PROPOSED PLAN FOR SITES DA013, LF006, and OT001 Driftwood Bay Radio Relay Station, Alaska

Final - August 2011



View of Driftwood Bay, Alaska

AIR FORCE ANNOUNCES PROPOSED PLAN

This Proposed Plan identifies the remedial alternatives for three Environmental Restoration Program (ERP) sites at Driftwood Bay Radio Relay Station (RRS), and provides the rationale for selecting the Preferred Alternative for each ERP site. The sites are:

- Burned Battery Area (Disposal Area 013 [DA013])
- Old Disposal Site and Electronic Debris Area (Landfill 006 [LF006])
- Former Composite Building (OT001)

In addition this Proposed Plan includes summaries of other remedial alternatives evaluated for use at these sites. This document is issued by the Department of the Air Force (USAF), the lead agency for site activities. The Alaska Department of Environmental Conservation (ADEC) is the support agency. The USAF will select a final remedy for these sites after reviewing and considering all information submitted during the 30-day public comment period. The USAF, in consultation with the ADEC, may modify the Preferred Alternative or select another response action presented in this Proposed Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all the alternatives in this Proposed Plan.

The USAF is issuing this Proposed Plan as part of its public participation responsibilities under Section 117 (a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) 42 USC § 9617(a) and Section 300.430 (f)(3) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This Proposed Plan summarizes information that can be found in greater detail in the Remedial Investigation and Feasibility Study reports and other documents contained in the Administrative Record file for these sites. The USAF encourages the public to review these documents to gain a more comprehensive understanding of these sites and the remedial activities that have been conducted at Driftwood Bay RSS.

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HOW CAN YOU PARTICIPATE?

Public Comment Period: 22 August - 22 September 2011

The USAF will accept written comments on this Proposed Plan during the public comment period. A pre-addressed comment form is inserted into this Proposed Plan. Comment letters must be postmarked by 22 September 2011 and should be submitted to:

Steve Hunt, Remedial Project Mgr USAF 611th CES/CEAR 10471 20th Street, Suite 302 JBER, Alaska 99506 Email: Steve.Hunt@elmendorf.af.mil

For more information, see the Administrative Record at: US Air Force USAF 611th CES/CEAR 10471 20th Street, Suite 302 JBER, Alaska 99506

U.S. EPA Records Center, Reg. 10 1200 Sixth Ave, Suite 900, 7th Floor Seattle, WA 98101 (206) 533-4494 Hours: Mon-Fri, 8:30 a.m. - 4:30 p.m.

Or online at http://www.adminrec. com/PACAF.asp?Location=Alaska

A Public Meeting will be held 25 August 2011 at 6:00 p.m. at the Unalaska Council Chambers.

The USAF will explain the Proposed Plan and all of the alternatives presented in the final Feasibility Study. Oral and written comments will also be accepted at the meeting.

To request an extension, please send a written request to Steve Hunt by 22 September 2011. Driftwood Bay RRS encompasses 333.54 acres of federal land withdrawn from the public domain for military purposes under Public Land Order 2374. The installation was initially one of 18 Distant Early Warning Line stations constructed in Alaska between 1950 and 1959. These radar stations were built to detect and warn of foreign military threats during the Cold War, and were later linked to the White Alice Communication System. Driftwood Bay is located 13.5 air miles northwest of Dutch Harbor on Unalaska Island, part of the Aleutian Chain.

Driftwood Bay RRS was activated in 1961, deactivated in 1977, and the buildings were demolished or removed in 1991. Building foundations, portions of the fuel pipeline, a 3,500 foot dirt runway, and a permitted landfill containing



asbestos and building debris remain. The installation is situated within Township 72 South, Range 119 West of the Seward Meridian, which also includes lands within the authorized boundaries of Alaska Maritime National Wildlife Refuge (AMNWR) managed by the U.S. Fish and Wildlife Service. The nearest residents are in Dutch Harbor, 13.5 air miles from Driftwood Bay RRS.

SITE HISTORY AND BACKGROUND

The Burned Battery Area (BBA; DA013) was discovered in 2005 during an reconnaissance activities of Site WP003 (POL Waste Pit). This area was estimated to be approximately 15 to 20 feet in diameter and contained evidence of more than 12 burned batteries. The size of the batteries could not be determined; however, field observations indicated that most were likely at least 12 volts in size. One soil sample was collected during this investigation and analyzed for diesel-range organics (DRO), residual-range organics (RRO), lead, arsenic, and polychlorinated biphenyls (PCBs). Only lead exceeded cleanup levels (400 milligrams per kilogram [mg/kg]) with a sample result of 76,600 mg/kg (USAF 2005). 2007 sample results indicated lead was present in concentrations above ADEC Method Two cleanup levels in 6 of 15 soil samples.

The Former Composite Building area at OT001 is located approximately 2 miles west of Driftwood Bay and connected to Lower Camp by a winding 4-mile road. This site included the composite building, antennas, two 20,000-gallon underground storage tanks (UST), and a 110-gallon aboveground storage tank (AST), among other structures. Foundations of the Former Composite Building and antenna arrays are currently in place though the primary structures have been removed. Site characterization work began in 1985 and initially indicated that PCBs were present in surface soil. All structures were demolished in 1991 along with the removal of one 20,000-gallon UST. A Preliminary Assessment/Site Investigation (PA/SI) was conducted in 1995 that indicated that PCBs and volatile organic compounds (VOCs) were present at the site.

