U.S. Army Corps of Engineers
Alaska District

Proposed Plan
FORT BABCOCK
Formerly Used Defense Site

Sitka, Alaska **October 2019**
FUDS Project No. F10AK035304

INTRODUCTION

Sections:

The U.S. Army Corps of Engineers (USACE) requests your comments on this Proposed Plan for remedial action at the Fort Babcock Formerly Used Defense Site (FUDS) located in Sitka, Alaska.

The Proposed Plan was prepared in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and follows the requirements from Engineer Regulation 200-3-1, FUDS Program Policy (USACE, 2004) and United States Environmental Protection Agency (EPA) guidance. The Proposed Plan is a document that USACE is required to issue to fulfill the public participation requirements of Section 117(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), also known as Superfund [42 U.S.C. § 9601 et al.]. The site described in this Proposed Plan is a CERCLA site; however, it is not listed on the National Priority List. USACE is issuing this Proposed Plan as part of its public participation responsibilities under CERCLA.

The Department of Defense (DoD) is authorized to carry out a program of environmental restoration at former military sites under the Defense Environmental Restoration Program, which includes clean-up efforts at FUDS. FUDS are properties that were under the jurisdiction of the DoD and owned by, leased to, or otherwise possessed by the United States that were transferred from DoD control prior to 17 October 1986. FUDS properties range from privately owned lands to state or Federal lands such as national parks as well as residential land, schools, and industrial areas. The FUDS program includes former Army, Navy, Marine, Air Force, and other defense-used properties. Over 500 FUDS have been identified in Alaska.

Although this Proposed Plan presents a preferred alternative for selected sites, a final determination will be made only after the public has had an opportunity to comment. After considering all public comments, USACE will prepare a Decision Document describing the selected remedy. The Decision Document will include responses to all significant public comments in a section called the Responsiveness Summary. Changes to the proposed approach may be made through this comment review process and highlights the importance of community involvement.

This Proposed Plan addresses contamination under CERCLA, which excludes petroleum hydrocarbon contamination, such as fuel releases. In addition to this, the Proposed Plan discusses alternatives addressing the petroleum, oil, and lubricants (POL)-contamination at the site. POL contamination at the site is not addressed under CERCLA but is being addressed under the authority of the Defense Environmental Restoration Program (DERP), United States Code, Title 10, Section 2701, et seq. The DERP provides authority to cleanup petroleum contamination if it poses an imminent and substantial endangerment to public health, welfare or the environment.

This Proposed Plan is limited to a summary of the history, data, and actions conducted at each of the subject sites. Detailed information is available for review in the Remedial Investigation (RI) and Feasibility Study (FS) reports that have been previously submitted and are now on file in the information repository at the Sitka Public Library.

ACRONYMS

This Proposed Plan contains many acronyms that are used to represent complex terms, titles, and other words or phrases. The use of acronyms enables us to provide more information to the reader with less space and greater brevity. We have provided a list of acronyms and their meanings at the end of the Proposed Plan. Please refer to the list, as needed, to improve your understanding of the sites.

PURPOSE

The purpose of this Proposed Plan is to:

- describe the environmental conditions and the risks posed by the sites,
- describe the clean-up criteria for the sites,
- describe the investigations, remedial actions, and removal actions conducted at each site,
- describe the remedial alternatives that were considered with a comparative evaluation,
- present the preferred alternative for the sites,
- request public comment on the remedial alternatives, and
- provide information on how the public can be involved in the final decision.

SITE BACKGROUND AND CHARACTERISTICS

Site Location and History

The Fort Babcock FUDS is located approximately 11 miles west of Sitka, Alaska at Shoals Point on the southeast corner of Kruzof Island (Figure 1, note figures are located at end of the Proposed Plan). Sitka Sound separates Kruzof Island from the community of Sitka and access to Fort Babcock is limited to marine vessels, recreational sea kayakers, small fixed-wing aircraft, and helicopters (if a landing area can be identified).

In the 1930s, the U.S. War Department developed “Plan Orange,” in response to the possibility of war in the Pacific. Alaska was recognized as part of a strategic defense triangle. Facilities established as part of the “Sitka Naval Air Station” in 1939 were the first wartime construction in Alaska. After the bombing of Hawaii’s Pearl Harbor on 07 December 1941 and the bombing of Alaska’s Dutch Harbor on 03 June 1942, military activity at Sitka increased.

On 09 June 1942, a Harbor Defense Plan to support the Sitka Naval Operating Base was initiated as part of the U.S. Army Coastal Defenses. The plan called for three modern, 200 series 6-inch gun batteries to be constructed on Kruzof Island (Battery 290), Biorka Island (Battery 291), and Makhnati Island (Battery 292).

The U.S. War Department acquired 4,070 acres on Kruzof Island for Fort Babcock by Executive Order 8877, dated 29 August 1941. At Fort Babcock, planned construction of one fixed, 6-inch gun battery (Battery 290) and additional support facilities were initiated, but stopped before completion in 1944 when the Sitka Naval Operating Base was decommissioned, as the focus of the war in Alaska shifted to the Aleutian Islands. Facilities that were constructed included a 7,500-square-foot (ft^2) concrete bunker (magazine and fire control station); observation tower; water tank; diesel fuel storage tanks; Quonset huts; a power plant; maintenance shops; wood-frame buildings utilized for troop quarters, administration, and supply/equipment storage; and a 220-foot by 40-foot (ft) dock at Shoals Point (USACE, 2014).

PRIOR INVESTIGATIONS

USACE conducted an initial site inventory of Fort Babcock in 1985 (USACE, 1986). Between 1995 and 2013, multiple environmental investigations were conducted to identify and investigate the potential contaminated sites associated with Fort Babcock. During this time, a concrete bunker (Battery 290), four collapsed timber structures, a collapsed timber bulkhead, 19 Quonset huts, a concrete crib, a landfill area, and two aboveground storage tanks (AST) used for possible fuel storage were investigated.

A RI was conducted in 2012 and 2013 to further investigate previously identified sources of contamination and additional features. The RI activities also included magnetic surveys to identify metallic debris; temporary well point installation; soil boring advancement; field screening; and collection of soil, sediment, surface water, groundwater, and wipe samples of concrete and tile for laboratory analysis. Fuels, metals, and polychlorinated biphenyls (PCBs) were identified in soil. The areas investigated during the RI are shown on Figure 2 and included the following.

- **Fuel Storage Area:** Visual survey; magnetic survey; and sample collection and analysis for soil, groundwater, sediment, and surface water.
- **Landfill Area:** Visual survey, magnetic survey, and soil sample collection and analysis.
- **Tar Drum Area:** Soil and groundwater sample collection and analysis.
- **Septic Tank #1:** Surface water and sediment sample collection and analysis.
- **Septic Tank #2:** Soil, sediment, surface water, and groundwater sample collection and analysis.
- **Manhole #1:** Soil, sediment, surface water, and groundwater sample collection and analysis.
- **Power Plant:** Soil, concrete, surface water, groundwater, and tile wipe sample collection and analysis.

The land use, physical and chemical characteristics of the local aquifer, and other factors included under 18 Alaska Administration Code (AAC) 75.350 were evaluated to determine whether groundwater at the FUDS area is a current or reasonably anticipated drinking water source as part of the Phase II Remedial Investigation, Addendum I (USACE, 2015). A “350 determination” was made based on the characteristics of the FUDS that indicate groundwater in not considered a current or reasonably anticipated future source of drinking water. A more detailed explanation of this determination can be found in the Technical Memorandum for Record: Phase II Remedial Investigation, Addendum I (USACE, 2015).

SITE CHARACTERIZATION

Contamination at the Fort Babcock FUDS is mostly characterized by small and localized surface soil impacts associated with surface debris, tanks, or structure-related contaminant sources. These surface soil impacts include former fuel areas, septic tanks, a power plant, and a small landfill.

CERCLA Site Characterization: Soil samples collected from the Landfill Area during the RI were analyzed for volatile organic compounds (VOCs), target metals, and PCBs. Only two isolated metals, lead and nickel were detected above screening levels in soils. The lead and nickel did not exceed the applicable site specific cleanup levels and were eliminated as contaminants of potential concern. All other analytes had concentrations below the applicable cleanup levels, indicating that the area does not pose a risk to human health or the environment. Groundwater was not encountered in two temporary well points set at depths of 9 feet and 15 feet below ground surface. Due to the “350 Determination”, the groundwater exposure pathway was considered incomplete.

