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UNITED STATES AIR FORCE
CAPE LISBURNE LRRS, ALASKA

INSTALLATION RESTORATION PROGRAM

DECISION DOCUMENT FOR TWO LOWER CAMP TRANSFORMER BUILDINGS AND ONE LOWER CAMP TRAMWAY TRANSFORMER BUILDING (SS009)

FINAL

MAY 2003

Part I
DECLARATION

SITE NAME AND LOCATION

Two Lower Camp Transformer Buildings and One Lower Camp Tramway Building (SS009)
Cape Lisburne Long Range Radar Station, Alaska
Region X

STATEMENT OF BASIS

This decision document presents the selected remedial action for the Installation Restoration Program (IRP) site SS009 (Two Lower Camp Transformer Buildings and One Lower Camp Tramway Building) at Cape Lisburne Long Range Radar Station (LRRS). This decision document was developed in accordance with the Defense Environmental Restoration Program, 10 United States Code (USC) 2701, consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9601 (*et seq.*); Executive Order 12580, 52 Federal Register 2923, and to the extent practicable, with Title 40, Part 300 of the Code of Federal Regulations (CFR): National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The decision put forth in this document also was developed in accordance with the requirements of Title 18, Chapter 75, Article 3, of the Alaska Administrative Code (AAC) Discharge Reporting, Cleanup, and Disposal of Oil and Other Hazardous Substances regulations for the State of Alaska. The U.S. Air Force (USAF) and the State of Alaska, through the Alaska Department of Environmental Conservation (ADEC), concur with the selected remedy.

ASSESSMENT OF SITE

Site SS009 consists of three former transformer buildings located at the "Lower Camp" of the LRRS. The buildings housed electrical transformers containing polychlorinated biphenyl (PCB) oils, which leaked or were spilled. Each building had a gravel floor with a concrete pad in the center. The transformers were removed when the buildings were deactivated sometime prior to 1993. Staining was evident on all 3 concrete pads in 1993 and 1996 (USAF 1996a, 1997a). The building and the concrete pads were removed in 2002 as part of the Clean Sweep Program.

The Lower Camp Transformer Buildings were located next to each other approximately 100 feet northwest of the main composite facility (living quarters and garage). The Lower Camp Tramway Building was located approximately 4,000 feet west of the main composite facility near the west end of the airstrip.

<u>Lower Camp Transformer Buildings</u>

The Air Force conducted a Remedial Investigation/Feasibility Study (RI/FS) at Cape Lisburne LRRS from 1993-1995, which investigated the Lower Camp Transformer Buildings (USAF 1996a). Only soil samples were collected because surface water bodies are not present. During the RI/FS, contaminant concentrations were compared with risk-based criteria, State of Alaska regulations (18 AAC 75), and other Applicable or Relevant and Appropriate Requirements (ARARs). Contaminants of concern (COC) identified during the RI/FS consisted of:

- Polychlorinated Biphenyls (PCBs), detected at a maximum concentration of 5,600 mg/kg
- Diesel Range Organics (DRO), detected at a maximum concentration of 30,000 mg/kg
- Residual Range Organics (RRO), detected at a maximum concentration of 13,000 mg/kg

The areas of PCB contamination coincided with areas of petroleum contamination. The risk assessment, performed in conjunction with the RI/FS, concluded that the potential human health risks exceeded EPA risk management standards. The cancer risk to humans exceeded 1×10^{-4} and the non-cancer risk was above a hazard quotient of 1.0. In addition, risks to birds and mammals ranged from insignificant to moderate. Almost all of the risk to human and ecological receptors was attributed to PCBs. The risk assessment noted that future risk might increase due to the potential for PCBs to bioaccumulate. Therefore, remediation was recommended for the site.

In 1996, an interim removal action (IRA) was conducted to remove some of the contaminated soil. Approximately 40 cubic yards (yd^3) of PCB and petroleum contaminated soil was excavated from around the concrete pad inside the buildings. Post excavation sampling at the conclusion of the IRA detected PCBs as high as 130 mg/kg and DRO as high as 130 mg/kg. RRO was not detected. The soil removed from the site was placed in a long term holding cell located at another IRP site (LF001).