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The electronic debris area at Site LF006 was discovered during 2007 site characterization activities. A pile of electronic debris (capacitors, transformers and batteries) was found in the southern portion of this area of concern. An area devoid of vegetation (previously called Lima Bean Area or Distressed Area) with several lead battery plates was found nearby. Contaminants of potential concern (COPCs) for this site include lead and PCBs. Niton field screening and analytical results for lead from this area indicated surficial lead contamination. PCB soil analytical results collected from the southern portion were below the ADEC Method Two cleanup level of 1 mg/kg, with a maximum detected concentration of 0.167 mg/kg (USAF 2009b). Five batteries and more than 30 capacitors and audio transformers were removed from this site during the remedial investigation.



STATE OF ALASKA REGULATED SITES

Based on results from previous environmental investigation reports and compliance determination by the ADEC, the following sites have been designated as follows in accordance with applicable State of Alaska regulations at 18 AAC 75: Cleanup Complete, Cleanup Complete with Institutional Controls, and Monitored Natural Attenuation with Institutional Controls. Because no hazardous substances regulated under CERCLA exist at levels hazardous to human health and the environment at these sites, they were not discussed in the Feasibility Study and are only briefly outlined below.

The following sites are recommended to be designated Cleanup Complete:

Heavy Equipment Storage Area: The heavy equipment storage area was located approximately 1,000 feet to the south of the south end of the runway. In 2005, a visual survey of the Heavy Equipment Storage Area indicated potential metallic debris at the site. Common drum contaminants (pesticides, herbicides, and PCBs) were not detected above Method Two cleanup criteria and downgradient groundwater grab samples indicated that groundwater is not impacted above ADEC criteria. DRO was present at the site at concentrations below Method Three alternative cleanup levels; however, because the only parameter modified was fraction of organic carbon, which is inherent to the soil at this site, land use is unrestricted. Based on the data collected, cumulative risk associated with the site is below ADEC maximum values.

SS004 - Spill/Leak No. 4 Drum Storage Area, **Construction Camp, Wooden Storage Building, Five-**Hundred Gallon Aboveground Storage Tank: The SS004 site addressed potential contamination from a combination of activities conducted approximately 1,000 feet west of the south end of the Driftwood Bay runway. Based on the Site Characterization Report at SS004: Spill/Leak No. 4 at Drum Storage Area site and the associated areas of concern, all results were below ADEC Method Two criteria at the Trench Area, Construction Camp, 500-Gallon AST, and Wood Storage Building subsites. Though DRO was present at the site, all contaminants were below ADEC Method Three criteria at the Drum Storage Area. Cumulative risk calculations indicate no unacceptable risk at the Trench Area, Construction Camp, 500-Gallon AST, and Wood Storage Building subsites.

Sites recommended to be designated Cleanup Complete: continued from page 3

SS008 - Spill/Leak No.

8 Pipeline: The SS008 site consists of the fuel supply lines traveling from Lower Camp to Top Camp (approximately 3 miles). All aboveground portions of the pipeline were dismantled and placed in Landfill No. 1 at the Former Composite Building (USAF 1995). Soil sample results indicate that contamination is present above Method Two DRO criteria. Groundwater/surface water was present at the surface in some locations containing DRO exceedances; however, no fuel sheen was visible. The risk-based calculations indicate DRO is below ADEC Method Three



migration-to-groundwater criteria.

SS011 - Spill/Leak No. 11 at Runway Lighting Vault:

SS011 is located near the former lighting vault (Building No. 140), approximately 650 feet southwest of the south end of the runway, along the access road to Top Camp. SS011 encompasses TU012 Spill/Leak No. 9 at the Former USTs; these sites were combined into one site due to the close proximity of the two locations. In 1995, 2000, and 2005, surface soil samples were collected around the lighting vault perimeter. No visual or olfactory indications of contamination were present at the surface or subsurface according to the 2009 Site Characterization Report. Analytical soil samples were collected and confirm field observations.

FL009: Spill/Leak No. 1 at the Septic Tank: The septic system was composed of a 6-inch-diameter drain line that extends approximately 160 feet from the Former Composite Building to a suspected septic tank. Prior to the 2007 field investigation activities documented in the 2009 site characterization report, the only known investigation at this site was in 2005, which found that one composite soil sample collected near the septic tank vent pipe contained 697 mg/kg DRO. No other analytes were detected in excess of ADEC Method Two criteria (USAF 2005). Extensive investigations were conducted in the 2007 field season to locate the septic tank and demonstrate that the tank was previously removed. Test pits were excavated to bedrock in an

area along the pipeline from the former composite building where the septic tank was believed to have been located; however, no evidence of a septic tank was found in this location, other than a small section of pipe protruding from the ground which was believed to be the septic tank vent pipe at which the aforementioned 2005 composite soil sample was collected. Given that the tank was not located, soil samples collected at 75-foot intervals along the pipeline and at the tank outfall were analyzed for contamination in 2007. Analysis of the 2007 soil samples at the pipeline and outfall were all below ADEC Method Two direct contact/ ingestion and inhalation cleanup levels. All available field evidence collected in 2007 indicated that the tank was previously removed; and no visual or olfactory indications of contamination were present. Cumulative risk was not calculated for this site because all sampling results were less than 1/10th ADEC Method Two criteria.

