2014 Kolmakof Mine Site Interim Removal Action Report
Kolmakof Mine Site, Alaska

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2014 KOLMAKOF MINE SITE INTERIM REMOVAL ACTION REPORT, KOLMAKOF MINE SITE, ALASKA

Prepared for:

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ACRONYMS

°C	degrees Celsius
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AK	Alaska Method
bgs	below ground surface
BLM	Bureau of Land Management
Calista	Calista Corporation
COC	contaminant of concern
DRO	diesel range organics
EE/CA	engineering evaluation / cost analysis
E&E	Ecology & Environment
J	indicates an estimated quantity
KMS	Kolmakof mine site
LOD	limit of detection
mg/kg	milligrams per kilogram
MS	matrix spike
MSD	matrix spike duplicate
MI	multi increment
NAC	Northern Air Cargo
PA/SI	preliminary assessment/site investigation
PID	photoionization detector
QAR	quality assurance review
QA/QC	quality assurance/quality control
RPD	relative percent difference
RSD	relative standard deviation
RSI	removal site inspection
SGS	SGS North America, Inc.
TKC	The Kuskokwim Corporation
UCL	upper confidence limit
USEPA	U.S. Environmental Protection Agency
XRF	X-ray fluorescence analyzer

1 INTRODUCTION

During the summer of 2014, Brice Environmental Services Corporation (Brice) conducted excavation and transport and disposal activities in association with the former Kolmakof Mine Site (KMS or Site) near Aniak, Alaska (Figure 1). These activities were performed under a work plan addendum prepared in July, 2014 (Brice, 2014).

1.1 SITE DESCRIPTION

The KMS is an abandoned cinnabar mine on the north bank of the Kuskokwim River. The site is located approximately 19.5 miles east of Aniak and approximately 10 miles west of Napaimute, Alaska, (the nearest known inhabited area). The legal description for the KMS is: North ½, Section 6, Township 17N, Range 53W, Seward Meridian, Alaska. A small, unnamed creek passes by portions of the site and flows into the Kuskokwim River near the Camp Area portion of the site (Figure 2). There are no roads to the site or aircraft landing strip nearby; access is by boat only.

The mine has three developed areas: a “Camp Area” on the bank of the Kuskokwim River; an upland “Mill Area”; and an open-pit/surface stripping mining area on the bluff above the river where waste rock was dumped down the bluff onto the river bank. The Camp Area is approximately 1.75 miles from the Mill Area. (Figure 2). The two areas are connected by a dirt road which parallels an unnamed creek that drains directly into the Kuskokwim River. From the Mill Area, the road continues uphill to the Mine Pit. Since the mine closure, the KMS became overgrown with vegetation and the roads narrowed to foot paths. During the 2006 BLM site inspection, the Mill Area was found to contain a collapsing ball mill structure with water flowing under and through it. Two sheds were found nearby, one containing about a dozen metal bottles which appeared to be empty mercury flasks. USEPA correspondence to BLM had mentioned a retort operation at the “upper camp” so it was assumed that the flasks indicated that the shed may have housed a retort or that one was nearby. Photos taken during the 2000 BLM site visit showed the larger shed housed an electric generator that had been removed by persons unknown by the 2006 BLM site visit. Numerous empty drums and fuel cans were found scattered around both inside and outside the sheds. The unnamed creek formed a small pond a few feet from the mill, and the source of the creek was reported to be water coming to the ground surface above and around the mill building from the steep hillside/berm immediately adjacent. An old pickup truck was found abandoned a short distance away. The former dynamite shed was represented by a pile of ash and burned metal debris. No evidence of spills, stains, odors or distressed vegetation beyond the ash at the former dynamite shed was noted by BLM. It also appeared that waste rock and tailings were dumped over the bluff into the Kuskokwim River from the mill building and the mining pit areas uphill and behind the river bluff.

The Camp Area structures were observed by the BLM to be deteriorating and contained a significant volume of discarded household debris. The remnant of a potential mercury retort, consisting of a metallic beer keg secured to rotting wood beams was found near the Camp Area. A firebrick pit was found located adjacent to the keg.

1.2 SITE BACKGROUND

The KMS is an abandoned cinnabar (mercury ore) mine on the North Bank of the Kuskokwim river near the village of Napaimute, Alaska, and is scheduled to be conveyed to The Kuskokwim Corporation (TKC) (surface estate) and Calista Corporation (Calista) (subsurface estate) in accordance with the Alaska Native Claims Settlement Act. Until conveyance, the land is administered by the U.S. Bureau of Land Management (BLM). A preliminary assessment/site investigation (PA/SI) was initiated by the United States Environmental Protection Agency (USEPA) in 1999, and two site inspections and removal actions were conducted by the BLM in 2000 and 2006. A Removal Site Inspection (RSI) was subsequently performed by Ecology and Environment, Inc. (E&E) in 2007 to identify facility features, inventory abandoned mine-related equipment and debris, and identify contaminants requiring possible remediation and or removal prior to transfer of the land to TKC and Calista. The RSI identified mercury as the primary contaminant of concern and identified the need for further investigation to further characterize the site for metals, petroleum hydrocarbons, and explosives, as well as the need for characterization and removal of hazardous and non-hazardous site materials. The RSI identified four areas of concern (AOC) within the site: Camp Area, Mill Area, Mine Pit, and Waste Rock/Tailings Dump Areas.

MACTEC Engineering and Consulting Inc. (MACTEC) conducted initial investigative removal activities in 2008, including metal background concentration investigations, a geophysical survey for a potential mono-fill location, explosives residue sampling, mercury speciation analysis, and an asbestos and lead-based paint survey. Field activities included removal and disposal of various hazardous and non-hazardous materials from abandoned waste containers and equipment.

In 2011, AMEC Environment & Infrastructure (AMEC, formerly MACTEC) prepared an Engineering Evaluation/Cost Analysis (EE/CA) work plan to complete site characterization activities required to delineate the extent of remaining contamination in each of the areas of concern (AOC). Field work including investigation of metals, petroleum hydrocarbons, and other contaminants of concern as well as a biological survey was conducted between September 25th and October 1st, 2011.

The EE/CA, completed in 2012 and subsequent 2013 Removal Action Memorandum identified oil, hazardous substances, and non-hazardous solid waste removal actions that were warranted within the mill, mine pit, and camp areas. The EE/CA results showed that removals of constituent of concern (COC) metals-contaminated soils were warranted in Investigation Areas (IAs) IA-1, IA-2, IA-3, IA-4, IA-5, IA-6, IA-8, and IA-13. IA-8 also required DRO impacted soil removal. Hazardous substances to be removed included mercury, arsenic, and chromium in soil as the contaminants of concern in both the Camp Area and the Mill Area, and localized petroleum hydrocarbon contamination of soil in the Mill Area (IA-8 only). Non-hazardous solid waste located within the Mine Pit, Mill Area, and Camp Area required removal as well (AMEC, 2012).

In 2012 BLM contracted with Brice to conduct Limited Removal Actions at the KMS during the 2013 field season. During the 2013 field season, Brice removed all camp buildings, infrastructure, and waste materials. Limited excavation was performed during the 2013 field activities to remove metals and fuel-contaminated soil in the areas noted in the EE/CA. Soil sampling analytical results indicated closure was obtained at all areas except IA-1 and IA-2. A

total of 46 cubic yards of COC metals-contaminated soil (including cinnabar residue from decontamination) was removed from IA-2, IA-3, IA-5, IA-6, and IA-8 of the Mill Area. An additional 14 cubic yards were removed from IA-1 at the Camp Area. This material was loaded into supersacks and transported off site for proper disposal. A landspread area was constructed with 23 cubic yards of DRO-impacted soil from IA-8. Initial baseline DRO concentrations were documented for the landspread area. Initial sampling of the landspread area indicated DRO concentrations exceeding the cleanup level of 250 milligrams per kilogram (mg/kg) and continued sampling was warranted. A landspread area maintenance and sampling and analysis plan was developed to formalize continued operation of the landspread area (Brice, 2014a).

1.3 PROJECT OBJECTIVES

The objectives of the work performed and discussed in this report include:

- Excavation and removal of up to 4 cubic yards of COC metals-contaminated soil from the mill area at IA-2 to reduce metal exposure potential in this area;
- Excavation and removal of up to 96 cubic yards of COC metals-contaminated soil from the retort mound area at IA-1 to reduce metal exposure potential in this area; and
- Collection of the first set of annual progress monitoring samples from the landspread area to document treatment progress.

2 REGULATORY CRITERIA

ADEC regulations applicable to this project are contained in Title 18 of the Alaska Administrative Code (AAC), Chapter 75, Oil and Other Hazardous Substances Pollution Control (18 AAC 75), as updated on April 8, 2012 (ADEC, 2012b).

2.1 SOIL REGULATORY CRITERIA

At the KMS, arsenic, chromium (total), mercury, nickel and DRO have been identified as COCs. Background sampling of AOCs determined that naturally occurring metal concentrations at some of the AOCs is higher than the ADEC's most stringent action level (Method 2 Migration to Groundwater). For purposes of defining cleanup levels as they pertain to background metal concentrations, the AOCs have been divided into the Camp Area and the Mill Area. A summary of the action levels for COC metals at both of the AOCs is presented in Table 1. The action level for DRO throughout the KMS is 250 mg/kg (ADEC Method 2, Migration to Groundwater, Under 40 inch Zone).

3 FIELD ACTIVITIES

On August 6, 2014, Brice mobilized to the Site to coordinate local labor and equipment in Aniak, and improve site access and improve the road to the upper mill area. Field activities continued until demobilization on August 22, 2014. All activities were performed under the ADEC-approved work plan addendum prepared in July, 2014 (Brice, 2014b). BLM Project Manager Larry Beck performed Project Inspector duties on-site 12-20 August, 2014.

Field activities were recorded in a bound field logbook. A photocopy of the field logbook is presented in Appendix A. Photographs of field activities are presented in Appendix B.

3.1 MOBILIZATION

On August 6, 2014, Brice Site Superintendent Dennis Olson mobilized to Aniak to arrange labor and equipment logistics for the work at KMS. Equipment, fuel, and materials were staged at the Aniak barge landing on August 8 for loading. On August 9, the barge was loaded and driven up to the KMS. On August 9, the barge arrived at the KMS with the following gear:

- JD 310E backhoe
- Morooka 300 track-mounted dump truck
- Case 450 dozer
- 250-gallon capacity fuel tank
- 1-fish tote with tools and supplies
- 125 Supersacks and pallets.

The Morooka dump truck was mobilized from Anchorage using Northern Air Cargo (NAC) on August 6, 2014. All other equipment used on this project originated in Aniak. Brice mobilized one laborer and one equipment operator to the site on August 10, and the barge was unloaded and the KMS barge ramp and road to the camp area were improved. Road and access improvements continued into August 12, 2014 in preparation for excavation and soil loading activities. Photographs of the mobilization process are presented in Appendix B.

3.2 PROGRESS MONITORING AT LANDSPREAD AREA

Progress monitoring at the landspread area was conducted on August 12, 2014. A sampling grid with thirty-six sample points was set up based on a systematic random sample design in accordance with the ADEC guidance on multi-increment (MI) sampling (ADEC, 2009). Samples KMSLS14-01, KMSLS14-02, and KMSLS14-03 were collected as replicate samples in accordance with the MI sample guidance. On August 13, 2014, the triplicate sample was submitted under chain of custody to SGS Environmental Services, Inc. (SGS) in Anchorage, Alaska for sieving and analysis of DRO using AK 102. Photographs of the multi-increment

subsample location layout in the landspread area are presented on pages 8 and 9 of the photo log in Appendix B.

3.3 EXCAVATION ACTIVITIES

Excavation activities were conducted at the Mill Area (IA-2) on August 12 and August 16, 2014. On August 12, two cubic yards were excavated from the northeast and southwest corners of the 2013 excavation limits at the Mill Area and transported to the barge landing. Confirmation soil sample results from these areas indicated mercury and chromium exceedances within the limits of excavation performed on August 12. Brice remobilized to the Mill Area on August 16 and excavated an additional four cubic yards from the northeast and southwest portions of the Mill Area excavation to a depth of two feet in the northeast corner and thirty-two inches in the southwest corner. Figure 3 shows final 2014 excavation limits at the Mill Area with respect to limits of excavation during work conducted in 2013. Photographs of the excavation work are presented on pages 4 through 8 of the photo log in Appendix B.

Excavation activities were conducted at the Retort Mound Area (IA-1) between August 14 and August 19, 2014. Excavation activities at the Retort Mound Area commenced on August 14 with the removal of twenty cubic yards of soil from the northeast quadrant of the retort mound. The excavation was advanced to original grade in this area and then scraped another 2-inches prior to screening using the XRF analyzer. An approximately 4'x4' wood-framed firebrick platform was encountered laying on bedrock at 3-feet bgs within the excavation (Figure 4). XRF screening of freshly broken surfaces of firebricks indicated mercury concentrations below the limit of detection (LOD), the same as was found for all of the other firebricks previously removed from IA-1. The firebrick was excavated and packaged along with soil for disposal. XRF screening in this area indicated mercury concentrations exceeding the limit of detection for the analyzer of 5 mg/kg. On August 15, excavation in the northeast quadrant of the retort mound was continued to a depth of 3 feet. What appeared to be burned cinnabar ore was observed in the northwest sidewall at a depth of 18-inches. A small amount of beaded elemental mercury was observed in an isolated pocket during sidewall removal in this area. Screening results continued to indicate mercury exceeding the XRF LOD of 5 mg/kg intermittently across the floor at 3-feet bgs. Twenty-six cubic yards were removed on August 15 and brought to the barge landing. On August 17, field screening was used to guide further excavation in the northeastern and northwestern area. In the northeast area, a second small pocket of elemental mercury beads was observed when the bulldozer was removing overburden to one-foot bgs, and all soils were containerized until screening results were non-detect for mercury. Twenty-two cubic yards of soil were removed on August 17. Excavation continued at the Retort Mound Area on August 18 and 19, and thirty cubic yards of soil were removed to a depth of 2-feet to 3-feet bgs from an area northeast of the originally planned limits of the northern half of the retort mound (Figure 4).

A total of ninety-four cubic yards of soil were excavated from the Retort Mound Area, bagged, and transported to the barge staging area for transport to Aniak. Bedrock was encountered across the floor of the excavation limits and along the north and northeast walls. A band of burned ore remains visible along the north wall: most being scattered pieces but is approximately 6-8 inches deep in the northeast corner. Figure 4 shows the final 2014 excavation limits and sample locations for the excavation conducted at the Retort Mound Area. Photographs of the excavation work are presented on pages 10 through 17 of the photo log in Appendix B.

3.3.1 FIELD SCREENING

Soil was screened using field screening instruments and visual observation. Field screening samples were collected and screened at the frequency and locations as described in Table 2B of the "Draft Field Sampling Guidance" (ADEC, 2010). A minimum of 10 screening samples were collected from the first 250 square feet and a minimum of one screening sample per each additional 100 square feet of excavated area was collected. Sidewall samples were collected at a minimum rate of one sample per 10 linear feet for excavations greater than three inches depth below ground surface. Samples were collected directly from the excavation footprint.

Soil was field screened for arsenic, chromium, mercury and nickel using a handheld X-ray fluorescence (XRF) analyzer. A Thermo Scientific Niton XRF was used. The XRF has LODs below the action levels for arsenic, chromium and nickel, however, the LOD for mercury is above the cleanup level of 1.4 mg/kg for the Camp Area and 1.99 mg/kg for the Mill Area. Mercury results indicating detections using the XRF drove the decision to continue excavation. XRF sample results were used to guide the excavation and to determine locations for collection of laboratory confirmation samples.

3.3.2 SOIL CONFIRMATION SAMPLING

Following soil removal, confirmation soil sampling was conducted within each excavation footprint. Soil confirmation samples were collected and screened per the frequency described in the work plan. For each excavation area at the KMS, a minimum of two confirmation samples plus one duplicate sample were collected from the first 250 square feet of excavation floor and one sample per each additional 250 square feet of excavation. Sidewall confirmation samples were collected within the excavation footprint at a minimum frequency of one sample per 20 linear feet. Confirmation samples were collected from the locations yielding the highest field screening results for the COCs within each excavation area. Sidewall samples only were collected at the Retort Mound Area due to encountering bedrock along the floor of the excavation indicating native material. Bedrock was encountered on the north and northeast walls of the excavation at the Retort Mound Area and these samples were collected for confirmation. Sidewall samples were collected along the remaining perimeter to evaluate whether final lateral excavation limits had been established.

Confirmation soil samples were collected in amber jars and placed into coolers with frozen gel packs at the site. Three sets of confirmation soil samples were transported to Anchorage via air cargo and submitted to SGS on August 13, August 16, and August 20, 2014. Analytical results were compared to the cleanup levels established for the site as shown in Table 1.

Field duplicate samples were collected for field precision evaluation at a rate of one per 10 soil confirmation samples collected. Sampling protocols, sample handling, custody, and transporting procedures followed those specified in the work plan.

3.3.3 SOIL CONTAINERIZATION AND TRANSPORT

Soils were loaded into 1.5-cubic-yard supersacks at the area of excavation and transported to the barge landing staging area on the north bank of the Kuskokwim River for weighing and barge transport under non-hazardous waste manifest to Aniak. Upon arrival in Aniak, the

supersacks were loaded onto a flatbed trailer and transported to the Aniak Airport. The soils were weighed again at the airport and loaded onto aircraft operated by Northern Air Cargo for transport to Anchorage. Transport continued from Anchorage to the Port of Seattle via barge, and then via rail to the Columbia Ridge landfill in Arlington, Oregon. The 100 sacks were shipped under non-hazardous waste manifests, each covering 20-sack shipments to the Columbia Ridge disposal facility.

3.3.4 DEMOBILIZATION

The final load of 20 supersacks were barged downriver from the site to Aniak on August 20, 2014. Grading and reseeding of the landspread, mill, and camp areas were completed on August 20. Repair of the barge ramp was also completed on August 20. All project equipment and personnel were barged from the KMS to Aniak on August 21. The Morooka truck was flown back to Anchorage on August 22, and the Brice Site Superintendent left Aniak for Fairbanks on August 23, 2014.

3.4 QUALITY ASSURANCE AND QUALITY CONTROL

Quality assurance/quality control (QA/QC) procedures were maintained throughout the sampling activities. QA procedures included the analysis of field duplicates and preparation of a laboratory data QA review (QAR) by qualified Brice staff. The QAR included the completion of an ADEC Laboratory Data Review Checklist for each analytical report included in Appendix C. QC procedures included adherence to appropriate sample collection methodology as described in Brice's ADEC approved work plan (Brice, 2013). Any discrepancies associated with the soil confirmation samples collected from the Site were identified in the QAR (Appendix D) and are described in Section 4.2.3.

3.5 WASTE MANAGEMENT

Facility-signed non-hazardous waste manifests returned from the Columbia Ridge landfill are presented in Appendix E as documentation of proper disposal of all 100 sacks of soil removed from the KMS in 2014. All soils excavated in 2014 were transported and disposed of under facility-approved waste profiles developed for the soils from the same AOCs in 2013 and renewed by the receiving facility in 2014.

4 FIELD SCREENING AND ANALYTICAL RESULTS

This section describes the findings of sampling conducted in support of the 2014 removal action performed at the KMS. The nomenclature for sample IDs and AOCs for this project are defined below:

KMSLS = Kolmakof Mine Site Land Spread

KTM = Kolmakof Top of Mill (IA-2)

KRM = Kolmakof Retort Mound (IA-1)

Field notes included in Appendix A provide a detailed account of the field screening and sampling activities conducted at the Site. Photos included in Appendix B show the initial Site conditions encountered and the subsequent excavation and removal of contaminated soil. The following sections detail the results for sampling conducted at each area at KMS in 2014.

4.1 LANDSPREAD AREA PROGRESS MONITORING SAMPLING RESULTS

A systematic random sample grid was prepared for the KMS landspread area prior to mobilization. Thirty-six subsample locations were identified in the field based on the grid. The ADEC MI sample guidance was used to collect a sample in triplicate from the landspread area on August 12, 2014. The samples were shipped to SGS on August 13, 2014 under chain of custody for sieving and analysis of DRO using AK102. Analytical DRO results for the triplicate samples, KMSLS14-01, KMSLS14-02, and KMSLS14-03, were 106 mg/kg, 139 mg/kg, and 111 mg/kg, respectively.

The triplicate analysis results were evaluated for the relative standard deviation (RSD) of the results based on ADEC's Draft Guidance on Multi Increment Soil Sampling (ADEC, 2009). Using the calculation provided in the guidance, the results were a mean concentration of 119 mg/kg, a standard deviation of 17.79 mg/kg, and an RSD of 15%. This RSD was within the upper limit of an RSD of 30% for MI data (ADEC, 2009).

The 95% upper confidence limit (UCL) as evaluated using the calculation on page 14 of the ADEC MI sample guidance (ADEC, 2009). The 95% UCL for the data collected from the landspread area in 2014 was 149 mg/kg.

Table 2 summarizes the landspread area soil sample results for DRO compounds. Complete laboratory analytical reports are provided in Appendix C. Completed ADEC laboratory data checklists and a quality assurance review of the laboratory data are included as Appendix D.

4.1.1 ANALYTICAL DATA QUALITY

The landspread area MI sample analytical data were deemed acceptable for use, and all precision and accuracy goals were met by the analytical laboratory. The laboratory report for these samples is presented in Appendix C, and the Brice QAR and ADEC checklist for these analytical results are presented in Appendix D.

4.2 EXCAVATION SAMPLING RESULTS

The following sections discuss findings of excavation sampling activities from the Mill Area (IA-2) and the Retort Mound Area (IA-1).

4.2.1 MILL AREA (IA-2)

Soil sampling at the KMS Mill Area (IA-2) excavation limits was conducted on August 12, after 2 cubic yards of soil were removed. During this sampling effort, four confirmation samples, and one QC field duplicate, were collected. Sample results are presented in Table 2 and the field samples for this effort were KTM14-01 through KTM14-05. All samples were submitted to SGS for rush analysis of arsenic, total chromium, mercury, and nickel using USEPA Method 6020A. The field duplicate pair collected on August 12, 2014 included primary sample KTM14-02 and duplicate KTM14-03. Complete laboratory analytical reports are provided in Appendix C. Completed ADEC laboratory data checklists and a quality assurance review of the laboratory data are included as Appendix D.

Detectable concentrations of all target metal analytes were found in all samples collected on August 12. The site-specific cleanup level for chromium was exceeded in sample KTM14-02 and the site specific cleanup level for mercury was exceeded in samples KTM14-01 through KTM14-04.

Upon receipt of these soil analytical results, Brice continued excavation activities at IA-2 and collected soil samples at the final limits of the excavation on August 16, 2014 after the removal of an additional 4 cubic yards of soil. Sample results are presented in Table 2 and the field samples for this effort were KTM14-06 through KTM14-08. The final limits of excavation at the Mill Area and soil analytical data are presented on Figure 3. Confirmation soil sample survey data are presented in Appendix F.

Detectable concentrations of all target metal analytes were found in all samples collected on August 16, 2014.

Arsenic concentrations ranged from 6.99 mg/kg in sample KTM14-06 to 9.29 mg/kg in sample KTM14-08. Arsenic was not detected above the ADEC cleanup level in the confirmation samples collected from the Mill Area excavation in 2014.

Chromium concentrations ranged from 23.7 mg/kg in sample KTM14-06 to 33.8 mg/kg in sample KTM14-07. Chromium was detected above the ADEC cleanup level in soil sample KTM14-07.

Mercury concentrations ranged from 1.23 mg/kg in sample KTM14-06 to 3.83 mg/kg in sample KTM14-08. Mercury was detected above the ADEC cleanup level in soil samples KTM14-07 and KTM14-08.

Nickel concentrations ranged from 24.1 mg/kg in sample KTM14-06 to 30.8 mg/kg in sample KTM14-07. Nickel was not detected above the ADEC cleanup level in any of the confirmation samples collected from the Mill Area excavation in 2014.

4.2.2 RETORT MOUND AREA (IA-1)

Soil sampling at the KMS Retort Mound (IA-1) excavation limits was conducted on August 19, after 94 cubic yards of soil were removed. Seven confirmation samples, including one QC field duplicate, were collected on August 19. All samples were submitted to SGS for rush analysis of arsenic, total chromium, mercury, and nickel using USEPA Method 6020A. The field duplicate pair collected on August 19, 2014 included primary sample KRM14-05 and duplicate KRM14-06.

Metal concentrations in soil confirmation samples collected from the Retort Mound excavation limits are presented in Table 2. Complete laboratory analytical reports are provided in Appendix C. Completed ADEC laboratory data checklists and a quality assurance review of the laboratory data are included as Appendix D. The limits of excavation at the Retort Mound and soil analytical data are presented on Figure 4. Confirmation soil sample survey data are presented in Appendix F.

Detectable concentrations of all target metal analytes were found in all samples.

Arsenic concentrations ranged from 8.08 mg/kg in sample KRM14-01 to 12.3 mg/kg in samples KRM14-03 and KRM14-05. Arsenic was detected above the ADEC cleanup level in confirmation samples KRM14-03, KRM14-05, and KRM14-07.

Chromium concentrations ranged from 27.0 mg/kg in sample KRM14-02 to 31.3 mg/kg in sample KRM14-05. Chromium was detected above the ADEC cleanup level in soil samples KRM14-05 and KRM14-07.

Mercury concentrations ranged from an estimated concentration of 1.04 mg/kg in sample KRM14-04 to an estimated concentration of 176 mg/kg in sample KRM14-06. Mercury was detected above the ADEC cleanup level in soil samples KRM12-01 through KRM14-03, and KRM14-05 through KRM14-07.

Nickel concentrations ranged from 27.0 mg/kg in sample KRM14-03 to 46.6 mg/kg in sample KRM14-06. Nickel was not detected above the ADEC cleanup level in any of the confirmation samples collected from the Mill Area excavation in 2014.

Confirmation soil sampling indicated the exceedances of ADEC cleanup levels for one or more of the target metals at all sample locations except KRM14-04 on the southern wall of the excavation.

4.2.2.1 Analytical Data Quality

The laboratory reports for all samples are presented in Appendix C. Although the data were deemed acceptable for use, there were precision goals for mercury in work order 1143947 that were not met by the analytical laboratory. These are described in detail in Brice's QAR in Appendix D and discussed briefly here:

- Matrix spike and matrix spike duplicate (MS/MSD) spike recoveries for chromium and mercury were outside acceptance criteria in work order 1143947. Post digestion spikes for these metals were successful and analytical accuracy is not affected.

- The relative percent difference (RPD) for MS/MSD analyses in work order 1143947 met control limits except for mercury. The matrix is non-homogeneous for mercury and mercury data in work order 1143947 are qualified as estimated "J" values. Affected samples are KRM14-01, KRM14-02, KRM14-03, KRM14-04, KRM14-05, KRM14-06, and KRM14-07.
- Laboratory duplicate analyses were performed on sample KRM14-01 and the resulting relative percent difference (RPD) of 25.90% exceeded the 20.00% acceptance criterion. Laboratory duplicate results indicate the samples are non-homogeneous for mercury. Mercury results in work order 1143947 are considered to be estimated "J" values. Affected samples are KRM14-01, KRM14-02, KRM14-03, KRM14-04, KRM14-05, KRM14-06, and KRM14-07.
- The RPD between primary samples and the field duplicates were in agreement in all cases except for mercury in work order 1143947. The RPD of 117% for mercury between parent sample KRM14-05 (18.9 mg/kg) and duplicate sample KRM14-06 (176 mg/kg) was greater than 50%. Both results were considered estimates with an unknown bias due to sample heterogeneity. Mercury results in work order 1143947 are considered to be estimated "J" values. Affected samples are KRM14-01, KRM14-02, KRM14-03, KRM14-04, KRM14-05, KRM14-06, and KRM14-07.

