FINAL WORK PLAN

CLEANUP WORK PLAN GRANITE MINE REMOVAL OF CONTAINERS WITH HAZARDOUS MATERIALS Chugach National Forest Prince William Sound, Alaska

July 2015

Contract Number: AG-0120-C-15-0003

Prepared For:



USDA Forest Service Chugach National Forest 161 East 1st Avenue, Door 8 Anchorage, AK 99501

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These Plans have been prepared by Bethel Environmental Solutions LLC (Bethel) and have been reviewed and approved for distribution.

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Appendix A: Health and Safety Plan

Acronyms and Abbreviations

°C	degrees Celsius
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AST	aboveground storage tank
Bethel	Bethel Environmental Solutions LLC
CFR	Code of Federal Regulations
CO	Contracting Officer
CoC	Chain of Custody
COR	Contracting Officer's Representative
CY	cubic yard
DQO	Data Quality Objectives
DRO	Diesel Range Organics
EPA	U.S. Environmental Protection Agency
FTL	Field Team Lead
GAC	granular activated carbon
GPS	Global Positioning System
HSP	Health and Safety Plan
IDW	investigation-derived waste
LCS	Laboratory Control Sample
LEL	lower explosive limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
OBS	Oil Burning Specifications
OZ.	ounce
PAH	polycyclic aromatic hydrocarbon
PCB	Polychlorinated Biphenyl
PID	photoionization detector
PM	Project Manager
PPE	personal protective equipment
QA	Quality Assurance
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
RRO	Residual Range Organics
Sf	square feet
SGS	SGS North America Inc.
SSHO	Site Safety and Health Officer
SVOCs	semi-volatile organic compounds
TCLP	Toxicity Characteristic Leaching Procedure
TLC	Teflon [®] septum-lined cap
TSDF	treatment, storage, and disposal facility
USDA	United States Department of Agriculture
USFS	USDA Forest Service
WSA	Wilderness Study Area

1.0 INTRODUCTION

Bethel Environmental Solutions LLC (Bethel) had been contracted by the United States Department of Agriculture (USDA) Forest Service (USFS) to remove and dispose of deteriorated containers and impacted soil associated with releases from drum(s) at the Granite Mine located in Prince William Sound, Alaska. The site is registered on the Alaska Department of Environmental Conservation (ADEC) Contaminated Sites Database as File Number 2114.38.014 and Hazard ID Number 2446. The land is managed by the USFS and located with the Chugach National Forest, Glacier Ranger District.

This Cleanup Work Plan presents the procedures for removal of deteriorated drums, drums containing product, impacted soil, and other miscellaneous debris to mitigate threats posed to human health and the environment. A site-specific Health and Safety Plan (HSP) is included as Appendix A. The HSP describes protocols necessary for the anticipation, recognition, evaluation, and control of hazards associated with the cleanup phase of the Granite Mine Drum Removal project.

1.1 Physical Setting and Location

Granite Mine is located near the west shore of Port Wells, approximately 22 miles northeast of Whittier and 60 miles east of Anchorage, Alaska in Section 10 of Township 10 North, Range 7 East of the Seward Meridian. The site extends from sea level up to around 900 feet above mean sea level. The project location is shown in Figure 1-1.

The site can be reached by boat or floatplane; helicopter access is not considered as an option. There are no roads at the site and access is via hiking an existing primitive trail. The work area is located completely within a Wilderness Study Area (WSA) and special rules apply. Such rules prohibit the use of motorized equipment, machinery and tools except that such tools may be used on a case-by-case basis using the minimum requirement analysis and specific format cited in policy R10 FSM 2320.03. The policy for the WSA is to minimize the disturbance of the area to the greatest extent practicable and conduct work in a manner that preserves the area's wilderness character.

1.2 Site Background

Bethel conducted a site reconnaissance on May 4, 2015. The objective of the site reconnaissance was to determine the magnitude and scope of container cleanup based on site reconnaissance findings, input from the USFS, and evaluation of analytical sample data. During the reconnaissance, Bethel personnel coordinated with USFS site personnel to inspect the Granite Mine trail and specific site work areas including the Upper Camp, the Old Mill Site, the Lower Camp, and the trail between the Old Mill Site and the Lower Camp. A site sketch showing these different work areas is shown in Figure 1-2.

