:00 AM
Nickel	ND	20.0		µg/L	1	11/7/2019 11:37:00 AM
Potassium	16500	50.0		µg/L	1	11/7/2019 11:37:00 AM
Selenium	ND	5.00		µg/L	1	11/7/2019 11:37:00 AM
Silver	ND	10.0		µg/L	1	11/7/2019 11:37:00 AM
Sodium	264000	500		µg/L	10	11/7/2019 12:05:00 PM
Thallium	ND	10.0		µg/L	1	11/7/2019 11:37:00 AM
Vanadium	ND	20.0		µg/L	1	11/7/2019 11:37:00 AM
Zinc	54.5	10.0		µg/L	1	11/7/2019 11:37:00 AM

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 11-Nov-19

CLIENT:	Arcadis	Client Sample ID:	DUP-1-20191024
Work Order:	191024057	Collection Date:	10/24/2019 9:00:00 AM
Reference:	Watervliet Arsenal / WVA	Lab Sample ID:	191024057-003
PO#:		Matrix:	AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 10/31/2019)						Analyst: AVB
Mercury	ND	0.20		µg/L	1	10/31/2019 1:55:28 PM
ICP METALS - EPA 200.7						
(Prep: SW3010A - 10/31/2019)						Analyst: KH
Aluminum	ND	100		µg/L	1	11/7/2019 12:12:00 PM
Antimony	16.9	60.0	J	µg/L	1	11/7/2019 12:12:00 PM
Arsenic	ND	5.00		µg/L	1	11/7/2019 12:12:00 PM
Barium	107	10.0		µg/L	1	11/7/2019 12:12:00 PM
Beryllium	ND	5.00		µg/L	1	11/7/2019 12:12:00 PM
Cadmium	ND	5.00		µg/L	1	11/7/2019 12:12:00 PM
Calcium	66000	50.0		µg/L	1	11/7/2019 12:12:00 PM
Chromium	1280	5.00		µg/L	1	11/7/2019 12:12:00 PM
Cobalt	ND	50.0		µg/L	1	11/7/2019 12:12:00 PM
Copper	5.69	5.00		µg/L	1	11/7/2019 12:12:00 PM
Iron	52.7	50.0		µg/L	1	11/7/2019 12:12:00 PM
Lead	14.2	5.00		µg/L	1	11/7/2019 12:12:00 PM
Magnesium	15500	50.0		µg/L	1	11/7/2019 12:12:00 PM
Manganese	4.42	20.0	J	µg/L	1	11/7/2019 12:12:00 PM
Nickel	ND	20.0		µg/L	1	11/7/2019 12:12:00 PM
Potassium	12800	50.0		µg/L	1	11/7/2019 12:12:00 PM
Selenium	ND	5.00		µg/L	1	11/7/2019 12:12:00 PM
Silver	ND	10.0		µg/L	1	11/7/2019 12:12:00 PM
Sodium	120000	500		µg/L	10	11/7/2019 12:16:00 PM
Thallium	ND	10.0		µg/L	1	11/7/2019 12:12:00 PM
Vanadium	ND	20.0		µg/L	1	11/7/2019 12:12:00 PM
Zinc	ND	10.0		µg/L	1	11/7/2019 12:12:00 PM

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 11-Nov-19

CLIENT: Arcadis
 Work Order: 191024057
 Reference: Watervliet Arsenal / WVA
 PO#:

Client Sample ID: Commercial Pit-20191024
 Collection Date: 10/24/2019 11:20:00 AM
 Lab Sample ID: 191024057-004
 Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 10/31/2019)						
Mercury	ND	0.20		µg/L	1	10/31/2019 1:57:10 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 10/31/2019)						
Aluminum	ND	100		µg/L	1	11/7/2019 12:22:00 PM
Antimony	15.6	60.0	J	µg/L	1	11/7/2019 12:22:00 PM
Arsenic	5.99	5.00		µg/L	1	11/7/2019 12:22:00 PM
Barium	141	10.0		µg/L	1	11/7/2019 12:22:00 PM
Beryllium	ND	5.00		µg/L	1	11/7/2019 12:22:00 PM
Cadmium	ND	5.00		µg/L	1	11/7/2019 12:22:00 PM
Calcium	91900	50.0		µg/L	1	11/7/2019 12:22:00 PM
Chromium	1400	5.00		µg/L	1	11/7/2019 12:22:00 PM
Cobalt	ND	50.0		µg/L	1	11/7/2019 12:22:00 PM
Copper	5.64	5.00		µg/L	1	11/7/2019 12:22:00 PM
Iron	994	50.0		µg/L	1	11/7/2019 12:22:00 PM
Lead	ND	5.00		µg/L	1	11/7/2019 12:22:00 PM
Magnesium	23800	50.0		µg/L	1	11/7/2019 12:22:00 PM
Manganese	76.0	20.0		µg/L	1	11/7/2019 12:22:00 PM
Nickel	ND	20.0		µg/L	1	11/7/2019 12:22:00 PM
Potassium	17200	50.0		µg/L	1	11/7/2019 12:22:00 PM
Selenium	ND	5.00		µg/L	1	11/7/2019 12:22:00 PM
Silver	ND	10.0		µg/L	1	11/7/2019 12:22:00 PM
Sodium	146000	500		µg/L	10	11/7/2019 12:27:00 PM
Thallium	ND	10.0		µg/L	1	11/7/2019 12:22:00 PM
Vanadium	ND	20.0		µg/L	1	11/7/2019 12:22:00 PM
Zinc	7.41	10.0	J	µg/L	1	11/7/2019 12:22:00 PM

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 11-Nov-19

CLIENT: Arcadis
 Work Order: 191024057
 Reference: Watervliet Arsenal / WVA
 PO#:

Client Sample ID: Excav. Sump-20191024
 Collection Date: 10/24/2019 12:25:00 PM
 Lab Sample ID: 191024057-005
 Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 10/31/2019)						
Mercury	ND	0.20		µg/L	1	10/31/2019 1:58:53 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 10/31/2019)						
Aluminum	ND	100		µg/L	1	11/7/2019 12:34:00 PM
Antimony	ND	60.0		µg/L	1	11/7/2019 12:34:00 PM
Arsenic	ND	5.00		µg/L	1	11/7/2019 12:34:00 PM
Barium	62.2	10.0		µg/L	1	11/7/2019 12:34:00 PM
Beryllium	ND	5.00		µg/L	1	11/7/2019 12:34:00 PM
Cadmium	ND	5.00		µg/L	1	11/7/2019 12:34:00 PM
Calcium	44700	50.0		µg/L	1	11/7/2019 12:34:00 PM
Chromium	24.6	5.00		µg/L	1	11/7/2019 12:34:00 PM
Cobalt	ND	50.0		µg/L	1	11/7/2019 12:34:00 PM
Copper	4.75	5.00	J	µg/L	1	11/7/2019 12:34:00 PM
Iron	3200	50.0		µg/L	1	11/7/2019 12:34:00 PM
Lead	ND	5.00		µg/L	1	11/7/2019 12:34:00 PM
Magnesium	9700	50.0		µg/L	1	11/7/2019 12:34:00 PM
Manganese	12.8	20.0	J	µg/L	1	11/7/2019 12:34:00 PM
Nickel	ND	20.0		µg/L	1	11/7/2019 12:34:00 PM
Potassium	6120	50.0		µg/L	1	11/7/2019 12:34:00 PM
Selenium	ND	5.00		µg/L	1	11/7/2019 12:34:00 PM
Silver	ND	10.0		µg/L	1	11/7/2019 12:34:00 PM
Sodium	119000	500		µg/L	10	11/7/2019 2:08:00 PM
Thallium	ND	10.0		µg/L	1	11/7/2019 12:34:00 PM
Vanadium	ND	20.0		µg/L	1	11/7/2019 12:34:00 PM
Zinc	ND	10.0		µg/L	1	11/7/2019 12:34:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 B - Analyte detected in the associated Method Blank
 X - Value exceeds Maximum Contaminant Level
 E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
 Z - RPD outside accepted recovery limits
 N - Matrix Spike below accepted limits (+ above)
 T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 11-Nov-19

CLIENT:	Arcadis	Client Sample ID:	WVA-AW-35-MW-12-2019102
Work Order:	191024057	Collection Date:	10/24/2019 1:30:00 PM
Reference:	Watervliet Arsenal / WVA	Lab Sample ID:	191024057-006
PO#:		Matrix:	AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 10/31/2019)						Analyst: AVB
Mercury	ND	0.20		µg/L	1	10/31/2019 2:00:36 PM
DISSOLVED MERCURY - EPA 245.1 REV 3.0						
(Prep: E245.1 - 10/31/2019)						Analyst: AVB
Dissolved Mercury	ND	0.20		µg/L	1	10/31/2019 2:10:42 PM
ICP METALS - EPA 200.7						
(Prep: SW3010A - 10/31/2019)						Analyst: KH
Aluminum	4710	100		µg/L	1	11/7/2019 12:39:00 PM
Antimony	ND	60.0		µg/L	1	11/7/2019 12:39:00 PM
Arsenic	6.18	5.00		µg/L	1	11/7/2019 12:39:00 PM
Barium	418	10.0		µg/L	1	11/7/2019 12:39:00 PM
Beryllium	ND	5.00		µg/L	1	11/7/2019 12:39:00 PM
Cadmium	ND	5.00		µg/L	1	11/7/2019 12:39:00 PM
Calcium	336000	500		µg/L	10	11/7/2019 1:09:00 PM
Chromium	383	5.00		µg/L	1	11/7/2019 12:39:00 PM
Cobalt	10.0	50.0	J	µg/L	1	11/7/2019 12:39:00 PM
Copper	34.1	5.00		µg/L	1	11/7/2019 12:39:00 PM
Iron	7480	50.0		µg/L	1	11/7/2019 12:39:00 PM
Lead	22.3	5.00		µg/L	1	11/7/2019 12:39:00 PM
Magnesium	65400	50.0		µg/L	1	11/7/2019 12:39:00 PM
Manganese	1340	20.0		µg/L	1	11/7/2019 12:39:00 PM
Nickel	15.1	20.0	J	µg/L	1	11/7/2019 12:39:00 PM
Potassium	67300	50.0		µg/L	1	11/7/2019 12:39:00 PM
Selenium	ND	5.00		µg/L	1	11/7/2019 12:39:00 PM
Silver	ND	10.0		µg/L	1	11/7/2019 12:39:00 PM
Sodium	1140000	5000		µg/L	100	11/7/2019 1:17:00 PM
Thallium	ND	10.0		µg/L	1	11/7/2019 12:39:00 PM
Vanadium	ND	20.0		µg/L	1	11/7/2019 12:39:00 PM
Zinc	432	10.0		µg/L	1	11/7/2019 12:39:00 PM
ICP DISSOLVED METAL - EPA 200.7						
(Prep: SW3005A - 10/31/2019)						Analyst: KH
Aluminum, Dissolved	ND	200		µg/L	1	11/7/2019 1:48:00 PM
Antimony, Dissolved	ND	60.0		µg/L	1	11/7/2019 1:48:00 PM
Arsenic, Dissolved	5.48	10.0	J	µg/L	1	11/7/2019 1:48:00 PM
Barium, Dissolved	377	200		µg/L	1	11/7/2019 1:48:00 PM
Beryllium, Dissolved	ND	5.00		µg/L	1	11/7/2019 1:48:00 PM

Qualifiers:	ND - Not Detected at the Reporting Limit	S - LCS Spike below accepted limits (+ above)
	J - Analyte detected below quantitation limits	Z - RPD outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	N - Matrix Spike below accepted limits (+ above)
	X - Value exceeds Maximum Contaminant Level	T - Tentatively Identified Compound-Estimated Conc.
	E - Value above quantitation range-Estimate	

Adirondack Environmental Services, Inc

Date: 11-Nov-19

CLIENT: Arcadis
Work Order: 191024057
Reference: Watervliet Arsenal / WVA
PO#:

Client Sample ID: WVA-AW-35-MW-12-2019102
Collection Date: 10/24/2019 1:30:00 PM
Lab Sample ID: 191024057-006
Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP DISSOLVED METAL - EPA 200.7						Analyst: KH
(Prep: SW3005A - 10/31/2019)						
Cadmium, Dissolved	ND	5.00		µg/L	1	11/7/2019 1:48:00 PM
Calcium, Dissolved	344000	50000		µg/L	10	11/7/2019 1:53:00 PM
Chromium, Dissolved	375	10.0		µg/L	1	11/7/2019 1:48:00 PM
Cobalt, Dissolved	1.37	50.0	J	µg/L	1	11/7/2019 1:48:00 PM
Copper, Dissolved	ND	25.0		µg/L	1	11/7/2019 1:48:00 PM
Iron, Dissolved	286	100		µg/L	1	11/7/2019 1:48:00 PM
Lead, Dissolved	ND	3.00		µg/L	1	11/7/2019 1:48:00 PM
Magnesium, Dissolved	62400	5000		µg/L	1	11/7/2019 1:48:00 PM
Manganese, Dissolved	406	15.0		µg/L	1	11/7/2019 1:48:00 PM
Nickel, Dissolved	3.35	40.0	J	µg/L	1	11/7/2019 1:48:00 PM
Potassium, Dissolved	68000	5000		µg/L	1	11/7/2019 1:48:00 PM
Selenium, Dissolved	ND	5.00		µg/L	1	11/7/2019 1:48:00 PM
Silver, Dissolved	ND	10.0		µg/L	1	11/7/2019 1:48:00 PM
Sodium, Dissolved	1450000	500000		µg/L	100	11/7/2019 2:00:00 PM
Thallium, Dissolved	8.96	10.0	J	µg/L	1	11/7/2019 1:48:00 PM
Vanadium, Dissolved	ND	50.0		µg/L	1	11/7/2019 1:48:00 PM
Zinc, Dissolved	58.8	20.0		µg/L	1	11/7/2019 1:48:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc

Date: 11-Nov-19

CLIENT: Arcadis
 Work Order: 191024057
 Reference: Watervliet Arsenal / WVA
 PO#:

Client Sample ID: 93EM-SP-9-20191024
 Collection Date: 10/24/2019 1:55:00 PM
 Lab Sample ID: 191024057-007
 Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 10/31/2019)						
Mercury	ND	0.20		µg/L	1	10/31/2019 2:02:17 PM
ICP METALS - EPA 200.7						Analyst: KH
(Prep: SW3010A - 10/31/2019)						
Aluminum	ND	100		µg/L	1	11/7/2019 1:22:00 PM
Antimony	ND	60.0		µg/L	1	11/7/2019 1:22:00 PM
Arsenic	ND	5.00		µg/L	1	11/7/2019 1:22:00 PM
Barium	12.2	10.0		µg/L	1	11/7/2019 1:22:00 PM
Beryllium	ND	5.00		µg/L	1	11/7/2019 1:22:00 PM
Cadmium	ND	5.00		µg/L	1	11/7/2019 1:22:00 PM
Calcium	15800	50.0		µg/L	1	11/7/2019 1:22:00 PM
Chromium	12.7	5.00		µg/L	1	11/7/2019 1:22:00 PM
Cobalt	ND	50.0		µg/L	1	11/7/2019 1:22:00 PM
Copper	7.85	5.00		µg/L	1	11/7/2019 1:22:00 PM
Iron	180	50.0		µg/L	1	11/7/2019 1:22:00 PM
Lead	ND	5.00		µg/L	1	11/7/2019 1:22:00 PM
Magnesium	635	50.0		µg/L	1	11/7/2019 1:22:00 PM
Manganese	4.53	20.0	J	µg/L	1	11/7/2019 1:22:00 PM
Nickel	ND	20.0		µg/L	1	11/7/2019 1:22:00 PM
Potassium	733	50.0		µg/L	1	11/7/2019 1:22:00 PM
Selenium	ND	5.00		µg/L	1	11/7/2019 1:22:00 PM
Silver	ND	10.0		µg/L	1	11/7/2019 1:22:00 PM
Sodium	2270	50.0		µg/L	1	11/7/2019 1:22:00 PM
Thallium	ND	10.0		µg/L	1	11/7/2019 1:22:00 PM
Vanadium	ND	20.0		µg/L	1	11/7/2019 1:22:00 PM
Zinc	18.4	10.0		µg/L	1	11/7/2019 1:22:00 PM

Qualifiers:

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 E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
 Z - RPD outside accepted recovery limits
 N - Matrix Spike below accepted limits (+ above)
 T - Tentatively Identified Compound-Estimated Conc.

CLIENT: Arcadis
 Work Order: 191024057
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76394

MBLK	SeqNo: 2735968	PrepDate:10/31/2019	TestNo: E200.7F	RunNo: 177135
	Samp ID: MB-76394	PrepRef:(SW3005A)	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum, Dissolved	ND	200									
Antimony, Dissolved	ND	60.0									
Arsenic, Dissolved	ND	10.0									
Barium, Dissolved	ND	200									
Beryllium, Dissolved	ND	5.00									
Cadmium, Dissolved	ND	5.00									
Calcium, Dissolved	ND	5000									
Chromium, Dissolved	ND	10.0									
Cobalt, Dissolved	ND	50.0									
Copper, Dissolved	ND	25.0									
Iron, Dissolved	ND	100									
Lead, Dissolved	ND	3.00									
Magnesium, Dissolved	ND	5000									
Manganese, Dissolved	ND	15.0									
Nickel, Dissolved	ND	40.0									
Potassium, Dissolved	ND	5000									
Selenium, Dissolved	ND	5.00									
Silver, Dissolved	ND	10.0									
Sodium, Dissolved	ND	5000									
Thallium, Dissolved	ND	10.0									
Vanadium, Dissolved	ND	50.0									
Zinc, Dissolved	ND	20.0									

LCS	SeqNo: 2735969	PrepDate:10/31/2019	TestNo: E200.7F	RunNo: 177135
	Samp ID: LCS-76394	PrepRef:(SW3005A)	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum, Dissolved	2020	200	2000	0	101	80	120	0	0		
Antimony, Dissolved	2014	60.0	2000	0	101	80	120	0	0		
Arsenic, Dissolved	2063	10.0	2000	0	103	80	120	0	0		
Barium, Dissolved	2077	200	2000	0	104	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76394

LCS	SeqNo: 2735969	PrepDate:10/31/2019	TestNo: E200.7F	RunNo: 177135
	Samp ID: LCS-76394	PrepRef:(SW3005A)	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium, Dissolved	2171	5.00	2000	0	109	80	120	0	0		
Cadmium, Dissolved	2120	5.00	2000	0	106	80	120	0	0		
Calcium, Dissolved	2143	5000	2000	0	107	80	120	0	0		J
Chromium, Dissolved	2003	10.0	2000	0	100	80	120	0	0		
Cobalt, Dissolved	2038	50.0	2000	0	102	80	120	0	0		
Copper, Dissolved	2174	25.0	2000	0	109	80	120	0	0		
Iron, Dissolved	2135	100	2000	0	107	80	120	0	0		
Lead, Dissolved	2162	3.00	2000	0	108	80	120	0	0		
Magnesium, Dissolved	1982	5000	2000	0	99.1	80	120	0	0		J
Manganese, Dissolved	2084	15.0	2000	0	104	80	120	0	0		
Nickel, Dissolved	2146	40.0	2000	0	107	80	120	0	0		
Potassium, Dissolved	9909	5000	10000	0	99.1	80	120	0	0		
Selenium, Dissolved	2040	5.00	2000	0	102	80	120	0	0		
Silver, Dissolved	514.7	10.0	500	0	103	80	120	0	0		
Sodium, Dissolved	2184	5000	2000	0	109	80	120	0	0		J
Thallium, Dissolved	2069	10.0	2000	0	103	80	120	0	0		
Vanadium, Dissolved	2066	50.0	2000	0	103	80	120	0	0		
Zinc, Dissolved	2104	20.0	2000	0	105	92	112	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
 Work Order: 191024057
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76399

mbk	SeqNo: 2731103	PrepDate:10/31/2019	TestNo: E245.1	RunNo: 176879
	Samp ID: MB-76399	PrepRef:(E245.1)	Units: µg/L	Analysis Date: 10/31/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.200									

lcs	SeqNo: 2731104	PrepDate:10/31/2019	TestNo: E245.1	RunNo: 176879
	Samp ID: LCS-76399	PrepRef:(E245.1)	Units: µg/L	Analysis Date: 10/31/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	1.863	0.200	2	0	93.2	85	115	0	0		

ms	SeqNo: 2731109	PrepDate:10/31/2019	TestNo: E245.1	RunNo: 176879
	Samp ID: 191024057-001 (NMT Pit-2019102)	PrepRef:(E245.1)	Units: µg/L	Analysis Date: 10/31/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	1.894	0.200	2	0	94.7	80.8	119	0	0		

dup	SeqNo: 2731108	PrepDate:10/31/2019	TestNo: E245.1	RunNo: 176879
	Samp ID: 191024057-001	PrepRef:	Units: µg/L	Analysis Date: 10/31/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	-0.0088	0.200	0	0	0	0	0	0	0	16.5	

CCB	SeqNo: 2731106	PrepDate:	TestNo: E245.1	RunNo: 176879
	Samp ID: CCB	PrepRef:	Units: µg/L	Analysis Date: 10/31/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0003	0.200	0	0	0	0	0	0	0		

CCB	SeqNo: 2731118	PrepDate:	TestNo: E245.1	RunNo: 176879
	Samp ID: CCB	PrepRef:	Units: µg/L	Analysis Date: 10/31/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0017	0.200	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76399

CCB	SeqNo: 2731122	PrepDate:	TestNo: E245.1	RunNo: 176879
	Samp ID: CCB	PrepRef:	Units: µg/L	Analysis Date: 10/31/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0004	0.200	0	0	0	0	0	0	0		

CCV	SeqNo: 2731105	PrepDate:	TestNo: E245.1	RunNo: 176879
	Samp ID: CCV	PrepRef:	Units: µg/L	Analysis Date: 10/31/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	1.963	0.200	2	0	98.2	85	115	0	0		

CCV	SeqNo: 2731117	PrepDate:	TestNo: E245.1	RunNo: 176879
	Samp ID: CCV	PrepRef:	Units: µg/L	Analysis Date: 10/31/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	1.947	0.200	2	0	97.4	85	115	0	0		

CCV	SeqNo: 2731121	PrepDate:	TestNo: E245.1	RunNo: 176879
	Samp ID: CCV	PrepRef:	Units: µg/L	Analysis Date: 10/31/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	1.963	0.200	2	0	98.2	85	115	0	0		

cra	SeqNo: 2731095	PrepDate:	TestNo: E245.1	RunNo: 176879
	Samp ID: 0.2ppb	PrepRef:	Units: µg/L	Analysis Date: 10/31/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.1828	0.200	0.2	0	91.4	70	130	0	0		

ICB	SeqNo: 2731094	PrepDate:	TestNo: E245.1	RunNo: 176879
	Samp ID: ICB	PrepRef:	Units: µg/L	Analysis Date: 10/31/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	-0.0001	0.200	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76399

ICV	SeqNo: 2731093	PrepDate:	TestNo: E245.1	RunNo: 176879
	Samp ID: ICV	PrepRef:	Units: µg/L	Analysis Date: 10/31/2019

<u>Analyte</u>	<u>Result</u>	<u>PQL</u>	<u>SPK value</u>	<u>SPK Ref Val</u>	<u>%REC</u>	<u>LowLimit</u>	<u>HighLimit</u>	<u>RPD Ref Val</u>	<u>%RPD</u>	<u>RPDLimit</u>	<u>Qual</u>
Mercury	2.013	0.200	2	0	101	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76400

mbk	SeqNo: 2731116	PrepDate:10/31/2019	TestNo: E245.1F	RunNo: 176879
	Samp ID: MB-76400	PrepRef:(E245.1)	Units: µg/L	Analysis Date: 10/31/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dissolved Mercury	ND	0.200									

lcs	SeqNo: 2731119	PrepDate:10/31/2019	TestNo: E245.1F	RunNo: 176879
	Samp ID: LCS-76400	PrepRef:(E245.1)	Units: µg/L	Analysis Date: 10/31/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dissolved Mercury	1.819	0.200	2	0	91	85	115	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
 Work Order: 191024057
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

PS	SeqNo: 2735951	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: 191024057-001 (NMT Pit-2019102)	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	4197	200	4000	0	105	75	125	0	0		
Antimony	1028	60.0	1000	18.71	101	75	125	0	0		
Arsenic	69.16	10.0	80	5.331	79.8	75	125	0	0		
Barium	4322	200	4000	103.5	105	75	125	0	0		
Beryllium	113.8	5.00	100	0	114	75	125	0	0		
Cadmium	105.4	5.00	100	0	105	75	125	0	0		
Chromium	1767	10.0	400	1295	118	75	125	0	0		
Cobalt	957	50.0	1000	0	95.7	75	125	0	0		
Copper	576.2	25.0	500	5.159	114	75	125	0	0		
Iron	2057	100	2000	39.92	101	75	125	0	0		
Lead	54.75	3.00	40	14.97	99.5	75	125	0	0		
Manganese	989.7	15.0	1000	4.37	98.5	75	125	0	0		
Nickel	995.7	40.0	1000	0	99.6	75	125	0	0		
Selenium	22.7	5.00	20	0	113	75	125	0	0		
Silver	103	10.0	100	0	103	75	125	0	0		
Thallium	83.6	10.0	100	0	83.6	75	125	0	0		
Vanadium	1045	50.0	1000	0	104	75	125	0	0		
Zinc	1069	20.0	1000	0	107	75	125	0	0		

SD	SeqNo: 2735952	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: 191024057-001 (NMT Pit-2019102)	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	1000	0	0	0	0	0	0	0	0	
Antimony	ND	300	0	0	0	0	0	18.71	0	0	
Arsenic	ND	50.0	0	0	0	0	0	5.331	0	0	
Barium	53.86	1000	0	0	0	0	0	103.5	0	0	J
Beryllium	ND	25.0	0	0	0	0	0	0	0	0	
Cadmium	ND	25.0	0	0	0	0	0	0	0	0	
Calcium	35820	25000	0	0	0	0	0	66050	59.3	0	
Chromium	616.7	50.0	0	0	0	0	0	1295	70.9	0	
Cobalt	ND	250	0	0	0	0	0	0	0	0	
Copper	ND	120	0	0	0	0	0	5.159	0	0	

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

SD	SeqNo: 2735952	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: 191024057-001 (NMT Pit-2019102)	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	ND	500	0	0	0	0	0	39.92	0	0	
Lead	17.12	15.0	0	0	0	0	0	14.97	13.4	0	
Magnesium	8064	25000	0	0	0	0	0	15550	0	0	J
Manganese	ND	75.0	0	0	0	0	0	4.37	0	0	
Nickel	ND	200	0	0	0	0	0	0	0	0	
Potassium	5219	25000	0	0	0	0	0	13030	0	0	J
Selenium	ND	25.0	0	0	0	0	0	0	0	0	
Silver	ND	50.0	0	0	0	0	0	0	0	0	
Sodium	60140	25000	0	0	0	0	0	101000	50.7	0	
Thallium	ND	50.0	0	0	0	0	0	0	0	0	
Vanadium	ND	250	0	0	0	0	0	0	0	0	
Zinc	ND	100	0	0	0	0	0	0	0	0	

MBLK	SeqNo: 2735944	PrepDate:10/31/2019	TestNo: E200.7	RunNo: 177135
	Samp ID: MB-76403	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200									
Antimony	ND	60.0									
Arsenic	ND	10.0									
Barium	ND	200									
Beryllium	ND	5.00									
Cadmium	ND	5.00									
Calcium	ND	5000									
Chromium	ND	10.0									
Cobalt	ND	50.0									
Copper	ND	25.0									
Iron	ND	100									
Lead	ND	3.00									
Magnesium	ND	5000									
Manganese	ND	15.0									
Nickel	ND	40.0									
Potassium	ND	5000									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

MBLK	SeqNo: 2735944	PrepDate:10/31/2019	TestNo: E200.7	RunNo: 177135
	Samp ID: MB-76403	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	ND	5.00									
Silver	ND	10.0									
Sodium	ND	5000									
Thallium	ND	10.0									
Vanadium	ND	50.0									
Zinc	ND	20.0									

LCS	SeqNo: 2735945	PrepDate:10/31/2019	TestNo: E200.7	RunNo: 177135
	Samp ID: LCS-76403	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	2005	200	2000	0	100	80	120	0	0		
Antimony	1947	60.0	2000	0	97.3	80	120	0	0		
Arsenic	1991	10.0	2000	0	99.5	80	120	0	0		
Barium	2055	200	2000	0	103	80	120	0	0		
Beryllium	2113	5.00	2000	0	106	80	120	0	0		
Cadmium	2062	5.00	2000	0	103	80	120	0	0		
Calcium	2055	5000	2000	0	103	80	120	0	0		J
Chromium	1997	10.0	2000	0	99.9	80	120	0	0		
Cobalt	1963	50.0	2000	0	98.2	80	120	0	0		
Copper	2184	25.0	2000	0	109	80	120	0	0		
Iron	2068	100	2000	0	103	80	120	0	0		
Lead	2069	3.00	2000	0	103	80	120	0	0		
Magnesium	1961	5000	2000	0	98.1	80	120	0	0		J
Manganese	2028	15.0	2000	0	101	80	120	0	0		
Nickel	2058	40.0	2000	0	103	80	120	0	0		
Potassium	9788	5000	10000	0	97.9	80	120	0	0		
Selenium	1957	5.00	2000	0	97.9	80	120	0	0		
Silver	511.4	10.0	500	0	102	80	120	0	0		
Sodium	2134	5000	2000	0	107	80	120	0	0		J
Thallium	2002	10.0	2000	0	100	80	120	0	0		
Vanadium	2032	50.0	2000	0	102	80	120	0	0		
Zinc	2030	20.0	2000	0	102	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
 Work Order: 191024057
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

MS	SeqNo: 2735950	PrepDate:10/31/2019	TestNo: E200.7	RunNo: 177135
	Samp ID: 191024057-001 (NMT Pit-2019102)	PrepRef:(SW3010A)	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1808	200	2000	0	90.4	75	125	0	0		
Antimony	485.9	60.0	500	18.71	93.4	75	125	0	0		
Arsenic	33.58	10.0	40	5.331	70.6	75	125	0	0		S
Barium	2081	200	2000	103.5	98.9	75	121	0	0		
Beryllium	52.73	5.00	50	0	105	75	120	0	0		
Cadmium	48.43	5.00	50	0	96.9	75	114	0	0		
Chromium	1502	10.0	200	1295	104	75	125	0	0		
Cobalt	441.7	50.0	500	0	88.3	75	117	0	0		
Copper	268.5	25.0	250	5.159	105	75	123	0	0		
Iron	984.5	100	1000	39.92	94.5	75	125	0	0		
Lead	31.66	3.00	20	14.97	83.4	75	125	0	0		
Manganese	457.1	15.0	500	4.37	90.5	75	125	0	0		
Nickel	458.2	40.0	500	0	91.6	75	120	0	0		
Selenium	10.05	5.00	10	0	100	75	125	0	0		
Silver	53.22	10.0	50	0	106	75	125	0	0		
Thallium	38.96	10.0	50	0	77.9	75	125	0	0		
Vanadium	476.7	50.0	500	0	95.3	75	125	0	0		
Zinc	501.1	20.0	500	0	100	78.5	123	0	0		

DUP	SeqNo: 2735948	PrepDate:10/31/2019	TestNo: E200.7	RunNo: 177135
	Samp ID: 191024057-001	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0	20	
Antimony	18.32	60.0	0	0	0	0	0	18.71	0	20	
Arsenic	3.869	10.0	0	0	0	0	0	5.331	0	20	
Barium	107	200	0	0	0	0	0	103.5	0	20	
Beryllium	ND	5.00	0	0	0	0	0	0	0	20	
Cadmium	ND	5.00	0	0	0	0	0	0	0	20	
Calcium	64470	5000	0	0	0	0	0	66050	2.43	20	
Chromium	1309	10.0	0	0	0	0	0	1295	1.12	20	
Cobalt	0.4076	50.0	0	0	0	0	0	0	0	20	
Copper	4.874	25.0	0	0	0	0	0	5.159	0	20	

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

DUP	SeqNo: 2735948	PrepDate: 10/31/2019	TestNo: E200.7	RunNo: 177135
	Samp ID: 191024057-001	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	67.64	100	0	0	0	0	0	39.92	0	20	
Lead	13.54	3.00	0	0	0	0	0	14.97	10.0	20	
Magnesium	15160	5000	0	0	0	0	0	15550	2.59	20	
Manganese	4.593	15.0	0	0	0	0	0	4.37	0	20	
Nickel	0.793	40.0	0	0	0	0	0	0	0	20	
Potassium	12560	5000	0	0	0	0	0	13030	3.71	20	
Selenium	ND	5.00	0	0	0	0	0	0	0	20	
Silver	0.9144	10.0	0	0	0	0	0	0	0	20	
Thallium	2.175	10.0	0	0	0	0	0	0	0	20	
Vanadium	ND	50.0	0	0	0	0	0	0	0	20	
Zinc	4.352	20.0	0	0	0	0	0	0	0	20	

DUP	SeqNo: 2735949	PrepDate: 10/31/2019	TestNo: E200.7	RunNo: 177135
	Samp ID: 191024057-001	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	111700	50000	0	0	0	0	0	112900	1.10	20	

CCB	SeqNo: 2735943	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCB-1	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0		
Antimony	0.05973	60.0	0	0	0	0	0	0	0		
Arsenic	0.1461	10.0	0	0	0	0	0	0	0		
Barium	0.08468	200	0	0	0	0	0	0	0		
Beryllium	ND	5.00	0	0	0	0	0	0	0		
Boron	2.177	50.0	0	0	0	0	0	0	0		
Cadmium	0.02812	5.00	0	0	0	0	0	0	0		
Calcium	ND	5000	0	0	0	0	0	0	0		
Chromium	ND	10.0	0	0	0	0	0	0	0		
Cobalt	ND	50.0	0	0	0	0	0	0	0		
Copper	1.958	25.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

CCB	SeqNo: 2735943	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCB-1	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	0.3036	100	0	0	0	0	0	0	0		
Lead	ND	3.00	0	0	0	0	0	0	0		
Lithium	ND	100	0	0	0	0	0	0	0		
Magnesium	ND	5000	0	0	0	0	0	0	0		
Manganese	0.04034	15.0	0	0	0	0	0	0	0		
Molybdenum	1.547	50.0	0	0	0	0	0	0	0		
Nickel	ND	40.0	0	0	0	0	0	0	0		
Potassium	8.819	5000	0	0	0	0	0	0	0		
Selenium	ND	5.00	0	0	0	0	0	0	0		
Silver	1.761	10.0	0	0	0	0	0	0	0		
Sodium	5.474	5000	0	0	0	0	0	0	0		
Strontium	4.076	20.0	0	0	0	0	0	0	0		
Thallium	ND	10.0	0	0	0	0	0	0	0		
Tin	ND	50.0	0	0	0	0	0	0	0		
Titanium	ND	50.0	0	0	0	0	0	0	0		
Vanadium	ND	50.0	0	0	0	0	0	0	0		
Zinc	ND	20.0	0	0	0	0	0	0	0		

CCB	SeqNo: 2735955	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCB-2	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1.814	200	0	0	0	0	0	0	0		
Antimony	ND	60.0	0	0	0	0	0	0	0		
Arsenic	ND	10.0	0	0	0	0	0	0	0		
Barium	ND	200	0	0	0	0	0	0	0		
Beryllium	ND	5.00	0	0	0	0	0	0	0		
Boron	2.335	50.0	0	0	0	0	0	0	0		
Cadmium	0.06038	5.00	0	0	0	0	0	0	0		
Calcium	ND	5000	0	0	0	0	0	0	0		
Chromium	ND	10.0	0	0	0	0	0	0	0		
Cobalt	ND	50.0	0	0	0	0	0	0	0		
Copper	0.1261	25.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

CCB	SeqNo: 2735955	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCB-2	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	ND	100	0	0	0	0	0	0	0		
Lead	ND	3.00	0	0	0	0	0	0	0		
Lithium	ND	100	0	0	0	0	0	0	0		
Magnesium	ND	5000	0	0	0	0	0	0	0		
Manganese	0.01467	15.0	0	0	0	0	0	0	0		
Molybdenum	1.003	50.0	0	0	0	0	0	0	0		
Nickel	0.1137	40.0	0	0	0	0	0	0	0		
Potassium	12.11	5000	0	0	0	0	0	0	0		
Selenium	0.8167	5.00	0	0	0	0	0	0	0		
Silver	3.065	10.0	0	0	0	0	0	0	0		
Sodium	22.28	5000	0	0	0	0	0	0	0		
Strontium	ND	20.0	0	0	0	0	0	0	0		
Thallium	0.2559	10.0	0	0	0	0	0	0	0		
Tin	0.3177	50.0	0	0	0	0	0	0	0		
Titanium	ND	50.0	0	0	0	0	0	0	0		
Vanadium	ND	50.0	0	0	0	0	0	0	0		
Zinc	ND	20.0	0	0	0	0	0	0	0		

CCB	SeqNo: 2735967	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCB-3	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0		
Antimony	ND	60.0	0	0	0	0	0	0	0		
Arsenic	ND	10.0	0	0	0	0	0	0	0		
Barium	0.6757	200	0	0	0	0	0	0	0		
Beryllium	ND	5.00	0	0	0	0	0	0	0		
Boron	2.292	50.0	0	0	0	0	0	0	0		
Cadmium	0.09208	5.00	0	0	0	0	0	0	0		
Calcium	ND	5000	0	0	0	0	0	0	0		
Chromium	0.3272	10.0	0	0	0	0	0	0	0		
Cobalt	0.02193	50.0	0	0	0	0	0	0	0		
Copper	0.7302	25.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

CCB	SeqNo: 2735967	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCB-3	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	0.1081	100	0	0	0	0	0	0	0		
Lead	ND	3.00	0	0	0	0	0	0	0		
Lithium	16.88	100	0	0	0	0	0	0	0		
Magnesium	ND	5000	0	0	0	0	0	0	0		
Manganese	0.04948	15.0	0	0	0	0	0	0	0		
Molybdenum	1.419	50.0	0	0	0	0	0	0	0		
Nickel	ND	40.0	0	0	0	0	0	0	0		
Potassium	8.285	5000	0	0	0	0	0	0	0		
Selenium	1.485	5.00	0	0	0	0	0	0	0		
Silver	5.543	10.0	0	0	0	0	0	0	0		
Sodium	47.21	5000	0	0	0	0	0	0	0		
Strontium	2.491	20.0	0	0	0	0	0	0	0		
Thallium	ND	10.0	0	0	0	0	0	0	0		
Tin	0.1986	50.0	0	0	0	0	0	0	0		
Titanium	ND	50.0	0	0	0	0	0	0	0		
Vanadium	ND	50.0	0	0	0	0	0	0	0		
Zinc	ND	20.0	0	0	0	0	0	0	0		

CCB	SeqNo: 2735978	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCB-4	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0		
Antimony	ND	60.0	0	0	0	0	0	0	0		
Arsenic	0.5596	10.0	0	0	0	0	0	0	0		
Barium	0.2748	200	0	0	0	0	0	0	0		
Beryllium	0.1105	5.00	0	0	0	0	0	0	0		
Boron	2.044	50.0	0	0	0	0	0	0	0		
Cadmium	0.04544	5.00	0	0	0	0	0	0	0		
Calcium	2.326	5000	0	0	0	0	0	0	0		
Chromium	ND	10.0	0	0	0	0	0	0	0		
Cobalt	0.07013	50.0	0	0	0	0	0	0	0		
Copper	ND	25.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

CCB	SeqNo: 2735978	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCB-4	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	0.1422	100	0	0	0	0	0	0	0		
Lead	ND	3.00	0	0	0	0	0	0	0		
Lithium	28.43	100	0	0	0	0	0	0	0		
Magnesium	ND	5000	0	0	0	0	0	0	0		
Manganese	0.01768	15.0	0	0	0	0	0	0	0		
Molybdenum	0.887	50.0	0	0	0	0	0	0	0		
Nickel	ND	40.0	0	0	0	0	0	0	0		
Potassium	9.384	5000	0	0	0	0	0	0	0		
Selenium	1.04	5.00	0	0	0	0	0	0	0		
Silver	0.8476	10.0	0	0	0	0	0	0	0		
Sodium	27.1	5000	0	0	0	0	0	0	0		
Strontium	ND	20.0	0	0	0	0	0	0	0		
Thallium	ND	10.0	0	0	0	0	0	0	0		
Tin	ND	50.0	0	0	0	0	0	0	0		
Titanium	ND	50.0	0	0	0	0	0	0	0		
Vanadium	ND	50.0	0	0	0	0	0	0	0		
Zinc	ND	20.0	0	0	0	0	0	0	0		

CCB	SeqNo: 2736107	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCB-5	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0		
Antimony	0.447	60.0	0	0	0	0	0	0	0		
Arsenic	0.4872	10.0	0	0	0	0	0	0	0		
Barium	1.191	200	0	0	0	0	0	0	0		
Beryllium	ND	5.00	0	0	0	0	0	0	0		
Boron	1.972	50.0	0	0	0	0	0	0	0		
Cadmium	ND	5.00	0	0	0	0	0	0	0		
Calcium	ND	5000	0	0	0	0	0	0	0		
Chromium	0.6226	10.0	0	0	0	0	0	0	0		
Cobalt	0.06575	50.0	0	0	0	0	0	0	0		
Copper	1.213	25.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
 Work Order: 191024057
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

CCB	SeqNo: 2736107	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCB-5	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	0.1101	100	0	0	0	0	0	0	0		
Lead	ND	3.00	0	0	0	0	0	0	0		
Lithium	29.19	100	0	0	0	0	0	0	0		
Magnesium	ND	5000	0	0	0	0	0	0	0		
Manganese	0.03323	15.0	0	0	0	0	0	0	0		
Molybdenum	0.7817	50.0	0	0	0	0	0	0	0		
Nickel	0.03914	40.0	0	0	0	0	0	0	0		
Potassium	10.8	5000	0	0	0	0	0	0	0		
Selenium	2.451	5.00	0	0	0	0	0	0	0		
Silver	3.457	10.0	0	0	0	0	0	0	0		
Sodium	37.25	5000	0	0	0	0	0	0	0		
Strontium	4.483	20.0	0	0	0	0	0	0	0		
Thallium	0.9594	10.0	0	0	0	0	0	0	0		
Tin	0.02379	50.0	0	0	0	0	0	0	0		
Titanium	ND	50.0	0	0	0	0	0	0	0		
Vanadium	ND	50.0	0	0	0	0	0	0	0		
Zinc	ND	20.0	0	0	0	0	0	0	0		

CCB	SeqNo: 2738554	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCB-6	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	200	0	0	0	0	0	0	0		
Antimony	ND	60.0	0	0	0	0	0	0	0		
Arsenic	ND	10.0	0	0	0	0	0	0	0		
Barium	2.087	200	0	0	0	0	0	0	0		
Beryllium	ND	5.00	0	0	0	0	0	0	0		
Boron	2.515	50.0	0	0	0	0	0	0	0		
Cadmium	0.04006	5.00	0	0	0	0	0	0	0		
Calcium	3.1	5000	0	0	0	0	0	0	0		
Chromium	ND	10.0	0	0	0	0	0	0	0		
Cobalt	0.07671	50.0	0	0	0	0	0	0	0		
Copper	ND	25.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

CCB	SeqNo: 2738554	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCB-6	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	0.5178	100	0	0	0	0	0	0	0		
Lead	ND	3.00	0	0	0	0	0	0	0		
Lithium	55.6	100	0	0	0	0	0	0	0		
Magnesium	ND	5000	0	0	0	0	0	0	0		
Manganese	0.01485	15.0	0	0	0	0	0	0	0		
Molybdenum	0.571	50.0	0	0	0	0	0	0	0		
Nickel	ND	40.0	0	0	0	0	0	0	0		
Potassium	7.815	5000	0	0	0	0	0	0	0		
Selenium	0.3714	5.00	0	0	0	0	0	0	0		
Silver	3.652	10.0	0	0	0	0	0	0	0		
Sodium	25.15	5000	0	0	0	0	0	0	0		
Strontium	4.529	20.0	0	0	0	0	0	0	0		
Thallium	ND	10.0	0	0	0	0	0	0	0		
Tin	0.2462	50.0	0	0	0	0	0	0	0		
Titanium	ND	50.0	0	0	0	0	0	0	0		
Vanadium	ND	50.0	0	0	0	0	0	0	0		
Zinc	ND	20.0	0	0	0	0	0	0	0		