5 CONCLUSIONS AND RECOMMENDATIONS

Conclusions and recommendations are presented below.

5.1 CONCLUSIONS

5.1.1 LANDSPREAD AREA

Sampling results indicate DRO concentrations have been reduced below the applicable cleanup level of 250 mg/kg. The mean MI sample DRO concentration was 119 mg/kg with a standard deviation of 17.79 and a resulting RSD of 15% which is half the MI threshold RSD of 30%. The 95% UCL concentration for the triplicate sample set collected from the landspread area on August 12, 2014 was 149 mg/kg, which is below the DRO cleanup level of 250 mg/kg. The cleanup level for DRO to achieve final site closure at the landspread area has been met.

5.1.2 MILL AREA (IA-2)

The limits of 2014 excavation did not extend to soils meeting cleanup levels established for the site at IA-2. Excavation sidewall sampling in the northeast portion of the excavation indicate exceedances of the ADEC cleanup level for mercury. Excavation sidewall sampling in the southwest portion of the excavation indicate exceedances of ADEC cleanup levels for chromium and mercury.

5.1.3 RETORT MOUND AREA (IA-1)

Excavation confirmation soil sampling conducted in the Retort Mound (IA-1) indicate that further contaminated media removal is required. The limits of excavation at IA-1 in 2014 did not extend to soils meeting cleanup levels despite extending significantly northeast of the limits of excavation identified in the EE/CA. The presence of the firebrick platform, beads of elemental mercury, and buried burned ore suggest the retort facility described in the original PA/SI may be present in this area, but was buried by mine operations before the “beer keg retort” was placed there.

Bedrock was encountered across the floor of the 2014 excavation limits shown in Figure 4, and further removal of soil in this area is not warranted. With the exception of the southern excavation wall, excavation sidewall samples indicate lateral exceedances of cleanup levels for mercury, arsenic, and chromium in soils surrounding the 2014 excavation area. Bedrock was encountered along the north and northeast walls of the excavation and further excavation in these directions should be limited to lateral removal to depths of placed material only.

5.2 RECOMMENDATIONS

Brice recommends further characterization of the extent of ore-bearing materials present in the vicinity of the mill and retort mound areas prior to further material excavation. Because retort activities may have been conducted at or near IA-1 over the life of the mine, characterization

activities here should consider the potential presence of buried processed ore beyond the limits of the presently identified “Retort Mound.” This characterization should serve as the basis to complete material removal at both of these areas. Brice recommends limiting removal to bedrock or previously undisturbed soil.

Brice recommends closure of the landspread area and discontinuation of biennial maintenance and monitoring based on attainment of the cleanup level of 250 mg/kg for DRO as documented by the 2014 landspread sampling results.

6 REFERENCES

Alaska Department of Environmental Conservation (ADEC), 2009. Draft Guidance on Multi Increment Soil Sampling. March.

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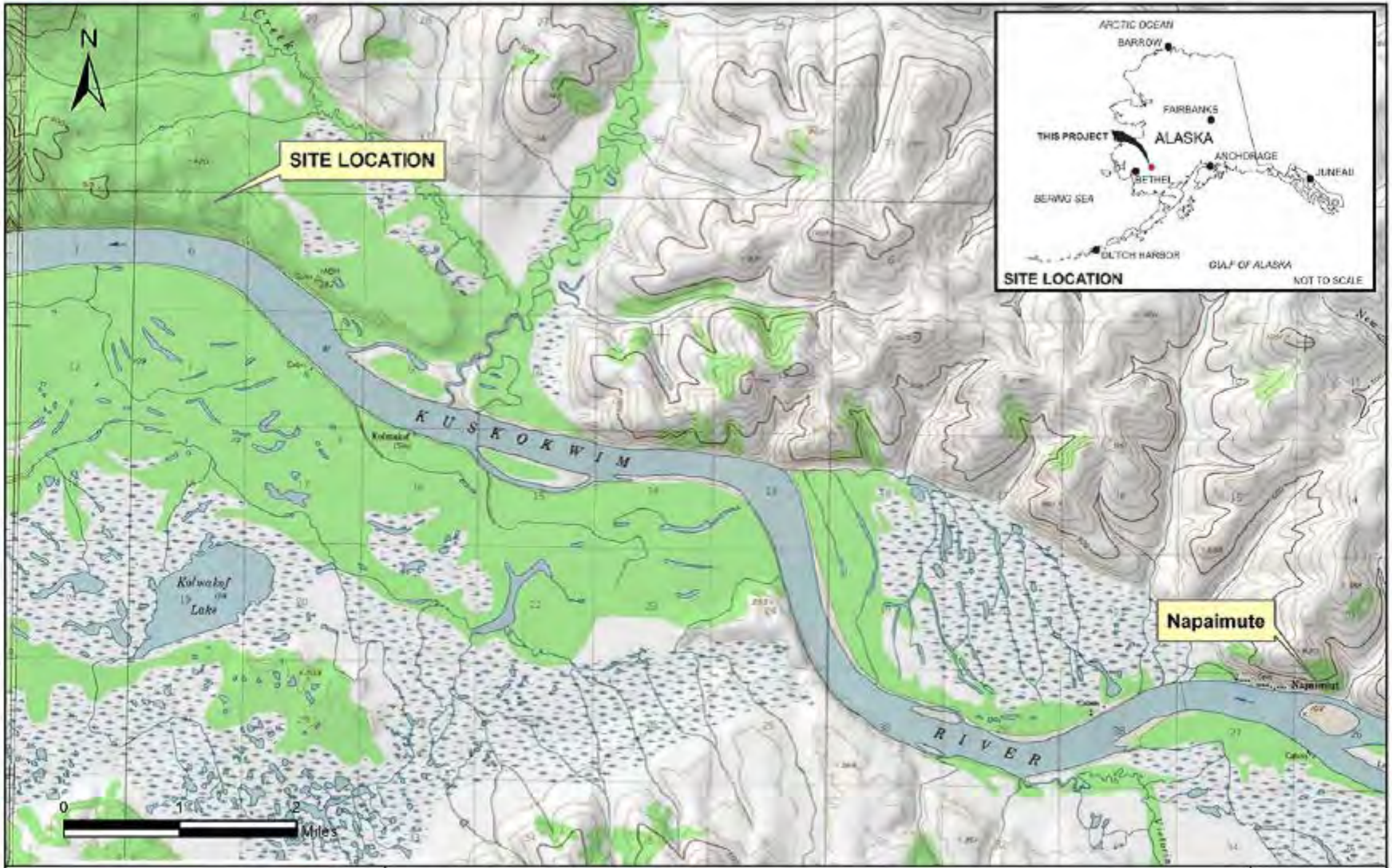
AMEC Environment & Infrastructure, Inc., 2012. Engineering Evaluation/Cost Analysis, Kolmakof Mine Site, Napaimute, Alaska. May.

Brice Environmental Services Corporation (Brice), 2013. BLM, Kolmakof Mine Site Interim Removal Action Work and Management Plan, Final. May.

Brice, 2014a. Kolmakof Mine Site Interim Removal Action. April.

Brice, 2014b. Proposed Addendum to Kolmakof Mine Site – 2013 Interim Removal Action, BLM Contract No. L12PC00215, Work and Management Plan. July.

FIGURES



amec

Site Location and Vicinity Map
Engineering Evaluation/Cost Analysis
Kolmakof Mine Site
Napaimute, Alaska

FIGURE
1

DRAWN	JOB NUMBER	CHECKED	CHECKED DATE	APPROVED	APPROVED DATE
TJH	4038060005 10		12/2011		

July 28, 2011 2:30:12 PM
P:\4038\060005__Kolmakof Mine\GIS\Projects\EECA\Work\P[lan\Figure-1.mxd

DRAWN: TJH	PROJECT NO: 4038930005.13	amec	Engineering Evaluation/Cost Analysis Kolmakof Mine Site Napaimute, Alaska	Site Overview	FIGURE 2
ENGINEER:	SCALE: AS SHOWN				
CHECKED:	DATE: 11/2011				
APPROVED:	DATE: 11/2011				

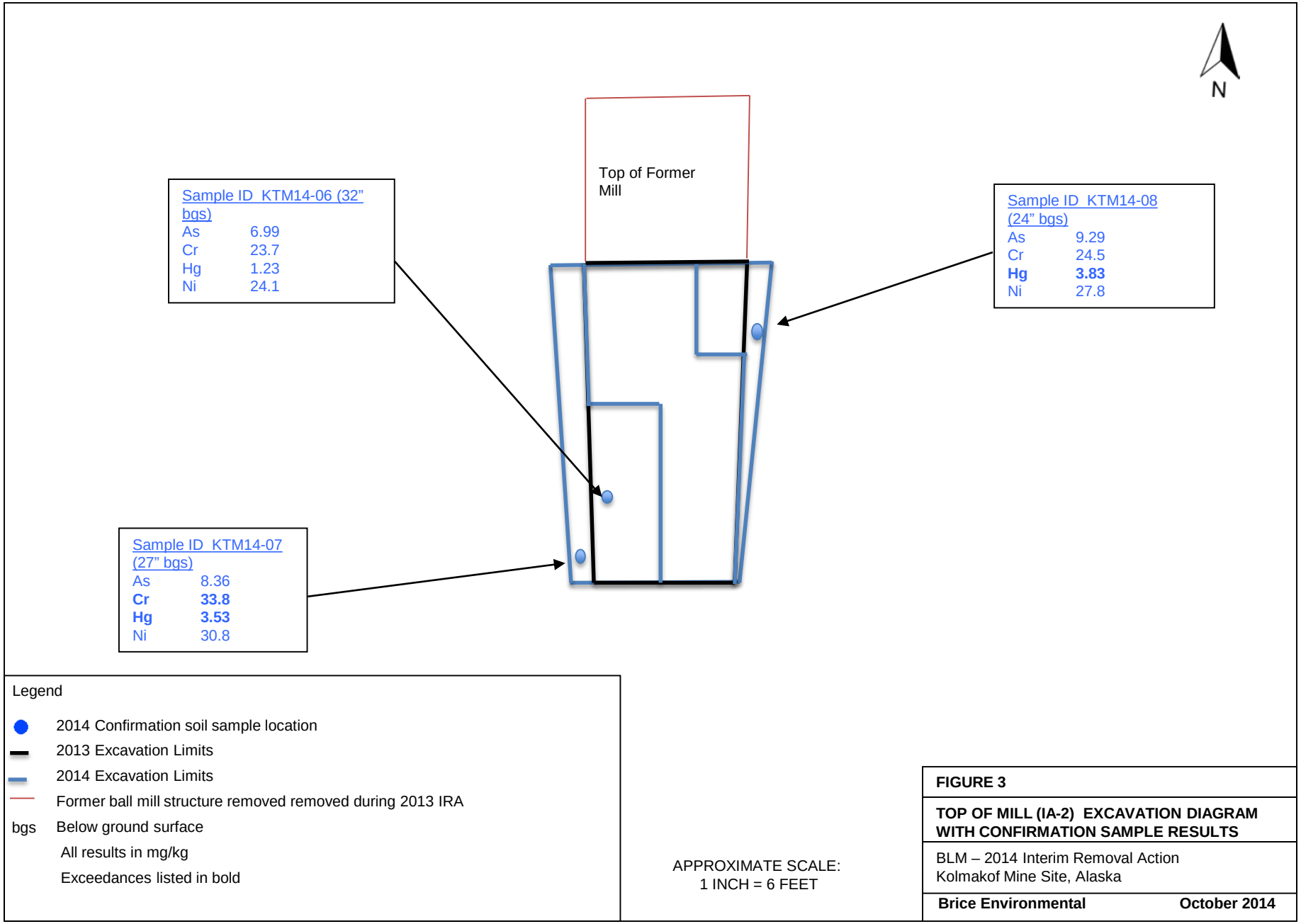


FIGURE 3

TOP OF MILL (IA-2) EXCAVATION DIAGRAM WITH CONFIRMATION SAMPLE RESULTS

BLM – 2014 Interim Removal Action
Kolmakof Mine Site, Alaska

Brice Environmental **October 2014**

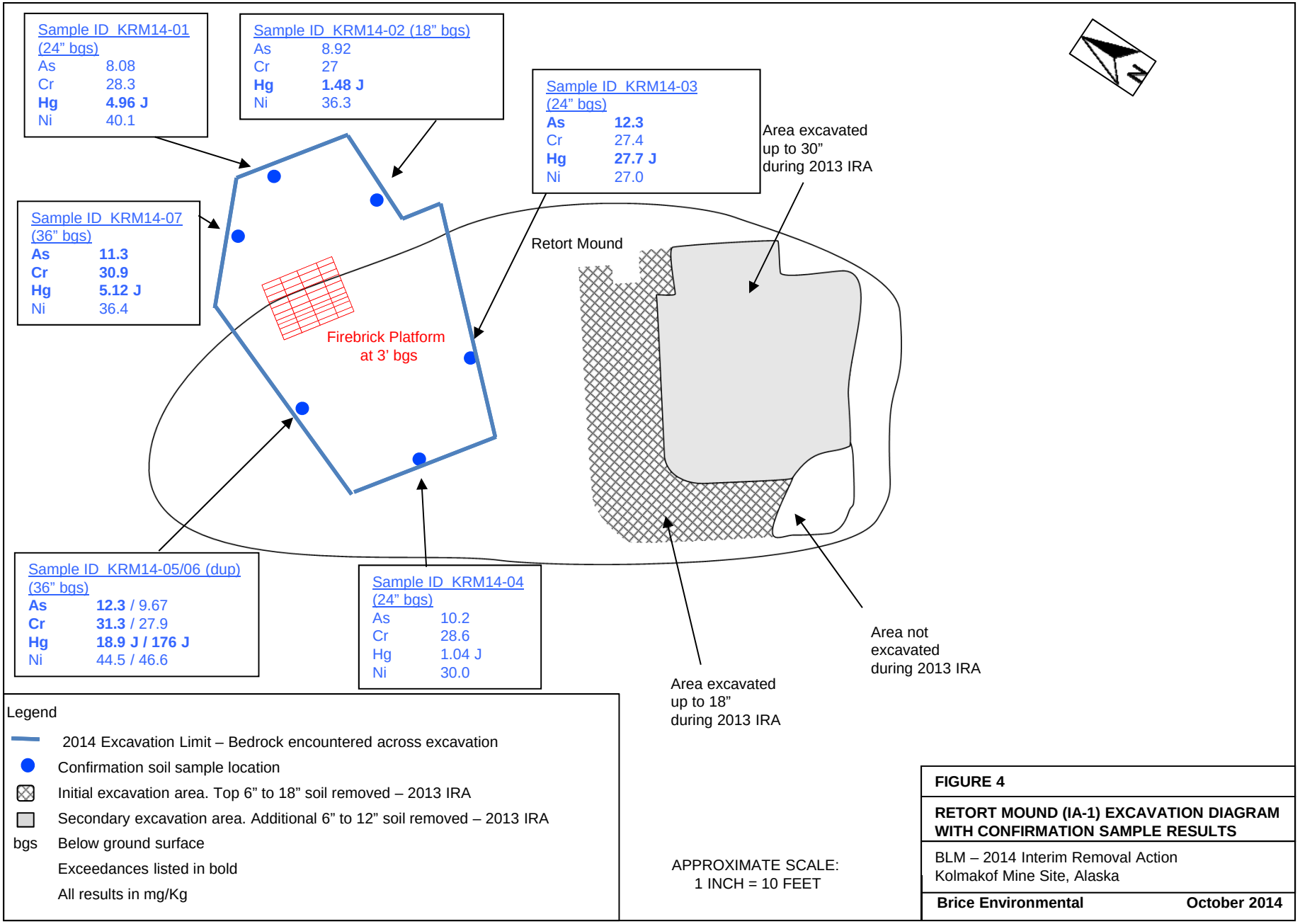


FIGURE 4

RETORT MOUND (IA-1) EXCAVATION DIAGRAM WITH CONFIRMATION SAMPLE RESULTS

BLM – 2014 Interim Removal Action
Kolmakof Mine Site, Alaska

Brice Environmental **October 2014**

TABLES

Table 1
Analytical Methods and Soil Cleanup Levels
2014 Kolmakof Mine Site Interim Removal Action

Parameter	Method	IA-1 Camp Area Soil Cleanup Level (mg/kg)	IA-2 Mill Area Soil Cleanup Level (mg/kg)
Diesel-range organics (DRO)	AK Method 102	250	250
Arsenic[1]	USEPA Method SW6020A	10.7	12.7
Chromium, (Total)[1]	USEPA Method SW6020A	29.2	30
Mercury[1]	USEPA Method SW6020A	1.4	1.99
Nickel[2]	USEPA Method SW6020A	86	86

Notes:

1 - Arsenic, chromium, and mercury soil cleanup levels were established during a background study conducted at the KMS during the 2008 investigation (AMEC, 2012).

2 - The cleanup level for nickel in the Mill Area was listed as 53.9 mg/kg in the Sampling and Analysis Plan based on the background study. However, the ADEC Method Two, Table B1, cleanup level of 86 mg/kg is applied as the action level for this site.

Abbreviations:

ADEC - Alaska Department of Environmental Conservation
AK - Alaska Method
mg/kg - milligrams per kilogram
USEPA - United States Environmental Protection Agency

Table 2
Soil Sample Analytical Results
2014 Kolmakof Mine Site Interim Removal Action

Field Sample ID	Sample Location	Date Sampled	USEPA Method 6020A				AK 102
			Arsenic (mg/kg)	Chromium (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Diesel Range Organics (mg/kg)
KTM14-01	Initial Mill SW Wall	8/12/2014	9.57	27.7	**3.06**	21.5	--
KTM14-02	Initial Mill SW Floor	8/12/2014	8.45	**30.7**	**4.17**	28.7	--
KTM14-03[A]	Duplicate of KTM14-02	8/12/2014	8.86	29	**3.16**	27.5	--
KTM14-04	Initial Mill NE Floor	8/12/2014	9.88	28.5	**3.32**	29.3	--
KTM14-05	Initial Mill NE Floor	8/12/2014	8.15	24.4	1.49	28.2	--
KTM14-06	Final Mill SW Floor	8/16/2014	6.99	23.7	1.23	24.1	--
KTM14-07	Final Mill SW Wall	8/16/2014	8.36	**33.8**	**3.53**	30.8	--
KTM14-08	Final Northeast Wall	8/16/2014	9.29	24.5	**3.83**	27.8	--
KRM14-01	Retort North Wall	8/19/2014	8.08	28.3	**4.96** J	40.1	--
KRM14-02	Retort NE Wall	8/19/2014	8.92	27.0	**1.48** J	36.3	--
KRM14-03	Retort SE Wall	8/19/2014	**12.3**	27.4	**27.7** J	27.0	--
KRM14-04	Retort South Wall	8/19/2014	10.2	28.6	1.04 J	30.0	--
KRM14-05	Retort SW Wall	8/19/2014	**12.3**	**31.3**	**18.9** J	44.5	--
KRM14-06[A]	Duplicate of KRM14-05	8/19/2014	9.67	27.9	**176** J	46.6	--
KRM14-07	Retort NW Wall	8/19/2014	**11.3**	**30.9**	**5.12** J	36.4	--
KMSLS14-01	Landspread MI Sample	8/12/2014	--	--	--	--	106
KMSLS14-02	Landspread MI Sample	8/12/2014	--	--	--	--	139
KMSLS14-03	Landspread MI Sample	8/12/2014	--	--	--	--	111

Notes:
[A] Duplicate of preceeding sample
Results in **bold** exceed ADEC cleanup levels

Abbreviations:
-- - not analyzed
ADEC - Alaska Department of Environmental Conservation
AK - Alaska Method
J - estimated value
mg/kg - milligrams per kilogram
ND - not detected at or above the [Limit of Detection]
USEPA - United States Environmental Protection Agency

APPENDIX A

FIELD LOG BOOK

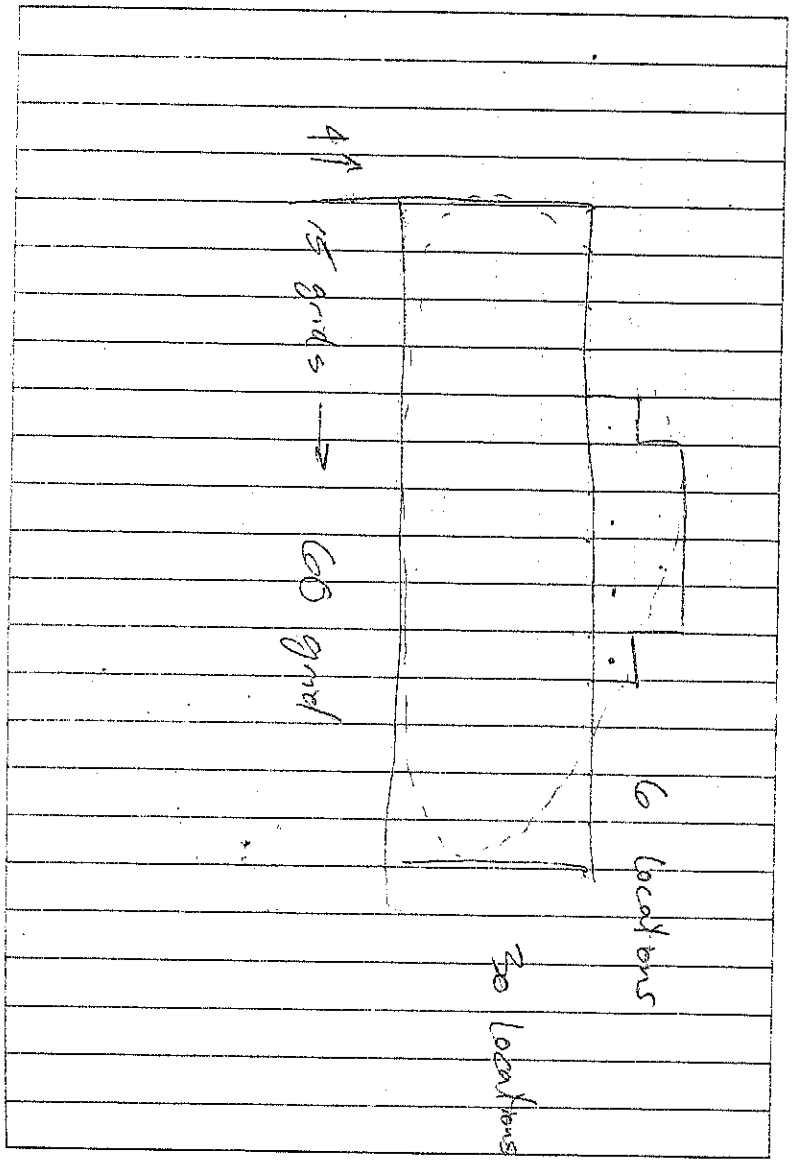
2014 Kolmakof Mine Site Removal Action Report
Kolmakof Mine Site, Alaska

BUREAU OF LAND MANAGEMENT ALASKA STATE OFFICE

4700 BLM Road

Anchorage, AK 99507-2591

December 2014



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KOLMAKOF MINE SITE

12 August 2014

0955 Mobilize to boat launch. Plan to collect MI samples at landspread area and begin soil removal at Top of Mill to remove remaining hot spots.

Layed out grid on landspread and sampled center of approximate 4' x 4' grid. Dupe and triplicate samples collected. Large samples placed into cooler.

MI Samples	Time	
KMSLS14Ø1	1202	
Ø2	1235	6 in to rt of Ø1
Ø3	1305	6 in to left of Ø1

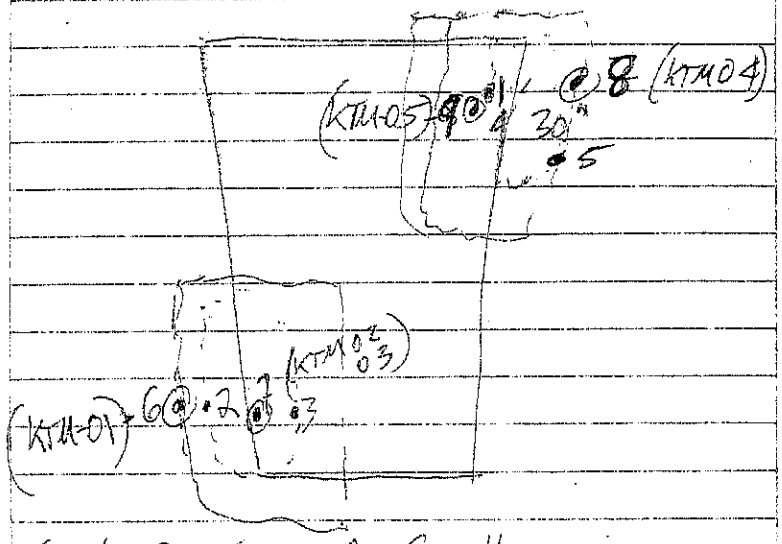
1350
Calibrate XRF. Chromium reading .62 on blank. XRF results will be biased high for chromium.

Returned to bottom of hill for lunch and supplies.

Scale: 1 square = _____

Top of RM 2A-2

1530 mobilized to Top of RM 11 for excavation + sampling.



Sample ID	Time	As	Cr	Hg	Ni	
#121 KTM-01	1605	15	56	nd	31	24" floor
#121 2	1610	nd	31	nd	<29.2	18" sidewall
#122 3	1612	5	65	nd	<28.9	24" floor
#124 4	1618	8	134	nd	<27.1	30" floor
#125 5	1650	4	81	nd	<28.6	18" SW
#126 6	1708	nd	38	nd	<27.6	18" SW
#127 7	1711	8	40	nd	<27.7	24" floor
#128 8	1715	nd	58	nd	<32	30" floor
9						30" floor

Scale: 1 square = _____

Filled one bag then screened former hot sample locations 1 2 3 xrf samples screened. Remove additional in vicinity of all three. Then screen w. the xrf again. Filled a total of 2 bags (~2 cy). Weighed bags and staged for removal to bottom of RM 11 (Comp area)

Samples collected from excavation footprint KTM14-01 through KTM14-05 Duplicate pair KTM14-02/03

Scale: 1 square = _____

Retort Mound excavation 13 Aug 24

0745 Meet Dennis and go to boat launch

0900 Arrive on-site, safety info + work plan

Excavate mound to at least 18" bgs where previous sampling showed mercury above cleanup level. Start ex at North end (opposite end from 2015 ex)

Begin initial excavation on ~~West~~ North East side perimeter. Dug to 24" and encountered silt. xrf screening of silt (#129)

Screened initial 4 CYs removed. Sidewall at 20" bgs (#135 - 136)

1000 Called SCS to get 1A-2 conf sample results verbally

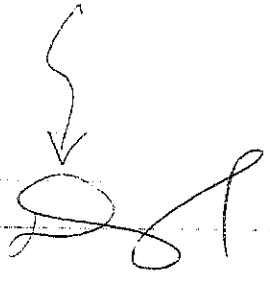
KTM	1	3.06 mg/Kg
KTM	2	4.17
KTM	3	5.16
KTM	4	3.32
KTM	5	1.49

Scale: 1 square =

Discussed with Larry and Dennis will move up to mill to excavate additional soil after loading bags on barge in the morning.

1700 Removed 20 CY of soil from retort mound NE quadrant. Screened with XRF Soil taken down to ground level. XRF 140 through 146 ~~were~~ all eight above LOD for mercury. Decision made to scrape back additional 2 inches on entire floor. Re screened to 30 sec every 8" across the floor of ex. Several locations still exhibit mercury above LOD and cleanup level. Continued removal of floor until excavation reached bedrock.

Boarded from site.