A concrete vault with a manhole (Manhole #1) is located north of Septic Tank #1 and was observed along with a marine outfall pipe during the May 2013 site visit. According to a historical map, this feature was part of a sewer system that serviced barracks and possibly a mess hall that ultimately discharged to the sound. During the RI, samples of various media (soil, groundwater, and sediment) were analyzed for PCBs and hexavalent chromium (soil). Silty, detrital material in Manhole #1 was analyzed for PCBs, toxicity characteristic leaching procedure volatile organic compounds/ semi-volatile organic compounds/ metals, and ignitability. All tested media had contaminant of concern (COC) concentrations below the applicable cleanup levels, indicating that the area does not pose a risk to human health or the environment.

The Power Plant Area (Figure 3) is a dilapidated concrete foundation with generator mounts and scattered building debris. The foundation was covered in enough debris to sustain small tree and bush growth (Photo 1). Soil samples collected and analyzed from this area had levels of PCBs up to 9,300 milligrams per kilogram (mg/kg). The contaminated areas were divided by levels of PCB concentration whereas one portion had concentrations between 1 and 50 mg/kg and the other portion had concentrations above 50 mg/kg. The volume of PCB-contaminated soil was estimated at 403 CY between 1 and 50 mg/kg and 156 CY above 50 mg/kg (USACE, 2017). Overall, the Fort Babcock FUDS contains over 550 CY of soil containing PCBs above the cleanup level of 1.0 mg/kg.

The Septic Tank #2 Area, located near the Power Plant, is composed of two open concrete boxes and the tank remnants. Currently, there is a stream flowing from the former septic pool into a wet area downslope, where it continues underground to the shoreline. Several sediment samples contained mercury above screening levels. Soil, sediment, and groundwater sample results were all below the applicable cleanup levels.

POL Site Characterization under DERP authority: The Fuel Storage Area is a former military docking and refueling area. The area contains remnant piping, fuel tank cribs, fuel drum remnants, timbers, and an 8,000-gallon AST (Photos 2, 3, 4, and Figure 4). This sub-site is estimated to have 82 cubic yards (CY) of diesel range organics (DRO)-impacted soil above the Alaska Department of Environmental Conservation (ADEC) Method 3 alternative cleanup level. Residual range organics (RRO) and DRO slightly above cleanup levels were detected in groundwater samples, but due to the "350 Determination," the groundwater exposure pathway is incomplete (USACE, 2015). Therefore, groundwater did not require further evaluation.

The Tar Drum Area is an area of approximately 50 ft^2 located 80 ft northeast and downhill of the Power Plant Area (Photo 5 and Figure 5). The area had distressed vegetation and a silvery gray sheen on the ground surface. Drum remnants were found, and some contained black/gray tar-like material. Soil samples from this sub-site contained DRO and RRO levels exceeding ADEC Method 3 cleanup levels. The total amount of contaminated soil and tar-like material was about 15 CY. Groundwater samples were collected and analyzed, but DRO and RRO did not exceed cleanup levels.

Overall, the Fort Babcock FUDS contains a total of approximately 100 CY of POL-contaminated soil that poses an imminent and substantial endangerment to the public health, welfare or the environment at the Fuel Storage Area and Tar Drum Areas because it exceeds the applicable ADEC cleanup levels and a complete exposure pathway exists. Tables 4 and 5 contain the estimated volumes and maximum contaminant levels found above site cleanup levels during the previous investigations.

Photo 1: Power Plant concrete foundation, facing south (USACE, 2014)

Photo 2: Drums at aboveground/buried piping area, facing south (USACE, 2013)

Photo 3: AST at Fuel Storage Area, facing west (USACE, 2013)

Photo 4: Inspecting AST within Fuel Storage Area, facing north (USACE, 2013)

The Septic Tank #1 sub-site consists of a concrete basin situated adjacent to an ephemeral stream. One sediment sample from within the septic tank contained polycyclic aromatic hydrocarbon (PAH) and RRO concentrations above the ADEC Method 2 human health cleanup levels for soil applicable in 2013 when the Phase I RI report was written. The results of the Septic Tank #1 sediment sample do not exceed the most stringent current ADEC cleanup level for RRO in soil, and the only PAH that exceeds ADEC's current human health cleanup level for soil is benzo(a)pyrene. PAH and RRO levels in the downstream sediment sample were below 2013 cleanup levels, which indicated lack of migration. Due to the limited, stagnant, and ephemeral nature of the surface water, direct contact or ingestion from recreational activities are unlikely to occur. As a result, direct contact and ingestion were considered insignificant pathways, and Septic Tank #1 does not pose an imminent and substantial endangerment to public health, welfare or the environment.

During the RI, soil, sediment, surface water, and groundwater samples were collected at Manhole #1 and analyzed for DRO; RRO; gasoline range organics; benzene, toluene, ethylbenzene, and xylene; PAHs; and total aromatic hydrocarbons/total aqueous hydrocarbons (surface water). All tested media had COC concentrations below the ADEC Method 2 cleanup levels, Alaska Water Quality Standards (AWQSs), and ADEC Table C groundwater cleanup levels, as applicable to each media, indicating Manhole #1 does not pose an imminent and substantial endangerment to human health or the environment.

At the Septic Tank #2 Area several sediment samples contained PAHs, but none exceeded ADEC Method 2 human health cleanup levels for soil, which indicates Septic Tank #2 does not pose an imminent and substantial endangerment to human health or the environment.

SUMMARY OF SITE RISKS

Introduction

The USACE conducted a Human Health Risk Assessment and Screening-level Ecological Risk Assessment for Fort Babcock FUDS to evaluate the potential risks to human and ecological receptors based on potential exposures to contaminants originating from the site. The risk assessments are presented in detail in the RI/FS and are summarized in this section. An updated Conceptual Site Model (CSM) was presented in the Phase II RI Addendum I Technical Memorandum and presented potential exposure pathways to contaminants at the site (USACE, 2015).

Human Health Risk

A human health CSM has been developed in accordance with federal guidelines under CERCLA. Current land use is predominantly un-guided recreation (e.g., sightseeing, hiking, camping, hunting) allowed by the land manager, the U.S. Forest Service (USFS). The USFS Land Management Plan designates the area, including the FUDS, as a Special Interest Area due to unique geologic values of the Mount Edgecumbe Geological Area. According to the USFS, the Special Interest Area designation prohibits residential land use. In addition, there is a very low probability the designation would change in the future based on the remoteness and geologic attributes of the area (USACE, 2018).

Although the reasonably anticipated future land use of the FUDS would remain the same as current land use, an unrestricted future land use scenario was initially assumed during the initial RI for conservative risk screening purposes. The CSM presented in the Phase II RI Addendum I (USACE, 2015) was updated to reflect the anticipated future land use (e.g., recreational). The pathways and receptors that are potentially complete, or where likely exposure exists, are summarized below.

Recreational User/Site Visitor (current/future): The most likely current and future human receptors include recreationists (e.g., hikers, hunters). Adults and children are both included as recreationists and site visitor receptors. Soil pathways include incidental ingestion and dermal absorption. Recreationists and site visitors may ingest edible vegetation during their time at the site. Since bioaccumulative compounds were detected above cleanup levels at the Power Plant (e.g., PCBs) and Landfill Areas (e.g., lead), ingestion of wild foods was considered a pathway for this receptor. Due to the remote nature and limited size of the site and the limited edible species occupying the site, ingestion of bioaccumulative compounds from the site in adequate volume to impose risk would be unlikely. While the ingestion of wild foods pathway is complete, the potential risk is considered insignificant based on expected minimal ecological exposure indicated through the Phase II RI ecological scoping process (USACE, 2014; USACE, 2015).

Ingestion of groundwater was retained as a potential future pathway during the RI as a conservative measure. The USFS designates the land encompassing the FUDS as a Special Interest Area. There are no plans to change this designation or allow seasonal or full-time occupancy of the island where a drinking water system would be necessary. It is unreasonable to include groundwater pathways for the limited recreational use of the area since receptor interactions with groundwater are not and will not be occurring. Further support for the FUDS area being neither a current nor reasonably anticipated future drinking water source is provided in the “350 Determination” outlined in the Phase II RI Addendum Technical Memorandum (USACE, 2015). Additionally, RI data show groundwater-to-surface water interactions do not yield any COC concentrations in surface water above the AWQS.