The site reconnaissance included collection and analysis of tar-like material from two drums; one sample was collected from a drum at the Old Mill Site (Drum GM01WD) and one sample was collected from a drum at the Upper Camp (Drum GM02WD). In addition, a sample was collected from soil adjacent to the Upper Camp drum to evaluate potential impacts from the released tar material. Analytical data indicated that this soil contained diesel-range organics (DRO), residual-range organics (RRO), and heavy metals (arsenic, cadmium, and lead) in concentrations that exceed ADEC cleanup levels.

A Site Reconnaissance Report (Bethel 2015) was prepared that identified for off-site removal approximately 51 empty drums, the two drums containing tar-like product, approximately one cubic yard (CY) of tar-impacted soil, one 500-gallon aboveground storage tank (AST), and miscellaneous metal debris that included two refrigerators and one stove.

Sample analytical data confirmed that the drum contents are not hazardous and can be disposed of as non-hazardous waste by NRC Emerald Alaska, Sample data for the impacted soil indicated that this soil

may be Resource Conservation and Recovery Act (RCRA)-regulated hazardous waste that can be disposed by NRC Emerald Alaska. The recovered metal drums and other metallic debris will be disposed of as scrap metal at an approved metal recycling facility.

1.3 Scope of Work

Granite Mine cleanup activities will include the following:

- Overpack the two drums with oil//grease product (Upper Camp drum and Old Mill Site drum) and transport to NRC Emerald Alaska for disposal as non-hazardous waste.
- Conduct limited tar-impacted soil removal (approximately 1 CY) immediately adjacent to the Upper Camp drum (GM02WD). Collect confirmation soil samples from excavation area. Containerize soil and transport to NRC Emerald Alaska in Anchorage for disposal.
- Decommission the Upper Camp 500-gallon AST cut into manageable size pieces and transport for scrap metal recycling with the recovered drums.
- Collect and remove approximately 51 drums and transport to Anchorage for scrap metal recycling.
- Recover, transport, and dispose of two abandoned refrigerators and one abandoned stove from the Lower Camp. Transport and dispose of with scrap metal.

1.4 **Project Organization**

Key personnel and contact information is provided in Table 1-1.

Title	Organization	Name	Telephone	Cell
Contracting Officer (CO)	USFS	Karen Weidenbaugh	(907) 743-9569	NA
Contracting Officer's Representative (COR)	USFS	Michael Wilcox	(907) 586-9379	(907) 723-1860
Project Manager (PM)	Bethel	John Davis	(907) 644-1731	(907) 444-6694
Site Safety and Health Officer (SSHO)	Bethel	John Davis	(907) 644-1731	(907) 444-6694
Field Team Lead (FTL)	Bethel	Eric Unruh	(907) 644-1726	(907) 382-3959
ADEC-Qualified Sampler	Bethel	John Davis	(907) 644-1731	(907) 444-6694
Environmental Program Specialist IV	ADEC	Anne Marie Palmieri	(907) 766-3184	NA

Table 1-1. Project Organization





2.0 CLEANUP ACTIVITIES

This section describes specific activities to be conducted during the project cleanup.

2.1 Mobilization and Demobilization

Personnel, equipment and supplies will be mobilized from Whittier to the Granite Mine beach landing area using a chartered landing craft. The landing craft will stay on-site throughout the day for emergency evacuation purposes if needed. The crew will be lodged in Whittier and will use the landing craft for daily trips to the Granite Mine site.

2.2 Empty Drum Recovery

The USFS identified and designated approximately 51 drums for removal and disposal. The majority of the drums are empty; approximately 10 percent contained rainwater. Drums with rainwater will be discharged on-site. If sheen is observed, the water will be treated with a portable granular activated carbon (GAC) system prior to discharge. Drums will be recovered and transported to a staging area at a location above high tide at the beach landing. The drums will be loaded onto the landing craft and transported to Whittier. The drums will be transferred to a truck for transport to Schnitzer Steel in Anchorage for recycling.

2.3 Recovery of Drums with Product

Two drums were identified with tar-like material - the drum located at the Old Mill Site (GM01WD) and the drum located at the Upper Camp (GM02WD). The two drums will be placed into properly labeled/manifested overpack containers and transferred to the staging area pending landing craft transport to Whittier and truck transport to NRC Emerald Alaska in Anchorage for disposal.