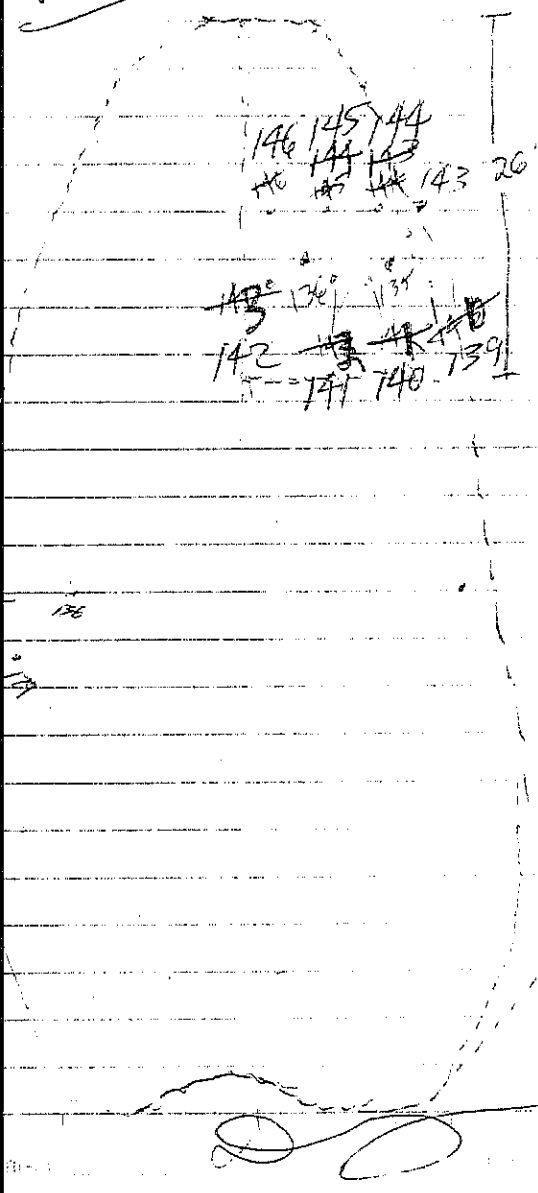
Scale: 1 square =

xrf #	As	Hg	Ni	Cr	X, Y	
129	<4.1	<4.8	14	49		0-1ft
135	ND	<5.8	<29.1	57		sidewall
138	20	8	<3.3	42		Continuous C
139						
140						
141						
142						
143						
144						
145						
146						

Higher results, indicating need to remove additional 0-1 from entire area

Scale 1 square =

Retort Heater ... Initial ex



+ Pallet 50 lbs each

# Bag	weights	Date
2	2250	8/15
1	2070	
3	1965	
4	2090	
5	2030	
6	2315	
7	2235	
8	2055	
9	2145	
10	2035	
11	2260	
12	2315	
13	2128	
14	2050	
15	2135	
16	1940	
17	2020	
18	1775	
19	1880	
20	1680	
	41335	
	100 pallets	
	42335 lbs	

Bag #	Weight	Date
21	2080	8/16
22	1750	
23	2075	
24	2150	
25	2025	
26	2325	
27	2055	
28	2090	
29	2035	
30	1910	
31	2330	
32	2015	
33	2095	
34	2435	
35	2345	
36	2075	
37	2260	
38	2365	
39	2230	
40	2035	
	42900	
	100	
	43900 lbs	

41	2070	
42	2120	
43	2435	
44	1985	
45	1895	
46	2420	
47	2520	
48	2130	
49	2165	
50	2225	
51	2510	
52	1935	
53	2405	
54	2140	
55	2105	
56	2190	
57	1905	
58	2020	
59	2225	
60	1965	
	43465	
	100	
	44465	

Scale: 1 square =

15 August 2014

0800 Depart beach.

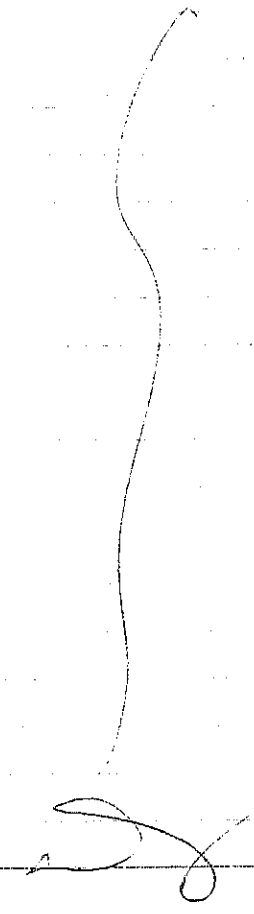
0900 Arrive at KLS. Safety mtg. Begin loading barge. Numbered bags with pink spray paint. Logged bag weights. 20 bags loaded. Bags # 1 through 20. Bags 21 + 22 left on beach. Barge loads will be 20 bags per trip.

1030 Barge left. Begin excavating, retort around again in Northeast quadrant. Continuous xrf and visual observation of cinnabar and layers used to guide soil removal. Filled bags on tarp four at a time then weighed and moved each bag with backhoe down to barge loading staging area. Mercury above clean up LOD occurring down to 2' bgs and intermittently across the ex floor to 3' bgs. Removed organic layer, silty layer and reached broken shale, fractured bedrock layer about 3' bgs. Continued out laterally to remove sidewalls east side as cinnabar was observed in a layer approx 18" bgs. Minute amounts of elemental mercury beads observed during sidewall removal. Possible that some retort was performed at the site. 26 bags filled. 18 brought to shore.

16 August 2014

Remarks - Today spent filling bags and excavation visibly soil containing ore.

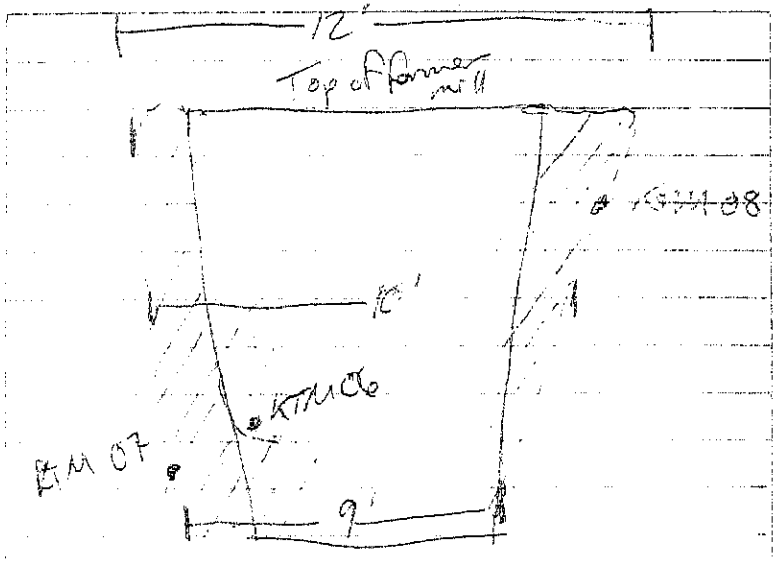
1730 Departed from site



0800 At NAC cargo to coordinate cargo air shipments back to Anchorage. Signed manifests (2014-00300 to -00304) and left originals with NAC to ship with bags to Anchorage. Signed NAC airway bills each for 10 bags a piece. Manifests have 20 bags a piece. Need to call Margot on Monday to ensure correct rate is used for shipment. Labeled all bags.

0900 Mobilized to KMS site. Setup gear at Staging area. Safety meeting & review work plan for the day.

1130 Began additional excavation at KM site 1A 2 (top of mill). See next page XRF blank Cr reading is 38 ppm. Should be blank. Cr will likely be biased high on screening results.



XRF
192 - 213 on floor after overex.
Collected KTM 06 3.2" bags @ 1315

XRF
on sidewall every 6-8" inches
KTM 07 2.25' bgs @ 1338

XRF
232-242 on sidewall after overex to remove additional 3'0". Resampled KTM 08 @ 1400 2' bgs

Returned down the hill to camp area. Crew finished loading 2nd barge with 20 bags (bags #21-40).
1500 Break for lunch.
1530 Begin moving bags from mill site down to barge landing. 4 bags from top of mill and 7 bags from retort mound staged at landing. Need 12 more bags for barge load. Ramps + muddy conditions. Dennis decided to hold off on more digging until tomorrow. Will have more visqueen to lay down and to use for excavation cover.

Discuss sending samples in for 24 hr Turn as we have 12 bags left to fill in case results above cleanup level at top of mill (1A:2) require more excavation. Should have results back on Tues morning. Call lab Monday to verify.
1700 Depart site. Arrive Anvik. Turn in samples

17 August 2014

0745 Depart camp to pick up Patrick and go to boat.
0800 Depart in boat heading to site.
0900 On site. Safety mtg and discuss work plan for the day. Will clean up N wall of EM ex and bag that soil. Screen existing N wall floor and E wall. Continue w. the ex. Calibrate XRF Ran blank 4 times 1st time Ag was Copper. Cleaned of blank and re-ran Chromium readings increased with each scan. Ag dot was non-detect after 1st scan #252 - 255
Cr. 42, 49, 73 85
0945 Begin excavating. Encountered burnt ore Field screened to guide ex. Encountered visible elemental mercury beads on east side of ex at approx 12 inches bgs. while bull dozing off clean fill layer. Bagging bulldozed soil now
1215 Lunch break.
1300 Begin excavating and bagging bulldozed soil from SE corner next to ex. Fill bags. Screen bulldozed area with XRF

to RAW Cargo. SBS to pickup Monday morning.
1800 Clean gear up and get paperwork bag labels ready for Sunday.

2000 Done for the day. Stop at VAC Tuesday morning to complete more airway bills for additional bags.

Scale 1 square =

All non-detect in 6'x 12' area along bulldozer track after removing top 1 foot of soil. Moved back over to area east of Retort mound where visible elemental mercury beads observed. Plan is to excavate to find east and northeast of contamination, if possible using the remaining volume of soil to be removed. ~30 cy remain on contract.

1530 Loading 3rd barge. Bags ~~or~~ 41 to 60 loaded.

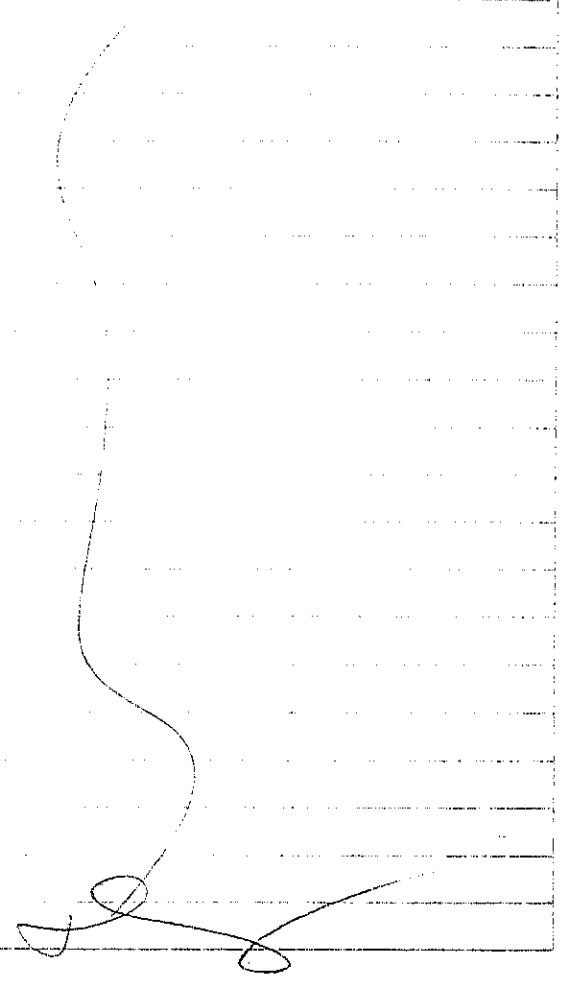
1610 Barge loaded and en route to Anvil. Begin moving next 10 bags to staging area. Weigh last 6 bags and move to staging area. Larry discussed digging a few test pits around the retort mound to screen with XRF and provide more characterization information about the site. Previous characterizations did not adequately delineate or estimate the actual volume of contaminated soil. Based on current excavation there is significantly more mercury-impacted soil in the retort mound area.

1645 Test pit on Northwest side of Retort mound site. XRF screening at 1' lifts down to 3 feet bgs. First 1' Lift sidewall shows mercury above LOD. Reading of 5 ppm. Two to three feet increments non-detect for mercury.

1715 Pack up for day. Cover the remaining Test pit soil for removal on Monday.

18 August 2014

Stand by day to await for sample results. Spent day organizing gear.



Scale: 1 square =

19 August 2014

0245 leave Per beach

0330 Boat to site. Safety meeting. Weather is overcast. Boards wet from steady rain yesterday. No wind.

0905 Arrived on site. Passed barge coming up river.

1020 Finished weighing + labeling bags for next barge. (Bags #61-80)

Calling SGS again to get KTM sample results. Forest informed me that there was a problem with the instrument and they were going to re-run the samples. Possibly have the results in late afternoon.

loaded barge (20 bags). Discuss plan for remaining 8 bags. Will bag 4 more at report mound then call SGS at 2 p.m. If results are available and above cleanup levels will make up and fill the last four bags the re-sample. If Clean up results not available yet, then we will fill the remaining 4 bags at report mound. Need to measure out final excavation footprint, screen and collect

Scale: 1 square =

Barge Bag wts

Bag #	Weight	Date
61	2030	8/19
62	2100	
63	1775	
64	2065	
65	1875	
66	1955	
67	1980	
68	1900	
69	1935	
70	1965	
71	2125	
72	2120	
73	2110	
74	1950	
75	2203	
76	2040	
77	1975	
78	2045	
79	2050	
80	2005	
	40293	
	+ 100 ea	
	41293	

Bag #	Weight	Date
81	1955	8/19
82	2015	
83	2160	
84	2010	
85	2090	
86	2110	
87	2175	
88	2000	
89	2190	
90	1905	
91	2040	
92	2145	
93	2170	
94	2185	
95	2030	
96	2095	
97	2130	
98	2105	
99	2125	
100	2130	
	41965	
	+ 100 ea	
	42965	

samples.

1340. Measured existing ex footprint. Set up to excavate NW portion of Retort mound to fill up to 8 more bags. Clean slough off ex floor first then move to top 2' of mound. Screen again after removal.

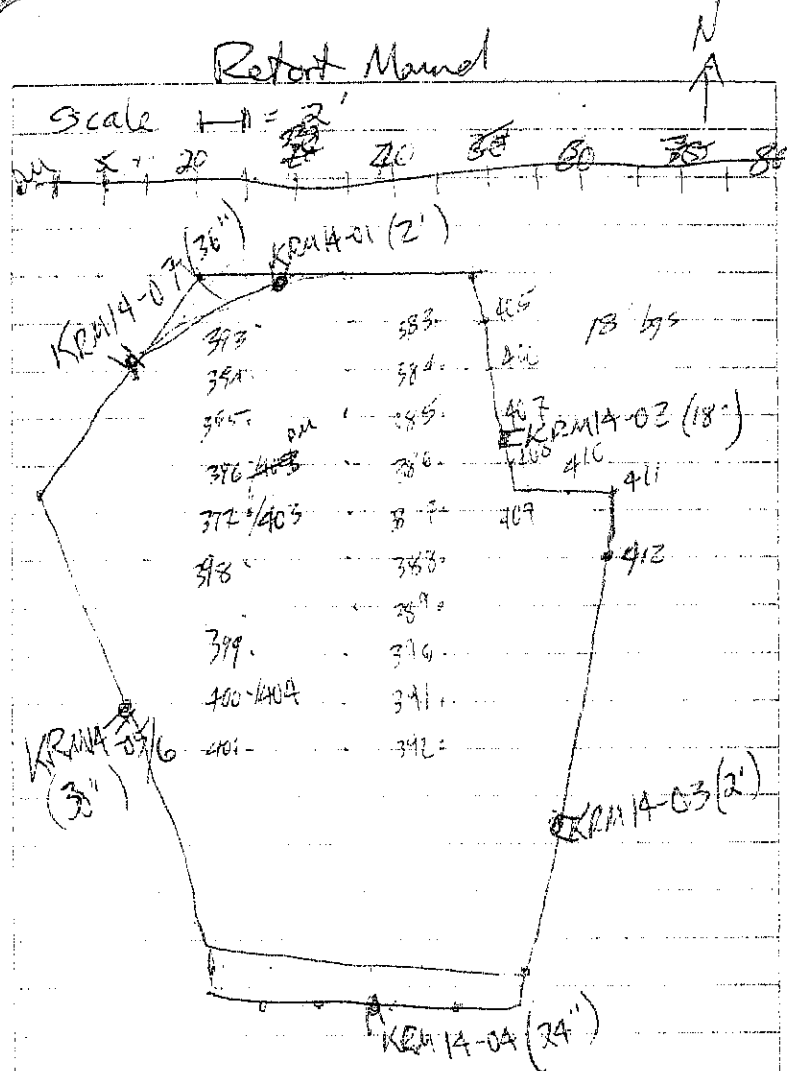
1410 Called SGS Forrest stopped out to Office. Spoke with Justin. Had to check. Called back. Results will be available end of day. Informed Dawn and Larry. Decision made to finish all bags at Retort mound. Continue XRF + sampling post-ex.

1510 Set up for sidewall sampling. Collected six samples (KRMW-01 thru 07) plus one duplicate. Duplicate pair: KRM14-05 + 06.

1600 Completed sampling. Marked and labeled remaining 8 bags. 20 bags (#81-100) staged on berm, awaiting to be picked up Tuesday.

1615 Depart site head back to Brink. Pack samples and gear.

Retort Manual



Excavation floor slopes from 2' bgs in NE corner to 4' on North wall. Northwall Kuskokwim rock @ 1' silty gray layer with organics 1-2', 2-3' reddish orange burnt ore layer. (photos with tape showing layers.

Scale 1 square =

XRF Screens @ RM

Depth	Sample #	As	Hg	Ni	Description
	382	<3.1	<4.6	<27.4	Blank OK all ND
2' B	383	<3.1	<4.6	<27.4	Fractured Kuskokwim bedrock with silt
2' B	384	10	<5.2	55	
2' B	385	<5.3	<5.4	<33.1	
2.5 B	386	6	<5.8	<33.7	
2.5' B	387	6	<5.9	60	
2.5' B	388	10	<6.3	<38.1	
2.5' B	389	<4.5	<4.8	<30.7	
2.5' B	390	<5	<6.2	<37.6	
3' B	391	<4.2	<5.2	41	silty soil with bedrock
3' B	392	7	<5.4	<33.1	" " " "
3 B	393	7	<4.9	<31.1	Kuskokwim bedrock highly fractured
3	394	8	<5.4	<32.5	
2.5	395	14	<7.6	<40.3	
2.5	396	7	<5.3	<33.4	
2.5	397 *	10	6	44	Removed more soil
3	398	8	<6.2	<36.5	
3	399	6	<5.3	73	
3	400 *	9	7	<31.7	
3	401	7	<5.5	<31.4	
3	402	<4.5	<5.6	60	
2.5	403	20	<6.1	41	Removed soil/Re screened from 397 to 400 pt.
3	404	6	<4.9	43	

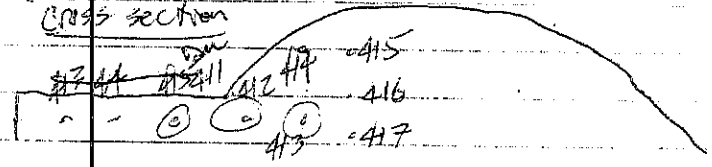
Scale: 1 square =

Depth	sample #	As	Mg	Ni	Description
405		<5	<5.7	<35.4	silty gravel / fractured rock
406		<5.9	<6.2	<36.9	silt with fractured rock and organics
407		8	<5.9	<33.7	fractured rock + weathered soil with organics
408		5	<4.1	<21.5	" "
409		<3.1	<4.0	<22.5	" "
410		5	<5.4	<31.4	" "
411		<3.7	8	54	" "
412		<5.7	9	<39.1	" "
413		6	7	<25.6	silty soil with organics
414		9	<5.4	<27.3	" "
415		13	<5.4	<31.1	" "
416		7	<4.7	31	" "
417		9	<4.9	<28.3	" "
418		30	<4.9	31	" "
419		9	<5.1	<30.7	" "
420		5	14	51	Root & organic layer w/ fines
421		<4.7	17	<31.6	soil with fines brown
422		9	9	32	soil with fines silty brown
423		9	12	<27.9	brown soil w/ silt + organics
424		6	32	<31.5	" " " "
425		4	16	30	" " " " "

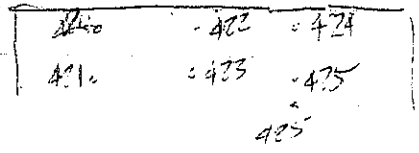
Stopped screening wells. Collect Samples.

Scale: 1 square =

South wall
Cross section



West wall



Confirmation Samples

KRM14-01	1515	silt with gravel grey
KRM14-02	1522	silt with gravel brownish grey
KRM14-03	1528	brown soil w/ organics + gravel
KRM14-04	1532	brown soil w/
KRM14-05	1540	grey silt with gravel
KRM14-06	1541	grey silt with gravel
KRM14-07	1548	grey silt w/ gravel + reddish layer

Scale: 1 square =

APPENDIX B

PROJECT PHOTOGRAPHS

2014 Kolmakof Mine Site Removal Action Report
Kolmakof Mine Site, Alaska

BUREAU OF LAND MANAGEMENT ALASKA STATE OFFICE

4700 BLM Road

Anchorage, AK 99507-2591

December 2014

Mobilizing Equipment & Supplies to Job Site – 8/9/14

Installing 12” Plastic Culvert for Trail Improvements 8/10/14

Complete Culvert Installation – 8/10/14

Ramp Repairs at Barge Landing – 8/10/14

Loading Rock for Road Repairs – 8/10/14

Road Repairs at Mud Hole – 8/11/14

Road Repairs at Mud Hole – 8/11/14

Top of Mill Site before Excavation – 8/12/14

First Bag being filled at Mill Site – 8/12/14

Loading Super Sack at Top of Mill Site – 8/12/14

Top of Mill Site Excavation – 8/12/14

Retrieving Sample #1 for Analysis at Top of Mill Site – 8/12/14

Retrieving Sample #4 for Analysis at Top of Mill Site – 8/12/14

Top of Mill Sample Points KTM14-06 (Floor) KT14-M07 (Sidewall left), KTM14-08 (Sidewall right)
8/16/14

Top of Mill Sample point KTM14-08 – 8/16/14

Land-Spread Area – Grid & Sample Locations - 8/13/14

Land-Spread Area – Grid & Sample Locations – 8/13/14

Reclaimed Mill Site – 8/13/14

Filling first Sack at Retort Mound – 8/14/14

Excavating at Retort Mound – 8/14/14

Filling First 4 Super Sacks at Retort Mound – 8/14/14

First 4 Super Sacks at Retort Mound – 8/14/14

Loading the 1st 20 Super Sacks on the Barge – 8/15/14

Loading Super Sacks onto Pallets – 1st load – 8/15/14

1st Load Headed to Aniak – 8/15/14

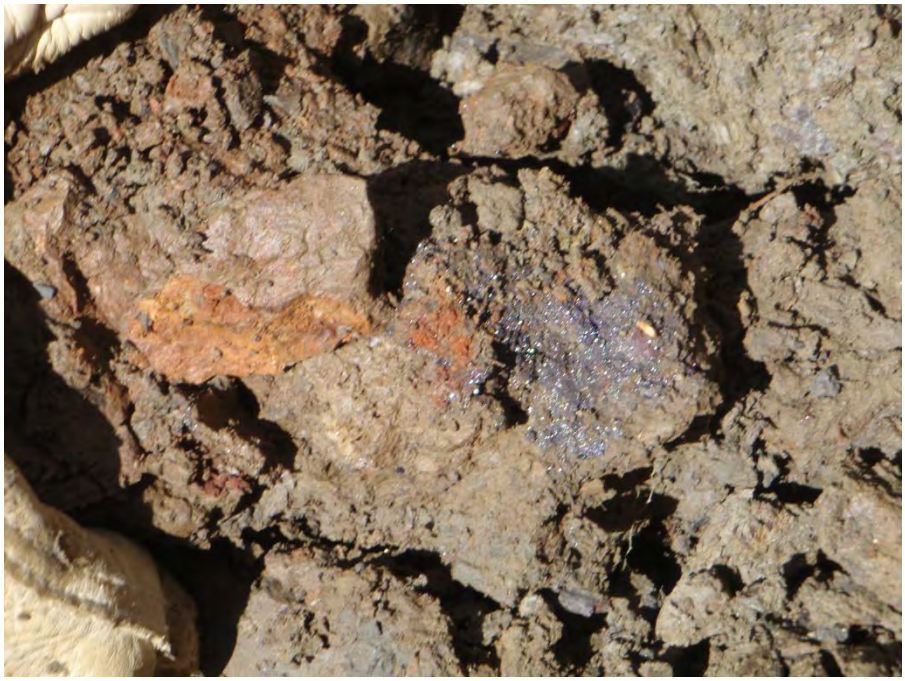
1st Load headed for Aniak – 8/15/14

Filling Super Sacks at Retort Mound – 8/15/14

1st Load of bags in Aniak, waiting for shipment to Anchorage – 8/16/14

Firebrick platform found at 3’ bgs – 8/17/14

Burned Ore and Elemental Mercury at Retort Mound



Burned Ore and Elemental Mercury at Retort Mound

Bottom of Excavation at Retort Mound – 8/18/14
(Still no defined limits of Contamination)

Retort Mound Excavation. Potential burned ore in NW sidewall – 8/18/14

Retort Mound NW Sidewall – 8/18/14

Reclaimed Settling Pond at Mill Site – 8/19/14

Reclaimed Mill Site – 8/19/14

Reclaiming Mill Site – 8/19/14

Filling Last Bag at Retort Mound – 8/19/20

Reclaimed Mill Site, ready for Seeding – 8/20/14

Seeding the Settling Pond Area – 8/20/14

Seeding Settling Pond and Mill Site Area – 8/20/14

APPENDIX C

LABORATORY ANALYTICAL DATA REPORTS

2014 Kolmakof Mine Site Removal Action Report
Kolmakof Mine Site, Alaska

BUREAU OF LAND MANAGEMENT ALASKA STATE OFFICE

4700 BLM Road

Anchorage, AK 99507-2591

December 2014

Laboratory Report of Analysis

To: Environmental Comp. Consultants (ECC)
1500 Post Road
Anchorage, AK 99501
(907)830-1225

Report Number: **1143947**

Client Project: **Kolmakof Mine Site**

Dear Don Maloney,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Forest at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Forest Taylor Date
Project Manager
Forest.Taylor@sgs.com

Print Date: 08/28/2014 3:48:53PM

Case Narrative

SGS Client: **Environmental Comp. Consultants (ECC)**
SGS Project: **1143947**
Project Name/Site: **Kolmakof Mine Site**
Project Contact: **Don Maloney**

Refer to sample receipt form for information on sample condition.

1143947001DUP (1228784) DUP

6020A - Metals - BMS/BMSD and PS/DUP RPD for mercury was outside of acceptance limits. Sample is non-homogeneous for mercury.

1143947001MS (1228785) MS

6020A - Metals - MS/MSD recoveries for chromium and mercury were outside of acceptance criteria. Post digestion spike was successful.

1143947001MSD (1228786) MSD

6020A - Metals - MS/MSD recoveries for chromium and mercury were outside of acceptance criteria. Post digestion spike was successful.
6020A - Metals - BMS/BMSD and PS/DUP RPD for mercury was outside of acceptance limits. Sample is non-homogeneous for mercury.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

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200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<http://www.sgs.com/terms_and_conditions.htm>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content.
All DRO/RRO analyses are integrated per SOP.