Quarry Area: The Red Cinder Dome Rock Quarry is located approximately 2 miles west of the runway, along the access road to the Former Composite Building. The quarry was thought to have been used as a landfill at some point during the RRS facility's history. A visual inspection was conducted by the USAF and ADEC in 2007 to verify that the Quarry had not been used as a landfill. The Quarry Area was never designated as a site or area of concern. No action is planned.

The following sites are recommended to be designated Cleanup Complete with Institutional Controls:

Site OT001 - Antennas and Underground Storage

Tanks: The Former Composite Building is located approximately 2 miles west of Driftwood Bay and is connected to the bay by a winding 4-mile-long road. This site includes the Former Composite Building foundation, the antenna pads, two former 20,000-gallon USTs, and a 110-gallon AST. Results from the 2009 Site Characterization indicate no unacceptable risks or hazards associated with contamination at the antennas and USTs under the current and anticipated land use. PCB contamination at this site is covered under discussions of the Former Composite Building (OT001).

Site WP003 - Petroleum, Oil, and Lubricant (POL) Waste Pit at the Former Composite Building: Site WP003 POL Waste Pit is a floor drain outfall located approximately 250 feet northeast of the Former Composite Building. Limited investigation performed at this site in 1985, 1995, and 2005 detected POL contaminants above ADEC Method Two criteria. The level of remaining contamination is approximately 12,000 mg/kg DRO and approximately 17,000 mg/ kg RRO. Cumulative risk at the site is below ADEC maximum values. The site-specific risk assessment found no unacceptable risk at Site WP003. Land use will be restricted so that land use remains recreational.

Site SS010 - Spill Leak No. 2 at the Former Water

Supply Pump House: The area included a pipeline that transported water from Snuffy Creek to a pump house located approximately 1 mile west of the south end of the runway and then along the access road to Top Camp. DRO in soil at SS010 was at levels less than Method Two ingestion (8,250 mg/kg) but greater than migration-to-groundwater (230 mg/kg). Method Three levels were calculated for the site, with the DRO migration-to-groundwater level calculated at 4,500 mg/kg. One sample remained in exceedance of Method Three criteria; however, a removal action was determined to be physically impracticable due to the site's location within an active slide zone. Results from a surface water sample were all nondetect for DRO, PAH, and VOC analysis. Considering DRO and RRO

concentrations, the excess lifetime cancer risk associated with this sample was below the ADEC risk goal (1×10^{-5}), and the hazard index is below the ADEC target value of 1. These results indicate no unacceptable risks or hazards associated with contamination at the Pump House site.

The following site is recommended to be designated Monitored Natural Attenuation with Institutional Controls:

Site SS007 - Spill/Leak No. 7 at Petroleum, Oil, and Lubricants Tank Farm: The POL Tank Farm is located on the beach, approximately 3,000 feet east of the north end of the runway, and consisted of two 250,000-gallon ASTs, a fuel pump house, and a 25,000-gallon MOGAS AST. Previous investigation and cleanup efforts at this site have included the removal of oiled sand from the AST foundations as well as surface soil and water sample collection. The 2009 Site Characterization revealed that contamination above ADEC Method Two migration-togroundwater criteria was found in soil samples at Site SS007; however, all of these samples were below Method Three site-specific criteria. Groundwater samples were collected from temporary monitoring points to characterize groundwater contamination at the site. DRO was found in excess of ADEC Table C groundwater levels; however, the aquifer is believed to be tidally influenced and not suitable for drinking water as stated in the groundwater use determination for the site.



Test pit excavation at Site LF006

SITE CHARACTERISTICS

Three specific areas within the Driftwood Bay RRS are addressed under CERCLA and are covered by this Proposed Plan. Numerous other petroleum sites at Driftwood Bay are regulated under Alaska State regulation 18 AAC 75.

BURNED BATTERY AREA (DA013)

The BBA was estimated at 15-20 feet in diameter at discovery and contained evidence of more than 12 burnt batteries each appearing greater than 12 volts. This site has lead contamination.

OLD DISPOSAL SITE AND ELECTRONIC DEBRIS AREA (LF006)

Site LF006 includes both the 1,800 square foot "Lima Bean" or "Distressed Area" and the much smaller Electronic Debris Area (EDA) 300 feet to the south. The "Lima Bean" is a gravel site devoid of vegetation that contained several lead battery plates. An application of Calcium hydroxyapatite (phosphate-based chemical stabilization compound) significantly reduced the bioavailability of lead, but levels remain higher than cleanup levels. The Electronic Debris Area is a small, partially vegetated mound that batteries, transformers, and capacitors were found atop. In 2007, a geophysical survey was performed at Old Disposal Site (LF006) to determine the extent of the landfill. Two separate grids were surveyed to adequately cover the potential area of the landfill. The grid areas were approximately 130 feet by 95 feet and 175 feet by 125 feet. Two test pits were also excavated at the Old Disposal Site. Soil sample results from an ash layer from within Test Pit 1 indicated exceedances in RRO, PAHs, lead, and arsenic; however, the arsenic result was below background concentrations. Soil sample results from Test Pit 2 indicated exceedances in lead. All groundwater, surface water, and sediment sample results were below ADEC cleanup criteria. This site has lead contamination.

FORMER COMPOSITE BUILDING (OT001)

Site OT001 is located very near to the Burned Battery Area. It is approximately two miles west of Driftwood Bay and is connected to the Lower Camp by a winding four mile road. Foundations of the former composite building and antenna arrays remain, while primary structures and tanks have been removed. This site has PCB contamination.