Exposure to surface water is a potentially complete, but insignificant pathway. All tested surface water samples indicate COC concentrations below the AWQS.

Subsistence Harvester/Consumers (current/future): Subsistence harvesters are assumed to have the same exposure and pathways as recreationists and site visitors. Additionally, subsistence harvesters and their families are also commonly subsistence consumers, who could be exposed to bioaccumulative compounds through the ingestion of wild foods pathway. Subsistence terrestrial foods include mink, deer, brown bear, mushrooms, berries, and fern. The range a subsistence hunter and/or gatherer covers and the terrestrial wildlife that is hunted for food is likely much greater than the impacted FUDS. Subsistence avian foods include duck, goose, and tern. Again, the home range of these animals would be much larger than the impacted FUDS locations, and the heavily forested conditions of the sub-sites typically do not provide habitat for many of these species.

Subsistence marine foods include salmon, halibut, lingcod, rockfish, herring, shellfish, crab, and seaweed. RI results indicate the marine environment has not been impacted by contaminants and exposure from marine foods is not expected. The absence of a habitat supportive of fish populations in the freshwater ephemeral streams associated with FUDS contamination precludes human consumption of aquatic organisms from these areas.

The Phase II RI ecological screening process indicated ecological exposure to contaminants is insignificant based on habitat and areal distribution of impacts. Therefore, human exposure through the ingestion of wild foods is also considered insignificant.

Inhalation: For all potential receptors, volatiles inhalation in ambient air is considered a complete pathway, although exposure is likely minor due to rapid dilution and atmospheric mixing. Inhalation of fugitive dust is considered an incomplete pathway for all receptors due to the wet climate and abundant vegetative ground cover in the form of mosses and underbrush.

Ecological Risk

An ecological CSM has been developed in accordance with federal standards. The CSM provides a general overview of the potential exposure pathways and ecological receptors to assess environmental risk on a site-wide basis. The generic ecological CSM indicates complete and significant exposure for ecological receptors is not expected. "Off-ramps" were identified for each of the sub-sites (Power Plant Area and Landfill Area); indicating further evaluation of risk to the environment is not warranted.

Risk Summary

Due to the current and anticipated future recreational land use, the Exposure Factor (EF) used to calculate cumulative risk was reduced from the default of 330 days per year to 14 days per year (USACE, 2015). An EF of 14 days per year more reasonably reflects the time a recreational user would be in contact with contaminated soil at the FUDS. Cumulative risk for the FUDS is driven by PCBs (USACE, 2018). Cumulative risk was calculated for a pre-remediation scenario using 2016 PCB data with an EF of 14 days. The cancer risk exceeds the acceptable NCP range of (1×10^{-4} to 1×10^{-6}) with a cancer risk of 6 in 10,000 (6×10^{-4}). Overall, risk at the site remains above the NCP risk range due to PCBs at the Power Plant sub-site.

Imminent and Substantial Endangerment Finding for POL under DERP

The POL contamination at the site was investigated to determine whether it poses an imminent and substantial endangerment to human health or the environment under DERP. To make this determination, the concentrations of petroleum compounds were compared to Alaska's Site Cleanup Rules (18 AAC 75 Article 3) which are indicative of when an imminent and substantial endangerment to the public health or welfare or the environment exists. The RI results indicate that DRO and RRO concentrations exceed the applicable cleanup levels and a complete exposure pathway exists at the Fuel Storage Area and the Tar Drum Area at Fort Babcock. Soil with concentrations of DRO and RRO that exceed the applicable cleanup levels pose an imminent and substantial endangerment to the public health.

REMEDIAL ACTION OBJECTIVE AND CLEANUP OBJECTIVES

The following was identified as the Remedial Action Objective (RAO) to address CERCLA soil contamination at the Fort Babcock FUDS:

- Minimize or prevent direct contact, outdoor inhalation, and ingestion of soil exceeding the cleanup level of 1.0 mg/kg total PCBs.

The extent of remaining contamination at the site was determined by comparing all available data to the cleanup level. The remedial investigation determined remaining contamination was limited to soil. Where groundwater was present, PCBs were not detected at concentrations above the cleanup level. For these reasons, potential exposure to contaminants is limited to soil pathways, such as direct contact, ingestion, and inhalation. Table 1 shows the concentration ranges of PCBs remaining above the cleanup level and estimated volume of contaminated soil that must be cleaned up to meet the RAO. The extent of impacted PCB contaminated soil is shown in Figure 3.

Table 1: Cleanup Level and Concentration of the CERCLA Contaminant Remaining Above Cleanup Level			
Location	Chemical	Cleanup Level (mg/kg)	Maximum Concentration Detected (mg/kg)
Power Plant Area	PCBs	1	9,300
	Concentration Range	Estimated Volume (CY)	
Power Plant Area	PCB (1-50 mg/kg)	403	
Power Plant Area	PCB (>50 mg/kg)	156	
	Total	559	

The evaluation of remedial alternatives detailed in the FS includes an analysis of the extent to which the alternatives comply with applicable or relevant and appropriate requirements (ARARs).

Chemical-specific and action-specific ARARs are shown in Table 2. The CERCLA-specific COC cleanup level of 1 mg/kg PCBs is identified in Table 2.

Table 2: ARARs			
Topic	Chemical of Concern	Regulation/Requirements Citation	Description
Chemical-specific ARARs			
Soil Cleanup	PCBs	Alaska Oil and Hazardous Substances Pollution Control Regulations [18 AAC 75.341(c) Table B1 PCB cleanup level]	This state regulation provides soil cleanup levels for CERCLA constituents and provide the basis for the site cleanup level of 1 mg/kg.
Action-specific ARARs			
Soil Storage	N/A	Alaska Oil and Hazardous Substances Pollution Control Regulations [18 AAC 75.370 (a)(2)]	Under PCB Alternative 2, this state regulation requires that contaminated soil be stored 100 feet from surface water.

AAC = Alaska Administrative Code
mg/kg = milligram per kilogram
PCBs = polychlorinated biphenyls

The ADEC requested consideration of multiple sections of the Code of Federal Regulations (CFR) and State of Alaska regulations as ARARs including 40 CFR 230 and 40 CFR 761, and AAC 70 and 18 AAC 75, respectively. The USACE has determined that some of these state and federal regulations are not ARARs. The proposed ARAR and USACE's rationale for not considering them ARARs are discussed below.

40 CFR 230.10(a): ADEC asserts this is an ARAR because USACE needs to access the site to execute the preferred alternative. The subject regulation prohibits the discharge of dredge or fill material in a wetland as defined by the Clean Water Act. The preferred alternative does not involve placing dredge or fill material into a wetland, which makes this regulation not applicable to the remedy. Accordingly, this is not an ARAR. In order to access the site, which is not part of the remedy itself, USACE must improve an existing road, which includes reconstructing collapsed culverts. This action triggers compliance with the Clean Water Act. Implementation of the preferred alternative would comply with the relevant substantive portions of Nation Wide Permit 38 – Cleanup of Hazardous and Toxic Waste.

40 CFR 761.61(a)(5)(i)(B)(2): ADEC asserts this is an ARAR because USACE must sample the soil on site. The subject regulation deals with disposal of PCB contaminated waste. This regulation does not apply onsite or affect the remedial action because all contaminated waste is being disposed of offsite. Accordingly, this is not an ARAR. USACE's cleanup action must comply with all applicable laws offsite, and will, therefore, comply with this provision.

18 AAC 70.010: ADEC asserts this is a substantive standard. This regulation states a person may not conduct an operation that causes or contributes to a violation of the water quality standards set by this chapter. This regulation does not contain a specific standard that addresses a CERCLA hazardous substance, pollutant, or contaminant. Accordingly, this is not an ARAR.

18 AAC 75.325(g): ADEC asserts this is an ARAR because it sets out the acceptable cumulative carcinogenic risk standard across all exposure pathways. This regulation requires that after site cleanup, the risk from hazardous substances does not exceed a cumulative carcinogenic risk standard of 1 in 100,000 across all exposure pathways. A risk calculation is not a cleanup standard or a standard of control. Accordingly, this is not an ARAR.