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
KRM14-01	1143947001	08/19/2014	08/20/2014	Soil/Solid (dry weight)
KRM14-02	1143947002	08/19/2014	08/20/2014	Soil/Solid (dry weight)
KRM14-03	1143947003	08/19/2014	08/20/2014	Soil/Solid (dry weight)
KRM14-04	1143947004	08/19/2014	08/20/2014	Soil/Solid (dry weight)
KRM14-05	1143947005	08/19/2014	08/20/2014	Soil/Solid (dry weight)
KRM14-06	1143947006	08/19/2014	08/20/2014	Soil/Solid (dry weight)
KRM14-07	1143947007	08/19/2014	08/20/2014	Soil/Solid (dry weight)

Method	Method Description
SW6020A	Metals by ICP-MS (S)
SM21 2540G	Percent Solids SM2540G

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Detectable Results Summary

Client Sample ID: **KRM14-01**
Lab Sample ID: 1143947001
Metals by ICP/MS

Parameter	Result	Units
Arsenic	8.08	mg/Kg
Chromium	28.3	mg/Kg
Mercury	4.96	mg/Kg
Nickel	40.1	mg/Kg

Client Sample ID: **KRM14-02**
Lab Sample ID: 1143947002
Metals by ICP/MS

Parameter	Result	Units
Arsenic	8.92	mg/Kg
Chromium	27.0	mg/Kg
Mercury	1.48	mg/Kg
Nickel	36.3	mg/Kg

Client Sample ID: **KRM14-03**
Lab Sample ID: 1143947003
Metals by ICP/MS

Parameter	Result	Units
Arsenic	12.3	mg/Kg
Chromium	27.4	mg/Kg
Mercury	27.7	mg/Kg
Nickel	27.0	mg/Kg

Client Sample ID: **KRM14-04**
Lab Sample ID: 1143947004
Metals by ICP/MS

Parameter	Result	Units
Arsenic	10.2	mg/Kg
Chromium	28.6	mg/Kg
Mercury	1.04	mg/Kg
Nickel	30.0	mg/Kg

Client Sample ID: **KRM14-05**
Lab Sample ID: 1143947005
Metals by ICP/MS

Parameter	Result	Units
Arsenic	12.3	mg/Kg
Chromium	31.3	mg/Kg
Mercury	18.9	mg/Kg
Nickel	44.5	mg/Kg

Client Sample ID: **KRM14-06**
Lab Sample ID: 1143947006
Metals by ICP/MS

Parameter	Result	Units
Arsenic	9.67	mg/Kg
Chromium	27.9	mg/Kg
Mercury	176	mg/Kg
Nickel	46.6	mg/Kg

Client Sample ID: **KRM14-07**
Lab Sample ID: 1143947007
Metals by ICP/MS

Parameter	Result	Units
Arsenic	11.3	mg/Kg
Chromium	30.9	mg/Kg
Mercury	5.12	mg/Kg
Nickel	36.4	mg/Kg

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Results of **KRM14-01**

Client Sample ID: **KRM14-01**
Client Project ID: **Kolmakof Mine Site**
Lab Sample ID: 1143947001
Lab Project ID: 1143947

Collection Date: 08/19/14 15:15
Received Date: 08/20/14 15:12
Matrix: Soil/Solid (dry weight)
Solids (%): 81.8
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	8.08		1.20	0.372	mg/Kg	10		08/26/14 14:52
Chromium	28.3		0.480	0.144	mg/Kg	10		08/26/14 14:52
Mercury	4.96		0.0480	0.0144	mg/Kg	10		08/26/14 14:52
Nickel	40.1		0.240	0.0744	mg/Kg	10		08/26/14 14:52

Batch Information

Analytical Batch: MMS8655
Analytical Method: SW6020A
Analyst: ACF
Analytical Date/Time: 08/26/14 14:52
Container ID: 1143947001-A

Prep Batch: MXX28006
Prep Method: SW3050B
Prep Date/Time: 08/22/14 10:05
Prep Initial Wt./Vol.: 1.018 g
Prep Extract Vol: 50 mL

Print Date: 08/28/2014 3:48:58PM

Results of **KRM14-02**

Client Sample ID: **KRM14-02**
Client Project ID: **Kolmakof Mine Site**
Lab Sample ID: 1143947002
Lab Project ID: 1143947

Collection Date: 08/19/14 15:22
Received Date: 08/20/14 15:12
Matrix: Soil/Solid (dry weight)
Solids (%): 82.0
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	8.92		1.20	0.371	mg/Kg	10		08/26/14 15:17
Chromium	27.0		0.478	0.143	mg/Kg	10		08/26/14 15:17
Mercury	1.48		0.239	0.0717	mg/Kg	50		08/26/14 20:53
Nickel	36.3		0.239	0.0741	mg/Kg	10		08/26/14 15:17

Batch Information

Analytical Batch: MMS8655
Analytical Method: SW6020A
Analyst: ACF
Analytical Date/Time: 08/26/14 15:17
Container ID: 1143947002-A

Prep Batch: MXX28006
Prep Method: SW3050B
Prep Date/Time: 08/22/14 10:05
Prep Initial Wt./Vol.: 1.02 g
Prep Extract Vol: 50 mL

Analytical Batch: MMS8656
Analytical Method: SW6020A
Analyst: ACF
Analytical Date/Time: 08/26/14 20:53
Container ID: 1143947002-A

Prep Batch: MXX28006
Prep Method: SW3050B
Prep Date/Time: 08/22/14 10:05
Prep Initial Wt./Vol.: 1.02 g
Prep Extract Vol: 50 mL

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Results of **KRM14-03**

Client Sample ID: **KRM14-03**
Client Project ID: **Kolmakof Mine Site**
Lab Sample ID: 1143947003
Lab Project ID: 1143947

Collection Date: 08/19/14 15:28
Received Date: 08/20/14 15:12
Matrix: Soil/Solid (dry weight)
Solids (%): 75.4
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	12.3		1.32	0.410	mg/Kg	10		08/26/14 15:19
Chromium	27.4		0.529	0.159	mg/Kg	10		08/26/14 15:19
Mercury	27.7		1.06	0.317	mg/Kg	200		08/26/14 20:56
Nickel	27.0		0.264	0.0819	mg/Kg	10		08/26/14 15:19

Batch Information

Analytical Batch: MMS8655
Analytical Method: SW6020A
Analyst: ACF
Analytical Date/Time: 08/26/14 15:19
Container ID: 1143947003-A

Prep Batch: MXX28006
Prep Method: SW3050B
Prep Date/Time: 08/22/14 10:05
Prep Initial Wt./Vol.: 1.004 g
Prep Extract Vol: 50 mL

Analytical Batch: MMS8656
Analytical Method: SW6020A
Analyst: ACF
Analytical Date/Time: 08/26/14 20:56
Container ID: 1143947003-A

Prep Batch: MXX28006
Prep Method: SW3050B
Prep Date/Time: 08/22/14 10:05
Prep Initial Wt./Vol.: 1.004 g
Prep Extract Vol: 50 mL

Print Date: 08/28/2014 3:48:58PM

Results of **KRM14-04**

Client Sample ID: **KRM14-04**
Client Project ID: **Kolmakof Mine Site**
Lab Sample ID: 1143947004
Lab Project ID: 1143947

Collection Date: 08/19/14 15:32
Received Date: 08/20/14 15:12
Matrix: Soil/Solid (dry weight)
Solids (%): 81.2
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	10.2		1.22	0.378	mg/Kg	10		08/26/14 15:22
Chromium	28.6		0.488	0.146	mg/Kg	10		08/26/14 15:22
Mercury	1.04		0.244	0.0732	mg/Kg	50		08/26/14 20:58
Nickel	30.0		0.244	0.0756	mg/Kg	10		08/26/14 15:22

Batch Information

Analytical Batch: MMS8655
Analytical Method: SW6020A
Analyst: ACF
Analytical Date/Time: 08/26/14 15:22
Container ID: 1143947004-A

Prep Batch: MXX28006
Prep Method: SW3050B
Prep Date/Time: 08/22/14 10:05
Prep Initial Wt./Vol.: 1.01 g
Prep Extract Vol: 50 mL

Analytical Batch: MMS8656
Analytical Method: SW6020A
Analyst: ACF
Analytical Date/Time: 08/26/14 20:58
Container ID: 1143947004-A

Prep Batch: MXX28006
Prep Method: SW3050B
Prep Date/Time: 08/22/14 10:05
Prep Initial Wt./Vol.: 1.01 g
Prep Extract Vol: 50 mL

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Results of **KRM14-05**

Client Sample ID: **KRM14-05**
Client Project ID: **Kolmakof Mine Site**
Lab Sample ID: 1143947005
Lab Project ID: 1143947

Collection Date: 08/19/14 15:40
Received Date: 08/20/14 15:12
Matrix: Soil/Solid (dry weight)
Solids (%): 84.0
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	12.3		1.18	0.366	mg/Kg	10		08/26/14 15:24
Chromium	31.3		0.473	0.142	mg/Kg	10		08/26/14 15:24
Mercury	18.9		0.945	0.284	mg/Kg	200		08/26/14 21:00
Nickel	44.5		0.236	0.0733	mg/Kg	10		08/26/14 15:24

Batch Information

Analytical Batch: MMS8655
Analytical Method: SW6020A
Analyst: ACF
Analytical Date/Time: 08/26/14 15:24
Container ID: 1143947005-A

Prep Batch: MXX28006
Prep Method: SW3050B
Prep Date/Time: 08/22/14 10:05
Prep Initial Wt./Vol.: 1.007 g
Prep Extract Vol: 50 mL

Analytical Batch: MMS8656
Analytical Method: SW6020A
Analyst: ACF
Analytical Date/Time: 08/26/14 21:00
Container ID: 1143947005-A

Prep Batch: MXX28006
Prep Method: SW3050B
Prep Date/Time: 08/22/14 10:05
Prep Initial Wt./Vol.: 1.007 g
Prep Extract Vol: 50 mL

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Results of **KRM14-06**

Client Sample ID: **KRM14-06**
Client Project ID: **Kolmakof Mine Site**
Lab Sample ID: 1143947006
Lab Project ID: 1143947

Collection Date: 08/19/14 15:41
Received Date: 08/20/14 15:12
Matrix: Soil/Solid (dry weight)
Solids (%): 84.1
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	9.67		1.17	0.362	mg/Kg	10		08/26/14 15:26
Chromium	27.9		0.468	0.140	mg/Kg	10		08/26/14 15:26
Mercury	176		9.35	2.81	mg/Kg	2000		08/26/14 21:03
Nickel	46.6		0.234	0.0725	mg/Kg	10		08/26/14 15:26

Batch Information

Analytical Batch: MMS8655
Analytical Method: SW6020A
Analyst: ACF
Analytical Date/Time: 08/26/14 15:26
Container ID: 1143947006-A

Prep Batch: MXX28006
Prep Method: SW3050B
Prep Date/Time: 08/22/14 10:05
Prep Initial Wt./Vol.: 1.017 g
Prep Extract Vol: 50 mL

Analytical Batch: MMS8656
Analytical Method: SW6020A
Analyst: ACF
Analytical Date/Time: 08/26/14 21:03
Container ID: 1143947006-A

Prep Batch: MXX28006
Prep Method: SW3050B
Prep Date/Time: 08/22/14 10:05
Prep Initial Wt./Vol.: 1.017 g
Prep Extract Vol: 50 mL

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Results of **KRM14-07**

Client Sample ID: **KRM14-07**
Client Project ID: **Kolmakof Mine Site**
Lab Sample ID: 1143947007
Lab Project ID: 1143947

Collection Date: 08/19/14 15:48
Received Date: 08/20/14 15:12
Matrix: Soil/Solid (dry weight)
Solids (%): 78.9
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	11.3		1.18	0.366	mg/Kg	10		08/26/14 15:29
Chromium	30.9		0.473	0.142	mg/Kg	10		08/26/14 15:29
Mercury	5.12		0.236	0.0709	mg/Kg	50		08/26/14 21:05
Nickel	36.4		0.236	0.0733	mg/Kg	10		08/26/14 15:29

Batch Information

Analytical Batch: MMS8655
Analytical Method: SW6020A
Analyst: ACF
Analytical Date/Time: 08/26/14 15:29
Container ID: 1143947007-A

Prep Batch: MXX28006
Prep Method: SW3050B
Prep Date/Time: 08/22/14 10:05
Prep Initial Wt./Vol.: 1.072 g
Prep Extract Vol: 50 mL

Analytical Batch: MMS8656
Analytical Method: SW6020A
Analyst: ACF
Analytical Date/Time: 08/26/14 21:05
Container ID: 1143947007-A

Prep Batch: MXX28006
Prep Method: SW3050B
Prep Date/Time: 08/22/14 10:05
Prep Initial Wt./Vol.: 1.072 g
Prep Extract Vol: 50 mL

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Method Blank

Blank ID: MB for HBN 1626052 [MXX/28006]
Blank Lab ID: 1228782

Matrix: Soil/Solid (dry weight)

QC for Samples:
1143947001, 1143947002, 1143947003, 1143947004, 1143947005, 1143947006, 1143947007

Results by **SW6020A**

Parameter	Results	LOQ/CL	DL	Units
Arsenic	0.500U	1.00	0.310	mg/Kg
Chromium	0.200U	0.400	0.120	mg/Kg
Mercury	0.0200U	0.0400	0.0120	mg/Kg
Nickel	0.100U	0.200	0.0620	mg/Kg

Batch Information

Analytical Batch: MMS8655
Analytical Method: SW6020A
Instrument: Perkin Elmer Sciex ICP-MS P3
Analyst: ACF
Analytical Date/Time: 8/26/2014 2:47:45PM

Prep Batch: MXX28006
Prep Method: SW3050B
Prep Date/Time: 8/22/2014 10:05:44AM
Prep Initial Wt./Vol.: 1 g
Prep Extract Vol: 50 mL

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Duplicate Sample Summary

Original Sample ID: 1143947001
Duplicate Sample ID: 1228784
Analysis Date: 08/26/2014 14:54
Matrix: Soil/Solid (dry weight)

QC for Samples:

1143947001, 1143947002, 1143947003, 1143947004, 1143947005, 1143947006, 1143947007

Results by **SW6020A**

NAME	Original (MXX28006	Duplicate (MXX28006)	RPD (%)	RPD CL
Mercury	4.96	3.83	25.90*	20.00

Batch Information

Analytical Batch: MMS8655
Analytical Method: SW6020A
Instrument: Perkin Elmer Sciex ICP-MS P3
Analyst: ACF

Prep Batch: Soil/Solid (dry weight)
Prep Method: MMS8655
Prep Date/Time: MXX28006

Print Date: 08/28/2014 3:49:01PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1143947 [MXX28006]
Blank Spike Lab ID: 1228783
Date Analyzed: 08/26/2014 14:50

Matrix: Soil/Solid (dry weight)

QC for Samples: 1143947001, 1143947002, 1143947003, 1143947004, 1143947005, 1143947006, 1143947007

Results by **SW6020A**

Blank Spike (mg/Kg)

Parameter	Spike	Result	Rec (%)	CL
Arsenic	50	49.0	98	(80-120)
Chromium	20	20.2	101	(80-120)
Mercury	0.5	0.476	95	(80-120)
Nickel	50	50.7	101	(80-120)

Batch Information

Analytical Batch: **MMS8655**
Analytical Method: **SW6020A**
Instrument: **Perkin Elmer Sciex ICP-MS P3**
Analyst: **ACF**

Prep Batch: **MXX28006**
Prep Method: **SW3050B**
Prep Date/Time: **08/22/2014 10:05**
Spike Init Wt./Vol.: 50 mg/Kg Extract Vol: 50 mL
Dup Init Wt./Vol.: Extract Vol:

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Matrix Spike Summary

Original Sample ID: 1143947001
MS Sample ID: 1228785 MS
MSD Sample ID: 1228786 MSD

Analysis Date: 08/26/2014 14:52
Analysis Date: 08/26/2014 14:57
Analysis Date: 08/26/2014 14:59
Matrix: Soil/Solid (dry weight)

QC for Samples: 1143947001, 1143947002, 1143947003, 1143947004, 1143947005, 1143947006, 1143947007

Results by **SW6020A**

		Matrix Spike (mg/Kg)				Spike Duplicate (mg/Kg)						
Parameter	Sample	Spike	Result	Rec (%)		Spike	Result	Rec (%)		CL	RPD (%)	RPD CL
Arsenic	8.08	58.6	70.4	106		59.3	71.3	107		80-120	1.28	(< 20)
Chromium	28.3	23.5	58.7	130	*	23.7	55.3	113		80-120	6.09	(< 20)
Mercury	4.96	0.586	4.06	-155	*	0.593	5.37	69	*	80-120	27.90	* (< 20)
Nickel	40.1	58.6	105	111		59.3	106	112		80-120	1.11	(< 20)

Batch Information

Analytical Batch: MMS8655
Analytical Method: SW6020A
Instrument: Perkin Elmer Sciex ICP-MS P3
Analyst: ACF
Analytical Date/Time: 8/26/2014 2:57:11PM

Prep Batch: MXX28006
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 8/22/2014 10:05:44AM
Prep Initial Wt./Vol.: 1.04g
Prep Extract Vol: 50.00mL

Print Date: 08/28/2014 3:49:04PM

Bench Spike Summary

Original Sample ID: 1143947001
MS Sample ID: 1228787 BND
MSD Sample ID:

Analysis Date: 08/26/2014 14:52
Analysis Date: 08/26/2014 15:01
Analysis Date:
Matrix: Soil/Solid (dry weight)

QC for Samples: 1143947001, 1143947002, 1143947003, 1143947004, 1143947005, 1143947006, 1143947007

Results by **SW6020A**

		Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Chromium	28.3	150	170	94				75-125		
Mercury	4.96	3.01	7.79	94				75-125		

Batch Information

Analytical Batch: MMS8655
Analytical Method: SW6020A
Instrument: Perkin Elmer Sciex ICP-MS P3
Analyst: ACF
Analytical Date/Time: 8/26/2014 3:01:54PM

Prep Batch: MXX28006
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 8/22/2014 10:05:44AM
Prep Initial Wt./Vol.: 1.02g
Prep Extract Vol: 50.00mL

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Method Blank

Blank ID: MB for HBN 1626043 [SPT/9429]
Blank Lab ID: 1228745

Matrix: Soil/Solid (dry weight)

QC for Samples:
1143947001, 1143947002, 1143947003, 1143947004, 1143947005, 1143947006, 1143947007

Results by **SM21 2540G**

Parameter	Results	LOQ/CL	DL	Units
Total Solids	100			%

Batch Information

Analytical Batch: SPT9429
Analytical Method: SM21 2540G
Instrument:
Analyst: MJN
Analytical Date/Time: 8/21/2014 7:05:00PM

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Duplicate Sample Summary

Original Sample ID: 1143960003
Duplicate Sample ID: 1228746

Analysis Date: 08/21/2014 19:05
Matrix: Soil/Solid (dry weight)

QC for Samples:

1143947001, 1143947002, 1143947003, 1143947004, 1143947005, 1143947006, 1143947007

Results by **SM21 2540G**

NAME	Original ()	Duplicate ()	RPD (%)	RPD CL
Total Solids	85.0	86.9	2.10	15.00

Batch Information

Analytical Batch: SPT9429
Analytical Method: SM21 2540G
Instrument:
Analyst: MJN

Print Date: 08/28/2014 3:49:06PM

SGS

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CHAIN OF CUSTODY RECC

1143947

Locations Nationwide

Alaska	Maryland
New Jersey	New York
North Carolina	Indiana
West Virgina	Kentucky

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Instructions: Sect... be filled out.
Omissions may delay the onset of analysis.

Page 1 of 1

Section 1

CLIENT: ECC

CONTACT: Don Maloney PHONE NO: (907) 830 1225

PROJECT NAME: Kolmakof mine Site PROJECT/ PWSID/ PERMIT#:

REPORTS TO: don@eccalaska.com E-MAIL:

INVOICE TO: ECC QUOTE #: 10382 P.O. #:

Section 3

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Type C = COMP G = GRAB MI = Multi Incre-mental Soils	Preservative: Total metals COLO Arsenic	Chromium	Mercury	Nickel	REMARKS/ LOC ID
1 A	KRM14-01	8/19/14	1515	Soil	1	G	X	X	X	X	
2 A	KRM14-02	8/19/14	1522		1	G					
3 A	KRM14-03	8/19/14	1528		1	G					
4 A	KRM14-04	8/19/14	1532		1	G					
5 A	KRM14-05	8/19/14	1540		1	G					
6 A	KRM14-06	8/19/14	1541		1	G					
7 A	KRM14-07	8/19/14	1548	↓	1	G	↓	↓	↓	↓	

Section 5

	Date	Time	
Relinquished By: (1)	8/20/14		Received By:
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date 8/20/14	Time 15:12	Received For Laboratory By:

Section 4

DOD Project? Yes (No)

Cooler ID:

Data Deliverable Requirements:

Requested Turnaround Time and/or Special Instructions:
Standard TAT

Temp Blank °C: 0.3°/#295
or Ambient [ ]
(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle)
INTACT BROKEN (ABSENT)
(See attached Sample Receipt Form)

[ ] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[ ] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

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1143947

SAMPLE RECEIPT FORM

Review Criteria:	Condition:	Comments/Action Taken:
Were **custody seals** intact? Note # & location, if applicable. COC accompanied samples?	Yes No (N/A) (Yes) No	☐ *Exemption permitted if sampler hand carries/delivers.*
Temperature blank compliant* (i.e., 0-6°C after CF)? *If >6°C, were samples collected <8 hours ago?* *If <0°C, were all sample containers ice free?* Cooler ID: 1 @ 0.3 w/ Therm.ID: 205 Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled."	(Yes) No Yes No (N/A) Yes No (N/A)	☐ *Exemption permitted if chilled & collected <8 hrs ago.* *Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.*
Delivery method (specify all that apply): (Client) (hand carried) USPS Lynden AK Air Alert Courier UPS FedEx RAVN C&D Delivery Carlile Pen Air Warp Speed Other: _____ → *For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?*	Tracking/AB # or see attached or N/A Yes No (N/A)	
→ For samples received with payment, note amount ($) and whether cash / check / CC (**circle one**) was received.		
→ For samples **received in FBKS**, ANCH staff will verify all criteria are reviewed. SRF initiated in FBKS by:		
Were samples received within hold time? Do samples **match COC*** (i.e., sample IDs, dates/times collected)? Were analyses requested unambiguous?	(Yes) No N/A (Yes) No N/A (Yes) No N/A	*Note: Refer to form F-083 "Sample Guide" for hold times.* *Note: If times differ <1hr, record details and login per COC.*
Were samples in **good condition** (no leaks/cracks/breakage)? Packing material used (specify all that apply): Bubble Wrap Separate plastic bags Vermiculite Other:	(Yes) No	
Were **proper containers** (type/mass/volume/preservative*) used? Were **Trip Blanks** (i.e., VOAs, LL-Hg) in cooler with samples? Were all VOA vials **free of headspace** (i.e., bubbles ≤6 mm)? Were all soil VOAs **field extracted** with MeOH+BFB?	(Yes) No N/A Yes No (N/A) Yes No (N/A) Yes No (N/A)	☐ *Exemption permitted for metals (e.g., 200.8/6020A).*
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was **pH verified and compliant**? If pH was adjusted, were bottles flagged (i.e., stickers)?	Yes No (N/A) Yes No (N/A)	
For **special handling** (e.g., "MI" soils, foreign soils, lab filter for dissolved…, lab extract for volatiles, Ref Lab, limited volume), were bottles/paperwork flagged (e.g., sticker)?	Yes No (N/A)	
For **RUSH/SHORT Hold Time**, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	Yes No (N/A)	
For **SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP**, were containers / paperwork flagged accordingly?	Yes No (N/A)	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	Yes No (N/A)	SRF Completed by: [signature] PM notified: N/A
Was **PEER REVIEW** of ***sample numbering/labeling completed?***	Yes No (N/A)	Peer Reviewed by: N/A
Additional notes (if applicable):		

Note to Client: *Any "no" circled above indicates non-compliance with standard procedures and may impact data quality.*

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1143947001-A	No Preservative Required	OK			
1143947002-A	No Preservative Required	OK			
1143947003-A	No Preservative Required	OK			
1143947004-A	No Preservative Required	OK			
1143947005-A	No Preservative Required	OK			
1143947006-A	No Preservative Required	OK			
1143947007-A	No Preservative Required	OK			

Container Condition Glossary

OK - The container was received at an acceptable pH for the analysis requested.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

BU - The container was received with headspace greater than 6mm.

Laboratory Report of Analysis

To: Environmental Comp. Consultants (ECC)
1500 Post Road
Anchorage, AK 99501
(907)830-1225

Report Number: **1143790**

Client Project: **Kolmakof Mine Site**

Dear Don Maloney,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Forest at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

_____

Forest Taylor Date
Project Manager
Forest.Taylor@sgs.com

Print Date: 08/14/2014 1:29:21PM

Case Narrative

SGS Client: **Environmental Comp. Consultants (ECC)**
SGS Project: **1143790**
Project Name/Site: **Kolmakof Mine Site**
Project Contact: **Don Maloney**

Refer to sample receipt form for information on sample condition.

1143790001MS (1226575) MS

6020A - Metals - MS/MSD recovery for mercury was outside of acceptance criteria. Post digestion spike was successful.

1143790001MSD (1226576) MSD

6020A - Metals - MS/MSD recovery for mercury was outside of acceptance criteria. Post digestion spike was successful.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

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Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<http://www.sgs.com/terms_and_conditions.htm>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content.
All DRO/RRO analyses are integrated per SOP.