Panoramic view of Driftwood Bay

WHAT ARE THE CONTAMINANTS OF CONCERN?

The USAF identified two contaminants that pose the greatest potential risk to human health and the environment at Sites BBA (DA013), Old Disposal Site and EDA (LF006), and Former Composite Building (OT001).

LEAD

Lead has been detected at the BBA (DA013) at a maximum concentration of 76,000 mg/kg and at LF006 at a maximum concentration of 154,000 mg/kg. These are above the ADEC residential cleanup level of 400 mg/kg. Lead is a corrosive-resistant metallic element often used in batteries. Other useful properties such as ductility, malleability, and widespread distribution have made its use popular for thousands of years.

Lead is a neurotoxin that accumulates in soft tissues and bones. It affects the nervous, immune, reproductive, developmental, and cardiovascular systems. Ecosystems near point sources of lead could potentially experience losses in biodiversity, changes in community composition, decreased growth and reproductive rates in plants and animals, and neurological effects in vertebrates.

POLYCHLORINATED BIPHENYLS (PCB)

PCBs were found at the Former Composite Building Site (OT001) at a maximum level of 4.5 mg/kg. This is above the ADEC residential cleanup level of 1 mg/kg. In the US, polychlorinated biphenyls were manufactured from 1929 until they were banned in 1979. Due to their non-flammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were used in hundreds of industrial and commercial applications including transformers, capacitors, heat transfer and hydraulic equipment and as plasticizers.

In addition to being known carcinogens (cancer causing agents), PCBs can act as estrogen, androgen, and thyroid hormone receptors. PCBs have been shown to have adverse effects on the immune, nervous, and endocrine systems. Symptoms of high exposure in both humans and animals include liver damage, anemia, and skin conditions such as rashes.



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SCOPE AND ROLE OF THE ACTION

Sites BBA (DA013), LF006, and OT001 are not part of an operable unit. No chemical interactions or migration of contaminants between BBA (DA013), LF006 and OT001 and any other site is anticipated. Any potential response action at these sites would not affect response actions at other sites.

SUMMARY OF SITE RISKS

The Baseline Risk Assessment published in September 2009 showed that with no further action the contamination levels at the BBA (DA013) and the Former Composite Building (OT001) do not pose an unacceptable risk to human health. Action is still required at these sites since the contamination is above the State of Alaska (ADEC) cleanup criteria. The risk assessment also indicated that contamination at the Old Disposal Area and EDA (LF006) does present an unacceptable risk to human health at current conditions. This risk is driving action at the site. The concentrations and exposure potential are different for each site. Site LF006 is at Lower Camp where there is a higher potential for people to come in contact with contamination, the contamination is in higher concentrations, and there are more ecological receptors. The BBA (DA013) site is in a more remote location at Top Camp, the contaminant concentrations are lower, and very few, if any, of the ecological receptors are present. It is the USAF's current judgment that the Preferred Alternatives identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, are necessary to protect human health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

Site	Subsite	Lead (mg/kg)	PCBs (mg/kg)
BBA (DA013)	Burned Battery Area	76,000	
LF006	"Lima Bean" / Disturbed Area	154,000	
	Electronic Debris Area	20,700	
OT001	Former Composite Building SW	-	4.5
	Former Composite Building NE		3.87
ADEC Cleanup Levels		400	1

MAXIMUM CONCENTRATIONS OF CONTAMINANTS AT DRIFTWOOD BAY RRS

HUMAN HEALTH RISKS

The Baseline Risk Assessment completed for Driftwood Bay RRS assumed recreational land use. Human health risks were evaluated based upon contaminant concentrations and community surveys regarding local land use. Potential exposure to contamination is through soil and surface water at LF006 and surface soil (not surface water) at BBA (DA013) and OT001. Under these conditions, it was found that the contamination at the BBA (DA013) and OT001 sites do not pose a human health risk while the contamination at LF006 site does pose an unacceptable human health risk without mitigation. The risk assessment identified a potential increase in lifetime cancer risk and noncancer risk (hazard index) to recreational users of the LF006 site due to contamination.

ECOLOGICAL RISKS

Ecological risk assessment is a process that evaluates the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more stressors. It is determined by looking at contaminant toxicity, quantity and potential for bioaccumulation, quality and extent of habitat, presence of receptors, and a record of observed direct impacts from contamination. It was determined that contamination found at the BBA (DA013) and OT001 did not pose an unacceptable risk to the environment based on the lack of habitat and absence of potential receptors in the area during the field effort. Contaminant concentrations at LF006 indicate that ecological receptors may be adversely impacted by potential exposure to PAHs and lead in soil without mitigation.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives are developed based on contaminant concentration standards in the applicable or relevant and appropriate requirements. Each subsite at Driftwood Bay RRS falls under Method Two of the 18 Alaska Administrative Code (AAC) 75; RAOs were developed for each subsite accordingly. **BBA (DA013)**: Prevent inhalation/direct contact of contaminants in soil containing lead in excess of 400 mg/kg. **LF006**: Prevent inhalation/direct contact of contaminants in soil containing lead in excess of 400 mg/kg. **OT001**: Prevent inhalation/direct contact with soil containing PCBs in excess of 1 mg/kg.