<u>Lower Tramway Transformer Building</u>
The Lower Tramway Transformer Building was not investigated until the 1996 IRA (USAF 1997a). Staining on the concrete pad and its similarity to other transformer buildings at Cape Lisburne make it probable that PCB contaminated soils were present. Sampling during the IRA identified PCB contaminated soils. A total 20 yd^3 of PCB contaminated soil were removed and placed in a holding cell at IRP site LF001. Post excavation sampling at the conclusion of the IRA detected PCBs as high as 14 mg/kg, DRO as high as 347 mg/kg, and RRO as high 192 mg/kg.

<u>Summary</u>
A total of 55 to 80 yd^3 of soil containing PCBs greater than (>) 1 mg/kg are estimated to remain at the three locations (USAF 1997a). This concentration corresponds to the cleanup levels established in 18 ACC 75.341 for the Arctic zone. Therefore, PCBs are still a COC at SS009. DRO and RRO are no longer contaminants of concern because they were removed below 18 ACC 75.341 cleanup levels for the Arctic zone.

Current land use of the Cape Lisburne LRRS includes industrial activities associated with operation and maintenance of the radar installation and runway. Current uses of nearby lands include subsistence hunting and recreation by residents of Point Lay and Point Hope (USAF 1997b). Expected future land use of the Cape Lisburne LRRS includes subsistence hunting, recreation, and possibly low-density residential occupancy at the lower elevations.

Actual or threatened releases of PCBs, if not addressed by implementing the response action selected in this decision document, could present an imminent or substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF SELECTED REMEDY

The selected remedy was chosen from many alternatives as the best method of addressing the contaminated soil at SS009. It addresses the current and future risk to human health and the environment caused by the exposure to contaminated soils. The selected remedy addresses this risk by removing PCB contaminated soil above 1 mg/kg. This cleanup level is based on ADEC Method Two contaminated site cleanup levels established in 18 AAC 70.341, Table B1 for the Arctic zone. This cleanup level meets the risk management standards of 18 AAC 75.325(h), (i.e., the risk from hazardous substances do not exceed a cumulative carcinogenic risk of 1 in 100,000 [1×10^{-5}] and a cumulative non-carcinogenic hazard index of 1.0).

The selected remedy is excavation of PCB contaminated soil above the cleanup level (1 mg/kg), off-site disposal of the excavated soil that is above the PCB cleanup level, and backfilling and regrading of excavated areas to prevent erosion and surface water ponding. Sampling of the excavation bottoms and sidewalls will be conducted to verify that the cleanup level was obtained. The facility for off-site disposal will be selected consistent with the off-site disposal rule under 40 CFR 300.440. At the off-site disposal facility the hazardous substances may be destroyed through treatment or disposed in a permitted landfill as permitted under the Resource Conservation and Recovery Act (RCRA) and Toxic Substances Control Act (TSCA). The PCB contaminated soil previously removed from the site and placed in holding cells at Cape Lisburne will also be removed off-site in accordance with the Decision Document for site LF001 (USAF 2003).

STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate, and is cost-effective. The statutory preference for remedies that employ treatment could not be satisfied because of the impractability of destroying PCBs, given the potential air emissions and limited infrastructure at the remote location.

This signature sheet documents the USAF and the ADEC acceptance of the record of decision for the SS009, Cape Lisburne LRRS, Alaska.

This decision may be reviewed and modified in the future if new information becomes available which indicates the presence of previously undiscovered contamination or exposure routes that may cause a risk to human health or the environment.

L. Dean Fox (signature) — 18 Sep 03

L. DEAN FOX, Maj Gen, USAF
The Civil Engineer
DCS/Installations & Logistics

Date

Jennifer Roberts (signature) — May 16 2003

Jennifer Roberts, Section Manager
Contaminated Sites Remediation Program
Alaska Department of Environmental Conservation

Date

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ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AFB	Air Force Base
ARAR	Applicable or relevant and appropriate requirements
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CES	611 Civil Engineering Squadron
CFR	Code of Federal Regulations
COC	Contaminants of concern
DRO	Diesel range organics
DRPHs	Diesel range petroleum hydrocarbons
EAFB	Elmendorf Air Force Base
EPA	Environmental Protection Agency
GRO	Gasoline range organics
GRPHs	Gasoline range petroleum hydrocarbons
HQ	Hazard Quotient
IRA	Interim Removal Actions
IRP	Installation Restoration Program
LRRS	Long Range Radar Station
MAR	Minimally Attended Radar
mg/kg	Milligram per kilogram
mg/L	Milligram per Liter
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
ND	Not detected
NFA	No further action
PCBs	Polychlorinated biphenyls
PRGs	Preliminary Remediation Goals
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
RRO	Residual range organics
RRPH	Residual Range Petroleum Hydrocarbons
TAPP	Technical assistance for public participation
TBC	To-be-considered
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage and Disposal Facility
USAF	U.S. Air Force
USC	United States Code
WAC	White Alice Communication