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
KTM14-01	1143790001	08/12/2014	08/13/2014	Soil/Solid (dry weight)
KTM14-02	1143790002	08/12/2014	08/13/2014	Soil/Solid (dry weight)
KTM14-03	1143790003	08/12/2014	08/13/2014	Soil/Solid (dry weight)
KTM14-04	1143790004	08/12/2014	08/13/2014	Soil/Solid (dry weight)
KTM14-05	1143790005	08/12/2014	08/13/2014	Soil/Solid (dry weight)

Method	Method Description
SW6020A	Metals by ICP-MS (S)
SM21 2540G	Percent Solids SM2540G

Print Date: 08/14/2014 1:29:25PM

Detectable Results Summary

Client Sample ID: **KTM14-01**
Lab Sample ID: 1143790001
Metals by ICP/MS

Parameter	Result	Units
Arsenic	9.57	mg/Kg
Chromium	27.7	mg/Kg
Mercury	3.06	mg/Kg
Nickel	21.5	mg/Kg

Client Sample ID: **KTM14-02**
Lab Sample ID: 1143790002
Metals by ICP/MS

Parameter	Result	Units
Arsenic	8.45	mg/Kg
Chromium	30.7	mg/Kg
Mercury	4.17	mg/Kg
Nickel	28.7	mg/Kg

Client Sample ID: **KTM14-03**
Lab Sample ID: 1143790003
Metals by ICP/MS

Parameter	Result	Units
Arsenic	8.86	mg/Kg
Chromium	29.0	mg/Kg
Mercury	3.16	mg/Kg
Nickel	27.5	mg/Kg

Client Sample ID: **KTM14-04**
Lab Sample ID: 1143790004
Metals by ICP/MS

Parameter	Result	Units
Arsenic	9.88	mg/Kg
Chromium	28.5	mg/Kg
Mercury	3.32	mg/Kg
Nickel	29.3	mg/Kg

Client Sample ID: **KTM14-05**
Lab Sample ID: 1143790005
Metals by ICP/MS

Parameter	Result	Units
Arsenic	8.15	mg/Kg
Chromium	24.4	mg/Kg
Mercury	1.49	mg/Kg
Nickel	28.2	mg/Kg

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Results of **KTM14-01**

Client Sample ID: **KTM14-01**
Client Project ID: **Kolmakof Mine Site**
Lab Sample ID: 1143790001
Lab Project ID: 1143790

Collection Date: 08/12/14 17:17
Received Date: 08/13/14 14:26
Matrix: Soil/Solid (dry weight)
Solids (%): 81.7
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	9.57		1.22	0.377	mg/Kg	10		08/13/14 20:39
Chromium	27.7		0.487	0.146	mg/Kg	10		08/13/14 20:39
Mercury	3.06		0.0487	0.0146	mg/Kg	10		08/13/14 20:39
Nickel	21.5		0.243	0.0754	mg/Kg	10		08/13/14 20:39

Batch Information

Analytical Batch: MMS8638
Analytical Method: SW6020A
Analyst: ACF
Analytical Date/Time: 08/13/14 20:39
Container ID: 1143790001-A

Prep Batch: MXX27964
Prep Method: SW3050B
Prep Date/Time: 08/13/14 15:15
Prep Initial Wt./Vol.: 1.006 g
Prep Extract Vol: 50 mL

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Results of **KTM14-02**

Client Sample ID: **KTM14-02**
Client Project ID: **Kolmakof Mine Site**
Lab Sample ID: 1143790002
Lab Project ID: 1143790

Collection Date: 08/12/14 17:20
Received Date: 08/13/14 14:26
Matrix: Soil/Solid (dry weight)
Solids (%): 80.1
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	8.45		1.14	0.353	mg/Kg	10		08/13/14 21:01
Chromium	30.7		0.456	0.137	mg/Kg	10		08/13/14 21:01
Mercury	4.17		0.0456	0.0137	mg/Kg	10		08/13/14 21:01
Nickel	28.7		0.228	0.0706	mg/Kg	10		08/13/14 21:01

Batch Information

Analytical Batch: MMS8638
Analytical Method: SW6020A
Analyst: ACF
Analytical Date/Time: 08/13/14 21:01
Container ID: 1143790002-A

Prep Batch: MXX27964
Prep Method: SW3050B
Prep Date/Time: 08/13/14 15:15
Prep Initial Wt./Vol.: 1.096 g
Prep Extract Vol: 50 mL

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Results of **KTM14-03**

Client Sample ID: **KTM14-03**
Client Project ID: **Kolmakof Mine Site**
Lab Sample ID: 1143790003
Lab Project ID: 1143790

Collection Date: 08/12/14 17:21
Received Date: 08/13/14 14:26
Matrix: Soil/Solid (dry weight)
Solids (%): 80.3
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	8.86		1.16	0.360	mg/Kg	10		08/13/14 21:03
Chromium	29.0		0.464	0.139	mg/Kg	10		08/13/14 21:03
Mercury	3.16		0.0464	0.0139	mg/Kg	10		08/13/14 21:03
Nickel	27.5		0.232	0.0719	mg/Kg	10		08/13/14 21:03

Batch Information

Analytical Batch: MMS8638
Analytical Method: SW6020A
Analyst: ACF
Analytical Date/Time: 08/13/14 21:03
Container ID: 1143790003-A

Prep Batch: MXX27964
Prep Method: SW3050B
Prep Date/Time: 08/13/14 15:15
Prep Initial Wt./Vol.: 1.074 g
Prep Extract Vol: 50 mL

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Results of **KTM14-04**

Client Sample ID: **KTM14-04**
Client Project ID: **Kolmakof Mine Site**
Lab Sample ID: 1143790004
Lab Project ID: 1143790

Collection Date: 08/12/14 17:26
Received Date: 08/13/14 14:26
Matrix: Soil/Solid (dry weight)
Solids (%): 83.6
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	9.88		1.15	0.356	mg/Kg	10		08/13/14 21:05
Chromium	28.5		0.459	0.138	mg/Kg	10		08/13/14 21:05
Mercury	3.32		0.0459	0.0138	mg/Kg	10		08/13/14 21:05
Nickel	29.3		0.229	0.0711	mg/Kg	10		08/13/14 21:05

Batch Information

Analytical Batch: MMS8638
Analytical Method: SW6020A
Analyst: ACF
Analytical Date/Time: 08/13/14 21:05
Container ID: 1143790004-A

Prep Batch: MXX27964
Prep Method: SW3050B
Prep Date/Time: 08/13/14 15:15
Prep Initial Wt./Vol.: 1.043 g
Prep Extract Vol: 50 mL

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t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **KTM14-05**

Client Sample ID: **KTM14-05**
Client Project ID: **Kolmakof Mine Site**
Lab Sample ID: 1143790005
Lab Project ID: 1143790

Collection Date: 08/12/14 17:30
Received Date: 08/13/14 14:26
Matrix: Soil/Solid (dry weight)
Solids (%): 82.0
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	8.15		1.10	0.340	mg/Kg	10		08/13/14 21:08
Chromium	24.4		0.438	0.132	mg/Kg	10		08/13/14 21:08
Mercury	1.49		0.0438	0.0132	mg/Kg	10		08/13/14 21:08
Nickel	28.2		0.219	0.0680	mg/Kg	10		08/13/14 21:08

Batch Information

Analytical Batch: MMS8638
Analytical Method: SW6020A
Analyst: ACF
Analytical Date/Time: 08/13/14 21:08
Container ID: 1143790005-A

Prep Batch: MXX27964
Prep Method: SW3050B
Prep Date/Time: 08/13/14 15:15
Prep Initial Wt./Vol.: 1.112 g
Prep Extract Vol: 50 mL

Print Date: 08/14/2014 1:29:26PM

Method Blank

Blank ID: MB for HBN 1625524 [MXX/27964]
Blank Lab ID: 1226572

Matrix: Soil/Solid (dry weight)

QC for Samples:
1143790001, 1143790002, 1143790003, 1143790004, 1143790005

Results by **SW6020A**

Parameter	Results	LOQ/CL	DL	Units
Arsenic	0.500U	1.00	0.310	mg/Kg
Chromium	0.200U	0.400	0.120	mg/Kg
Mercury	0.0200U	0.0400	0.0120	mg/Kg
Nickel	0.100U	0.200	0.0620	mg/Kg

Batch Information

Analytical Batch: MMS8638
Analytical Method: SW6020A
Instrument: Perkin Elmer Sciex ICP-MS P3
Analyst: ACF
Analytical Date/Time: 8/13/2014 8:33:55PM

Prep Batch: MXX27964
Prep Method: SW3050B
Prep Date/Time: 8/13/2014 3:15:44PM
Prep Initial Wt./Vol.: 1 g
Prep Extract Vol: 50 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1143790 [MXX27964]
Blank Spike Lab ID: 1226573
Date Analyzed: 08/13/2014 20:36

Matrix: Soil/Solid (dry weight)

QC for Samples: 1143790001, 1143790002, 1143790003, 1143790004, 1143790005

Results by **SW6020A**

Blank Spike (mg/Kg)

Parameter	Spike	Result	Rec (%)	CL
Arsenic	50	48.8	98	(80-120)
Chromium	20	20.5	102	(80-120)
Mercury	0.5	0.511	102	(80-120)
Nickel	50	50.7	101	(80-120)

Batch Information

Analytical Batch: **MMS8638**
Analytical Method: **SW6020A**
Instrument: **Perkin Elmer Sciex ICP-MS P3**
Analyst: **ACF**

Prep Batch: **MXX27964**
Prep Method: **SW3050B**
Prep Date/Time: **08/13/2014 15:15**
Spike Init Wt./Vol.: 50 mg/Kg Extract Vol: 50 mL
Dup Init Wt./Vol.: Extract Vol:

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Matrix Spike Summary

Original Sample ID: 1143790001
MS Sample ID: 1226575 MS
MSD Sample ID: 1226576 MSD

Analysis Date: 08/13/2014 20:39
Analysis Date: 08/13/2014 20:43
Analysis Date: 08/13/2014 20:46
Matrix: Soil/Solid (dry weight)

QC for Samples: 1143790001, 1143790002, 1143790003, 1143790004, 1143790005

Results by **SW6020A**

		Matrix Spike (mg/Kg)				Spike Duplicate (mg/Kg)					
Parameter	Sample	Spike	Result	Rec (%)		Spike	Result	Rec (%)		CL	RPD (%)	RPD CL
Arsenic	9.57	57.0	64.3	96		60.5	68.4	97		80-120	6.28	(< 20)
Chromium	27.7	22.8	53.7	114		24.2	55.9	117		80-120	4.16	(< 20)
Mercury	3.06	0.570	3.24	32	*	0.605	3.83	127	*	80-120	16.60	(< 20)
Nickel	21.5	57.0	80.2	103		60.5	85.2	105		80-120	6.08	(< 20)

Batch Information

Analytical Batch: MMS8638
Analytical Method: SW6020A
Instrument: Perkin Elmer Sciex ICP-MS P3
Analyst: ACF
Analytical Date/Time: 8/13/2014 8:43:48PM

Prep Batch: MXX27964
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 8/13/2014 3:15:44PM
Prep Initial Wt./Vol.: 1.07g
Prep Extract Vol: 50.00mL

Print Date: 08/14/2014 1:29:30PM

Bench Spike Summary

Original Sample ID: 1143790001
MS Sample ID: 1226577 BND
MSD Sample ID:

Analysis Date: 08/13/2014 20:39
Analysis Date: 08/13/2014 20:48
Analysis Date:
Matrix: Soil/Solid (dry weight)

QC for Samples: 1143790001, 1143790002, 1143790003, 1143790004, 1143790005

Results by **SW6020A**

		Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Mercury	3.06	3.05	5.96	95				75-125		

Batch Information

Analytical Batch: MMS8638
Analytical Method: SW6020A
Instrument: Perkin Elmer Sciex ICP-MS P3
Analyst: ACF
Analytical Date/Time: 8/13/2014 8:48:31PM

Prep Batch: MXX27964
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 8/13/2014 3:15:44PM
Prep Initial Wt./Vol.: 1.01g
Prep Extract Vol: 50.00mL

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Method Blank

Blank ID: MB for HBN 1625550 [SPT/9422]
Blank Lab ID: 1226694

Matrix: Soil/Solid (dry weight)

QC for Samples:
1143790001, 1143790002, 1143790003, 1143790004, 1143790005

Results by **SM21 2540G**

Parameter	Results	LOQ/CL	DL	Units
Total Solids	100			%

Batch Information

Analytical Batch: SPT9422
Analytical Method: SM21 2540G
Instrument:
Analyst: MJN
Analytical Date/Time: 8/13/2014 7:50:00PM

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Duplicate Sample Summary

Original Sample ID: 1143746015
Duplicate Sample ID: 1226696
QC for Samples:

Analysis Date: 08/13/2014 19:50
Matrix: Soil/Solid (dry weight)

Results by **SM21 2540G**

NAME	Original ()	Duplicate ()	RPD (%)	RPD CL
Total Solids	87.1	87.1	0.04	15.00

Batch Information

Analytical Batch: SPT9422
Analytical Method: SM21 2540G
Instrument:
Analyst: MJN

Print Date: 08/14/2014 1:29:31PM

Duplicate Sample Summary

Original Sample ID: 1143760009
Duplicate Sample ID: 1226697
QC for Samples:
1143790001, 1143790002, 1143790003, 1143790004, 1143790005

Analysis Date: 08/13/2014 19:50
Matrix: Soil/Solid (dry weight)

Results by **SM21 2540G**

NAME	Original ()	Duplicate ()	RPD (%)	RPD CL
Total Solids	66.8	67.5	1.10	15.00

Batch Information

Analytical Batch: SPT9422
Analytical Method: SM21 2540G
Instrument:
Analyst: MJN

Print Date: 08/14/2014 1:29:31PM

SGS

SGS North America Inc.
CHAIN OF CUSTODY RECORD

1143790

onwide
Maryland
New York
Indiana
Kentucky
gs.com

Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

Page 1 of 1

Section 1

CLIENT: ECC

CONTACT: Don Maloney — PHONE NO: (907) 545-6719

PROJECT NAME: Kolmakof Mine Site — PROJECT/ PWSID/ PERMIT#:

REPORTS TO: don@eccalaska.com — E-MAIL:

INVOICE TO: ECC — QUOTE #: Q# 10382 — P.O. #:

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	Section 3: # CONTAINERS	Section 3: Type C = COMP G = GRAB MI = Multi Incremental Soils	Preservative: Total As, Cr, Hg, Ni by 6020a Total Metals	Preservative: Arsenic	Preservative: Chromium	Preservative: Mercury	Preservative: Nickel	REMARKS/ LOC ID
(1) A	KTM14-01	08/12/14	1717	Soil	1	G		X	X	X	X	
(2) A	KTM14-02	08/12/14	1720	"	1	"		X	X	X	X	
(3) A	KTM14-03	08/12/14	1721	"	1	"		X	X	X	X	
(4) A	KTM14-04	08/12/14	1726	"	1	"		X	X	X	X	
(5) A	KTM14-05	08/12/14	1730	"	1	"		X	X	X	X	

Section 5

	Date	Time	
Relinquished By: (1) D Maloney	8/13/14	0856	Received By:
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	8/13/14	1426	Received For Laboratory By:

Section 4

DOD Project? Yes (No)

Cooler ID:

Data Deliverable Requirements:

Requested Turnaround Time and/or Special Instructions:
24-Hour RUSH all samples.

Temp Blank °C: 1.0 #205
or Ambient [ ]
(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle)
INTACT BROKEN ABSENT
(See attached Sample Receipt Form)

[ ] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[ ] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

SGS

1143790

SAMPLE RECEIPT FORM

Review Criteria:	Condition:	Comments/Action Taken:
Were **custody seals** intact? Note # & location, if applicable. COC accompanied samples?	(Yes) No N/A (Yes) No	☐ *Exemption permitted if sampler hand carries/delivers.* IF
Temperature blank compliant* (i.e., 0-6°C after CF)? *If >6°C, were samples collected <8 hours ago?* *If <0°C, were all sample containers ice free?* Cooler ID: 1 @ 1.0 w/ Therm.ID: 205 Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled."	(Yes) No Yes No (N/A) Yes No (N/A)	☐ *Exemption permitted if chilled & collected <8 hrs ago.* *Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.*
Delivery method (specify all that apply): (Client (hand carried)) USPS Lynden AK Air (Alert Courier) UPS FedEx RAVN C&D Delivery Carlile Pen Air Warp Speed Other: _____ → *For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?*	Tracking/AB # or see attached or N/A (Yes) No N/A	
→ For samples received with payment, note amount ($) and whether cash / check / CC (**circle one**) was received.		
→ For samples **received in FBKS**, ANCH staff will verify all criteria are reviewed. SRF initiated in FBKS by:		
Were samples received within hold time? Do samples **match COC*** (i.e., sample IDs, dates/times collected)? Were analyses requested unambiguous?	(Yes) No N/A (Yes) No N/A (Yes) No N/A	*Note: Refer to form F-083 "Sample Guide" for hold times.* *Note: If times differ <1hr, record details and login per COC.*
Were samples in **good condition** (no leaks/cracks/breakage)? Packing material used (specify all that apply): Bubble Wrap Separate plastic bags Vermiculite Other:	(Yes) No	
Were **proper containers** (type/mass/volume/preservative*) used? Were **Trip Blanks** (i.e., VOAs, LL-Hg) in cooler with samples? Were all VOA vials **free of headspace** (i.e., bubbles ≤6 mm)? Were all soil VOAs **field extracted** with MeOH+BFB?	(Yes) No N/A Yes No (N/A) Yes No (N/A) Yes No (N/A)	☐ *Exemption permitted for metals (e.g., 200.8/6020A).*
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was **pH verified and compliant**? If pH was adjusted, were bottles flagged (i.e., stickers)?	Yes No (N/A) Yes No (N/A)	
For **special handling** (e.g., "MI" soils, foreign soils, lab filter for dissolved..., lab extract for volatiles, Ref Lab, limited volume), were bottles/paperwork flagged (e.g., sticker)?	Yes No (N/A)	
For **RUSH/SHORT Hold Time**, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	(Yes) No N/A	Due 8/14/14 COB
For **SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP**, were containers / paperwork flagged accordingly?	Yes No (N/A)	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	Yes No (N/A)	SRF Completed by: [signature] PM notified: N/A
Was **PEER REVIEW** of ***sample numbering/labeling completed?***	Yes No (N/A)	Peer Reviewed by: N/A
Additional notes (if applicable):		

Note to Client: *Any "no" circled above indicates non-compliance with standard procedures and may impact data quality.*

AIRPORT OF DEPARTURE ANI 08/13/14 09:14 002241 **808 6674224** **Frgt**

SHIPPER'S NAME, ADDRESS & PHONE

ECC ECC, INC.
1500 N POST RD,
ANIAK AK 9076440428

SHIPPER'S ACCOUNT NUMBER
E6175

NOT NEGOTIABLE
AIR WAYBILL
(AIR CONSIGNMENT NOTE)

Ravn ALASKA
4700 Old International Airport Road
Anchorage, Alaska 99502

It is agreed that the goods described herein are accepted in apparent good order and condition (except as noted) for carriage SUBJECT TO THE CONDITIONS OF CONTRACT AS LISTED IN THE COMPANIES TARIFFS. THE SHIPPER'S ATTENTION IS DRAWN TO THE NOTICE CONCERNING CARRIERS' LIMITATION OF LIABILITY. Shipper may increase such limitation of liability by declaring a higher value for carriage and paying a supplemental charge if required.

Received in Good Condition

Place Date

TO EXPEDITE MOVEMENT, SHIPMENT MAY BE DIVERTED TO [illegible] RULE UNLESS SHIPPER GIVES OTHER INSTRUCT

CONSIGNEE'S NAME, ADDRESS & PHONE

SGS LABS

ANCHORAGE AK 9075622343

CONSIGNEE'S ACCOUNT NUMBER

1143790

ISSUING CARRIER'S AGENT NAME, CITY & PHONE

ALSO NOTIFY NAME & ADDRESS

AGENT'S IATA CODE

ACCOUNT NO.

ACCOUNTING INFORMATION 6874020
Acc#: E6175 ECC, INC.

AIRPORT OF DEPARTURE
Aniak

Declared Value $ 0.00

Insured Amount $ 0.00

ROUTING AND DESTINATION

TO	BY FIRST CARRIER	TO	BY	TO	BY

AIRPORT OF DESTINATION
Anchorage

FOR CARRIER USE ONLY
FLIGHT/DATE 0
FLIGHT/DATE

COMMENTS

No. Of Pieces Rcp	Gross Weight	kg lb	Rate Class / Commodity Item No.	Chargeable Weight	Rate/Charge	Total	Nature and Quantity of Goods
1	12	lb	F	1	$29.18	$29.18	soil samples
1	12					$29.18	

PREPAID	WEIGHT CHARGE	COLLECT
$29.18		

VALUATION CHARGE
$0.00

FEDERAL EXCISE TAX
$1.82

TOTAL OTHER CHARGES DUE AGENT
$0.00

TOTAL OTHER CHARGES DUE CARRIER
$0.00

TOTAL PREPAID	TOTAL COLLECT
$31.00	

OTHER CHARGES AND DESCRIPTION

AMOUNT	DESCRIPTION

HAZMAT
No

STATION NUMBERS

ANCHORAGE - (907) 243-2761
ANIAK - (907) 675-4572
BARROW - (907) 852-5300
BETHEL -(907) 543-3825
DEADHORSE - (907) 659-9222
FAIRBANKS - (907) 450-7250
GALENA -(907) 656-1875
KOTZEBUE - (907) 442-3020
NOME - (907) 443-7595
ST. MARYS - (907) 438-2247
UNALAKLEET - (907) 624-3595

Printed at 09:16:31 on 8/13/2014 at ANI-1 10.6.0.6

Shipper certifies that the particulars on the face hereof are correct, agrees to the CONDITIONS AS LISTED IN THE COMPANIES TARIFFS, accepts that carrier's liability is limited as stated in the companies tariffs and accepts such value unless a higher value for carriage is declared on the face hereof subject to an additional charge and that insofar as any part of the consignment contains restricted articles, such part is described by name and is in proper condition for carriage by air according to applicable national governmental regulations, and for international shipments, the current International Air Transport Association's Restricted Articles Regulations.

Printed Name and Title

Signature

Consignee Copy

Alert Expeditors Inc.
DBA/Petroleum Courier Service

Citywide Delivery • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

#347424

Date 8.13.14
From ECC ECC
To SGS

Collect ☐	Prepay ☐ Account ☐	Advance Charges ☐
Job #	PO#	

1 Cooler

808 66744224

1143790

Shipped Signature

Total Charge 1426

Received By:

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1143790001-A	No Preservative Required	OK			
1143790002-A	No Preservative Required	OK			
1143790003-A	No Preservative Required	OK			
1143790004-A	No Preservative Required	OK			
1143790005-A	No Preservative Required	OK			

Container Condition Glossary

OK - The container was received at an acceptable pH for the analysis requested.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

BU - The container was received with headspace greater than 6mm.

Laboratory Report of Analysis

To: Environmental Comp. Consultants (ECC)
1500 Post Road
Anchorage, AK 99501
(907)830-1225

Report Number: **1143831**

Client Project: **Kolmakof Mine Site**

Dear Don Maloney,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Forest at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

_____

Forest Taylor Date
Project Manager
Forest.Taylor@sgs.com

SGS North America Inc. 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Case Narrative

SGS Client: **Environmental Comp. Consultants (ECC)**
SGS Project: **1143831**
Project Name/Site: **Kolmakof Mine Site**
Project Contact: **Don Maloney**

Refer to sample receipt form for information on sample condition.

KMSLS14-01 (1143831001) PS

AK102 - The pattern is consistent with a weathered middle distillate and an unknown hydrocarbon with several peaks.

KMSLS14-02 (1143831002) PS

AK102 - The pattern is consistent with a weathered middle distillate and an unknown hydrocarbon with several peaks.

KMSLS14-03 (1143831003) PS

AK102 - The pattern is consistent with a weathered middle distillate and an unknown hydrocarbon with several peaks.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

SGS North America Inc.
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Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<http://www.sgs.com/terms_and_conditions.htm>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

SGS North America Inc.
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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
KMSLS14-01	1143831001	08/12/2014	08/14/2014	Soil/Solid (dry weight)
KMSLS14-02	1143831002	08/12/2014	08/14/2014	Soil/Solid (dry weight)
KMSLS14-03	1143831003	08/12/2014	08/14/2014	Soil/Solid (dry weight)

Method	Method Description
AK102	Diesel Range Organics (S)
SM21 2540G	Percent Solids SM2540G

SGS North America Inc.
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Detectable Results Summary

Client Sample ID: **KMSLS14-01**
Lab Sample ID: 1143831001
Semivolatile Organic Fuels

Parameter	Result	Units
Diesel Range Organics	106	mg/Kg

Client Sample ID: **KMSLS14-02**
Lab Sample ID: 1143831002
Semivolatile Organic Fuels

Parameter	Result	Units
Diesel Range Organics	139	mg/Kg

Client Sample ID: **KMSLS14-03**
Lab Sample ID: 1143831003
Semivolatile Organic Fuels

Parameter	Result	Units
Diesel Range Organics	111	mg/Kg

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
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Results of **KMSLS14-01**

Client Sample ID: **KMSLS14-01**
Client Project ID: **Kolmakof Mine Site**
Lab Sample ID: 1143831001
Lab Project ID: 1143831

Collection Date: 08/12/14 12:02
Received Date: 08/14/14 16:33
Matrix: Soil/Solid (dry weight)
Solids (%): 87.2
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	106		21.2	6.58	mg/Kg	1		08/19/14 19:00
Surrogates								
5a Androstane	83.8		50-150		%	1		08/19/14 19:00

Batch Information

Analytical Batch: XFC11514
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 08/19/14 19:00
Container ID: 1143831001-B

Prep Batch: XXX31744
Prep Method: SW3550C
Prep Date/Time: 08/18/14 21:10
Prep Initial Wt./Vol.: 32.422 g
Prep Extract Vol: 1 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **KMSLS14-02**

Client Sample ID: **KMSLS14-02**
Client Project ID: **Kolmakof Mine Site**
Lab Sample ID: 1143831002
Lab Project ID: 1143831

Collection Date: 08/12/14 12:35
Received Date: 08/14/14 16:33
Matrix: Soil/Solid (dry weight)
Solids (%): 86.0
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	139		21.7	6.74	mg/Kg	1		08/19/14 19:21
Surrogates								
5a Androstane	88.8		50-150		%	1		08/19/14 19:21

Batch Information

Analytical Batch: XFC11514
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 08/19/14 19:21
Container ID: 1143831002-B

Prep Batch: XXX31744
Prep Method: SW3550C
Prep Date/Time: 08/18/14 21:10
Prep Initial Wt./Vol.: 32.077 g
Prep Extract Vol: 1 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **KMSLS14-03**

Client Sample ID: **KMSLS14-03**
Client Project ID: **Kolmakof Mine Site**
Lab Sample ID: 1143831003
Lab Project ID: 1143831

Collection Date: 08/12/14 13:05
Received Date: 08/14/14 16:33
Matrix: Soil/Solid (dry weight)
Solids (%): 87.6
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	111		21.7	6.73	mg/Kg	1		08/19/14 19:41
Surrogates								
5a Androstane	84.5		50-150		%	1		08/19/14 19:41

Batch Information

Analytical Batch: XFC11514
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 08/19/14 19:41
Container ID: 1143831003-B

Prep Batch: XXX31744
Prep Method: SW3550C
Prep Date/Time: 08/18/14 21:10
Prep Initial Wt./Vol.: 31.564 g
Prep Extract Vol: 1 mL

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200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Method Blank

Blank ID: MB for HBN 1625807 [SPT/9426]
Blank Lab ID: 1227832

Matrix: Soil/Solid (dry weight)

QC for Samples:
1143831001, 1143831002, 1143831003

Results by **SM21 2540G**

Parameter	Results	LOQ/CL	DL	Units
Total Solids	100			%

Batch Information

Analytical Batch: SPT9426
Analytical Method: SM21 2540G
Instrument:
Analyst: MJN
Analytical Date/Time: 8/18/2014 7:00:00PM

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Duplicate Sample Summary

Original Sample ID: 1143866018
Duplicate Sample ID: 1227833
QC for Samples:
1143831001, 1143831002, 1143831003

Analysis Date: 08/18/2014 19:00
Matrix: Soil/Solid (dry weight)

Results by **SM21 2540G**

NAME	Original ()	Duplicate ()	RPD (%)	RPD CL
Total Solids	86.9	85.2	2.00	15.00

Batch Information

Analytical Batch: SPT9426
Analytical Method: SM21 2540G
Instrument:
Analyst: MJN

Print Date: 08/21/2014 10:23:15AM

Method Blank

Blank ID: MB for HBN 1625798 [XXX/31744]
Blank Lab ID: 1227782

Matrix: Soil/Solid (dry weight)

QC for Samples:
1143831001, 1143831002, 1143831003

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane	82.1	60-120		%

Batch Information

Analytical Batch: XFC11514
Analytical Method: AK102
Instrument: HP 7890A FID SV E F
Analyst: EAB
Analytical Date/Time: 8/19/2014 5:38:00PM

Prep Batch: XXX31744
Prep Method: SW3550C
Prep Date/Time: 8/18/2014 9:10:44PM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

Print Date: 08/21/2014 10:23:18AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1143831 [XXX31744]
Blank Spike Lab ID: 1227783
Date Analyzed: 08/19/2014 17:58

Spike Duplicate ID: LCSD for HBN 1143831 [XXX31744]
Spike Duplicate Lab ID: 1227784
Matrix: Soil/Solid (dry weight)

QC for Samples: 1143831001, 1143831002, 1143831003

Results by **AK102**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	167	159	95	167	154	93	(75-125)	2.90	(< 20)
Surrogates									
5a Androstane	3.33		85	3.33		85	(60-120)	0.05	

Batch Information

Analytical Batch: **XFC11514**
Analytical Method: **AK102**
Instrument: **HP 7890A FID SV E F**
Analyst: **EAB**

Prep Batch: **XXX31744**
Prep Method: **SW3550C**
Prep Date/Time: **08/18/2014 21:10**
Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
Dup Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

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t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

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SGS North America Inc.
CHAIN OF CUSTODY RECORD