SUMMARY OF REMEDIAL ALTERNATIVES

Possible remedial alternatives were developed and analyzed during the feasibility study. Alternatives that passed the preliminary study were examined in further detail during the feasibility study and a preferred alternative was chosen. The following alternatives were considered in depth for use at the Driftwood Bay Radio Relay Station. Not all alternatives were considered for all three sites.

No Action

Considered for BBA (DA013), LF006, OT001 A no-action alternative is required for consideration under the NCP and serves as a baseline against which other alternatives can be compared.

Institutional Controls

Considered for OT001 (Former Composite Building) This alternative proposes to leave PCB-contaminated soil in place at the Former Composite Building, but restrict use by institutional controls. Risk assessments indicate that under recreational use, PCB levels at OT001 do not pose an unacceptable health risk to adult users, including pregnant women. Therefore, recreational use would be maintained at the site, but institutional controls would prevent soil from being moved from the site and would require reviews every five years as long as contamination remains above cleanup levels. The USAF would continue to hold the land.

Chemical Stabilization and Institutional Controls

Considered for BBA (DA013), LF006

A compound such as calcium hydroxyapatite would be applied to chemically stabilize the soil, reducing lead migration from the site and prevent leaching. Institutional controls would be put in place to prevent soil from being moved from the sites. Recreational access and use at Site BBA (DA013) will be maintained since potential exposures are not considered an unacceptable risk to adult recreational users, including pregnant women. Potential exposures at Site LF006 are expected to pose a higher, unacceptable risk to recreational users; therefore institutional controls at Site LF006 would restrict site access. The USAF would continue to hold the land and review contamination levels every five years as long as lead remains above cleanup levels.

Removal and Offsite Disposal

Considered for BBA (DA013), LF006, OT001 Under this alternative, soil contaminated above cleanup levels would be excavated and tested according to standard Toxicity Characteristic Leaching Procedure (TCLP). Heavily contaminated soil qualifying under the Resource Conservation and Recovery Act (RCRA, leaching 5 mg/L lead) or Toxic Substances Control Act (TSCA)(50 mg/kg PCB) would be identified and segregated from less heavily contaminated soil. Contaminated soil would be barged from Driftwood Bay to Dutch Harbor, then from Dutch Harbor to appropriate licensed treatment, storage, and disposal facilities (TSDF) for each type and level of contamination. After analytical testing confirmed all contaminated soil was removed, excavations would be backfilled.

Chemical Stabilization and Offsite Disposal

Considered for BBA (DA013), LF006

This alternative is very similar to "Removal and Offsite Disposal," with the exception of applying calcium hydroxyapatite or equivalent chemical stabilization in-situ prior to removal. This would reduce the ability of lead to leach from the contaminated soil, reducing or eliminating the quantity of soil qualifying under RCRA for separate transportation, storage, and disposal.

Chemical Stabilization and Onsite Disposal

Considered for BBA (DA013), LF006

Under this alternative, soil contaminated with lead above cleanup levels would be treated with a chemical stabilization compound to increase stabilization and prevent leaching of lead. After stabilization, a geotextile layer and two feet of cover material would be placed on top of contaminated soil, creating a permeable cap. Clean fill would be hauled from the quarry within the Driftwood Station or barged to the site (dependant on the alternative chosen for each site and necessary equipment mobilized). The USAF would continue to hold the BBA (DA013) land and acquire the LF006 land. Reviews to ensure protection of human health and the environment would be conducted every five years as long as contaminant levels remained above cleanup levels.

Onsite Disposal with Institutional Controls *Considered for OT001*

Under this alternative, a geotextile layer and 2 feet of cover material placed on top of PCB-contaminated soil would create a permeable cap, preventing direct contact. Clean fill would be hauled from the quarry within the Driftwood Station or barged to the site. Institutional controls would assure that the cap remained undisturbed. The USAF would likely be required to maintain ownership of the site. To ensure protection of human health and the environment, the site would be reviewed every five years as long as contamination remains above cleanup levels.

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SUMMARY OF REMEDIAL ALTERNATIVES BBA (DA013), LF006 and OT001

Site	Environmental Media	RI/FS Designation	Description		
BBA	Soil	1	No Action		
(DA013)		2	Chemical Stabilization and Institutional Controls		
		3	Removal and Offsite Disposal		
		4	Chemical Stabilization and Offsite Disposal		
		5	Chemical Stabilization and Onsite Disposal		
Old Disposal	Soil	1	No Action		
Area and EDA (LF006)		2	Chemical Stabilization and Institutional Controls		
		3	Removal and Offsite Disposal		
		4	Chemical Stabilization and Offsite Disposal		
		5	Chemical Stabilization and Onsite Disposal		
Former Composite Building (OT001)	Soil	1	No Action		
		2	Institutional Controls		
		3	Offsite Disposal		
		4	Onsite Disposal		

The preferred alternative is highlighted

EVALUATION CRITERIA FOR SUPERFUND REMEDIAL ALTERNATIVES

Threshold Criteria

Overall Protectiveness of Human Health and the Environment determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.

Compliance with applicable or relevant and appropriate requirements (ARARs) evaluates whether the alternative meets Federal and State environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.

Primary Balancing Criteria

Long-term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.

Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.

Short-term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.

Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.

Cost includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.

Modifying Criteria

State/Support Agency Acceptance considers whether the U.S. Environmental Protection Agency and/or the State agree with the analyses and recommendations of the alternative, as described in the Remedial Investigation/ Feasibility Study and Proposed Plan.