2.4 Impacted Soil Removal

Tar-impacted soil is present adjacent to the Upper Camp drum containing tar-like material. Up to one CY of impacted soil will be hand excavated using visual/olfactory observations and/or headspace photoionization detector (PID) field screening to guide the lateral and vertical extent of excavation. Excavated soil will be placed into a lined super sack or overpack for subsequent transport by landing craft to Whittier and transport via truck or barge to NRC Emerald Alaska in Anchorage for disposal.

2.5 AST Removal

An approximately 500-gallon AST is located in the Upper Camp. The AST will be cut into manageable sized sections for subsequent transport by landing craft to Whittier and truck transport to Schnitzer Steel in Anchorage for recycling.

Prior to cutting, the AST atmosphere will be measured using a RAE 4-gas meter. If the tank atmosphere lower explosive limit (LEL) is less than 10 percent, then tank cutting can be conducted. Tank cutting will be conducted using a specialized metal cutting skill saw with non-sparking blades. If the AST LEL atmosphere is greater than 10 percent, the AST will be purged with a non-sparking pump or blower to introduce clean air into the tank and purge fuel vapors. When the AST atmosphere LEL is less than 10 percent, tank cutting may be conducted.

2.6 Miscellaneous Debris Removal – Lower Camp

Bethel will collect two abandoned refrigerators and one abandoned stove and place at the beach area material staging area pending landing craft transport to Whittier. After transport to Whittier, the refrigerators will be transported to the Anchorage Municipal Landfill for refrigerant draining and disposal. The stove will be added to the empty drums for transport to Schnitzer Steel for recycling.

2.7 Field Documentation

The project field notebook will be hardbound with numbered pages. Entries in the logbook will include as a minimum the following information:

- Job site location and weather conditions;
- Work performed and personnel onsite;
- Global positioning system (GPS) and photographic information;
- Sampling information including sampling personnel, sample number, location, matrix, number of containers, sampling equipment, and other pertinent information;
- Site sketch as appropriate and needed (sampling locations, north arrow, scale, distance to nearby structure, size of sampling site, depth of collection, soil types, depth to ground water, surface drainage);
- Other comments on the work performed; and
- Signature, time, and date per page.

A Tailgate Safety Briefing Site Log will be kept for all personnel on the site with worker signatures acknowledging review and understanding of the HSP and the potential site hazards at the site.

3.0 SAMPLING AND ANALYSIS

This section describes the procedures for collection, labeling, packaging, and shipment of confirmation soil samples. Analytical results will be used to demonstrate that impacted soil has been removed to concentrations below ADEC cleanup levels (ADEC 2015). Sample collection, chemical analysis, and chemical parameter measurements will be performed so that the resulting data meet the ADEC and U.S. Environmental Protection Agency (EPA) requirements. All analytical samples will be submitted to SGS Laboratories (SGS) in Anchorage, Alaska for analysis. SGS is an ADEC-approved laboratory. Samples will be collected by an ADEC-Qualified Sampler.

3.1 Confirmation Soil Sampling

After impacted soil has been removed as described in Section 2.4, confirmation soil sample(s) will be collected from the floor of the excavation. Samples will be collected at a frequency shown in Table 2B of ADEC *Draft Field Sampling Guidance* (ADEC 2010). If the floor of the excavation is 50 square feet (sf) or less, one confirmation sample will be collected. If the excavation floor is 51 to 124 sf, two confirmation soil samples will be collected. If the excavation floor is greater than 250 sf, two samples plus one sample for each additional 250 sf (or portion thereof) will be collected. Sample locations will be chosen based on visual/olfactory observations and/or headspace PID field screening. Since the depth of the excavation is expected to less than one foot deep, it may impractical to collect excavation sidewall samples per ADEC guidance. However, floor samples will be collected near the edges of the excavation to confirm removal of contaminated soil laterally, unless otherwise indicated by field screening.

Organic material, rocks, pebbles, and loose material will be scraped from the sampling location. The sample will be collected with a clean disposable scoop or spoon and placed in unused jars provided by the laboratory. Each sample location will be marked with a brush flag and weatherproof tag with the sample identification (ID) recorded on the tag so that sample locations may be relocated in the future. Sample locations will be documented with a sketch map, photographs, and GPS coordinates.

The soil samples will be analyzed for RCRA metals (arsenic, barium, cadmium, non-speciated chromium, lead, mercury, selenium, and silver), DRO, RRO, and polycyclic aromatic hydrocarbons (PAH) which are regulated semi-volatile organic compounds (SVOCs). Table 3-1 shows container and preservation/holding time specifications for these analytes.