Part II
DECISION SUMMARY

This decision summary provides an overview of Site SS009 (Two Lower Camp Transformer Buildings and the Lower Tramway Transformer Building) located at Cape Lisburne LRRS, Alaska. It summarizes the site description, history, regulatory activities, contamination, risk evaluation, and the selected cleanup remedy. It also explains the rationale for selecting the remedy and how the selected remedy satisfies the requirements of the Defense Environmental Restoration Program, 10 USC 2701, consistent with CERCLA, 42 USC 9601 (*et seq.*), Executive Order 12580, the NCP, and the State of Alaska 18 AAC 75, Article 3 regulations.

1 SITE DESCRIPTION

1.1 Regional Setting

The Cape Lisburne LRRS comprises approximately 1,090 acres of land along the shore of the Chukchi Sea in the Alaska Maritime National Wildlife Refuge. It is approximately 810 miles northwest of Anchorage and 570 miles northwest of Fairbanks. The legal property description for the Cape Lisburne LRRS is as follows:

> *TRACT A: Beginning at a point of intersection of Longitude 166° 09'W. and Latitude 68° 52'N., 1927 N.A.D.; thence North 4,400 feet more or less to the point of intersection of the mean high tide line of the Chukchi Sea and Longitude 166° 09' W.; thence Easterly 13,500 feet, more or less, along said mean high tide line to the intersection with Longitude 166° 03' W.; thence South 2,900 feet, more or less, to the point on intersection of said longitude with Latitude 68° 52' N.; thence West 13,200 feet, more or less, along said latitude to the Point of Beginning, and containing 1,090.91 acres, more or less.*

The general location of the Cape Lisburne LRRS is shown on the inset in Figure II-1. The nearest communities are Point Hope, 35 miles to the southwest and Point Lay, 130 miles to the northeast. No roads connect Point Hope or Point Lay to the Cape Lisburne LRRS. Cape Lisburne LRRS is accessible by air, by sea a few months in the summer, or by snow machine in the winter. The USAF owns the Cape Lisburne LRRS and is responsible for environmental cleanup of the site.

The Cape Lisburne LRRS is divided into two areas, the Upper Camp and the Lower Camp. A 3.9-mile gravel road connects the two camps. The Upper Camp is located on a mountain plateau, at an elevation of approximately 1500 feet. It contains the station's radar equipment. The Lower Camp, located near sea level, contains the living quarters and support facilities.

Average precipitation at Cape Lisburne LRRS is approximately 12 inches per year. The mean annual temperature is 18 degrees Fahrenheit. Winds average 10 miles per hour and are predominantly from the east, with winds in October and November months being the most severe.

Bedrock found at Cape Lisburne LRRS is comprised of sandstone, chert, shale, and conglomerates of the Shublik formation. Bedrock exposures are mostly restricted to upper slopes, crestlines, and eroded areas. The surficial Quaternary deposits are composed of coarse and fine-grained deposits associated with moderate to steep sloped mountains and hills (USAF 1996a).