Community Acceptance considers whether the local community agrees with the analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

EVALUATION OF ALTERNATIVES

Nine criteria are used to evaluate the different remediation alternatives individually and against each other in order to select the remedies. This section of the Proposed Plan profiles the relative performance of each selected alternative against the nine criteria, noting how it compares to the other options under consideration. The nine criteria fall into three groups: threshold criteria, primary balancing criteria, and modifying criteria. A description of the purposes of the three groups follows:

- Threshold criteria, which are requirements that each alternative must meet in order to be eligible for selection.
- Primary balancing criteria, which are used to weigh major trade-offs among alternatives.
- Modifying criteria, which may be considered to the extent that information is available during the FS, but can be fully considered only after public comment is received on the Proposed Plan.

In the final balancing of trade-offs between alternatives upon which the final remedy selection is based. The nine evaluation criteria are discussed on Page 10. The "Detailed Analysis of Alternatives" can be found in the Feasibility Study.





Electromagnetic surveying at Site LF006

Watering calcium hydroxyapatite at Site BBA (DA013)



Onsite drilling during foggy conditions at Site OT001.

BURNED BATTERY AREA (BBA) (DA013) COMPARISON OF ALTERNATIVES

Evaluation Criteria	Alternative 1 No Action	Alternative 2 Chemical Stabilization and Institutional Controls	Alternative 3 Removal and Offsite Disposal	Alternative 4 Chemical Stabilization and Offsite Disposal	Alternative 5 Chemical Stabilization and Onsite Disposal
Overall Protection of Human Health and the Environment	Fail	Pass	Pass	Pass	Pass
Compliance with ARARs	Fail	Pass	Pass	Pass	Pass
Long-Term Effectiveness and Permanence	0	3	5	5	4
Reduction in Toxicity, Mobility, and Volume Through Treatment	0	0*	0	1	0*
Short-Term Effectiveness	0	4	3	3	2
Implementability	2	4	2	4	3
Cost (in millions)	\$0	\$0.35	\$0.87	\$0.90	\$0.77

Alternative 2: Chemical Stabilization and Institutional Controls is the preferred alternative for this site.

*Chemical stabilization does not treat the compound; it only limits the availability of lead by binding it to the soil.

Evaluation of Preferred Alternative for BBA (DA013) Site Alternative 2: Chemical Stabilization and Institutional Controls

Overall Protection of Human Health and the

Environment - This alternative protects human health and the environment by reducing the migration and leachability of lead in the soil through chemical stabilization. Institutional controls prevent removal of soil from the site and therefore more direct and widespread exposure in the future.

Compliance with Applicable or Relevant and Appropriate Requirements - This alternative complies with all applicable federal and state regulations regarding the Driftwood Bay RRS and the cleanup of lead. Neither groundwater nor surface water was encountered at the BBA (DA013), therefore ADEC Method Two direct contact cleanup criteria can be utilized. Institutional controls will not achieve the cleanup level of 400 mg/ kg for lead; however, their implementation will prevent the primary means of exposure to the contamination. Since contamination will be left onsite at concentrations greater than the cleanup level, reviews must be conducted every five years. Institutional controls could include documentation of institutional controls at the District Recorder's office, signage, and/or periodic reviews.

Long-Term Effectiveness and Permanence - The treatment process is a resistant chemical process with strength and durability to 1,000 years; however the longterm effectiveness of this alternative is highly dependent on maintenance of institutional controls. The site-specific risk assessment shows that concentrations of lead at the site are protective of human health and the environment under a recreational land use scenario. Since institutional controls preventing digging and removal of soil from the BBA (DA013) are the primary means of preventing exposure to the contamination, they must be enforced and monitored to allow this alternative to be effective. Reduction of Toxicity, Mobility, or Volume through Treatment - The goal of this alternative is to prevent exposure to, rather than treat, lead-contaminated soil. Chemical stabilization does not treat the compound; it only limits the availability of lead by binding it to the soil. The total lead concentration will remain the same, but the bioavailability of the compound is reduced.

Short-Term Effectiveness - Implementation of this alternative does not involve intrusive activities; it will not have negative impacts on community or worker health and safety or environmental quality. However, natural processes will not reduce lead to concentrations below those presented in the remedial action objectives.

Implementability - Implementation of this alternative is relatively straightforward. The largest challenge is in the logistics of mobilizing the chemical stabilizer to the site. Approximately 3.5 tons of stabilizer are required for the BBA (DA013) site. The most cost-effective mobilization necessitates a helicopter and sling load to transport crew and stabilizer to the site, avoiding the need to barge heavy equipment to the site. The crew will manually spread the stabilizer. Attaining administrative approval should be possible, though more challenging than a true treatment option because contaminated soil remains onsite.

Cost - Chemical stabilization and institutional control will cost approximately \$350,000. This is based on the assumptions that 93 cubic yards (140 tons) of soil require stabilization; stabilizer and personnel could be transferred to the site in 12 round-trips; and application can be completed during one day of onsite work at the BBA (DA013).