1143831

Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

Page 1 of 1

Section 1

CLIENT: ECC

CONTACT: Don Malony PHONE NO: (907) 545-6719

PROJECT NAME: Kolmakof Mine site PROJECT/ PWSID/ PERMIT#:

REPORTS TO: don@eccalaska.com E-MAIL:

INVOICE TO: ECC QUOTE #:

P.O. #: 10382

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Type C = COMP G = GRAB MI = Multi Incremental Soils	Preservative: DRO AK102	REMARKS/ LOC ID
1 A-E	KMSLS14-01	8/12/14	1202	Soil	1	MI		Multi-incremental Soil samples. unsieved.
2 A-E	KMSLS14-02	8/12/14	1235	Soil	1	MI		
3 A-E	KMSLS14-03	8/12/14	1305	Soil	1	MI		

Section 5

	Date	Time	
Relinquished By: (1)	8/13/14	1055	Received By:
Relinquished By: (2)			Received By:
Relinquished By: (3)			Received By:
Relinquished By: (4)	8/14/14	16:33	Received For Laboratory By:

Section 4

DOD Project? Yes (No)

Cooler ID:

Data Deliverable Requirements:

Requested Turnaround Time and/or Special Instructions:
MI Samples need to be sieved at lab.
STd TAT

Temp Blank °C: 16 #71

or Ambient [ ]

(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle)
INTACT BROKEN ABSENT
(See attached Sample Receipt Form)

[ ] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[ ] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

http://www.sgs.com/terms-and-conditions

SGS

1143831

SAMPLE RECEIPT FORM

Review Criteria:	Condition:	Comments/Action Taken:
Were **custody seals** intact? Note # & location, if applicable. COC accompanied samples?	(Yes) No N/A (Yes) No	☐ *Exemption permitted if sampler hand carries/delivers.* / F
Temperature blank compliant* (i.e., 0-6°C after CF)? *If >6°C, were samples collected <8 hours ago?* *If <0°C, were all sample containers ice free?* Cooler ID: 1 @ 1.6 w/ Therm.ID: 7C Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled."	(Yes) No Yes No (N/A) Yes No ~~N/A~~	☐ *Exemption permitted if chilled & collected <8 hrs ago.* *Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.*
Delivery method (specify all that apply): Client (hand carried) USPS Lynden AK Air (Alert Courier) UPS FedEx RAVN C&D Delivery Carlile Pen Air Warp Speed Other: _____ → *For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?*	Tracking/AB # (or see attached) or N/A (Yes) No N/A	
→ For samples received with payment, note amount ($) and whether cash / check / CC (**circle one**) was received.		
→ For samples **received in FBKS**, ANCH staff will verify all criteria are reviewed. SRF initiated in FBKS by:		
Were samples received within hold time? Do samples **match COC*** (i.e., sample IDs, dates/times collected)? Were analyses requested unambiguous?	(Yes) No N/A (Yes) No N/A (Yes) No N/A	*Note: Refer to form F-083 "Sample Guide" for hold times.* *Note: If times differ <1hr, record details and login per COC.*
Were samples in **good condition** (no leaks/cracks/breakage)? Packing material used (specify all that apply): Bubble Wrap (Separate plastic bags) Vermiculite Other:	(Yes) No	
Were ~~proper containers~~ (type/mass/volume/preservative*) used? Were **Trip Blanks** (i.e., VOAs, LL-Hg) in cooler with samples? Were all VOA vials **free of headspace** (i.e., bubbles ≤6 mm)? Were all soil VOAs **field extracted** with MeOH+BFB?	(Yes) No N/A Yes No (N/A) Yes No (N/A) Yes No (N/A)	☐ *Exemption permitted for metals (e.g., 200.8/6020A).*
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was **pH verified and compliant**? If pH was adjusted, were bottles flagged (i.e., stickers)?	Yes No (N/A) Yes No (N/A)	
For **special handling** (e.g., "MI" soils, foreign soils, lab filter for dissolved…, lab extract for volatiles, Ref Lab, limited volume), were bottles/paperwork flagged (e.g., sticker)?	(Yes) No N/A	
For **RUSH/SHORT Hold Time**, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	Yes No (N/A)	
For **SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP**, were containers / paperwork flagged accordingly?	Yes No (N/A)	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	Yes No (N/A)	SRF Completed by: NEG PM notified: N/A
Was **PEER REVIEW** of ***sample numbering/labeling completed?***	Yes No (N/A)	Peer Reviewed by: N/A
Additional notes (if applicable):		

Note to Client: *Any "no" circled above indicates non-compliance with standard procedures and may impact data quality.*

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1143831001-A	No Preservative Required	OK			
1143831001-B	No Preservative Required	OK			
1143831001-C	No Preservative Required	OK			
1143831001-D	No Preservative Required	OK			
1143831001-E	No Preservative Required	OK			
1143831002-A	No Preservative Required	OK			
1143831002-B	No Preservative Required	OK			
1143831002-C	No Preservative Required	OK			
1143831002-D	No Preservative Required	OK			
1143831002-E	No Preservative Required	OK			
1143831003-A	No Preservative Required	OK			
1143831003-B	No Preservative Required	OK			
1143831003-C	No Preservative Required	OK			
1143831003-D	No Preservative Required	OK			
1143831003-E	No Preservative Required	OK			

Container Condition Glossary

OK - The container was received at an acceptable pH for the analysis requested.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

BU - The container was received with headspace greater than 6mm.

029 2900 8512 | 029 2900 8512

NOT NEGOTIABLE
AIR WAYBILL
(AIR CONSIGNMENT NOTE)

EVERTS AIR CARGO
P.O. BOX 61680
Fairbanks, Alaska 99706

Copies 1, 2 and 3 of this Air Waybill are originals and have the same validity.

SHIPPER'S NAME AND ADDRESS: Environmental Co. [illegible]; Aniak, AK 99557
SHIPPER'S ACCOUNT NUMBER: [illegible]

CONSIGNEE'S NAME AND ADDRESS: SGS; Anchorage, AK
CONSIGNEE'S ACCOUNT NUMBER:

It is agreed that the goods described herein are accepted in apparent good order and condition (except as noted) for carriage SUBJECT TO THE CONDITIONS OF CONTRACT ON THE REVERSE HEREOF. THE SHIPPER'S ATTENTION IS DRAWN TO THE NOTICE CONCERNING CARRIER'S LIMITATION OF LIABILITY. Shipper may increase such limitation of liability by declaring a higher value for carriage and paying a supplemental charge if required.

SIGNATURE | RECEIVED IN GOOD ORDER | PLACE | DATE/TIME
VAA SEDO
PRINTED NAME

ISSUING CARRIER'S AGENT NAME AND CITY

ALSO NOTIFY: NAME AND ADDRESS *(OPTIONAL ACCOUNTING INFORMATION)*

TO EXPEDITE MOVEMENT, SHIPMENT MAY BE DIVERTED TO MOTOR OR OTHER CARRIER UNLESS SHIPPER GIVES OTHER INSTRUCTIONS HEREON.

AGENT'S IATA CODE | ACCOUNT NO.

DOMESTIC LIABILITY: Carrier shall not be liable for damages to shipments that are not properly packaged. If no value declared. Everts Air Cargo liability will not exceed $.50/lb. plus transportation charges (see reverse).

AIRPORT OF DEPARTURE (ADDR OF FIRST CARRIER) AND REQUESTED ROUTING: Aniak

ROUTING AND DESTINATION

TO	BY FIRST CARRIER	TO	BY	TO	BY	CURRENCY	CHGS CODE	WT/VAL PPD	WT/VAL COLL	OTHER PPD	OTHER COLL	DECLARED VALUE FOR CARRIAGE	DECLARED VALUE FOR CUSTOMS
ANC	5V						CC	X		X			

AIRPORT OF DESTINATION: Anchorage
FOR CARRIER USE ONLY — FLIGHT/DATE: 961/8-1305. | FLIGHT/DATE:
AMOUNT OF INSURANCE
INSURANCE - If shipper requests insurance in accordance with conditions on reverse hereof, indicate amount to be insured in figures in box marked amount of insurance.
INSURANCE DECLINED
INITIALS ____

HANDLING INFORMATION These commodities licensed by U.S. for ultimate destination. Diversion contrary to U.S. law is prohibited.
☐ TSA Acceptance Inspection Completed

NOA 563-[illegible] - SGS will PU all 8.94

SPS ○ PRI ⊙ GEN

NO. OF PIECES RCP	GROSS WEIGHT	kg/lb	RATE CLASS / COMMODITY ITEM NO.	CHARGEABLE WEIGHT	RATE / CHARGE	TOTAL	NATURE AND QUANTITY OF GOODS (INCL. DIMENSIONS OR VOLUME)
1	32		Gen	32	.97	35.00 min	Soil sample
1	32					35.00	

PREPAID	WEIGHT CHARGE	COLLECT
A. 35.00		
	VALUATION CHARGE	
D.		
	TAX	
I. 2.77		
	TOTAL OTHER CHARGES DUE AGENT	
	TOTAL OTHER CHARGES DUE CARRIER	
9.45		
G. COD ➡	CURRENCY	
TOTAL PREPAID		TOTAL COLLECT
47.22		
CURRENCY CONVERSION RATES		TOTAL COLLECT IN DESTINATION CURRENCY
FOR CARRIERS USE ONLY AT DESTINATION		CHARGES AT DESTINATION

OTHER CHARGES
FSC 9.45
TAX 2.77

1143831

Shipper certifies that the particulars on the face hereof are correct and that insofar as any part of the consignment contains dangerous goods (hazardous materials) such part is properly described by name and is in proper condition for carriage by air according to the applicable governmental regulations and, for international shipments, the current International Air Transport Association's Dangerous Goods Regulations.

SHIPPER GUARANTEES ALL CHARGES SUBJECT TO RATE AUDIT (INCLUDING RE-WEIGH/DIMENSIONAL WEIGHT)

PRINTED NAME | SIGNATURE
SIGNATURE OF SHIPPER ABOVE AND INITIAL APPLICABLE BOX BELOW.
☒ THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS. ☐ THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS.

EXECUTED ON 8/1/14 11:14 Aniak [illegible]
(Date) (Time) at (Place) SIGNATURE OF ISSUING CARRIER OR ITS AGENT

TOTAL COLLECT CHARGES

NO. 6 029 2900 8512

RELEASING AGENT ________ (SIGNATURE)
RELEASE TIME ________
PAID BY (CIRCLE ONE) CASH CC CHECK#
RELEASE DATE ________
TOTAL AMOUNT ________

Alert Expeditors Inc. **#347414**
DBA/Petroleum Courier Service

Citywide Delivery • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

Date 8·14·14
From Environment / ECC
To SAS

Collect ☐	Prepay ☐ Account ☐	Advance Charges ☐
Job #	PO#	

1 Cooler

029 2900 8512

1143831

Shipped Signature

Total Charge

Received By: [signature]
8/14/14 16:35

029 2900 8512 029 2900 8512

RELEASING AGENT _____ (SIGNATURE)

RELEASE TIME _____ CASH _____ CC _____ CHECK# _____

PAID BY (CIRCLE ONE)

RELEASE DATE _____

TOTAL AMOUNT _____

SHIPPER'S NAME AND ADDRESS	SHIPPER'S ACCOUNT NUMBER
CONSIGNEE'S NAME AND ADDRESS	CONSIGNEE'S ACCOUNT NUMBER
ISSUING CARRIER'S AGENT NAME AND CITY	
AGENT'S IATA CODE	ACCOUNT NO.
AIRPORT OF DEPARTURE (ADDR OF FIRST CARRIER) AND REQUESTED ROUTING	

NOT NEGOTIABLE

AIR WAYBILL

(AIR CONSIGNMENT NOTE)

EVERTS AIR CARGO

P.O. BOX 61680

Fairbanks, Alaska 99706

Copies 1, 2 and 3 of this Air Waybill are originals and have the same validity.

It is agreed that the goods described herein are accepted in apparent good order and condition (except as noted) for carriage SUBJECT TO THE CONDITIONS OF CONTRACT ON THE REVERSE HEREOF. THE SHIPPER'S ATTENTION IS DRAWN TO THE NOTICE CONCERNING CARRIER'S LIMITATION OF LIABILITY. Shipper may increase such limitation of liability by declaring a higher value for carriage and paying a supplemental charge if required.

SIGNATURE	RECEIVED IN GOOD ORDER	PLACE	DATE / TIME

PRINTED NAME

ALSO NOTIFY: NAME AND ADDRESS *(OPTIONAL ACCOUNTING INFORMATION)*

TO EXPEDITE MOVEMENT, SHIPMENT MAY BE DIVERTED TO MOTOR OR OTHER CARRIER UNLESS SHIPPER GIVES OTHER INSTRUCTIONS HEREON.

DOMESTIC LIABILITY: **Carrier shall not be liable for damages to shipments that are not properly packaged. If no value declared. Everts Air Cargo liability will not exceed $.50/lb. plus transportation charges (see reverse).**

ROUTING AND DESTINATION						CURRENCY	CHGS CODE	WT/VAL		OTHER		DECLARED VALUE FOR CARRIAGE	DECLARED VALUE FOR CUSTOMS
TO	BY FIRST CARRIER	TO	BY	TO	BY			PPD	COLL	PPD	COLL		

AIRPORT OF DESTINATION	FOR CARRIER USE ONLY FLIGHT/DATE	FLIGHT/DATE	AMOUNT OF INSURANCE	INSURANCE - If shipper requests insurance in accordance with conditions on reverse hereof, indicate amount to be insured in figures in box marked amount of insurance.	INSURANCE DECLINED INITIALS ____

HANDLING INFORMATION These commodities licensed by U.S. for ultimate destination. Diversion contrary to U.S. law is prohibited. ☐ TSA Acceptance Inspection Completed

o SPS o PRI o GEN

NO. OF PIECES RCP	GROSS WEIGHT	kg / lb	RATE CLASS / COMMODITY ITEM NO.	CHARGEABLE WEIGHT	RATE / CHARGE	TOTAL	NATURE AND QUANTITY OF GOODS (INCL. DIMENSIONS OR VOLUME)

PREPAID	WEIGHT CHARGE	COLLECT

A.	
VALUATION CHARGE	
D.	
TAX	
I.	
TOTAL OTHER CHARGES DUE AGENT	
TOTAL OTHER CHARGES DUE CARRIER	

OTHER CHARGES

1143831

Shipper certifies that the particulars on the face hereof are correct and that insofar as any part of the consignment contains dangerous goods (hazardous materials) such part is properly described by name and is in proper condition for carriage by air according to the applicable governmental regulations and, for international shipments, the current International Air Transport Association's Dangerous Goods Regulations.

SHIPPER GUARANTEES ALL CHARGES SUBJECT TO RATE AUDIT (INCLUDING RE-WEIGH/DIMENSIONAL WEIGHT)

G. COD →	CURRENCY

TOTAL PREPAID	TOTAL COLLECT

PRINTED NAME _____ SIGNATURE _____

SIGNATURE OF SHIPPER ABOVE AND INITIAL APPLICABLE BOX BELOW.

☐ THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS.

☐ THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS.

CURRENCY CONVERSION RATES	TOTAL COLLECT IN DESTINATION CURRENCY

EXECUTED ON _____ at _____

(Date) (Time) at (Place) SIGNATURE OF ISSUING CARRIER OR ITS AGENT

FOR CARRIERS USE ONLY AT DESTINATION	CHARGES AT DESTINATION	TOTAL COLLECT CHARGES

NO. 6 029 2900 8512

Laboratory Report of Analysis

To: Environmental Comp. Consultants (ECC)
1500 Post Road
Anchorage, AK 99501
(907)830-1225

Report Number: **1143868**

Client Project: **Kolmakof Mine Site**

Dear Don Maloney,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Forest at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Forest Taylor Date
Project Manager
Forest.Taylor@sgs.com

Print Date: 08/20/2014 7:18:17AM

Case Narrative

SGS Client: **Environmental Comp. Consultants (ECC)**
SGS Project: **1143868**
Project Name/Site: **Kolmakof Mine Site**
Project Contact: **Don Maloney**

Refer to sample receipt form for information on sample condition.

1148378001MSD (1227534) MSD

6020A - Metals - MSD recoveries for chromium and barium were outside of acceptance criteria. Post digestion spike was successful.
6020A - Metals - MS/MSD RPD for chromium was outside of acceptance limits. Sample duplicate RPD is within criteria.

1148378001(1227536MSD) (1227538) MSD

6020A - Metals - MSD recoveries for chromium and barium were outside of acceptance criteria. Post digestion spike was successful.
6020A - Metals - MS/MSD RPD for chromium was outside of acceptance limits. Sample duplicate RPD is within criteria.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<http://www.sgs.com/terms_and_conditions.htm>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
KTM14-06	1143868001	08/16/2014	08/18/2014	Soil/Solid (dry weight)
KTM14-07	1143868002	08/16/2014	08/18/2014	Soil/Solid (dry weight)
KTM14-08	1143868003	08/16/2014	08/18/2014	Soil/Solid (dry weight)

Method	Method Description
SW6020A	Metals by ICP-MS (S)
SM21 2540G	Percent Solids SM2540G

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Detectable Results Summary

Client Sample ID: **KTM14-06**
Lab Sample ID: 1143868001
Metals by ICP/MS

Parameter	Result	Units
Arsenic	6.99	mg/Kg
Chromium	23.7	mg/Kg
Mercury	1.23	mg/Kg
Nickel	24.1	mg/Kg

Client Sample ID: **KTM14-07**
Lab Sample ID: 1143868002
Metals by ICP/MS

Parameter	Result	Units
Arsenic	8.36	mg/Kg
Chromium	33.8	mg/Kg
Mercury	3.53	mg/Kg
Nickel	30.8	mg/Kg

Client Sample ID: **KTM14-08**
Lab Sample ID: 1143868003
Metals by ICP/MS

Parameter	Result	Units
Arsenic	9.29	mg/Kg
Chromium	24.5	mg/Kg
Mercury	3.83	mg/Kg
Nickel	27.8	mg/Kg

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Results of **KTM14-06**

Client Sample ID: **KTM14-06**
Client Project ID: **Kolmakof Mine Site**
Lab Sample ID: 1143868001
Lab Project ID: 1143868

Collection Date: 08/16/14 13:15
Received Date: 08/18/14 08:20
Matrix: Soil/Solid (dry weight)
Solids (%): 77.3
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	6.99		1.28	0.396	mg/Kg	10		08/19/14 13:21
Chromium	23.7		0.511	0.153	mg/Kg	10		08/19/14 13:21
Mercury	1.23		0.0511	0.0153	mg/Kg	10		08/19/14 13:21
Nickel	24.1		0.256	0.0792	mg/Kg	10		08/19/14 13:21

Batch Information

Analytical Batch: MMS8644
Analytical Method: SW6020A
Analyst: CDE
Analytical Date/Time: 08/19/14 13:21
Container ID: 1143868001-A

Prep Batch: MXX27980
Prep Method: SW3050B
Prep Date/Time: 08/18/14 09:45
Prep Initial Wt./Vol.: 1.012 g
Prep Extract Vol: 50 mL

Print Date: 08/20/2014 7:18:24AM

Results of **KTM14-07**

Client Sample ID: **KTM14-07**
Client Project ID: **Kolmakof Mine Site**
Lab Sample ID: 1143868002
Lab Project ID: 1143868

Collection Date: 08/16/14 13:38
Received Date: 08/18/14 08:20
Matrix: Soil/Solid (dry weight)
Solids (%): 82.8
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	8.36		1.19	0.369	mg/Kg	10		08/19/14 13:24
Chromium	33.8		0.476	0.143	mg/Kg	10		08/19/14 13:24
Mercury	3.53		0.0476	0.0143	mg/Kg	10		08/19/14 13:24
Nickel	30.8		0.238	0.0737	mg/Kg	10		08/19/14 13:24

Batch Information

Analytical Batch: MMS8644
Analytical Method: SW6020A
Analyst: CDE
Analytical Date/Time: 08/19/14 13:24
Container ID: 1143868002-A

Prep Batch: MXX27980
Prep Method: SW3050B
Prep Date/Time: 08/18/14 09:45
Prep Initial Wt./Vol.: 1.016 g
Prep Extract Vol: 50 mL

Print Date: 08/20/2014 7:18:24AM

Results of **KTM14-08**

Client Sample ID: **KTM14-08**
Client Project ID: **Kolmakof Mine Site**
Lab Sample ID: 1143868003
Lab Project ID: 1143868

Collection Date: 08/16/14 14:00
Received Date: 08/18/14 08:20
Matrix: Soil/Solid (dry weight)
Solids (%): 83.3
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	9.29		1.15	0.358	mg/Kg	10		08/19/14 13:26
Chromium	24.5		0.462	0.139	mg/Kg	10		08/19/14 13:26
Mercury	3.83		0.0462	0.0139	mg/Kg	10		08/19/14 13:26
Nickel	27.8		0.231	0.0716	mg/Kg	10		08/19/14 13:26

Batch Information

Analytical Batch: MMS8644
Analytical Method: SW6020A
Analyst: CDE
Analytical Date/Time: 08/19/14 13:26
Container ID: 1143868003-A

Prep Batch: MXX27980
Prep Method: SW3050B
Prep Date/Time: 08/18/14 09:45
Prep Initial Wt./Vol.: 1.039 g
Prep Extract Vol: 50 mL

Print Date: 08/20/2014 7:18:24AM

Method Blank

Blank ID: MB for HBN 1625730 [MXX/27980]
Blank Lab ID: 1227530

Matrix: Soil/Solid (dry weight)

QC for Samples:
1143868001, 1143868002, 1143868003

Results by **SW6020A**

Parameter	Results	LOQ/CL	DL	Units
Arsenic	0.500U	1.00	0.310	mg/Kg
Chromium	0.200U	0.400	0.120	mg/Kg
Mercury	0.0200U	0.0400	0.0120	mg/Kg
Nickel	0.100U	0.200	0.0620	mg/Kg

Batch Information

Analytical Batch: MMS8644
Analytical Method: SW6020A
Instrument: Perkin Elmer Sciex ICP-MS P3
Analyst: CDE
Analytical Date/Time: 8/19/2014 12:44:12PM

Prep Batch: MXX27980
Prep Method: SW3050B
Prep Date/Time: 8/18/2014 9:45:44AM
Prep Initial Wt./Vol.: 1 g
Prep Extract Vol: 50 mL

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Duplicate Sample Summary

Original Sample ID: 1148378001
Duplicate Sample ID: 1227532
QC for Samples:
1143868001, 1143868002, 1143868003

Analysis Date: 08/19/2014 12:51
Matrix: Soil/Solid (dry weight)

Results by **SW6020A**

NAME	Original (MXX27980	Duplicate (MXX27980)	RPD (%)	RPD CL
Chromium	3.87	4.18	7.86	20.00

Batch Information

Analytical Batch: MMS8644
Analytical Method: SW6020A
Instrument: Perkin Elmer Sciex ICP-MS P3
Analyst: CDE

Prep Batch: Soil/Solid (dry weight)
Prep Method: MMS8644
Prep Date/Time: MXX27980

Print Date: 08/20/2014 7:18:38AM

Duplicate Sample Summary

Original Sample ID: 1227536
Duplicate Sample ID: 1227609
QC for Samples:
1143868001, 1143868002, 1143868003

Analysis Date: 08/19/2014 12:51
Matrix: Soil/Solid (dry weight)

Results by **SW6020A**

NAME	Original (MXX27980	Duplicate (MXX27980)	RPD (%)	RPD CL
Chromium	3.56	3.85	7.86	20.00

Batch Information

Analytical Batch: MMS8644
Analytical Method: SW6020A
Instrument: Perkin Elmer Sciex ICP-MS P3
Analyst: CDE

Prep Batch: Soil/Solid (dry weight)
Prep Method: MMS8644
Prep Date/Time: MXX27980

Print Date: 08/20/2014 7:18:38AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1143868 [MXX27980]
Blank Spike Lab ID: 1227531
Date Analyzed: 08/19/2014 12:46

Matrix: Soil/Solid (dry weight)

QC for Samples: 1143868001, 1143868002, 1143868003

Results by **SW6020A**

Blank Spike (mg/Kg)

Parameter	Spike	Result	Rec (%)	CL
Arsenic	50	49.6	99	(80-120)
Chromium	20	21.5	108	(80-120)
Mercury	0.5	0.498	100	(80-120)
Nickel	50	50.6	101	(80-120)

Batch Information

Analytical Batch: **MMS8644**
Analytical Method: **SW6020A**
Instrument: **Perkin Elmer Sciex ICP-MS P3**
Analyst: **CDE**

Prep Batch: **MXX27980**
Prep Method: **SW3050B**
Prep Date/Time: **08/18/2014 09:45**
Spike Init Wt./Vol.: 50 mg/Kg Extract Vol: 50 mL
Dup Init Wt./Vol.: Extract Vol:

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Matrix Spike Summary

Original Sample ID: 1148378001
MS Sample ID: 1227533 MS
MSD Sample ID: 1227534 MSD

Analysis Date: 08/19/2014 12:48
Analysis Date: 08/19/2014 12:53
Analysis Date: 08/19/2014 12:56
Matrix: Soil/Solid (dry weight)

QC for Samples: 1143868001, 1143868002, 1143868003

Results by **SW6020A**

		Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Arsenic	9.47	53.6	61.2	96	52.2	63.9	104	80-120	4.49	(< 20)
Chromium	3.87	21.4	27.8	112	20.9	34.7	147 *	80-120	21.90 *	(< 20)
Mercury	0.0217U	0.536	0.576	107	0.522	0.521	100	80-120	10.20	(< 20)

Batch Information

Analytical Batch: MMS8644
Analytical Method: SW6020A
Instrument: Perkin Elmer Sciex ICP-MS P3
Analyst: CDE
Analytical Date/Time: 8/19/2014 12:53:38PM

Prep Batch: MXX27980
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 8/18/2014 9:45:44AM
Prep Initial Wt./Vol.: 1.01g
Prep Extract Vol: 50.00mL

Print Date: 08/20/2014 7:18:41AM

Matrix Spike Summary

Original Sample ID: 1227536
MS Sample ID: 1227537 MS
MSD Sample ID: 1227538 MSD

Analysis Date: 08/19/2014 12:48
Analysis Date: 08/19/2014 12:53
Analysis Date: 08/19/2014 12:56
Matrix: Soil/Solid (dry weight)

QC for Samples: 1143868001, 1143868002, 1143868003

Results by **SW6020A**

		Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Arsenic	8.71	49.3	56.3	96	48.0	58.8	104	80-120	4.49	(< 20)
Chromium	3.56	19.7	25.6	112	19.2	31.9	147 *	80-120	21.90	* (< 20)
Nickel	7.18	49.3	56.2	99	48.0	59.1	108	80-120	5.02	(< 20)

Batch Information

Analytical Batch: MMS8644
Analytical Method: SW6020A
Instrument: Perkin Elmer Sciex ICP-MS P3
Analyst: CDE
Analytical Date/Time: 8/19/2014 12:53:38PM

Prep Batch: MXX27980
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 8/18/2014 9:45:44AM
Prep Initial Wt./Vol.: 1.01g
Prep Extract Vol: 50.00mL

Print Date: 08/20/2014 7:18:41AM

Bench Spike Summary

Original Sample ID: 1148378001
MS Sample ID: 1227535 BND
MSD Sample ID:

Analysis Date: 08/19/2014 12:48
Analysis Date: 08/19/2014 12:58
Analysis Date:
Matrix: Soil/Solid (dry weight)

QC for Samples: 1143868001, 1143868002, 1143868003

Results by **SW6020A**

		Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Chromium	3.87	136	147	105				75-125		

Batch Information

Analytical Batch: MMS8644
Analytical Method: SW6020A
Instrument: Perkin Elmer Sciex ICP-MS P3
Analyst: CDE
Analytical Date/Time: 8/19/2014 12:58:21PM

Prep Batch: MXX27980
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 8/18/2014 9:45:44AM
Prep Initial Wt./Vol.: 1.00g
Prep Extract Vol: 50.00mL

Print Date: 08/20/2014 7:18:41AM

Bench Spike Summary

Original Sample ID: 1227536
MS Sample ID: 1227539 BND
MSD Sample ID:

Analysis Date: 08/19/2014 12:48
Analysis Date: 08/19/2014 12:58
Analysis Date:
Matrix: Soil/Solid (dry weight)

QC for Samples: 1143868001, 1143868002, 1143868003

Results by **SW6020A**

		Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Chromium	3.56	125	135	105				75-125		

Batch Information

Analytical Batch: MMS8644
Analytical Method: SW6020A
Instrument: Perkin Elmer Sciex ICP-MS P3
Analyst: CDE
Analytical Date/Time: 8/19/2014 12:58:21PM

Prep Batch: MXX27980
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 8/18/2014 9:45:44AM
Prep Initial Wt./Vol.: 1.00g
Prep Extract Vol: 50.00mL

Print Date: 08/20/2014 7:18:41AM

Method Blank

Blank ID: MB for HBN 1625807 [SPT/9426]
Blank Lab ID: 1227832

Matrix: Soil/Solid (dry weight)

QC for Samples:
1143868001, 1143868002, 1143868003

Results by **SM21 2540G**

Parameter	Results	LOQ/CL	DL	Units
Total Solids	100			%

Batch Information

Analytical Batch: SPT9426
Analytical Method: SM21 2540G
Instrument:
Analyst: MJN
Analytical Date/Time: 8/18/2014 7:00:00PM

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Duplicate Sample Summary

Original Sample ID: 1143866018
Duplicate Sample ID: 1227833
QC for Samples:
1143868001, 1143868002, 1143868003

Analysis Date: 08/18/2014 19:00
Matrix: Soil/Solid (dry weight)

Results by **SM21 2540G**

NAME	Original ()	Duplicate ()	RPD (%)	RPD CL
Total Solids	86.9	85.2	2.00	15.00

Batch Information

Analytical Batch: SPT9426
Analytical Method: SM21 2540G
Instrument:
Analyst: MJN

Print Date: 08/20/2014 7:18:42AM

Duplicate Sample Summary

Original Sample ID: 1148358034
Duplicate Sample ID: 1227834
QC for Samples:
1143868001, 1143868002, 1143868003

Analysis Date: 08/18/2014 19:00
Matrix: Soil/Solid (dry weight)

Results by **SM21 2540G**

NAME	Original ()	Duplicate ()	RPD (%)	RPD CL
Total Solids	89.3	89.1	0.16	15.00

Batch Information

Analytical Batch: SPT9426
Analytical Method: SM21 2540G
Instrument:
Analyst: MJN

Print Date: 08/20/2014 7:18:42AM

SGS

SGS North America Inc.
CHAIN OF CUSTODY RECORD

1143868

Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

Section 1

CLIENT: ECC

CONTACT: Don Maloney PHONE NO: (907) 545-6719

PROJECT NAME: Kalmakof Mine Site PROJECT/ PWSID/ PERMIT#:

REPORTS TO: don@eccalaska.com E-MAIL:

INVOICE TO: ECC QUOTE #: Qt. 10382 P.O. #:

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	Section 3 # CONTAINERS	Section 3 Type C = COMP G = GRAB MI = Multi Incremental Soils	Preservative: Total Metals 6010 + Arsenic	Preservative: Chromium	Preservative: Mercury	Preservative: Nickel	REMARKS/ LOC ID
1A	KTM14-06	08/16/14	1315	Soil	1	G	X	X	X	X	
2A	KTM14-07	08/16/14	1338	"	1	G	X	X	X	X	
3A	KTM14-08	08/16/14	1400	"	1	G	X	X	X	X	

Section 5

	Date	Time	
Relinquished By: (1)	8/16/14	1745	Received By:
Relinquished By: (2)			Received By:
Relinquished By: (3)			Received By:
Relinquished By: (4)	8/18/14	8:20	Received For Laboratory By:

Section 4

DOD Project? Yes (No)

Cooler ID:

Data Deliverable Requirements:

Requested Turnaround Time and/or Special Instructions:
24 Hour RUSH all samples.