18 AAC 75.355(b): ADEC asserts this regulation is substantive in nature. This regulation requires sampling and analysis associated with the preferred alternative is conducted or supervised by a qualified environmental professional. This is not a cleanup standard, standard of control, or requirement that specifically addresses a CERCLA hazardous substance, pollutant, or contaminant; remedial action; or remedial location. This regulation does not impact how the remediation would happen, and therefore is not an ARAR. As a best management practice, sampling and analysis is conducted or supervised by a qualified environmental professional.

POL Cleanup Objectives: Alaska regulations provide methods to establish soil cleanup levels for petroleum hydrocarbons under Alaska Administrative Code (18 AAC 75), which are indicative of contamination posing an imminent and substantial endangerment to public health, welfare, or the environment. Table 3 shows cleanup levels for POL contaminants and estimated volumes of POL-contaminated soil that will be cleaned up to meet state requirements.

Table 3: Cleanup Levels and Concentrations of POL Contaminants Remaining Above Cleanup Levels

Location	Chemical	Cleanup Level (mg/kg)	Maximum Concentration Detected (mg/kg)
Fuel Storage Area	DRO	12,500	130,000
Tar Drum Area	DRO	12,500	46,000
	RRO	22,000	36,000
		Estimated Volume (CY)	
Fuel Storage Area	DRO	82	
Tar Drum Area	DRO, RRO	15	

REMEDIAL ALTERNATIVES

The Power Plant sub-site contains PCB-contaminated soil at concentrations above the cleanup level of 1 mg/kg. The Power Plant remedial action will be addressed under the CERCLA process. The three remedial alternatives for the Power Plant sub-site are PCB Alternative 1: No action, PCB Alternative 2: Ex-situ Vapor Energy Generator (VEG), and PCB Alternative 3: Excavation with off-site disposal. The Preferred Alternative has been identified as PCB Alternative 3: Excavation with off-site disposal.

The alternatives are evaluated using nine criteria, divided into three categories: Threshold Criteria, Primary Balancing Criteria, and Modifying criteria. Threshold criteria include “Overall protection of Human Health and the Environment” and “Compliance with ARARs” are evaluated on a pass/fail basis. The balancing criteria, Long-term Effectiveness and Permanence; Reduction in Toxicity, Mobility, or Volume Through Treatment; Short-term Effectiveness; Implementability; and Cost are evaluated on a rating scale of very low to very high. The modifying criteria Regulatory Agency Acceptance and Community Acceptance are evaluated after public and agency input is received on this Proposed Plan. A comparison of PCB alternatives can be found in Table 4.

During the FS, land use controls (LUCs) were considered during general response action screening. LUCs may include institutional controls (e.g., dig and land use restrictions) and engineering controls (e.g., signs and fences) to restrict access to the contaminated area. The USFS Land Management Plan already restricts land use to recreational use. Additional institutional controls and engineering controls would not effectively protect recreational land users because PCB concentrations would not be reduced below the applicable cleanup level; thus the RAO would not be met. As a result, LUCs were not considered a viable alternative.

All remedial alternatives have been evaluated as independent remedial actions for comparison purposes. A significant overall cost savings may be seen by combining and sequencing mobilization, construction, and removal actions for the PCB and POL cleanup actions.

PCB Alternative 1—No Further Action

Period of Performance:	Not Applicable
Capital Cost:	$0
Operation & Maintenance (O&M) Cost:	$0
Long-term Monitoring (LTM) Cost:	$0
Total Present Worth Costs:	$0

Under PCB Alternative 1, no remedial actions would be conducted at the Fort Babcock FUDS. All contaminants would remain in place and be subject to environmental influences. Furthermore, no action would be taken to prevent unauthorized access or development at the site. Therefore, there are no costs associated with this alternative.

PCB Alternative 2—Ex-situ Vapor Energy Generator

Period of Performance:	~ 63 days
Implementation Cost:	$2,390,000
O&M Cost:	$0
LTM Timeline:	$0
Total Present Worth Costs:	$2,390,000

PCB Alternative 2 involves the excavation, stockpiling, and in-pile treatment of PCB-contaminated soil above the cleanup level using a VEG. The excavation would be backfilled with the treated soil. Since the PCB contamination would be reduced to below the residential cleanup level under this alternative, all exposure pathways would present an acceptable level of risk and the site would meet unlimited use (UU) and unrestricted exposure (UE).

There are several site-specific conditions that impact the implementation and costs associated with this alternative. Because of the remote and undeveloped nature of the site, heavy construction equipment, VEG treatment equipment, associated materials, and field personnel would be transported from Sitka to Kruzof Island using marine vessels. A shallow draft landing craft and personnel transport vessel would be needed, and the landing site for equipment and personnel would be along the beach located northeast of the Landfill Area. The availability of heavy construction equipment can be limited in Sitka (Photo 6). As such, it may be necessary to transport these items on a barge from Seattle, WA to Sitka. Once the equipment/materials are transported to Kruzof Island, vegetation clearing, and access road construction would be required to obtain access to the Power Plant sub-site. A new access road would be constructed from the beach landing area to a northern point along the existing road. From there, the existing road will be utilized wherever feasible, with vegetation removal and improvements made as needed. All tree and other vegetation cutting outside of the FUDS property would require approval from the USFS. Since there are no facilities located on Kruzof Island, a remote field camp would be constructed for field personnel near the beach landing area.

PCB-contaminated soil would be excavated and stockpiled onsite. Temporary construction fencing and signs would be used to secure the open excavation and treatment stockpiles. A field test would be performed to determine the optimal VEG operation temperature to achieve treatment based on moisture content and soil type. Once the parameters were determined, the VEG process would occur. This process requires a water source, so a nearby water source would need to be permitted for use during construction.

During excavation, samples would be collected to confirm that all soil above cleanup levels was removed, and residual contamination does not remain above the cleanup level (1 mg/kg). Excavation would continue until PCB concentrations in remaining soil are below the cleanup level. The excavation would be backfilled with the treated soil following VEG remediation. The treated soils would be sampled prior to backfilling to ensure PCB concentrations are below the cleanup level. Site restoration and repair would occur following construction completion, restoring all stream flows and disturbed areas to their pre-remediation conditions, or as close as feasibly possible. No additional reviews under CERCLA would be required at the Power Plant sub-site after remediation.

PCB Alternative 3—Excavation with Off-site Disposal

Period of Performance:	~46 days
Implementation Cost:	$1,855,000
O&M Cost:	$0
LTM Timeline:	$0
Total Present Worth Costs:	$1,855,000

PCB Alternative 3 is the complete removal of PCB-contaminated soil above the cleanup level and off-site waste disposal. In accordance with Toxic Substance Control Act (TSCA), disposal requirements (40 CFR 761.61(a)(5), PCB remediation waste), waste soil would be segregated by PCB content (above or below 50 mg/kg) and transported to an appropriate landfill. The excavation will be backfilled with clean and certified material sourced from Sitka. Since the PCB contamination would be reduced to below the residential cleanup level under this alternative, all exposure pathways would present an acceptable level of risk and the site would meet UU/UE. No additional reviews under CERCLA would be required at the Power Plant sub-site after remediation.

There are several site-specific conditions that impact the implementation and costs associated with this alternative. Because of the remote and undeveloped nature of the site, heavy construction equipment, backfill material, and field personnel would be transported from Sitka to Kruzof Island using marine vessels. A shallow draft landing craft and personnel transport vessel would be needed, and the landing site for equipment and personnel would be along the beach located northeast of the Landfill Area. The availability of heavy construction equipment can be limited in Sitka. As such, it may be necessary to transport these items on a barge from Seattle, WA to Sitka. Once the equipment/materials are transported to Kruzof Island, vegetation clearing, and access road construction would be required to obtain access to the Power Plant sub-site. A new access road would be constructed from the beach landing area to a northern point along the existing road. From there, the existing road will be utilized wherever feasible, with vegetation removal and improvements made as needed. All tree and other vegetation cutting outside of the FUDS property would require approval from the USFS. Since there are no facilities located on Kruzof Island, a remote field camp would be constructed for field personnel near the beach landing area.