OLD DISPOSAL AREA AND EDA (LF006) COMPARISON OF ALTERNATIVES

Evaluation Criteria	Alternative 1 No Action	Alternative 2 Chemical Stabilization and Institutional Controls	Alternative 3 Removal and Offsite Disposal	Alternative 4 Chemical Stabilization and Offsite Disposal	Alternative 5 Chemical Stabilization and Onsite Disposal
Overall Protection of Human Health and the Environment	Fail	Pass	Pass	Pass	Pass
Compliance with ARARs	Fail	Pass	Pass	Pass	Pass
Long-Term Effectiveness and Permanence	0	3	5	5	4
Reduction in Toxicity, Mobility, and Volume Through Treatment	0	0	0	1	0
Short-Term Effectiveness	0	4	3	3	2
Implementability	2	4	2	4	3
Cost (in millions)	\$0	\$0.45	\$1.0	\$1.1	\$0.72
Human Health and the Environment Compliance with ARARs Long-Term Effectiveness and Permanence Reduction in Toxicity, Mobility, and Volume Through Treatment Short-Term Effectiveness Implementability Cost (in millions)	Fail Fail 0 0 0 2 \$0	Pass Pass 3 0 4 4 \$0.45	Pass Pass 5 0 3 2 \$1.0	Pass Pass 5 1 3 4 \$1.1	Pass Pass 4 0 2 3 \$0.72

ffsite Disposal is the preferred alternative for this site

Evaluation of Preferred Alternative for Site LF006 Alternative 3: Removal and Offsite Disposal

Overall Protection of Human Health and the

Environment - This alternative proposes removing leadcontaminated soil from the facility, effectively protecting human health and the environment. The goal of preventing direct contact or inhalation of soil containing lead in excess of 400 mg/kg will be obtained at project completion.

Compliance with Applicable or Relevant and

Appropriate Requirements - Offsite disposal complies with all applicable federal and state regulations regarding the Driftwood Bay RRS and the cleanup of lead under ADEC Method Two. The groundwater encountered at Site LF006 is not impacted by the contamination. Offsite disposal will remove all soil above cleanup levels and prevent any interaction between the lead-contaminated soil at LF006 and groundwater.

Long-Term Effectiveness and Permanence - This alternative has high potential for effectively addressing site contamination. Removing lead-contaminated soil has a high degree of long-term effectiveness. Removal will be confirmed with analytical laboratory testing.

Reduction of Toxicity, Mobility, or Volume through

Treatment - The "Lima Bean" area within LF006 was treated with Calcium hydroxyapatite in 2009; some reduction of toxicity and mobility of lead within the contaminated soil has already occurred. Under this alternative, soil will not be treated further during removal. Instead, it will be sent to a treatment, storage, and disposal facility. When necessary, heavily contaminated soil will be sent to a facility regulated by the Resource Conservation and Reduction Act. This alternative does not satisfy the statutory preference for treatment as a principal element.

Short-Term Effectiveness - Removal of contaminated soil is highly effective and permanent. The contaminated soil will be placed in appropriate chemical waste landfills offsite. Excavation of large volumes of soil might have negative environmental impacts, but due to previous development of the site, anticipated impacts are not considered significant.

Implementability - Implementation of this alternative is logistically challenging, but feasible. Equipment and personnel are not readily available in the area. Heavy equipment requires transportation from Anchorage via barge, while other supplies and personnel can be transported to Dutch Harbor by plane, and to Driftwood Bay by small boat or helicopter. Demobilization for this site is much the same as mobilization.

Cost - Offsite disposal will cost approximately \$1 million to implement. This is based on several assumptions: 230 cubic yards (345 tons) of soil require excavation and offsite disposal; 25% of which will be regulated by RCRA; two weeks of on-site work and 115 trips by flat-bed truck between the site and the beach will address all the contaminated soil within LE006.

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COMPARISON OF ALTERNATIVES FOR FORMER COMPOSITE BUILDING (OT001)

Evaluation Criteria	Alternative 1 No Action	Alternative 2 Institutional Controls	<u>Alternative 3</u> Offsite Disposal	Alternative 4 Onsite Disposal
Overall Protection of Human Health and the Environment	Fail	Pass	Pass	Pass
Compliance with ARARs	Fail	Pass	Pass	Pass
Long-Term Effectiveness and Permanence	0	3	5	4
Reduction in Toxicity, Mobility, and Volume Through Treatment	0	0	0	0
Short-Term Effectiveness	2	5	3	4
Implementability	2	5	2	3
Cost (in millions)	\$0	\$0.23	\$1.36	\$0.76

Alternative 2: Institutional Controls is the preferred alternative for this site.

Evaluation of Preferred Alternative for Former Composite Building (OT001) Alternative 2: Institutional Controls

Overall Protection of Human Health and the Environment - Alternative 2 proposes to leave PCBcontaminated soil in place, but limit exposure by prohibiting digging or moving contaminated soil. Although concentrations are above cleanup levels, the Risk Assessment indicates that current PCB levels at the site do not pose an unacceptable health risk to adult users, including pregnant women. Land use at the site will remain restricted under institutional controls in order to protect human health and the environment.

Compliance with Applicable or Relevant and

Appropriate Requirements - The potential chemical specific ARARs for OT001 include 18 AAC 75.341 Tables B1 and B2 and 40 CFR 761 which provide preliminary remediation goals for contaminants. Institutional controls will comply with all chemical-, location-, and action-specific applicable or relevant and appropriate requirements if properly maintained.

Long-Term Effectiveness and Permanence - The longterm effectiveness of Alternative 2 is highly dependent on maintenance of the institutional controls. Institutional controls will not achieve the cleanup level of 1 mg/kg for PCBs; however, their implementation will prevent the primary means of exposure to the contamination. As the primary means of preventing exposure to the contamination, the institutional controls must be enforced and monitored to allow this alternative to be effective. Institutional controls could include documentation of the institutional controls at the District Recorder's office, signage, and/or periodic reviews. Reviews at least every five years are required as long as PCB concentrations in the soil remain above 1 mg/kg.