CCV	SeqNo: 2735942	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCV-1	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1956	200	2000	0	97.8	90	110	0	0		
Antimony	1984	60.0	2000	0	99.2	90	110	0	0		
Arsenic	1980	10.0	2000	0	99	90	110	0	0		
Barium	2068	200	2000	0	103	90	110	0	0		
Beryllium	2063	5.00	2000	0	103	90	110	0	0		
Boron	2184	50.0	2000	0	109	90	110	0	0		
Cadmium	2091	5.00	2000	0	105	90	110	0	0		
Calcium	1992	5000	2000	0	99.6	90	110	0	0		
Chromium	1969	10.0	2000	0	98.4	90	110	0	0		
Cobalt	1976	50.0	2000	0	98.8	90	110	0	0		
Copper	2095	25.0	2000	0	105	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

CCV	SeqNo: 2735942	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCV-1	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	2034	100	2000	0	102	90	110	0	0		
Lead	2099	3.00	2000	0	105	90	110	0	0		
Lithium	1974	100	2000	0	98.7	90	110	0	0		
Magnesium	1924	5000	2000	0	96.2	90	110	0	0		
Manganese	1982	15.0	2000	0	99.1	90	110	0	0		
Molybdenum	2058	50.0	2000	0	103	90	110	0	0		
Nickel	2059	40.0	2000	0	103	90	110	0	0		
Potassium	9365	5000	10000	0	93.7	90	110	0	0		
Selenium	1994	5.00	2000	0	99.7	90	110	0	0		
Silver	509.9	10.0	500	0	102	90	110	0	0		
Sodium	1911	5000	2000	0	95.6	90	110	0	0		
Strontium	2078	20.0	2000	0	104	90	110	0	0		
Thallium	2097	10.0	2000	0	105	90	110	0	0		
Tin	1997	50.0	2000	0	99.8	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	1968	50.0	2000	0	98.4	90	110	0	0		
Zinc	2069	20.0	2000	0	103	90	110	0	0		

CCV	SeqNo: 2735954	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCV-2	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1962	200	2000	0	98.1	90	110	0	0		
Antimony	2013	60.0	2000	0	101	90	110	0	0		
Arsenic	2000	10.0	2000	0	100	90	110	0	0		
Barium	2070	200	2000	0	103	90	110	0	0		
Beryllium	2052	5.00	2000	0	103	90	110	0	0		
Boron	2211	50.0	2000	0	111	90	110	0	0		S
Cadmium	2123	5.00	2000	0	106	90	110	0	0		
Calcium	1994	5000	2000	0	99.7	90	110	0	0		
Chromium	1988	10.0	2000	0	99.4	90	110	0	0		
Cobalt	1988	50.0	2000	0	99.4	90	110	0	0		
Copper	2086	25.0	2000	0	104	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

CCV	SeqNo: 2735954	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCV-2	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	2057	100	2000	0	103	90	110	0	0		
Lead	2114	3.00	2000	0	106	90	110	0	0		
Lithium	1927	100	2000	0	96.4	90	110	0	0		
Magnesium	1966	5000	2000	0	98.3	90	110	0	0		
Manganese	2017	15.0	2000	0	101	90	110	0	0		
Molybdenum	2088	50.0	2000	0	104	90	110	0	0		
Nickel	2095	40.0	2000	0	105	90	110	0	0		
Potassium	9363	5000	10000	0	93.6	90	110	0	0		
Selenium	2023	5.00	2000	0	101	90	110	0	0		
Silver	510.3	10.0	500	0	102	90	110	0	0		
Sodium	1961	5000	2000	0	98	90	110	0	0		
Strontium	2059	20.0	2000	0	103	90	110	0	0		
Thallium	2132	10.0	2000	0	107	90	110	0	0		
Tin	2020	50.0	2000	0	101	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	1952	50.0	2000	0	97.6	90	110	0	0		
Zinc	2086	20.0	2000	0	104	90	110	0	0		

CCV	SeqNo: 2735966	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCV-3	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1972	200	2000	0	98.6	90	110	0	0		
Antimony	2076	60.0	2000	0	104	90	110	0	0		
Arsenic	2060	10.0	2000	0	103	90	110	0	0		
Barium	2074	200	2000	0	104	90	110	0	0		
Beryllium	2113	5.00	2000	0	106	90	110	0	0		
Boron	1898	50.0	2000	0	94.9	90	110	0	0		
Cadmium	2164	5.00	2000	0	108	90	110	0	0		
Calcium	2101	5000	2000	0	105	90	110	0	0		
Chromium	1960	10.0	2000	0	98	90	110	0	0		
Cobalt	2071	50.0	2000	0	104	90	110	0	0		
Copper	2094	25.0	2000	0	105	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

CCV	SeqNo: 2735966	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCV-3	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	2112	100	2000	0	106	90	110	0	0		
Lead	2091	3.00	2000	0	105	90	110	0	0		
Lithium	1930	100	2000	0	96.5	90	110	0	0		
Magnesium	1955	5000	2000	0	97.7	90	110	0	0		
Manganese	2056	15.0	2000	0	103	90	110	0	0		
Molybdenum	2150	50.0	2000	0	108	90	110	0	0		
Nickel	2102	40.0	2000	0	105	90	110	0	0		
Potassium	9366	5000	10000	0	93.7	90	110	0	0		
Selenium	2086	5.00	2000	0	104	90	110	0	0		
Silver	507.9	10.0	500	0	102	90	110	0	0		
Sodium	1989	5000	2000	0	99.4	90	110	0	0		
Strontium	2131	20.0	2000	0	107	90	110	0	0		
Thallium	2035	10.0	2000	0	102	90	110	0	0		
Tin	2110	50.0	2000	0	106	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	2007	50.0	2000	0	100	90	110	0	0		
Zinc	2161	20.0	2000	0	108	90	110	0	0		

CCV	SeqNo: 2735977	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCV-4	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1990	200	2000	0	99.5	90	110	0	0		
Antimony	2098	60.0	2000	0	105	90	110	0	0		
Arsenic	2084	10.0	2000	0	104	90	110	0	0		
Barium	2081	200	2000	0	104	90	110	0	0		
Beryllium	2144	5.00	2000	0	107	90	110	0	0		
Boron	2154	50.0	2000	0	108	90	110	0	0		
Cadmium	2179	5.00	2000	0	109	90	110	0	0		
Calcium	2139	5000	2000	0	107	90	110	0	0		
Chromium	1961	10.0	2000	0	98.1	90	110	0	0		
Cobalt	2096	50.0	2000	0	105	90	110	0	0		
Copper	2098	25.0	2000	0	105	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

CCV	SeqNo: 2735977	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCV-4	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	2136	100	2000	0	107	90	110	0	0		
Lead	2126	3.00	2000	0	106	90	110	0	0		
Lithium	1952	100	2000	0	97.6	90	110	0	0		
Magnesium	1966	5000	2000	0	98.3	90	110	0	0		
Manganese	2073	15.0	2000	0	104	90	110	0	0		
Molybdenum	2170	50.0	2000	0	108	90	110	0	0		
Nickel	2132	40.0	2000	0	107	90	110	0	0		
Potassium	9389	5000	10000	0	93.9	90	110	0	0		
Selenium	2105	5.00	2000	0	105	90	110	0	0		
Silver	518.4	10.0	500	0	104	90	110	0	0		
Sodium	2004	5000	2000	0	100	90	110	0	0		
Strontium	2165	20.0	2000	0	108	90	110	0	0		
Thallium	2052	10.0	2000	0	103	90	110	0	0		
Tin	2143	50.0	2000	0	107	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	2027	50.0	2000	0	101	90	110	0	0		
Zinc	2188	20.0	2000	0	109	90	110	0	0		

CCV	SeqNo: 2736106	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCV-5	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	2007	200	2000	0	100	90	110	0	0		
Antimony	2108	60.0	2000	0	105	90	110	0	0		
Arsenic	2122	10.0	2000	0	106	90	110	0	0		
Barium	2084	200	2000	0	104	90	110	0	0		
Beryllium	2176	5.00	2000	0	109	90	110	0	0		
Boron	2170	50.0	2000	0	108	90	110	0	0		
Cadmium	2078	5.00	2000	0	104	90	110	0	0		
Calcium	2180	5000	2000	0	109	90	110	0	0		
Chromium	1962	10.0	2000	0	98.1	90	110	0	0		
Cobalt	2127	50.0	2000	0	106	90	110	0	0		
Copper	2103	25.0	2000	0	105	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

CCV	SeqNo: 2736106	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCV-5	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	2163	100	2000	0	108	90	110	0	0		
Lead	2162	3.00	2000	0	108	90	110	0	0		
Lithium	1979	100	2000	0	99	90	110	0	0		
Magnesium	1991	5000	2000	0	99.5	90	110	0	0		
Manganese	2102	15.0	2000	0	105	90	110	0	0		
Molybdenum	2197	50.0	2000	0	110	90	110	0	0		
Nickel	2160	40.0	2000	0	108	90	110	0	0		
Potassium	9425	5000	10000	0	94.2	90	110	0	0		
Selenium	2146	5.00	2000	0	107	90	110	0	0		
Silver	516.4	10.0	500	0	103	90	110	0	0		
Sodium	2086	5000	2000	0	104	90	110	0	0		
Strontium	2196	20.0	2000	0	110	90	110	0	0		
Thallium	2075	10.0	2000	0	104	90	110	0	0		
Tin	2181	50.0	2000	0	109	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	2054	50.0	2000	0	103	90	110	0	0		
Zinc	2136	20.0	2000	0	107	90	110	0	0		

CCV	SeqNo: 2738553	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCV-6	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	2019	200	2000	0	101	90	110	0	0		
Antimony	2149	60.0	2000	0	107	90	110	0	0		
Arsenic	2066	10.0	2000	0	103	90	110	0	0		
Barium	2085	200	2000	0	104	90	110	0	0		
Beryllium	2033	5.00	2000	0	102	90	110	0	0		
Boron	1946	50.0	2000	0	97.3	90	110	0	0		
Cadmium	2134	5.00	2000	0	107	90	110	0	0		
Calcium	2098	5000	2000	0	105	90	110	0	0		
Chromium	1951	10.0	2000	0	97.5	90	110	0	0		
Cobalt	2192	50.0	2000	0	110	90	110	0	0		
Copper	2097	25.0	2000	0	105	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

CCV	SeqNo: 2738553	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CCV-6	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	1907	100	2000	0	95.4	90	110	0	0		
Lead	2126	3.00	2000	0	106	90	110	0	0		
Lithium	1990	100	2000	0	99.5	90	110	0	0		
Magnesium	2010	5000	2000	0	101	90	110	0	0		
Manganese	2167	15.0	2000	0	108	90	110	0	0		
Molybdenum	1903	50.0	2000	0	95.2	90	110	0	0		
Nickel	2165	40.0	2000	0	108	90	110	0	0		
Potassium	9417	5000	10000	0	94.2	90	110	0	0		
Selenium	2071	5.00	2000	0	104	90	110	0	0		
Silver	521.2	10.0	500	0	104	90	110	0	0		
Sodium	2024	5000	2000	0	101	90	110	0	0		
Strontium	2195	20.0	2000	0	110	90	110	0	0		
Thallium	2039	10.0	2000	0	102	90	110	0	0		
Tin	2037	50.0	2000	0	102	90	110	0	0		
Titanium	ND	50.0	0	0	0	90	110	0	0		
Vanadium	2094	50.0	2000	0	105	90	110	0	0		
Zinc	2117	20.0	2000	0	106	90	110	0	0		

CRI	SeqNo: 2735939	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CRI-1	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	4.173	200	0	0	0	50	150	0	0		
Antimony	121.2	60.0	120	0	101	50	150	0	0		
Arsenic	16.95	10.0	20	0	84.7	50	150	0	0		
Barium	ND	200	0	0	0	50	150	0	0		
Beryllium	10.16	5.00	10	0	102	50	150	0	0		
Cadmium	10.75	5.00	10	0	108	50	150	0	0		
Calcium	ND	5000	0	0	0	50	150	0	0		
Chromium	21.65	10.0	20	0	108	50	150	0	0		
Cobalt	99.2	50.0	100	0	99.2	50	150	0	0		
Copper	52.45	25.0	50	0	105	50	150	0	0		
Iron	ND	100	0	0	0	50	150	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

CRI	SeqNo: 2735939	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CRI-1	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	6.354	3.00	6	0	106	50	150	0	0		
Magnesium	12.57	5000	0	0	0	50	150	0	0		
Manganese	29.68	15.0	30	0	98.9	50	150	0	0		
Nickel	83.61	40.0	80	0	105	50	150	0	0		
Potassium	0.00126	5000	0	0	0	50	150	0	0		
Selenium	11.67	5.00	10	0	117	50	150	0	0		
Silver	20.22	10.0	20	0	101	50	150	0	0		
Sodium	0.6698	5000	0	0	0	50	150	0	0		
Thallium	21.01	10.0	20	0	105	50	150	0	0		
Vanadium	91.61	50.0	100	0	91.6	50	150	0	0		
Zinc	45.33	20.0	40	0	113	50	150	0	0		

CRI	SeqNo: 2738550	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CRI-2	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	12.16	200	0	0	0	50	150	0	0		
Antimony	131.6	60.0	120	0	110	50	150	0	0		
Arsenic	19.91	10.0	20	0	99.5	50	150	0	0		
Barium	0.8152	200	0	0	0	50	150	0	0		
Beryllium	10.94	5.00	10	0	109	50	150	0	0		
Cadmium	11.63	5.00	10	0	116	50	150	0	0		
Calcium	ND	5000	0	0	0	50	150	0	0		
Chromium	19.26	10.0	20	0	96.3	50	150	0	0		
Cobalt	110.2	50.0	100	0	110	50	150	0	0		
Copper	50.52	25.0	50	0	101	50	150	0	0		
Iron	ND	100	0	0	0	50	150	0	0		
Lead	5.929	3.00	6	0	98.8	50	150	0	0		
Magnesium	4.19	5000	0	0	0	50	150	0	0		
Manganese	32.46	15.0	30	0	108	50	150	0	0		
Nickel	94	40.0	80	0	118	50	150	0	0		
Potassium	11.74	5000	0	0	0	50	150	0	0		
Selenium	12.32	5.00	10	0	123	50	150	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

CRI	SeqNo: 2738550	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: CRI-2	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Silver	21.94	10.0	20	0	110	50	150	0	0		
Sodium	63.85	5000	0	0	0	50	150	0	0		
Thallium	22.9	10.0	20	0	115	50	150	0	0		
Vanadium	98.62	50.0	100	0	98.6	50	150	0	0		
Zinc	49.65	20.0	40	0	124	50	150	0	0		

ICB	SeqNo: 2735938	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: ICB-1	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	6.532	200	0	0	0	0	0	0	0		
Antimony	ND	60.0	0	0	0	0	0	0	0		
Arsenic	ND	10.0	0	0	0	0	0	0	0		
Barium	0.2206	200	0	0	0	0	0	0	0		
Beryllium	ND	5.00	0	0	0	0	0	0	0		
Cadmium	0.02929	5.00	0	0	0	0	0	0	0		
Calcium	ND	5000	0	0	0	0	0	0	0		
Chromium	ND	10.0	0	0	0	0	0	0	0		
Cobalt	0.02411	50.0	0	0	0	0	0	0	0		
Copper	ND	25.0	0	0	0	0	0	0	0		
Iron	0.05284	100	0	0	0	0	0	0	0		
Lead	ND	3.00	0	0	0	0	0	0	0		
Magnesium	ND	5000	0	0	0	0	0	0	0		
Manganese	0.04037	15.0	0	0	0	0	0	0	0		
Nickel	ND	40.0	0	0	0	0	0	0	0		
Potassium	6.725	5000	0	0	0	0	0	0	0		
Selenium	ND	5.00	0	0	0	0	0	0	0		
Silver	5.738	10.0	0	0	0	0	0	0	0		
Sodium	12.86	5000	0	0	0	0	0	0	0		
Thallium	1.088	10.0	0	0	0	0	0	0	0		
Vanadium	0.2148	50.0	0	0	0	0	0	0	0		
Zinc	ND	20.0	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

ICV	SeqNo: 2735937	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: ICV-1	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1970	200	2000	0	98.5	90	110	0	0		
Antimony	1993	60.0	2000	0	99.6	90	110	0	0		
Arsenic	1982	10.0	2000	0	99.1	90	110	0	0		
Barium	2071	200	2000	0	104	90	110	0	0		
Beryllium	2055	5.00	2000	0	103	90	110	0	0		
Cadmium	2098	5.00	2000	0	105	90	110	0	0		
Calcium	1985	5000	2000	0	99.2	90	110	0	0		
Chromium	1972	10.0	2000	0	98.6	90	110	0	0		
Cobalt	1982	50.0	2000	0	99.1	90	110	0	0		
Copper	2090	25.0	2000	0	105	90	110	0	0		
Iron	2037	100	2000	0	102	90	110	0	0		
Lead	1987	3.00	2000	0	99.3	90	110	0	0		
Magnesium	1947	5000	2000	0	97.3	90	110	0	0		
Manganese	1985	15.0	2000	0	99.3	90	110	0	0		
Nickel	2065	40.0	2000	0	103	90	110	0	0		
Potassium	9898	5000	10000	0	99	90	110	0	0		
Selenium	1995	5.00	2000	0	99.8	90	110	0	0		
Silver	507.3	10.0	500	0	101	90	110	0	0		
Sodium	1909	5000	2000	0	95.5	90	110	0	0		
Thallium	2099	10.0	2000	0	105	90	110	0	0		
Vanadium	1965	50.0	2000	0	98.2	90	110	0	0		
Zinc	2076	20.0	2000	0	104	90	110	0	0		

ICSA	SeqNo: 2735940	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: ICSA-1	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	495600	200	500000	0	99.1	80	120	0	0		
Antimony	ND	60.0	0	0	0	80	120	0	0		
Arsenic	ND	10.0	0	0	0	80	120	0	0		
Barium	1.229	200	0	0	0	80	120	0	0		
Beryllium	2.57	5.00	0	0	0	80	120	0	0		
Cadmium	ND	5.00	0	0	0	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

ICSA	SeqNo: 2735940	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: ICSA-1	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	429300	5000	500000	0	85.9	80	120	0	0		
Chromium	ND	10.0	0	0	0	80	120	0	0		
Cobalt	ND	50.0	0	0	0	80	120	0	0		
Copper	ND	25.0	0	0	0	80	120	0	0		
Iron	123600	100	200000	0	61.8	80	120	0	0		S
Lead	ND	3.00	0	0	0	80	120	0	0		
Magnesium	515700	5000	500000	0	103	80	120	0	0		
Manganese	ND	15.0	0	0	0	80	120	0	0		
Nickel	ND	40.0	0	0	0	80	120	0	0		
Potassium	0.3782	5000	0	0	0	80	120	0	0		
Selenium	ND	5.00	0	0	0	80	120	0	0		
Silver	ND	10.0	0	0	0	80	120	0	0		
Sodium	ND	5000	0	0	0	80	120	0	0		
Thallium	ND	10.0	0	0	0	80	120	0	0		
Vanadium	ND	50.0	0	0	0	80	120	0	0		
Zinc	ND	20.0	0	0	0	80	120	0	0		

ICSA	SeqNo: 2738551	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: ICSA-2	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	499900	200	500000	0	100	80	120	0	0		
Antimony	ND	60.0	0	0	0	80	120	0	0		
Arsenic	ND	10.0	0	0	0	80	120	0	0		
Barium	1.673	200	0	0	0	80	120	0	0		
Beryllium	2.491	5.00	0	0	0	80	120	0	0		
Cadmium	ND	5.00	0	0	0	80	120	0	0		
Calcium	470600	5000	500000	0	94.1	80	120	0	0		
Chromium	ND	10.0	0	0	0	80	120	0	0		
Cobalt	ND	50.0	0	0	0	80	120	0	0		
Copper	ND	25.0	0	0	0	80	120	0	0		
Iron	134700	100	200000	0	67.3	80	120	0	0		S
Lead	ND	3.00	0	0	0	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

ICSA	SeqNo: 2738551	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: ICSA-2	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Magnesium	520300	5000	500000	0	104	80	120	0	0		
Manganese	ND	15.0	0	0	0	80	120	0	0		
Nickel	ND	40.0	0	0	0	80	120	0	0		
Potassium	8.819	5000	0	0	0	80	120	0	0		
Selenium	ND	5.00	0	0	0	80	120	0	0		
Silver	ND	10.0	0	0	0	80	120	0	0		
Sodium	100.3	5000	0	0	0	80	120	0	0		
Thallium	ND	10.0	0	0	0	80	120	0	0		
Vanadium	ND	50.0	0	0	0	80	120	0	0		
Zinc	ND	20.0	0	0	0	80	120	0	0		

ICSAB	SeqNo: 2735941	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: ICSAB-1	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	493900	200	500000	0	98.8	80	120	0	0		
Antimony	1.3	60.0	0	0	0	80	120	0	0		
Arsenic	ND	10.0	0	0	0	80	120	0	0		
Barium	523.6	200	500	0	105	80	120	0	0		
Beryllium	512	5.00	500	0	102	80	120	0	0		
Cadmium	964.9	5.00	1000	0	96.5	80	120	0	0		
Calcium	425500	5000	500000	0	85.1	80	120	0	0		
Chromium	500.2	10.0	500	0	100	80	120	0	0		
Cobalt	457.9	50.0	500	0	91.6	80	120	0	0		
Copper	575.9	25.0	500	0	115	80	120	0	0		
Iron	124300	100	200000	0	62.1	80	120	0	0		S
Lead	880.3	3.00	1000	0	88	80	120	0	0		
Magnesium	513900	5000	500000	0	103	80	120	0	0		
Manganese	498.7	15.0	500	0	99.7	80	120	0	0		
Nickel	903.3	40.0	1000	0	90.3	80	120	0	0		
Potassium	ND	5000	0	0	0	80	120	0	0		
Selenium	ND	5.00	0	0	0	80	120	0	0		
Silver	1062	10.0	1000	0	106	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: 76403

ICSAB	SeqNo: 2735941	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: ICSAB-1	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	ND	5000	0	0	0	80	120	0	0		
Thallium	ND	10.0	0	0	0	80	120	0	0		
Vanadium	465.9	50.0	500	0	93.2	80	120	0	0		
Zinc	914.5	20.0	1000	0	91.5	80	120	0	0		

ICSAB	SeqNo: 2738552	PrepDate:	TestNo: E200.7	RunNo: 177135
	Samp ID: ICSAB-2	PrepRef:	Units: µg/L	Analysis Date: 11/7/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	503500	200	500000	0	101	80	120	0	0		
Antimony	0.5868	60.0	0	0	0	80	120	0	0		
Arsenic	ND	10.0	0	0	0	80	120	0	0		
Barium	501.9	200	500	0	100	80	120	0	0		
Beryllium	531.1	5.00	500	0	106	80	120	0	0		
Cadmium	1005	5.00	1000	0	100	80	120	0	0		
Calcium	475200	5000	500000	0	95	80	120	0	0		
Chromium	568	10.0	500	0	114	80	120	0	0		
Cobalt	410.1	50.0	500	0	82	80	120	0	0		
Copper	551.4	25.0	500	0	110	80	120	0	0		
Iron	135600	100	200000	0	67.8	80	120	0	0		S
Lead	971.4	3.00	1000	0	97.1	80	120	0	0		
Magnesium	522200	5000	500000	0	104	80	120	0	0		
Manganese	525	15.0	500	0	105	80	120	0	0		
Nickel	832.9	40.0	1000	0	83.3	80	120	0	0		
Potassium	12.69	5000	0	0	0	80	120	0	0		
Selenium	ND	5.00	0	0	0	80	120	0	0		
Silver	1052	10.0	1000	0	105	80	120	0	0		
Sodium	87.28	5000	0	0	0	80	120	0	0		
Thallium	ND	10.0	0	0	0	80	120	0	0		
Vanadium	472.9	50.0	500	0	94.6	80	120	0	0		
Zinc	974.4	20.0	1000	0	97.4	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

Test Code: CLPHG

Test Number: E245.1

Test Name: Mercury

Matrix: Water **Units:** µg/L

**METHOD DETECTION /
REPORTING LIMITS**

Updated: 12-Dec-18

Type	Analyte	MDL	PQL
A	Mercury	0.1	0.2

Test Code: CLPW

Test Number: E200.7

Test Name: ICP Metals Water

Matrix: Water Units: µg/L

**METHOD DETECTION /
REPORTING LIMITS**

Updated: 03-Sep-19

Type	Analyte	MDL	PQL
A	Aluminum	29.4	200
A	Antimony	6.7	60
A	Arsenic	5.3	10
A	Barium	4.8	200
A	Beryllium	1	5
A	Boron	8.6	50
A	Cadmium	1	5
A	Calcium	24.5	5000
A	Chromium	4	10
A	Cobalt	1	50
A	Copper	2.1	25
A	Iron	11.1	100
A	Lead	2.8	3
A	Lithium	40.7	100
A	Magnesium	34.7	5000
A	Manganese	3	15
A	Molybdenum	3.5	50
A	Nickel	2.7	40
A	Potassium	19	5000
A	Selenium	3.5	5
A	Silver	8	10
A	Sodium	185	5000
A	Strontium	10.2	20
A	Thallium	5.1	10
A	Tin	2.6	50
A	Titanium	0	50
A	Vanadium	8	50
A	Zinc	4.6	20

Seq. No.	1	AS Loc:	1	Date:	10/31/2019			
Sample ID:	Blank							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[0.00] µg/L		0.0009	0.0045		0.0009		1:14:08PM
	[0.00] µg/L		0.0009	0.0043		0.0009		1:14:39PM
Mean:	[0.00] µg/L		0.0009	0.0044		0.0009		
SD:	0.00 µg/L							
%RSD:	2.09							

Seq. No.	2	AS Loc:	2	Date:	10/31/2019			
Sample ID:	0.2ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[0.200] µg/L		0.0024	0.0156		0.0033		1:15:49PM
	[0.200] µg/L		0.0024	0.0163		0.0033		1:16:19PM
Mean:	[0.200] µg/L		0.0024	0.0160		0.0033		
SD:	0.00 µg/L							
%RSD:	0.86							

Seq. No.	3	AS Loc:	3	Date:	10/31/2019			
Sample ID:	0.5ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[0.500] µg/L		0.0065	0.0354		0.0074		1:17:30PM
	[0.500] µg/L		0.0064	0.0339		0.0073		1:18:00PM
Mean:	[0.500] µg/L		0.0065	0.0346		0.0074		
SD:	0.00 µg/L							
%RSD:	1.73							

Seq. No.	4	AS Loc:	4	Date:	10/31/2019			
Sample ID:	1.00ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[1.000] µg/L		0.0133	0.0684		0.0142		1:19:11PM
	[1.000] µg/L		0.0133	0.0683		0.0142		1:19:41PM
Mean:	[1.000] µg/L		0.0133	0.0684		0.0142		
SD:	0.00 µg/L							
%RSD:	0.11							

Seq. No.	5	AS Loc:	5	Date:	10/31/2019			
Sample ID:	2.00ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[2.000] µg/L		0.0270	0.1317		0.0279		1:20:54PM
	[2.000] µg/L		0.0269	0.1300		0.0278		1:21:24PM
Mean:	[2.000] µg/L		0.0269	0.1308		0.0279		
SD:	0.00 µg/L							
%RSD:	0.18							

Seq. No.	6	AS Loc:	6	Date:	10/31/2019			
Sample ID:	5.00ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[5.000] µg/L		0.0671	0.3237		0.0681		1:22:35PM
	[5.000] µg/L		0.0668	0.3203		0.0677		1:23:05PM
Mean:	[5.000] µg/L		0.0670	0.3220		0.0679		
SD:	0.00 µg/L							
%RSD:	0.35							

Seq. No.	7	AS Loc:	7	Date:	10/31/2019			
Sample ID:	10.00ppb							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	[10.000] µg/L		0.1337	0.6282		0.1346		1:24:15PM
	[10.000] µg/L		0.1319	0.6307		0.1328		1:24:45PM
Mean:	[10.000] µg/L		0.1328	0.6295		0.1337		
SD:	0.00 µg/L							
%RSD:	0.97							

Seq. No.	8	AS Loc:	5	Date:	10/31/2019			
Sample ID:	ICV							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
		10/31/2019	1:26:29PM	All analyte(s) passed QC.				
	2.028 µg/L	2.028 µg/L	0.0270	0.1286		0.0279		1:25:57PM
	1.998 µg/L	1.998 µg/L	0.0266	0.1270		0.0275		1:26:27PM
Mean:	2.013 µg/L	2.013 µg/L	0.0268	0.1278		0.0277		
SD:	0.0215 µg/L	µg/L						
%RSD:	1.07							

10/31/2019 1:26:29PM QC value within limits for Hg 253.7 Recovery = 100.66%

Seq. No.	9	AS Loc:	1	Date:	10/31/2019				
Sample ID:	ICB								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7	10/31/2019 1:28:10PM All analyte(s) passed QC.								
	-0.0017 µg/L	-0.0017 µg/L	0.0000	0.0037		0.0009		1:27:38PM	
	0.0015 µg/L	0.0015 µg/L	0.0000	0.0044		0.0009		1:28:08PM	
Mean:	-0.0001 µg/L	-0.0001 µg/L	0.0000	0.0040		0.0009			
SD:	0.00226 µg/L		µg/L						
%RSD:	3,805.87								
	10/31/2019 1:28:10PM QC value within limits for Hg 253.7 Recovery = Not calculated								

Seq. No.	10	AS Loc:	9	Date:	10/31/2019				
Sample ID:	0.2ppb								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7									
	0.1840 µg/L	0.1840 µg/L	0.0025	0.0153		0.0034		1:29:18PM	
	0.1817 µg/L	0.1817 µg/L	0.0024	0.0156		0.0033		1:29:49PM	
Mean:	0.1828 µg/L	0.1828 µg/L	0.0024	0.0155		0.0034			
SD:	0.00164 µg/L	0.00164 µg/L							
%RSD:	0.89								

Seq. No.	11	AS Loc:	10	Date:	10/31/2019				
Sample ID:	2.0ppb								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7									
	1.985 µg/L	1.985 µg/L	0.0264	0.1285		0.0273		1:31:00PM	
	1.981 µg/L	1.981 µg/L	0.0264	0.1283		0.0273		1:31:30PM	
Mean:	1.983 µg/L	1.983 µg/L	0.0264	0.1284		0.0273			
SD:	0.0024 µg/L	0.0024 µg/L							
%RSD:	0.12								

Seq. No.	12	AS Loc:			11	Date:	10/31/2019			
Sample ID:	MB-76398									
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance		Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7										
	-0.0047	µg/L	-0.0047	µg/L	0.0000	0.0039		0.0009		1:32:42PM
	-0.0045	µg/L	-0.0045	µg/L	0.0000	0.0042		0.0009		1:33:12PM
Mean:	-0.0046	µg/L	-0.0046	µg/L	0.0000	0.0040		0.0009		
SD:	0.00013	µg/L	0.00013	µg/L						
%RSD:	2.73									

Seq. No.	13	AS Loc:	12	Date:	10/31/2019			
Sample ID:	LCS-76398							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	1.847 µg/L	1.847 µg/L	0.0246	0.1239		0.0255		1:34:24PM
	1.846 µg/L	1.846 µg/L	0.0246	0.1228		0.0255		1:34:54PM
Mean:	1.847 µg/L	1.847 µg/L	0.0246	0.1233		0.0255		
SD:	0.0005 µg/L	0.0005 µg/L						
%RSD:	0.03							

Seq. No.	14	AS Loc:	13	Date:	10/31/2019			
Sample ID:	191024055-001E							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	-0.0106 µg/L	-0.0106 µg/L	-0.0001	0.0037		0.0008		1:36:07PM
	-0.0100 µg/L	-0.0100 µg/L	-0.0001	0.0036		0.0008		1:36:37PM
Mean:	-0.0103 µg/L	-0.0103 µg/L	-0.0001	0.0037		0.0008		
SD:	0.00044 µg/L	0.00044 µg/L						
%RSD:	4.25							

Seq. No.	15	AS Loc:	14	Date:	10/31/2019			
Sample ID:	191024055-001EDP							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	-0.0065 µg/L	-0.0065 µg/L	-0.0001	0.0036		0.0008		1:37:49PM
	-0.0063 µg/L	-0.0063 µg/L	-0.0001	0.0034		0.0008		1:38:19PM
Mean:	-0.0064 µg/L	-0.0064 µg/L	-0.0001	0.0035		0.0008		
SD:	0.00015 µg/L	0.00015 µg/L						
%RSD:	2.27							

Seq. No.	16	AS Loc:	15	Date:	10/31/2019			
Sample ID:	191024055-001EMS							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	1.954 µg/L	1.954 µg/L	0.0260	0.1266		0.0269		1:39:29PM
	1.940 µg/L	1.940 µg/L	0.0258	0.1249		0.0267		1:39:59PM
Mean:	1.947 µg/L	1.947 µg/L	0.0259	0.1258		0.0268		
SD:	0.0099 µg/L	0.0099 µg/L						
%RSD:	0.51							

Seq. No.	17		AS Loc:	16		Date:	10/31/2019			
Sample ID:	191024055-002E									
Analyte	Conc (Calib)		Conc (Sample)		Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7										
	-0.0145	µg/L	-0.0145	µg/L	-0.0002	0.0024		0.0007		1:41:10PM
	-0.0114	µg/L	-0.0114	µg/L	-0.0001	0.0029		0.0008		1:41:40PM
Mean:	-0.0130	µg/L	-0.0130	µg/L	-0.0002	0.0026		0.0008		
SD:	0.00224	µg/L	0.00224	µg/L						
%RSD:	17.30									

Seq. No.	18	AS Loc:			17	Date:		10/31/2019		
Sample ID:	MB-76399									
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance		Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7										
	-0.0034	µg/L	-0.0034	µg/L	0.0000	0.0031		0.0009		1:42:50PM
	0.0015	µg/L	0.0015	µg/L	0.0000	0.0041		0.0009		1:43:20PM
Mean:	-0.0009	µg/L	-0.0009	µg/L	0.0000	0.0036		0.0009		
SD:	0.00344	µg/L	0.00344	µg/L						
%RSD:	373.06									

Seq. No.	19	AS Loc:	18	Date:	10/31/2019			
Sample ID:	LCS-76399							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	1.873 µg/L	1.873 µg/L	0.0249	0.1239		0.0258		1:44:30PM
	1.852 µg/L	1.852 µg/L	0.0247	0.1241		0.0256		1:45:00PM
Mean:	1.863 µg/L	1.863 µg/L	0.0248	0.1240		0.0257		
SD:	0.0148 µg/L	0.0148 µg/L						
%RSD:	0.80							

Seq. No.	20	AS Loc:		5	Date:	10/31/2019				
Sample ID:	CCV									
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance		Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7	10/31/2019 1:46:44PM All analyte(s) passed QC.									
	1.961	µg/L	1.961	µg/L	0.0261	0.1289		0.0270		1:46:11PM
	1.964	µg/L	1.964	µg/L	0.0261	0.1285		0.0271		1:46:41PM
Mean:	1.963	µg/L	1.963	µg/L	0.0261	0.1287		0.0270		
SD:	0.0024	µg/L		µg/L						
%RSD:	0.12									

10/31/2019 1:46:44PM QC value within limits for Hg 253.7 Recovery = 98.14%

Seq. No.	21	AS Loc:	1	Date:	10/31/2019				
Sample ID:	CCB								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7	10/31/2019 1:48:25PM All analyte(s) passed QC.								
	-0.0028 µg/L	-0.0028 µg/L	0.0000	0.0037		0.0009		1:47:53PM	
	0.0033 µg/L	0.0033 µg/L	0.0001	0.0045		0.0010		1:48:23PM	
Mean:	0.0003 µg/L	0.0003 µg/L	0.0000	0.0041		0.0009			
SD:	0.00433 µg/L		µg/L						
%RSD:	1,645.50								
10/31/2019 1:48:25PM QC value within limits for Hg 253.7 Recovery = Not calculated									

Seq. No.	22	AS Loc:	19	Date:	10/31/2019				
Sample ID:	191024057-001A								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7									
	-0.0048 µg/L	-0.0048 µg/L	0.0000	0.0042		0.0009		1:49:33PM	
	-0.0082 µg/L	-0.0082 µg/L	-0.0001	0.0036		0.0008		1:50:03PM	
Mean:	-0.0065 µg/L	-0.0065 µg/L	-0.0001	0.0039		0.0008			
SD:	0.00244 µg/L	0.00244 µg/L							
%RSD:	37.56								

Seq. No.	23	AS Loc:	20	Date:	10/31/2019				
Sample ID:	191024057-001ADP								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7									
	-0.0095 µg/L	-0.0095 µg/L	-0.0001	0.0027		0.0008		1:51:14PM	
	-0.0080 µg/L	-0.0080 µg/L	-0.0001	0.0035		0.0008		1:51:44PM	
Mean:	-0.0088 µg/L	-0.0088 µg/L	-0.0001	0.0031		0.0008			
SD:	0.00104 µg/L	0.00104 µg/L							
%RSD:	11.90								

Seq. No.	24	AS Loc:	21	Date:	10/31/2019				
Sample ID:	191024057-001AMS								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7									
	1.892 µg/L	1.892 µg/L	0.0252	0.1236		0.0261		1:52:55PM	
	1.896 µg/L	1.896 µg/L	0.0252	0.1232		0.0261		1:53:25PM	
Mean:	1.894 µg/L	1.894 µg/L	0.0252	0.1234		0.0261			
SD:	0.0028 µg/L	0.0028 µg/L							
%RSD:	0.15								

Seq. No.	25	AS Loc:	22	Date:	10/31/2019			
Sample ID:	191024057-002A							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	-0.0118 µg/L	-0.0118 µg/L	-0.0001	0.0030		0.0008		1:54:37PM
	-0.0095 µg/L	-0.0095 µg/L	-0.0001	0.0033		0.0008		1:55:07PM
Mean:	-0.0107 µg/L	-0.0107 µg/L	-0.0001	0.0031		0.0008		
SD:	0.00166 µg/L	0.00166 µg/L						
%RSD:	15.56							

Seq. No.	26	AS Loc:	23	Date:	10/31/2019			
Sample ID:	191024057-003A							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	-0.0119 µg/L	-0.0119 µg/L	-0.0001	0.0030		0.0008		1:56:19PM
	-0.0131 µg/L	-0.0131 µg/L	-0.0002	0.0028		0.0008		1:56:49PM
Mean:	-0.0125 µg/L	-0.0125 µg/L	-0.0002	0.0029		0.0008		
SD:	0.00090 µg/L	0.00090 µg/L						
%RSD:	7.20							

Seq. No.	27	AS Loc:	24	Date:	10/31/2019			
Sample ID:	191024057-004A							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	-0.0057 µg/L	-0.0057 µg/L	-0.0001	0.0033		0.0009		1:58:01PM
	-0.0095 µg/L	-0.0095 µg/L	-0.0001	0.0029		0.0008		1:58:31PM
Mean:	-0.0076 µg/L	-0.0076 µg/L	-0.0001	0.0031		0.0008		
SD:	0.00268 µg/L	0.00268 µg/L						
%RSD:	35.22							

Seq. No.	28	AS Loc:	25	Date:	10/31/2019			
Sample ID:	191024057-005A							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	-0.0205 µg/L	-0.0205 µg/L	-0.0003	0.0026		0.0007		1:59:44PM
	-0.0145 µg/L	-0.0145 µg/L	-0.0002	0.0030		0.0007		2:00:14PM
Mean:	-0.0175 µg/L	-0.0175 µg/L	-0.0002	0.0028		0.0007		
SD:	0.00423 µg/L	0.00423 µg/L						
%RSD:	24.25							

Seq. No.	29	AS Loc:	26	Date:	10/31/2019			
Sample ID:	191024057-006A							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.0141 µg/L	0.0141 µg/L	0.0002	0.0047		0.0011		2:01:26PM
	0.0172 µg/L	0.0172 µg/L	0.0002	0.0050		0.0012		2:01:56PM
Mean:	0.0157 µg/L	0.0157 µg/L	0.0002	0.0049		0.0011		
SD:	0.00223 µg/L	0.00223 µg/L						
%RSD:	14.24							

Seq. No.	30	AS Loc:	27	Date:	10/31/2019			
Sample ID:	191024057-007A							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	-0.0050 µg/L	-0.0050 µg/L	-0.0001	0.0039		0.0009		2:03:06PM
	-0.0095 µg/L	-0.0095 µg/L	-0.0001	0.0035		0.0008		2:03:37PM
Mean:	-0.0073 µg/L	-0.0073 µg/L	-0.0001	0.0037		0.0008		
SD:	0.00318 µg/L	0.00318 µg/L						
%RSD:	43.69							

Seq. No.	31	AS Loc:	28	Date:	10/31/2019			
Sample ID:	MB-76400							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
	0.0003 µg/L	0.0003 µg/L	0.0000	0.0043		0.0009		2:04:47PM
	-0.0004 µg/L	-0.0004 µg/L	0.0000	0.0042		0.0009		2:05:17PM
Mean:	-0.0000 µg/L	-0.0000 µg/L	0.0000	0.0043		0.0009		
SD:	0.00045 µg/L	0.00045 µg/L						
%RSD:	1,143.67							

Seq. No.	32	AS Loc:	5	Date:	10/31/2019			
Sample ID:	CCV							
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7								
		10/31/2019 2:07:02PM All analyte(s) passed QC.						
	1.958 µg/L	1.958 µg/L	0.0261	0.1292		0.0270		2:06:29PM
	1.937 µg/L	1.937 µg/L	0.0258	0.1276		0.0267		2:06:59PM
Mean:	1.947 µg/L	1.947 µg/L	0.0259	0.1284		0.0268		
SD:	0.0147 µg/L	µg/L						
%RSD:	0.75							

10/31/2019 2:07:02PM QC value within limits for Hg 253.7 Recovery = 97.37%

Seq. No.	33	AS Loc:		1	Date:	10/31/2019			
Sample ID:	CCB								
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7	10/31/2019 2:08:43PM All analyte(s) passed QC.								
	0.0013	µg/L	0.0013	µg/L	0.0000		0.0041	0.0009	2:08:10PM
	0.0022	µg/L	0.0022	µg/L	0.0000		0.0047	0.0010	2:08:41PM
Mean:	0.0017	µg/L	0.0017	µg/L	0.0000		0.0044	0.0009	
SD:	0.00060	µg/L		µg/L					
%RSD:	34.17								

10/31/2019 2:08:43PM QC value within limits for Hg 253.7 Recovery = Not calculated

Seq. No.	34	AS Loc:		29	Date:		10/31/2019		
Sample ID:	LCS-76400								
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7									
	1.827 µg/L	1.827 µg/L		0.0243	0.1227		0.0252		2:09:51PM
	1.812 µg/L	1.812 µg/L		0.0241	0.1215		0.0250		2:10:21PM
Mean:	1.819 µg/L	1.819 µg/L		0.0242	0.1221		0.0251		
SD:	0.0105 µg/L	0.0105 µg/L							
%RSD:	0.58								

Seq. No.	35		AS Loc:	30		Date:	10/31/2019		
Sample ID:	191024057-006C								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance		Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7									
	-0.0129 µg/L	-0.0129 µg/L	-0.0002		0.0030		0.0008		2:11:31PM
	-0.0110 µg/L	-0.0110 µg/L	-0.0001		0.0034		0.0008		2:12:01PM
Mean:	-0.0119 µg/L	-0.0119 µg/L	-0.0001		0.0032		0.0008		
SD:	0.00134 µg/L	0.00134 µg/L							
%RSD:	11.20								

Seq. No.	36	AS Loc:	5	Date:	10/31/2019				
Sample ID:	CCV								
Analyte	Conc (Calib)	Conc (Sample)	Corr. Absorbance	Pk Area	BG Area	Pk Ht	BG Ht	Time	
Hg 253.7	10/31/2019 2:13:46PM All analyte(s) passed QC.								
	1.947 µg/L	1.947 µg/L	0.0259	0.1291		0.0268		2:13:13PM	
	1.979 µg/L	1.979 µg/L	0.0263	0.1294		0.0273		2:13:43PM	
Mean:	1.963 µg/L	1.963 µg/L	0.0261	0.1293		0.0270			
SD:	0.0223 µg/L	µg/L							
%RSD:	1.13								

10/31/2019 2:13:46PM QC value within limits for Hg 253.7 Recovery = 98.16%

Seq. No.	37		AS Loc:		1		Date:	10/31/2019		
Sample ID:	CCB									
Analyte	Conc (Calib)	Conc (Sample)		Corr. Absorbance		Pk Area	BG Area	Pk Ht	BG Ht	Time
Hg 253.7	10/31/2019 2:15:27PM All analyte(s) passed QC.									
	-0.0011	µg/L	-0.0011	µg/L	0.0000	0.0039		0.0009		2:14:54PM
	0.0019	µg/L	0.0019	µg/L	0.0000	0.0041		0.0010		2:15:25PM
Mean:	0.0004	µg/L	0.0004	µg/L	0.0000	0.0040		0.0009		
SD:	0.00216	µg/L		µg/L						
%RSD:	548.87									

10/31/2019 2:15:27PM QC value within limits for Hg 253.7 Recovery = Not calculated

Sample Report

Report Author

Printed: 11/12/2019 11:13 am

Blank

Acquire Date: 07-Nov-2019 9:25 am

Sample Type: Calib. Std.