During excavation, samples would be collected to confirm that all soil above cleanup levels was removed, and residual contamination does not remain above the cleanup level (1 mg/kg). Excavation would continue until PCB concentrations in remaining soil are below the cleanup level. The excavation will be backfilled with USFS approved weed-free and invasive species-free fill material obtained in Sitka. The excavated soil would be segregated based on the TSCA designation, containerized in bulk bags, and transported to Sitka on the shallow draft landing craft. Once in Sitka, the waste soil would be loaded onto shipping containers for transport to the appropriate landfill; soil with PCB concentrations at or above 50 mg/kg would be transported to an approved Subtitle C landfill, while soil with PCB concentrations below 50 mg/kg would be transported to an approved Subtitle D landfill. Site restoration and repair would occur following construction completion, restoring all stream flows and disturbed areas to their pre-remediation conditions, or as close as feasibly possible.

Photo 5: Tar Drum Area, facing southeast (USACE, 2013)

Photo 6: Offloading landing craft at beach adjacent to Phase II RI field camp location, facing southeast (USACE, 2014)

POL Cleanup Action under DERP

The Fuel Storage Area and Tar Drum area contain POL-contaminated soils at concentrations above the cleanup levels. A streamlined screening and development process were used to develop five alternatives, including POL Alternative 1 – No Action, POL Alternative 2 – In-situ Mixing, POL Alternative 3 – Ex-situ VEG, POL Alternative 4 – Excavation with Offsite Disposal, and POL Alternative 5 –Excavation with Low Temperature Thermal Desorption. The Preferred POL Alternative is Excavation with Offsite Disposal. A comparison of POL alternatives can be found in Table 5.

The POL cleanup action impact areas are show in Figures 4 and 5. A detailed discussion and comparison of the POL alternatives can be found in the 2018 FS held in the information repository.

POL Alternative 1 – No Action

No cleanup action would occur, and POL-contaminated soil would remain onsite.

POL Alternative 2 – In-situ Mixing

Portland Cement or other acceptable binding agent is spread and mixed into the contaminated soil, which solidifies and binds the waste and protects potential receptors from the contaminated soil. Vegetation will not regrow in these areas due to the soil solidification and the contaminated soil would be left in place.

POL Alternative 3 – Ex-situ VEG

POL-contaminated soil would be excavated and stockpiled onsite for VEG treatment. The excavation would be backfilled with the clean, treated soil.

POL Alternative 4 – Excavation with Off-site Disposal

Contaminated soil above the cleanup level would be completely removed and disposed of at an approved Subtitle D landfill. The excavation would be backfilled with clean fill material.

POL Alternative 5 – Excavation with Off-site Low Temperature Thermal Desorption

Contaminated soil above the cleanup level would be completely removed and thermally desorbed at an approved facility. The excavation would be backfilled with clean fill material.

EVALUATION OF ALTERNATIVES

CERCLA Remedial Alternative Evaluation

Nine criteria are used to evaluate remediation alternatives as part of the CERCLA process. The criteria fall in three categories: Threshold Criteria, Balancing Criteria, and Modifying Criteria. Threshold criteria (overall protection of human health and the environment, compliance with ARARs) must be met in order to receive further consideration, balancing criteria (long-term effectiveness, short-term effectiveness, implementability, and cost) are used to compare the alternatives, and modifying criteria (State acceptance and community acceptance) are considered once public comment is complete. Table 4 compares the relative performance of the alternatives for PCB-contaminated areas.

The calculated costs of the remediation alternatives were estimated for each contaminant type separately. If CERCLA contaminant remediation and POL cleanup were to occur concurrently, significant cost savings may apply. Cost estimates for each alternative including LTM are included in Table 4 and Table 5, respectfully. Diagrams of all remediation alternative sites are included in Figures 3, 4, and 5. A more detailed explanation of the remediation alternative evaluation process can be found in the FS Report.

POL Cleanup Alternative Evaluation

The five POL Alternatives were evaluated considering the following factors: Achievement of POL cleanup objectives, how effective it will be, how implementable it is, and cost, as shown in Table 5. Of the five alternatives, only the POL Alternative 1: No Action Alternative was found to be unacceptable. POL Alternative 2: In-situ Mixing was found to be acceptable but was not as effective as the remaining three alternatives. POL Alternative 3, 4, and 5 were found to be equally effective, implementable, and achieved remedial objectives. The final distinguishing criteria, cost, set POL Alternative 4: Excavation with Offsite Disposal above the three most effective and implementable alternatives due to its lower cost. A more detailed explanation of the cleanup alternative evaluation process can be found in the FS Report.

PREFERRED ALTERNATIVE

CERCLA Preferred Alternative

For PCBs, the preferred alternative at the Fort Babcock FUDS is Excavation with Off-site Disposal, which is PCB Alternative 3.

Excavation with Off-site Disposal would quickly achieve the RAO through permanent removal of the contaminated material. This alternative provides overall protection of human health and the environment, compliance with ARARs, short-term and long-term effectiveness and permanence, good implementability, and removes all contamination above unlimited use and unrestricted exposure levels. This alternative is lower in price to the other alternatives that also provide overall protection of human health and the environment and compliance with regulations. No 5-year review would be required with selection of this alternative. The ex-situ VEG alternative, while fulfilling the requirement of waste reduction, is prohibitively more expensive than the preferred alternative.

Based on information currently available, the USACE believes the preferred alternative meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to balancing and modifying criteria. The USACE expects the preferred alternative to satisfy the following statutory requirements of CERCLA §121 (b): 1) be protective of human health and the environment; 2) comply with ARARs; 3) be cost-effective; and 4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. The preferred alternative does not fully satisfy the preference for treatment as a principal element due to the substantial increase in cost associated with treating the contaminated soil.

POL Cleanup Alternative

For POL, Excavation and Off Site Disposal, Alternative 4, is the alternative that best met the four criteria and addresses the POL contamination to remove the imminent and substantial endangerment.

Table 4: Comparison of Alternatives for the Power Plant Sub-site Following the CERCLA Process			
Criterion	**PCB Alternative 1: No Action**	**PCB Alternative 2: Ex-situ Vapor Energy Generator**	**PCB Alternative 3: Excavation with Off-site Disposal**
Threshold Criteria			
Overall Protection of Human Health and Environment	**Non-protective**	**Protective**	**Protective**
Compliance with ARARs	**Non-compliant**	**Compliant**	**Compliant**
Primary Balancing Criteria			
Long-term Effectiveness and Permanence	⬢	●	●
Reduction in Toxicity, Mobility, or Volume Through Treatment	⬢	●	▼
Short-term Effectiveness	⬢	▼	▼
Implementability	●	■	▲
Cost	None	$2,390,000	$1,855,000
Modifying Criteria			
Regulatory Agency Acceptance	To be determined after comments on Proposed Plan		
Community Acceptance	To be determined after comments on Proposed Plan		

● = Very High, ▲ = High, ■ = Medium, ▼ = Low, ⬢ = Very Low

Table 5: Comparison of Alternatives for Petroleum Hydrocarbons at the Fuel Storage Area and Tar Drum Area Sub-Sites					
Criteria	**POL Alternative 1** **No Action**	**POL Alternative 2** **In-situ Mixing**	**POL Alternative 3** **Ex-situ Vapor Energy Generator**	**POL Alternative 4** **Excavation with Off-site Disposal**	**POL Alternative 5** **Excavation with Off-site Low Temperature Thermal Desorption**
Achieves POL Cleanup Objectives	Fail	Pass	Pass	Pass	Pass
Effectiveness	⬢	▲	●	●	●
Implementability	●	■	■	■	■
Cost	None	$1,085,000	$1,829,000	$1,175,000	$1,284,000

● = Very High, ▲ =High, ■ = Medium, ▼ = Low, ⬢ = Very Low

POL = petroleum, oil, and lubricants

COMMUNITY PARTICIPATION

The NCP specifies the lead agency must provide a reasonable opportunity, not less than 30 calendar days, for submission of written and oral comments on the proposed plan and the supporting analysis and information located in the information repository. The public is encouraged to provide comments on any of the alternatives presented in this Proposed Plan for the Fort Babcock FUDS.