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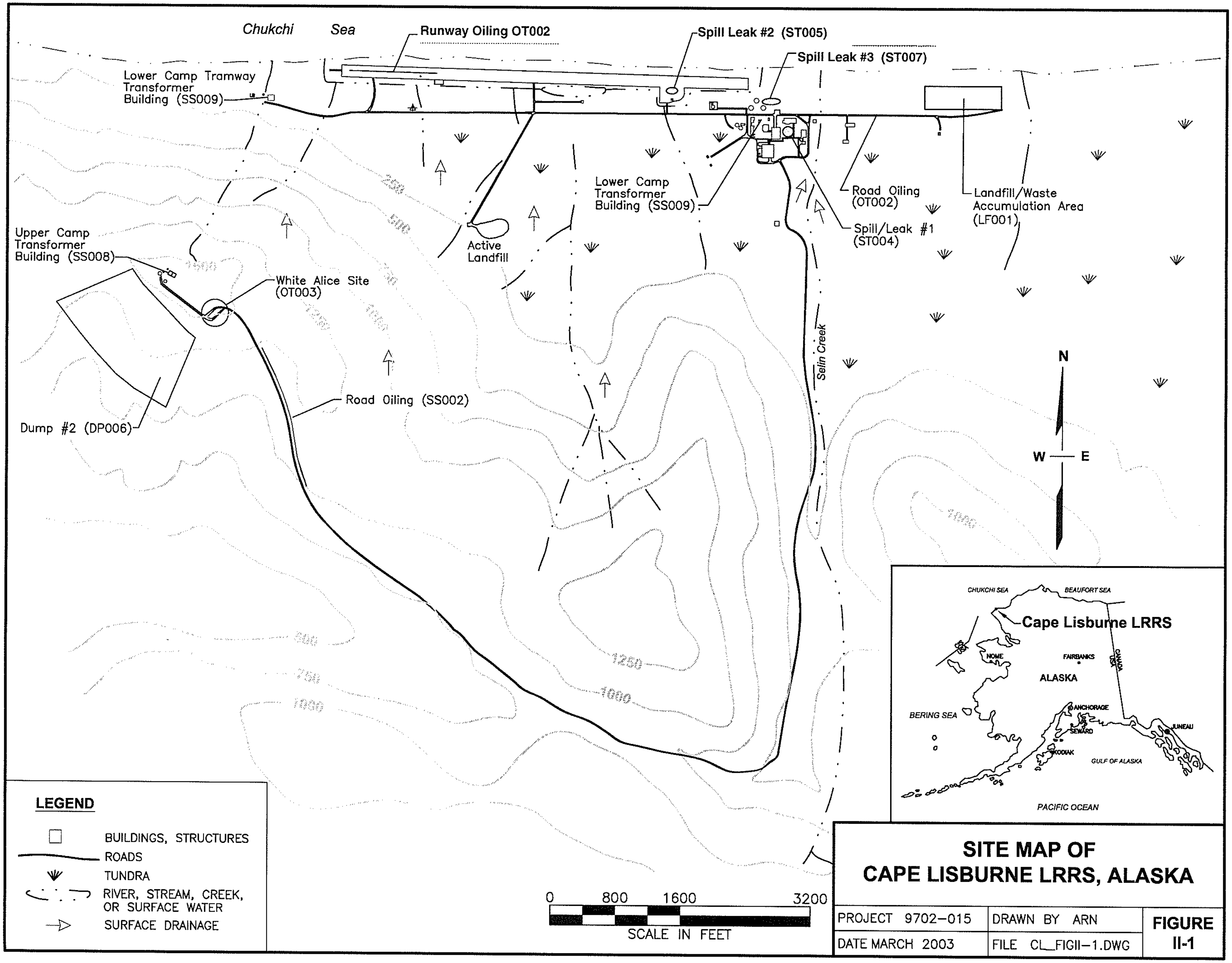

SITE MAP OF CAPE LISBURNE LRRS, ALASKA

PROJECT 9702-015	DRAWN BY ARN	FIGURE II-1
DATE MARCH 2003	FILE CL_FIGII-1.DWG	

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The drainage of Cape Lisburne LRRS is accomplished by surface water flow and shallow subsurface flow over the permafrost to the Chukchi Sea. Some installation runoff is directed to Selin Creek, which also discharges to the Chukchi Sea. The LRRS obtains its water from the shallow water gallery underlying Selin Creek. Surface water runoff from the three former transformer building locations comprising SS009 does not enter the Selin Creek drainage.

Current land use of the Cape Lisburne LRRS includes industrial activities associated with operation and maintenance of the radar installation and runway. Current uses of nearby lands include subsistence hunting and recreation by residents of Point Lay and Point Hope (USAF 1997b). Expected future land use of the Cape Lisburne LRRS includes subsistence hunting, recreation, and possibly low-density residential occupancy.