Correction Factor: 1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	.43971	Cts/S	.09216	20.960
Ag	-.22055	Cts/S	.06868	31.138
Al	-.17478	Cts/S	.07063	40.414
As	.04410	Cts/S	.01572	35.639
Au	.18886	Cts/S	.03140	16.624
B_	.08579	Cts/S	.01398	16.293
Ba	7.0173	Cts/S	1.2465	17.763
Be	2.6605	Cts/S	.0665	2.4989
Ca	.03745	Cts/S	.07258	193.81
Cd	.04686	Cts/S	.00464	9.9010
Co	-.02006	Cts/S	.00306	15.244
Cr	-.18345	Cts/S	.04072	22.197
Cu	.83162	Cts/S	.01003	1.2056
Fe	.69513	Cts/S	.00817	1.1759
K_	.79619	Cts/S	.08233	10.340
Li	-69.542	Cts/S	.034	.04842
Mg	-.04994	Cts/S	.03139	62.860
Mn	.38946	Cts/S	.02799	7.1863
Mo	-.01173	Cts/S	.00174	14.872
Na	-68.359	Cts/S	3.793	5.5486
Ni	.01203	Cts/S	.01178	97.900
Pb	-.01234	Cts/S	.01309	106.06
Pd	.03745	Cts/S	.01373	36.672
Sb	.00710	Cts/S	.01091	153.72
Se	.01894	Cts/S	.00100	5.3022
Si	.23165	Cts/S	.02552	11.017
Sn	-.01068	Cts/S	.00060	5.6424
Sr	.24783	Cts/S	.03834	15.471
Ti	.03190	Cts/S	.00588	18.438
Tl	-.01420	Cts/S	.00785	55.327
V_	.09859	Cts/S	.07968	80.818
Zn	.11634	Cts/S	.01093	9.3924
Zr	-.57426	Cts/S	.09028	15.721

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Ag - 1ppm

Acquire Date: 07-Nov-2019 9:28 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ag	21.048	Cts/S	.108	.51170

200.7-6

Acquire Date: 07-Nov-2019 9:38 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
As	13.876	Cts/S	.074	.53490
Cr	20.991	Cts/S	.235	1.1216
Li	54.475	Cts/S	5.869	10.773
Se	11.526	Cts/S	.051	.44177
Si	25.308	Cts/S	.341	1.3489
Sn	35.860	Cts/S	.094	.26311
V_	15.932	Cts/S	.072	.45479

200.7-1

Acquire Date: 07-Nov-2019 9:48 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1485.0	Cts/S	7.9	.53502
Al	76.264	Cts/S	.028	.03697
Ca	71.638	Cts/S	.229	.31944
K_	442.84	Cts/S	1.14	.25791
Mg	56.242	Cts/S	.470	.83619
Na	3557.5	Cts/S	6.2	.17451
Ni	434.34	Cts/S	.32	.07450
Zn	1143.9	Cts/S	1.0	.08772

200.7-2

Acquire Date: 07-Nov-2019 9:53 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ba	944.22	Cts/S	.98	.10407
Be	744.42	Cts/S	.58	.07748
Co	281.58	Cts/S	.55	.19591
Cu	36.831	Cts/S	.080	.21692
Fe	3588.7	Cts/S	4.0	.11108
Mn	859.12	Cts/S	.02	.00291
Sr	80.238	Cts/S	.027	.03418

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

200.7-4

Acquire Date: 07-Nov-2019 10:00 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mo	556.68	Cts/S	.42	.07505
Sb	103.62	Cts/S	.33	.31828
Ti	437.47	Cts/S	.55	.12473

200.7-3

Acquire Date: 07-Nov-2019 10:03 am

Sample Type: Calib. Std.

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
B_	14.516	Cts/S	.015	.10572
Cd	119.14	Cts/S	.14	.11601
Pb	13.779	Cts/S	.000	.00333
TI	4.8096	Cts/S	.0006	.01165

ICV-1

Acquire Date: 07-Nov-2019 10:09 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1909.1	ppb	14.8	.77449
Ag	507.27	ppb	1.73	.34160
Al	1970.0	ppb	7.1	.36085
As	1982.4	ppb	1.5	.07595
Au	3.8525	ppb	.6054	15.713
B_	2066.3	ppb	.2	.00992
Ba	2070.7	ppb	11.5	.55638
Be	2054.6	ppb	9.4	.45619
Ca	1984.7	ppb	2.7	.13408
Cd	2098.4	ppb	4.1	.19760
Co	1982.4	ppb	4.9	.24641
Cr	1972.0	ppb	9.1	.46198
Cu	2090.2	ppb	11.4	.54423
Fe	2036.7	ppb	4.4	.21767
K_	9898.3	ppb	13.8	.13902
Li	1964.3	ppb	57.0	2.9001
Mg	1946.9	ppb	5.2	.26456
Mn	1985.3	ppb	3.9	.19715
Mo	2061.6	ppb	3.9	.18894
Na	1909.2	ppb	14.2	.74169
Ni	2064.6	ppb	.5	.02324
Pb	1986.8	ppb	4.1	.20624

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

ICV-1

Acquire Date: 07-Nov-2019 10:09 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Pd	<.00000	ppb	2.216	4.0143
Sb	1992.8	ppb	7.8	.38967
Se	1995.1	ppb	1.5	.07590
Si	4707.9	ppb	62.8	1.3333
Sn	2006.4	ppb	2.4	.11904
Sr	2053.7	ppb	15.8	.76784
Ti	<.00000	ppb	.7624	46.236
Tl	2098.9	ppb	6.4	.30256
V_	1964.8	ppb	15.6	.79279
Zn	2075.7	ppb	5.3	.25444
Zr	<.00000	ppb	.58793	114.58

ICB-1

Acquire Date: 07-Nov-2019 10:13 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	<.00000	ppb	1.49212	890.78
Ag	5.7376	ppb	.0896	1.5624
Al	6.5316	ppb	16.9348	259.27
As	<.00000	ppb	.03466	10.940
Au	<.00000	ppb	.13231	47.070
B_	1.5140	ppb	.6413	42.355
Ba	.22057	ppb	1.66488	754.80
Be	<.00000	ppb	.14877	1,265.3
Ca	<.00000	ppb	7.397	70.713
Cd	.02929	ppb	.01185	40.448
Co	.02411	ppb	.06819	282.80
Cr	<.00000	ppb	4.9002	157.16
Cu	<.00000	ppb	.23926	244.48
Fe	.05284	ppb	.03115	58.950
K_	6.7248	ppb	.1916	2.8489
Li	<.00000	ppb	7.3376	168.98
Mg	<.00000	ppb	10.10465	4,093.9
Mn	.04037	ppb	.03464	85.806
Mo	1.4247	ppb	.9329	65.485
Na	12.860	ppb	11.224	87.273
Ni	<.00000	ppb	.19097	413.39
Pb	<.00000	ppb	.25294	40.370
Pd	<.00000	ppb	21.307	111.30
Sb	<.00000	ppb	.46351	70.740

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

ICB-1

Acquire Date: 07-Nov-2019 10:13 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Se	<.00000	ppb	2.45042	395.86
Si	6.6770	ppb	5.5341	82.884
Sn	<.00000	ppb	.40427	565.87
Sr	<.00000	ppb	.3104	13.752
Ti	<.00000	ppb	1.92917	202.66
Tl	1.0875	ppb	.8143	74.878
V_	.21482	ppb	3.22840	1,502.9
Zn	<.00000	ppb	.05022	95.338
Zr	<.00000	ppb	1.04314	263.91

CRI-1

Acquire Date: 07-Nov-2019 10:26 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	<.00000	ppb	.2908	5.0434
Ag	20.218	ppb	.461	2.2817
Al	4.1727	ppb	10.5228	252.18
As	16.948	ppb	.592	3.4959
Au	<.00000	ppb	.54869	272.72
B_	.24787	ppb	.00001	.00248
Ba	<.00000	ppb	1.99731	625.90
Be	10.157	ppb	.098	.96157
Ca	<.00000	ppb	4.1099	265.30
Cd	10.754	ppb	.083	.77095
Co	99.203	ppb	.239	.24098
Cr	21.651	ppb	6.115	28.242
Cu	52.448	ppb	1.912	3.6464
Fe	<.00000	ppb	.06010	16.910
K_	.00126	ppb	4.43774	352,840
Li	<.00000	ppb	12.091	73.223
Mg	12.568	ppb	17.077	135.88
Mn	29.684	ppb	.212	.71524
Mo	.14414	ppb	.23516	163.15
Na	.66979	ppb	12.97181	1,936.7
Ni	83.607	ppb	.352	.42106
Pb	6.3538	ppb	.3793	5.9690
Pd	<.00000	ppb	7.9854	87.784
Sb	121.17	ppb	.50	.41653
Se	11.670	ppb	.683	5.8485
Si	<.00000	ppb	17.210	148.22

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CRI-1

Acquire Date: 07-Nov-2019 10:26 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Sn	.10330	ppb	.44917	434.81
Sr	1.1334	ppb	6.4036	564.98
Ti	<.00000	ppb	.0448	3.9281
Tl	21.007	ppb	.159	.75754
V_	91.606	ppb	6.143	6.7063
Zn	45.333	ppb	.146	.32289
Zr	.63479	ppb	1.03699	163.36

ICSA-1

Acquire Date: 07-Nov-2019 10:30 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	21.623	ppb	1.361	6.2941
Ag	<.00000	ppb	.738	1.7937
Al	495620.	ppb	1,671	.33712
As	<.00000	ppb	2.511	5.6412
Au	117.66	ppb	.85	.71979
B_	<.00000	ppb	.52	.22724
Ba	1.2287	ppb	.3690	30.029
Be	2.5699	ppb	.0211	.82183
Ca	429310.	ppb	2,860	.66620
Cd	<.00000	ppb	.01943	2.7537
Co	<.00000	ppb	.14257	97.091
Cr	<.00000	ppb	1.380	9.8510
Cu	<.00000	ppb	1.960	8.4202
Fe	123570.	ppb	515	.41646
K_	.37815	ppb	9.05354	2,394.2
Li	<.00000	ppb	223.8	13.301
Mg	515720.	ppb	1,397	.27095
Mn	<.00000	ppb	.0033	.04462
Mo	<.00000	ppb	.3451	8.1063
Na	<.00000	ppb	12.60704	2,095.8
Ni	<.00000	ppb	.085	.40678
Pb	<.00000	ppb	2.114	2.8928
Pd	<.00000	ppb	7.985	26.796
Sb	<.00000	ppb	1.3686	56.028
Se	<.00000	ppb	3.638	5.0315
Si	1.1138	ppb	2.3476	210.78
Sn	.77826	ppb	.16847	21.647
Sr	10.642	ppb	9.605	90.253

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

ICSA-1

Acquire Date: 07-Nov-2019 10:30 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ti	<.00000	ppb	2.197	12.330
Tl	<.00000	ppb	2.261	14.081
V_	<.00000	ppb	.486	1.8759
Zn	<.00000	ppb	.0753	1.3278
Zr	<.00000	ppb	.0346	2.7769

ICSAB-1

Acquire Date: 07-Nov-2019 10:34 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	17.903	ppb	2.155	12.035
Ag	1062.1	ppb	6.0	.56135
Al	493930.	ppb	3,631	.73512
As	<.00000	ppb	1.961	3.7295
Au	120.58	ppb	.51	.42446
B_	<.00000	ppb	.16	.06797
Ba	523.56	ppb	3.09	.59092
Be	512.05	ppb	4.21	.82174
Ca	425520.	ppb	2,665	.62627
Cd	964.94	ppb	8.12	.84124
Co	457.88	ppb	4.19	.91485
Cr	500.20	ppb	2.38	.47527
Cu	575.93	ppb	3.32	.57656
Fe	124280.	ppb	318	.25548
K_	<.00000	ppb	4.48280	14,655
Li	<.00000	ppb	214.8	13.150
Mg	513890.	ppb	3,612	.70280
Mn	498.72	ppb	4.90	.98312
Mo	<.00000	ppb	.5330	19.547
Na	<.00000	ppb	12.1049	559.64
Ni	903.34	ppb	11.09	1.2272
Pb	880.30	ppb	8.17	.92860
Pd	<.00000	ppb	3.104	8.6814
Sb	1.2998	ppb	.8396	64.591
Se	<.00000	ppb	6.826	9.1686
Si	2.2159	ppb	19.5606	882.74
Sn	.27006	ppb	.25827	95.636
Sr	<.00000	ppb	2.8819	70.737
Ti	<.00000	ppb	.898	4.6782
Tl	<.00000	ppb	1.809	8.4676

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

ICSAB-1

Acquire Date: 07-Nov-2019 10:34 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
V_	465.88	ppb	4.32	.92826
Zn	914.51	ppb	10.07	1.1014
Zr	<.00000	ppb	.1386	8.5926

CCV-1

Acquire Date: 07-Nov-2019 10:42 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1900.8	ppb	.6	.03406
Ag	509.89	ppb	1.37	.26867
Al	1956.1	ppb	1.7	.08915
As	1979.9	ppb	1.4	.06954
Au	3.8927	ppb	.1324	3.4024
B_	2184.1	ppb	1.3	.06085
Ba	2068.1	ppb	3.0	.14386
Be	2063.0	ppb	.7	.03249
Ca	1992.4	ppb	25.5	1.2816
Cd	2090.7	ppb	.8	.03834
Co	1976.5	ppb	2.5	.12463
Cr	1968.5	ppb	4.4	.22389
Cu	2094.8	ppb	6.2	.29620
Fe	2034.0	ppb	.3	.01338
K_	9365.4	ppb	14.1	.15070
Li	1973.9	ppb	50.6	2.5628
Mg	1924.3	ppb	2.5	.12948
Mn	1981.9	ppb	4.1	.20912
Mo	2057.9	ppb	.5	.02419
Na	1911.3	ppb	3.3	.17058
Ni	2059.2	ppb	.6	.03117
Pb	2098.8	ppb	3.0	.14323
Pd	<.00000	ppb	2.662	9.1259
Sb	1983.9	ppb	2.4	.12311
Se	1993.6	ppb	.1	.00701
Si	4705.3	ppb	16.3	.34638
Sn	1996.8	ppb	.1	.00282
Sr	2078.4	ppb	9.5	.45937
Ti	<.00000	ppb	1.1659	33.732
Tl	2097.2	ppb	.7	.03452
V_	1967.6	ppb	2.4	.12165
Zn	2068.8	ppb	.8	.03633

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCV-1

Acquire Date: 07-Nov-2019 10:42 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Zr	<.00000	ppb	.17309	78.605

CCB-1

Acquire Date: 07-Nov-2019 10:46 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	.30850	ppb	.31705	102.77
Ag	1.7607	ppb	2.9514	167.63
Al	<.00000	ppb	20.7888	309.57
As	.14607	ppb	1.99729	1,367.3
Au	<.00000	ppb	.32219	219.06
B_	2.1771	ppb	.4662	21.413
Ba	.08468	ppb	1.37768	1,626.9
Be	<.00000	ppb	.03447	19.839
Ca	<.00000	ppb	2.4658	90.932
Cd	.02812	ppb	.17085	607.66
Co	<.00000	ppb	.04961	251.48
Cr	<.00000	ppb	1.2048	36.410
Cu	1.9575	ppb	.0243	1.2436
Fe	.30361	ppb	.11295	37.203
K_	8.8189	ppb	5.1043	57.879
Li	<.00000	ppb	7.287	60.373
Mg	<.00000	ppb	2.440	19.415
Mn	.04034	ppb	.05271	130.67
Mo	1.5467	ppb	.8233	53.232
Na	5.4740	ppb	7.9162	144.61
Ni	<.00000	ppb	.07043	2,004.3
Pb	<.00000	ppb	.00016	.01929
Pd	<.00000	ppb	15.5269	225.00
Sb	.05973	ppb	.12601	210.99
Se	<.00000	ppb	.34969	1,414.2
Si	<.00000	ppb	4.6962	121.40
Sn	<.00000	ppb	.04502	29.832
Sr	4.0758	ppb	12.4855	306.34
Ti	<.00000	ppb	.71753	174.07
Tl	<.00000	ppb	1.71865	895.26
V_	<.00000	ppb	.879	5.6659
Zn	<.00000	ppb	.11480	232.87
Zr	<.00000	ppb	.2416	16.204

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

MB-W

Acquire Date: 07-Nov-2019 10:51 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	28.957	ppb	.715	2.4688
Ag	3.3910	ppb	3.5976	106.09
Al	11.069	ppb	1.797	16.235
As	<.00000	ppb	1.8581	146.75
Au	.14710	ppb	.81418	553.47
B_	1.3344	ppb	.0729	5.4624
Ba	<.00000	ppb	1.16581	260.63
Be	<.00000	ppb	.01044	7.1646
Ca	3.1008	ppb	11.7818	379.96
Cd	<.00000	ppb	.02792	28.123
Co	.11398	ppb	.07128	62.542
Cr	.85088	ppb	8.38400	985.33
Cu	1.1217	ppb	.2021	18.021
Fe	<.00000	ppb	.11814	33.149
K_	14.468	ppb	1.643	11.359
Li	<.00000	ppb	1.303	7.3668
Mg	3.9427	ppb	9.7578	247.49
Mn	.07063	ppb	.00337	4.7753
Mo	.14412	ppb	.28223	195.83
Na	6.9208	ppb	8.8160	127.38
Ni	.04971	ppb	.12563	252.73
Pb	.67119	ppb	.37942	56.530
Pd	<.00000	ppb	15.526	72.790
Sb	.17862	ppb	.37919	212.28
Se	<.00000	ppb	2.0306	106.53
Si	<.00000	ppb	14.0855	364.26
Sn	.03975	ppb	.35931	903.90
Sr	2.2650	ppb	4.8015	211.98
Ti	<.00000	ppb	.3139	14.997
Tl	1.7273	ppb	.6331	36.655
V_	<.00000	ppb	3.216	30.498
Zn	.99547	ppb	.57785	58.048
Zr	<.00000	ppb	1.10641	751.67

LCS-W

Acquire Date: 07-Nov-2019 10:55 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
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Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

LCS-W

Acquire Date: 07-Nov-2019 10:55 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2150.1	ppb	11.6	.53996
Ag	511.43	ppb	10.20	1.9943
Al	2004.8	ppb	24.5	1.2213
As	1990.6	ppb	6.0	.30024
Au	2.9026	ppb	.6243	21.509
B_	2144.0	ppb	12.5	.58419
Ba	2055.4	ppb	23.4	1.1388
Be	2113.4	ppb	22.0	1.0418
Ca	2054.8	ppb	13.0	.63235
Cd	2062.4	ppb	15.5	.75206
Co	1963.2	ppb	12.4	.63224
Cr	1997.4	ppb	37.0	1.8523
Cu	2184.3	ppb	24.7	1.1321
Fe	2068.1	ppb	9.6	.46601
K_	9787.6	ppb	130.9	1.3371
Li	2013.6	ppb	75.4	3.7452
Mg	1961.1	ppb	39.9	2.0358
Mn	2027.5	ppb	16.6	.81955
Mo	2093.0	ppb	15.7	.74980
Na	2134.1	ppb	14.9	.69630
Ni	2057.8	ppb	11.0	.53634
Pb	2069.0	ppb	11.8	.56818
Pd	<.00000	ppb	6.213	13.294
Sb	1946.6	ppb	9.3	.47535
Se	1957.4	ppb	15.5	.79161
Si	9918.9	ppb	134.6	1.3567
Sn	1984.8	ppb	14.2	.71622
Sr	2120.2	ppb	27.0	1.2758
Ti	<.00000	ppb	1.7940	38.488
Tl	2002.3	ppb	19.7	.98432
V_	2032.0	ppb	14.5	.71177
Zn	2030.5	ppb	12.7	.62784
Zr	.53797	ppb	.75957	141.19

191024057-001A

Acquire Date: 07-Nov-2019 10:59 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	127030.	ppb	208	.16355
Ag	5.0218	ppb	1.4759	29.390

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191024057-001A

Acquire Date: 07-Nov-2019 10:59 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Al	<.00000	ppb	15.65	6.2799
As	5.3309	ppb	.3090	5.7961
Au	<.00000	ppb	.05700	6.1749
B_	409.32	ppb	1.82	.44366
Ba	103.50	ppb	.68	.66069
Be	<.00000	ppb	.13498	74.454
Ca	66049.	ppb	215	.32552
Cd	<.00000	ppb	.01015	9.5948
Co	.41426	ppb	.01858	4.4850
Cr	1294.7	ppb	14.0	1.0776
Cu	5.1593	ppb	.7786	15.091
Fe	39.923	ppb	.029	.07265
K_	13030.	ppb	87	.66697
Li	<.00000	ppb	1.96	.23750
Mg	15553.	ppb	34	.22112
Mn	4.3698	ppb	.0185	.42224
Mo	3.5148	ppb	.4859	13.823
Na	101020.	ppb	607	.60120
Ni	.87487	ppb	.07538	8.6166
Pb	14.969	ppb	.568	3.7923
Pd	<.00000	ppb	14.1955	411.39
Sb	18.708	ppb	.125	.66917
Se	<.00000	ppb	2.3107	92.416
Si	4995.7	ppb	39.3	.78599
Sn	<.00000	ppb	.06731	14.365
Sr	2253.6	ppb	.7	.03140
Ti	<.00000	ppb	1.4800	37.639
Tl	1.7271	ppb	1.1763	68.109
V_	<.00000	ppb	7.602	55.768
Zn	3.9160	ppb	.0287	.73173
Zr	1.0506	ppb	1.2785	121.69

191024057-001A

Acquire Date: 07-Nov-2019 11:04 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	11306.	ppb	35	.30878
Ag	3.7172	ppb	4.4275	119.11
Al	<.00000	ppb	16.940	23.220
As	<.00000	ppb	.03544	29.035

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191024057-001A

Acquire Date: 07-Nov-2019 11:04 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Au	<.00000	ppb	.11293	32.452
B_	42.954	ppb	.231	.53777
Ba	10.773	ppb	.351	3.2568
Be	.02078	ppb	.14552	700.43
Ca	7007.3	ppb	9.2	.13127
Cd	<.00000	ppb	.06510	76.653
Co	.24768	ppb	.13640	55.070
Cr	122.34	ppb	.46	.37708
Cu	2.5129	ppb	1.7348	69.037
Fe	3.5438	ppb	.0176	.49529
K_	905.97	ppb	4.07	.44896
Li	<.00000	ppb	3.251	5.5957
Mg	1550.8	ppb	5.9	.38037
Mn	.49126	ppb	.01268	2.5805
Mo	.22728	ppb	.02352	10.347
Na	11290.	ppb	62	.55007
Ni	.23829	ppb	.23111	96.984
Pb	1.1433	ppb	.8545	74.738
Pd	<.00000	ppb	30.6104	487.95
Sb	1.9367	ppb	.5052	26.085
Se	<.00000	ppb	1.05067	169.77
Si	532.72	ppb	6.27	1.1768
Sn	<.00000	ppb	.61752	144.02
Sr	238.39	ppb	5.13	2.1507
Ti	<.00000	ppb	.3139	10.311
Tl	2.1113	ppb	2.0807	98.553
V_	<.00000	ppb	.0012	.01992
Zn	.38417	ppb	.05749	14.964
Zr	<.00000	ppb	.9330	84.798

191024057-001ADP

Acquire Date: 07-Nov-2019 11:09 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	124530.	ppb	815	.65471
Ag	.91435	ppb	.45882	50.180
Al	<.00000	ppb	1.73	.72177
As	3.8689	ppb	.7236	18.704
Au	<.00000	ppb	.1701	11.449
B_	399.02	ppb	1.75	.43903

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191024057-001ADP

Acquire Date: 07-Nov-2019 11:09 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ba	106.96	ppb	.70	.65835
Be	<.00000	ppb	.06528	35.187
Ca	64466.	ppb	174	.27026
Cd	<.00000	ppb	.06933	72.907
Co	.40764	ppb	.10226	25.085
Cr	1309.3	ppb	4.4	.33694
Cu	4.8743	ppb	.5351	10.978
Fe	67.644	ppb	.273	.40334
K_	12556.	ppb	54	.42682
Li	<.00000	ppb	4.16	.51582
Mg	15155.	ppb	27	.18044
Mn	4.5931	ppb	.0139	.30287
Mo	3.0708	ppb	.0782	2.5452
Na	98604.	ppb	64	.06489
Ni	.79298	ppb	.11059	13.946
Pb	13.543	ppb	1.770	13.070
Pd	<.00000	ppb	.0017	.10640
Sb	18.318	ppb	.170	.92794
Se	<.00000	ppb	.6301	22.929
Si	4857.2	ppb	49.6	1.0221
Sn	.87354	ppb	.07863	9.0015
Sr	2185.4	ppb	14.2	.64937
Ti	<.00000	ppb	.9422	29.715
Tl	2.1751	ppb	1.0857	49.913
V_	<.00000	ppb	1.464	13.901
Zn	4.3523	ppb	.0402	.92401
Zr	.39227	ppb	.48143	122.73

191024057-001ADP

Acquire Date: 07-Nov-2019 11:14 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	11159.	ppb	15	.13496
Ag	4.1086	ppb	.5534	13.470
Al	<.00000	ppb	7.956	8.8927
As	1.0706	ppb	1.7219	160.85
Au	<.00000	ppb	.18971	101.20
B_	42.115	ppb	.471	1.1186
Ba	11.271	ppb	.394	3.4994
Be	.03385	ppb	.05289	156.27

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191024057-001ADP

Acquire Date: 07-Nov-2019 11:14 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ca	6897.2	ppb	34.0	.49268
Cd	<.00000	ppb	.06933	69.418
Co	.27177	ppb	.10227	37.630
Cr	122.54	ppb	2.69	2.1924
Cu	2.1753	ppb	1.3581	62.435
Fe	6.5840	ppb	.0484	.73489
K_	895.58	ppb	5.28	.58980
Li	<.00000	ppb	15.155	21.893
Mg	1518.5	ppb	11.2	.73452
Mn	.49491	ppb	.00897	1.8128
Mo	.21619	ppb	.05487	25.383
Na	11167.	ppb	1	.01011
Ni	.20991	ppb	.00998	4.7532
Pb	1.3230	ppb	.7908	59.776
Pd	<.00000	ppb	5.3235	54.745
Sb	2.9198	ppb	.2111	7.2312
Se	<.00000	ppb	.0352	2.0914
Si	514.46	ppb	10.17	1.9770
Sn	.02381	ppb	.58405	2,452.7
Sr	242.46	ppb	4.48	1.8485
Ti	<.00000	ppb	1.2109	112.31
Tl	1.0876	ppb	.0902	8.2975
V_	<.00000	ppb	5.2642	70.774
Zn	.40711	ppb	.00035	.08651
Zr	<.00000	ppb	1.24420	181.71

191024057-001AMS

Acquire Date: 07-Nov-2019 11:19 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	123880.	ppb	459	.37085
Ag	53.220	ppb	4.702	8.8351
Al	1807.6	ppb	22.2	1.2305
As	33.583	ppb	.344	1.0246
Au	<.00000	ppb	.22704	22.920
B_	406.29	ppb	2.76	.67862
Ba	2081.0	ppb	14.1	.67629
Be	52.727	ppb	.391	.74233
Ca	65622.	ppb	648	.98690
Cd	48.426	ppb	.123	.25300

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191024057-001AMS

Acquire Date: 07-Nov-2019 11:19 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Co	441.68	ppb	3.01	.68256
Cr	1501.7	ppb	17.1	1.1397
Cu	268.53	ppb	5.79	2.1579
Fe	984.54	ppb	4.99	.50702
K_	12816.	ppb	8	.06380
Li	<.00000	ppb	2.06	.25838
Mg	15342.	ppb	134	.87211
Mn	457.10	ppb	2.84	.62181
Mo	3.6915	ppb	.2508	6.7948
Na	98129.	ppb	247	.25144
Ni	458.21	ppb	2.82	.61485
Pb	31.655	ppb	.186	.58646
Pd	<.00000	ppb	8.428	49.758
Sb	485.87	ppb	3.70	.76252
Se	10.049	ppb	.735	7.3155
Si	4891.2	ppb	22.5	.45904
Sn	.63531	ppb	.28073	44.188
Sr	2231.2	ppb	32.9	1.4732
Ti	<.00000	ppb	.4483	14.282
Tl	38.956	ppb	.633	1.6254
V_	476.72	ppb	.56	.11750
Zn	501.08	ppb	3.67	.73333
Zr	1.1972	ppb	1.2092	101.01

191024057-001AA

Acquire Date: 07-Nov-2019 11:26 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	125830.	ppb	796	.63265
Ag	102.99	ppb	.55	.53523
Al	4197.2	ppb	41.0	.97597
As	69.162	ppb	.895	1.2934
Au	.36066	ppb	.35947	99.670
B_	416.53	ppb	2.40	.57540
Ba	4322.0	ppb	45.5	1.0534
Be	113.81	ppb	.96	.84575
Ca	67596.	ppb	497	.73515
Cd	105.43	ppb	.68	.64203
Co	957.05	ppb	5.75	.60044
Cr	1767.4	ppb	25.6	1.4470

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191024057-001AA

Acquire Date: 07-Nov-2019 11:26 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Cu	576.16	ppb	5.89	1.0231
Fe	2056.8	ppb	12.4	.60155
K_	13335.	ppb	43	.31930
Li	<.00000	ppb	14.96	1.9507
Mg	15919.	ppb	120	.75070
Mn	989.74	ppb	3.81	.38468
Mo	4.1127	ppb	.0940	2.2867
Na	100260.	ppb	398	.39691
Ni	995.71	ppb	5.34	.53595
Pb	54.752	ppb	.945	1.7258
Pd	<.00000	ppb	7.541	23.116
Sb	1028.1	ppb	6.0	.58206
Se	22.696	ppb	.840	3.7009
Si	5042.3	ppb	81.2	1.6111
Sn	<.00000	ppb	.31441	64.926
Sr	2285.0	ppb	8.9	.38991
Ti	<.00000	ppb	.1793	2.9910
Tl	83.604	ppb	.453	.54142
V_	1044.6	ppb	1.5	.14265
Zn	1069.2	ppb	4.9	.45701
Zr	<.00000	ppb	.48413	54.989

191024057-001AL

Acquire Date: 07-Nov-2019 11:30 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	12617.	ppb	17,690	140.20
Ag	5.2839	ppb	.3677	6.9582
Al	<.00000	ppb	94.397	127.55
As	1.3140	ppb	.8261	62.871
Au	<.00000	ppb	.35952	116.80
B_	70.131	ppb	22.712	32.386
Ba	10.772	ppb	15.662	145.40
Be	<.00000	ppb	.02990	32.370
Ca	7164.6	ppb	10,117.3	141.21
Cd	<.00000	ppb	.05919	87.599
Co	.20383	ppb	.03719	18.247
Cr	123.34	ppb	192.72	156.25
Cu	1.8657	ppb	2.2138	118.66
Fe	6.6623	ppb	2.0145	30.237

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191024057-001AL

Acquire Date: 07-Nov-2019 11:30 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
K_	1043.8	ppb	1,452.4	139.14
Li	<.00000	ppb	113.45	111.20
Mg	1612.7	ppb	2,291.1	142.07
Mn	.78821	ppb	.25472	32.316
Mo	.51554	ppb	.18031	34.975
Na	12027.	ppb	16,932	140.78
Ni	.32354	ppb	.09011	27.851
Pb	3.4237	ppb	.7920	23.132
Pd	<.00000	ppb	17.2954	688.29
Sb	3.9620	ppb	1.2647	31.921
Se	.14846	ppb	.87521	589.53
Si	544.63	ppb	730.34	134.10
Sn	<.00000	ppb	.20215	43.146
Sr	250.50	ppb	337.30	134.65
Ti	<.00000	ppb	1.8387	67.430
Tl	2.8788	ppb	.9952	34.570
V_	<.00000	ppb	9.936	72.829
Zn	1.0677	ppb	.3176	29.743
Zr	<.00000	ppb	.5555	42.174

191024057-002A

Acquire Date: 07-Nov-2019 11:37 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	258760.	ppb	243	.09387
Ag	3.5867	ppb	1.6604	46.292
Al	144.27	ppb	1.28	.88860
As	.43698	ppb	.61951	141.77
Au	2.2739	ppb	.4919	21.634
B_	480.91	ppb	.05	.01138
Ba	1355.0	ppb	6.0	.44197
Be	.33309	ppb	.12170	36.535
Ca	14962.	ppb	28	.18762
Cd	<.00000	ppb	.01860	37.463
Co	.49310	ppb	.12397	25.140
Cr	<.00000	ppb	8.7554	378.63
Cu	32.841	ppb	.454	1.3811
Fe	1905.0	ppb	1.2	.06075
K_	16511.	ppb	76	.45743
Li	<.00000	ppb	13.56	10.016

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191024057-002A

Acquire Date: 07-Nov-2019 11:37 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mg	4692.2	ppb	31.7	.67487
Mn	1333.6	ppb	3.4	.25665
Mo	.30488	ppb	.19596	64.277
Na	174570.	ppb	384	.22018
Ni	.36891	ppb	.14568	39.490
Pb	3.3233	ppb	.2225	6.6939
Pd	<.00000	ppb	1.7745	18.249
Sb	.77245	ppb	.12633	16.354
Se	<.00000	ppb	.24503	61.801
Si	6785.4	ppb	72.7	1.0712
Sn	.06361	ppb	.21336	335.44
Sr	1794.1	ppb	10.9	.60571
Ti	<.00000	ppb	1.1660	40.406
Tl	4.1581	ppb	2.2615	54.389
V_	<.00000	ppb	7.0182	77.072
Zn	54.533	ppb	.120	.21981
Zr	<.00000	ppb	.06901	8.8189

CCV-2

Acquire Date: 07-Nov-2019 11:48 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	1983.5	ppb	8.5	.42973
Ag	510.28	ppb	1.40	.27494
Al	1961.9	ppb	11.6	.59250
As	1999.6	ppb	3.1	.15736
Au	3.3843	ppb	.0567	1.6756
B_	2211.1	ppb	.5	.02271
Ba	2069.8	ppb	14.0	.67612
Be	2051.8	ppb	12.8	.62549
Ca	1994.3	ppb	20.5	1.0265
Cd	2123.1	ppb	5.4	.25484
Co	1988.2	ppb	3.4	.17139
Cr	1987.9	ppb	6.8	.34174
Cu	2086.5	ppb	9.6	.46013
Fe	2056.9	ppb	2.2	.10853
K_	9363.2	ppb	31.1	.33170
Li	1927.4	ppb	66.9	3.4717
Mg	1965.7	ppb	24.7	1.2549
Mn	2016.7	ppb	4.8	.23750

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCV-2

Acquire Date: 07-Nov-2019 11:48 am

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mo	2088.4	ppb	.9	.04293
Na	1960.6	ppb	6.1	.31086
Ni	2094.9	ppb	5.2	.24751
Pb	2113.6	ppb	3.0	.14296
Pd	<.00000	ppb	3.991	8.5968
Sb	2012.9	ppb	.9	.04322
Se	2023.4	ppb	13.6	.67023
Si	4699.1	ppb	60.8	1.2945
Sn	2019.5	ppb	3.5	.17421
Sr	2058.7	ppb	15.0	.72697
Ti	<.00000	ppb	.4036	21.947
Tl	2132.1	ppb	3.6	.17044
V_	1951.8	ppb	1.2	.06382
Zn	2086.2	ppb	4.3	.20510
Zr	1.7838	ppb	.3107	17.419

CCB-2

Acquire Date: 07-Nov-2019 12:01 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	30.303	ppb	2.035	6.7156
Ag	3.0649	ppb	1.8448	60.190
Al	1.8137	ppb	3.5930	198.11
As	<.00000	ppb	.6540	48.837
Au	<.00000	ppb	.15140	94.216
B_	2.3352	ppb	.6895	29.529
Ba	<.00000	ppb	.50930	122.33
Be	<.00000	ppb	.01587	13.714
Ca	<.00000	ppb	.8220	11.166
Cd	.06038	ppb	.00846	14.006
Co	<.00000	ppb	.03719	54.749
Cr	<.00000	ppb	.60218	61.697
Cu	.12614	ppb	1.00589	797.42
Fe	<.00000	ppb	.10528	498.39
K_	12.114	ppb	5.769	47.624
Li	<.00000	ppb	.205	1.1552
Mg	<.00000	ppb	19.516	96.579
Mn	.01467	ppb	.01679	114.45
Mo	1.0033	ppb	.2901	28.909
Na	22.282	ppb	8.659	38.860

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCB-2

Acquire Date: 07-Nov-2019 12:01 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ni	.11368	ppb	.26626	234.22
Pb	<.00000	ppb	1.2030	116.94
Pd	<.00000	ppb	3.993	35.357
Sb	<.00000	ppb	.1685	10.677
Se	.81674	ppb	2.24045	274.31
Si	<.00000	ppb	2.347	21.224
Sn	.31767	ppb	.30322	95.453
Sr	<.00000	ppb	.9605	35.373
Ti	<.00000	ppb	.7624	48.085
Tl	.25590	ppb	1.08564	424.24
V_	<.00000	ppb	6.4333	74.083
Zn	<.00000	ppb	.01234	23.865
Zr	.14605	ppb	.06913	47.332

191024057-002A

Acquire Date: 07-Nov-2019 12:05 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	27986.	ppb	101	.36200
Ag	4.3041	ppb	3.7818	87.866
Al	<.00000	ppb	3.0797	282.50
As	.26676	ppb	.44749	167.75
Au	.32065	ppb	.18917	58.996
B_	47.244	ppb	.175	.37028
Ba	131.11	ppb	.23	.17264
Be	.03580	ppb	.11900	332.42
Ca	1455.0	ppb	7.4	.50809
Cd	<.00000	ppb	.00084	.89380
Co	.19506	ppb	.09918	50.843
Cr	<.00000	ppb	6.6707	86.553
Cu	7.5386	ppb	3.1942	42.372
Fe	187.06	ppb	.02	.01204
K_	1004.8	ppb	9.1	.90953
Li	<.00000	ppb	3.661	12.185
Mg	420.66	ppb	10.11	2.4029
Mn	131.51	ppb	.57	.42998
Mo	<.00000	ppb	.04703	425.18
Na	26403.	ppb	109	.41183
Ni	.28417	ppb	.02513	8.8441
Pb	1.2223	ppb	.5065	41.442

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191024057-002A

Acquire Date: 07-Nov-2019 12:05 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Pd	<.00000	ppb	6.2109	220.03
Sb	<.00000	ppb	.37907	636.55
Se	<.00000	ppb	1.36515	306.13
Si	663.29	ppb	4.69	.70730
Sn	.04771	ppb	.50534	1,059.2
Sr	170.02	ppb	3.84	2.2601
Ti	<.00000	ppb	1.6593	41.529
Tl	<.00000	ppb	.18096	70.790
V_	<.00000	ppb	7.3111	86.246
Zn	5.6357	ppb	.0605	1.0734
Zr	<.00000	ppb	.69121	70.658

191024057-003A

Acquire Date: 07-Nov-2019 12:12 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	125820.	ppb	600	.47707
Ag	1.6953	ppb	5.2576	310.13
Al	<.00000	ppb	1.80	.74900
As	3.6252	ppb	.3786	10.444
Au	<.00000	ppb	.2081	15.098
B_	407.16	ppb	1.97	.48398
Ba	107.03	ppb	1.20	1.1236
Be	<.00000	ppb	.00267	29.184
Ca	65981.	ppb	113	.17112
Cd	<.00000	ppb	.01691	13.402
Co	.43393	ppb	.07748	17.855
Cr	1284.9	ppb	13.0	1.0138
Cu	5.6945	ppb	.4779	8.3916
Fe	52.721	ppb	.371	.70443
K_	12812.	ppb	126	.98360
Li	<.00000	ppb	9.58	1.1482
Mg	15455.	ppb	23	.15176
Mn	4.4168	ppb	.0306	.69321
Mo	2.9710	ppb	.2508	8.4427
Na	100600.	ppb	441	.43859
Ni	.83913	ppb	.00503	.59971
Pb	14.185	ppb	.601	4.2336
Pd	<.00000	ppb	23.0687	294.17
Sb	16.858	ppb	2.232	13.241

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191024057-003A

Acquire Date: 07-Nov-2019 12:12 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Se	<.00000	ppb	.2100	7.6433
Si	4922.2	ppb	50.9	1.0338
Sn	<.00000	ppb	.52779	332.50
Sr	2246.0	ppb	5.1	.22876
Ti	<.00000	ppb	.0448	1.1400
Tl	3.5184	ppb	2.6234	74.562
V_	<.00000	ppb	1.4623	18.167
Zn	4.1599	ppb	.0717	1.7238
Zr	<.00000	ppb	.55306	125.58

191024057-003A

Acquire Date: 07-Nov-2019 12:16 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	12064.	ppb	146	1.2116
Ag	2.5434	ppb	5.7183	224.83
Al	<.00000	ppb	11.801	14.451
As	<.00000	ppb	1.85865	423.59
Au	.14688	ppb	.39738	270.55
B_	45.603	ppb	.611	1.3401
Ba	11.748	ppb	.133	1.1323
Be	<.00000	ppb	.05569	90.501
Ca	7425.5	ppb	107.5	1.4471
Cd	<.00000	ppb	.00592	4.8997
Co	.19945	ppb	.08058	40.403
Cr	131.22	ppb	3.48	2.6514
Cu	6.0154	ppb	.8041	13.367
Fe	5.2120	ppb	.0559	1.0733
K_	959.78	ppb	8.16	.85062
Li	<.00000	ppb	12.768	16.977
Mg	1636.5	ppb	47.1	2.8792
Mn	.53893	ppb	.01308	2.4266
Mo	.37694	ppb	.12543	33.274
Na	12003.	ppb	146	1.2161
Ni	.16369	ppb	.05530	33.784
Pb	1.8792	ppb	.2544	13.538
Pd	<.00000	ppb	1.3308	19.284
Sb	1.3411	ppb	.9267	69.097
Se	<.00000	ppb	4.3407	152.48
Si	556.50	ppb	16.46	2.9572

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191024057-003A

Acquire Date: 07-Nov-2019 12:16 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Sn	.26209	ppb	.35936	137.11
Sr	244.27	ppb	10.23	4.1894
Ti	<.00000	ppb	.5380	12.206
Tl	2.6229	ppb	.2714	10.347
V_	<.00000	ppb	2.633	12.128
Zn	.46092	ppb	.03666	7.9531
Zr	<.00000	ppb	1.9360	98.999

191024057-004A

Acquire Date: 07-Nov-2019 12:22 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	168210.	ppb	754	.44829
Ag	2.4779	ppb	.2765	11.158
Al	<.00000	ppb	5.38	2.2973
As	5.9867	ppb	1.0316	17.232
Au	<.00000	ppb	.60524	102.77
B_	308.18	ppb	.93	.30026
Ba	141.17	ppb	.32	.22727
Be	<.00000	ppb	.05035	159.59
Ca	91927.	ppb	331	.35966
Cd	<.00000	ppb	.00422	2.8715
Co	.51724	ppb	.01553	3.0018
Cr	1400.7	ppb	3.6	.25417
Cu	5.6360	ppb	.1019	1.8077
Fe	994.31	ppb	4.08	.41047
K_	17160.	ppb	21	.12518
Li	<.00000	ppb	.4	.03284
Mg	23812.	ppb	54	.22549
Mn	76.044	ppb	.120	.15786
Mo	1.5854	ppb	.2666	16.819
Na	125590.	ppb	1,128	.89782
Ni	.81432	ppb	.17087	20.983
Pb	<.00000	ppb	.4448	40.183
Pd	5.9605	ppb	9.7595	163.74
Sb	15.638	ppb	1.433	9.1647
Se	<.00000	ppb	2.41527	304.81
Si	5398.0	ppb	4.1	.07534
Sn	<.00000	ppb	.32576	68.374
Sr	4999.2	ppb	1.7	.03487