Parameter	Container	Preservation/ Holding Times		
RCRA Metals EPA Method 60208-ounce (oz.) wide-mouth glass jar; Teflon® septum-lined cap (TLC)DRO/RRO AK102/1038-oz. amber wide-mouth glass jar; TLCSVOCs EPA Solid Waste Method (SW) 8270C8-oz. amber wide-mouth glass jar; TLC		4° Celsius (C) ± 2 °C; 180 days to analyze, 28 days for mercury		
		4 °C ± 2 °C; 14 days to extract; 40 days to analyze extraction		
		4 °C ± 2 °C; 14 days to extract; 40 days to analyze extraction		

Table 3-1: Soil Sample Containers, Holding Times and Preservation

3.2 Sample Labeling

The sample labels will be securely attached to the sampling jars. Indelible, waterproof ink will be used to label containers. The sample labels will contain the following information:

• Project name

- Unique identifying sample number
- Date, time, and place of collection
- Name of collector
- Laboratory analysis
- Preservation used

The analytical samples will be numbered as follows.

- 1. Year (last two digits): The year 2015 will be labeled as <u>15</u>.
- 2. Project Identifier: Granite Mine project will be labeled as GM.
- 3. Primary Sample Number: 01 through 10.
- Matrix: Soil: <u>SL</u> Waste Disposal (Drum Contents): <u>WD</u>

For example, sample number "15GM07SL" would indicate the seventh analytical soil sample collected.

3.3 Sample Handling

The purpose of sample preservation procedures is to maintain the original character of the analytes during storage and shipment to the laboratory. Most sample analyses require samples be maintained at a temperature of 4 °C \pm 2 °C. Waste samples such as oils and tars do not have this temperature or a preservative requirement. All sample containers will be obtained from the project laboratory and be kept in sealed containers until used in the field.

The ADEC-Qualified Sampler will maintain the chain of custody (CoC) records for all field samples. A CoC form will be utilized to document custody of all samples during transportation to the laboratory. Each CoC form will be filled out in ink and include the following information.

- Client information
- Contact name and telephone number
- Site and contract number
- Unique sample number
- Date and time of collection
- Matrix and type of sample
- Analyses required and preservation
- Collector's signature, date, and time
- Custody seals conditions and serial numbers
- Name of collector
- Shipping tracking numbers
- Custody transfer signatures, dates, and times

Soil sample bottles will be placed in coolers with frozen gel-ice packs to maintain a temperature of 4 °C \pm 2 °C. The original and one copy of the CoC form will be placed inside a sealed plastic bag and taped to

the lid of each cooler. Copies will be retained for project files. The form will be filled out and signed by the ADEC-Qualified Sampler. The coolers may be held by Bethel until delivered in person to the laboratory or may be shipped via common carrier. The name of receiving person, laboratory work order number, date of sample receipt, and sample condition and temperature will be placed on the CoC forms at the time the sample coolers are received at SGS.

4.0 WASTE MANAGEMENT

This section describes waste management practices that will be employed to characterize, containerize, manifest, transport, and dispose of the waste streams that will be generated during project activities described in Section 2.0. Waste streams generated from project cleanup activities include scrap metal, tar/oil/grease material present in two drums, tar-impacted soil, and investigation-derived waste (IDW). Waste streams other than scrap metal and IDW will be disposed of at an appropriate offsite treatment, storage, and disposal facility (TSDF). The following subsections describe each waste stream.

4.1 Scrap Metal

Scrap metal recovered from the site will include approximately 51 abandoned drum carcasses, a 500gallon AST, two refrigerators, and a stove. The scrap metal will be sized and temporarily staged above high tide near the beach landing. The metal will be transported by landing craft to Whittier and loaded into an open-top container staged near the dock. At completion of recovery activities, the container will be transported by truck to Schnitzer Steel in Anchorage.

If present, refrigerant coils or units potentially containing refrigerant (e.g., Freon) may be removed from the two abandoned refrigerators recovered from the Lower Camp. Bethel will transport the units to the Anchorage Municipal Landfill where they will be drained of refrigerant and properly disposed. Alternatively, the entire refrigerators will be transported to the Anchorage Municipal Landfill for refrigerant draining and disposal.