1.2 SS009 Site Conditions

The three former tramway buildings comprising SS009 are located at Lower Camp at an elevation less than 250 feet above mean sea level. The two Lower Camp Transformer Buildings were located next to each other approximately 100 feet northwest of the main composite facility (living quarters and garage). The Lower Camp Tramway Building was located approximately 4,000 feet west of the main composite facility near the west end of the airstrip. Due to the distances separating each of these two locations they are discussed separately.

1.2.1 Lower Camp Transformer Buildings

The topography in the immediate vicinity of these former buildings is relatively flat with a slight slope to the northwest, towards the Chukchi Sea. There is a small gravel embankment to the south. The area is an unvegetated gravel pad. The soil consists of sandy, gravel fill. Permafrost was not encountered in excavation of up to 5 feet below the ground surface (bgs) in August of 1996 (USAF 1997a). Permafrost was generally encountered at around 6 feet bgs at nearby sites with similar conditions during the RI/FS (USAF 1996a). There are no surface water bodies in the general area.

1.2.2 Lower Camp Transformer Building

The topography in the immediate vicinity of the former Lower Tramway Transformer Building is slightly undulated with a slight slope to the northeast. A small hill is located near the northwest corner of the site (former building). The site soils consist of sandy gravel with some organics in the upper surface soils. The area immediately surrounding the former building is relatively unvegetated. Vegetated tundra exists on the periphery. Permafrost was encountered at a depth of 2.5 feet in August during the 1996 IRA (USAF 1997a). There is no surface water in the vicinity of the site.

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2 SITE HISTORY, ENVIRONMENTAL ACTIVITIES AND COMMUNITY RELATIONS

The following subsections describe the site history of SS009, including environmental investigations, regulatory activities, and the role of the community in defining the response action.

2.1 Site History

Construction of the Cape Lisburne LRRS was completed in 1952 and the high frequency radio was activated in 1953. This system was replaced with a White Alice Communications (WAC) system in 1957. In 1977, operation of the installation was switched from military to contractor personnel. In 1979, the WAC was replaced with satellite technology and the number of personnel at the site was reduced from 93 to 14. The technology at the installation was upgraded again in 1985 with the installation of a Minimally Attended Radar (MAR) system. Currently, six contractor personnel manage and reside at the installation.

Operations at the LRRS have included facility maintenance, power generation, waste disposal, transportation, living quarters, mess hall, and radar and communication equipment maintenance. The following activities could have resulted in a contaminant release:

- Fuel spills from storage tanks or during transfers between tanks;
- Vehicle, equipment, and road maintenance;
- Operation of power-generation facilities utilizing PCB-containing transformers or other electrical equipment;
- Disposal of trash, wastes, and other discarded material.

SS009 originally consisted of three buildings used to hold electrical transformers. The buildings had a gravel floor with a 6-inch thick concrete pad in the center. The date the transformers were removed is unknown. Transformers were not present in the buildings when they were investigated in 1993 and 1996. During these investigations staining was evident on the concrete pad and gravel within each building (USAF 1996a and USAF 1997a). The buildings and the concrete pads were removed in 2002 as part of the Clean Sweep Program.

2.2 Summary of Investigations and Interim Removal Actions

2.2.1 Two Lower Tramway Buildings

The Lower Transformer Buildings were first investigated in 1993, when an RI/FS was performed at Cape Lisburne (USAF 1996a). During the initial scoping activities performed for the RI/FS, which included record searches and interviews with site personnel, the USAF and ADEC concluded that these two buildings were one of five sites to be included in the Cape Lisburne RI/FS.

During the RI, soil samples were collected for the analysis of PCBs, DRO, and RRO. The samples were collected from gravel within the building and outside the building by the doorway. Table II-1 summarizes the maximum contaminant concentrations detected. Three COCs were identified:

- PCBs
- DRO
- RRO

Table II-1: Maximum Contaminant of Concentrations Detected in the Soil at SS009.

(Units in mg/kg)

Analyte	18 AAC 75 Cleanup Level	RI/FS 1993-1995 (USAF 1996a)	Post 1996 IRA (USAF 1997a)
Lower Camp Transformer Building (South Building)			
PCBs	1	5,600	2.7
DRPH/DRO	12,500	30,000	164
RRPH/RRO	13,700	13,000	68
Lower Camp Transformer Building (North Building)			
PCBs	1	1,720	130
DRPH/DRO	12,500	13,00	249
RRPH/RRO	13,700	4,500	48
Lower Tramway Transformer Building			
PCBs	1	NA	13
DRPH/DRO	12,500	NA	38
RRPH/RRO	13,700	NA	192

Notes:

1) The soil cleanup levels listed in this table are derived from 18 AAC 75.341, Table B1and B2. The value listed is for the most conservative pathway for the Arctic zone (ingestion or inhalation).