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191024057-004A

Acquire Date: 07-Nov-2019 12:22 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ti	<.00000	ppb	.9867	22.713
Tl	2.4950	ppb	.0904	3.6247
V_	<.00000	ppb	17.2535	440.78
Zn	7.4059	ppb	.0956	1.2912
Zr	.09717	ppb	1.31307	1,351.3

191024057-004A

Acquire Date: 07-Nov-2019 12:27 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	14850.	ppb	93	.62712
Ag	1.3042	ppb	1.5678	120.21
Al	<.00000	ppb	10.525	11.262
As	.31657	ppb	.37925	119.80
Au	.26787	ppb	.22748	84.921
B_	29.693	ppb	.118	.39819
Ba	14.213	ppb	.190	1.3368
Be	.03377	ppb	.00537	15.911
Ca	9148.1	ppb	43.3	.47386
Cd	<.00000	ppb	.14461	87.619
Co	.27397	ppb	.06198	22.624
Cr	115.88	ppb	14.78	12.754
Cu	1.0483	ppb	.4283	40.862
Fe	99.107	ppb	.535	.53969
K_	1063.9	ppb	6.9	.64838
Li	<.00000	ppb	4.440	4.8206
Mg	2188.7	ppb	16.7	.76195
Mn	7.6743	ppb	.0495	.64450
Mo	.06652	ppb	.04703	70.702
Na	14638.	ppb	62	.42501
Ni	.30588	ppb	.05534	18.093
Pb	.33307	ppb	.25364	76.152
Pd	<.00000	ppb	2.2181	32.142
Sb	1.4309	ppb	1.1370	79.460
Se	<.00000	ppb	.1052	10.122
Si	550.41	ppb	9.37	1.7029
Sn	.02383	ppb	.83108	3,487.0
Sr	509.36	ppb	11.19	2.1975
Ti	<.00000	ppb	.4934	14.144
Tl	1.8551	ppb	.2713	14.626

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191024057-004A

Acquire Date: 07-Nov-2019 12:27 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
V_	<.00000	ppb	15.792	146.95
Zn	.62607	ppb	.05445	8.6978
Zr	.04861	ppb	1.72827	3,555.3

191024057-005A

Acquire Date: 07-Nov-2019 12:34 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	144810.	ppb	861	.59446
Ag	5.0871	ppb	1.1990	23.569
Al	<.00000	ppb	5.390	6.7970
As	4.2105	ppb	1.2064	28.652
Au	1.1775	ppb	.3036	25.784
B_	62.714	ppb	.589	.93886
Ba	62.179	ppb	1.819	2.9253
Be	<.00000	ppb	.11903	129.95
Ca	44729.	ppb	234	.52300
Cd	<.00000	ppb	.02708	28.478
Co	.40985	ppb	.06195	15.115
Cr	24.624	ppb	3.378	13.719
Cu	4.7490	ppb	.9301	19.585
Fe	3198.4	ppb	76.1	2.3782
K_	6120.5	ppb	.1	.00146
Li	<.00000	ppb	8.10	1.1240
Mg	9695.4	ppb	24.3	.25087
Mn	12.838	ppb	.006	.04511
Mo	4.8117	ppb	.0791	1.6443
Na	112020.	ppb	106	.09444
Ni	.38396	ppb	.02522	6.5686
Pb	.23524	ppb	.41856	177.93
Pd	2.8230	ppb	6.2104	219.99
Sb	.68609	ppb	.75842	110.54
Se	.19796	ppb	.17449	88.146
Si	4948.6	ppb	39.9	.80697
Sn	.48446	ppb	.38183	78.815
Sr	619.60	ppb	12.80	2.0660
Ti	1.7441	ppb	.1794	10.284
Tl	1.1512	ppb	3.0764	267.22
V_	<.00000	ppb	8.4806	216.12
Zn	3.4219	ppb	.0083	.24203

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191024057-005A

Acquire Date: 07-Nov-2019 12:34 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Zr	.46429	ppb	.17287	37.233

191024057-006A

Acquire Date: 07-Nov-2019 12:39 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	548340.	ppb	4,806	.87642
Ag	2.6737	ppb	2.2136	82.791
Al	4714.7	ppb	18.5	.39330
As	6.1804	ppb	2.2716	36.754
Au	1.9127	ppb	.9271	48.474
B_	190.82	ppb	1.18	.61842
Ba	418.00	ppb	1.45	.34737
Be	.41534	ppb	.00523	1.2602
Ca	316750.	ppb	2,869	.90589
Cd	.89440	ppb	.03129	3.4983
Co	10.030	ppb	.074	.74191
Cr	383.43	ppb	3.52	.91903
Cu	34.052	ppb	.176	.51607
Fe	7483.5	ppb	37.1	.49596
K_	67265.	ppb	21	.03196
Li	<.00000	ppb	227.4	8.0899
Mg	65408.	ppb	110	.16750
Mn	1344.0	ppb	3.7	.27864
Mo	2.8656	ppb	.2587	9.0271
Na	237990.	ppb	600	.25226
Ni	15.105	ppb	.311	2.0620
Pb	22.266	ppb	.291	1.3091
Pd	<.00000	ppb	.888	1.4667
Sb	3.7833	ppb	2.2743	60.115
Se	<.00000	ppb	.4900	10.937
Si	11245.	ppb	27	.23794
Sn	2.6283	ppb	.2471	9.3996
Sr	2233.8	ppb	20.5	.91869
Ti	16.934	ppb	.045	.26340
Tl	4.4779	ppb	.1809	4.0402
V_	<.00000	ppb	5.2646	476.58
Zn	431.71	ppb	3.50	.81091
Zr	<.00000	ppb	.96787	219.80

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191024057-006A

Acquire Date: 07-Nov-2019 1:09 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	139440.	ppb	78	.05601
Ag	2.7392	ppb	5.2573	191.93
Al	244.08	ppb	12.58	5.1531
As	1.7998	ppb	.1377	7.6536
Au	<.00000	ppb	.09464	37.148
B_	21.074	ppb	.230	1.0895
Ba	40.748	ppb	1.589	3.8991
Be	<.00000	ppb	.02119	17.183
Ca	33586.	ppb	153	.45414
Cd	<.00000	ppb	.02706	39.332
Co	1.6020	ppb	.0806	5.0309
Cr	27.800	ppb	.046	.16699
Cu	<.00000	ppb	1.81030	188.07
Fe	898.84	ppb	2.31	.25674
K_	4132.5	ppb	19.3	.46823
Li	<.00000	ppb	11.61	2.1757
Mg	5960.9	ppb	38.3	.64204
Mn	153.91	ppb	.47	.30443
Mo	.24391	ppb	.03135	12.855
Na	108770.	ppb	803	.73849
Ni	2.1375	ppb	.2662	12.455
Pb	2.4528	ppb	.6657	27.142
Pd	<.00000	ppb	3.1053	41.248
Sb	.41386	ppb	.46339	111.97
Se	<.00000	ppb	1.6802	40.162
Si	1135.7	ppb	4.7	.41445
Sn	.32564	ppb	.60638	186.21
Sr	227.06	ppb	10.24	4.5108
Ti	<.00000	ppb	1.0314	85.599
Tl	1.2796	ppb	1.4474	113.11
V_	<.00000	ppb	14.9142	153.24
Zn	49.253	ppb	.289	.58772
Zr	<.00000	ppb	.17291	37.227

191024057-006A

Acquire Date: 07-Nov-2019 1:17 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
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Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191024057-006A

Acquire Date: 07-Nov-2019 1:17 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	11501.	ppb	37	.32048
Ag	6.9783	ppb	.1845	2.6438
Al	<.00000	ppb	5.389	45.685
As	<.00000	ppb	.7922	57.102
Au	.30804	ppb	.62487	202.85
B_	1.2790	ppb	.1026	8.0243
Ba	3.6900	ppb	.2042	5.5331
Be	.06380	ppb	.05820	91.219
Ca	3207.7	ppb	.6	.01748
Cd	<.00000	ppb	.03383	27.073
Co	.39015	ppb	.02788	7.1453
Cr	<.00000	ppb	.6949	19.621
Cu	4.3360	ppb	2.4394	56.260
Fe	74.821	ppb	1.601	2.1400
K_	248.92	ppb	3.55	1.4259
Li	<.00000	ppb	21.797	74.703
Mg	531.79	ppb	17.42	3.2763
Mn	14.630	ppb	.284	1.9400
Mo	<.00000	ppb	.02355	12.874
Na	11357.	ppb	52	.46160
Ni	.25941	ppb	.08038	30.984
Pb	1.1414	ppb	.3804	33.329
Pd	1.5689	ppb	9.7599	622.10
Sb	.53640	ppb	.54762	102.09
Se	<.00000	ppb	.69996	257.17
Si	104.56	ppb	3.13	2.9922
Sn	<.00000	ppb	.64025	2,011.8
Sr	17.207	ppb	3.522	20.467
Ti	<.00000	ppb	.89694	91.244
Tl	1.5992	ppb	.6335	39.612
V_	<.00000	ppb	1.4624	16.450
Zn	4.6812	ppb	.1960	4.1871
Zr	<.00000	ppb	.6912	45.601

191024057-007A

Acquire Date: 07-Nov-2019 1:22 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2314.9	ppb	46.6	2.0144
Ag	5.0871	ppb	.4612	9.0651

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191024057-007A

Acquire Date: 07-Nov-2019 1:22 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Al	<.00000	ppb	14.372	96.582
As	1.0951	ppb	.1041	9.5106
Au	<.00000	ppb	.03833	143.31
B_	19.050	ppb	.106	.55897
Ba	12.167	ppb	.254	2.0855
Be	<.00000	ppb	.09784	1,051.9
Ca	15812.	ppb	63	.39994
Cd	.00897	ppb	.00848	94.579
Co	.32438	ppb	.04652	14.340
Cr	12.734	ppb	5.188	40.742
Cu	7.8549	ppb	.3267	4.1588
Fe	180.46	ppb	5.13	2.8422
K_	732.53	ppb	1.95	.26624
Li	<.00000	ppb	.24	.21533
Mg	634.77	ppb	10.45	1.6467
Mn	4.5298	ppb	.0049	.10721
Mo	1.1808	ppb	.1175	9.9496
Na	2272.8	ppb	35.0	1.5421
Ni	1.5312	ppb	.0701	4.5774
Pb	2.4030	ppb	1.6139	67.163
Pd	6.2735	ppb	4.8797	77.781
Sb	1.0426	ppb	.7578	72.680
Se	<.00000	ppb	.8752	28.511
Si	609.03	ppb	12.52	2.0555
Sn	<.00000	ppb	.35948	238.21
Sr	53.878	ppb	.961	1.7830
Ti	<.00000	ppb	1.4350	67.545
Tl	1.7273	ppb	1.8998	109.98
V_	<.00000	ppb	1.755	14.638
Zn	18.356	ppb	.037	.19998
Zr	<.00000	ppb	1.3824	117.84

CCV-3

Acquire Date: 07-Nov-2019 1:30 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2020.8	ppb	16.2	.79965
Ag	507.93	ppb	.27	.05401
Al	1971.6	ppb	45.9	2.3304
As	2060.1	ppb	2.9	.13868

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCV-3

Acquire Date: 07-Nov-2019 1:30 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Au	5.2975	ppb	.7568	14.286
B_	1898.1	ppb	7.4	.39052
Ba	2073.6	ppb	15.1	.72736
Be	2112.9	ppb	23.9	1.1301
Ca	2101.0	ppb	27.4	1.3045
Cd	2163.5	ppb	3.8	.17645
Co	2070.7	ppb	4.8	.23045
Cr	1960.0	ppb	27.6	1.4067
Cu	2094.3	ppb	24.8	1.1857
Fe	2112.5	ppb	3.5	.16585
K_	9366.5	ppb	78.0	.83287
Li	1929.9	ppb	85.1	4.4114
Mg	1954.6	ppb	16.0	.82062
Mn	2055.5	ppb	5.6	.27254
Mo	2150.4	ppb	3.5	.16216
Na	1988.6	ppb	25.4	1.2756
Ni	2102.5	ppb	.7	.03380
Pb	2090.9	ppb	7.1	.34096
Pd	<.00000	ppb	13.752	29.622
Sb	2076.2	ppb	5.7	.27383
Se	2085.9	ppb	1.2	.05704
Si	4761.6	ppb	63.4	1.3312
Sn	2110.4	ppb	4.5	.21339
Sr	2131.1	ppb	24.7	1.1572
Ti	<.00000	ppb	1.2556	35.042
Tl	2035.3	ppb	7.4	.36409
V_	2007.4	ppb	21.9	1.0929
Zn	2160.8	ppb	4.2	.19584
Zr	1.2218	ppb	.2764	22.626

CCB-3

Acquire Date: 07-Nov-2019 1:34 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	101.23	ppb	.18	.17557
Ag	5.5434	ppb	2.5829	46.593
Al	<.00000	ppb	13.0868	153.44
As	<.00000	ppb	.3437	23.529
Au	.01331	ppb	.62487	4,693.6
B_	2.2925	ppb	1.1133	48.563

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCB-3

Acquire Date: 07-Nov-2019 1:34 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ba	.67573	ppb	.12773	18.903
Be	<.00000	ppb	.02360	1,355.5
Ca	<.00000	ppb	2.7400	108.82
Cd	.09208	ppb	.00257	2.7875
Co	.02193	ppb	.11467	522.90
Cr	.32724	ppb	2.54669	778.23
Cu	.73015	ppb	1.76174	241.29
Fe	.10813	ppb	.08766	81.062
K_	8.2849	ppb	7.3653	88.901
Li	16.882	ppb	17.322	102.60
Mg	<.00000	ppb	7.317	69.057
Mn	.04948	ppb	.02721	54.997
Mo	1.4191	ppb	.7997	56.354
Na	47.214	ppb	6.928	14.675
Ni	<.00000	ppb	.01512	23.666
Pb	<.00000	ppb	.06332	9.4357
Pd	1.5693	ppb	25.7305	1,639.6
Sb	<.00000	ppb	1.22121	512.77
Se	1.4852	ppb	.4556	30.676
Si	4.4292	ppb	35.2092	794.93
Sn	.19857	ppb	.42672	214.90
Sr	2.4909	ppb	3.8406	154.19
Ti	<.00000	ppb	1.2108	76.368
Tl	<.00000	ppb	.81392	424.16
V_	<.00000	ppb	2.9242	35.358
Zn	<.00000	ppb	.00143	1.5258
Zr	.41515	ppb	.38072	91.708

MB-F

Acquire Date: 07-Nov-2019 1:39 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	95.303	ppb	4.444	4.6628
Ag	<.00000	ppb	.00101	.22143
Al	<.00000	ppb	1.0293	15.756
As	.29164	ppb	.61992	212.56
Au	.32100	ppb	.15161	47.232
B_	.39341	ppb	.02411	6.1286
Ba	.20773	ppb	.28600	137.68
Be	.07296	ppb	.06646	91.090

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

MB-F

Acquire Date: 07-Nov-2019 1:39 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ca	2.5189	ppb	1.0952	43.479
Cd	.01314	ppb	.05495	418.12
Co	.06137	ppb	.08989	146.47
Cr	<.00000	ppb	1.3414	46.542
Cu	1.2274	ppb	.9581	78.059
Fe	.04736	ppb	.06249	131.95
K_	6.4956	ppb	1.4622	22.510
Li	7.8405	ppb	.3814	4.8643
Mg	<.00000	ppb	14.639	95.813
Mn	.03129	ppb	.01143	36.543
Mo	.11087	ppb	.15679	141.42
Na	27.307	ppb	6.344	23.231
Ni	.09239	ppb	.14568	157.68
Pb	<.00000	ppb	1.36097	148.42
Pd	<.00000	ppb	21.737	192.47
Sb	.00011	ppb	.63172	576,480
Se	1.2128	ppb	1.2605	103.93
Si	<.00000	ppb	4.686	40.341
Sn	<.00000	ppb	.20211	363.78
Sr	8.1492	ppb	11.2025	137.47
Ti	<.00000	ppb	.5831	28.732
Tl	<.00000	ppb	2.5329	164.98
V_	<.00000	ppb	6.7244	79.319
Zn	<.00000	ppb	.05462	75.731
Zr	<.00000	ppb	.9666	56.506

LCS-F

Acquire Date: 07-Nov-2019 1:42 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2219.7	ppb	9.4	.42415
Ag	514.73	ppb	.29	.05573
Al	2020.2	ppb	16.0	.78964
As	2062.9	ppb	16.7	.81075
Au	4.2406	ppb	.2081	4.9082
B_	2083.4	ppb	16.8	.80616
Ba	2076.8	ppb	4.1	.19865
Be	2171.1	ppb	9.5	.43722
Ca	2142.7	ppb	6.8	.31765
Cd	2120.0	ppb	24.2	1.1407

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

LCS-F

Acquire Date: 07-Nov-2019 1:42 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Co	2037.8	ppb	14.8	.72864
Cr	2003.4	ppb	3.6	.18064
Cu	2173.9	ppb	8.8	.40407
Fe	2134.7	ppb	18.1	.84566
K_	9908.7	ppb	18.1	.18271
Li	1980.7	ppb	53.6	2.7053
Mg	1981.8	ppb	14.7	.74059
Mn	2083.7	ppb	19.7	.94592
Mo	2165.1	ppb	21.9	1.0135
Na	2184.2	ppb	7.9	.35968
Ni	2146.3	ppb	23.5	1.0969
Pb	2162.4	ppb	16.7	.77241
Pd	<.00000	ppb	25.731	70.108
Sb	2014.5	ppb	10.9	.54345
Se	2040.4	ppb	10.2	.49912
Si	10098.	ppb	55	.54026
Sn	2078.6	ppb	17.2	.82971
Sr	2174.9	ppb	15.3	.70456
Ti	<.00000	ppb	.2690	6.1920
Tl	2068.8	ppb	25.5	1.2330
V_	2066.4	ppb	16.9	.81880
Zn	2103.5	ppb	14.8	.70582
Zr	<.00000	ppb	2.6269	137.77

191024057-006C

Acquire Date: 07-Nov-2019 1:48 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	557870.	ppb	3,915	.70182
Ag	3.0003	ppb	3.0441	101.46
Al	<.00000	ppb	8.22	5.9628
As	5.4751	ppb	1.1356	20.742
Au	<.00000	ppb	.0567	1.0902
B_	200.76	ppb	.28	.14004
Ba	376.89	ppb	3.48	.92446
Be	.13081	ppb	.00503	3.8431
Ca	326450.	ppb	4,517	1.3837
Cd	.60087	ppb	.06256	10.411
Co	1.3653	ppb	.0868	6.3546
Cr	374.75	ppb	2.89	.77193

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191024057-006C

Acquire Date: 07-Nov-2019 1:48 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Cu	1.7760	ppb	1.6920	95.269
Fe	285.53	ppb	2.20	.77173
K_	67957.	ppb	840	1.2358
Li	<.00000	ppb	228.5	7.6304
Mg	62403.	ppb	567	.90874
Mn	405.81	ppb	.96	.23640
Mo	4.3900	ppb	.3136	7.1439
Na	246650.	ppb	278	.11273
Ni	3.3538	ppb	.0252	.75140
Pb	<.00000	ppb	.4586	45.512
Pd	<.00000	ppb	14.1952	301.71
Sb	5.3621	ppb	.7162	13.356
Se	<.00000	ppb	.4201	12.035
Si	7648.2	ppb	32.3	.42244
Sn	1.5247	ppb	.0112	.73748
Sr	2324.4	ppb	27.7	1.1911
Ti	<.00000	ppb	1.883	15.502
Tl	8.9558	ppb	.7238	8.0821
V_	<.00000	ppb	1.1712	25.789
Zn	58.845	ppb	.584	.99307
Zr	<.00000	ppb	1.1413	79.172

191024057-006C

Acquire Date: 07-Nov-2019 1:53 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	144340.	ppb	395	.27353
Ag	4.6303	ppb	.5536	11.956
Al	<.00000	ppb	15.41	7.5800
As	2.2878	ppb	.4124	18.026
Au	<.00000	ppb	.18900	19.088
B_	22.810	ppb	.924	4.0493
Ba	37.639	ppb	2.159	5.7369
Be	.00579	ppb	.02393	413.22
Ca	34414.	ppb	36	.10557
Cd	<.00000	ppb	.01100	7.7276
Co	.59615	ppb	.13325	22.351
Cr	29.087	ppb	2.270	7.8057
Cu	<.00000	ppb	.98165	191.45
Fe	33.985	ppb	.210	.61901

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191024057-006C

Acquire Date: 07-Nov-2019 1:53 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
K_	4284.1	ppb	3.1	.07210
Li	<.00000	ppb	1.08	.19905
Mg	5757.0	ppb	13.4	.23353
Mn	48.076	ppb	.510	1.0600
Mo	.41021	ppb	.09406	22.930
Na	109900.	ppb	836	.76078
Ni	.36663	ppb	.11062	30.173
Pb	.22054	ppb	.34771	157.66
Pd	<.00000	ppb	10.203	31.887
Sb	.86627	ppb	.50513	58.311
Se	<.00000	ppb	.7350	51.194
Si	742.93	ppb	18.80	2.5312
Sn	<.00000	ppb	.34807	62.615
Sr	237.25	ppb	.97	.40862
Ti	<.00000	ppb	.4037	15.913
Tl	2.5589	ppb	.3619	14.142
V_	<.00000	ppb	.5864	17.791
Zn	7.6270	ppb	.0438	.57364
Zr	<.00000	ppb	1.52033	310.79

191024057-006C

Acquire Date: 07-Nov-2019 2:00 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	14863.	ppb	132	.88989
Ag	2.8052	ppb	4.2412	151.19
Al	<.00000	ppb	10.254	25.455
As	.19450	ppb	1.03249	530.85
Au	.65568	ppb	.20827	31.764
B_	2.2155	ppb	.2661	12.009
Ba	4.2746	ppb	.2844	6.6532
Be	<.00000	ppb	.04168	184.41
Ca	3922.6	ppb	32.7	.83446
Cd	<.00000	ppb	.06934	46.573
Co	.17534	ppb	.07129	40.658
Cr	6.0279	ppb	2.6381	43.765
Cu	3.2299	ppb	1.3787	42.686
Fe	2.2435	ppb	.1711	7.6277
K_	313.12	ppb	7.00	2.2348
Li	<.00000	ppb	35.130	99.200

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191024057-006C

Acquire Date: 07-Nov-2019 2:00 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mg	604.43	ppb	14.39	2.3811
Mn	5.5110	ppb	.1188	2.1565
Mo	<.00000	ppb	.23520	92.234
Na	14461.	ppb	133	.91716
Ni	.18488	ppb	.00500	2.7026
Pb	<.00000	ppb	.98059	2,510.0
Pd	<.00000	ppb	24.3964	485.87
Sb	<.00000	ppb	1.51618	5,192.9
Se	.37130	ppb	1.12019	301.69
Si	91.810	ppb	52.378	57.050
Sn	.20647	ppb	.41555	201.26
Sr	28.294	ppb	5.114	18.073
Ti	<.00000	ppb	1.8387	115.96
Tl	2.3030	ppb	.3619	15.713
V_	<.00000	ppb	6.434	62.247
Zn	.68387	ppb	.04841	7.0792
Zr	<.00000	ppb	.37827	73.795

191024057-005A

Acquire Date: 07-Nov-2019 2:08 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	12083.	ppb	77	.63369
Ag	3.7799	ppb	3.7852	100.14
Al	<.00000	ppb	9.729	21.099
As	<.00000	ppb	.3436	28.230
Au	.82971	ppb	.30336	36.563
B_	5.2096	ppb	.2911	5.5880
Ba	6.3754	ppb	.3247	5.0934
Be	.05167	ppb	.05948	115.13
Ca	4514.1	ppb	56.7	1.2556
Cd	<.00000	ppb	.06682	60.077
Co	.24547	ppb	.10847	44.190
Cr	3.5574	ppb	4.8247	135.62
Cu	2.4730	ppb	2.4249	98.054
Fe	183.06	ppb	9.51	5.1971
K_	377.18	ppb	2.87	.76103
Li	<.00000	ppb	52.874	145.87
Mg	867.65	ppb	21.99	2.5342
Mn	1.1809	ppb	.0041	.34414

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

191024057-005A

Acquire Date: 07-Nov-2019 2:08 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Mo	.16631	ppb	.18815	113.13
Na	11888.	ppb	58	.48845
Ni	.19201	ppb	.04521	23.547
Pb	.80781	ppb	.31684	39.222
Pd	5.9657	ppb	7.1054	119.10
Sb	<.00000	ppb	1.05305	888.29
Se	.74265	ppb	.66469	89.503
Si	455.42	ppb	12.32	2.7041
Sn	.15882	ppb	.12359	77.821
Sr	77.228	ppb	14.768	19.122
Ti	<.00000	ppb	1.1669	53.315
Tl	1.2794	ppb	.1812	14.159
V_	<.00000	ppb	3.512	23.595
Zn	.71824	ppb	.12569	17.499
Zr	<.00000	ppb	.4192	27.599

CCV-4

Acquire Date: 07-Nov-2019 2:47 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2040.5	ppb	9.1	.44636
Ag	518.37	ppb	3.80	.73254
Al	1990.2	ppb	8.5	.42858
As	2084.3	ppb	2.0	.09732
Au	5.8728	ppb	.0189	.32236
B_	2154.3	ppb	.0	.00205
Ba	2080.7	ppb	18.6	.89413
Be	2144.2	ppb	17.1	.79842
Ca	2139.0	ppb	25.8	1.2071
Cd	2179.3	ppb	2.5	.11306
Co	2096.2	ppb	.7	.03472
Cr	1961.3	ppb	22.0	1.1226
Cu	2098.3	ppb	20.1	.95595
Fe	2136.1	ppb	.2	.00742
K_	9388.7	ppb	53.3	.56796
Li	1952.1	ppb	74.6	3.8212
Mg	1966.4	ppb	53.7	2.7322
Mn	2072.8	ppb	3.3	.16106
Mo	2169.9	ppb	.3	.01499
Na	2004.5	ppb	10.2	.50863

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCV-4

Acquire Date: 07-Nov-2019 2:47 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ni	2131.8	ppb	7.0	.32671
Pb	2125.8	ppb	.2	.01124
Pd	<.00000	ppb	20.407	57.572
Sb	2097.7	ppb	.8	.03602
Se	2104.9	ppb	5.7	.27118
Si	4808.1	ppb	41.6	.86546
Sn	2142.9	ppb	5.0	.23120
Sr	2164.7	ppb	6.1	.28411
Ti	<.00000	ppb	1.7937	50.059
Tl	2052.2	ppb	8.7	.42610
V_	2027.3	ppb	19.1	.94065
Zn	2187.7	ppb	.0	.00098
Zr	.63522	ppb	.00029	.04586

CCB-4

Acquire Date: 07-Nov-2019 2:54 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	41.620	ppb	.975	2.3430
Ag	.84758	ppb	.36843	43.469
Al	<.00000	ppb	3.334	14.465
As	.55965	ppb	.24004	42.891
Au	.53526	ppb	.37785	70.592
B_	2.0444	ppb	.7254	35.483
Ba	.27484	ppb	.30867	112.31
Be	.11049	ppb	.00284	2.5746
Ca	2.3255	ppb	2.4663	106.05
Cd	.04544	ppb	.01096	24.121
Co	.07013	ppb	.05890	83.986
Cr	<.00000	ppb	3.7535	67.400
Cu	<.00000	ppb	1.71163	10,352
Fe	.14224	ppb	.07402	52.040
K_	9.3835	ppb	5.9897	63.832
Li	28.429	ppb	.744	2.6169
Mg	<.00000	ppb	17.077	147.44
Mn	.01768	ppb	.00864	48.840
Mo	.88696	ppb	.04695	5.2933
Na	27.105	ppb	15.133	55.830
Ni	<.00000	ppb	.08039	206.14
Pb	<.00000	ppb	1.04396	518.80

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCB-4

Acquire Date: 07-Nov-2019 2:54 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Pd	<.00000	ppb	10.203	70.711
Sb	<.00000	ppb	.16851	26.958
Se	1.0396	ppb	2.4851	239.05
Si	1.6623	ppb	25.0288	1,505.7
Sn	<.00000	ppb	.23574	98.954
Sr	<.00000	ppb	.57525	106.05
Ti	<.00000	ppb	3.94645	654.93
Tl	<.00000	ppb	.7232	56.522
V_	<.00000	ppb	6.1417	156.41
Zn	<.00000	ppb	.04282	47.743
Zr	.87943	ppb	.27599	31.383

CCV-5

Acquire Date: 07-Nov-2019 4:04 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2136.7	ppb	11.6	.54061
Ag	516.36	ppb	5.15	.99758
Al	2007.3	ppb	2.8	.13787
As	2121.9	ppb	13.3	.62702
Au	4.5080	ppb	.0568	1.2609
B_	2170.0	ppb	10.0	.46122
Ba	2084.4	ppb	13.5	.64873
Be	2175.8	ppb	21.4	.98543
Ca	2180.5	ppb	26.8	1.2286
Cd	2078.4	ppb	7.0	.33551
Co	2126.6	ppb	13.2	.61920
Cr	1961.7	ppb	14.6	.74339
Cu	2103.3	ppb	10.7	.50894
Fe	2162.9	ppb	10.8	.49987
K_	9424.7	ppb	50.9	.53963
Li	1979.0	ppb	84.3	4.2606
Mg	1990.9	ppb	16.3	.81993
Mn	2101.7	ppb	6.3	.29784
Mo	2197.0	ppb	6.2	.28040
Na	2086.3	ppb	7.0	.33497
Ni	2160.5	ppb	6.4	.29399
Pb	2161.7	ppb	13.5	.62632
Pd	<.00000	ppb	7.099	16.519
Sb	2108.1	ppb	5.4	.25663

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCV-5

Acquire Date: 07-Nov-2019 4:04 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Se	2145.8	ppb	9.9	.45932
Si	4850.3	ppb	71.1	1.4649
Sn	2181.2	ppb	15.2	.69901
Sr	2196.4	ppb	26.5	1.2070
Ti	<.00000	ppb	.9417	19.536
Tl	2075.1	ppb	5.4	.25970
V_	2054.4	ppb	16.9	.82274
Zn	2136.0	ppb	13.5	.63078
Zr	.12177	ppb	.24221	198.91

CCB-5

Acquire Date: 07-Nov-2019 4:10 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	175.26	ppb	.43	.24726
Ag	3.4565	ppb	.7385	21.365
Al	<.00000	ppb	7.696	62.368
As	.48716	ppb	.68819	141.27
Au	.38844	ppb	.39723	102.26
B_	1.9720	ppb	.6958	35.284
Ba	1.1913	ppb	.0608	5.1042
Be	<.00000	ppb	.02349	38.103
Ca	<.00000	ppb	5.206	49.765
Cd	<.00000	ppb	.01185	398.17
Co	.06575	ppb	.07750	117.88
Cr	.62260	ppb	7.31737	1,175.3
Cu	1.2129	ppb	.8153	67.219
Fe	.11014	ppb	.07707	69.973
K_	10.796	ppb	9.943	92.105
Li	29.187	ppb	3.164	10.840
Mg	<.00000	ppb	5.225	29.046
Mn	.03323	ppb	.00848	25.505
Mo	.78169	ppb	.38420	49.150
Na	37.253	ppb	7.459	20.024
Ni	.03914	ppb	.20095	513.40
Pb	<.00000	ppb	.5380	40.762
Pd	<.00000	ppb	26.174	130.37
Sb	.44704	ppb	.84231	188.42
Se	2.4512	ppb	.9100	37.127
Si	<.00000	ppb	6.2662	161.90

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCB-5

Acquire Date: 07-Nov-2019 4:10 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Sn	.02379	ppb	.56157	2,360.6
Sr	4.4828	ppb	1.1547	25.758
Ti	<.00000	ppb	.5381	37.709
Tl	.95937	ppb	.63329	66.011
V_	<.00000	ppb	4.6781	59.542
Zn	<.00000	ppb	.00222	2.3099
Zr	<.00000	ppb	.41567	94.464

CRI-2

Acquire Date: 07-Nov-2019 4:30 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	151.29	ppb	10.20	6.7441
Ag	21.935	ppb	.121	.55061
Al	12.160	ppb	10.006	82.286
As	19.909	ppb	.205	1.0320
Au	.85626	ppb	1.02202	119.36
B_	10.590	ppb	2.771	26.164
Ba	.81516	ppb	1.38705	170.16
Be	10.942	ppb	.098	.89522
Ca	<.00000	ppb	1.3704	70.752
Cd	11.633	ppb	.048	.41115
Co	110.17	ppb	.50	.45134
Cr	19.260	ppb	2.085	10.824
Cu	50.518	ppb	5.016	9.9287
Fe	<.00000	ppb	.05364	31.122
K_	11.735	ppb	5.331	45.426
Li	48.889	ppb	21.700	44.386
Mg	4.1905	ppb	10.1045	241.13
Mn	32.465	ppb	.292	.89997
Mo	.37141	ppb	.32142	86.540
Na	63.846	ppb	21.279	33.329
Ni	94.003	ppb	.546	.58126
Pb	5.9294	ppb	.8539	14.401
Pd	<.00000	ppb	.0002	.00245
Sb	131.55	ppb	1.18	.90061
Se	12.321	ppb	.177	1.4332
Si	<.00000	ppb	3.1460	113.54
Sn	.58767	ppb	.10108	17.199
Sr	.90338	ppb	11.20048	1,239.8

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CRI-2

Acquire Date: 07-Nov-2019 4:30 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Ti	<.00000	ppb	1.6595	67.093
Tl	22.902	ppb	1.267	5.5339
V_	98.621	ppb	2.025	2.0531
Zn	49.652	ppb	.169	.33947
Zr	.02515	ppb	.86203	3,428.1

ICSA-2

Acquire Date: 07-Nov-2019 4:36 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	206.45	ppb	7.09	3.4364
Ag	<.00000	ppb	.646	1.5724
Al	499940.	ppb	3,573	.71473
As	<.00000	ppb	2.922	6.5717
Au	127.08	ppb	.27	.21387
B_	<.00000	ppb	1.49	.65658
Ba	1.6726	ppb	.1961	11.726
Be	2.4912	ppb	.0212	.85147
Ca	470550.	ppb	4,154	.88286
Cd	<.00000	ppb	.04731	6.4689
Co	<.00000	ppb	.08681	359.97
Cr	<.00000	ppb	4.716	26.628
Cu	<.00000	ppb	3.633	15.743
Fe	134660.	ppb	1,200	.89102
K_	8.8194	ppb	1.6418	18.616
Li	<.00000	ppb	236.9	12.461
Mg	520270.	ppb	4,312	.82874
Mn	<.00000	ppb	.0246	.30050
Mo	<.00000	ppb	.3062	6.1040
Na	100.33	ppb	2.72	2.7145
Ni	<.00000	ppb	.046	.19783
Pb	<.00000	ppb	2.166	2.5190
Pd	<.00000	ppb	.444	1.6842
Sb	<.00000	ppb	.3769	10.389
Se	<.00000	ppb	.554	.73872
Si	<.00000	ppb	13.2988	1,208.0
Sn	.50033	ppb	.49416	98.767
Sr	<.00000	ppb	1.60099	354.67
Ti	<.00000	ppb	.448	2.5200
Tl	<.00000	ppb	2.983	13.921

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

ICSA-2

Acquire Date: 07-Nov-2019 4:36 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
V_	<.00000	ppb	10.025	33.750
Zn	<.00000	ppb	.2862	5.0316
Zr	<.00000	ppb	2.28119	274.34

ICSAB-2

Acquire Date: 07-Nov-2019 4:43 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	195.06	ppb	4.35	2.2325
Ag	1052.1	ppb	.3	.02781
Al	503460.	ppb	1,847	.36694
As	<.00000	ppb	6.334	11.037
Au	131.08	ppb	.87	.66217
B_	<.00000	ppb	1.25	.54331
Ba	501.90	ppb	.97	.19250
Be	531.10	ppb	1.77	.33262
Ca	475160.	ppb	1,661	.34962
Cd	1004.6	ppb	.8	.07983
Co	410.09	ppb	.59	.14305
Cr	568.05	ppb	2.94	.51838
Cu	551.40	ppb	1.62	.29426
Fe	135640.	ppb	347	.25583
K_	12.688	ppb	1.254	9.8859
Li	<.00000	ppb	271.8	13.633
Mg	522220.	ppb	1,667	.31915
Mn	524.97	ppb	.18	.03483
Mo	<.00000	ppb	.2744	7.7968
Na	87.285	ppb	.562	.64377
Ni	832.88	ppb	.79	.09478
Pb	971.43	ppb	3.96	.40763
Pd	<.00000	ppb	33.734	104.37
Sb	.58677	ppb	1.28261	218.59
Se	<.00000	ppb	1.994	2.6326
Si	<.00000	ppb	.8142	12.320
Sn	<.00000	ppb	.41550	74.766
Sr	7.4822	ppb	13.4606	179.90
Ti	<.00000	ppb	.576	2.8192
Tl	<.00000	ppb	.543	2.4544
V_	472.92	ppb	5.77	1.2193
Zn	974.38	ppb	.07	.00736

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

ICSAB-2

Acquire Date: 07-Nov-2019 4:43 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
Zr	<.00000	ppb	.4104	20.950

CCV-6

Acquire Date: 07-Nov-2019 4:49 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	2065.9	ppb	12.9	.62679
Ag	521.25	ppb	3.39	.65053
Al	2019.1	ppb	12.2	.60588
As	2066.1	ppb	5.6	.27055
Au	5.0567	ppb	.0000	.00042
B_	1945.9	ppb	1.4	.07094
Ba	2085.4	ppb	1.6	.07504
Be	2033.2	ppb	1.4	.06654
Ca	2098.0	ppb	8.9	.42231
Cd	2134.5	ppb	.3	.01323
Co	2191.7	ppb	1.0	.04775
Cr	1950.7	ppb	11.6	.59320
Cu	2096.7	ppb	5.9	.28022
Fe	1907.3	ppb	1.8	.09293
K_	9417.4	ppb	9.5	.10046
Li	1989.9	ppb	59.1	2.9683
Mg	2010.4	ppb	10.5	.52433
Mn	2166.9	ppb	1.4	.06536
Mo	1903.4	ppb	1.0	.05470
Na	2023.7	ppb	13.2	.65033
Ni	2165.2	ppb	4.2	.19618
Pb	2125.9	ppb	6.4	.30340
Pd	<.00000	ppb	10.202	21.681
Sb	2148.8	ppb	2.2	.10364
Se	2071.1	ppb	1.8	.08567
Si	4885.7	ppb	3.7	.07569
Sn	2037.1	ppb	3.0	.14708
Sr	2195.4	ppb	4.2	.19084
Ti	<.00000	ppb	1.3455	47.674
Tl	2039.2	ppb	2.9	.14218
V_	2093.5	ppb	26.5	1.2668
Zn	2116.6	ppb	4.8	.22506
Zr	<.00000	ppb	.86360	503.34

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

CCB-6

Acquire Date: 07-Nov-2019 4:57 pm

Sample Type: Unknown

Correction Factor:1.0000

SW: 1.0000

NW: 1.0000

IV: 1.0000

FV: 1.0000

AF: 1.0000

Elem	Avg	Units	Stddev	%RSD
2Na	85.888	ppb	2.814	3.2767
Ag	3.6521	ppb	.2767	7.5762
Al	<.00000	ppb	12.062	96.326
As	<.00000	ppb	2.06451	302.72
Au	.37457	ppb	.22649	60.468
B_	2.5149	ppb	.5570	22.146
Ba	2.0866	ppb	.2759	13.220
Be	<.00000	ppb	.00792	6.5257
Ca	3.1004	ppb	.2740	8.8380
Cd	.04006	ppb	.03216	80.296
Co	.07671	ppb	.05580	72.740
Cr	<.00000	ppb	3.7985	313.28
Cu	<.00000	ppb	.32679	38.019
Fe	.51776	ppb	.15891	30.692
K_	7.8147	ppb	2.6185	33.507
Li	55.600	ppb	17.000	30.576
Mg	<.00000	ppb	2.091	15.153
Mn	.01485	ppb	.00273	18.398
Mo	.57097	ppb	.07051	12.349
Na	25.152	ppb	12.442	49.469
Ni	<.00000	ppb	.03513	44.984
Pb	<.00000	ppb	.4434	28.314
Pd	<.00000	ppb	6.211	30.460
Sb	<.00000	ppb	.16861	26.969
Se	.37139	ppb	2.52104	678.80
Si	<.00000	ppb	2.347	17.681
Sn	.24620	ppb	.02242	9.1049
Sr	4.5287	ppb	8.6443	190.88
Ti	<.00000	ppb	.5381	24.595
Tl	<.00000	ppb	.63373	198.08
V_	<.00000	ppb	6.434	53.655
Zn	<.00000	ppb	.05709	53.910
Zr	<.00000	ppb	.27645	112.94

Color Legend: [Pass/Unchecked](#) [Internal Standard](#) [Check Fail](#) [Check Warn](#)

Adirondack Environmental Services, Inc

PREP BATCH REPORT

Prep Start Date: **10/31/2019 8:10:34**
 Prep End Date: **10/31/2019 11:30:00**

Comments: Temp:95 Start Time:930 End Time:1130

Page:1 of 1

Prep Factor Units:
 mL / mL

Prep Batch **76399** Prep Code: **HG_PREP** Technician: **Ashlyn VanBuren**

Sample ID	Matrix	pH	ResCl	SampAmt	Sol Added	Fin Vol	factor	PrepStart	PrepEnd	ExPos	TareWt	CleanUp
MB-76399				50	0	50	1.000	10/31/2019	10/31/2019		0	
LCS-76399				50	0	50	1.000	10/31/2019	10/31/2019		0	
191024057-001A	Aqueous			50	0	50	1.000	10/31/2019	10/31/2019		0	
191024057-001ADP	Aqueous			50	0	50	1.000	10/31/2019	10/31/2019		0	
191024057-001AMS	Aqueous			50	0	50	1.000	10/31/2019	10/31/2019		0	
191024057-002A	Aqueous			50	0	50	1.000	10/31/2019	10/31/2019		0	
191024057-003A	Aqueous			50	0	50	1.000	10/31/2019	10/31/2019		0	
191024057-004A	Aqueous			50	0	50	1.000	10/31/2019	10/31/2019		0	
191024057-005A	Aqueous			50	0	50	1.000	10/31/2019	10/31/2019		0	
191024057-006A	Aqueous			50	0	50	1.000	10/31/2019	10/31/2019		0	
191024057-007A	Aqueous			50	0	50	1.000	10/31/2019	10/31/2019		0	

Number	Reagent Name	Solution ID	Solution Name	SampType	AmtAdd	units
5433	Sulfuric Acid	MR-HYDROXYL	Hydroxylamine, 12%		3	ml
5930	Nitric Acid	MR-KMNO4 5%-	Potassium Permanganate		7.5	ml
5870	Hot Block Digestion Vessels - 100m	MR-POTASSIUM	Potassium Persulfate, 5%		4	ml
		MSP-HG 0.1 PP	0.1 PPM Hg		1	ml

Adirondack Environmental Services, Inc

PREP BATCH REPORT

Prep Start Date: **10/31/2019 8:10:37**

Prep End Date: **10/31/2019 11:30:00**

Comments: Temp:95 Start Time:930 End Time:1130

Page:1 of 1

Prep Factor Units:

mL / ml

Prep Batch **76400** Prep Code: **HG_PREP_D** Technician: **Ashlyn VanBuren**

Sample ID	Matrix	pH	ResCl	SampAmt	Sol Added	Fin Vol	factor	PrepStart	PrepEnd	ExPos	TareWt	CleanUp
MB-76400				50	0	50	1.000	10/31/2019	10/31/2019		0	
LCS-76400				50	0	50	1.000	10/31/2019	10/31/2019		0	
191024057-006C	Aqueous			50	0	50	1.000	10/31/2019	10/31/2019		0	

limited sample volume

Number	Reagent Name	Solution ID	Solution Name	SampType	AmtAdd	units
5433	Sulfuric Acid	MR-HYDROXYL	Hydroxylamine, 12%		3	ml
5930	Nitric Acid	MR-KMNO4 5%-	Potassium Permanganate		7.5	ml
5870	Hot Block Digestion Vessels - 100m	MR-POTASSIUM	Potassium Persulfate, 5%		4	ml
		MSP-HG 0.1 PP	0.1 PPM Hg		1	ml

Adirondack Environmental Services, Inc

PREP BATCH REPORT

Prep Start Date: **10/31/2019 8:14:18**
 Prep End Date: **10/31/2019 12:30:00**

Comments: Temp:95 Start Time:1114 End Time:1230

Page:1 of 1

Prep Factor Units:
 mL / mL

Prep Batch **76403** Prep Code: **3010CLP** Technician: **Ashlyn VanBuren**

Sample ID	Matrix	pH	ResCl	SampAmt	Sol Added	Fin Vol	factor	PrepStart	PrepEnd	ExPos	TareWt	CleanUp
MB-76403				50	0	50	1.000	10/31/2019	10/31/2019		0	
LCS-76403				50	0	50	1.000	10/31/2019	10/31/2019		0	
191024057-001A	Aqueous	1		50	0	50	1.000	10/31/2019	10/31/2019		0	
191024057-001ADP	Aqueous	1		50	0	50	1.000	10/31/2019	10/31/2019		0	
191024057-001AMS	Aqueous	1		50	0	50	1.000	10/31/2019	10/31/2019		0	
191024057-002A	Aqueous	1		50	0	50	1.000	10/31/2019	10/31/2019		0	
191024057-003A	Aqueous	1		50	0	50	1.000	10/31/2019	10/31/2019		0	
191024057-004A	Aqueous	1		50	0	50	1.000	10/31/2019	10/31/2019		0	
191024057-005A	Aqueous	1		50	0	50	1.000	10/31/2019	10/31/2019		0	
191024057-006A	Aqueous	1		50	0	50	1.000	10/31/2019	10/31/2019		0	
191024057-007A	Aqueous	1		50	0	50	1.000	10/31/2019	10/31/2019		0	

Number	Reagent Name	Solution ID	Solution Name	SampType	AmtAdd	units
5930	Nitric Acid	5794	M-ICP-SSWS-M		0.5	ml
5945	Hydrochoric Acid	MWS-200.7-6-86	200.7-6		50	ml
5871	Hot Block Digestion Vessels - 50mL					

Adirondack Environmental Services, Inc

PREP BATCH REPORT

Prep Start Date: **10/31/2019 8:10:07**

Prep End Date: **10/31/2019 12:14:00**

Comments: Temp:95 Start Time:1114 End Time:1214

Page:1 of 1

Prep Factor Units:

mL / mL

Prep Batch **76394** Prep Code: **3005CLP** Technician: **Ashlyn VanBuren**

Sample ID	Matrix	pH	ResCl	SampAmt	Sol Added	Fin Vol	factor	PrepStart	PrepEnd	ExPos	TareWt	CleanUp
191024057-006C	Aqueous	7		50	0	50	1.000	10/31/2019	10/31/2019		0	filtered
limited sample volume												
MB-76394				50	0	50	1.000	10/31/2019	10/31/2019		0	
LCS-76394				50	0	50	1.000	10/31/2019	10/31/2019		0	

Number	Reagent Name	Solution ID	Solution Name	SampType	AmtAdd	units
5930	Nitric Acid	5794	M-ICP-SSWS-M		0.5	ml
5945	Hydrochoric Acid	MWS-200.7-6-86	200.7-6		50	ml
5871	Hot Block Digestion Vessels - 50mL					
5995	M-Flipmate 50, 0.45um filter					

Adirondack Environmental Services, Inc**Date:** 11-Nov-19**CLIENT:** Arcadis**Client Sample ID:** NMT Pit-20191024**Work Order:** 191024057**Collection Date:** 10/24/2019 9:20:00 AM**Reference:** Watervliet Arsenal / WVA**Lab Sample ID:** 191024057-001**PO#:****Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	1.2	0.20		mg/L	10	10/24/2019 5:14:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 11-Nov-19**CLIENT:** Arcadis**Client Sample ID:** 120 Pit-20191024**Work Order:** 191024057**Collection Date:** 10/24/2019 10:10:00 AM**Reference:** Watervliet Arsenal / WVA**Lab Sample ID:** 191024057-002**PO#:****Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	10/24/2019 5:14:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 11-Nov-19**CLIENT:** Arcadis**Client Sample ID:** DUP-1-20191024**Work Order:** 191024057**Collection Date:** 10/24/2019 9:00:00 AM**Reference:** Watervliet Arsenal / WVA**Lab Sample ID:** 191024057-003**PO#:****Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	1.2	0.20		mg/L	10	10/24/2019 5:14:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 11-Nov-19**CLIENT:** Arcadis**Client Sample ID:** Commercial Pit-20191024**Work Order:** 191024057**Collection Date:** 10/24/2019 11:20:00 AM**Reference:** Watervliet Arsenal / WVA**Lab Sample ID:** 191024057-004**PO#:****Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	1.1	0.20		mg/L	10	10/24/2019 5:14:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 11-Nov-19**CLIENT:** Arcadis**Work Order:** 191024057**Reference:** Watervliet Arsenal / WVA**PO#:****Client Sample ID:** Excav. Sump-20191024**Collection Date:** 10/24/2019 12:25:00 PM**Lab Sample ID:** 191024057-005**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	10/24/2019 5:14:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 11-Nov-19**CLIENT:** Arcadis**Work Order:** 191024057**Reference:** Watervliet Arsenal / WVA**PO#:****Client Sample ID:** WVA-AW-35-MW-12-2019102**Collection Date:** 10/24/2019 1:30:00 PM**Lab Sample ID:** 191024057-006**Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	0.20	0.02		mg/L	1	10/24/2019 5:14:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentatively Identified Compound-Estimated Conc.