Reduction of Toxicity, Mobility, or Volume Through Treatment - The goal of this alternative is to prevent exposure to, rather than treat, PCB-contaminated soil. This alternative does not satisfy the statutory preference for treatment as a principal element. **Short-Term Effectiveness** - Institutional controls can be enacted immediately and do not expose workers or the nearby community to PCBs.

Implementability - No technical obstacles prevent implementation of this alternative. Administrative approval is possible to acquire, but will be challenging since the alternative does not allow for unrestricted land use and requires administrative control to ensure protectiveness.

Cost - Cost estimates for this alternative include planning, coordination, site visit, and preparation of land use maps involved with implementing institutional controls. This alternative will cost approximately \$230,000 to implement.



Lupine in bloom at Driftwood Bay

Top Camp Proposed Institutional Control Boundaries



SUMMARY OF PREFERRED ALTERNATIVES

BURNED BATTERY AREA (DA013)

The preferred alternative for lead contaminated soil at the BBA (DA013) is Alternative 2 - Chemical Stabilization and Institutional Controls because this alternative is protective of human health and the environment and has high short term effectiveness, is easily implementable and a low cost.

OLD DISPOSAL AREA AND EDA (LF006)

The preferred alternative for lead contaminated soil at the Old Disposal Area and EDA (LF006) is Alternative 3 – Removal and Offsite Disposal because this alternative has high long term effectiveness in an area that is more accessible to human and ecological traffic. It is also implementable and has a moderate cost.

FORMER COMPOSITE BUILDING (OT001)

The preferred alternative for PCB-contaminated soil at the Former Composite Building (OT001) is Alternative 2 – Institutional Controls because this alternative is protective of human health and the environment and has the best short term effectiveness and implementability.

Based on information currently available, the USAF believes the Preferred Alternatives meet the threshold criteria and provide the best balance of trade-offs among the other alternatives with respect to the balancing and modifying criteria. The USAF expects the Preferred Alternatives 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; (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and (5) satisfy the preference for treatment as a principal element to the extent practical.

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COMMUNITY PARTICIPATION

The USAF and ADEC provide information regarding the cleanup of sites BBA (DA013), LF006 and OT001 to the public through public meetings, the Administrative Record file for Driftwood Bay RRS, and announcements published in the Dutch Harbor Fisherman, Dutch Harbor, Alaska. The USAF and the ADEC encourage the public to gain a more comprehensive understanding of these sites and the remedial activities that have been conducted at Driftwood Bay RRS. The dates for the public comment period, the date, location, and time of the public meeting, and the locations of the Administrative Record files, are provided on the second page of this Proposed Plan. For further information on sites BBA (DA013), LF006 and OT001, please contact:

Steve Hunt Remedial Project Manager (907) 552-4869 Tommie Baker Community Relations Coordinator (907) 552-4506

U.S. Air Force USAF 611th CES/CEAR 10471 20th Street, Suite 302 JBER, Alaska 99506

GLOSSARY OF TERMS

Alaska Department of Environmental Conservation (*ADEC*) – the State of Alaska body that governs environmental cleanup standards.

Applicable or relevant and appropriate requirements (**ARARs**) – the Federal and State environmental cleanup standards and other substantive requirements that a selected remedy must meet. These requirements may vary among sites and alternatives.

calcium hydroxyapatite - a chemical capable of bonding strongly to lead so that it is not available for uptake by plants, animals or humans.

cumulative risk - the sum of risks resulting from multiple sources and pathways to which humans are exposed. The cumulative cancer risk remaining at the site when cleanup is completed must not exceed 1 in 100,000 (1 x 10^{-5}) and the cumulative non-carcinogenic hazard index must not exceed 1.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) – a United States federal law designed to find and govern the cleanup of sites contaminated with hazardous substances.

Feasibility Study (FS) – a document required under CERCLA to investigate the potential options available to remediate contamination.

Operable Unit – a step taken towards comprehensively addressing site problems.

Polychlorinated Biphenyls (PCBs) – a chemical previously used for industrial purposed that was banned from

production in 1979. It bioaccumulates and has been shown to be hazardous to human health and the environment.

Resource Conservation and Recovery Act (RCRA) - the Federal act that established a regulatory system to track hazardous wastes from the time they are generated to their final disposal. RCRA also provides for safe hazardous waste management practices and imposes standards for transporting, treating, storing, and disposing of hazardous waste.



Drum debris from Site LF006 Landfill. Drums were determined to be clean under RCRA and soil sample results from beneath the drums were all below ADEC Method Two criteria.

USE THIS SPACE TO WRITE YOUR COMMENTS

Your input on the Proposed Plan for Sites BBA (DA013), LF006 and OT001 is important to the USAF. Comments provided by the public are valuable in helping the USAF select a final cleanup remedy for these sites.

You may use the space below to write your comments, then fold and mail. Comments must be postmarked by 22 September 2011. If you have questions about the comment period, please contact Steve Hunt at (907) 552-4869 or through the USAF's toll free number at 1-800 222-4137. Those with access to email may submit their comments to the USAF at the following address: Steve.Hunt@elmendorf.af.mil.

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