Temp Blank °C: 3.0 / #71 or Ambient [ ] (See attached Sample Receipt Form)

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT (See attached Sample Receipt Form)

[ ] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[ ] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

SGS

1143868

SAMPLE RECEIPT FORM

Review Criteria:	Condition:	Comments/Action Taken:
Were **custody seals** intact? Note # & location, if applicable. COC accompanied samples? 1 B	(Yes) No N/A Yes No	☐ *Exemption permitted if sampler hand carries/delivers.*
Temperature blank compliant* (i.e., 0-6°C after CF)? *If >6°C, were samples collected <8 hours ago?* *If <0°C, were all sample containers ice free?* Cooler ID: 1 @ 3.0 w/ Therm.ID: 71 Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled."	(Yes) No Yes No (N/A) Yes No (N/A)	☐ *Exemption permitted if chilled & collected <8 hrs ago.* *Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.*
Delivery method (specify all that apply): Client (hand carried) USPS Lynden (AK Air) (Alert Courier) UPS FedEx (RAVN) C&D Delivery Carlile Pen Air Warp Speed Other: _____ → *For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?*	Tracking/AB # or (see attached) or N/A (Yes) No N/A	
→ For samples received with payment, note amount ($) and whether cash / check / CC (**circle one**) was received.		
→ For samples **received in FBKS**, ANCH staff will verify all criteria are reviewed. SRF initiated in FBKS by:		
Were samples received within hold time? Do samples **match COC*** (i.e., sample IDs, dates/times collected)? Were analyses requested unambiguous?	(Yes) No N/A (Yes) No N/A (Yes) No N/A	*Note: Refer to form F-083 "Sample Guide" for hold times.* *Note: If times differ <1hr, record details and login per COC.*
Were samples in **good condition** (no leaks/cracks/breakage)? Packing material used (specify all that apply): Bubble Wrap Separate plastic bags Vermiculite Other:	(Yes) No	
Were **proper containers** (type/mass/volume/preservative*) used? Were **Trip Blanks** (i.e., VOAs, LL-Hg) in cooler with samples? Were all VOA vials **free of headspace** (i.e., bubbles ≤6 mm)? Were all soil VOAs **field extracted** with MeOH+BFB?	(Yes) No N/A Yes No (N/A) Yes No (N/A) Yes No (N/A)	☐ *Exemption permitted for metals (e.g., 200.8/6020A).*
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was **pH verified and compliant**? If pH was adjusted, were bottles flagged (i.e., stickers)?	Yes No (N/A) Yes No (N/A)	
For **special handling** (e.g., "MI" soils, foreign soils, lab filter for dissolved…, lab extract for volatiles, Ref Lab, limited volume), were bottles/paperwork flagged (e.g., sticker)?	Yes No (N/A)	
For **RUSH/SHORT Hold Time**, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	(Yes) No N/A	Rush Due: 8/14/14
For **SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP**, were containers / paperwork flagged accordingly?	Yes No (N/A)	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	Yes No (N/A)	SRF Completed by: C.RD PM notified: N/A
Was **PEER REVIEW** of ***sample numbering/labeling completed?***	Yes No (N/A)	Peer Reviewed by: N/A
Additional notes (if applicable):		

Note to Client: *Any "no" circled above indicates non-compliance with standard procedures and may impact data quality.*

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1143868001-A	No Preservative Required	OK			
1143868002-A	No Preservative Required	OK			
1143868003-A	No Preservative Required	OK			

Container Condition Glossary

OK - The container was received at an acceptable pH for the analysis requested.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

BU - The container was received with headspace greater than 6mm.

AIRPORT OF DEPARTURE ANI 08/16/14 15:38 002241 **808 6676573** **Frgt**

SHIPPER'S NAME, ADDRESS & PHONE
DON MALONEY

ANIAK

SHIPPER'S ACCOUNT NUMBER

NOT NEGOTIABLE
AIR WAYBILL
(AIR CONSIGNMENT NOTE)

Ravn ALASKA
4700 Old International Airport Road
Anchorage, Alaska 99502

It is agreed that the goods described herein are accepted in apparent good order and condition (except as noted) for carriage SUBJECT TO THE CONDITIONS OF CONTRACT AS LISTED IN THE COMPANIES TARIFFS. THE SHIPPER'S ATTENTION IS DRAWN TO THE NOTICE CONCERNING CARRIERS' LIMITATION OF LIABILITY. Shipper may increase such limitation of liability by declaring a higher value for carriage and paying a supplemental charge if required.

Received in Good Condition _____

Place _____ Date _____

TO EXPEDITE MOVEMENT, SHIPMENT MAY BE DIVERTED TO MOTOR OR OTHER CARRIER AS PER TARIFF RULE UNLESS SHIPPER GIVES OTHER INSTRUCTION HEREON

CONSIGNEE'S NAME, ADDRESS & PHONE
SGS

ANCHORAGE **9075622343**

CONSIGNEE'S ACCOUNT NUMBER

ISSUING CARRIER'S AGENT NAME, CITY & PHONE

ALSO NOTIFY NAME & ADDRESS

AGENT'S IATA CODE

ACCOUNT NO.

ACCOUNTING INFORMATION 6875595
Card VI 0882 Exp 0515

AIRPORT OF DEPARTURE
Aniak

Declared Value $ 0.00

Insured Amount $ 0.00

ROUTING AND DESTINATION

TO	BY FIRST CARRIER	TO	BY	TO	BY

COMMENTS

AIRPORT OF DESTINATION
Anchorage

FOR CARRIER USE ONLY
FLIGHT/DATE 0
FLIGHT/DATE

No. Of Pieces Rcp	Gross Weight	kg lb	Rate Class	Commodity Item No.	Chargeable Weight	Rate/Charge	Total	Nature and Quantity of Goods
1	7	lb	F		1	$29.18	$29.18	soil samples
1	7						$29.18	

1143868

PREPAID	WEIGHT CHARGE	COLLECT
$29.18		

VALUATION CHARGE
$0.00

FEDERAL EXCISE TAX
$1.82

TOTAL OTHER CHARGES DUE AGENT
$0.00

TOTAL OTHER CHARGES DUE CARRIER
$0.00

TOTAL PREPAID	TOTAL COLLECT
$31.00	

OTHER CHARGES AND DESCRIPTION

AMOUNT	DESCRIPTION

HAZMAT
No

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APPENDIX D

ADEC CHECKLIST AND QUALITY ASSURANCE REPORT

2014 Kolmakof Mine Site Removal Action Report
Kolmakof Mine Site, Alaska

BUREAU OF LAND MANAGEMENT ALASKA STATE OFFICE

4700 BLM Road

Anchorage, AK 99507-2591

December 2014

Laboratory Data Review Checklist

Completed by:	Carl Benson		
Title:	Environmental Scientist	Date:	9/26/2014
CS Report Name:	Kolmakof Mine Site Interim Removal Action	Report Date:	8/29/2014
Consultant Firm:	Environmental Compliance Consultants		
Laboratory Name:	SGS	Laboratory Report Number:	1143947
ADEC File Number:	2404.38.014	ADEC RecKey Number:	

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

(•) Yes ( ) No ( ) NA (Please explain.) Comments:

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

( ) Yes ( ) No (•) NA (Please explain) Comments:

All analyses performed in-house at SGS Anchorage

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. Correct analyses requested?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

c. Sample condition documented - broken, leaking (Methanol), zero headspace (VOC vials)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

d. If there were any discrepancies, were they documented? - For example, incorrect sample containers/ preservation, sample temperature outside of acceptance range, insufficient or missing samples, etc.?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

No discrepancies noted

e. Data quality or usability affected? (Please explain)

Comments:

No - no discrepancies noted.

4. Case Narrative

a. Present and understandable?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

MS/MSD recovery for chromium and mercury exceeded QC criteria, post digestion spike was successful; MS/MSD RPD excedance for mercury; lab sample duplicate RPD excedance for mercury

c. Were all corrective actions documented?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Mercury data for all samples in work order 1143947 is qualified "J" as estimated.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. All applicable holding times met?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

c. All soils reported on a dry weight basis?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

e. Data quality or usability affected? (Please explain)

Comments:

No

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

ii. All method blank results less than PQL?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

iii. If above PQL, what samples are affected? Comments:

N/A

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

No blank-affected data in this work order.

v. Data quality or usability affected? (Please explain) Comments:

No

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics - One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

○ Yes ○ No ◉ NA (Please explain) Comments:

Only inorganic analytes in work order 1143947

ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples?

◉ Yes ○ No ○ NA (Please explain) Comments:

iii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

◉ Yes ○ No ○ NA (Please explain) Comments:

LCS and laboratory duplicate sample recovery met QC criteria.

iv. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/DMSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

○ Yes ◉ No ○ NA (Please explain) Comments:

MS/MSD RPD for chromium and mercury exceeded QC criteria; laboratory duplicate RPD for mercury exceeded QC criteria.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

KRM14-01, KRM14-02, KRM14-03, KRM14-04, KRM14-05, KRM14-06, and KRM14-07.

vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

Affected samples are qualified "J" to indicate estimated quantities.

vii. Data quality or usability affected? (Please explain) Comments:

Yes, results are estimated quantities. Data are still usable.

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses - field, QC and laboratory samples?

( ) Yes ( ) No (•) NA (Please explain) Comments:

Inorganic analyses only in this work order.

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

( ) Yes ( ) No (•) NA (Please explain) Comments:

Inorganic analyses only in this work order.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

( ) Yes ( ) No (•) NA (Please explain) Comments:

Inorganic analyses only in this work order.

iv. Data quality or usability affected? (Use the comment box to explain.).

Comments:

N/A

d. Trip Blank - Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

( ) Yes ( ) No (•) NA (Please explain.) Comments:

Inorganic analyses only in this work order.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

( ) Yes ( ) No (•) NA (Please explain.) Comments:

Inorganic analyses only in this work order.

iii. All results less than PQL?

○ Yes ○ No ◉ NA (Please explain.) Comments:

Inorganic analyses only in this work order.

iv. If above PQL, what samples are affected?

Comments:

Inorganic analyses only in this work order.

v. Data quality or usability affected? (Please explain.)

Comments:

N/A

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

◉ Yes ○ No ○ NA (Please explain) Comments:

ii. Submitted blind to lab?

◉ Yes ○ No ○ NA (Please explain.) Comments:

iii. Precision - All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute Value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

○ Yes ◉ No ○ NA (Please explain) Comments:

Parent sample and field duplicate RPD results exceeded 50% for mercury

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

◉ Yes ○ No ○ NA (Please explain) Comments:

Mercury results qualified "J" to indicate estimated quantities.

f. Decontamination or Equipment Blank (if applicable)

○ Yes ○ No ◉ NA (Please explain) Comments:

Only disposable sampling equipment used for this project - no equipment blank submitted for analysis.

i. All results less than PQL?

○ Yes ○ No ◉ NA (Please explain) Comments:

Only disposable sampling equipment used for this project - no equipment blank submitted for analysis.

ii. If above PQL, what samples are affected?

Comments:

Only disposable sampling equipment used for this project - no equipment blank submitted for analysis.

iii. Data quality or usability affected? (Please explain.)

Comments:

N/A

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

○ Yes ○ No ○ NA (Please explain) Comments:

No other qualifiers used for analyses in this work order.

Reset Form

Laboratory Data Review Checklist

Completed by:	Carl Benson		
Title:	Environmental Scientist	Date:	9/25/2014
CS Report Name:	Kolmakof Mine Site Interim Removal 2014	Report Date:	8/14/2014
Consultant Firm:	Environmental Compliance Consultants		
Laboratory Name:	SGS	Laboratory Report Number:	1143790
ADEC File Number:	2404.38.014	ADEC RecKey Number:	

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

(•) Yes ( ) No ( ) NA (Please explain.) Comments:

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

( ) Yes ( ) No (•) NA (Please explain) Comments:

All samples run in-house at SGS Anchorage.

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. Correct analyses requested?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

Cool

c. Sample condition documented - broken, leaking (Methanol), zero headspace (VOC vials)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

All OK

d. If there were any discrepancies, were they documented? - For example, incorrect sample containers/ preservation, sample temperature outside of acceptance range, insufficient or missing samples, etc.?

( ) Yes ( ) No (•) NA (Please explain) Comments:

e. Data quality or usability affected? (Please explain)

Comments:

No

4. Case Narrative

a. Present and understandable?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

MS/MSD spike recovery outside acceptance criterai for Hg. Post digestion spike acceptable for Hg.

c. Were all corrective actions documented?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

Post digestion spike recoveries documented.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

None.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. All applicable holding times met?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

c. All soils reported on a dry weight basis?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

e. Data quality or usability affected? (Please explain)

Comments:

No

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

ii. All method blank results less than PQL?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

iii. If above PQL, what samples are affected? Comments:

N/A

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

Data not affected.

v. Data quality or usability affected? (Please explain) Comments:

No

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics - One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

○ Yes ○ No ◉ NA (Please explain) Comments:

Inorganic analyses by EPA 6020A only in this work order.

ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples?

◉ Yes ○ No ○ NA (Please explain) Comments:

iii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

◉ Yes ○ No ○ NA (Please explain) Comments:

LCS recoveries acceptable.

iv. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/DMSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

◉ Yes ○ No ○ NA (Please explain) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

MS/MSD recoveries for Hg were out of acceptance criteria, but post digestion spike was within limits. MS/MSD RPD was within acceptance criteria.

vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

○ Yes ◉ No ○ NA (Please explain) Comments:

Non-compliant MS/MSD results flagged, but sample results not affected.

vii. Data quality or usability affected? (Please explain) Comments:

No

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses - field, QC and laboratory samples?

○ Yes ○ No ◉ NA (Please explain) Comments:

All inorganic analyses in work order 1143790.

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

○ Yes ○ No ◉ NA (Please explain) Comments:

All inorganic analyses in work order 1143790

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

All inorganic analyses in work order 1143790

iv. Data quality or usability affected? (Use the comment box to explain.). Comments:

N/A

d. Trip Blank - Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

○ Yes ○ No ◉ NA (Please explain.) Comments:

All inorganic analyses in work order 1143790

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

○ Yes ○ No ◉ NA (Please explain.) Comments:

All inorganic analyses in work order 1143790

iii. All results less than PQL?

○ Yes ○ No ◉ NA (Please explain.) Comments:

All inorganic analyses in work order 1143790

iv. If above PQL, what samples are affected?

Comments:

N/A

v. Data quality or usability affected? (Please explain.)

Comments:

No

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

◉ Yes ○ No ○ NA (Please explain) Comments:

ii. Submitted blind to lab?

◉ Yes ○ No ○ NA (Please explain.) Comments:

iii. Precision - All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute Value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

◉ Yes ○ No ○ NA (Please explain) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

○ Yes ◉ No ○ NA (Please explain) Comments:

f. Decontamination or Equipment Blank (if applicable)

○ Yes ○ No ◉ NA (Please explain) Comments:

Not collected. All sampling equipment was disposable.

i. All results less than PQL?

○ Yes ○ No ◉ NA (Please explain) Comments:

N/A

ii. If above PQL, what samples are affected?

Comments:

N/A

iii. Data quality or usability affected? (Please explain.)

Comments:

N/A

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

◉ Yes ○ No ○ NA (Please explain) Comments:

Reset Form

Laboratory Data Review Checklist

Completed by:	Carl Benson		
Title:	Environmental Scientist	Date:	9/26/2014
CS Report Name:	Kolmakof Mine Site Interim Removal Action	Report Date:	8/21/2014
Consultant Firm:	Environmental Compliance Consultants		
Laboratory Name:	SGS	Laboratory Report Number:	1143831
ADEC File Number:	2404.38.014	ADEC RecKey Number:	

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

(•) Yes ( ) No ( ) NA (Please explain.) Comments:

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

( ) Yes ( ) No (•) NA (Please explain) Comments:

All analyses performed in-house at SGS Anchorage.

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. Correct analyses requested?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

c. Sample condition documented - broken, leaking (Methanol), zero headspace (VOC vials)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

d. If there were any discrepancies, were they documented? - For example, incorrect sample containers/ preservation, sample temperature outside of acceptance range, insufficient or missing samples, etc.?

( ) Yes ( ) No (•) NA (Please explain) Comments:

No discrepancies noted

e. Data quality or usability affected? (Please explain)

Comments:

No

4. Case Narrative

a. Present and understandable?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

( ) Yes (•) No ( ) NA (Please explain) Comments:

None noted or identified during review.

c. Were all corrective actions documented?

( ) Yes ( ) No (•) NA (Please explain) Comments:

None required.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

N/A

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. All applicable holding times met?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

c. All soils reported on a dry weight basis?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

e. Data quality or usability affected? (Please explain)

Comments:

No

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

ii. All method blank results less than PQL?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

iii. If above PQL, what samples are affected? Comments:

N/A

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

None affected

v. Data quality or usability affected? (Please explain) Comments:

No

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics - One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

◉ Yes ○ No ○ NA (Please explain) Comments:

ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples?

○ Yes ○ No ◉ NA (Please explain) Comments:

Organic analyses only.

iii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

◉ Yes ○ No ○ NA (Please explain) Comments:

iv. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/DMSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

◉ Yes ○ No ○ NA (Please explain) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A

vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

No affected data.

vii. Data quality or usability affected? (Please explain) Comments:

N/A

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses - field, QC and laboratory samples?

◉ Yes ○ No ○ NA (Please explain) Comments:

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

◉ Yes ○ No ○ NA (Please explain) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

No QC criteria exceeded

iv. Data quality or usability affected? (Use the comment box to explain.). Comments:

N/A

d. Trip Blank - Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

○ Yes ○ No ◉ NA (Please explain.) Comments:

No volatile sample analyses requested

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

○ Yes ○ No ◉ NA (Please explain.) Comments:

No volatile sample analyses requested

iii. All results less than PQL?

○ Yes ○ No ◉ NA (Please explain.) Comments:

No volatile sample analyses requested

iv. If above PQL, what samples are affected?

Comments:

No volatile sample analyses requested

v. Data quality or usability affected? (Please explain.)

Comments:

No volatile sample analyses requested

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

○ Yes ○ No ◉ NA (Please explain) Comments:

MI sample submitted in triplicate

ii. Submitted blind to lab?

○ Yes ○ No ◉ NA (Please explain.) Comments:

MI sample submitted in triplicate

iii. Precision - All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute Value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

○ Yes ○ No ◉ NA (Please explain) Comments:

MI sample submitted in triplicate

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

○ Yes ○ No ◉ NA (Please explain) Comments:

MI sample submitted in triplicate

f. Decontamination or Equipment Blank (if applicable)

○ Yes ○ No ◉ NA (Please explain) Comments:

No rinsate blank collected - only disposable sampling equipment used.

i. All results less than PQL?

○ Yes ○ No ◉ NA (Please explain) Comments:

No rinsate blank collected - only disposable sampling equipment used.

ii. If above PQL, what samples are affected?

Comments:

No rinsate blank collected - only disposable sampling equipment used.

iii. Data quality or usability affected? (Please explain.)

Comments:

No rinsate blank collected - only disposable sampling equipment used.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

○ Yes ○ No ◉ NA (Please explain) Comments:

N/A - no data qualifiers needed. No QC exceedances.

Reset Form

Laboratory Data Review Checklist

Completed by:	Carl Benson		
Title:	Environmental Scientist	Date:	9/26/2014
CS Report Name:	Kolmakof Mine Site Interim Removal Action	Report Date:	8/20/2014
Consultant Firm:	Environmental Compliance Consultants		
Laboratory Name:	SGS	Laboratory Report Number:	1143868
ADEC File Number:	2404.38.014	ADEC RecKey Number:	

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

(•) Yes ( ) No ( ) NA (Please explain.) Comments:

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

( ) Yes ( ) No (•) NA (Please explain) Comments:

All samples were analyzed in-house in Anchorage, not transferred to another lab.

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. Correct analyses requested?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

c. Sample condition documented - broken, leaking (Methanol), zero headspace (VOC vials)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

d. If there were any discrepancies, were they documented? - For example, incorrect sample containers/ preservation, sample temperature outside of acceptance range, insufficient or missing samples, etc.?

( ) Yes ( ) No (•) NA (Please explain) Comments:

No discrepancies noted.

e. Data quality or usability affected? (Please explain)

Comments:

N/A

4. Case Narrative

a. Present and understandable?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

Narrative indicates MS/MSD recoveries and RPD failures for chromium.

c. Were all corrective actions documented?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

Post-digestion spike for chromium was successful, and labortory duplicate RPD were within QC criteria.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

None - no qualification necessary.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. All applicable holding times met?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

c. All soils reported on a dry weight basis?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

e. Data quality or usability affected? (Please explain)

Comments:

No

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

ii. All method blank results less than PQL?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

iii. If above PQL, what samples are affected? Comments:

N/A

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

No data affected, blank results were within QC criteria.

v. Data quality or usability affected? (Please explain) Comments:

N/A

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics - One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

○ Yes ○ No ◉ NA (Please explain) Comments:

Only inorganic analyses performed under this work order (Work Order 1143868)

ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples?

◉ Yes ○ No ○ NA (Please explain) Comments:

iii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

◉ Yes ○ No ○ NA (Please explain) Comments:

iv. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/DMSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

○ Yes ◉ No ○ NA (Please explain) Comments:

RPD for MS/MSD pair were outside QC criteria. Laboratory duplicate met QC criteria.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

None, laboratory duplicate met QC criteria, no qualification necessary.

vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

No Data affected.

vii. Data quality or usability affected? (Please explain) Comments:

No

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses - field, QC and laboratory samples?

○ Yes ○ No ◉ NA (Please explain) Comments:

Inorganic analyses only in this work order.

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

○ Yes ○ No ◉ NA (Please explain) Comments:

Inorganic analyses only in this work order.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

Inorganic analyses only in this work order.

iv. Data quality or usability affected? (Use the comment box to explain.).

Comments:

N/A

d. Trip Blank - Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

○ Yes ○ No ◉ NA (Please explain.) Comments:

Inorganic analyses only in this work order.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

○ Yes ○ No ◉ NA (Please explain.) Comments:

Inorganic analyses only in this work order.

iii. All results less than PQL?

○ Yes ○ No ◉ NA (Please explain.) Comments:

Inorganic analyses only in this work order.

iv. If above PQL, what samples are affected?

Comments:

N/A

v. Data quality or usability affected? (Please explain.)

Comments:

N/A

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

◉ Yes ○ No ○ NA (Please explain) Comments:

Laboratory duplicate submitted under different work order from these three samples.

ii. Submitted blind to lab?

◉ Yes ○ No ○ NA (Please explain.) Comments:

iii. Precision - All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute Value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

◉ Yes ○ No ○ NA (Please explain) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

○ Yes ◉ No ○ NA (Please explain) Comments:

f. Decontamination or Equipment Blank (if applicable)

○ Yes ○ No ◉ NA (Please explain) Comments:

Only disposable sample equipment used during sample collection - No equipment blank taken.

i. All results less than PQL?

○ Yes ○ No ◉ NA (Please explain) Comments:

Only disposable sample equipment used during sample collection - No equipment blank taken.

ii. If above PQL, what samples are affected?

Comments:

N/A

iii. Data quality or usability affected? (Please explain.)

Comments:

N/A

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

◉ Yes ○ No ○ NA (Please explain) Comments:

Reset Form

LABORATORY DATA
QUALITY ASSURANCE SUMMARY
Kolmakof Mine Site Interim Removal Action 2014

Project Number: BE1452
ADEC Contaminated Site Number: 2404.38.014

This report summarizes a review of analytical results for work order numbers 1143790, 1143831, 1143868, and 1143947 for samples collected on 8/12/2014, 8/12/2014, 8/16/2014, and 8/19/2014, respectively. Samples were collected by Environmental Compliance Consultants (ECC) under the oversight of Brice Environmental Services Corporation (Brice), and submitted to SGS Environmental Services (SGS), Alaska. Samples were analyzed for the following parameters:

- Diesel Range Organics (DRO), using Alaska Method 102
- Arsenic, Chromium, Mercury, and Nickel using EPA Method 6020A

Quality Assurance Program

A quality assurance (QA) program was followed that addressed project administration, sampling protocols, data review, and data QA. Sample QA was provided by Brice through strict adherence to sampling protocols. Chain-of-custody (COC) procedures were followed as an integral part of the QA program.