4.2 Tar/Oil/Grease Material

Analytical data from samples collected during the May 2015 site reconnaissance show that drum contents are non-hazardous. The two drums containing tar/oil/grease material will be overpacked in new 180-gallon overpack drums and transported by landing craft to Whittier. NRC Emerald Alaska will pick up the overpacked drums and transport them to their facility in Anchorage for recycling, as appropriate,

4.3 Tar-Impacted Soil

Analytical data from samples collected during the May 2015 site reconnaissance indicate that the tarimpacted soil contains concentrations of DRO, RRO, and heavy metals at concentrations that exceed ADEC cleanup levels. A sample of the soil will be collected for Toxicity Characteristic Leaching Procedure (TCLP) Metals analysis. If results indicate the impacted soil is RCRA-regulated hazardous waste, a Uniform Hazardous Waste Manifest will be prepared. If TCLP results show the impacted soil is nonhazardous waste, the material will be shipped with a bill of lading or non-hazardous waste manifest. The excavated tar-impacted soil will be placed into a 1 CY lined super sack. This super sack will be labeled and manifested for transport via truck or barge to NRC Emerald Alaska for disposal.

4.4 Investigation-Derived Waste

Disposable sampling equipment will be used to minimize generation of waste. Only the minimum required amount of sample will be collected and any additional sample aliquots will be returned to the original container from which they were collected. Used absorbent pads, personal protective equipment (PPE), trash, and disposable sampling equipment will be placed in a heavy duty plastic contractor bag for transportation and disposal at the Anchorage Municipal Landfill.

4.5 EPA Identification Numbers

The EPA identification (ID) number for the Granite Mine site is AK0001764471. The EPA ID number for Sundog Charters LLC, transporter of the soil waste stream from the work site to Whittier, is AKR000206276. The EPA ID number for NRC Emerald Alaska is AKR000004184. This ID number is applicable to NRC Emerald Alaska as a transporter and a non-RCRA TSDF.

Table 4-1 presents a summary of disposal activities to be conducted at the various locations throughout the work site.

Location	Items Identified for Removal	Disposal	
	1 drum containing grease/tar	NRC Emerald Alaska	
Lipper Camp Site	Up to 1 CY of tar-impacted soil		
opper Camp Sile	16 empty drums		
	1 500-gallon AST		
	1 drum containing grease/tar	NRC Emerald Alaska	
	9 empty drums	Metal Recycler	
Trail between Old Mill and Lower Camp sites	25 empty drums	Metal Recycler	
Lower Camp Site	2 refrigerators, 1 stove	Metal Recycler	

Table 4-1. Summary of Disposal Actions

5.0 QUALITY ASSURANCE/QUALITY CONTROL

The objectives of the Quality Assurance (QA)/Quality Control (QC) program are to ensure compliance with the contract specifications, ensure sampling and analysis in accordance with ADEC and EPA protocols, and to provide scientifically defensible data in terms of precision, accuracy, and reproducibility. Characterization of wastes does not require the same degree of QA/QC that confirmation sampling requires to document cleanup of a site. Thus, field QA or QC samples are not required and will not be collected.

An ADEC-Qualified Sampler will collect samples. Clean disposable sampling equipment will be used to prevent cross-contamination. Samples will be collected at the correct depth and location. The sampling jars will be properly labeled and kept at 4 °C \pm 2 °C when applicable. An approved laboratory (SGS) will conduct the proper analyses. Analyses will be conducted in accordance with standard EPA test methods (EPA 2007).

5.1 Data Quality Objectives, Analytical Methods, Method Detection Limits, and Practical Quantitation Limits

Data Quality Objectives (DQO) are to develop and implement procedures for evaluating data in an accurate, precise, and complete manner so that sampling procedures and collections provide information that is comparable to and representative of the actual field conditions. Precision, accuracy, and completeness are quantitative QC that the analytical laboratory has control over. The SGS QC program is based upon the laboratory control samples (LCS), which are performed on analyte-free water samples. These samples monitor the laboratory's daily performance of routine analytical methods. Method blanks, which also use LCS, identify any background interference that might lead to false positive data.

Field accuracy and precision will not be measured as part of Phase 1 project activities. However, laboratory accuracy and precision will be evaluated. Precision is the measure of agreement among analyses performed using the same test procedure. Precision is estimated by the relative percent difference (RPD) between two duplicate samples. Matrix Spike (MS)/Matrix Spike Duplicate (MSD) samples are analyzed to determine precision RPD. Accuracy is the degree of agreement between a sample's known concentration and the actual measured value. Accuracy reflects the total error of a measurement.