The public comment period will be at least **30 calendar days**. The public comment period ends **December 12, 2019.**

Comments can be submitted to USACE by any of the following methods:

- Call: **1 (833) 646-0206**
- Mail a written comment to the following address:

  ATTN: CEPOA-PM-ESP-FUDS (Astley), PO Box 6898, JBER, AK 99506
- Email a comment to the following address: **POA-FUDS@usace.army.mil**
- Attend the **public meeting**:

PUBLIC MEETING TO BE HELD

7:00 pm on Thursday

November 7, 2019

Harrigan Centennial Hall, Silver Room

Sitka, Alaska

A final decision for each of these sites will be made only after public comments are considered. Evaluation of public comments is a significant factor in the final alternative selection.

USACE will provide a written response to all significant comments. A summary of the responses will accompany the Decision Document and will be made available in the Administrative Record located at the Information Repository.

Contact Information

For additional information, please contact:

Michael Jones, P.E.

Sundance-EA II JV Project Manager

1 (833) 646-0206

Information Repository Location

Additional detailed information that is not presented in this Proposed Plan (documents that detail previous investigations, remedial actions, and results) is available for your review in the Fort Babcock Administrative Record, located at the Information Repository for the Fort Babcock Project at the Sitka Public Library, 320 Harbor Drive, in Sitka, Alaska.

Electronic Copy

An electronic copy of this Proposed Plan is available during the public comment period at **https://www.poa.usace.army.mil/Library/Reports-and-Studies**.

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ACRONYMS

#	number
~	approximately
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
ARAR	applicable or relevant and appropriate requirement
AST	aboveground storage tank
AWQS	Alaska Water Quality Standards
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	Code of Federal Regulations
COC	contaminant of concern
CSM	conceptual site model
CY	cubic yard
DERP	Defense Environmental Restoration Program
DoD	U.S. Department of Defense
DRO	diesel range organics
EF	Exposure Factor
EPA	U.S. Environmental Protection Agency
ft	feet
ft^2	square feet
FS	feasibility study
FUDS	Formerly Used Defense Site
LTM	long-term monitoring
LUC	land use control
mg/kg	milligram per kilogram
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
O&M	operation and maintenance
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
POL	petroleum, oil, and lubricant
RAO	remedial action objective
RI	remedial investigation
RRO	residual range organics
TSCA	Toxic Substances Control Act (1976) (15 U.S. Code s/s 2601 et seq.)
UE	unrestricted exposure
USACE	U.S. Army Corps of Engineers
USFS	U.S. Forest Service
UU	unlimited use
VEG	Vapor Energy Generator
VOC	volatile organic compounds

REFERENCES

Alaska Department of Environmental Conservation (ADEC), 2018. 18 Alaska Administrative Code (AAC) 75.

U.S. Army Corp of Engineers, Alaska District (USACE), 1986. *Defense Environmental Restoration Account Inventory Report for Fort Babcock Kruzof Island, Alaska*. Contract Number (No.) DACA85-85-C-0074. Prepared by Sverdrup & Parcel and Associates, Inc. for USACE-Alaska District. January.

USACE, 2004. ER 200-3-1 *FUDS Program Policy*. May.

USACE, 2010. *Site Investigation Report hazardous, toxic, and radioactive waste (HTRW) Formerly Used Defense Site (FUDS) Project Fort Babcock Tank Site Kruzof Island, Alaska*. FUDS Project No.: F10AK0353-04. September.

USACE, 2013. *Final, Remedial Investigation, Fort Babcock FUDS (F10AK0353-04), Sitka, Alaska*. Prepared by AECOM Technical Services, Inc. April. F10AK035304_03.10_0500_a; 200-1e.

USACE, 2014. *Final Remedial Investigation – Phase II Fort Babcock FUDS (F10AK035304) Sitka, Alaska*. Prepared by AECOM Technical Services, Inc. September. F10AK035304_03.10_0501_a; 200-1e.

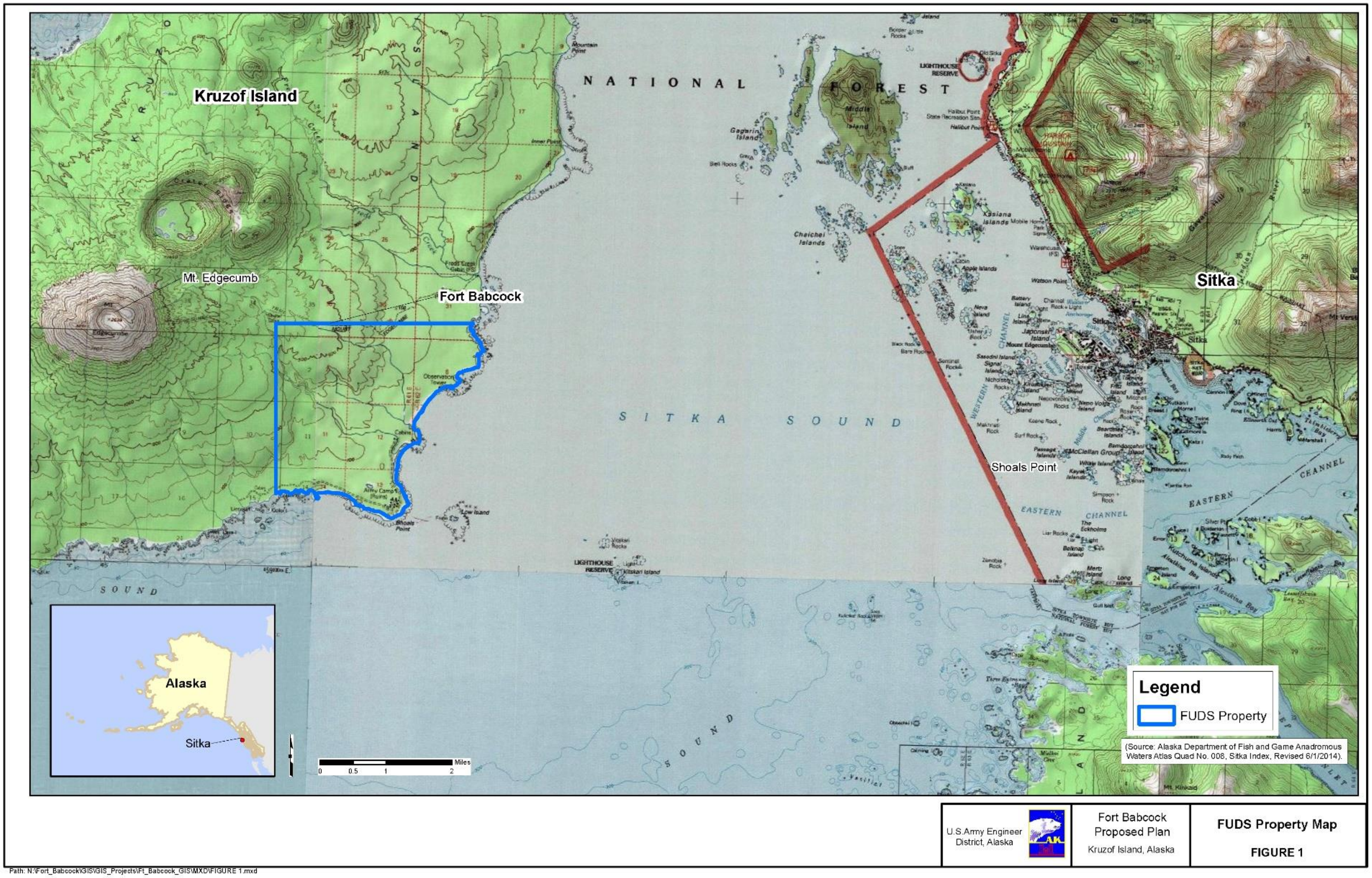
USACE, 2015. *Technical Memorandum for Record. Final Phase II Remedial Investigation – Addendum 1, Modified Conceptual Site Model, Groundwater "350 Determination", and Alternative Cleanup Level Evaluation, Fort Babcock FUDS (F10AK035304), Sitka, Alaska*. Prepared by AECOM Technical Services, Inc. April. F10AK035304_03.10_0502_a.

USACE, 2017. *Final Technical Memorandum. Phase II Remedial Investigation Report – Addendum 2, Summary of Polychlorinated Biphenyl (PCB) Soil and Groundwater Sample Results from the Former Power Plant, and Comparison of RI Data with 2016 Alaska Department of Conservation (ADEC) Updated Cleanup Levels, Fort Babcock FUDS (F10AK035304), Sitka, Alaska*. Prepared by USACE-Alaska District. October. F10AK035304_03.10_0503_a.