2) The RI/FS samples were collected in 1993 and 1994 (USAF 1996a). The IRA samples were collected in 1996 after removal actions were completed (USAF 1997a).

3) During the RI, two types of PCBs were detected. Aroclor 1254 and 1260 were detected at a maximum concentration of 1,720 and 5,600 mg/kg, respectively. During the IRA only Aroclor 1260 was detected.

4) During the RI/FS samples were analyzed for DRPH and RRPH by EPA method diesel 8100M. These results are approximately equivalent to DRO and RRO results by AK Methods 102 and 103, respectively.

Abbreviations:

DRPH - Diesel Range Petroleum Hydrocarbons by EPA method diesel 8100M analysis used in RI/FS (prior to 1996).

RRPH - Residual Range Petroleum Hydrocarbons by EPA method diesel 8100M analysis used in RI/FS (prior to 1996).

DRO – Diesel Range Organic Compounds by AK method 102

RRO - Residual Range Organic Compounds by AK method 103

PCBs – Polychlorinated biphenyls

mg/kg – milligrams per kilogram

NA – Not analyzed

ND – Not detected

Elevated concentrations of all three compounds occurred in the same areas, indicating they came from a common source (presumably transformer oil).

A risk assessment was prepared based on sampling conducted during the 1993-1995 RI/FS (USAF 1996b). The risk assessment concluded that the potential human health risks were of a magnitude that normally requires remedial action based on EPA risk management standards. The cancer risk to humans exceeded 1×10^{-4} and the non-cancer risk was above a hazard quotient of 1.0. Environmental risks were moderate for some species of birds and the brown lemming. Both human health and environmental risks was due almost entirely to exposure to PCBs (See section 3.1 for further discussions). Based on the risk assessment, the RI/FS recommended remedial actions at the site.

The USAF conducted an IRA at both transformer buildings in 1996 (USAF 1997a). During the IRA, 20 yd^3 of PCB contaminated gravel was removed from inside the building next to the concrete pad. Sampling at the completion of the IRA detected PCBs up to 130 mg/kg, DRO up to 249 mg/kg, and RRO up 68 mg/kg. The samples were collected from the bottom of the excavations at a depth of 1 to 5 feet. Table II-2 lists the maximum concentrations detected at the conclusion of the IRA. It is estimated that approximately 20 to 35 yd^3 of soil containing PCBs > 1 mg/kg remained at the site (USAF 1997a).

In addition, the concrete slab was cleaned during the IRA to remove PCBs. Some areas remained visibly stained after the cleaning. Wipe samples collected from the concrete slab after the cleaning activities indicated that PCB contamination remained on the slab up to 340 mg/100 cm^2. Environmental Protection Agency (EPA) PCB spill cleanup policy as published in the Federal Register on April 2, 1987 lists cleanup standards of between 0.1 and 0.01 mg/100 cm^2 for solid surfaces, depending upon the circumstances.

In 2002, the building and the concrete pad were removed during demolition activities. Portions of the concrete slab believed to contain PCBs based on wipe samples or staining were sent off-site to a Treatment, Storage and Disposal (TSD) facility for disposal.

2.2.2 Lower Tramway Transformer Building

The Lower Tramway Transformer Building was not investigated until the 1996 IRA (USAF 1997a). Staining on the concrete pad and its similarity to other transformer buildings at Cape Lisburne make it probable that PCB contaminated soils were present. Sampling during the IRA identified PCB contaminated soils. A total 20 yd^3 of PCB contaminated soil were removed and placed in a holding cell at IRP site LF001. Post excavation sampling at the conclusion of the IRA detected PCBs as high as 14 mg/kg, DRO as high as 347 mg/kg, and RRO as high 192 mg/kg (see Table II-1). It is estimated that approximately 30 to 45 yd^3 of soil containing PCBs > 1 mg/kg remained at the site (USAF 1997a).