Completeness is the amount of valid data obtained (non-R flagged) compared to the amount of valid data expected. Completeness is reported for each method matrix and analyte. The data reports will include an overview of the project, sample description information, analytical results, QC reports, and a description of analytical methods. Completeness requirement is 95 percent for aqueous and 90 percent for soils. The laboratory routinely calibrates instruments to establish proper detection limits. Preventative maintenance is performed on all instruments to prevent down time.

Representativeness and comparability are controlled by field personnel and their investigative objectives. Field personnel will adhere to standard field sampling and analytical procedures. Representativeness is the degree in which a group of samples reflects the characteristics of the media at that sampling point. Representativeness of the data is the characteristic of a population, parameter variation at a sampling point, or an environmental condition. Duplicate samples provide a representation of parameters at a specific location. However, waste characterization does not require that these criteria meet a specific goal.

Comparability is the confidence with which one data set can be compared to another data set. The methods used were specified by regulatory agencies. The results need to be normalized to standardized conditions, using comprehensive reporting formats.

5.2 ADEC Laboratory Data Checklists

Bethel will complete the most recent version of the ADEC Laboratory Data Review Checklist for each SGS laboratory data report. The checklists will be provided as an appendix to the Cleanup Report.

6.0 PROJECT REPORTING

At completion of cleanup activities, Bethel will prepare draft and final versions of a Cleanup Report for ADEC and USFS review and approval. The report will be prepared in accordance with the USFS Statement of Objectives and will describe field activities conducted. work plan deviations, analytical results, recommendations, and other pertinent elements. As described in Section 5.0, Bethel will prepare ADEC Laboratory Data Checklists for each SGS sample delivery group and will append them to the report.

7.0 REFERENCES

- Alaska Department of Environmental Conservation (ADEC), 2010, *Draft Field Sampling Guidance*, May 2010.
- ADEC, 2015, 18 Alaska Administrative Code (AAC) 75, Oil and Other Hazardous Substances Pollution Control, June 2015
- ADEC, 2002, Underground Storage Tanks (UST) Procedures Manual, November 2002
- Bethel Environmental Solutions LLC (Bethel) 2015. Draft Phase 1 Site Reconnaissance Report. June 2015.
- U.S. Environmental Protection Agency (EPA), 2007, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* EPA Publication SW-846, Revision 6, February 2007.

Appendix A:

Health and Safety Plan

APPENDIX A SITE-SPECIFIC HEALTH & SAFETY PLAN

GRANITE MINE DRUM REMOVAL Whittier, AK

July 2015

Contract Number: AG-0120-C-15-0003

Prepared For:



USDA Forest Service Chugach National Forest 161 East 1st Avenue, Door 8 Anchorage, AK 99501

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Acronyms and Abbreviations

AHA	Activity Hazard Analysis
AST	aboveground storage tank
Bethel	Bethel Environmental Solutions LLC
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
FTL	Field Team Lead
HSP	Health and Safety Plan
LEL	lower explosive limit
NTCRA	Non-Time Critical Removal Action
PFD	Personal Flotation Device
PPE	Personal Protective Equipment
SSHO	Site Safety and Health Officer
USDA	US Department of Agriculture
USFS	US Forest Service

1.0 INTRODUCTION

The purpose of this site-specific Health and Safety Plan (HSP) is to describe protocols necessary for the anticipation, recognition, evaluation, and control of hazards associated with the cleanup phase (Phase 2) of the Granite Mine Drum Removal project. The HSP will be on the job site throughout the duration of the project and will be enforced by the designated Bethel Environmental Solutions LLC (Bethel) Site Safety and Health Officer (SSHO). This site-specific HSP is to be used in conjunction with the Bethel Services Corporate Health and Safety Plan which will be available onsite during cleanup activities.

1.1 Site Background

The Granite Mine area (Site) is currently being managed by the US Department of Agriculture (USDA) Forest Service (USFS) under the authorities of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). An Engineering Evaluation/Cost Analysis dated January 2002 was prepared in order to provide Non-Time Critical Removal Action (NTCRA) cleanup alternatives regarding the release or threat of release of possible CERCLA hazardous substances from the Site mainly focused in the tailings area. To date, no NTCRA has been executed at the Site. However, petroleum-based hazardous materials in newly discovered old containers pose risk to human and ecological receptors and need to be removed from the site in the short term, regardless of long term CERCLA management of the Site, such as with existing mine tailings. Petroleum products are excluded from CERCLA by regulation as "hazardous substances" and cleanup action to remove such containers is being sought outside of a CERCLA NTCRA.