USACE, 2018. *Final Feasibility Study Fort Babcock FUDS (F10AK035304) Sitka, Alaska. Prepared by Sundance-EA II LLC for USACE-Alaska District*. December. F10AK035304_04.09_0502_a.

U.S. Environmental Protection Agency (USEPA). 1988. *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA*. EPA/540/G-89/004 OSWER Directive 9355.3-01. October.

USEPA. 1999. *A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents*. EPA 540-R-98-031. July.



Path: N:\Fort_Babcock\GIS\GIS_Projects\Ft_Babcock_GIS\MXD\FIGURE 1.mxd

Figure 1: Property Location Map

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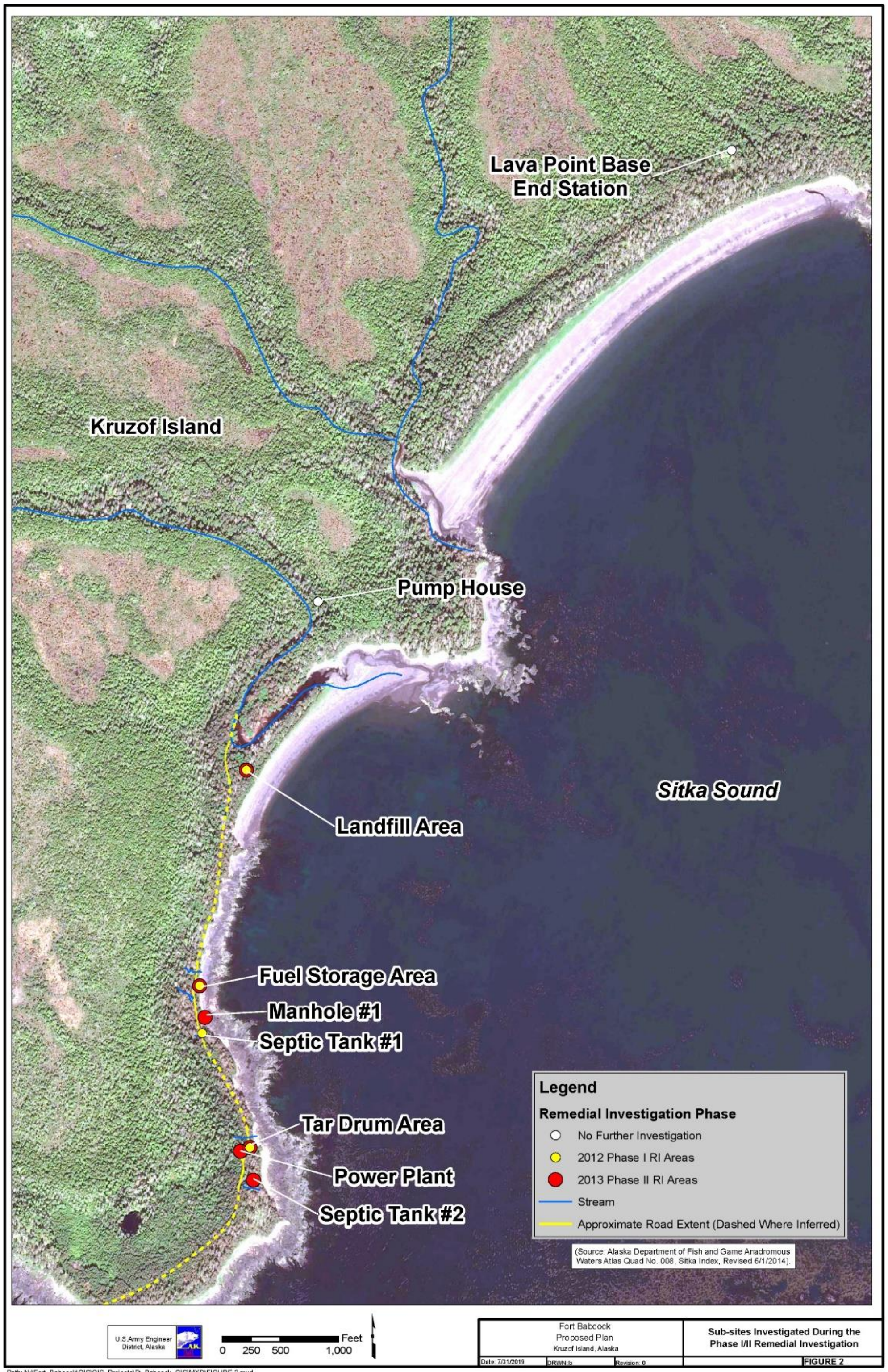

Figure 2: Sub-sites Investigated During the Phase I/II Remedial Investigation

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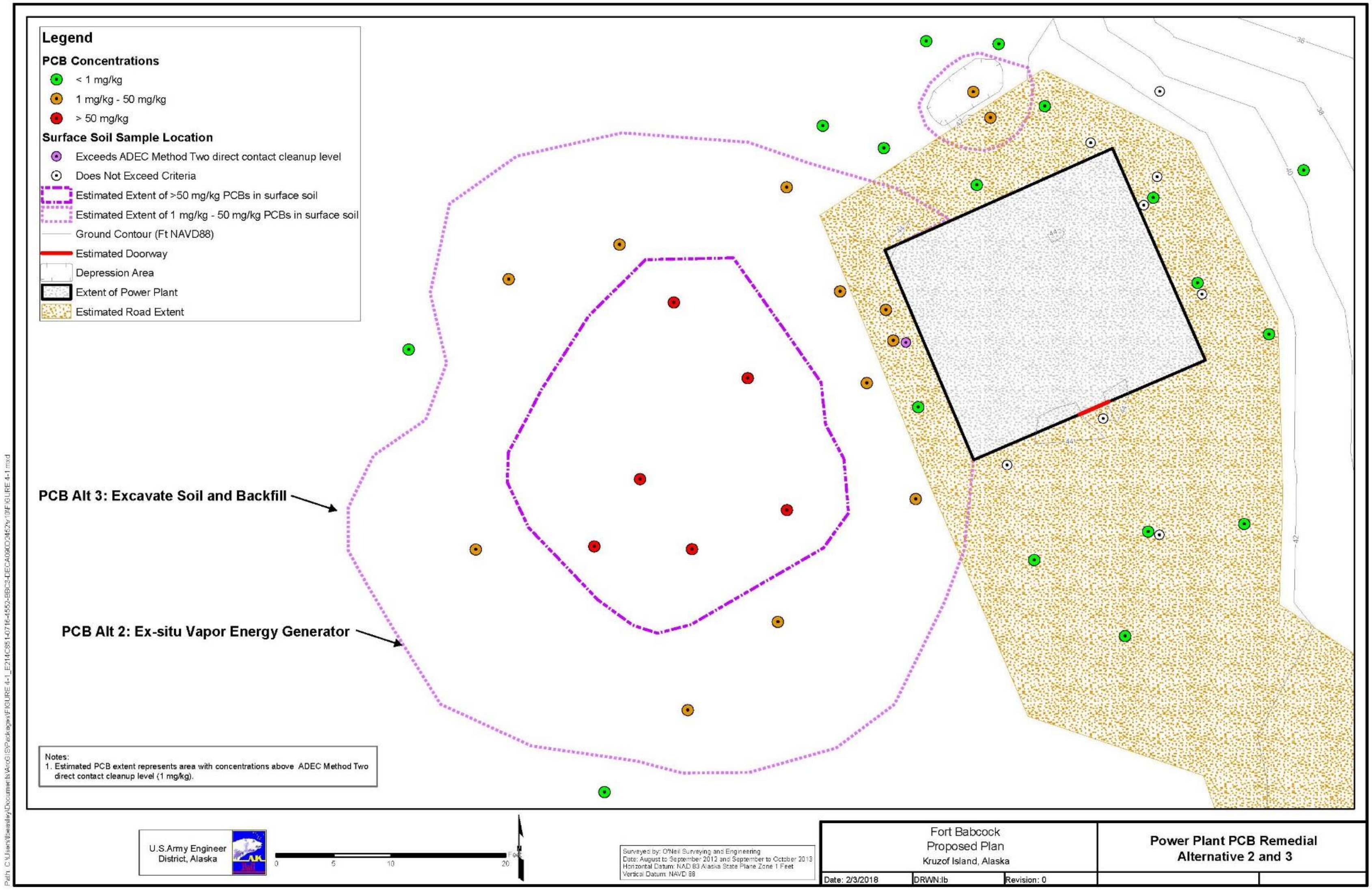