Data validation consisted of the following:

- Verifying that quality control (QC) blanks were properly prepared, identified, and analyzed.
- Reviewing COC records for completeness, signatures, and dates.
- Verifying that surrogate analyses (when applicable) are within recovery acceptance limits.
- Verifying that Laboratory Control Samples (LCS) and Laboratory Control Sample Duplicates (LCSD) are within recovery acceptance limits.
- Verifying that Matrix Spike (MS) and Matrix Spike Duplicate (MSD) recoveries and relative percent differences (RPDs) are within recovery acceptance criteria.
- Verifying that Laboratory Duplicate results (when appropriate) are within RPD acceptance criteria.
- Reviewing the Continuing Calibration Verification (CCV) recoveries are within recovery criteria.
- Evaluating the result RPD between original and blind field duplicate (QC) samples.
- Providing an overall assessment of laboratory data quality and qualifying sample results if necessary.

Data Qualifications

The comments presented in this report refer to the field procedures and the laboratory's performance in meeting the QC specifications. The sample results were reviewed using the following documents:

- ADEC, 18 AAC 75 Oil and Other Hazardous Substances Pollution Control (ADEC, Revised as of April 8 2012).
- ADEC, Underground Storage Tanks Procedure Manual Guidance for Treatment of Petroleum – Contaminated Soil and Water and Standard Sampling Procedures (ADEC, November 2002).
- ADEC, Draft Field Sampling Guidance (ADEC, May 2010).
- ADEC, Technical Memorandum, Environmental Laboratory Data and Quality Assurance Requirements (ADEC, March 2009).
- ACEC, Draft Guidance on Multi-Increment Soil Sampling (ADEC, March 2009).
- EPA Document 530/SW-846, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, fourth edition (EPA, November 1991).
- EPA Document 540-10-011R, USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review (EPA, January 2010).
- EPA Document 540-R-08-01, USEPA Contract Laboratory Program National Functional Guidelines for Superfunds Organic Methods Data Review (EPA, June 2008).

Data Validation

Data Package

The data packages were checked for transcription errors, omissions, or other anomalies. No anomalies were found, except as noted below:

- The type of data package was not identified on the Chain of Custody or Sample Receipt Form.

Holding Times and Preservation

Samples were appropriately preserved upon collection and were submitted to SGS. Sample analyses were conducted within holding time criteria. No issues were noted in regard to sample preservation or handling.

Laboratory Method Blanks

Laboratory method blanks were analyzed at the appropriate frequencies. No analytes were detected in method blanks at or above the method reporting limits (MRL).

Trip Blanks

No trip blanks were included in the subject work orders.

Surrogate Recovery Results

Surrogate analyses were performed at the required frequencies in Work Order 1143831 and the results were within EPA and SGS percent recovery acceptance limits.

Continuing Calibration Verification

Continuing calibration verifications (CCVs) were performed at the required frequencies, and percent recoveries were within EPA and SGS percent recovery acceptance limits.

Field Duplicates

The following field duplicates were collected:

- KTM14-3 is the duplicate of KTM14-2
- KRM14-6 is the duplicate of KRM14-5.

For analytes detected above the MRL, duplicate/parent RPDs are summarized below.

RELATIVE PERCENT DIFFERENCES

Parent sample (Duplicate sample) Analyte RPD (%)

KRM14-5 (KRM14-6) Mercury RPD = 81.4%

Parent sample and field duplicate results exceed the RPD QC limit of 50% for mercury in work order 1143947. Mercury results in Work Order 1143947 are qualified "J" to indicate estimated quantities. Duplicate sample RPDs for arsenic, chromium, and nickel were below 50% and no qualification was required.

Parent sample and field duplicate RPD results in work order 1143790 were below 50% for all analytes and no qualification was required.

Matrix Spike/Matrix Spike Duplicates

Matrix spike/matrix spike duplicate (MS/MSD) samples were performed at the required frequencies, and percent recoveries and RPDs were within EPA and SGS acceptance limits with the following exceptions:

- Work order 1143790 – MS/MSD recovery for mercury were outside acceptance criteria. The post-digestion spike was successful and no qualification required. RPD was within acceptance 20% acceptance criterion for all analytes.
- Work order 1143868 – MSD recovery for barium was outside acceptance criteria. Post digestion spike was successful and barium was not a target analyte. No qualification required. MS/MSD RPD was outside acceptance criteria for chromium. The sample duplicate RPD was within acceptance criteria, no data qualification was required.
- Work order 1143947 – MS/MSD recoveries for chromium and mercury were outside acceptance critera. The post-digestion spike was successful and no data qualification was required. MS/MSD RPD were outside the acceptance criterion for mercury. The laboratory duplicate RPD was outside the acceptance criterion for mercury. Mercury results for samples in work order 1143947 (KRM14-01, KRM14-02, KRM14-03, KRM14-04, KRM14-04, KRM14-05, KRM14-06, and KRM14-07) are qualified "J" to indicate estimated quantities.

Laboratory Control Samples/Laboratory Control Duplicate Samples

Laboratory Control Samples (LCSs) were analyzed for all inorganic analyses, and LCS/LCSDs were analyzed at the appropriate frequencies for organic analyses. All LCS results in work orders 1143790, 1143868, and 1143947, met percent recovery acceptance limits. LCS/LCSD results in work 1143831 order met percent recovery and RPD acceptance limits.

Laboratory Duplicate Samples

Laboratory duplicate samples were analyzed for work orders 1143790, 1143868, and 1143947. All results were within acceptance criteria except for the laboratory duplicate analysis of mercury in work order 1143947 as noted above. Affected data (KRM14-01, KRM14-02, KRM14-03, KRM14-04, KRM14-04, KRM14-05, KRM14-06, and KRM14-07) are qualified “J” to indicate estimated quantities.

Laboratory duplicate samples were not analyzed in work order 1143831. This is acceptable due to the analysis of an LCS/LCSD pair for DRO.

APPENDIX E

RECORDS OF DISPOSAL

2014 Kolmakof Mine Site Removal Action Report
Kolmakof Mine Site, Alaska

BUREAU OF LAND MANAGEMENT ALASKA STATE OFFICE

4700 BLM Road

Anchorage, AK 99507-2591

December 2014

WASTE MANAGEMENT

WASTE MANAGEMENT
17629 Cedar Springs Lane
Arlington, OR 97812
(541) 454-2643
(541) 454-3279 Fax

October 14, 2014

Environmental Compliance Consultants Inc.
1500 Post Road
Anchorage AK 99501

CERTIFICATE OF DISPOSAL

Waste Management, Inc. dba Columbia Ridge Landfill has received NON HAZARDOUS Waste material from Environmental Compliance Consultants Inc.

Date of Disposal:	Sept 10 & 18, 2014
Generator:	BLM Kolmakof Mine Site
Site Address:	4700 BLM Rd – Anchorage AK 99507
Profile #:	100638AK
Total Containers:	5
Total Tons Disposed:	101.58
Waste Description:	Metals Impacted Soil

The non hazardous waste material described above was managed in compliance with all applicable laws.

Julie Valdez

Julie Valdez
Operations Specialist

Seal # 98 4444

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
AKR000004317	3	907-830-1225	2014-00300

GENERATOR

5. Generator's Name and Mailing Address
BLM-KOLMAKOF MINE SITE
4700 BLM ROAD
ANCHORAGE, AK 99507
Generator's Phone: 907-267-1226

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Northern Air Cargo — U.S. EPA ID Number: AKD003845526

7. Transporter 2 Company Name: ECC, INC. (907) 644-0428 — U.S. EPA ID Number: AKR000202408

8. Designated Facility Name and Site Address
WM COLUMBIA RIDGE LANDFILL
18177 CEDAR SPRINGS LANE
ARLINGTON, OR 97182-6512
Facility's Phone: (541) 454-2030 — U.S. EPA ID Number: ORD987173457

HM	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
	1. NON-REGULATED SOLID(SOIL)	1	CM	40000	P
	2.				
	3.				
	4.				

RECEIVED
SEP 16 2014
Anchorage Field Office

13. Special Handling Instructions and Additional Information
1) Profile 100636AK (20 bags)
W 6077

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Lawrence J Beck — Signature: [signature] — Month: 08 Day: 16 Year: 14

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Grace Wheeler — Signature: [signature] — Month: 8 Day: 16 Year: 14

Transporter 2 Printed/Typed Name: Jeff Wolf — Signature: [signature] — Month: 8 Day: 22 Year: 14

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month: Day: Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Sarah Mastriona — Signature: Sarah Mastriona — Month: 09 Day: 10 Year: 14

NON-HAZARDOUS WASTE MANIFEST (Continuation Sheet)	19. Generator ID Number	20. Page	21. Waste Tracking Number
	AKR000004317	2 OF 3	2014-00300

22. Generator's Name

BLM-KOLMAKOF MINE SITE

23. Transporter 3 Company Name: WEAVER BROTHERS — U.S. EPA ID Number: AKD002848372

24. Transporter 4 Company Name: TOTEM OCEAN TRAILER EXPRESS — U.S. EPA ID Number: WAD070397955

HM	25. Waste Shipping Name and Description	26. Containers No.	26. Containers Type	27. Total Quantity	28. Unit Wt./Vol.	

29. Special Handling Instructions and Additional Information

GENERATOR

TRANSPORTER

30. Transporter ____ Acknowledgment of Receipt of Materials

Printed/Typed Name: Michael K O'Brien — Signature: M K O'B — Month: 8 Day: 27 Year: 14

31. Transporter 4 Acknowledgment of Receipt of Materials

Printed/Typed Name: Billy Cox — Signature: [signature] — Month: 8 Day: 29 Year: 14

DESIGNATED FACILITY

32. Discrepancy

DESIGNATED FACILITY TO GENERATOR

NON-HAZARDOUS WASTE MANIFEST (Continuation Sheet)	19. Generator ID Number	20. Page	21. Waste Tracking Number
	AKR000004317	3 OF 3	2014-00300

22. Generator's Name

BLM-KOLMAKOF MINE SITE

23. Transporter 5 Company Name ~~R TRANSPORT~~ ACTA — U.S. EPA ID Number ~~WAH000028388~~ WAH000042946

24. Transporter 6 Company Name Union Pacific Railroad Co. — U.S. EPA ID Number NED001792910

HM	25. Waste Shipping Name and Description	26. Containers No.	26. Containers Type	27. Total Quantity	28. Unit Wt./Vol.	

29. Special Handling Instructions and Additional Information

GENERATOR

TRANSPORTER

30. Transporter 5 Acknowledgment of Receipt of Materials

Printed/Typed Name — Signature: Terry Gunn — Month 9 Day 8 Year 14

31. Transporter 6 Acknowledgment of Receipt of Materials

Printed/Typed Name — Signature — Month 9 Day 8 Year 14

DESIGNATED FACILITY

32. Discrepancy

#5 ACTA Transportation

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	AKR000004317	3	907-830-1225	2014-00301

GENERATOR

5. Generator's Name and Mailing Address: BLM-KOLMAKOF MINE SITE
4700 BLM ROAD
ANCHORAGE, AK 99507
Generator's Phone: 907-267-1226

Generator's Site Address (if different than mailing address):

6. Transporter 1 Company Name: Northern Air Cargo — U.S. EPA ID Number: AKD003845526

7. Transporter 2 Company Name: ECC, INC. (907) 644-0428 — U.S. EPA ID Number: AKR000202408

8. Designated Facility Name and Site Address:
WM COLUMBIA RIDGE LANDFILL
18177 CEDAR SPRINGS LANE
ARLINGTON, OR 97182-6512
Facility's Phone: (541) 454-2030 — U.S. EPA ID Number: ORD987173457

HM	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
	1. NON-REGULATED SOLID(SOIL)	1	CM	40000	P	
	2.					
	3.					
	4.					

RECEIVED
SEP 16 2014
Anchorage Field Office

13. Special Handling Instructions and Additional Information
1) Profile 100638AK (20 bags)
W 6291

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Lawrence J Beck — Signature: [signature] — Month: 08 — Day: 16 — Year: 14

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Grace Wheeler — Signature: [signature] — Month: 8 — Day: 16 — Year: 14

Transporter 2 Printed/Typed Name: Jeff Waite — Signature: [signature] — Month: 8 — Day: 27 — Year: 14

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month — Day — Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Sarah Mastriona — Signature: Sarah Mastriona — Month: 09 — Day: 10 — Year: 14

NON-HAZARDOUS WASTE MANIFEST (Continuation Sheet)	19. Generator ID Number	20. Page	21. Waste Tracking Number
	AKR000004317	2 OF 3	2014-00301

22. Generator's Name

BLM-KOLMAKOF MINE SITE

23. Transporter 3 Company Name: WEAVER BROTHERS — U.S. EPA ID Number: AKD002848372

24. Transporter 4 Company Name: TOTEM OCEAN TRAILER EXPRESS — U.S. EPA ID Number: WAD070397955

HM	25. Waste Shipping Name and Description	26. Containers No.	26. Containers Type	27. Total Quantity	28. Unit Wt./Vol.	

29. Special Handling Instructions and Additional Information

GENERATOR

TRANSPORTER

30. Transporter 3 Acknowledgment of Receipt of Materials

Printed/Typed Name: Brian Clyde — Signature: Brian Clyde — Month: 8 Day: 29 Year: 14

31. Transporter ____ Acknowledgment of Receipt of Materials

Printed/Typed Name: Michael Trigilio — Signature: [signature] — Month: 8 Day: 29 Year: 14

DESIGNATED FACILITY

32. Discrepancy

NON-HAZARDOUS WASTE MANIFEST (Continuation Sheet)	19. Generator ID Number	20. Page	21. Waste Tracking Number
	AKR000004317	3 OF 3	2014-00301

22. Generator's Name

BLM-KOLMAKOF MINE SITE

23. Transporter 5 Company Name ~~R-TRANSPORT~~ A-1-A Logistics U.S. EPA ID Number 42941 WAH000029[illegible]

24. Transporter 6 Company Name Union Pacific Railroad Co. U.S. EPA ID Number NED001792910

HM	25. Waste Shipping Name and Description	26. Containers No.	26. Containers Type	27. Total Quantity	28. Unit Wt./Vol.	

29. Special Handling Instructions and Additional Information

GENERATOR

TRANSPORTER

30. Transporter ____ Acknowledgment of Receipt of Materials

Printed/Typed Name Santos Signature [signature] Month 9 Day 8 Year 14

31. Transporter ____ Acknowledgment of Receipt of Materials

Printed/Typed Name Signature Month Day Year

DESIGNATED FACILITY

32. Discrepancy A-1-A Logistics Transport [signature] 9-8-14

Driver A=27

170-BLC-O 6 10502 (Rev. 8/06)

DESIGNATED FACILITY TO GENERATOR

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	AKR000004317	3	907-830-1225	2014-00302

GENERATOR

5. Generator's Name and Mailing Address
BLM-KOLMAKOF MINE SITE
4700 BLM ROAD
ANCHORAGE, AK 99507
Generator's Phone: 907-267-1226

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Northern Air Cargo — U.S. EPA ID Number: AKD003845526

7. Transporter 2 Company Name: ECC, INC. (907) 644-0428 — U.S. EPA ID Number: AKR000202408

8. Designated Facility Name and Site Address
WM COLUMBIA RIDGE LANDFILL
18177 CEDAR SPRINGS LANE
ARLINGTON, OR 97182-6512
Facility's Phone: (541) 454-2030 — U.S. EPA ID Number: ORD987173457

HM	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
	1. NON-REGULATED SOLID(SOIL)	1	CW	40000	P	
	2.					
	3.					
	4.					

RECEIVED
SEP 16 2014
~~Anchorage Field Office~~

13. Special Handling Instructions and Additional Information
1) Profile 100638AK (20 bags)
Transporter #1 BOL # (345 2236 2196)
W 6241

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Lawrence J Beck — Signature: [signature] — Month: 08 — Day: 16 — Year: 14

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Grace Wheeler — Signature: [signature] — Month: 8 — Day: 16 — Year: 14

Transporter 2 Printed/Typed Name: Jeff Wolfe — Signature: [signature] — Month: 8 — Day: 16 — Year: 14

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month — Day — Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Sarah Mastriona — Signature: Sarah Mastriona — Month: 09 — Day: 10 — Year: 14

NON-HAZARDOUS WASTE MANIFEST (Continuation Sheet)	19. Generator ID Number	20. Page	21. Waste Tracking Number
	AKR000004317	2 OF 3	2014-00302

22. Generator's Name

BLM-KOLMAKOF MINE SITE

23. Transporter 3 Company Name: WEAVER BROTHERS — U.S. EPA ID Number: AKD002848372

24. Transporter 4 Company Name: TOTEM OCEAN TRAILER EXPRESS — U.S. EPA ID Number: WAD070397955

HM	25. Waste Shipping Name and Description	26. Containers No.	26. Containers Type	27. Total Quantity	28. Unit Wt./Vol.	

GENERATOR

29. Special Handling Instructions and Additional Information

TRANSPORTER

30. Transporter ____ Acknowledgment of Receipt of Materials

Printed/Typed Name: Michael K O'Brien — Signature: M l K O'B — Month: 8 Day: 28 Year: 14

31. Transporter 4 Acknowledgment of Receipt of Materials

Printed/Typed Name: Britty Cox — Signature: [signature] — Month: 8 Day: 29 Year: 14

DESIGNATED FACILITY

32. Discrepancy

NON-HAZARDOUS WASTE MANIFEST (Continuation Sheet)	19. Generator ID Number	20. Page	21. Waste Tracking Number
	AKR000004317	3 OF 3	2014-00302

22. Generator's Name

BLM-KOLMAKOF MINE SITE

23. Transporter 5 Company Name ~~R TRANSPORT~~ U.S. EPA ID Number WAH000028388

24. Transporter 6 Company Name Union Pacific Railroad Co. U.S. EPA ID Number NED001792910

HM	25. Waste Shipping Name and Description	26. Containers No.	26. Containers Type	27. Total Quantity	28. Unit Wt./Vol.	

29. Special Handling Instructions and Additional Information

GENERATOR

30. Transporter 5 Acknowledgment of Receipt of Materials

Printed/Typed Name [illegible] Signature [signature] Month 9 Day 8 Year 14

31. Transporter 6 Acknowledgment of Receipt of Materials

Printed/Typed Name [illegible] Signature [signature] Month 9 Day 8 Year 14

TRANSPORTER

32. Discrepancy TRANSPORT #5 ALTA EPA# WAH0000 42941

DESIGNATED FACILITY

DESIGNATED FACILITY TO GENERATOR

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
AKR000004317	3	907-830-1225	2014-00303

5. Generator's Name and Mailing Address: BLM-KOLMAKOF MINE SITE
4700 BLM ROAD
ANCHORAGE, AK 99507
Generator's Phone: 907-267-1225
Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Northern Air Cargo — U.S. EPA ID Number: AKD003845526

7. Transporter 2 Company Name: ECC, INC. (907) 644-0428 — U.S. EPA ID Number: AKR000202408

8. Designated Facility Name and Site Address:
WM COLUMBIA RIDGE LANDFILL
18177 CEDAR SPRINGS LANE
ARLINGTON, OR 97182-6512
Facility's Phone: (541) 454-2030 — U.S. EPA ID Number: ORD987173457

HM	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
	1 NON-REGULATED SOLID(SOIL)	1	CM	40000	P
	2.				
	3.				
	4.				

13. Special Handling Instructions and Additional Information
1) Profile 100638AK (20 bags)

RECEIVED
... 10 2014
Anchorage Field Office

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Lawrence J Beck — Signature — Month: 08 Day: 16 Year: 14

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Grace Wheeler — Signature — Month: 8 Day: 16 Year: 14

Transporter 2 Printed/Typed Name: Jeff Walk — Signature — Month: 8 Day: 16 Year: 14

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month: Day: Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Vicky McKinney — Signature — Month: 9 Day: 18 Year: 14

GENERATOR | INT'L | TRANSPORTER | DESIGNATED FACILITY

169-BLC-O 6 10498 (Rev. 9/09)

DESIGNATED FACILITY TO GENERATOR

NON-HAZARDOUS WASTE MANIFEST (Continuation Sheet)	19. Generator ID Number	20. Page	21. Waste Tracking Number
	AKR000004317	2 OF 3	2014-00303

22. Generator's Name

BLM-KOLMAKOF MINE SITE

23. Transporter 3 Company Name: WEAVER BROTHERS — U.S. EPA ID Number: AKD002848372

24. Transporter 4 Company Name: TOTEM OCEAN TRAILER EXPRESS — U.S. EPA ID Number: WAD070397955

HM	25. Waste Shipping Name and Description	26. Containers No.	26. Containers Type	27. Total Quantity	28. Unit Wt./Vol.	

29. Special Handling Instructions and Additional Information

GENERATOR

TRANSPORTER

30. Transporter 3 Acknowledgment of Receipt of Materials

Printed/Typed Name: SEAN COADELL — Signature — Month 09 Day 03 Year 14

31. Transporter 4 Acknowledgment of Receipt of Materials

Printed/Typed Name: Kelly Bro — Signature — Month 9 Day 5 Year 14

DESIGNATED FACILITY

32. Discrepancy

NON-HAZARDOUS WASTE MANIFEST (Continuation Sheet)

19. Generator ID Number: AKR000004317

20. Page: 3 OF 3

21. Waste Tracking Number: 2014-00303

22. Generator's Name: BLM-KOLMAKOF MINE SITE

23. Transporter 5 Company Name: R TRANSPORT — U.S. EPA ID Number: WAH000028388

24. Transporter 6 Company Name: Union Pacific Railroad Co. — U.S. EPA ID Number: NED001792910

HM	25. Waste Shipping Name and Description	26. Containers No.	26. Containers Type	27. Total Quantity	28. Unit Wt./Vol.	

29. Special Handling Instructions and Additional Information

GENERATOR

TRANSPORTER

30. Transporter 5 Acknowledgment of Receipt of Materials

Printed/Typed Name: Cindi Cryg — Signature: Cindi Cryg — Month: 9 — Day: 15 — Year: 14

31. Transporter 6 Acknowledgment of Receipt of Materials

Printed/Typed Name: Sarah Mastriona — Signature: Sarah Mastriona — Month: 09 — Day: 17 — Year: 14

DESIGNATED FACILITY

32. Discrepancy

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	AKR000004317	3	907-830-1225	2014-00304

GENERATOR

5. Generator's Name and Mailing Address: BLM-KOLMAKOF MINE SITE
4700 BLM ROAD
ANCHORAGE, AK 99507
Generator's Phone: 907-267-1226

Generator's Site Address (if different than mailing address):

6. Transporter 1 Company Name: Northern Air Cargo — U.S. EPA ID Number: AKD003845526

7. Transporter 2 Company Name: ECC, INC. (907) 644-0428 — U.S. EPA ID Number: AKR000202408

8. Designated Facility Name and Site Address:
WM COLUMBIA RIDGE LANDFILL
18177 CEDAR SPRINGS LANE
ARLINGTON, OR 97182-6512
Facility's Phone: (541) 454-2030 — U.S. EPA ID Number: ORD987173457

HM	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
	1. NON-REGULATED SOLID(SOIL)	1	CM	40000	P	
	2.					
	3.					
	4.					

13. Special Handling Instructions and Additional Information
1) Profile 100638K (20 supersacks)

RECEIVED
[illegible] 10.2014
Anchorage Field Office

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Lawrence J Beck — Signature: [signature] — Month: 08 Day: 16 Year: 14

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Grace Wheeler — Signature: [signature] — Month: 8 Day: 16 Year: 14

Transporter 2 Printed/Typed Name: Jeff Walke — Signature: [signature] — Month: 9 Day: 3 Year: 14

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month: Day: Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Vicky McKinney — Signature: [signature] — Month: 9 Day: 18 Year: 14

NON-HAZARDOUS WASTE MANIFEST (Continuation Sheet)

19. Generator ID Number	20. Page	21. Waste Tracking Number
AKR000004317	2 OF 3	2014-00304

22. Generator's Name

BLM-KOLMAKOF MINE SITE

23. Transporter 3 Company Name: WEAVER BROTHERS — U.S. EPA ID Number: AKD002848372

24. Transporter 4 Company Name: TOTEM OCEAN TRAILER EXPRESS — U.S. EPA ID Number: WAD070397955

HM	25. Waste Shipping Name and Description	26. Containers No.	26. Containers Type	27. Total Quantity	28. Unit Wt./Vol.	

29. Special Handling Instructions and Additional Information

TRANSPORTER

30. Transporter 3 Acknowledgment of Receipt of Materials

Printed/Typed Name: Darryl Edenshaw WBC 102 — Signature: Darryl Edenshaw WBC 102 — Month: 9 Day: 15 Year: 14

31. Transporter 4 Acknowledgment of Receipt of Materials

Printed/Typed Name: Bobby Fox — Signature: [signature] — Month: 9 Day: 15 Year: 14

DESIGNATED FACILITY

32. Discrepancy

NON-HAZARDOUS WASTE MANIFEST (Continuation Sheet)	19. Generator ID Number	20. Page	21. Waste Tracking Number
	AKR000004317	3 OF 3	2014-00304

22. Generator's Name

BLM-KOLMAKOF MINE SITE

23. Transporter 5 Company Name ~~R TRANSPORT~~ U.S. EPA ID Number WAH000028388

24. Transporter 85 Company Name Union Pacific Railroad Co. U.S. EPA ID Number NED001792910

HM	25. Waste Shipping Name and Description	26. Containers No.	26. Containers Type	27. Total Quantity	28. Unit Wt./Vol.	

29. Special Handling Instructions and Additional Information

TRANSPORTER

30. Transporter 5 Acknowledgment of Receipt of Materials

Printed/Typed Name Cindi Cregg Signature Cindi Cregg Month 9 Day 15 Year 14

31. Transporter ____ Acknowledgment of Receipt of Materials

Printed/Typed Name ____ Signature ____ Month ____ Day ____ Year ____

DESIGNATED FACILITY

32. Discrepancy

APPENDIX F

SAMPLE LOCATION SURVEY DATA

2014 Kolmakof Mine Site Removal Action Report
Kolmakof Mine Site, Alaska

BUREAU OF LAND MANAGEMENT ALASKA STATE OFFICE

4700 BLM Road

Anchorage, AK 99507-2591

December 2014

2014 Kolmakof Mine Site Interim Removal Action
Soil Sample Survey Data

Point #	Latitude	Longitude	Elevation (m)	Associated Sample ID	Location	Survey Date
1	61.59289564	-158.943233	37.495	KRM14-01	rm01 side wall	8/20/2014
2	61.59289105	-158.943238	37.958	KRM14-02	rm02 sidewall	8/20/2014
3	61.59284039	-158.943309	37.975	KRM14-03	rm03 sidewall	8/20/2014
4	61.59285709	-158.943359	37.634	KRM14-04	rm04 sidewall	8/20/2014
5	61.59288575	-158.943313	37.162	KRM14-05/06	rm05 and 06 sidewall duplicate	8/20/2014
6	61.59289992	-158.94328	36.938	KRM14-07	rm07 sidewall	8/20/2014
7	61.59647893	-158.95959	80.563	KTM14-08	ms01 bottom	8/20/2014
8	61.59646435	-158.959595	80.999	KTM14-06	ms02 bottom	8/20/2014
9	61.59645673	-158.959556	81.237	KTM14-07 (wall)	ms03 wall	8/20/2014
10	61.5964605	-158.959526	80.244	KTM14-07 (floor)	ms04 bottom	8/20/2014