The former Granite Mine is situated about 22 miles northeast of Whittier, Alaska, and 60 miles east of Anchorage, Alaska, in Section 10 of Township 10 North, Range 7 East of the Seward Meridian. A ruptured drum is estimated to have leaked approximately five gallons of a tar-like substance to the surrounding soil; it is estimated that approximately five gallons of this substance remains in the drum. Coordinates of the drum (Garmin Oregon 550t) are: 60° 58.226'; W148° 12.657' at 465 feet above mean sea level. There are several other suspect drums down-gradient of this drum around the old mill and there may be other containers containing hazardous material strewn around the Site.

1.2 Change Management

This HSP will be kept onsite during field activities and will be reviewed as necessary. Changes to this HSP shall be documented and approved by the designated Bethel SSHO. Examples of changes that may require a plan revision include:

- Change in scope or addition of new tasks;
- Change in contaminants of concern or change in concentrations of contaminants of concern; and
- New hazards or hazards not previously identified that are not addressed in this HSP.

1.3 Training

Prior to commencement of cleanup field activities, the SSHO will conduct a site-specific health and safety orientation to ensure that all personnel are informed of the known site hazards discussed in Section 2.0. The SSHO shall also ensure that field personnel who may come in contact with potentially hazardous materials have received a minimum of 40 hours of Hazardous Waste Operations and Emergency Response (HAZWOPER) health and safety instruction in accordance with *29 Code of Federal Regulations (CFR) 1910.120(e)*. This includes eight hours of annual refresher training, as appropriate.

1.4 Daily Safety Meetings

The SSHO will conduct daily safety meetings prior to commencing work with project personnel to review the hazards and controls that apply for each day's activities, as well as any environmental issues, requirements and/or best management practices. The topic(s) of the meeting and attendees will be documented in the field logbook and/or a daily safety meeting form.

2.0 ACTIVITY HAZARD ANALYSIS

As described in Section 1.0 of the work plan, the cleanup phase of the project involves mobilization of field personnel to the job site via watercraft, removing and transporting empty drums and drums with product, remediating impacted soil, inerting and sizing an aboveground storage tank (AST), removing miscellaneous debris, and collecting confirmation soil samples.

Individual activity hazard analyses (AHA) have been performed for each major task which identify potential hazards, control measures, and training and personal protective equipment (PPE). The AHA summary is provided in Table 2-1.

Task	Potential Hazards	Hazard Controls	
Site Access via Watercraft	Slips, trips, falls on deck Drowning/submersion Hypothermia	All occupants will wear personal flotation devices (PFD) Sit where directed by captain Minimize sudden movements when entering/exiting craft	
		Keep arms and legs inside vessel Vessel Safety Awareness Training	
Site Access	Slips, Trips, Falls Wildlife Encounters Biological Hazards Heat/Cold Stress Open Mine Shafts	Proper PPE Buddy system Proper use of bear spray Proper control of refuse and food Use sunscreen Use insect repellant Personal Noise Maker Maintain Bear Awareness	
AST Handling	Awkward Ergonomics Pinch Points Explosive Atmosphere Cuts and Abrasions Fire	Proper Lifting/Moving Technique Wear Proper PPE Monitor atmosphere with instruments Inert/flush tank before cutting Eliminate ignition sources Hot Work protocols	
Drum Handling	Awkward Ergonomics Pinch Points Contact with Product	Proper Lifting/Moving Technique Wear Proper PPE Stay upwind, avoid contact with product Eliminate ignition sources	
Sampling	Contact with Product	Wear Proper PPE Don't kneel or sit in contaminated media	

Table 2-1: Activity Hazard Analysis Summary

3.0 SAFETY PLANS AND PROCEDURES

This section describes safety plans and procedures specific to the site. The SSHO has overall responsibility to implement these programs although all site workers are empowered, and are expected to establish and maintain safe work practices at all times.

3.1 Buddy System

The "buddy system" will be maintained at all times. Two-way radios may be used to maintain voice contact. High-visibility outerwear will be worn at all times.