Adirondack Environmental Services, Inc**Date:** 11-Nov-19**CLIENT:** Arcadis**Client Sample ID:** 93EM-SP-9-20191024**Work Order:** 191024057**Collection Date:** 10/24/2019 1:55:00 PM**Reference:** Watervliet Arsenal / WVA**Lab Sample ID:** 191024057-007**PO#:****Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SM3500-CR B-2011						Analyst: DAA
Chromium, Hexavalent	ND	0.02		mg/L	1	10/24/2019 5:14:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
X - Value exceeds Maximum Contaminant Level
E - Value above quantitation range-Estimate

S - LCS Spike below accepted limits (+ above)
Z - RPD outside accepted recovery limits
N - Matrix Spike below accepted limits (+ above)
T - Tentitively Identified Compound-Estimated Conc.

CLIENT: Arcadis
 Work Order: 191024057
 Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: R176646

MBLK	SeqNo: 2725444	TestNo: SM3500-Cr D	RunNo: 176646
	Samp ID: MB-R176646	Units: mg/L	Analysis Date: 10/24/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	0.020									

LCS	SeqNo: 2725445	TestNo: SM3500-Cr D	RunNo: 176646
	Samp ID: LCS-R176646	Units: mg/L	Analysis Date: 10/24/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.198	0.020	0.2	0	99	91.7	108	0	0		

MS	SeqNo: 2725447	TestNo: SM3500-Cr D	RunNo: 176646
	Samp ID: 191023043-001	Units: mg/L	Analysis Date: 10/24/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.205	0.020	0.2	0	103	75	125	0	0		

MS	SeqNo: 2726315	TestNo: SM3500-Cr D	RunNo: 176646
	Samp ID: 191024057-001 (NMT Pt-2019102)	Units: mg/L	Analysis Date: 10/24/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	3.19	0.20	2	1.17	101	75	125	0	0		

MSD	SeqNo: 2725448	TestNo: SM3500-Cr D	RunNo: 176646
	Samp ID: 191023043-001	Units: mg/L	Analysis Date: 10/24/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.21	0.020	0.2	0	105	75	125	0.205	2.41	14.5	

MSD	SeqNo: 2726316	TestNo: SM3500-Cr D	RunNo: 176646
	Samp ID: 191024057-001 (NMT Pt-2019102)	Units: mg/L	Analysis Date: 10/24/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	3.19	0.20	2	1.17	101	75	125	3.19	0	14.5	

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: R176646

CCB	SeqNo: 2725450	TestNo: SM3500-Cr D	RunNo: 176646
	Samp ID: CCB	Units: mg/L	Analysis Date: 10/24/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.005	0.020	0	0	0	0	0	0	0		

CCB	SeqNo: 2726325	TestNo: SM3500-Cr D	RunNo: 176646
	Samp ID: CCB	Units: mg/L	Analysis Date: 10/24/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.020	0	0	0	0	0	0	0		

CCV	SeqNo: 2725449	TestNo: SM3500-Cr D	RunNo: 176646
	Samp ID: CCV	Units: mg/L	Analysis Date: 10/24/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.194	0.020	0.2	0	97	90	110	0	0		

CCV	SeqNo: 2726324	TestNo: SM3500-Cr D	RunNo: 176646
	Samp ID: CCV	Units: mg/L	Analysis Date: 10/24/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.195	0.020	0.2	0	97.5	90	110	0	0		

CRI	SeqNo: 2726323	TestNo: SM3500-Cr D	RunNo: 176646
	Samp ID: CRI	Units: mg/L	Analysis Date: 10/24/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.019	0.020	0.02	0	95	50	150	0	0		

ICB	SeqNo: 2725442	TestNo: SM3500-Cr D	RunNo: 176646
	Samp ID: ICB	Units: mg/L	Analysis Date: 10/24/2019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-0.004	0.020	0	0	0	0	0	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Arcadis
Work Order: 191024057
Project: Watervliet Arsenal

ANALYTICAL QC SUMMARY REPORT

BatchID: R176646

ICV	SeqNo: 2725443	TestNo: SM3500-Cr D	RunNo: 176646
	Samp ID: ICV	Units: mg/L	Analysis Date: 10/24/2019

<u>Analyte</u>	<u>Result</u>	<u>PQL</u>	<u>SPK value</u>	<u>SPK Ref Val</u>	<u>%REC</u>	<u>LowLimit</u>	<u>HighLimit</u>	<u>RPD Ref Val</u>	<u>%RPD</u>	<u>RPDLimit</u>	<u>Qual</u>
Chromium, Hexavalent	0.198	0.020	0.2	0	99	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

WorkSheet Report

Date: 11/11/2019

RunID: GEN10S_191024A

Run Start Date: 10/24/2019

Analyst: Darnell Avent

Comments:

SeqNo	SampleID	SmpType	Analyte	Units	Smp Vol(mL)	Smp Abs	Smp Blk Abs	Blk Rslt (mg/L)	Smp Rslt (mg/L)	FinalVal	Qual	%Recovery	RPD(dups)
2725442	ICB	ICB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004		0.00%	0.00%
2725443	ICV	ICV	Chromium, Hexavalent	mg/L	50	0	0.167	0	0.198	0.2		99.00%	0.00%
2725444	MB-R176646	MBLK	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	0		0.00%	0.00%
2725445	LCS-R176646	LCS	Chromium, Hexavalent	mg/L	50	0	0.167	0	0.198	0.2		99.00%	0.00%
2725446	191023043-001B	SAMP	Chromium, Hexavalent	mg/L	50	0	0.01	0	0.008	0		0.00%	0.00%
2725447	191023043-001BMS	MS	Chromium, Hexavalent	mg/L	50	0	0.173	0	0.205	0.21		102.50%	0.00%
2725448	191023043-001BMSD	MSD	Chromium, Hexavalent	mg/L	50	0	0.177	0	0.21	0.21		105.00%	2.41%
2725449	CCV	CCV	Chromium, Hexavalent	mg/L	50	0	0.164	0	0.194	0.19		97.00%	0.00%
2725450	CCB	CCB	Chromium, Hexavalent	mg/L	50	0	-0.001	0	-0.005	-0.005		0.00%	0.00%
2726312	191024049-001B	SAMP	Chromium, Hexavalent	mg/L	50	0	-0.001	0	-0.005	0		0.00%	0.00%
2726313	191024052-001B	SAMP	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	0		0.00%	0.00%
2726314	191024057-001B	SAMP	Chromium, Hexavalent	mg/L	5	0	0.1	0	0.117	1.2		0.00%	0.00%
2726315	191024057-001BMS	MS	Chromium, Hexavalent	mg/L	5	0	0.267	0	0.319	3.2		101.00%	0.00%
2726316	191024057-001BMSD	MSD	Chromium, Hexavalent	mg/L	5	0	0.267	0	0.319	3.2		101.00%	0.00%

Run standards

WC6-28-T Cr(+6) Standard 1ml= 50 ug ICV

WC6-28-U Cr(+6) LCS 1ml= 50 ug LCS

WorkSheet Report

Date: 11/11/2019

RunID: GEN10S_191024A

Run Start Date: 10/24/2019

Analyst: Darnell Avent

Comments:

SeqNo	SamplID	SmpType	Analyte	Units	Smp Vol(mL)		Smp Abs		Smp Rslt (mg/L)		%Recovery	RPD(dups)
						Smp Blk Abs		Blk Rslt (mg/L)	FinalVal		Qual	
2726317	191024057-002B	SAMP	Chromium, Hexavalent	mg/L	50	0	0.001	0	-0.002	0	0.00%	0.00%
2726318	191024057-003B	SAMP	Chromium, Hexavalent	mg/L	5	0	0.099	0	0.116	1.2	0.00%	0.00%
2726319	191024057-004B	SAMP	Chromium, Hexavalent	mg/L	5	0	0.097	0	0.11	1.1	0.00%	0.00%
2726320	191024057-005B	SAMP	Chromium, Hexavalent	mg/L	50	0	0.001	0	-0.002	0	0.00%	0.00%
2726321	191024057-006B	SAMP	Chromium, Hexavalent	mg/L	50	0	0.168	0	0.199	0.2	0.00%	0.00%
2726322	191024057-007B	SAMP	Chromium, Hexavalent	mg/L	50	0	0.012	0	0.011	0	0.00%	0.00%
2726323	CRI	CRI	Chromium, Hexavalent	mg/L	50	0	0.019	0	0.019	0.019	95.00%	0.00%
2726324	CCV	CCV	Chromium, Hexavalent	mg/L	50	0	0.165	0	0.195	0.2	97.50%	0.00%
2726325	CCB	CCB	Chromium, Hexavalent	mg/L	50	0	0	0	-0.004	-0.004	0.00%	0.00%

Run standards

WC6-28-T Cr(+6) Standard 1ml= 50 ug ICV

WC6-28-U Cr(+6) LCS 1ml= 50 ug LCS



Experience is the solution

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TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

- (a) Neither **Adirondack Environmental Services, Inc.**, nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.**'s performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.
- (b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.
- (c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.
- (d) In no event shall **Adirondack Environmental Services, Inc.**, its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.
- (e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**
- (f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.
- (g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.



Experience is the solution

314 North Pearl Street ♦ Albany, New York 12207
(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

September 17, 2019

Stefan Bagnato
Arcadis
855 Route 146, Suite 210
Clifton Park, NY 12065

TEL: (518) 250-7382

Work Order No: 190828002

PO#: W912DR18D0004/W912DR18F0736

Project# : 30001988.0002P

RE: Watervliet Arsenal
WVA

Dear Stefan Bagnato:

Adirondack Environmental Services, Inc received 3 samples on 8/27/2019 for the analyses presented in the following report.

These samples were received outside the acceptable temperature range of 2-6 °C

Please see case narrative for specifics on analysis.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Tara Daniels", is written over a horizontal line.

Tara Daniels
Laboratory Director

ELAP#: 10709

Adirondack Environmental Services, Inc

CASE NARRATIVE

CLIENT: Arcadis

Date: 17-Sep-19

Project: Watervliet Arsenal

Lab Order: 190828002

Sample containers were supplied by Adirondack Environmental Services.

Definitions - RL: Reporting Limit DF: Dilution factor

Qualifiers:	ND : Not Detected at reporting limit	C: CCV below acceptable Limits
	J: Analyte detected below quantitation limit	C+: CCV above acceptable Limits
	B: Analyte detected in Blank	S: LCS Spike recovery is below acceptable limits
	X : Exceeds maximum contamination limit	S+: LCS Spike recovery is above acceptable limits
	H: Hold time exceeded	Z: Duplication outside acceptable limits
	N: Matrix Spike below acceptable limits	T : Tentatively Identified Compound-Estimated
	N+: Matrix Spike is above acceptable limits	E :Above quantitation range-Estimated

Note : All Results are reported as wet weight unless noted

The results relate only to the items tested. Information supplied by the client is assumed to be correct.

Adirondack Environmental Services, Inc

Date: 17-Sep-19

CLIENT: Arcadis

Client Sample ID: WVA-AW-35-Soil Drum-08271

Work Order: 190828002

Collection Date: 8/27/2019 10:00:00 AM

Reference: Watervliet Arsenal / WVA

Lab Sample ID: 190828002-001

PO#: W912DR18D0004/

Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
POLYCHLORINATED BIPHENYLS - EPA 8082A						Analyst: KF
(Prep: SW3545A - 8/29/2019)						
Aroclor 1262	ND	36		µg/Kg-dry	1	8/29/2019 8:36:52 PM
Aroclor 1268	ND	36		µg/Kg-dry	1	8/29/2019 8:36:52 PM
Aroclor 1016	ND	36		µg/Kg-dry	1	8/29/2019 8:36:52 PM
Aroclor 1221	ND	36		µg/Kg-dry	1	8/29/2019 8:36:52 PM
Aroclor 1232	ND	36		µg/Kg-dry	1	8/29/2019 8:36:52 PM
Aroclor 1242	ND	36		µg/Kg-dry	1	8/29/2019 8:36:52 PM
Aroclor 1248	ND	36		µg/Kg-dry	1	8/29/2019 8:36:52 PM
Aroclor 1254	ND	36		µg/Kg-dry	1	8/29/2019 8:36:52 PM
Aroclor 1260	ND	36		µg/Kg-dry	1	8/29/2019 8:36:52 PM
Surr: Decachlorobiphenyl	90.0	48.1-152		%REC	1	8/29/2019 8:36:52 PM
TCLP MERCURY - SW1311/7470A						Analyst: AVB
(Prep: SW7470A - 9/9/2019)						
Mercury-TCLP	ND	0.002		mg/L	1	9/9/2019 2:26:28 PM
TCLP METALS - SW1311/6010C						Analyst: WB
(Prep: SW1311 - 9/6/2019)						
Arsenic-TCLP	ND	0.050		mg/L	1	9/9/2019 1:50:00 PM
Barium-TCLP	0.455	0.100		mg/L	1	9/9/2019 1:50:00 PM
Cadmium-TCLP	ND	0.050		mg/L	1	9/9/2019 1:50:00 PM
Chromium-TCLP	ND	0.050		mg/L	1	9/9/2019 1:50:00 PM
Lead-TCLP	ND	0.050		mg/L	1	9/9/2019 1:50:00 PM
Selenium-TCLP	ND	0.050		mg/L	1	9/9/2019 1:50:00 PM
Silver-TCLP	ND	0.100		mg/L	1	9/9/2019 1:50:00 PM
SEMI-VOLATILE ORGANICS - EPA 8270D						Analyst: MT
(Prep: SW3545A - 9/6/2019)						
Phenol	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Bis(2-chloroethyl)ether	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
2-Chlorophenol	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
1,3-Dichlorobenzene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
1,4-Dichlorobenzene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
1,2-Dichlorobenzene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
2-Methylphenol	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
2,2-Oxybis(1-chloropropane)	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
4-Methylphenol & 3-Methylphenol	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
N-Nitrosodi-n-propylamine	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Hexachloroethane	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Nitrobenzene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Isophorone	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM

Adirondack Environmental Services, Inc

Date: 17-Sep-19

CLIENT: Arcadis

Client Sample ID: WVA-AW-35-Soil Drum-08271

Work Order: 190828002

Collection Date: 8/27/2019 10:00:00 AM

Reference: Watervliet Arsenal / WVA

Lab Sample ID: 190828002-001

PO#: W912DR18D0004/

Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMI-VOLATILE ORGANICS - EPA 8270D						Analyst: MT
(Prep: SW3545A - 9/6/2019)						
2-Nitrophenol	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
2,4-Dimethylphenol	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Bis(2-chloroethoxy)methane	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
2,4-Dichlorophenol	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
1,2,4-Trichlorobenzene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Naphthalene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
4-Chloroaniline	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Hexachlorobutadiene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
4-Chloro-3-methylphenol	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
2-Methylnaphthalene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Hexachlorocyclopentadiene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
2,4,6-Trichlorophenol	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
2,4,5-Trichlorophenol	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
2-Chloronaphthalene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
2-Nitroaniline	ND	1800		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Dimethyl phthalate	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Acenaphthylene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
2,6-Dinitrotoluene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
3-Nitroaniline	ND	1800		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Acenaphthene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
2,4-Dinitrophenol	ND	1800		µg/Kg-dry	1	9/10/2019 11:33:00 AM
4-Nitrophenol	ND	1800		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Dibenzofuran	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
2,4-Dinitrotoluene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Diethyl phthalate	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
4-Chlorophenyl phenyl ether	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Fluorene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
4-Nitroaniline	ND	1800		µg/Kg-dry	1	9/10/2019 11:33:00 AM
4,6-Dinitro-2-methylphenol	ND	1800		µg/Kg-dry	1	9/10/2019 11:33:00 AM
N-Nitrosodiphenylamine	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
4-Bromophenyl phenyl ether	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Hexachlorobenzene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Pentachlorophenol	ND	1800		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Phenanthrene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Anthracene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Carbazole	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Di-n-butyl phthalate	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Fluoranthene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Pyrene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Butyl benzyl phthalate	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM

Adirondack Environmental Services, Inc

Date: 17-Sep-19

CLIENT: Arcadis

Client Sample ID: WVA-AW-35-Soil Drum-08271

Work Order: 190828002

Collection Date: 8/27/2019 10:00:00 AM

Reference: Watervliet Arsenal / WVA

Lab Sample ID: 190828002-001

PO#: W912DR18D0004/

Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMI-VOLATILE ORGANICS - EPA 8270D						Analyst: MT
(Prep: SW3545A - 9/6/2019)						
3,3'-Dichlorobenzidine	ND	720		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Benz(a)anthracene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Chrysene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Bis(2-ethylhexyl)phthalate	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Di-n-octyl phthalate	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Benzo(b)fluoranthene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Benzo(k)fluoranthene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Benzo(a)pyrene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Indeno(1,2,3-cd)pyrene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Dibenz(a,h)anthracene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Benzo(g,h,i)perylene	ND	360		µg/Kg-dry	1	9/10/2019 11:33:00 AM
Surr: 2,4,6-Tribromophenol	55.7	26.5-126		%REC	1	9/10/2019 11:33:00 AM
Surr: 2-Fluorobiphenyl	64.9	32-136		%REC	1	9/10/2019 11:33:00 AM
Surr: 2-Fluorophenol	42.8	30.3-104		%REC	1	9/10/2019 11:33:00 AM
Surr: 4-Terphenyl-d14	65.4	30.1-145		%REC	1	9/10/2019 11:33:00 AM
Surr: Nitrobenzene-d5	52.3	19.5-123		%REC	1	9/10/2019 11:33:00 AM
Surr: Phenol-d5	48.7	27-122		%REC	1	9/10/2019 11:33:00 AM
VOLATILE ORGANICS-EPA 8260C (SW5035A PREP)						Analyst: SMD
(Prep: SW5035A - 8/30/2019)						
Chloromethane	ND	9		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Bromomethane	ND	9		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Vinyl chloride	ND	9		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Chloroethane	ND	9		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Methylene chloride	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Acetone	ND	9		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Carbon disulfide	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
1,1-Dichloroethene	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
1,1-Dichloroethane	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
trans-1,2-Dichloroethene	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
cis-1,2-Dichloroethene	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Chloroform	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
1,2-Dichloroethane	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
2-Butanone	ND	9		µg/Kg-dry	1	8/30/2019 6:16:00 PM
1,1,1-Trichloroethane	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Carbon tetrachloride	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Bromodichloromethane	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
1,2-Dichloropropane	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
cis-1,3-Dichloropropene	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Trichloroethene	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM

Adirondack Environmental Services, Inc

Date: 17-Sep-19

CLIENT: Arcadis

Client Sample ID: WVA-AW-35-Soil Drum-08271

Work Order: 190828002

Collection Date: 8/27/2019 10:00:00 AM

Reference: Watervliet Arsenal / WVA

Lab Sample ID: 190828002-001

PO#: W912DR18D0004/

Matrix: SOIL

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS-EPA 8260C (SW5035A PREP)						Analyst: SMD
(Prep: SW5035A - 8/30/2019)						
Dibromochloromethane	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
1,1,2-Trichloroethane	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Benzene	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
trans-1,3-Dichloropropene	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Bromoform	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
4-Methyl-2-pentanone	ND	9		µg/Kg-dry	1	8/30/2019 6:16:00 PM
2-Hexanone	ND	9		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Tetrachloroethene	ND	5	N	µg/Kg-dry	1	8/30/2019 6:16:00 PM
1,1,2,2-Tetrachloroethane	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Toluene	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Chlorobenzene	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Ethylbenzene	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Styrene	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
m,p-Xylene	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
o-Xylene	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Methyl tert-butyl ether	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Dichlorodifluoromethane	ND	5	SN	µg/Kg-dry	1	8/30/2019 6:16:00 PM
Methyl Acetate	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Trichlorofluoromethane	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Cyclohexane	ND	9		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Methyl Cyclohexane	ND	5	N	µg/Kg-dry	1	8/30/2019 6:16:00 PM
1,2-Dibromoethane	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
1,3-Dichlorobenzene	ND	5	S	µg/Kg-dry	1	8/30/2019 6:16:00 PM
Isopropylbenzene	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
1,2-Dichlorobenzene	ND	5	S	µg/Kg-dry	1	8/30/2019 6:16:00 PM
1,4-Dichlorobenzene	ND	5	S	µg/Kg-dry	1	8/30/2019 6:16:00 PM
1,2-Dibromo-3-chloropropane	ND	9		µg/Kg-dry	1	8/30/2019 6:16:00 PM
1,2,4-Trichlorobenzene	ND	5		µg/Kg-dry	1	8/30/2019 6:16:00 PM
Surr: 1,2-Dichloroethane-d4	108	64.8-130		%REC	1	8/30/2019 6:16:00 PM
Surr: 4-Bromofluorobenzene	123	76.8-122	S	%REC	1	8/30/2019 6:16:00 PM
Surr: Toluene-d8	103	78.5-120		%REC	1	8/30/2019 6:16:00 PM
HEXAVALENT CHROMIUM - SW 7196A (3060A)						Analyst: DAA
(Prep: SW3060A - 9/4/2019)						
Chromium, Hexavalent	ND	1.1		µg/g-dry	1	9/4/2019 5:10:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	8.5	0.1		wt%	1	8/29/2019

Adirondack Environmental Services, Inc

Date: 17-Sep-19

CLIENT: Arcadis

Client Sample ID: WVA-AW-35-Concrete 1-08271

Work Order: 190828002

Collection Date: 8/27/2019 11:00:00 AM

Reference: Watervliet Arsenal / WVA

Lab Sample ID: 190828002-002

PO#: W912DR18D0004/

Matrix: SOLID

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW 7196A (3060A)						Analyst: DAA
(Prep: SW3060A - 9/4/2019)						
Chromium, Hexavalent	70.7	10.0		µg/g-dry	10	9/4/2019 5:10:00 PM
MOISTURE CONTENT-ASTM D2216 (NOT ELAP CERTIFIED)						Analyst: TSZ
Percent Moisture	2.1	0.1	Z	wt%	1	8/29/2019

Adirondack Environmental Services, Inc**Date:** 17-Sep-19**CLIENT:** Arcadis**Client Sample ID:** WVA-AW-35-Swipe-082719**Work Order:** 190828002**Collection Date:** 8/27/2019 11:15:00 AM**Reference:** Watervliet Arsenal / WVA**Lab Sample ID:** 190828002-003**PO#:** W912DR18D0004/**Matrix:** WIPE**Project# :** 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM - SW7196A						Analyst: DAA
Chromium, Hexavalent	18.7	0	Z	µg	1	8/29/2019 11:44:00 AM

314 North Pearl Street
Albany, New York 12207
518-434-4546/434-0891 FAX

CHAIN OF CUSTODY RECORD

AES Work Order #

Experience is the solution

A full service analytical research laboratory offering solutions to environmental concerns

Client Name: Arcoadis		Address: 855 Route 146, Suite 210 Clifton Park NY 12065						
Send Report To: Stefan.Bagnato@arcoadis.com Kate@Bioduel@arcoadis.com		Project Name (Location): WVA						
Client Phone No: 518 250 1787		Client Email:						
PO Number: 30001988		Samplers: (Names) Kim Stikson						
Client Email:		Samplers: (Signature) K Stikson						
AES Sample Number	Client Sample Identification & Location	Date Sampled	Time A=a.m. P=p.m.	Sample Type Matrix	Comp	Grab	Number of Cont's	Analysis Required
001	WVA-AW-35-soil drum - 082719	8/27/19	1000	(A) S	X		7	EPA 8082 Soil PCB, Hexchrom
	WVA-AW-35-Concrete 1-082719	L	1100	(A) Concrete		X	1	Hexchrome-soil
	WVA-AW-35-Swipe-082719		1115	(A) Swipe		X	2	Hexchrome-wipe
				A				
				P				
				A				
				P				
				A				
				P				
				A				
				P				
				A				
				P				
				A				
				P				
				A				
				P				
				A				
				P				

Shipment Arrived Via: FedEx UPS Client ☒ AES Other: _____		CC Report To / Special Instructions/Remarks: Hold on extra soil from WVA-AW-35-soil drum jars.	
Turnaround Time Request: ☐ 1 Day ☐ 3 Day ☒ Normal ☐ 2 Day ☐ 5 Day Note: Samples received after 3:30 pm are considered next business day			
Relinquished by: (Signature) Kim Stikson		Received by: (Signature)	
Relinquished by: (Signature)		Received by: (Signature)	
Relinquished by: (Signature)		Received for Laboratory by:	
		Date/Time 8/27/19 3	
TEMPERATURE Ambient or Chilled Notes: 80c	AES Bottles Y ☒ N ☐	PROPERLY PRESERVED Y ☒ N ☐ Notes:	RECEIVED WITHIN HOLDING TIMES ☒ Y ☐ N Notes:

WHITE - Lab Copy

YELLOW - Sampler Copy

Adirondack Environmental Serv





Experience is the solution

314 North Pearl Street • Albany, New York 12207 • (518) 434-4546 • Fax (518) 434-0891

TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

- (a) Neither **Adirondack Environmental Services, Inc.**, nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.**'s performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.
- (b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.
- (c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.
- (d) In no event shall **Adirondack Environmental Services, Inc.**, its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.
- (e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**
- (f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.
- (g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.



Experience is the solution

314 North Pearl Street ♦ Albany, New York 12207
(800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

September 25, 2019

Stefan Bagnato
Arcadis
855 Route 146, Suite 210
Clifton Park, NY 12065

TEL: (518) 250-7382

Work Order No: 190911065

PO#: W912DR18D0004/W912DR18F0736

Project# : 30001988.0002P

RE: Watervliet Arsenal
Water Analysis

Dear Stefan Bagnato:

Adirondack Environmental Services, Inc received 3 samples on 9/11/2019 for the analyses presented in the following report.

Please see case narrative for specifics on analysis.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Monica Higdon
Laboratory Manager

ELAP#: 10709

Adirondack Environmental Services, Inc

CASE NARRATIVE

CLIENT: Arcadis

Date: 25-Sep-19

Project: Watervliet Arsenal

Lab Order: 190911065

Sample containers were supplied by Adirondack Environmental Services.

Definitions - RL: Reporting Limit DF: Dilution factor

Qualifiers:	ND : Not Detected at reporting limit	C: CCV below acceptable Limits
	J: Analyte detected below quantitation limit	C+: CCV above acceptable Limits
	B: Analyte detected in Blank	S: LCS Spike recovery is below acceptable limits
	X : Exceeds maximum contamination limit	S+: LCS Spike recovery is above acceptable limits
	H: Hold time exceeded	Z: Duplication outside acceptable limits
	N: Matrix Spike below acceptable limits	T : Tentatively Identified Compound-Estimated
	N+: Matrix Spike is above acceptable limits	E :Above quantitation range-Estimated

Note : All Results are reported as wet weight unless noted

The results relate only to the items tested. Information supplied by the client is assumed to be correct.

Adirondack Environmental Services, Inc

Date: 25-Sep-19

CLIENT: Arcadis

Client Sample ID: WVA-AW-35-Wcwater-201909

Work Order: 190911065

Collection Date: 9/11/2019

Reference: Watervliet Arsenal / Water Analysis

Lab Sample ID: 190911065-001

PO#: W912DR18D0004/

Matrix: WATER

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP METALS - EPA 200.7 REV 4.4						Analyst: SM
(Prep: - 9/12/2019)						
Arsenic	ND	0.005		mg/L	1	9/23/2019
Barium	0.473	0.010		mg/L	1	9/23/2019
Cadmium	ND	0.005		mg/L	1	9/23/2019
Chromium	ND	0.005		mg/L	1	9/23/2019
Lead	ND	0.005		mg/L	1	9/23/2019
Selenium	ND	0.005		mg/L	1	9/23/2019
Silver	ND	0.010		mg/L	1	9/23/2019
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 9/12/2019)						
Mercury	ND	0.0002		mg/L	1	9/12/2019 3:38:46 PM
SEMI-VOLATILE ORGANICS - EPA 8270D						Analyst: MT
(Prep: SW3535A - 9/12/2019)						
Phenol	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Bis(2-chloroethyl)ether	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
2-Chlorophenol	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
1,3-Dichlorobenzene	ND	10		µg/L	1	9/17/2019 3:21:00 PM
1,4-Dichlorobenzene	ND	10		µg/L	1	9/17/2019 3:21:00 PM
1,2-Dichlorobenzene	ND	10		µg/L	1	9/17/2019 3:21:00 PM
2-Methylphenol	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
2,2-Oxybis(1-chloropropane)	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
4-Methylphenol & 3-Methylphenol	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
N-Nitrosodi-n-propylamine	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Hexachloroethane	ND	10		µg/L	1	9/17/2019 3:21:00 PM
Nitrobenzene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Isophorone	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
2-Nitrophenol	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
2,4-Dimethylphenol	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Bis(2-chloroethoxy)methane	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
2,4-Dichlorophenol	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
1,2,4-Trichlorobenzene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Naphthalene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
4-Chloroaniline	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Hexachlorobutadiene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
4-Chloro-3-methylphenol	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
2-Methylnaphthalene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Hexachlorocyclopentadiene	ND	10		µg/L	1	9/17/2019 3:21:00 PM
2,4,6-Trichlorophenol	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
2,4,5-Trichlorophenol	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM

Adirondack Environmental Services, Inc

Date: 25-Sep-19

CLIENT: Arcadis

Client Sample ID: WVA-AW-35-Wcwater-201909

Work Order: 190911065

Collection Date: 9/11/2019

Reference: Watervliet Arsenal / Water Analysis

Lab Sample ID: 190911065-001

PO#: W912DR18D0004/

Matrix: WATER

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMI-VOLATILE ORGANICS - EPA 8270D						Analyst: MT
(Prep: SW3535A - 9/12/2019)						
2-Chloronaphthalene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
2-Nitroaniline	ND	26		µg/L	1	9/17/2019 3:21:00 PM
Dimethyl phthalate	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Acenaphthylene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
2,6-Dinitrotoluene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
3-Nitroaniline	ND	26		µg/L	1	9/17/2019 3:21:00 PM
Acenaphthene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
2,4-Dinitrophenol	ND	26	S	µg/L	1	9/17/2019 3:21:00 PM
4-Nitrophenol	ND	26	C	µg/L	1	9/17/2019 3:21:00 PM
Dibenzofuran	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
2,4-Dinitrotoluene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Diethyl phthalate	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
4-Chlorophenyl phenyl ether	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Fluorene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
4-Nitroaniline	ND	26		µg/L	1	9/17/2019 3:21:00 PM
4,6-Dinitro-2-methylphenol	ND	26	S	µg/L	1	9/17/2019 3:21:00 PM
N-Nitrosodiphenylamine	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
4-Bromophenyl phenyl ether	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Hexachlorobenzene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Pentachlorophenol	ND	26		µg/L	1	9/17/2019 3:21:00 PM
Phenanthrene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Anthracene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Carbazole	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Di-n-butyl phthalate	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Fluoranthene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Pyrene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Butyl benzyl phthalate	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
3,3'-Dichlorobenzidine	ND	10		µg/L	1	9/17/2019 3:21:00 PM
Benz(a)anthracene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Chrysene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Bis(2-ethylhexyl)phthalate	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Di-n-octyl phthalate	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Benzo(b)fluoranthene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Benzo(k)fluoranthene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Benzo(a)pyrene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Indeno(1,2,3-cd)pyrene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Dibenz(a,h)anthracene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Benzo(g,h,i)perylene	ND	5.1		µg/L	1	9/17/2019 3:21:00 PM
Surr: 2,4,6-Tribromophenol	72.0	43.1-139		%REC	1	9/17/2019 3:21:00 PM
Surr: 2-Fluorobiphenyl	90.0	47.2-126		%REC	1	9/17/2019 3:21:00 PM

Adirondack Environmental Services, Inc

Date: 25-Sep-19

CLIENT: Arcadis**Client Sample ID:** WVA-AW-35-Wcwater-201909**Work Order:** 190911065**Collection Date:** 9/11/2019**Reference:** Watervliet Arsenal / Water Analysis**Lab Sample ID:** 190911065-001**PO#:** W912DR18D0004/**Matrix:** WATER**Project# :** 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMI-VOLATILE ORGANICS - EPA 8270D						Analyst: MT
(Prep: SW3535A - 9/12/2019)						
Surr: 2-Fluorophenol	38.1	28.4-101		%REC	1	9/17/2019 3:21:00 PM
Surr: 4-Terphenyl-d14	75.1	40.2-138		%REC	1	9/17/2019 3:21:00 PM
Surr: Nitrobenzene-d5	67.1	40.4-127		%REC	1	9/17/2019 3:21:00 PM
Surr: Phenol-d5	54.3	17.1-118		%REC	1	9/17/2019 3:21:00 PM

VOLATILE ORGANICS EPA 8260C (SW5030C PREP) Analyst: **SMD**

Chloromethane	ND	10	SN	µg/L	1	9/13/2019 4:28:00 PM
Bromomethane	ND	10	SN	µg/L	1	9/13/2019 4:28:00 PM
Vinyl chloride	ND	10	N	µg/L	1	9/13/2019 4:28:00 PM
Chloroethane	ND	10		µg/L	1	9/13/2019 4:28:00 PM
Methylene chloride	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
Acetone	ND	10		µg/L	1	9/13/2019 4:28:00 PM
Carbon disulfide	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
1,1-Dichloroethene	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
1,1-Dichloroethane	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
trans-1,2-Dichloroethene	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
cis-1,2-Dichloroethene	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
Chloroform	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
1,2-Dichloroethane	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
2-Butanone	ND	10		µg/L	1	9/13/2019 4:28:00 PM
1,1,1-Trichloroethane	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
Carbon tetrachloride	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
Bromodichloromethane	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
1,2-Dichloropropane	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
cis-1,3-Dichloropropene	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
Trichloroethene	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
Dibromochloromethane	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
1,1,2-Trichloroethane	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
Benzene	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
trans-1,3-Dichloropropene	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
Bromoform	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	9/13/2019 4:28:00 PM
2-Hexanone	ND	10		µg/L	1	9/13/2019 4:28:00 PM
Tetrachloroethene	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
1,1,2,2-Tetrachloroethane	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
Toluene	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
Chlorobenzene	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
Ethylbenzene	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
Styrene	ND	5.0	N	µg/L	1	9/13/2019 4:28:00 PM

Adirondack Environmental Services, Inc

Date: 25-Sep-19

CLIENT: Arcadis

Client Sample ID: WVA-AW-35-Wcwater-201909

Work Order: 190911065

Collection Date: 9/11/2019

Reference: Watervliet Arsenal / Water Analysis

Lab Sample ID: 190911065-001

PO#: W912DR18D0004/

Matrix: WATER

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS EPA 8260C (SW5030C PREP)						Analyst: SMD
m,p-Xylene	ND	10		µg/L	1	9/13/2019 4:28:00 PM
o-Xylene	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
Methyl tert-butyl ether	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
Dichlorodifluoromethane	ND	10	SN	µg/L	1	9/13/2019 4:28:00 PM
Methyl Acetate	ND	5.0	SN	µg/L	1	9/13/2019 4:28:00 PM
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
Trichlorofluoromethane	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
Cyclohexane	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
Methyl Cyclohexane	ND	5.0	S	µg/L	1	9/13/2019 4:28:00 PM
1,2-Dibromoethane	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
1,3-Dichlorobenzene	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
Isopropylbenzene	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
1,2-Dichlorobenzene	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
1,4-Dichlorobenzene	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
1,2-Dibromo-3-chloropropane	ND	10		µg/L	1	9/13/2019 4:28:00 PM
1,2,4-Trichlorobenzene	ND	5.0		µg/L	1	9/13/2019 4:28:00 PM
Surr: 1,2-Dichloroethane-d4	101	80.9-122		%REC	1	9/13/2019 4:28:00 PM
Surr: 4-Bromofluorobenzene	105	76.5-125		%REC	1	9/13/2019 4:28:00 PM
Surr: Toluene-d8	100	80.4-121		%REC	1	9/13/2019 4:28:00 PM

Adirondack Environmental Services, Inc

Date: 25-Sep-19

CLIENT: Arcadis**Client Sample ID:** WVA-AW-35-Wcwater-2-20190**Work Order:** 190911065**Collection Date:** 9/11/2019**Reference:** Watervliet Arsenal / Water Analysis**Lab Sample ID:** 190911065-002**PO#:** W912DR18D0004/**Matrix:** WATER**Project# :** 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP METALS - EPA 200.7 REV 4.4						Analyst: SM
(Prep: - 9/12/2019)						
Arsenic	ND	0.005		mg/L	1	9/23/2019
Barium	0.662	0.010		mg/L	1	9/23/2019
Cadmium	ND	0.005		mg/L	1	9/23/2019
Chromium	ND	0.005		mg/L	1	9/23/2019
Lead	ND	0.005		mg/L	1	9/23/2019
Selenium	ND	0.005		mg/L	1	9/23/2019
Silver	ND	0.010		mg/L	1	9/23/2019
MERCURY - EPA 245.1 REV 3.0						Analyst: AVB
(Prep: E245.1 - 9/12/2019)						
Mercury	ND	0.0002		mg/L	1	9/12/2019 3:40:29 PM
SEMI-VOLATILE ORGANICS - EPA 8270D						Analyst: MT
(Prep: SW3535A - 9/12/2019)						
Phenol	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Bis(2-chloroethyl)ether	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
2-Chlorophenol	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
1,3-Dichlorobenzene	ND	10		µg/L	1	9/17/2019 3:48:00 PM
1,4-Dichlorobenzene	ND	10		µg/L	1	9/17/2019 3:48:00 PM
1,2-Dichlorobenzene	ND	10		µg/L	1	9/17/2019 3:48:00 PM
2-Methylphenol	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
2,2-Oxybis(1-chloropropane)	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
4-Methylphenol & 3-Methylphenol	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
N-Nitrosodi-n-propylamine	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Hexachloroethane	ND	10		µg/L	1	9/17/2019 3:48:00 PM
Nitrobenzene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Isophorone	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
2-Nitrophenol	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
2,4-Dimethylphenol	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Bis(2-chloroethoxy)methane	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
2,4-Dichlorophenol	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
1,2,4-Trichlorobenzene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Naphthalene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
4-Chloroaniline	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Hexachlorobutadiene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
4-Chloro-3-methylphenol	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
2-Methylnaphthalene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Hexachlorocyclopentadiene	ND	10		µg/L	1	9/17/2019 3:48:00 PM
2,4,6-Trichlorophenol	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
2,4,5-Trichlorophenol	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM

Adirondack Environmental Services, Inc

Date: 25-Sep-19

CLIENT: Arcadis

Client Sample ID: WVA-AW-35-Wcwater-2-20190

Work Order: 190911065

Collection Date: 9/11/2019

Reference: Watervliet Arsenal / Water Analysis

Lab Sample ID: 190911065-002

PO#: W912DR18D0004/

Matrix: WATER

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMI-VOLATILE ORGANICS - EPA 8270D						Analyst: MT
(Prep: SW3535A - 9/12/2019)						
2-Chloronaphthalene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
2-Nitroaniline	ND	26		µg/L	1	9/17/2019 3:48:00 PM
Dimethyl phthalate	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Acenaphthylene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
2,6-Dinitrotoluene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
3-Nitroaniline	ND	26		µg/L	1	9/17/2019 3:48:00 PM
Acenaphthene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
2,4-Dinitrophenol	ND	26	S	µg/L	1	9/17/2019 3:48:00 PM
4-Nitrophenol	ND	26	C	µg/L	1	9/17/2019 3:48:00 PM
Dibenzofuran	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
2,4-Dinitrotoluene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Diethyl phthalate	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
4-Chlorophenyl phenyl ether	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Fluorene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
4-Nitroaniline	ND	26		µg/L	1	9/17/2019 3:48:00 PM
4,6-Dinitro-2-methylphenol	ND	26	S	µg/L	1	9/17/2019 3:48:00 PM
N-Nitrosodiphenylamine	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
4-Bromophenyl phenyl ether	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Hexachlorobenzene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Pentachlorophenol	ND	26		µg/L	1	9/17/2019 3:48:00 PM
Phenanthrene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Anthracene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Carbazole	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Di-n-butyl phthalate	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Fluoranthene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Pyrene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Butyl benzyl phthalate	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
3,3'-Dichlorobenzidine	ND	10		µg/L	1	9/17/2019 3:48:00 PM
Benzo(a)anthracene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Chrysene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Bis(2-ethylhexyl)phthalate	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Di-n-octyl phthalate	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Benzo(b)fluoranthene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Benzo(k)fluoranthene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Benzo(a)pyrene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Indeno(1,2,3-cd)pyrene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Dibenz(a,h)anthracene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Benzo(g,h,i)perylene	ND	5.2		µg/L	1	9/17/2019 3:48:00 PM
Surr: 2,4,6-Tribromophenol	88.3	43.1-139		%REC	1	9/17/2019 3:48:00 PM
Surr: 2-Fluorobiphenyl	80.6	47.2-126		%REC	1	9/17/2019 3:48:00 PM

Adirondack Environmental Services, Inc

Date: 25-Sep-19

CLIENT: Arcadis

Client Sample ID: WVA-AW-35-Wcwater-2-20190

Work Order: 190911065

Collection Date: 9/11/2019

Reference: Watervliet Arsenal / Water Analysis

Lab Sample ID: 190911065-002

PO#: W912DR18D0004/

Matrix: WATER

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
SEMI-VOLATILE ORGANICS - EPA 8270D						Analyst: MT
(Prep: SW3535A - 9/12/2019)						
Surr: 2-Fluorophenol	0.740	28.4-101	S	%REC	1	9/17/2019 3:48:00 PM
Surr: 4-Terphenyl-d14	66.9	40.2-138		%REC	1	9/17/2019 3:48:00 PM
Surr: Nitrobenzene-d5	68.4	40.4-127		%REC	1	9/17/2019 3:48:00 PM
Surr: Phenol-d5	1.29	17.1-118	S	%REC	1	9/17/2019 3:48:00 PM

VOLATILE ORGANICS EPA 8260C (SW5030C PREP)

Analyst: SMD

Chloromethane	ND	10	S	µg/L	1	9/13/2019 4:50:00 PM
Bromomethane	ND	10	S	µg/L	1	9/13/2019 4:50:00 PM
Vinyl chloride	ND	10		µg/L	1	9/13/2019 4:50:00 PM
Chloroethane	ND	10		µg/L	1	9/13/2019 4:50:00 PM
Methylene chloride	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
Acetone	ND	10		µg/L	1	9/13/2019 4:50:00 PM
Carbon disulfide	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
1,1-Dichloroethene	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
1,1-Dichloroethane	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
trans-1,2-Dichloroethene	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
cis-1,2-Dichloroethene	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
Chloroform	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
1,2-Dichloroethane	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
2-Butanone	ND	10		µg/L	1	9/13/2019 4:50:00 PM
1,1,1-Trichloroethane	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
Carbon tetrachloride	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
Bromodichloromethane	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
1,2-Dichloropropane	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
cis-1,3-Dichloropropene	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
Trichloroethene	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
Dibromochloromethane	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
1,1,2-Trichloroethane	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
Benzene	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
trans-1,3-Dichloropropene	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
Bromoform	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	9/13/2019 4:50:00 PM
2-Hexanone	ND	10		µg/L	1	9/13/2019 4:50:00 PM
Tetrachloroethene	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
1,1,2,2-Tetrachloroethane	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
Toluene	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
Chlorobenzene	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
Ethylbenzene	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
Styrene	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM

Adirondack Environmental Services, Inc

Date: 25-Sep-19

CLIENT: Arcadis

Client Sample ID: WVA-AW-35-Wcwater-2-20190

Work Order: 190911065

Collection Date: 9/11/2019

Reference: Watervliet Arsenal / Water Analysis

Lab Sample ID: 190911065-002

PO#: W912DR18D0004/

Matrix: WATER

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS EPA 8260C (SW5030C PREP)						Analyst: SMD
m,p-Xylene	ND	10		µg/L	1	9/13/2019 4:50:00 PM
o-Xylene	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
Methyl tert-butyl ether	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
Dichlorodifluoromethane	ND	10	S	µg/L	1	9/13/2019 4:50:00 PM
Methyl Acetate	ND	5.0	S	µg/L	1	9/13/2019 4:50:00 PM
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
Trichlorofluoromethane	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
Cyclohexane	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
Methyl Cyclohexane	ND	5.0	S	µg/L	1	9/13/2019 4:50:00 PM
1,2-Dibromoethane	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
1,3-Dichlorobenzene	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
Isopropylbenzene	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
1,2-Dichlorobenzene	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
1,4-Dichlorobenzene	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
1,2-Dibromo-3-chloropropane	ND	10		µg/L	1	9/13/2019 4:50:00 PM
1,2,4-Trichlorobenzene	ND	5.0		µg/L	1	9/13/2019 4:50:00 PM
Surr: 1,2-Dichloroethane-d4	98.8	80.9-122		%REC	1	9/13/2019 4:50:00 PM
Surr: 4-Bromofluorobenzene	101	76.5-125		%REC	1	9/13/2019 4:50:00 PM
Surr: Toluene-d8	97.7	80.4-121		%REC	1	9/13/2019 4:50:00 PM

Adirondack Environmental Services, Inc

Date: 25-Sep-19

CLIENT: Arcadis

Client Sample ID: Trip Blank

Work Order: 190911065

Collection Date: 9/11/2019

Reference: Watervliet Arsenal / Water Analysis

Lab Sample ID: 190911065-003

PO#: W912DR18D0004/

Matrix: WATER

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
----------	--------	----	------	-------	----	---------------

VOLATILE ORGANICS EPA 8260C (SW5030C PREP)

Analyst: SMD

Chloromethane	ND	10	S	µg/L	1	9/13/2019 4:06:00 PM
Bromomethane	ND	10	S	µg/L	1	9/13/2019 4:06:00 PM
Vinyl chloride	ND	10		µg/L	1	9/13/2019 4:06:00 PM
Chloroethane	ND	10		µg/L	1	9/13/2019 4:06:00 PM
Methylene chloride	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
Acetone	ND	10		µg/L	1	9/13/2019 4:06:00 PM
Carbon disulfide	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
1,1-Dichloroethene	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
1,1-Dichloroethane	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
trans-1,2-Dichloroethene	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
cis-1,2-Dichloroethene	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
Chloroform	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
1,2-Dichloroethane	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
2-Butanone	ND	10		µg/L	1	9/13/2019 4:06:00 PM
1,1,1-Trichloroethane	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
Carbon tetrachloride	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
Bromodichloromethane	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
1,2-Dichloropropane	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
cis-1,3-Dichloropropene	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
Trichloroethene	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
Dibromochloromethane	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
1,1,2-Trichloroethane	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
Benzene	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
trans-1,3-Dichloropropene	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
Bromoform	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	9/13/2019 4:06:00 PM
2-Hexanone	ND	10		µg/L	1	9/13/2019 4:06:00 PM
Tetrachloroethene	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
1,1,2,2-Tetrachloroethane	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
Toluene	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
Chlorobenzene	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
Ethylbenzene	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
Styrene	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
m,p-Xylene	ND	10		µg/L	1	9/13/2019 4:06:00 PM
o-Xylene	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
Methyl tert-butyl ether	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
Dichlorodifluoromethane	ND	10	S	µg/L	1	9/13/2019 4:06:00 PM
Methyl Acetate	ND	5.0	S	µg/L	1	9/13/2019 4:06:00 PM
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
Trichlorofluoromethane	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM

Adirondack Environmental Services, Inc

Date: 25-Sep-19

CLIENT: Arcadis

Client Sample ID: Trip Blank

Work Order: 190911065

Collection Date: 9/11/2019

Reference: Watervliet Arsenal / Water Analysis

Lab Sample ID: 190911065-003

PO#: W912DR18D0004/

Matrix: WATER

Project# : 30001988.0002P

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANICS EPA 8260C (SW5030C PREP)						Analyst: SMD
Cyclohexane	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
Methyl Cyclohexane	ND	5.0	S	µg/L	1	9/13/2019 4:06:00 PM
1,2-Dibromoethane	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
1,3-Dichlorobenzene	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
Isopropylbenzene	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
1,2-Dichlorobenzene	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
1,4-Dichlorobenzene	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
1,2-Dibromo-3-chloropropane	ND	10		µg/L	1	9/13/2019 4:06:00 PM
1,2,4-Trichlorobenzene	ND	5.0		µg/L	1	9/13/2019 4:06:00 PM
Surr: 1,2-Dichloroethane-d4	101	80.9-122		%REC	1	9/13/2019 4:06:00 PM
Surr: 4-Bromofluorobenzene	104	76.5-125		%REC	1	9/13/2019 4:06:00 PM
Surr: Toluene-d8	101	80.4-121		%REC	1	9/13/2019 4:06:00 PM



190911065

A full service analytical research laboratory offering solutions to environmental concerns

Client Name: Arcadis		Address: 855 Route 146, Suite 210, Clifton Park, NY 12065	
Send Report To: stephen.bignato@Arcadis.com Katie.Bidwell@Arcadis.com		Project Name (Location) WVA	Samplers: (Names) A. Thomas + K Liloia
Client Phone No:	Client Email:	PO Number: 30001988	Samplers: (Signature) Katie M. ... +

[illegible]

Shipment Arrived Via: FedEx UPS Client AES Other: _____		CC Report To / Special Instructions/Remarks: Waste Characterizations samples	
Turnaround Time Request: ☐ 1 Day ☐ 3 Day ☒ Normal ☐ 2 Day ☐ 5 Day Note: Samples received after 3:30 pm are considered next business day			
Relinquished by: (Signature) [Signature]		Received by: (Signature) [Signature]	
Relinquished by: (Signature) [Signature]		Received by: (Signature) [Signature]	
Relinquished by: (Signature) [Signature]		Received for Laboratory by: [Signature]	
TEMPERATURE Ambient or <u>Chilled</u> Notes: <u>20°C</u>		PROPERLY PRESERVED ☒ Y ☐ N Notes: _____	
AES Bottles ☐ Y ☐ N		RECEIVED WITHIN HOLDING TIMES ☒ Y ☐ N Notes: _____	

WHITE - Lab Copy

YELLOW - Sampler Copy

Adirondack Environmental Ser



190911065



Experience is the solution

314 North Pearl Street • Albany, New York 12207 • (518) 434-4546 • Fax (518) 434-0891

TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services, Inc.** are undertaken and all rates are based upon the following terms:

- (a) Neither **Adirondack Environmental Services, Inc.**, nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of **Adirondack Environmental Services, Inc.**'s performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against **Adirondack Environmental Services, Inc.** arising out of its work.
- (b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.
- (c) **Adirondack Environmental Services, Inc.** reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an **Adirondack Environmental Services, Inc.** report by other than our customer does not constitute a representation of **Adirondack Environmental Services, Inc.** as to the accuracy of the contents thereof.
- (d) In no event shall **Adirondack Environmental Services, Inc.**, its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.
- (e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**
- (f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and **Adirondack Environmental Services, Inc.** is not responsible for the accuracy of this information.
- (g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.

APPENDIX B

GPR Base Map



W:\PROJECTS\142055\CAD\WA142055_EX01.DGN



TERMS AND CONDITIONS

1. THIS DRAWING IS INTENDED TO DOCUMENT MARKINGS AND COMMENTS COLLECTED BY GROUND PENETRATING RADAR SYSTEMS (GPRS). GPRS CANNOT GUARANTEE IT WILL BE ABLE TO LOCATE ALL UTILITIES OR OTHER SUBSURFACE FEATURES ON SITE. ALL FINDINGS ARE SUBJECT TO THE TERMS AND CONDITIONS THAT CAN BE VIEWED WITH THE LINK BELOW:
<https://m.gp-radar.com/terms-conditions>
2. GPRS DOES NOT PROVIDE GEOPHYSICAL, GEOLOGICAL, LAND SURVEYING, OR ENGINEERING SERVICES.
3. FOR ADDITIONAL INFORMATION REGARDING FINDINGS AND EQUIPMENT USED, SEE THE "JOB SUMMARY REPORT" THAT WAS SUBMITTED VIA EMAIL FOLLOWING COMPLETION OF FIELD WORK.
4. PRIVATE UTILITY LOCATING IS NEVER A REPLACEMENT FOR ONE CALL/811 SERVICES. STATE LAW REQUIRES 811 TO BE CALLED PRIOR TO ANY AND ALL EXCAVATION ACTIVITIES.

LEGEND

- E — ELECTRICAL
- WATER
- ST — STORM
- SS — SANITARY
- G — GAS
- U — UNKNOWN
- SCAN AREA
- D= DEPTH

0 50' 100' 200'



GPRS IS NOT AFFILIATED WITH 811 BUT DOES RECOMMEND THAT THE SERVICE IS USED ON EVERY PROJECT IN ADDITION TO OUR OWN. SEE NOTE #4 ABOVE.

FOR INFORMATION ONLY

GPRS UTILITY FINDINGS MAP

PREPARED FOR:
ARCADIS

LOCATION:
U.S. ARMY WATERLIET ARSENAL
1 BUFFINGTON ST
WATERLIET, NY 12189

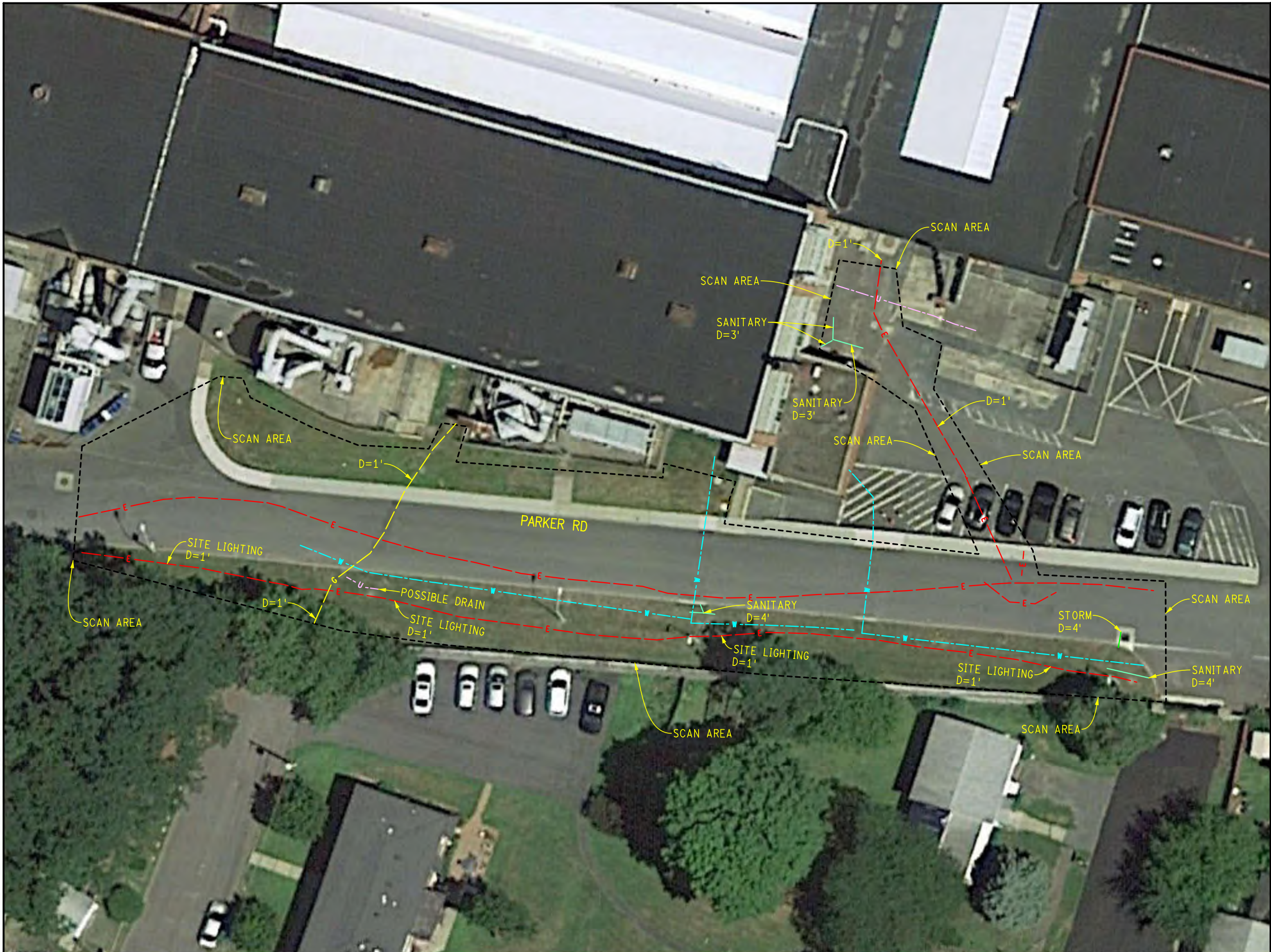
DRAWN BY: ADRIAN.KOEHN

PROJECT MANAGER:
JOSEPH FEDERICO
518.524.6114
JOE.FEDERICO@GPRSINC.COM

DATE 8/14/2019

DRAWING NO. 1 REV. 0

W:\PROJECTS\142055\CAD\WA142055_EX01.DGN



TERMS AND CONDITIONS

1. THIS DRAWING IS INTENDED TO DOCUMENT MARKINGS AND COMMENTS COLLECTED BY GROUND PENETRATING RADAR SYSTEMS (GPRS). GPRS CANNOT GUARANTEE IT WILL BE ABLE TO LOCATE ALL UTILITIES OR OTHER SUBSURFACE FEATURES ON SITE. ALL FINDINGS ARE SUBJECT TO THE TERMS AND CONDITIONS THAT CAN BE VIEWED WITH THE LINK BELOW:
<https://m.gp-radar.com/terms-conditions>
2. GPRS DOES NOT PROVIDE GEOPHYSICAL, GEOLOGICAL, LAND SURVEYING, OR ENGINEERING SERVICES.
3. FOR ADDITIONAL INFORMATION REGARDING FINDINGS AND EQUIPMENT USED, SEE THE "JOB SUMMARY REPORT" THAT WAS SUBMITTED VIA EMAIL FOLLOWING COMPLETION OF FIELD WORK.
4. PRIVATE UTILITY LOCATING IS NEVER A REPLACEMENT FOR ONE CALL/811 SERVICES. STATE LAW REQUIRES 811 TO BE CALLED PRIOR TO ANY AND ALL EXCAVATION ACTIVITIES.

LEGEND

- E --- ELECTRICAL
- WATER
- ST --- STORM
- SS --- SANITARY
- G --- GAS
- U --- UNKNOWN
- SCAN AREA
- D= DEPTH

0 15' 30'



GPRS IS NOT AFFILIATED WITH 811 BUT DOES RECOMMEND THAT THE SERVICE IS USED ON EVERY PROJECT IN ADDITION TO OUR OWN. SEE NOTE #4 ABOVE.

FOR INFORMATION ONLY

GPRS UTILITY FINDINGS MAP

PREPARED FOR:
ARCADIS

LOCATION:
U.S. ARMY WATERVLIET ARSENAL
1 BUFFINGTON ST
WATERVLIET, NY 12189

DRAWN BY: ADRIAN.KOEHN

PROJECT MANAGER:
JOSEPH FEDERICO
518.524.6114
JOE.FEDERICO@GPRSINC.COM

DATE 8/13/2019

DRAWING NO. 2 REV. 0

APPENDIX C

Soil Boring and Well Construction Logs

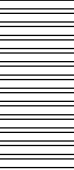


[illegible]

BORING LOG

Well ID
WVA-AW-35-MW-10

PROJECT	B35 Cr. Acid Spill Inv.		LOCATION	Watervliet Arsenal, Watervliet, NY			SHEET	1	OF	3
CLIENT	US Army Corps of Engineers						PROJECT No.	02118227.0000		
DRILLING CONTRACTOR	Nothnagle						MEAS. PT. ELEV.	41.30'		
PURPOSE	Plating Area Site Investigation						GROUND ELEV.	41.6'		
WELL MATERIAL	Steel						DATUM	MSL		
DRILLING METHOD(S)	HSA		SAMPLE	CORE	CASING		DATE STARTED	8/20/19		
DRILL RIG TYPE	CME 85	TYPE	Splitspoon	Wireline	Steel		DATE FINISHED	8/21/19		
GROUND WATER DEPTH	8.9'	DIA.	2" OD"	HQ	4"		DRILLER	Steve		
MEASURING POINT	Ground Surface	WEIGHT	140 #				ARCADIS STAFF	K.Stilson		
DATE OF MEASUREMENT	8/20-21/19	FALL	30"							

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
2	4		0.0		Asphalt.	0.4		
4		20	0.0		Medium SAND and coarse angular to subangular GRAVEL, loose, moist.	4.0		
6	1.5	34			Medium SAND and weathered rock, dense, moist.	4.5		
		40			Weathered rock, weak to moderate cementation, gray, dry			
	0.1	50						
		100/6"						4 in. steel casing installed 0.3-12 ft.
8					Gray SHALE, minor metamorphism, medium hard lamination with veins of calcite and pyrite. Porous, laminated, intensely fractured, weathered, iron staining, calcite deposits, medium hard.	7.0		
10								Rock Socket installed 7-12 ft.
12					Showing phyllitic texture along fractures.		12.0	12-17ft bgs RQD: 38%
14								Open hole 12-50 ft.
16								
18					Smooth, irregular bedding, moderately to intensely fractured, slightly weathered, medium hard.			17-22ft bgs RQD: 28%

[illegible]

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
22	8				Porous, moderately fractured along bedding, iron staining, calcite and pyrite deposits, medium hard.			19-27ft bgs RQD: 34%
24								
26								
28								
30								
32								
34								
36								
38	8				Horizontal fracture from 27.5' to 28.5'			27-35ft bgs RQD: 55%
40								
42								
44								
46								
48								
50								
52								
54	8				Slightly weathered, medium hard, mineral deposits along fractures.			35-43ft bgs RQD: 77%
56								
58								
60								
62								
64								
66								
68								
70								43-50ft bgs RQD: 65%
72								
74								
76								
78								
80								
82								
84								

BORING LOG

Well ID
WVA-AW-35-MW-11

PROJECT **B35 Cr. Acid Spill Inv.**

LOCATION **Watervliet Arsenal, Watervliet, NY**

SHEET **3** OF **3**

CLIENT **US Army Corps of Engineers**

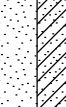
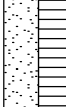
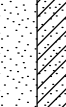
PROJECT No. **02118227.0000**

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
48	7							Open hole 19-50 ft.
50						50.0		50.0

BORING LOG

Well ID
WVA-AW-35-MW-12

PROJECT	B35 Cr. Acid Spill Inv.		LOCATION	Watervliet Arsenal, Watervliet, NY			SHEET	1	OF	1
CLIENT	US Army Corps of Engineers						PROJECT No.	02118227.0000		
DRILLING CONTRACTOR	Nothnagle						MEAS. PT. ELEV.	51.52'		
PURPOSE	Plating Area Site Investigation						GROUND ELEV.	51.8'		
WELL MATERIAL	PVC						DATUM	MSL		
DRILLING METHOD(S)	HSA		SAMPLE	CORE	CASING		DATE STARTED	8/21/19		
DRILL RIG TYPE	CME 85	TYPE	Splitspoon	Wireline	PVC		DATE FINISHED	8/21/19		
GROUND WATER DEPTH	12.9'	DIA.	2" OD"	HQ	2"		DRILLER	Steve		
MEASURING POINT	Ground Surface	WEIGHT	140 #				ARCADIS STAFF	K.Stilson		
DATE OF MEASUREMENT	8/21/19	FALL	30"							

DEPTH FT.	SAMPLE TYPE, RECOVERY, NUMBER	BLOWS ON SAMPLE SPOON PER 6"	PID	GRAPHIC LOG	GEOLOGIC DESCRIPTION KEY - Color, Major, Minor Moisture, Etc.	ELEV. DEPTH	WELL Constr.	REMARKS
2	5		0.0		Topsoil.	0.4		
					Brown SAND with large angular weathered rock, moist.	4.5		0.29-5 ft. Sch. 40 PVC riser
4					No recovery.	4.5		
6	0	4						
		2						
		2						
8	1.5	3	0.1		Fine to coarse SAND, some Clay and small rounded Gravel, very soft, brown, moist.	7.0		5-13 ft. 10-slot Sch. 40 PVC screen
		3						
		6						
10	1.3	8	0.0		Fine to coarse SAND, some Clay and sub-angular Gravel, soft, brown to dark brown, moist.	9.0		
		9						
		7						
12	1	4	0.0		Medium rounded GRAVEL with angular weathered rock, dry, gray.	11.7		
		100/6				12.0		
								13.0 ▼
								13.5 13-13.5 ft. PVC sump



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built assets

Soil/Sediment Sample Log

Sample ID B35-551-08052019Project/No. WVA 02118227.0000.002P/30001988Date 8/5/19Sampling Personnel K. StibonTime 1310Weather 82°F Sunny

DESCRIPTION OF SAMPLE LOCATION:



Soil

Sediment

Location South of Parker Road, WVA

Name of Water Body _____

Sample depth (ft) 0" - 2"

Location _____

Soil type SAND fine to med grained. some organic.

Depth of water _____

Velocity of water _____

Substrate description _____

Description of vegetation _____

FIELD PARAMETERS:

Sample Method GrabSample Description fine to med grained SAND. Some organic material. Dry. Brown.Color BrownOdor NoneSalinity —CONTAINER DESCRIPTION: From ADK Lab _____

Number

Container

Analysis

14 oz glass (clear)6010+7471 TAL Metal7196 Hexavalent Chromium

TOTAL:

1



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built assets

Soil/Sediment Sample Log

Sample ID B3552-08/52019Project/No. WVA 02118227.0000.002P/30001988Date 8/5/2019Sampling Personnel Kim WilsonTime 1320Weather 83°F Sunny

DESCRIPTION OF SAMPLE LOCATION:



Soil

Sediment

Location North of Parker Rd, WVA Name of Water Body _____Sample depth (ft) 0"-2" Location _____Soil type SAND Depth of water _____

Velocity of water _____

Substrate description _____

Description of vegetation _____

FIELD PARAMETERS:

Sample Method GrabSample Description Fine to medium grained SAND, some organic material. Dark BrownColor BrownOdor None

Salinity _____

CONTAINER DESCRIPTION: From ADK Lab _____

Number

Container

Analysis

1100 mL glass (clear)601027471 TAL Metal
7196 Hexavalent Chromium

TOTAL:

1



ARCADIS

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built assets

Soil/Sediment Sample Log

Sample ID 655-SS3-08052019Project/No. WVA 02118227.0000.002P/30001988Date 8/5/19Sampling Personnel EST/507Time 1330Weather 83°F Sunny

DESCRIPTION OF SAMPLE LOCATION:

☒ Soil ☐ Sediment
Location South of Parker Road
WVA

Name of Water Body _____

Sample depth (ft) 0"-2"

Location _____

Soil type SAND fine to
Med grained

Depth of water _____

Velocity of water _____

Substrate description _____

Description of vegetation _____

FIELD PARAMETERS:

Sample Method GrabSample Description Fine to medium grained SAND. Some
organic material. Dk Brown.Color BrownOdor None

Salinity _____

CONTAINER DESCRIPTION: From ADK Lab _____

Number

Container

Analysis

14oz glass (clear)6050 & 7471 TAL Metc
7196 Hex ChromTOTAL: 1



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built assets

Soil/Sediment Sample Log

Sample ID B35-^{SS4}-00052019
 Date 8/5/19
 Time 1400
 Weather 83°F Sunny

Project/No. WVA 02118227.0000.002P/30001988
 Sampling Personnel R. St. Louis

DESCRIPTION OF SAMPLE LOCATION:



Soil

Sediment

Location North of Parker Rd, WVA
 Sample depth (ft) 0"-2"
 Soil type SAND

Name of Water Body

Location

Depth of water

Velocity of water

Substrate description

Description of vegetation

FIELD PARAMETERS:

Sample Method Grab
 Sample Description Fine to medium grained SAND, little small debris, some organic material, brown, Dry
 Color Brown
 Odor none
 Salinity

CONTAINER DESCRIPTION: From ADK Lab

Number

Container

Analysis

1
1

4oz glass clear
4oz glass clear

6000047 TAL Metals / 7196 Hex Chrom
MS/MSD

TOTAL:

2



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for natural and
built assets

Soil/Sediment Sample Log

Sample ID 835-SS5-08052019Project/No. WVA 02118227.0000.002P/30001988Date 8/5/19Sampling Personnel K. StinsonTime 1410Weather 83°F Sunny

DESCRIPTION OF SAMPLE LOCATION:

Soil

Sediment

Location North of Parker Rd, WVASample depth (ft) 0"-2"Soil type SAND

Name of Water Body

Location

Depth of water

Velocity of water

Substrate description

Description of vegetation

FIELD PARAMETERS:

Sample Method GrabSample Description Fine to medium grained SAND. Little small pebbles, some organic materials, brownishColor BrownOdor NoneSalinity —CONTAINER DESCRIPTION: From ADK Lab

Number

Container

Analysis

14 oz glass jar6010+7471 TAL Metals / 7196 Hex Chrom115Dup

TOTAL:

2


ARCADIS

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for natural and
built assets

Soil/Sediment Sample Log

 Sample ID B35-SS6-08052019

 Project/No. WVA 02118227.0000.002P/30001988

 Date 8/5/19

 Sampling Personnel K. Silson

 Time 1500

 Weather 80°F Sunny

DESCRIPTION OF SAMPLE LOCATION:

☒ Soil South of Parker Rd
☐ Sediment

 Location WVA

Name of Water Body _____

 Sample depth (ft) 0-2"

Location _____

 Soil type Sand

Depth of water _____

Velocity of water _____

Substrate description _____

Description of vegetation _____

FIELD PARAMETERS:

 Sample Method fine to med (KS) Grab

 Sample Description Fine to medium grained SAND some
organic material, Day Brown

 Color Brown

 Odor NONE

Salinity _____

 CONTAINER DESCRIPTION: From ADK Lab _____

Number

Container

Analysis

1
4 oz glass clear
6010+7491 TAL Metals

7196 Hex Chrom

 TOTAL: 1



Soil/Sediment Sample Log

Sample ID B35-SS7-08052019Project/No. WVA 02118227.0000.002P/30001988Date 8/5/19Sampling Personnel K StilsonTime 1515Weather 80°F Sunny

DESCRIPTION OF SAMPLE LOCATION:

☒ Soil☐ SedimentLocation In fenced area next to pond Name of Water Body _____Sample depth (ft) 0-2 ft

Location _____

Soil type Sand and gravel

Depth of water _____

Velocity of water _____

Substrate description _____

Description of vegetation _____

FIELD PARAMETERS:

Sample Method GrabSample Description SAND and gravel. ^{dry} Dark brown,Color Dark BrownOdor None

Salinity _____

CONTAINER DESCRIPTION: From ADK Lab _____

Number

Container

Analysis

14 oz glass jar6010+1471 TAL Metals
7196 Hex ChromTOTAL: 1



Soil/Sediment Sample Log

Sample ID B35-SSP-08052019Project/No. WVA 02118227.0000.002P/30001988Date 08/5/19Sampling Personnel K. StilsonTime 1520Weather 80°F Sunny

DESCRIPTION OF SAMPLE LOCATION:



Soil

Sediment

Location Fenced in area west side of machine Name of Water Body _____Sample depth (ft) 0-2" Location _____Soil type SAND + Gravel Depth of water _____

Velocity of water _____

Substrate description _____

Description of vegetation _____

FIELD PARAMETERS:

Sample Method GrabSample Description SAND and gravel, Dark BrownColor Dark BrownOdor None

Salinity _____

CONTAINER DESCRIPTION: From ADK Lab _____

Number

Container

Analysis

14oz clear glass6010+1741 AL Metal
7196 Hex Chrom

TOTAL:

--	--

Soil/Sediment Sample Log

Sample ID 355-559-DRC-19
 Date 1530 08/5/19
 Time 1530
 Weather 85°F Sunny

Project/No. WVA 02118227.0000.002P/30001988
 Sampling Personnel L Stinson

DESCRIPTION OF SAMPLE LOCATION:

☒ Soil By smoking hut ☐ Sediment

Location Southern Parker Ave
 Sample depth (ft) 0-2'
 Soil type Sand

Name of Water Body _____

Location _____

Depth of water _____

Velocity of water _____

Substrate description _____

Description of vegetation _____

FIELD PARAMETERS:

Sample Method GrabSample Description SAND - fine to medium grained dark brownColor Dark BrownOdor None

Salinity _____

CONTAINER DESCRIPTION: From ADK Lab _____

Number

Container

Analysis

1

4oz glass clear

6010+7471 TAL Metal
7196 Hex Carbon

TOTAL:

--	--

APPENDIX D

Well Development Logs





INVA-AW-35

Page 1 of 1

MW-9

Date 12/12/2019

Purge Method
Centrifugal

Submersible

Other ✓ Bailer

Developed By K. Stilson

gallon/foot	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

Brown cloudy color



ARCADIS

Monitoring Well Development Log

Page 1 of 2Project/No. WVA - B35 Chromic Acid Spill Investigation
02118227.0000.0002P Well MW-50Date 8/26 /19Total Depth 53.28 Casing Diameter (inches) 4"Purge Method
CentrifugalWater Level 7.62 Well Volume (gal) 29.6 gals

Submersible

Water Column 45.66 Total Volume Purged ~140 gals

Other

Pump On 8/26 1400 Pump Off 0710Developed By Whole Pump

Well Casing Volumes

gallon/foot

1-1/4" = 0.06

2" = 0.16

3" = 0.37

4" = 0.65

1-1/2" = 0.09

2-1/2" = 0.26

3-1/2" = 0.50

6" = 1.47

Time	Minutes Elapsed	Rate (gpm) (mL/min)	DTW (ft)	Gallons Purged	pH	Specific Conductance (mS/cm)	Temp. (C) (F)	Turbidity (NTU)	REMARKS (PID readings, color, odor, etc.)
8/26 1415		1.300	9.67	~10	8.02	0.974	19.89	1000	cloudy
1445		1.300	17.69	~12	8.07	1.03	19.85	1100	cloudy gray
1515		1.300	25.52	~29	8.05	1.06	20.50	1000	cloudy gray
1545		1.300	38.9	~45	8.14	1.38	20.13	7100	clear cloudy
1600		1.300	38.905	~46	8.20	1.49	20.01	7100	cloudy
			5.15						
0710			10.31		7.67	1.46	14.12	430	cloud slightly
0730			25.25		7.68	1.50	18.97	485	"
0745			27.9		7.69	1.42	20.01	400	"
0800			30.5		7.70	1.44	20.0	391	"
0830			31.83		7.74	1.44	19.99	312	"
0845			33.10		7.74	1.45	20.27	341	"
0910			33.55		7.73	1.46	20.98	311	"
0915			33.55		7.73	1.44	21.25	301	"
0930			32.80		7.67	1.44	21.10	277	"
0945			32.85		7.67	1.47	21.22	257	"
1000			32.95		7.68	1.46	21.56	232	"
1015			33.45		7.72	1.44	22.00	209	"
1030			33.5		7.70	1.46	22.10	183	"
1045			34.5		7.68	1.46	21.99	157	clear
1100			34.25		7.65	1.49	22.13	149	clear

Monitoring Well Development Log

Page 2 of

Project/No. WVA - B35 Chromic Acid Spill Investigation
02118227.0000.0002P Well

MW-10

Date 8/21/19

Total Depth	Casing Diameter (inches)
-------------	--------------------------

Purge Method	Centrifugal
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30
31	31
32	32
33	33
34	34
35	35
36	36
37	37
38	38
39	39
40	40
41	41
42	42
43	43
44	44
45	45
46	46
47	47
48	48
49	49
50	50
51	51
52	52
53	53
54	54
55	55
56	56
57	57
58	58
59	59
60	60
61	61
62	62
63	63
64	64
65	65
66	66
67	67
68	68
69	69
70	70
71	71
72	72
73	73
74	74
75	75
76	76
77	77
78	78
79	79
80	80
81	81
82	82
83	83
84	84
85	85
86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

Water Level _____ Well Volume (gal) _____

Submersible

Water Column	Total Volume Purged
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30
31	31
32	32
33	33
34	34
35	35
36	36
37	37
38	38
39	39
40	40
41	41
42	42
43	43
44	44
45	45
46	46
47	47
48	48
49	49
50	50
51	51
52	52
53	53
54	54
55	55
56	56
57	57
58	58
59	59
60	60
61	61
62	62
63	63
64	64
65	65
66	66
67	67
68	68
69	69
70	70
71	71
72	72
73	73
74	74
75	75
76	76
77	77
78	78
79	79
80	80
81	81
82	82
83	83
84	84
85	85
86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

Other

Pump On _____ Pump Off _____

Developed By _____

Well Casing Volumes

gallon/foot

$$1\frac{1}{4}'' = 0.06$$
$$2'' = 0.16$$
$$3'' = 0.37$$
$$4'' = 0.65$$
$$1\frac{1}{2}'' = 0.09$$
$$2\frac{1}{2}'' = 0.26$$
$$3\frac{1}{2}'' = 0.50$$
$$6'' = 1.47$$
[illegible]



ARCADIS

Monitoring Well Development Log

Page 1 of 3Project/No. WVA - B35 Chromic Acid Spill Investigation
02118227.0000.0002PWell MW-11Date 8/26/19Total Depth 52.57 Casing Diameter (inches) 4"Purge Method
CentrifugalWater Level 6.77 Well Volume (gal) 29.77 $V_3 = 8931$

Submersible

Water Column 45.8 Total Volume Purged ~150

Other

Pump On 1025 Pump Off 1700Developed By Mark H. HargreavesPhase Pump

Well Casing Volumes

gallon/foot

1-1/4" = 0.06

2" = 0.16

3" = 0.37

4" = 0.65

1-1/2" = 0.09

2-1/2" = 0.26

3-1/2" = 0.50

6" = 1.47

Time	Minutes Elapsed	Rate (gpm) (mL/min)	DTW (ft)	Gallons Purged	pH	Specific Conductance (mS/cm)	Temp. (C) (F)	Turbidity (NTU)	REMARKS (PID readings, color, odor, etc.)
1030	5	1.333	6.00		5.73	0.789	16.91	0	Clear
1035	10	1.000	12.75		5.75	0.765	16.96	17	Clear
1040	15	1.333	18.98		5.93	0.730	16.87	407	slightly cloudy
1045	20	1.333	23.50		5.82	0.721	16.99	687	"
1050	25	1.333	29.00		5.90	0.699	17.01	779	"
1055	30	1.333	31.20		5.93	0.687	16.99	71000	Cloudy grey
1100	35	1.333	33.45		5.95	0.663	16.98	71000	Cloudy grey
1105	40	1.333	34.5		6.07	0.659	16.97	71000	
1110	45	1.333	35.00		6.34	0.657	16.96	71000	Cloudy grey
1115	50	1.333	36.60		8.96	0.541	16.96	7100	" "
1120	55	1.333	37.00		8.49	0.540	16.94	71000	" "
1125	60	"	38.00		9.20	0.592	16.75	71000	"
1130	65	"	39.34		9.35	0.725	16.75	71000	"
1135	70	"	39.89		9.33	0.725	16.86	71000	"
1140	75	"	39.99		9.28	0.763	16.74	71000	"
1145	80	"	40.30		9.27	0.762	16.91	71000	"
1150	85	"	40.81		9.23	0.781	16.96	71000	"
1155	90	"	40.90		9.21	0.805	16.81	71000	"
1200	95	"	41.00		9.15	0.824	16.89	71000	slight cloudy grey
1205	100	"	41.10		9.12	0.839	16.83	71000	" "
1210	105	"	41.30		9.11	0.839	16.90	71000	" "
1215	110	"	41.50		9.10	0.853	16.88	71000	" "



ARCADIS

Monitoring Well Development Log

Project/No. WVA - B35 Chromic Acid Spill Investigation
02118227.0000.0002P WellPage 2 of 3Date 8/26 /19Total Depth 52.57 Casing
Diameter (inches) _____Purge Method
Centrifugal _____Water Level 6.77 Well Volume (gal) _____

Submersible _____

Water Column 7 Total Volume Purged _____

Other _____

Pump On _____

Pump Off _____

Developed By _____

Well Casing Volumes

gallon/foot

1-1/4" = 0.06

2" = 0.16

3" = 0.37

4" = 0.65

1-1/2" = 0.09

2-1/2" = 0.26

3-1/2" = 0.50

6" = 1.47

Time	Minutes Elapsed	Rate (gpm) (mL/min)	DTW (ft)	Gallons Purged	pH	Specific Conductance (mS/cm)	Temp. (C) (F)	Turbidity (NTU)	REMARKS (PID readings, color, odor, etc.)
1220	115	1.333	41.50		9.08	0.869	16.79	1000	slight cloud
1225	120	1.333	41.65		9.05	0.872	16.76	1000	" "
1230	125	1.333	41.75		9.03	0.885	16.73	71000	" "
1235	130	1.333	41.80		9.01	0.891	16.63	71000	" "
1240	135	1.333	41.50		8.96	0.903	16.61	71000	" "
1245	140	1.333	45.20		8.94	0.901	16.55	71000	" "
1250	145	1.333	45.40		8.91	0.906	16.60	71000	" "
1255	150	1.333	45.65		8.91	0.904	16.69	71000	" "
1300	155	1.333	45.90		8.89	0.910	16.86	71000	" "
1305	160	1.333	45.20		8.88	0.925	16.91	776	" "
1310	165	"	45.10		8.88	0.918	16.89	915	" "
1315	170	"	44.70		8.86	0.924	16.87	895	" "
1320	175	"	44.55		8.85	0.912	16.86	844	" "
1325	180	"	44.30		8.84	0.927	16.86	751	" "
1330	185	"	44.25		8.83	0.925	16.97	749	" "
1335	190	"	44.25		8.83	0.920	17.00	734	" "
1340	195	"	44.00		8.82	0.927	16.89	719	" "
1345	200	"	44.00		8.82	0.918	16.81	705	" "
1350	205	"	44.00		8.81	0.926	16.86	759	" "
1355	210	"	44.00						
1400	215	"	44.00						
1405	220	"	44.50						

Monitoring Well Development Log

Page 3 of 3

Project/No. WVA - B35 Chromic Acid Spill Investigation
02118227.0000.0002P Well

Well

MW-11

Date 8/21/19

Total Depth	Casing Diameter (inches)
Water Level	Well Volume (gal)
Water Column	Total Volume Purged
Pump On	Pump Off

Purge Method

Centrifugal _____

Submersible _____

Other _____

Developed By _____

Well Casing Volumes

gallon/foot

$$1\frac{1}{4}'' = 0.06$$
$$2'' = 0.16$$
$$3'' = 0.37$$
$$4'' = 0.65$$
$$1\frac{1}{2}'' = 0.09$$
$$2^{-1/2} = 0.26$$
$$3\frac{1}{2}'' = 0.50$$
$$6'' = 1.47$$

Time	Minutes Elapsed	Rate (gpm) (mL/min)	DTW (ft)	Gallons Purged	pH	Specific Conductance (mS/cm)	Temp. (C) (F)	Turbidity (NTU)	REMARKS (PID readings, color, odor, etc.)
1410					8.01	0.984	17.15	549	slight discolor
1415					8.13	0.987	17.11	486	"
1435	DTW				8.41	0.976	17.44	555	"
1442	44.35				8.44	0.983	17.42	503	"
1500	44.40				8.42	0.979	17.76	290	"
1513	44.0				8.43	0.999	17.63	211	"
1525	45.00				8.31	0.969	18.01	175	Clear
1540	45.15				8.05	0.986	18.05	94	"
1555	44.65				8.20	0.975	17.96	66	"
1615	44.55				8.29	0.964	18.34	44.9	"
1630	44.55				8.28	0.965	18.45	44.0	"
1645	44.55				8.29	0.967	18.47	41.7	"
1715	44.55								
1745	44.56								
1721	44.50			450 gpm					

ARCADIS

Monitoring Well Development Log

WVA-AW-35-AW-12 Page 1 of 1

Project/No. 30 1918 Well Date 8/20/9

Total Depth	13.35	Casing Diameter (inches)	2"	Purge Method	Centrifugal
-------------	-------	--------------------------	----	--------------	-------------

Water Level 12.79 Well Volume (gal) 0.109 Submersible

Water Column 056 Total Volume Purged Other Boilers 16

Pump On Failer/Whale Pump Off Biler Whale Developed By 12

Well Casing Volumes

gallon/foot	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

[illegible]



Monitoring Well Development Log

Page 1 of 1

Project/No. WVA - B35 Chromic Acid Spill Investigation 30001988.0002P Well

WVA-AW-35-
AW-12 D

Date 12/12/2019

Total Depth 13.33' Casing Diameter (inches)

2"

Purge Method
Centrifugal

Water Level 12.40' Well Volume (gal)

0.15 mol

Submersible

Water Column 0.93' Total Volume Purged

0.934

Other ☒ Bacterial

Pump On

Pump Off

Developed By K. Stilson

Well Casing Volumes

gallon/foot

$$1\frac{1}{4}'' = 0.06$$
$$2'' = 0.16$$
$$3'' = 0.37$$
$$4'' = 0.65$$
$$1\frac{1}{2}'' = 0.09$$
$$2^{-1/2} = 0.26$$
$$3\frac{1}{2}'' = 0.50$$
$$6'' = 1.47$$
[illegible]

Field Forms-Environmental.xls
MW Development

APPENDIX E

Groundwater Sampling Logs





ARCADIS

Groundwater Sampling Form

Page 1 of 1

Project No. 30001988.0002P

Well ID

93-GM-SP-11

Date 9/18/19

Project Name/Location WVA - B35 Chromic Acid Spill Investigation / Watervliet, NY

Weather

65°F Sunny

Measuring Pt.