Figure 3: Power Plant PCB Remedial Alternative 2 and 3

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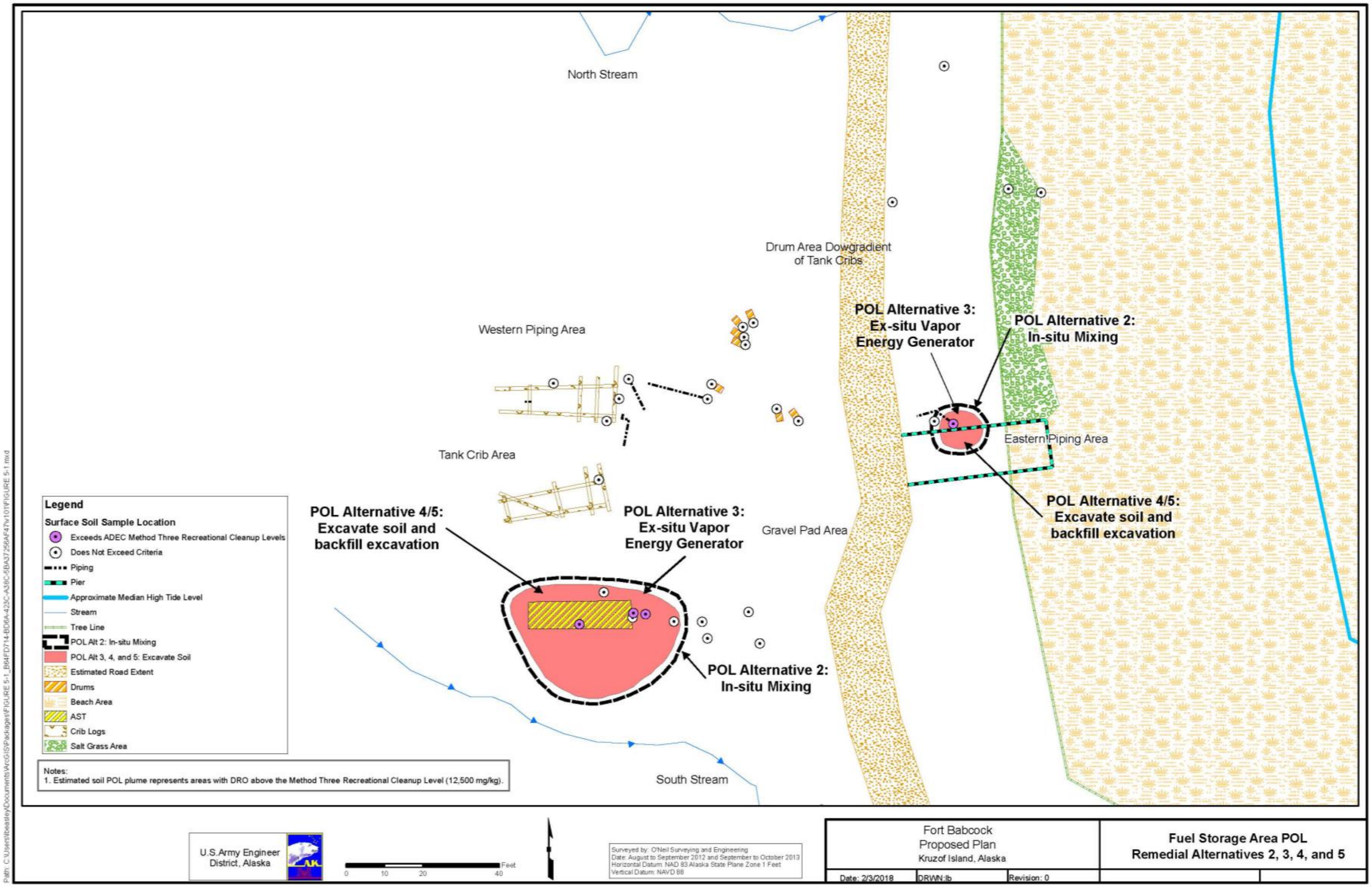

Figure 4: Fuel Storage Area POL Remedial Alternatives 2, 3, 4, and 5

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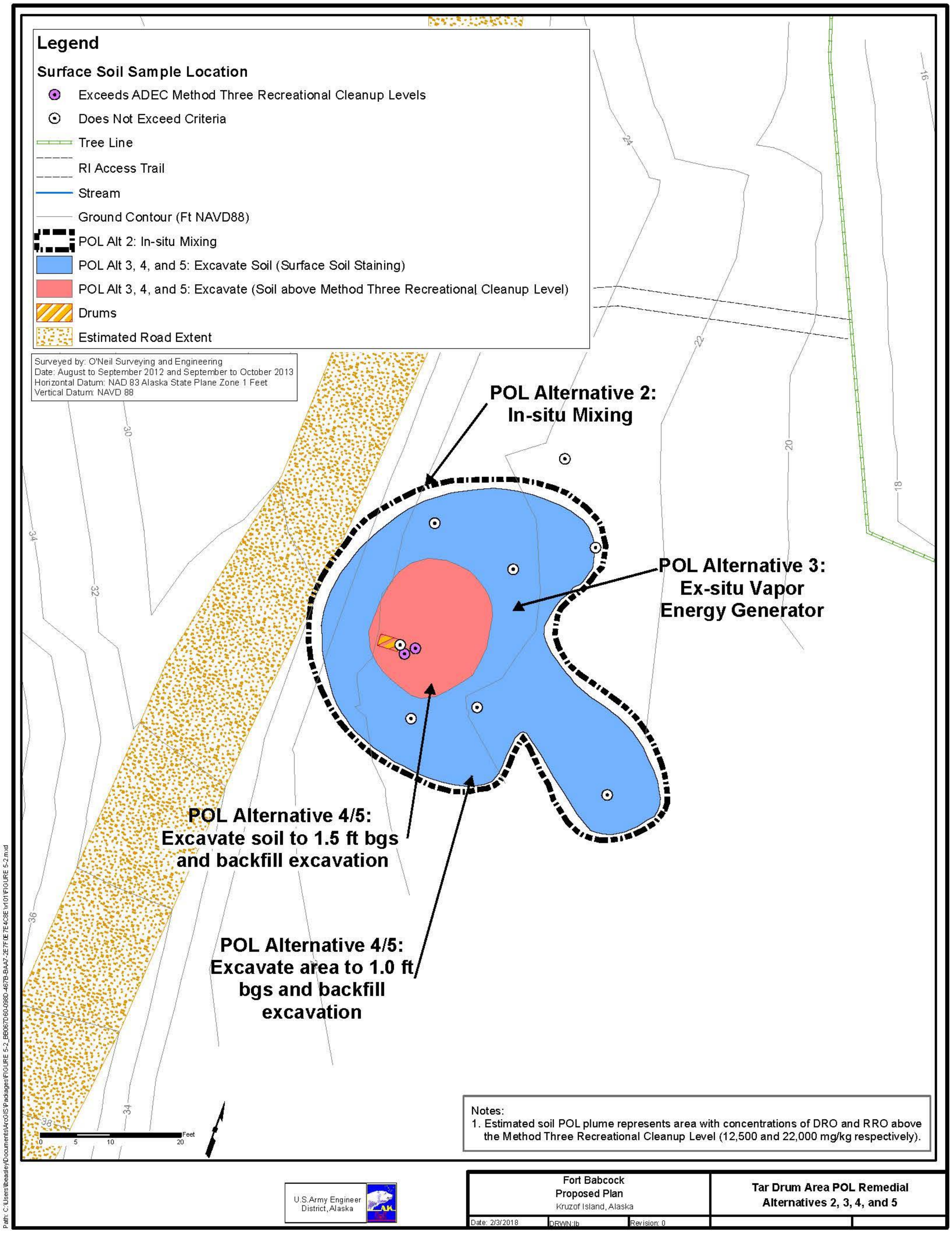

Figure 5: Tar Drum Area POL Remedial Alternatives 2, 3, 4, and 5

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