3.2 Severe Weather

Inclement weather may necessitate ceasing site operations. Heavy precipitation, high winds, electrical storms, or cold damp weather may affect worker's ability to function properly. Weather conditions will be continuously monitored by the SSHO and other site personnel. In most cases, cessation of work and seeking adequate cover/shelter will mitigate impacts from severe weather. Hypothermia may occur even in relatively mild weather if outer clothing becomes damp or saturated. Avoid damp clothing by wearing appropriate rain gear and/or seeking shelter during precipitation.

Personnel shall monitor each other at all times for signs of hypothermia which include shivering, numb extremities, mumbling, and reduction of cognitive abilities.

3.3 Unknown Objects/Materials

If unknown or suspect objects/materials are encountered (i.e. biological waste, cylinders, munitions and explosives of concern, unexpected stained/discolored soil) are encountered during site operations, ongoing activities shall be immediately suspended. Open mine shafts or adits are of particular concern at the Granite Mine site. The Bethel Field Team Lead (FTL) will consult with the USFS onsite coordinator of the encountered unknown. The area will be demarcated, without causing bodily injury personnel or disturbing the object/material. The unknown object/material will be described in the field logbook, as well as control methods. Site activities will commence with direction from the USFS onsite coordinator.

3.4 Personal Protective Equipment

Level D PPE work clothes will be worn during cleanup field activities and include steel-toe work boots, hard hats, gloves, safety glasses, and high-visibility vests. Work clothes will be sturdy material with long sleeves and long pants.

During sampling activities, disposable nitrile gloves will be worn to avoid skin contact with potentially hazardous materials. In addition, disposable Tyvek coveralls may be worn if the potential of encounter with oily substances is possible.

3.5 Explosive Atmosphere

An explosive atmosphere may be present in the AST or discarded drums. To prevent explosions and combustions, the AST atmosphere will be monitored with a properly calibrated RAE 4-gas meter. If the tank atmosphere lower explosive limit (LEL) is less than 10 percent, then tank cutting can be conducted. Tank cutting will be conducted using a specialized metal cutting skill saw with non-sparking blades.

If the tank atmosphere is greater than 10 percent, the tank will be purged with a non-sparking fan or blower to introduce clean air into the tank and purge fuel vapors. When the tank atmosphere LEL is less than 10 percent, tank cutting may be conducted.

3.6 Fire Prevention

Ignition sources will be minimized. Smoking will only be allowed in designated areas clear of combustible sources. Butts will be completely extinguished and will not be discarded to the ground surface. Under no circumstances will ignition sources or open flame be allowed around drums containing, or suspected of containing product.

Sparks are not anticipated during cutting of the AST since non-sparking blades will be used. Nonetheless, a fire watch will be posted during cutting operations and will remain on fire watch 30 minutes after cutting has finished. In addition, a fire extinguisher will be readily available.

3.7 Emergency Procedures and Contacts

In the event of an emergency, site personnel will muster to a designated muster area. The emergency 911 will be initiated, followed by notification to the Bethel PM. A satellite phone will be available for emergency use. Table 3-1 provides local emergency contacts and telephone numbers.

Sundog Charters LLC is providing marine transportation via their My Marie landing craft. The location of the landing craft can be tracked on the Sundog Charters website at sundogcharters.com. Click on the "Vessel Location" tag. A text message can be sent to the vessel operator by clicking on the "Message" tab on the left side of the web page.

Department/Personnel	Name/Address	Phone Number
Emergency Dispatch	N/A	911 (907) 580-5555
Bethel Project Manager	John Davis	(907) 644-1731 (907) 444-6694
Bethel SSHO	John Davis	(907) 644-1731 (907) 444-6694
Girdwood Clinic	131 Lindblad Ave Girdwood, AK 99587	(907) 783-1355
Whittier Health Clinic	301 Kenai Street Whittier AK 99693	(907) 472-2303
Providence Medical Center	3200 Providence Drive Anchorage, AK 99508	(907) 562-2211
Alaska State Troopers – Girdwood Post	N/A	(907) 783-0972
Alaska State Troopers – Anchorage Post	N/A	(907) 269-5511
Anchorage Police Dept.	4501 Elmore Road Anchorage, AK 99507	(907) 786-8900 (907) 786-8500

Table 3-1: Emergency Contacts and Telephone Numbers