Type of PVC

Screen

Setting (ft-bmp)

—

Casing

Diameter (in.)

4

Well Material

☒ PVC☐ SS☐ Other

Total Depth (ft-bmp)

14.88

Static Water

Level (ft-bmp)

9.30

Water Column in Well

5.58

Gallons in Well

3.63

Calc. Gallons

1.90

Pump Intake (ft-bmp)

Present

Purge Method:

Centrifugal

Submersible

Disp. Bailor

Other

Sample

Method

bladder pump

Gallons Purged

1.80

MP Elevation

—

Sample Time: Label

0935

Replicate/

Code No.

NA

Pump On/Off

0945

Sampled by

K.S.

0.1

3.0%

10%

10mV

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft) TOC	Gallons Purged	pH	Cond. (µmhos) (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°F)	Redox (mV)	Appearance	
											Color	Odor
0850	5	150	9.96	0.20	6.59	2.12	64.1	0.75	16.77	13	clear	none
0855	10	150	10.10	0.40	6.79	2.06	78.6	0.72	16.90	-33	cloudy	none
0900	15	150	10.17	0.60	6.90	2.00	79.8	0.69	17.11	-59	cloudy	none
0905	20	150	9.88	0.80	7.15	1.84	57.4	0.93	17.41	-95	clear	none
0910	25	150	9.95	1.00	7.42	1.69	35.7	1.39	17.49	-117	cloudy	none
0915	30	150	9.99	1.20	8.02	1.55	19.4	1.73	17.59	-139	cloudy	none
0920	35	150	10.02	1.40	8.56	1.47	12.4	1.86	17.66	-145	"	"
0925	40	150	10.12	1.60	8.61	1.45	17.0	1.90	17.67	-140	"	"
0930	45	150	10.14	1.80	8.66	1.43	16.8	1.87	17.71	-138	"	"
0935	SAMPLE 93-GM-SP-11-091819											

Constituents Sampled

Container

Number

Preservative

TAL Metals

500 mL

1

Nitric Acid

Hex Chrom

500 mL

1

None

Well Information

Well Location:

East of building 35. Along fence line.

Well Locked at Arrival:

Yes

/

No

Condition of Well:

Fair

Well Locked at Departure:

Yes

/

No

Well Completion:

Flush Mount

Stick Up

Key Number To Well:

NOTES: Initial: cloudy no odor. slight tan tint.

Well Casing Volumes

Gallons/Foot

1" = 0.04

1.5" = 0.09

2.5" = 0.26

3.5" = 0.50

6" = 1.47

1.25" = 0.06

2" = 0.16

3" = 0.37

4" = 0.65



ARCADIS

Groundwater Sampling Form

Project No. 30001988.0002P

Well ID

WVA-AW-35-MW-5

Date

Page 1 of 1
9/18/19

Project Name/Location WVA - B35 Chromic Acid Spill Investigation / Watervliet, NY

Weather

70°F Sunny

Measuring Pt.

Description

Top of PK

Screen

Setting (ft-bmp)

Casing

Diameter (in.)

4"

Well Material

☒ PVC☐ SS☐ Other

Total Depth (ft-bmp)

49.89

Static Water

Level (ft-bmp)

13.86

Water Column in Well

36.03

Gallons in Well

23.92

Calc. Gallons
PurgedPump Intake (ft-
bmp)

pre set

Purge Method:

Centrifugal

Submersible

Disp. Bailor

Other

Sample
Method

Bladder pump

Gallons Purged

MP Elevation

Pump On/Off

1045

Sample Time: Label

1120

Replicate/

Code No.

NA

Sampled by

KS

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft) TOC	Gallons Purged	pH	Cond. (µmhos) (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C) (°F)	Redox (mV)	Appearance	
											Color	Odor
1050	5	150	14.01	0.20	8.19	1.49	1.3	1.94	16.93	48	clear	none
1055	10	150	14.23	0.40	8.12	1.48	1.0	0.40	16.53	46	"	"
1100	15	150	14.52	0.60	8.11	1.48	0.8	0.23	16.77	45	"	"
1105	20	150	14.68	0.80	8.11	1.48	0.1	0.00	17.17	37	"	"
1110	25	150	14.76	1.00	8.12	1.47	0.0	0.00	17.28	33	"	"
1115	30	150	14.90	1.20	8.10	1.47	0.3	0.00	17.52	23	"	"

Constituents Sampled

Container

Number

Preservative

TAL Metals

500mL plastic

1

None

Hex Chrom

500mL plastic

1

None

Well Information

Well Location:

Building 35 east of door C1

Well Locked at Arrival:

Yes

/

No

Condition of Well:

Fair

Well Locked at Departure:

Yes

/

No

Well Completion:

☒ Flush Mount

/

Stick Up

Key Number To Well:

NOTES: Initial clear no odor. Final: Clear no odor

Well Casing Volumes

Gallons/Foot

1" = 0.04

1.5" = 0.09

2.5" = 0.26

3.5" = 0.58

6" = 1.47

1.25" = 0.06

2" = 0.16

3" = 0.37

4" = 0.65



ARCADIS

Groundwater Sampling Form

Project No. 30001988.0002P

Well ID

WVA-AW-35-MW-9

Date

Page 1 of 1
9/17/19

Project Name/Location WVA - B35 Chronic Acid Spill Investigation / Watervliet, NY

Weather

65°F Sunny

Measuring Pt.

Description Top of PVC

Screen

Setting (ft-bmp)

8-13

Casing

Diameter (in.)

2"

Well Material

☒ PVC
☐ SS
☐ Other

Total Depth (ft-bmp)

13.15

Static Water

Level (ft-bmp)

Dry

Water Column in Well

-

Gallons in Well

NA

Calc. Gallons

NA

Purged

NA

Pump Intake (ft-bmp)

-

Purge Method:

Centrifugal

Submersible

Disp. Bailer

Other

Sample

Method

-

Gallons Purged

MP Elevation

-

Pump On/Off

-

Sample Time: Label

Replicate/

Code No.

-

Sampled by

ATE/KS

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft) TOC	Gallons Purged	pH	Cond. (µmhos) (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C) (°F)	Redox (mV)	Appearance	
											Color	Odor

Constituents Sampled

Container

Number

Preservative

TAL Metals

Hex Chrom

Well Information

Well Location:

Building 35, Suite 51

Well Locked at Arrival:

Yes / No

Condition of Well:

Good

Well Locked at Departure:

Yes / No

Well Completion:

Push Mount

/ Stick Up

Key Number To Well:

NOTES:

Well Casing Volumes

Gallons/Foot

1" = 0.04

1.25" = 0.06

1.5" = 0.09

2" = 0.16

2.5" = 0.26

3" = 0.37

3.5" = 0.50

4" = 0.65

6" = 1.47

Groundwater Sampling Form

Page 1 of 1

Project No. 30001988.0002P

Well ID

WVA-4W-35-MW-10

Date

9/17/19

Project Name/Location WVA - B35 Chronic Acid Spill Investigation / Watervliet, NY

Weather

70's, sunny

Measuring Pt.
Description

TOC

Screen

Setting (ft-bmp)

Bedrock well

Casing

Diameter (in.)

4"

Well Material

PVC
SS
Other

Total Depth (ft-bmp)

51.19

Static Water
Level (ft-bmp)

5.69

Water Column in Well

45.5

Gallons in Well

29.58

Calc. Gallons
Purged

2.9

Pump Intake (ft-bmp)

~50

Purge Method:

Centrifugal
Submersible

Sample
Method

Peristaltic

Gallons Purged

2.9

MP Elevation

-

Disp. Bailer
Other

peristaltic

Pump On/Off

1300/

Sample Time: Label

↓

Replicate/
Code No.

DUP-01-091719

Sampled by

A. Therman

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft) TOC	Gallons Purged	pH	Cond. (µmhos) (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp (°C) (°F)	Redox (mV)	Appearance	
											Color	Odor
1305	5	300	6.30	0.5	7.28	1.77	76.8	0.5	21.53	-79	cloudy	none
1310	10	300	6.74	1.0	7.166	1.75	80.5	0.48	21.70	-72	slightly cloudy	none
1315	15	220	7.09	1.2	7.45	1.75	45.5	0.47	21.90	-114	clear	none
1320	20	220	7.20	1.5	7.35	1.75	41.8	0.40	21.89	-108	clear	none
1325	25	220	7.37	1.7	7.34	1.74	39.1	0.41	21.94	-118	clear	none
1330	30	220	7.46	1.9	7.57	1.74	33.9	0.46	22.24	-134	clear	none
1335	35	220	7.55	2.1	7.61	1.73	34.2	0.40	22.24	-142	clear	none
1340	40	200	7.63	2.25	7.51	1.73	32.5	0.43	22.29	-145	clear	none
1345	45	200	7.69	2.4	7.59	1.72	28.4	0.39	22.42	-155	clear	none
1350	50	200	7.69	2.6	7.50	1.72	28.0	0.39	23.14	-153	clear	none
1355	55	200	7.70	2.8	7.55	1.72	27.4	0.37	23.57	-163	clear	none
Sample	6		1400									

Constituents Sampled

Container

Number

Preservative

TAL Metals

500 mL plastic

1

Anting Acid

Hex Chrom

↓

1

none

Well Information

Well Location:

Adjacent to B-35

Well Locked at Arrival:

Yes

No

Condition of Well:

Good

Well Locked at Departure:

Yes

No

Well Completion:

Flush Mount

Key Number To Well:

N/A 9/16/19

NOTES:

initial pH: 7.28, 7.166, 7.45, 7.35, 7.34, 7.57, 7.61, 7.51, 7.59, 7.50, 7.55
collected 0.5 - 2.8 ft below water level

Well Casing Volumes

Gallons/Foot

1" = 0.04

1.5" = 0.09

2.5" = 0.26

3.5" = 0.50

6" = 1.47

1.25" = 0.06

2" = 0.16

3" = 0.37

4" = 0.65



ARCADIS

Groundwater Sampling Form

Page 1 of 1

Project No. 30001988.0002P

Well ID WVA-AW-35-MW-11

Date 9/17/19

Project Name/Location WVA - B35 Chronic Acid Spill Investigation / Watervliet, NY

Weather 66°F Sunny

Measuring Pt.

Description

Top of Steel Casing

Screen

Setting (ft-bmp)

Bedrock

Casing

Diameter (in.)

4"

Well Material

PVC

☒ SS

Other

Total Depth (ft-bmp)

51.07

Static Water

Level (ft-bmp)

6.64

Water Column in Well

44.45

Gallons in Well

28.89

Calc. Gallons

2.42

Purged

2.5

Pump Intake (ft-bmp)

49.09

Purge Method:

Centrifugal Submersible

Disp. Bailer

Other

Sample Method

Pump

Pump On/Off

1255/1420

Sampled by

KS

Sample Time: Label

1355

Replicate/

Code No.

WVA-AW-35-MW-11

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft) TOC	Gallons Purged	pH	Cond. (µmhos) (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°F)	Redox (mV)	Appearance	
											Color	Odor
1300	5	250	8.95	0.22	6.15	1.25	1.70	12.3	20.52	31	clear	none
1305	10	250	9.06	0.44	6.48	1.23	0.81	2.9	20.71	-6	yellow	nitrogen
1310	15	250	9.16	0.66	6.88	1.23	0.46	5.1	20.11	-46	"	"
1315	20	250	9.38	0.88	7.19	1.23	0.11	1.1	19.32	-92	"	"
1320	25	250	9.70	1.10	7.41	1.23	0.00	0.0	18.98	-135	"	"
1325	30	250	9.77	1.32	7.44	1.23	0.00	0.0	18.84	-157	"	"
1330	35	250	9.85	1.54	7.46	1.26	0.00	0.0	18.73	-177	"	"
1335	40	250	9.89	1.76	7.48	1.28	0.00	0.0	18.71	-193	"	"
1340	45	250	9.95	1.98	7.48	1.29	0.00	0.0	18.70	-206	"	"
1345	50	250	9.99	2.20	7.44	1.30	0.00	0.0	18.67	-214	"	"
1350	55	250	10.03	2.42	7.56	1.31	0.00	0.0	18.67	-220	"	"
Final Reading			—	—	7.31	1.33	40.3	0.70	19.00	-167		

Constituents Sampled

Container

Number

Preservative

TAL Metals

500mL

3 MS/MSD

Nitric

Hex Chrom

500mL

3 MS/MSD

None

Well Information

Well Location:

Albany Police - B35 Building 35

Well Locked at Arrival:

Yes / ☒ No

Condition of Well:

Intact

Well Locked at Departure:

Yes / ☒ No

Well Completion:

Flush Mount / Stick Up

Key Number To Well:

NOTES:

MS/MSD taken. Slight tint.

Well Casing Volumes

Gallons/Foot

1" = 0.04

1.5" = 0.09

2.5" = 0.26

3.5" = 0.50

6" = 1.47

1.25" = 0.06

2" = 0.16

3" = 0.37

4" = 0.65

Groundwater Sampling Form

Page 1 of 1

Project No. 30001988.0002P

Well ID

WVA-AW-35-MW-12

Date _____

9/17/19

Project Name/Location WVA - B35 Chromic Acid Spill Investigation / Watervliet, NY

Weather 65°F Sunny

Measuring Pt.	Top of PVC
Description	

Screen
Setting (ft-bmp)

5-13

Casing
Diameter (in.)

24

Well Material ☒ PVC
☐ SS
☐ Other

Total Depth (ft-bmp) 13.39

Static Water
Level (ft-bmp)

Dc 4

Water Column in Well

Gallons in Well

Calc. Gallons Purged NA

Pump Intake (ft-bmp)

Purge Method:

Sample Method

Gallons Purged

MP Elevation

Centrifugal
Submersible

Pump On/Off

Sample Time: Label

Replicate/

Disp. Bailer
Other

Sampled by AT IKS

[illegible][illegible]

Well Information

Well Location: In cross along road. 100m E

Well Locked at Arrival: Yes / ☒ No

Condition of Well: Good

Well Locked at Departure: Yes / No

Well Completion: Flush Mount / Stick Up

Key Number To Well:

NOTES:

Well Casing Volumes

Gallons/Foot	1" = 0.04	1.5" = 0.09	2.5" = 0.26	3.5" = 0.50	6" = 1.47
	1.25" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65	



ARCADIS

Groundwater Sampling Form

Page 1 of 1

Project No. 30001988.0002P

Well ID WVA-AW-35-MW-38Date 9/18/19Project Name/Location WVA - B35 Chronic Acid Spill Investigation / Watervliet, NYWeather 60s, sunnyMeasuring Pt.
DescriptionScreen
Setting (ft-bmp)Unknown

Casing

Diameter (in.) Unknown, assume 4"Well Material
PVC
SS
OtherUnknownTotal Depth (ft-bmp) UnknownStatic Water
Level (ft-bmp)9.69

Water Column in Well

16.14

Gallons in Well

Calc. Gallons
Purged2.2

Pump Intake (ft-bmp)

25' mtr. head

Purge Method:

Centrifugal

Submersible

Disp. Bailer

Other

Sample
MethodPeristaltic

Gallons Purged

Sample Time: Label 0940Replicate/
Code No.NAPump On/Off 0845/0955Sampled by A. ThomasWVA-AW-35-MW-38-091819

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft) TOC	Gallons Purged	pH	Cond. (umhos) (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C) (°F)	Redox mV	Appearance	
											Color	Odor
0855	10	150	10.84	0.6	6.91	1.76	12.8	1.92	17.84	180	clear	none
0900	15	200	11.16	0.8	7.21	1.76	7.7	2.14	18.26	165	clear	none
0905	20	150	11.41	1.0	7.38	1.74	2.6	2.38	18.44	152	clear	none
0910	25	150	11.50	1.2	7.46	1.75	11.0	1.68	18.31	144	clear	none
0915	30	200	11.63	1.4	7.45	1.75	3.0	2.48	18.00	139	clear	none
0920	35	200	12.17	1.5	7.47	1.75	3.2	2.55	18.91	134	clear	none
0925	40	200	12.42	1.6	7.47	1.75	3.6	2.61	19.00	132	clear	none
0930	45	200	12.70	1.8	7.50	1.75	4.0	2.75	19.11	131	clear	none
0935	50	200	13.00	2.0	7.56	1.75	3.6	2.80	19.17	130	clear	none
Correct		Sample @	0940					2.80				

Constituents Sampled

Container

Number

Preservative

TAL Metals

500mL plastic1Nitric acid

Hex Chrom

↓1NoneNIRES CONT.Will collect sample, and then try again to remove bladder pump.update: this is the only sample collected

Well Information

Well Location:

Adjacent to break hut

Well Locked at Arrival:

Yes / No

Condition of Well:

OK

Well Locked at Departure:

Yes / No

Well Completion:

Flush Mount / Stick Up

Key Number To Well:

NA

NOTES:

Top of bladder 25.83See field notes. Could not get bladder pump to discharge but was able to pull up bladder for inspection. It is pushing in it and will be replaced at depth of top of bladder.

Well Casing Volumes

Gallons/Foot

1" = 0.04

1.5" = 0.09

2.5" = 0.26

3.5" = 0.50

6" = 1.47

1.25" = 0.06

2" = 0.16

3" = 0.37

4" = 0.65

* Pump stopped. Turned up rate and turned on car. Lowered rate w/ car on 200mL/min.

ARCADIS

Water Sampling Log

Project WVA Project No. 30001988 Page 1 of 1
 Site Location Water/let, NY Date 10/24/19
 Site/Well No. WVA-AW-35-MW-12 Replicate No.
 Weather Sunny 65°F Sampling Time. Begin 1330 End —

Evacuation Data

Measuring Point Top of PVC
 Sounded Well Depth (ft bmp) 13.38
 Depth to Water (ft bmp) 12.78
 Depth to Packer (ft bmp)
 Water Column in Well (ft) 0.6
 Casing Diameter (in) 2"
 Gallons in Well (gal) 0.09
 Gallons Pumped/Bailed
 Prior to Sampling (gal) ~0.25 gal ~ 10/22/19
 Sample Pump Intake
 Setting (ft bmp)
 Pressure (psi)
 Pumping Rate (ml/min)
 Evacuation Method Bailer
 Sampling Method Bailer
 Purge Time Begin End

Field Parameters

Color Tan / Brown
 Odor None
 Appearance Cloudy
 pH (s.u.) 7.10
 Conductivity 8.772
 (mS/cm)
 Temperature (°C) 16.6°C
 DO (mg/L) 5.96
 Turbidity (NTU) 432
 Time 1445
 DTW (ft bmp) 13.25
 ORP 71.1

Remarks:

Water Quality Meter: YSI Pro Plus
 Initial Purge: 10/22/19 DTW: 12.65 DTB: 13.38 2 Volume = 0.11 gal
~ 0.10 gal purged → Dry
* Unpreserved Dissolved Metals Collected due to high turbidity *

Constituents Sampled: See COC Sampling Personnel: Kidwell BS/AL

Well Casing Volumes

Gal./Ft.	1" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2 1/2" = 0.28	3 1/2" = 0.50	6" = 1.47

bmp	below measuring point	mS/cm	Millisiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Milligrams per liter	COC	Chain of Custody		

* Well Went Dry → Needed to Wait for recharge Multiple Times *

ARCADIS

Water Sampling Log

Project WVA Project No. 30001988 Page 1 of 1
 Site Location Waterlitch, NY Date 10/24/19
 Site/Well No. 93EM-SP-9 Replicate No.
 Weather Sunny 65°F Sampling Time: Begin 1355 End

Evacuation Data

Measuring Point Top of PVC
 Sounded Well Depth (ft bmp) 2.99 *
 Depth to Water (ft bmp) 0.77
 Depth to Packer (ft bmp)
 Water Column in Well (ft) 2.22
 Casing Diameter (in) 4"
 Gallons in Well (gal) 1.37
 Gallons Pumped/Bailed
 Prior to Sampling (gal)
 Sample Pump Intake
 Setting (ft bmp)
 Pressure (psi)
 Pumping Rate (ml/min)
 Evacuation Method Bailer
 Sampling Method Bailer
 Purge Time Begin End

Field Parameters

Color None
 Odor None
 Appearance Clear
 pH (s.u.) 6.96
 Conductivity 7.34 (ES)
 (mS/cm) 0.125
 Temperature (°C) 17.0
15.9 (ES)
 DO (mg/L) 3.51
4.35 (ES)
 Turbidity (NTU) 6.45
 Time 1350
 DTW (ft bmp) 1.04
 ORP 13.11 (ES)
32.0

Remarks:

Water Quality Meter: YSI Pro Plus
 Initial Purge: *Compromised well - Grab Sample Collected
- may only be Surface water runoff here

Constituents Sampled:

See COC

Sampling Personnel:

K. L. Smith ES/AL

Well Casing Volumes

Gal./Ft. 1^{1/4"} = 0.08 2" = 0.16 3" = 0.37 4" = 0.65
 1^{1/2"} = 0.09 2-¹/₂" = 0.26 3-¹/₂" = 0.50 6" = 1.47

bmp below measuring point mS/cm Millisiemens per centimeter VOC Volatile Organic Compounds
 °C Degrees Celsius s.u. Standard units umhos/cm Micromhos per centimeter
 ft feet NTU Nephelometric Turbidity Units
 gpm Gallons per minute N/A Not Applicable
 mg/L Milligrams per liter COC Chain of Custody

ARCADIS

Water Sampling Log

Project WVA Project No. 30001988 Page 1 of 1
 Site Location B35 Date 10/24/19
 Site/Well No. NMT Pit Replicate No. M3/M4 + DUP
 Weather _____ Sampling Time: Begin 0920 End —

Evacuation Data

Field Parameters

Measuring Point	<u>Top of PVC</u>	Color	<u>None</u>
Sounded Well Depth (ft bmp)	<u>—</u>	Odor	<u>None</u>
Depth to Water (ft bmp)	<u>—</u>	Appearance	<u>Clear</u>
Depth to Packer (ft bmp)	<u>—</u>		
Water Column in Well (ft)	<u>—</u>		
Casing Diameter (in)	<u>Sump</u>	pH (s.u.)	<u>7.41</u>
Gallons in Well (gal)	<u>—</u>	Conductivity	<u>1.166</u>
Gallons Pumped/Bailed		(mS/cm)	
Prior to Sampling (gal)	<u>—</u>		
Sample Pump Intake		Temperature (°C)	<u>17.6</u>
Setting (ft bmp)	<u>—</u>		
Pressure (psi)	<u>—</u>	DO (mg/L)	<u>5.62</u>
Pumping Rate (ml/min)	<u>—</u>		
Evacuation Method	<u>* Bailer from Sump</u>	Turbidity (NTU)	<u>2.33</u>
Sampling Method	<u>* Bailer from Sump</u>	Time	<u>0925</u>
Purge Time	Begin <u>—</u> End <u>—</u>	DTW (ft bmp)	<u>—</u>
		ORP	<u>159.4</u>

Remarks: Water Quality Meter: YSI Pro Plus
 Initial Purge: Purged into seeps before collection ES

Constituents Sampled: See COC Sampling Personnel: ~~K. H. H. H.~~ ES/AL

Well Casing Volumes

Gal./Ft.	1 ^{1/4"} = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 ^{1/2"} = 0.09	2-1/2" = 0.26	3-1/2" = 0.50	6" = 1.47

bmp	below measuring point	mS/cm	MilliSiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Milligrams per liter	COC	Chain of Custody		

ARCADIS

Water Sampling Log

Project WVA Project No. 38001988 Page 1 of 1
 Site Location Watervliet, NY Date 10/24/19
 Site/Well No. 120 Pit Replicate No. —
 Weather — Sampling Time: Begin 1010 End —

Evacuation Data

Measuring Point Top of PVC
 Sounded Well Depth (ft bmp) —
 Depth to Water (ft bmp) —
 Depth to Packer (ft bmp) —
 Water Column in Well (ft) —
 Casing Diameter (in) —
 Gallons in Well (gal) —
 Gallons Pumped/Bailed
 Prior to Sampling (gal) —
 Sample Pump Intake
 Setting (ft bmp) —
 Pressure (psi) —
 Pumping Rate (ml/min) —
 Evacuation Method * Bailer from Sump
 Sampling Method * Bailer from Sump
 Purge Time Begin — End —

Field Parameters

Color None
 Odor None
 Appearance Clear w/ some suspended solids
 pH (s.u.) 8.25
 Conductivity (mS/cm) 1614
 Temperature (°C) 20.6
 DO (mg/L) 4.02
 Turbidity (NTU) 15.1
 DTW (ft bmp) —
 ORP 3.3

I	1V	2V	3V
8.25			
1614			
20.6			
4.02			
15.1			
1015			
—			
3.3			

Remarks: Water Quality Meter: YSI Pro Plus
Initial Purge: —

Constituents Sampled: See COC Sampling Personnel: K. Caldwell ES/AL

Well Casing Volumes				
Gal./Ft.	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2 1/2" = 0.28	3 1/2" = 0.50	6" = 1.47

bmp	below measuring point	mS/cm	Milli Siemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Milligrams per liter	COC	Chain of Custody		

ARCADIS

Water Sampling Log

Project WVA Project No. 30001988 Page 1 of 1
 Site Location Waterket, NJ Date 10/24/19
 Site/Well No. Commercial Pit Replicate No. —
 Weather — Sampling Time: Begin 1720 End —

Evacuation Data

Field Parameters

Measuring Point	Top of PVC	Color	<u>Slightly Tan</u>			
Sounded Well Depth (ft bmp)	<u>—</u>	Odor	<u>None</u>			
Depth to Water (ft bmp)	<u>—</u>	Appearance	<u>Slightly Cloudy</u>			
Depth to Packer (ft bmp)	<u>—</u>					
Water Column in Well (ft)	<u>—</u>					
Casing Diameter (in)	<u>—</u>	pH (s.u.)	<u>7.85</u>			
Gallons in Well (gal)	<u>—</u>	Conductivity	<u>1,487</u>			
Gallons Pumped/Bailed		(mS/cm)				
Prior to Sampling (gal)	<u>—</u>					
Sample Pump Intake		Temperature (°C)	<u>18.0</u>			
Setting (ft bmp)	<u>—</u>					
Pressure (psi)	<u>—</u>	DO (mg/L)	<u>6.52</u>			
Pumping Rate (ml/min)	<u>—</u>	Turbidity (NTU)	<u>46.9</u>			
Evacuation Method	<u>* Pump/Sample Valve</u>	Time	<u>1125</u>			
Sampling Method	<u>* Pump/Sample Valve</u>					
Purge Time	Begin <u>—</u> End <u>—</u>	DTW (ft bmp)	<u>—</u>			
		ORP	<u>48.8</u>			

Remarks:

Water Quality Meter: VSI Pro Plus
 Initial Purge: Purged ~ 10 seconds

Constituents Sampled:

See COC

Sampling Personnel:

K. bidwell ES/AL

Well Casing Volumes

Gal./Ft.	1 ^{1/4"} = 0.08	2" = 0.16	3" = 0.37	4" = 0.85
	1 ^{1/2"} = 0.09	2-1/2" = 0.28	3-1/2" = 0.50	6" = 1.47

bmp	below measuring point	mS/cm	Milsiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Miligrams per liter	COC	Chain of Custody		

ARCADIS

Water Sampling Log

Project WVA Project No. 30001988 Page 1 of 1
 Site Location Waterdret, NY Date 10/24/19
 Site/Well No. Excav. Sump Replicate No.
 Weather Sampling Time: Begin 1225 End

Evacuation Data

Field Parameters

Measuring Point Top of PVC
 Sounded Well Depth (ft bmp) 15.61
 Depth to Water (ft bmp) 13.26
 Depth to Packer (ft bmp)
 Water Column in Well (ft) 2.35
 Casing Diameter (in) 8"
 Gallons in Well (gal) 6.13
 Gallons Pumped/Bailed 6.25
 Prior to Sampling (gal)
 Sample Pump Intake
 Setting (ft bmp)
 Pressure (psi)
 Pumping Rate (ml/min)
 Evacuation Method * Whale Pump
 Sampling Method * Whale Pump
 Purge Time Begin 1215 End 1220

Color None
 Odor None
 Appearance clear
 pH (s.u.) 7.58
 Conductivity 0.968
 (mS/cm)
 Temperature (°C) 22.7
 DO (mg/L) 1.90
 Turbidity (NTU) 47.4
 Time 1215 1230
 DTW (ft bmp) 13.26 13.30
 ORP -12.9

Remarks:

Water Quality Meter: YSI Pro Plus
 Initial Purge: Excess, Brown/Tan, No Odor, Slightly Cloudy

Constituents Sampled:

See COC

Sampling Personnel:

K. Bidwell ES/AL

Well Casing Volumes

Gal./Ft.	1 1/4" = 0.08	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2 1/2" = 0.26	3 1/2" = 0.60	6" = 1.47

bmp	below measuring point	mS/cm	Millsiemens per centimeter	VOC	Volatile Organic Compounds
°C	Degrees Celsius	s.u.	Standard units	umhos/cm	Micromhos per centimeter
ft	feet	NTU	Nephelometric Turbidity Units		
gpm	Gallons per minute	N/A	Not Applicable		
mg/L	Milligrams per liter	COC	Chain of Custody		

GROUNDWATER SAMPLING LOG

Sampling Personnel: Anna Laloe/Kim Stilson
 WVA - B35 Chromic Acid Spill
 Client / Job Number: Investigation/Watervliet, NY 30001988.0002P
 Weather:

Well ID: 93EM-SP-7
 Date: 12/10/19
 Time In: Time Out:

Well Information

Depth to Water: feet from MP
 Total Depth: feet from MP
 Length of Water Column: feet
 Volume of Water in Well: gal
 Intake depth for tubing: feet

Well Type: Flushmount ☐ Stick-Up ☐
 Well Material: Stainless Steel ☐ PVC ☐
 Well Locked: Yes ☐ No ☐
 Measuring Point Marked: Yes ☐ No ☐
 Well Diameter: 1" 2" Other:

Purging Information

Purging Method: Bailer ☐ Peristaltic ☐ Monsoon ☐ Other:
 Tubing/Bailer Material: Steel ☐ Polyethylene ☐ Teflon ☐ Other:
 Sampling Method: Bailer ☐ Peristaltic ☐ Monsoon ☐ Other:

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Pump Start Time:

Pump Stop Time:

Water-Quality Meter Type:

Total Volume Removed: (gal) Did well go dry: Yes ☐ No ☐

Unit Stability			
pH	DO / Turb	Cond. /Temp	ORP
▽ 0.1	▽ 10%	▽ 3.0%	▽ 10 mV

Parameter:	1	2	3	4	5	6	7	8	9
Time									
Volume Purged (Gal)									
Rate (mL/min)									
Depth to Water (ft.)									
pH									
Temp. (C)									
Conductivity (mS/cm)									
Dissolved Oxygen (mg/L)									
ORP (mV)									
Turbidity (NTU)									
Notes:									

Sampling Information

Analyses	#	n	Laboratory
Hex Chromium			Adirondack Environmental
TAL Metals			Adirondack Environmental
Color:			
Odor:			
Appearance:			
Sample ID:			Sample Time:
MS/MSD: Yes ☐			No ☐
Duplicate: Yes ☐			No ☐
Duplicate ID			Dup. Time:
Chain of Custody Signed By:			

Problems / Observations

12/18/19 - Flooded
 12/19/19 - Frozen
 Was not able to sample

GROUNDWATER SAMPLING LOG

Sampling Personnel: Anna Laloe/Kim Stilson
 WVA - B35 Chromic Acid Spill
 Client / Job Number: Investigation/Watervliet, NY 30001988.0002P
 Weather: 15° Cloudy

Well ID: 93-EM-SP-11
 Date: 12/18/19
 Time In: 1330 Time Out: 1500

Well Information

Depth to Water: 2.05' from MP
 Total Depth: 14.85' from MP
 Length of Water Column: 12.8' from MP
 Volume of Water in Well: 4.4 gal
 Intake depth for tubing: 10.0'

Well Type: Flushmount ☒ Stick-Up ☐
 Well Material: Stainless Steel ☐ PVC ☒
 Well Locked: Yes ☐ No ☒
 Measuring Point Marked: Yes ☒ No ☐
 Well Diameter: 1" 2" Other: 4"

Purging Information

Purging Method: Bailer ☐ Peristaltic ☐ Monsoon ☐ Other: Bailer
 Tubing/Bailer Material: Steel ☐ Polyethylene ☒ Teflon ☐ Other:
 Sampling Method: Bailer ☐ Peristaltic ☐ Monsoon ☐ Other: Bailer

Pump Start Time: 1345

Pump Stop Time: 1445

Water-Quality Meter Type: Horiba

Total Volume Removed: (gal) 2.3

Did well go dry: Yes ☐ No ☒

Conversion Factors

gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet

Unit Stability

pH	DO / Turb	Cond. /Temp	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Parameter:	1	2	3	4	5	6	7	8	9
Time	1350	1355	1400	1405	1410	1415	1420	1425	1430
Volume Purged (Gal)	0.23	0.46	0.69	0.92	1.15	1.38	1.61	1.84	2.07
Rate (mL/min)	175	175	175	175	175	175	175	175	175
Depth to Water (ft.)	8.30	8.44	8.63	8.44	9.22	9.44	9.55	9.63	9.71
pH	8.11	8.29	8.35	8.49	8.20	8.68	8.85	8.09	8.05
Temp. (C)	11.64	11.74	11.86	11.86	12.02	11.82	11.64	11.59	11.57
Conductivity (mS/cm)	2.92	2.93	2.94	2.94	2.93	2.72	2.25	2.08	2.09
Dissolved Oxygen (mg/L)	6.37	6.25	6.11	5.57	4.98	5.59	5.75	4.83	4.56
ORP (mV)	160	147	139	128	128	118	114	127	124
Turbidity (NTU)	11.8	11.9	11.9	11.5	11.0	8.96	5.55	4.75	4.44
Notes:									

Sampling Information

Problems / Observations

Analyses	#	n	Laboratory
Hex Chromium	1		Adirondack Environmental
TAL Metals	1		Adirondack Environmental
Color:			
Odor:			
Appearance:			
Sample ID:			Sample Time: 1440
MS/MSD:	Yes ☐	No ☒	
Duplicate:	Yes ☐	No ☒	
Duplicate ID:			Dup. Time:
Chain of Custody Signed By:			Anna Laloe

Initial: clear no color no odor

93-EM-SP-11-20191218

GROUNDWATER SAMPLING LOG

Sampling Personnel: Anna Laloe/Kim Stilson
 WVA - B35 Chromic Acid Spill
 Client / Job Number: Investigation/Watervliet, NY 30001988.0002P
 Weather: 25° Clear

Well ID: 93-EM-SF-11

Date: 12/18/19

Time In: 1330

Time Out: 1500

Well Information

Depth to Water: feet 8.5' from MP
 Total Depth: feet 14.88' from MP
 Length of Water Column: feet 6.38'
 Volume of Water in Well: gal 4.4 gal
 Intake depth for tubing: feet 10.5'

Well Type: Flushmount ☒ Stick-Up ☐
 Well Material: Stainless Steel ☐ PVC ☒
 Well Locked: Yes ☐ No ☒
 Measuring Point Marked: Yes ☒ No ☐
 Well Diameter: 1" 2" Other: 4"

Purging Information

Purging Method: Bailer ☐ Peristaltic ☐ Monsoon ☐ Other: Bladder
 Tubing/Bailer Material: Steel ☐ Polyethylene ☒ Teflon ☐ Other:
 Sampling Method: Bailer ☐ Peristaltic ☐ Monsoon ☐ Other: Bladder

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Pump Start Time:

Pump Stop Time:

Water-Quality Meter Type:

Total Volume Removed: (gal)

Did well go dry: Yes ☐ No ☒

Unit Stability			
pH	DO / Turb	Cond. / Temp	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Parameter:	1	2	3	4	5	6	7	8	9
Time	1435								
Volume Purged (Gal)	2.3								
Rate (mL/min)	175								
Depth to Water (ft.)	9.79								
pH	7.98								
Temp. (C)	11.61								
Conductivity (mS/cm)	2.09								
Dissolved Oxygen (m/L)	4.47								
ORP (mV)	131								
Turbidity (NTU)	4.76								
Notes:									

Sampling Information

Problems / Observations

Analyses	#	n	Laboratory
Hex Chromium	1		Adirondack Environmental
TAL Metals	1		Adirondack Environmental
Color:	clear none		
Odor:	none		
Appearance:	clear		
Sample ID:	Sample Time: 1440		
MS/MSD:	Yes ☐	No ☒	
Duplicate:	Yes ☐	No ☒	
Duplicate ID	Dup. Time:		
Chain of Custody Signed By:	AKS		

Final clear no odor no color

93-EM-SF-11-20191218

GROUNDWATER SAMPLING LOG

Sampling Personnel: Anna Laloe/Kim Stilson
 WVA - B35 Chronic Acid Spill
 Client / Job Number: Investigation/Watervliet NY 30001988.0002P
 Weather: 10° Clear

Well ID: WVA-AW-35-MW-5
 Date: 12/19/19
 Time In: 1320 Time Out: 1415

Well Information

Depth to Water: feet 13.15' from MP
 Total Depth: feet 49.84' from MP
 Length of Water Column: feet 36.74'
 Volume of Water in Well: gal 23.08 gal
 Intake depth for tubing: feet per set

Well Type: Flushmount ☒ Stick-Up ☐
 Well Material: Stainless Steel ☐ PVC ☒
 Well Locked: Yes ☐ No ☒
 Measuring Point Marked: Yes ☒ No ☐
 Well Diameter: 1" 2" Other: 4"

Purging Information

Purging Method: Bailer ☐ Peristaltic ☐ Monsoon ☐ Other: Bladder
 Tubing/Bailer Material: Steel ☐ Polyethylene ☒ Teflon ☐ Other:
 Sampling Method: Bailer ☐ Peristaltic ☐ Monsoon ☐ Other: Bladder

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Pump Start Time: 1325
 Pump Stop Time: 1340 (1410) Water-Quality Meter Type: foripa
 Total Volume Removed: (gal) 1.54 Did well go dry: Yes ☐ No ☒

Unit Stability			
pH	DO / Turb	Cond. /Temp	ORP
± 0.1	± 10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9
Time	1330	1335	1340	1345	1350	1355	1400		
Volume Purged (Gal)	0.22	0.44	0.66	0.88	1.10	1.32	1.54		
Rate (mL/min)	200	200	200	200	200	200	200		
Depth to Water (ft.)	13.54	13.83	13.98	14.13	14.41	14.72	14.80		
pH	7.85	7.88	7.90	7.89	7.89	7.89	7.88		
Temp. (C)	8.21	8.41	8.58	8.82	8.80	8.86	8.90		
Conductivity (mS/cm)	1.51	1.49	1.48	1.48	1.47	1.48	1.48		
Dissolved Oxygen (mg/L)	1.36	0.45	0.07	0.02	0.00	0.00	0.00		
ORP (mV)	205	203	199	197	191	190	190		
Turbidity (NTU)	2.68	2.54	2.18	1.47	2.12	1.97	1.91		
Notes:									

Sampling Information

Analyses	#	n	Laboratory
Hex Chromium	1		Adirondack Environmental
TAL Metals	1		Adirondack Environmental
Color: clear none			
Odor: none			
Appearance: clear			
Sample ID: ———→			Sample Time: 1405
MS/MSD: Yes ☐ No ☒			
Duplicate: Yes ☐ No ☒			
Duplicate ID: ———→			Dup. Time: ———→
Chain of Custody Signed By: KSLAC			

Problems / Observations

Initial: clear no odor
 no color

Final: clear no odor
 no color
 WVA-AW-35-MW-5-
 20191219

GROUNDWATER SAMPLING LOG

Sampling Personnel: Anna Laloe/Kim Stilson
 WVA - B35 Chromic Acid Spill
 Client / Job Number: Investigation/Watervliet, NY 30001988.0002P
 Weather: SUN 33°F

Well ID: WVA-AW-35-mw-9
 Date: 12/18/19
 Time In: 10:55 Time Out: 11:05

Well Information

Depth to Water: feet 12.97 from MP
 Total Depth: feet 13.15 from MP
 Length of Water Column: feet 0.18
 Volume of Water in Well: gal 0.03
 Intake depth for tubing: feet

Well Type: Flushmount ☒ Stick-Up ☐
 Well Material: Stainless Steel ☐ PVC ☒
 Well Locked: Yes ☐ No ☒
 Measuring Point Marked: Yes ☒ No ☐
 Well Diameter: 1" 2" Other:

Purging Information

Purging Method: Bailer ☒ Peristaltic ☐ Monsoon ☐ Other: Bailer.
 Tubing/Bailer Material: Steel ☐ Polyethylene ☒ Teflon ☐ Other:
 Sampling Method: Bailer ☐ Peristaltic ☐ Monsoon ☐ Other:

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Pump Start Time:

Pump Stop Time:

Water-Quality Meter Type:

Total Volume Removed: (gal)

Did well go dry: Yes ☒ No ☐

Unit Stability			
pH	DO / Turb	Cond. / Temp	ORP
▽ 0.1	▽ 10%	▽ 3.0%	▽ 10 mV

Parameter:	1	2	3	4	5	6	7	8	9
Time									
Volume Purged (Gal)									
Rate (mL/min)									
Depth to Water (ft.)									
pH									
Temp. (C)									
Conductivity (mS/cm)									
Dissolved Oxygen (m/L)									
ORP (mV)									
Turbidity (NTU)									
Notes:									

Sampling Information

Problems / Observations

Sampling Information			
Analyses	#	n	Laboratory
Hex Chromium			Adirondack Environmental
TAL Metals			Adirondack Environmental
Color:			
Odor:			
Appearance:			
Sample ID:		Sample Time:	
MS/MSD:	Yes ☐	No ☐	
Duplicate:	Yes ☐	No ☐	
Duplicate ID		Dup. Time:	
Chain of Custody Signed By:			

12/18/19
 1100 Bailed dry
 Insufficient volume for field parameters
 End of Day DTW 0.02.

Was not Sampled

GROUNDWATER SAMPLING LOG

Sampling Personnel: Anna Laloe/Kim Stilson
 Client / Job Number: WVA - B35 Chronic Acid Spill
 Investigation/Watervliet, NY 30001988.0002P
 Weather: snow + overcast 33°F

Well ID: WVA-AW-35-mw-10
 Date: 12/18/19
 Time In: 1325 Time Out: 1425

Well Information

Depth to Water: (feet) 5.97 (from MP)
 Total Depth: (feet) 51.13 (from MP)
 Length of Water Column: (feet) 45.16
 Volume of Water in Well: (gal) 29.35
 Intake depth for tubing: (feet) ~ 49.13

Well Type: Flushmount ☒ Stick-Up ☐
 Well Material: Stainless Steel ☒ PVC ☐
 Well Locked: Yes ☐ No ☒
 Measuring Point Marked: Yes ☒ No ☐
 Well Diameter: 1" 2" Other: 4"

Purging Information

Purging Method: Bailer ☐ Peristaltic ☒ Monsoon ☐ Other:
 Tubing/Bailer Material: Steel ☐ Polyethylene ☒ Teflon ☐ Other:
 Sampling Method: Bailer ☐ Peristaltic ☒ Monsoon ☐ Other:

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Pump Start Time: 1320
 Pump Stop Time: 1410 Water-Quality Meter Type: Horiba
 Total Volume Removed: (gal) 2.64 Did well go dry: Yes ☐ No ☒

Unit Stability			
pH	DO / Turb	Cond. /Temp	ORP
∇ 0.1	∇ 10%	∇ 3.0%	∇ 10 mV

Parameter:	1	2	3	4	5	6	7	8	9
Time	1325	1330	1335	1340	1345	1350	1355	1400	
Volume Purged (Gal)	.33	.66	.99	1.32	1.65	1.98	2.31	2.64	
Rate (mL/min)	250	250	250	250	250	250	250	250	
Depth to Water (ft.)	6.30	6.72	7.09	7.45	7.79	7.99	8.20	8.42	
pH	8.01	8.03	8.07	8.07	8.06	8.04	8.07	8.05	
Temp. (C)	16.55	16.57	16.49	16.40	16.7	17.08	16.53	16.68	
Conductivity (mS/cm)	1.67	1.66	1.66	1.66	1.63	1.63	1.64	1.63	
Dissolved Oxygen (mg/L)	2.53	2.41	2.37	2.36	2.7	2.19	2.13	2.13	
ORP (mV)	-200	-208	-215	-217	-220	-221	-222	-222	
Turbidity (NTU)	5.27	6.2	0.71	1.86	8.53	8.32	9.07	9.67	
Notes:									

Sampling Information

Analyses	#	n	Laboratory
Hex Chromium	3		Adirondack Environmental
TAL Metals	3		Adirondack Environmental
Color:	none		
Odor:	none		
Appearance:	clear		
Sample ID:	Sample Time: 1405		
MS/MSD:	Yes ☒	No ☐	
Duplicate:	Yes ☐	No ☒	
Duplicate ID:	Dup. Time:		
Chain of Custody Signed By:	anna laloe		

Problems / Observations

Initial: clean, no odor, no color, no sheen

WVA-AW-35-mw-10-20191218 (MS/MSD)

$$250 \text{ mL} \times 5 = 1250$$

$$1250 \text{ mL} = .33$$

$$4" = .65$$

$$22.35$$

GROUNDWATER SAMPLING LOG

Sampling Personnel: Anna Laloe/Kim Stilson
 Client / Job Number: WVA - B35 Chronic Acid Spill Investigation/Watervliet, NY 30001988.0002P
 Weather: 9°F sunny & windy

Well ID: WVA-AW-35-MW-11
 Date: 12/1/19
 Time In: 1310 Time Out: 1415

Well Information

Depth to Water: feet 8.15 from MP
 Total Depth: feet 51.09 from MP
 Length of Water Column: feet 42.94
 Volume of Water in Well: gal 27.91
 Intake depth for tubing: feet ~45.0

Well Type: Flushmount ☒ Stick-Up ☐
 Well Material: Stainless Steel ☒ PVC ☐
 Well Locked: Yes ☐ No ☒
 Measuring Point Marked: Yes ☒ No ☐
 Well Diameter: 1" 2" Other: 4"

Purging Information

Purging Method: Bailer ☐ Peristaltic ☒ Monsoon ☐ Other:
 Tubing/Bailer Material: Steel ☐ Polyethylene ☒ Teflon ☐ Other:
 Sampling Method: Bailer ☐ Peristaltic ☒ Monsoon ☐ Other:

Pump Start Time: 1313

Pump Stop Time: 1437

Water-Quality Meter Type: Horiba

Total Volume Removed: 2.8 (gal)

Did well go dry: Yes ☐ No ☒

Conversion Factors

gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet

Unit Stability

pH	DO / Turb	Cond. /Temp	ORP
▽ 0.1	▽ 10%	▽ 3.0%	▽ 10 mV

Parameter:	1	2	3	4	5	6	7	8	9
Time	1325	1330	1335	1340	1345	1350	1355	1400	1405
Volume Purged (Gal)	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8
Rate (mL/min)	150	150	150	150	150	150	150	150	150
Depth to Water (ft.)	8.74	8.97	9.16	9.31	9.52	9.69	9.82	9.93	10.06
pH	7.67	7.91	8.07	8.14	8.23	8.26	8.28	8.26	8.27
Temp. (C)	5.74	6.31	6.85	7.37	7.67	7.86	7.97	8.05	8.12
Conductivity (mS/cm)	1.37	1.37	1.36	1.34	1.35	1.34	1.35	1.34	1.34
Dissolved Oxygen (mg/L)	4.41	2.06	1.62	1.39	1.49	1.46	1.52	1.64	1.76
ORP (mV)	-50	-87	-123	-154	-196	-214	-226	-234	-243
Turbidity (NTU)	16.9	14.4	15.2	17.8	20.3	21.6	23.5	23.7	24.9
Notes:									

Sampling Information

Analyses	#	n	Laboratory
Hex Chromium	1		Adirondack Environmental
TAL Metals	1		Adirondack Environmental
Color:	HUTR AL		
Odor:	HUTR		
Appearance:	CLEAR		
Sample ID:	Sample Time: 1435		
MS/MSD:	Yes ☐	No ☒	
Duplicate:	Yes ☒	No ☐	
Duplicate ID	Dup. Time: 1405		
Chain of Custody Signed By:	ALIC		

Problems / Observations

Initial: clear, no odor, no sheen

Final: light brown, cloudy

WVA-AW-35-MW-11-20191219
 WVA-AW-35-MW-11-20191219

DUPLICATE-01-20191219

15.3 mL x 5 = 750 mL x .20
 1.5765 mm 150

GROUNDWATER SAMPLING LOG

Sampling Personnel: Anna Laloe/Kim Stilson

Well ID: WVA-AW-3S-mw-11

Client / Job Number: WVA - B35 Chronic Acid Spill

Date: 12/9/19

Investigation/Watervliet, NY 30001988.0002P

Weather:

Time In:

Time Out:

Well Information

Depth to Water: feet from MP

Total Depth: feet from MP

Length of Water Column: feet

Volume of Water in Well: gal

Intake depth for tubing: feet

Well Type: Flushmount ☐ Stick-Up ☐

Well Material: Stainless Steel ☐ PVC ☐

Well Locked: Yes ☐ No ☐

Measuring Point Marked: Yes ☐ No ☐

Well Diameter: 1" 2" Other:

Purging Information

Purging Method: Bailer ☐ Peristaltic ☐ Monsoon ☐ Other:

Tubing/Bailer Material: Steel ☐ Polyethylene ☐ Teflon ☐ Other:

Sampling Method: Bailer ☐ Peristaltic ☐ Monsoon ☐ Other:

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Pump Start Time:

Pump Stop Time:

Water-Quality Meter Type:

Total Volume Removed: (gal)

Did well go dry: Yes ☐ No ☐

Unit Stability			
pH	DO / Turb	Cond. / Temp	ORP
∇ 0.1	∇ 10%	∇ 3.0%	∇ 10 mV

Parameter:	1	2	3	4	5	6	7	8	9
Time	1410	1415	1420	1425	1430				
Volume Purged (Gal)	2.0	2.2	2.4	2.6	2.8				
Rate (mL/min)	150	150	150	150	150				
Depth to Water (ft.)	10.06	10.25	10.30	10.43	10.49				
pH	8.21	8.31	8.32	8.31	8.29				
Temp. (C)	8.09	8.09	8.55	8.43	8.59				
Conductivity (mS/cm)	1.34	1.33	1.33	1.34	1.33				
Dissolved Oxygen (mg/L)	1.89	1.93	1.98	2.10	2.11				
ORP (mV)	-252	-256	-259	-260	-257				
Turbidity (NTU)	25.8	25.8	25.7	26.0	26.2				
Notes:									

Sampling Information

Analyses	#	n	Laboratory
Hex Chromium	1		Adirondack Environmental
TAL Metals	1		Adirondack Environmental
Color:	1.14		WVA
Odor:	none		
Appearance:	clear		
Sample ID:	Sample Time: 1435		
MS/MSD:	Yes ☐	No ☐	
Duplicate:	Yes ☒	No ☐	
Duplicate ID	Dup. Time: 1405		
Chain of Custody Signed By:	ALOE		

Problems / Observations

WVA-AW-3S-mw-11-20191219

DUPLICATE-01-20191219

GROUNDWATER SAMPLING LOG

Sampling Personnel: Anna Laloe/Kim Stilson
 WVA - B35 Chromic Acid Spill
 Client / Job Number: Investigation/Watervliet, NY 30001988.0002P
 Weather: Sun 33°F

Well ID: WVA-AW-35-MW-12

Date: 12/18/19 + 12/19/19

Time In: 11:00 Time Out: 3:45

Well Information

Depth to Water: feet 12.43 from MP
 Total Depth: feet 13.39 from MP
 Length of Water Column: feet 0.96
 Volume of Water in Well: gal 0.15
 Intake depth for tubing: feet

Well Type: Flushmount ☒ Stick-Up ☐
 Well Material: Stainless Steel ☐ PVC ☒
 Well Locked: Yes ☐ No ☒
 Measuring Point Marked: Yes ☒ No ☐
 Well Diameter: 1" ☐ 2" ☒ Other:

Purging Information

Purging Method: Bailer ☒ Peristaltic ☐ Monsoon ☐ Other:
 Tubing/Bailer Material: Steel ☐ Polyethylene ☒ Teflon ☐ Other:
 Sampling Method: Bailer ☒ Peristaltic ☐ Monsoon ☐ Other:

Pump Start Time:

Pump Stop Time:

Water-Quality Meter Type:

Total Volume Removed: (gal) 0.15 Did well go dry: Yes ☒ No ☐

Conversion Factors

gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet

Unit Stability

pH	DO / Turb	Cond. / Temp	ORP
∇ 0.1	∇ 10%	∇ 3.0%	∇ 10 mV

Parameter:	12/18	12/19	12/19	12/19	5	6	7	8	9
Time	1108	0800	0700	1220					
Volume Purged (Gal)	0.15								
Rate (mL/min)									
Depth to Water (ft.)	12.43	12.51	12.51	12.50					
pH	7.26								
Temp. (C)	10.79								
Conductivity (mS/cm)	4.99								
Dissolved Oxygen (mg/L)	11.58								
ORP (mV)	237								
Turbidity (NTU)	207								
Notes:	Initial → Sampled: TAL metals Dissolved metals + Hex chrom								

Sampling Information

Analyses	#	n	Laboratory
Hex Chromium	1		Adirondack Environmental
TAL Metals	1	*	Adirondack Environmental
Color:	light brown		
Odor:	none		
Appearance:	some solids		
Sample ID:	Sample Time:		
MS/MSD:	Yes ☐	No ☒	
Duplicate:	Yes ☐	No ☒	
Duplicate ID:	Dup. Time:		
Chain of Custody Signed By:	ALV		

Problems / Observations

Initial: clear to cloudy
 brown tint
 no odor
 *dissolved Hex chrom + dissolved TAL - 1 bottle

GROUNDWATER SAMPLING LOG

Sampling Personnel: Anna Laloe/Kim Stilson
 Client / Job Number: WVA - B35 Chromic Acid Spill
 Investigation/Watervliet, NY 30001988.0002P
 Weather: 22° C

Well ID: WV - W-35-mw-38
 Date: 12/10/19
 Time In: 200 Time Out: 130

Well Information

Depth to Water: 25.83 feet 7.55 from MP
 Total Depth: 1.55 feet 25.83 from MP
 Length of Water Column: feet 18.28
 Volume of Water in Well: gal 11.88
 Intake depth for tubing: feet ~23.83

Well Type: Flushmount ☒ Stick-Up ☐
 Well Material: Stainless Steel ☐ PVC ☒
 Well Locked: Yes ☐ No ☒
 Measuring Point Marked: Yes ☒ No ☐
 Well Diameter: 1" 2" Other: 4"

Purging Information

Purging Method: Bailer ☐ Peristaltic ☒ Monsoon ☐ Other:
 Tubing/Bailer Material: Steel ☐ Polyethylene ☒ Teflon ☐ Other:
 Sampling Method: Bailer ☐ Peristaltic ☒ Monsoon ☐ Other:

Pump Start Time: 1210

Pump Stop Time: 1250

Water-Quality Meter Type: Horiba

Total Volume Removed: 1.56 (gal)

Did well go dry: Yes ☐ No ☒

Conversion Factors

gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet

Unit Stability

pH	DO / Turb	Cond. /Temp	ORP
✓ 0.1	✓ 10%	✓ 3.0%	✓ 10 mV

Parameter:	1	2	3	4	5	6	7	8	9
Time	1215	1220	1225	1230	1235	1240	1245		
Volume Purged (Gal)	0.26	0.52	0.78	1.04	1.30	1.56			
Rate (mL/min)	200	200	200	200	200	200			
Depth to Water (ft.)	8.03	8.58	9.05	9.40	9.89	10.23			
pH	7.91	7.91	7.92	7.92	7.95	7.95			
Temp. (C)	10.96	11.32	11.57	11.36	11.41	10.87			
Conductivity (mS/cm)	1.64	1.64	1.63	1.64	1.63	1.64			
Dissolved Oxygen (mg/L)	3.58	3.29	3.19	3.14	3.03	3.10			
ORP (mV)	179	177	175	173	169	169			
Turbidity (NTU)	0.00	0.26	1.60	1.10	1.72	1.63			
Notes:									

Sampling Information

Problems / Observations

Analyses	#	n	Laboratory
Hex Chromium	1		Adirondack Environmental
TAL Metals	1		Adirondack Environmental

Initial: clear, no odor, no color, no sheen

finds:

Color: none

Odor: none

Appearance: clear

Sample ID: Sample Time: 1245

MS/MSD: Yes ☐ No ☒

Duplicate: Yes ☐ No ☒

Duplicate ID: Dup. Time:

Chain of Custody Signed By: Anna Laloe

WVA-AW-35-mw-38-20191218

200 x 5 min = 1000 mL
 1000 mL = 0.26 gallons

4" = 0.65

2" = 0.163
 within 10% of highest value

Water Sampling Log

Project WVA - B35 Chromic Acid Spill Investigation Project No. 30001988.0002P

Site Location Watervliet, NY Date 12/19/19

Well No. 120 Pit Replicate No. — Weather —

Sampling Personnel Kim Stilson/Anna Laloe

Sampling Time:	Begin	<u>0917</u>	→	End	<u>—</u>
	Label		<u>0917</u>		

Purge Data

Measuring Point (describe)	<u>TOC</u>
Sounded Well Depth (ft bmp)	<u>—</u>
Depth to Water (ft bmp)	<u>—</u>
Water Column in Well (ft)	<u>—</u>
Casing Diameter	<u>Sump</u>
Gallons in Well	<u>—</u>
Gallons Purged	<u>—</u>
Prior to Sampling	<u>—</u>
Pump Intake	<u>—</u>
Setting (ft bmp)	<u>—</u>
Pumping Rate (gpm)	<u>—</u>
Evacuation Method	<u>*Bailer from Sump</u>
Sampling Method	<u>*Bailer from Sump</u>
Pump Time	On <u>—</u> Off <u>—</u>

Field Parameters

	I	1V	2V	3V
Color	<u>none</u>			
Odor	<u>none</u>			
Appearance	<u>clear with suspended solids</u>			
Temperature (°C)	<u>14.76</u>			
Conductivity (mS/cm)	<u>1.75</u>			
DO (mg/L)	<u>7.19</u>			
pH (s.u.)	<u>6.13</u>			
ORP (mV)	<u>265</u>			
Turbidity (NTU)	<u>61.4</u>			
Time	<u>0917</u>			
DTW (ft bmp)	<u>—</u>			

Remarks: Water Quality Meter: Horiba U-53

Initial Purge: —

Due to high turbidity, we took an additional dissolved sample

Parameters

See Chain of Custody

Container Type

500 mL plastic

No.

3

Preservative

nitric acid/unpreserved

Well Casing Volumes

Gal./Ft.	1 ^{1/4"} = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 ^{1/2"} = 0.09	2- ¹ / ₂ " = 0.26	3- ¹ / ₂ " = 0.50	6" = 1.47

Water Sampling Log

Project WVA - B35 Chromic Acid Spill Investigation Project No. 30001988.0002P
 Site Location Watervliet, NY Date 12/9/19
 Well No. Commercial Pit Replicate No. — Weather —

Sampling Personnel Kim Stilson/Anna Laloe

Sampling Time:	Begin	<u>0941</u>	→	End	<u>—</u>
	Label			<u>0941</u>	

Purge Data

Measuring Point (describe) TOC
 Sounded Well Depth (ft bmp) —
 Depth to Water (ft bmp) —
 Water Column in Well (ft) —
 Casing Diameter Sump
 Gallons in Well —
 Gallons Purged —
 Prior to Sampling —
 Pump Intake —
 Setting (ft bmp) —
 Pumping Rate (gpm) —
 Evacuation Method * Pump/sample valve
 Sampling Method * Pump/sample valve
 Pump Time On — Off —

Field Parameters

	I	1V	2V	3V
Color	<u>none</u>			
Odor	<u>none</u>			
Appearance	<u>clear</u>			
Temperature (°C)	<u>9.51</u>			
Conductivity (mS/cm)	<u>1.33</u>			
DO (mg/L)	<u>4.20</u>			
pH (s.u.)	<u>7.11</u>			
ORP (mV)	<u>216</u>			
Turbidity (NTU)	<u>7.61</u>			
Time	<u>0941</u>			
DTW (ft bmp)	<u>—</u>			

Remarks: Water Quality Meter: Horiba U-53
Initial Purge: purged ~ 10 seconds

Parameters

See Chain of Custody

Container Type

500 mL plastic

No.

2

Preservative

nitric acid / unpermeated

Well Casing Volumes

Gal./Ft.	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2 1/2" = 0.26	3 1/2" = 0.50	6" = 1.47

Water Sampling Log

 Project WVA - B35 Chromic Acid Spill Investigation Project No. 30001988.0002P

 Site Location Watervliet, NY Date 12/19 /19

 Well No. NMT Pit Replicate No. — Weather —

 Sampling Personnel Kim Stilson/Anna Laloe

Sampling Time:	Begin <u>0957</u> → End <u>—</u>
	Label <u>0957</u>

Purge Data

Measuring Point (describe)	<u>TOC</u>
Sounded Well Depth (ft bmp)	<u>—</u>
Depth to Water (ft bmp)	<u>—</u>
Water Column in Well (ft)	<u>—</u>
Casing Diameter	<u>Sump</u>
Gallons in Well	<u>—</u>
Gallons Purged	<u>—</u>
Prior to Sampling	<u>—</u>
Pump Intake	<u>—</u>
Setting (ft bmp)	<u>—</u>
Pumping Rate (gpm)	<u>—</u>
Evacuation Method	<u>*Bailer from Sump</u>
Sampling Method	<u>*Bailer from Sump</u>
Pump Time	On <u>—</u> Off <u>—</u>

Field Parameters

	I	1V	2V	3V
Color	<u>yellow</u>			
Odor	<u>none</u>			
Appearance	<u>clear</u>			
Temperature (°C)	<u>12.09</u>			
Conductivity (mS/cm ^o)	<u>1.27</u>			
DO (mg/L)	<u>7.15</u>			
pH (s.u.)	<u>4.7</u>			
ORP (mV)	<u>397</u>			
Turbidity (NTU)	<u>11.0</u>			
Time	<u>0957</u>			
DTW (ft bmp)				

 Remarks: Water Quality Meter: Horiba U-53

 Initial Purge: —

 Parameters
See Chain of Custody

 Container Type 500mL plastic No. 2

 Preservative
nitric acid
unt reserved

Well Casing Volumes				
Gal./Ft.	1 ^{1/4"} = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 ^{1/2"} = 0.09	2-1/2" = 0.26	3-1/2" = 0.50	6" = 1.47

Water Sampling Log

Project WVA - B35 Chromic Acid Spill Investigation Project No. 30001988.0002P

Site Location Watervliet, NY Date 12/17 /19

Well No. Excav. Sump Replicate No. — Weather —

Sampling Personnel Kim Stilson/Anna Laloe

Sampling Time:	Begin	<u>1020</u> →	End	<u>1114</u>
				Label <u>1114</u>

Purge Data

Measuring Point (describe)	TOC
Sounded Well Depth (ft bmp)	<u>15.63</u>
Depth to Water (ft bmp)	<u>13.33</u>
Water Column in Well (ft)	<u>2.3</u>
Casing Diameter	<u>8" 1"</u>
Gallons in Well	<u>6.00</u>
Gallons Purged	
Prior to Sampling	<u>6.00</u>
Pump Intake	<u>—</u>
Setting (ft bmp)	<u>—</u>
Pumping Rate (gpm)	<u>—</u>
Evacuation Method	<u>* whale pump</u>
Sampling Method	<u>* whale pump</u>
Pump Time	On <u>1054</u> Off <u>1114</u>

Field Parameters

	I	1V	2V	3V
Color	<u>brown</u>	<u>none</u>		
Odor	<u>none</u>	<u>none</u>		
Appearance	<u>clean</u>	<u>clear</u>		
Temperature (°C)	<u>18.19</u>	<u>19.61</u>		
Conductivity (mS/cm ²)	<u>1.04</u>	<u>1.03</u>		
DO (mg/L)	<u>4.09</u>	<u>3.63</u>		
pH (s.u.)	<u>6.97</u>	<u>7.38</u>		
ORP (mV)	<u>308</u>	<u>249</u>		
Turbidity (NTU)	<u>166.1</u>	<u>15.9</u>		
Time	<u>1054</u>	<u>1114</u>		
DTW (ft bmp)	<u>13.33</u>	<u>13.38</u>		

Remarks: Water Quality Meter: Horiba U-53
Initial Purge: brown, no odor, clear

Parameters	Container Type	No.	Preservative
See Chain of Custody	<u>500mL plastic</u>	<u>2</u>	<u>nitric acid/unreserved</u>

Gal./Ft.	Well Casing Volumes			
	1 1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1 1/2" = 0.09	2 1/2" = 0.26	3 1/2" = 0.50	6" = 1.47

8-2.61"

APPENDIX F

Waste Profile and Shipping Documents



1236500

WORK ORDER NO. 191061-55G-004

DOCUMENT NO.

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Services Inc. VEHICLE ID # 572301EPA ID # MA003912250 TRANS. 1 PHONE (781) 792-5000TRANSPORTER 2 Franks Vacuum Truck Service Inc VEHICLE ID # _____EPA ID # NY0982792814 TRANS. 2 PHONE (716) 284-2134

DESIGNATED FACILITY <u>Spring Grove Resource Recovery Inc.</u>			SHIPPER <u>Watervliet Arsenal</u>		
FACILITY EPA ID # <u>QHD000816829</u>			SHIPPER EPA ID # <u>NY7213820940</u>		
ADDRESS <u>4579 Spring Grove Avenue</u>			ADDRESS <u>1 Buttington St.</u>		
CITY <u>Cincinnati</u>		STATE <u>OH</u>	ZIP <u>45232</u>	CITY <u>Watervliet</u>	
				STATE <u>NY</u>	
				ZIP <u>12189</u>	
CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
<u>12X55</u>	<u>DM</u>		A. NON DOT REGULATED MATERIAL, (SOIL, WATER)	<u>4800</u>	<u>P</u>
<u>12X55</u>	<u>DM</u>		B. NON DOT REGULATED MATERIAL, (WATER, SOIL)	<u>4800</u>	<u>P</u>
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		
SPECIAL HANDLING INSTRUCTIONS <u>EMERGENCY PHONE # (800) 453-3713</u> GENERATOR <u>Watervliet Arsenal</u> <u>A.CH1331983 B.CH1332069</u>					

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

SHIPPER	PRINT <u>Eric Marcy</u>	SIGN <u>[Signature]</u>	DATE <u>12/12/19</u>
TRANSPORTER 1	PRINT <u>Spurgeon Smith</u>	SIGN <u>[Signature]</u>	DATE <u>12/12/19</u>
TRANSPORTER 2	PRINT <u>Paul Lynch</u>	SIGN <u>[Signature]</u>	DATE <u>12/17/19</u>
RECEIVED BY	PRINT <u>Charity Bongesfel</u>	SIGN <u>[Signature]</u>	DATE <u>12/19/19</u>

APPENDIX G

Data Usability Summary Reports



Data Validation Services

120 Cobble Creek Road P. O. Box 208

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Phone (518) 251-4429

harry@frontiernet.net

December 21, 2019

Katie Bidwell
Arcadis US, Inc.
855 Route 146 Suite 210
Clifton Park, NY 12065

RE: Validation of the Watervliet Arsenal Plating Area Site Analytical Laboratory Data
Data Usability Summary Report (DUSR)
AES SDG Nos. 190806001, 190821067, 190917059, and 191024057

Dear Ms. Bidwell:

Review has been completed for the data packages generated by Adirondack Environmental Services that pertain to samples collected between 08/05/19 and 10/24/19 at the Watervliet Arsenal Plating Area site. Nine soil samples, eleven aqueous samples, one soil field duplicate, and two aqueous field duplicates were processed for TAL metals and hexavalent chromium. Four additional soil samples and a field duplicate were processed for hexavalent chromium. One of the aqueous samples was also processed for dissolved metals. Field blanks and matrix spikes were also processed.

Data validation was performed with guidance from the USEPA national and regional validation documents, and in consideration for the specific requirements of the analytical methodology. The processing requirements of the project QAPP were not applicable to this scope.

The following items were reviewed:

- * Data Completeness
- * Case Narrative
- * Custody Documentation
- * Holding Times
- * Preparation/Calibration Blanks
- * Matrix Spike Recoveries/Duplicate Correlations
- * Blind Field Duplicate Correlations
- * Laboratory Control Sample (LCS)
- * Initial and Continuing Calibration Standards
- * Serial Dilution Evaluation
- * Method Compliance
- * Sample Result Verification

Those items listed above which show deficiencies are discussed within the text of this narrative. All of the other items were determined to be acceptable for the DUSR level review, as discussed in NYS DER-10 Appendix B Section 2.0 (c). Documentation of the outlying parameters cited in this report can be found in the laboratory data package.

In summary, results for the hexavalent chromium in the aqueous samples and for metals in both matrices are usable either as reported or with minor qualification. However, the results for hexavalent chromium in three soil samples are rejected and not usable due to an apparent matrix effect. Results for that analyte in the other soil samples should be used with extreme caution.

Data completeness may be affected by the validity of the data for hexavalent chromium in soil. Accuracy, precision, representativeness, sensitivity, and comparability are acceptable.

Client sample identifications are attached to this text. Also included in this report are the client EDDs with recommended qualifiers/edits applied in red.

Blind Field Duplicates

The blind field duplicate evaluations were performed on NMT Pit-20191024, B35-SS5-08052019, WVA-AW-35-MW-10(3-4), and WVA-AW-35-MW-10-09172019. Correlations are within validation guidelines, with the exception of that for lead (41%RPD) in B35-SS5-08052019. The results for that element in that parent sample and its field duplicate have been qualified as estimated in value.

TAL Metal Analyses by EPA 200.7 and 200.8

The custody forms request methods 6010 and 7470/7471. The laboratory reported methods 200.7 and 253.7. The reported results of the samples are not seen as being significantly affected.

Dissolved metal results have been qualified as estimated due to the delayed preservation following laboratory filtration.

Matrix spike/duplicate evaluations were performed on B35-SS4-08052019, NMT Pit-20191024, and WVA-AW-35-MW-11-091719. The following recoveries and correlations fall outside acceptance ranges/limits, and results for the listed elements have been qualified as estimated in the indicated parent samples. All listed elements except lead can be expected to have a low bias:

- Antimony (50%) and lead (44%RPD) in B35-SS4-08052019
- Selenium and thallium (72% and 68%, respectively) in WVA-AW-35-MW-11-091719
- Arsenic (71%) in NMT Pit-20191024

The ICP serial dilution evaluations were performed on B35-SS4-08052019, NMT Pit-20191024, and WVA-AW-35-MW-11-091719. The following correlations fall outside the validation guideline, and results for the listed elements have been qualified as estimated in the parent samples, with a bias as indicated:

- Iron, potassium, and sodium (18%D to 33%D) in B35-SS4-08052019, low bias
- Sodium (32%D) in WVA-AW-35-MW-11-091719, low bias
- Calcium, chromium, sodium, and potassium (435%D to 60%D) in NMT Pit-20191024, high bias

The ICP Interference Check Standard (ICS) evaluation that is part of the 6010 and 200.7 methodologies is limited for some of the elements due to fact that those ICS concentrations are higher than the linear range of the laboratory instrumentation.

The detected values of beryllium in the samples collected in August are considered external contamination and edited to reflect non-detection due to presence in the associated field blank.

The results for sodium in the total and dissolved fractions of WV-AW-35-MW-12-20191024 are qualified as estimated due to the correlations in concentrations.

The linear range summaries, the interelement correction factor summaries, and the ICP analytical sequences were forwarded upon request. Analytical dilution factors should have been provided in the raw data. The spike concentrations and volumes are not included on the ICP raw digestion logs. The raw data show only average absorbances (with standard deviations and %RSD values) rather than individual readings.

Hexavalent Chromium Analyses

Review was conducted for method compliance, holding times, transcription, calculations, standard and blank acceptability, accuracy and precision, etc., as applicable.

The soluble fraction matrix spikes of B35-SS4-08052019, B35-SS9-08052019, and WVA-AW-35-MW-11(8-9)-082119 failed to recover. Without information to determine if the samples are in a reducing state (i.e. redox potential and pH/eH), the results for hexavalent chromium in B35-SS4-08052019 and WVA-AW-35-MW-11(8-9)-082119 (which report no detection) are therefore rejected. If the samples are in a reducing state, then hexavalent chromium would not be stable in those samples, and non-detection would be a valid result. The detected value in B35-SS9-08052019 is qualified as estimated, and may have a severe low bias. Because each of the three soil parent samples show failure of the matrix spikes, extreme caution should be used in the use of the data for hexavalent chromium in the other soil samples.

The matrix spike/duplicate evaluations of the insoluble fractions of those three soils, and of the aqueous samples WVA-AW-35-MW-11-091719 and NMT Pit-20191024, show acceptable recoveries and correlations. It is noted that, although the 3060a analytical preparation protocol requires that the insoluble soil spike be performed at 10 to 20 times the concentration of the soluble spike, these were spiked at about 1000 times the soluble concentration, thus making a much less strict evaluation.

Errors were observed on the summary form for the laboratory duplicate evaluation of B35-SS9-08052019; reported results are unaffected.

Please do not hesitate to contact me if questions or comments arise during your review of this report.

Very truly yours,



Judy Harry

Attachments: Validation Qualifier Definitions
 Sample Identifications
 Qualified Laboratory EQuIS EDDs

VALIDATION DATA QUALIFIER DEFINITIONS

U	The analyte was analyzed for, but was not detected above the level of the associated reported quantitation limit.
J	The analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.
J-	The analyte was positively identified; the associated numerical value is an estimated quantity that may be biased low.
J+	The analyte was positively identified; the associated numerical value is an estimated quantity that may be biased high.
UJ	The analyte was analyzed for, but was not detected. The associated reported quantitation limit is approximate and may be inaccurate or imprecise.
NJ	The detection is tentative in identification and estimated in value. Although there is presumptive evidence of the analyte, the result should be used with caution as a potential false positive and/or elevated quantitative value.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control limits. The analyte may or may not be present.
EMPC	The results do not meet all criteria for a confirmed identification. The quantitative value represents the Estimated Maximum Possible Concentration of the analyte in the sample.

Sample Summaries

Workorder Sample Summary

Client: Arcadis

Work Order: 190806001

ProjectName: Watervliet Arsenal

ProjLocation: Soil Sampling

AES Sample No	ClientSampID	Matrix	CollectionDate	DateReceived
190806001-001	B35-SS1-08052019	Soil	8/5/2019 1:10:00 PM	8/5/2019 4:19:00 PM
190806001-002	B35-SS2-08052019	Soil	8/5/2019 1:20:00 PM	8/5/2019 4:19:00 PM
190806001-003	B35-SS3-08052019	Soil	8/5/2019 1:30:00 PM	8/5/2019 4:19:00 PM
190806001-004	B35-SS4-08052019	Soil	8/5/2019 2:00:00 PM	8/5/2019 4:19:00 PM
190806001-005	B35-SS5-08052019	Soil	8/5/2019 2:10:00 PM	8/5/2019 4:19:00 PM
190806001-006	B35-DUP-1-SS-08052019	Soil	8/5/2019	8/5/2019 4:19:00 PM
190806001-007	B35-SS6-08052019	Soil	8/5/2019 3:00:00 PM	8/5/2019 4:19:00 PM
190806001-008	B35-SS7-08052019	Soil	8/5/2019 3:15:00 PM	8/5/2019 4:19:00 PM
190806001-009	B35-SS8-08052019	Soil	8/5/2019 3:20:00 PM	8/5/2019 4:19:00 PM
190806001-010	B35-SS9-08052019	Soil	8/5/2019 3:30:00 PM	8/5/2019 4:19:00 PM
190806001-011	Field Blank-B3555-08052019	Water	8/5/2091 2:35:00 PM	8/5/2019 4:19:00 PM

Workorder Sample Summary

Client: Arcadis

Work Order: 190821067

ProjectName: Watervliet Arsenal

ProjLocation: WVA

AES Sample No	ClientSampID	Matrix	CollectionDate	DateReceived
190821067-001	WVA-AW-35-MW-9 (9-11) 081919	Soil	8/19/2019 4:45:00 PM	8/21/2019 4:12:00 PM
190821067-002	WVA-AW-35-MW-10 (3-4) 082019	Soil	8/20/2019 9:45:00 AM	8/21/2019 4:12:00 PM
190821067-003	WVA-AW-35-MW-11 (8-9) 082119	Soil	8/21/2019 8:45:00 AM	8/21/2019 4:12:00 PM
190821067-004	WVA-AW-35-DUP 1	Soil	8/21/2019	8/21/2019 4:12:00 PM
190821067-005	WVA-AW-35-FB-082119	Water	8/21/2019 2:15:00 PM	8/21/2019 4:12:00 PM
190821067-006	WVA-AW-35-MW-12 (10-11)	Soil	8/21/2019 3:30:00 PM	8/21/2019 4:12:00 PM

Workorder Sample Summary

Client: Arcadis

Work Order: 190917059

ProjectName: Watervliet Arsenal

ProjLocation:

AES Sample No	ClientSampID	Matrix	CollectionDate	DateReceived
190917059-001	WVA-AW-35-MW-10-091719	Water	9/17/2019 2:00:00 PM	9/17/2019 3:56:00 PM
190917059-002	WVA-AW-35-MW-11-091719	Water	9/17/2019 1:55:00 PM	9/17/2019 3:56:00 PM
190917059-003	DUP-01-091719	Water	9/17/2019	9/17/2019 3:56:00 PM
190917059-004	93-EM-SP-11-091819	Water	9/18/2019 9:35:00 AM	9/18/2019 1:12:00 PM
190917059-005	WVA-AW-35-MW-38-091819	Water	9/18/2019 9:40:00 AM	9/18/2019 1:12:00 PM
190917059-006	WVA-AW-35-MW-5-091819	Water	9/18/2019 11:20:00 AM	9/18/2019 1:12:00 PM

Workorder Sample Summary

Client: Arcadis

Work Order: 191024057

ProjectName: Watervliet Arsenal

ProjLocation: WVA

AES Sample No	ClientSampID	Matrix	CollectionDate	DateReceived
191024057-001	NMT Pit-20191024	Aqueous	10/24/2019 9:20:00 AM	10/24/2019 3:54:00 PM
191024057-002	120 Pit-20191024	Aqueous	10/24/2019 10:10:00 AM	10/24/2019 3:54:00 PM
191024057-003	DUP-1-20191024	Aqueous	10/24/2019 9:00:00 AM	10/24/2019 3:54:00 PM
191024057-004	Commercial Pit-20191024	Aqueous	10/24/2019 11:20:00 AM	10/24/2019 3:54:00 PM
191024057-005	Excav. Sump-20191024	Aqueous	10/24/2019 12:25:00 PM	10/24/2019 3:54:00 PM
191024057-006	WVA-AW-35-MW-12-20191024	Aqueous	10/24/2019 1:30:00 PM	10/24/2019 3:54:00 PM
191024057-007	93EM-SP-9-20191024	Aqueous	10/24/2019 1:55:00 PM	10/24/2019 3:54:00 PM

Data Validation Services

120 Cobble Creek Road P. O. Box 208

North Creek, NY 12853

Phone (518) 251-4429

harry@frontiernet.net

January 30, 2020

Katie Bidwell
Arcadis US, Inc.
855 Route 146 Suite 210
Clifton Park, NY 12065

RE: Validation of the Watervliet Arsenal Plating Area Site Analytical Laboratory Data
Data Usability Summary Report (DUSR)
AES SDG Nos. 191218077

Dear Ms. Bidwell:

Review has been completed for the data package generated by Adirondack Environmental Services that pertains to samples collected 12/18/19 and 12/19/19 at the Watervliet Arsenal Plating Area site. Ten aqueous samples and a field duplicate were processed for TAL metals and hexavalent chromium. Two of the samples were also processed for dissolved metals.

Data validation was performed with guidance from the USEPA national and regional validation documents, and in consideration for the specific requirements of the analytical methodology. The processing requirements of the project QAPP were not applicable to this scope.

The following items were reviewed:

- * Data Completeness
- * Case Narrative
- * Custody Documentation
- * Holding Times
- * Preparation/Calibration Blanks
- * Matrix Spike Recoveries/Duplicate Correlations
- * Blind Field Duplicate Correlations
- * Laboratory Control Sample (LCS)
- * Initial and Continuing Calibration Standards
- * Serial Dilution Evaluation
- * Method Compliance
- * Sample Result Verification

Those items listed above which show deficiencies are discussed within the text of this narrative. All of the other items were determined to be acceptable for the DUSR level review, as discussed in NYS DER-10 Appendix B Section 2.0 (c). Documentation of the outlying parameters cited in this report can be found in the laboratory data package.

In summary, results are usable either as reported or with minor qualification.

Data completeness, accuracy, precision, representativeness, and sensitivity are acceptable.

Client sample identifications are attached to this text. Also included in this report are the client EDDs with recommended qualifiers/edits applied in red.

Chain-of-Custody/Sample Receipt

The laboratory reported sample WVA-AW-35-MW-10-20191218 as WVA-AW-35-10-20191218.

Blind Field Duplicate

The blind field duplicate evaluation was performed on WVA-AW-35-MW-11-20191219. Correlations are within validation guidelines.

TAL Metal Analyses by EPA 200.7 and 245.1

The custody forms request methods 6010 and 7470/7471. The laboratory reported methods 200.7 and 245.1. The reported results of the samples are not seen as being significantly affected.

Dissolved metal results have been qualified as estimated due to the delayed preservation following laboratory filtration.

The detections of chromium in WVA-AW-35-MW-10-20191218, Excav. Sump-20191219, WVA-AW-35-MW-5-20191219, WVA-AW-35-MW-11-20191211, and Duplicate-01-20191219 are considered external contamination and edited to reflect non-detection at elevated reporting limits, due to presence in the associated method blank.

Matrix spike/duplicate evaluations were performed on the total fraction of WVA-AW-35-MW-10-20191218 and the dissolved fraction of WVA-AW-35-MW-12-20191218. The following recoveries fall outside acceptance ranges/limits, and results for the listed elements have been qualified as estimated in the indicated parent samples:

- Total iron and selenium (-5% and 68) in WVA-AW-35-MW-10-20191218
- Dissolved arsenic (74%) in WVA-AW-35-MW-12-20191218

The results for mercury are qualified as estimated due to low recovery in the associated low level concentration standard.

The ICP serial dilution evaluations were performed on WVA-AW-35-MW-10-20191218 and WVA-AW-35-MW-12-20191218. The following correlations fall outside the validation guideline, and results for the listed elements have been qualified as estimated in the parent samples, with a low bias:

- Sodium (38%D) in WVA-AW-35-MW-10-20191218
- Manganese (42%D) in WVA-AW-35-MW-102-20191218

The ICP Interference Check Standard (ICS) evaluation that is part of the 6010 and 200.7 methodologies is limited for some of the elements due to fact that those ICS concentrations are higher than the linear range of the laboratory instrumentation.

Total and dissolved concentrations correlate well.

The linear range summaries, the interelement correction factor summaries, and the

ICP analytical sequences were forwarded upon request. Analytical dilution factors should have been provided in the raw data.

The spike concentrations and volumes are not included on the ICP raw digestion logs. The raw data show only average absorbances (with standard deviations and %RSD values) rather than individual readings.

Hexavalent Chromium Analyses by 3500 CR-B-2011

Review was conducted for method compliance, holding times, transcription, calculations, standard and blank acceptability, accuracy and precision, etc., as applicable.

The detected concentration of hexavalent chromium in NMT Pit-20191219 (260 mg/L) is higher than that of the total chromium determination of the sample (244 mg/L). That may be due to a non-homogeneous matrix, but may also reflect potential matrix interferences in the hexavalent chromium analysis. That result has been qualified as estimated.

The matrix spikes of WVA-AW-35-MW-10-20191218 show low recoveries (73% and 74%), and results for hexavalent chromium in that parent sample has been qualified as estimated in value.

Please do not hesitate to contact me if questions or comments arise during your review of this report.

Very truly yours,



Judy Harry

Attachments: Validation Qualifier Definitions
 Sample Identifications
 Qualified Laboratory EQuIS EDDs

VALIDATION DATA QUALIFIER DEFINITIONS

U	The analyte was analyzed for, but was not detected above the level of the associated reported quantitation limit.
J	The analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.
J-	The analyte was positively identified; the associated numerical value is an estimated quantity that may be biased low.
J+	The analyte was positively identified; the associated numerical value is an estimated quantity that may be biased high.
UJ	The analyte was analyzed for, but was not detected. The associated reported quantitation limit is approximate and may be inaccurate or imprecise.
NJ	The detection is tentative in identification and estimated in value. Although there is presumptive evidence of the analyte, the result should be used with caution as a potential false positive and/or elevated quantitative value.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control limits. The analyte may or may not be present.
EMPC	The results do not meet all criteria for a confirmed identification. The quantitative value represents the Estimated Maximum Possible Concentration of the analyte in the sample.

Sample Summaries

Workorder Sample Summary

Client: Arcadis

Work Order: 191218077

ProjectName: Watervliet Arsenal

ProjLocation:

AES Sample No	ClientSampID	Matrix	CollectionDate	DateReceived
191218077-001	WVA-AW-35-MW-38-20191218	Water	12/18/2019 12:45:00 PM	12/18/2019 4:03:00 PM
191218077-002	WVA-AW-35-MW-10-20191218	Water	12/18/2019 2:05:00 PM	12/18/2019 4:03:00 PM
191218077-003	93-EM-SP-11-20191218	Water	12/18/2019 2:40:00 PM	12/18/2019 4:03:00 PM
191218077-004	WVA-AW-35-MW-12-20191219	Water	12/19/2019 8:00:00 AM	12/19/2019 4:37:00 PM
191218077-005	120 Pit-20191219	Water	12/19/2019 9:17:00 AM	12/19/2019 4:37:00 PM
191218077-006	Commercial Pit-20191219	Water	12/19/2019 9:41:00 AM	12/19/2019 4:37:00 PM
191218077-007	NMT Pit-20191219	Water	12/19/2019 9:57:00 AM	12/19/2019 4:37:00 PM
191218077-008	Excav. Sump-20191219	Water	12/19/2019 11:14:00 AM	12/19/2019 4:37:00 PM
191218077-009	WVA-AW-35-MW-5-20191219	Water	12/19/2019 2:05:00 PM	12/19/2019 4:37:00 PM
191218077-010	WVA-AW-35-MW-11-20191219	Water	12/19/2019 2:35:00 PM	12/19/2019 4:37:00 PM
191218077-011	Duplicate-01-20191219	Water	12/19/2019 2:05:00 PM	12/19/2019 4:37:00 PM

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A decorative graphic consisting of three thin orange lines. One line is horizontal, extending from the left edge of the page towards the right. Two other lines are diagonal, starting from the bottom left and extending towards the top right, intersecting the horizontal line.