In addition, the concrete slab was cleaned to remove PCBs. Some areas remained visibly stained after the cleaning. Wipe samples collected from the concrete slab after the cleaning activities indicated that PCB contamination remained on the slab up to 41 mg/100 cm^2.

In 2002, the building and the concrete pad were removed during demolition activities. Portions of the concrete slab believed to contain PCBs based on wipe samples or staining were sent off-site to a TSD facility for disposal.

2.2.3 EE/CA and Proposed Plan

In 1998, the USAF completed an evaluation of treatment alternatives for PCB contaminated soil at Cape Lisburne (USAF 1998). Concerns regarding the air emission using onsite thermal desorption, along with a need for disposal options for hydrocarbon and asbestos containing materials (ACM) caused a second evaluation of treatment options. An Engineering Evaluation and Cost Analysis (EE/CA) report was written to examine and compare different treatment technologies for the PCB and petroleum impacted soil at Cape Lisburne (USAF 2002a). The study evaluated five treatment alternatives and their abilitys to treat the chemicals of concern, while ensuring protection of human health and the environment. The study determined that the preferred option was removal and off-site disposal of the PCB and petroleum impacted soil. Based on this report a Proposed Plan was prepared for the site (USAF 2002b). The ADEC approved the Proposed Plan on December 4, 2002 (ADEC 2002).

2.3 Community Relations Activities

Public participation has been an important component of the CERCLA process at Cape Lisburne LRRS. All decisions made for IRP Site SS009 were based on information contained in the administrative record. Activities aimed at informing and soliciting public input regarding cleanup activities for the site are as follows:

Proposed Plan. A proposed plan that presented the cleanup alternatives proposed by the Air Force for Cape Lisburne LRRS was submitted for public review on November 18, 2002. A public meeting was also held at that time.

Public Comment Period. The public comment period for the proposed plan was November 18, 2002 to December 20, 2002. A summary of the public comments and responses to public comments are provided in Part III of this decision document.

Public Meetings. The Air Force held a public meeting in Point Hope on November 18, 2002 to discuss the proposed plan and record verbal comments. Responses to all comments received on the proposed plan are included in Part III of this decision document. Additional community involvement activities for Cape Lisburne LRRS included Restoration Advisory Board (RAB) and public meetings on the following dates:

- RAB meeting at Point Hope, Alaska, 4 March 1998
- RAB meeting at Point Hope, Alaska, 17 September 1998
- Government-to-government meeting with General Case (Air Force) at Point Hope Alaska, 19 July 1999
- Site visit at Cape Lisburne LRRS with community members of Point Hope, Alaska, and RAB meeting, 12 August 1999
- RAB meeting at Point Hope, Alaska, 1 September 1999
- RAB and Technical Assistance for Public Participation (TAPP) Review meeting at Point Hope, Alaska, 29 September 1999
- RAB meeting at Point Hope, Alaska, 15 February 2000
- Site visit at Cape Lisburne LRRS by eight Point Hope elders to investigate historical home sites at Wevok, 29 July 2000
- Public hearing on the Cape Lisburne landfill at Point Hope, Alaska, 31 July 2000
- RAB meeting at Point Hope, Alaska, 7 March 2001
- RAB meeting at Point Hope, Alaska, 15 August 2001
- RAB meeting at Point Hope, Alaska, 3 March 2002

- Public meeting at Point Hope, Alaska, presenting Proposed Plan, 18 November 2002

Responsiveness Summary. Section III of this decision document summarizes comments on the proposed plan.

Updated Mailing List and Mailing Events. A mailing list of interested parties is maintained and updated regularly by the Air Force Community Relations Coordinator.

Administrative Record. The administrative record located at the 611 Civil Engineering Squadron (CES) office at the Elmendorf Air Force Base, Alaska, is continually updated and developed. The administrative record for the Cape Lisburne LRRS contains the information used to support this decision and is accessible to the public. An index of documents is included in Appendix A.

Information Repository. The information repository is a file containing newsletters, fact sheets, and community relations documents relating to proposed plans and response actions for all of the IRP sites at Cape Lisburne LRRS. The USAF maintains information repositories for Cape Lisburne LRRS at Elmendorf AFB, Alaska, and in Point Hope, Alaska at the Tikigaq School, the Point Hope Community Office / Mayor's Office and at the Tikigaq Native Village office.

Management Action Plan. Past hazardous waste investigations and cleanup activities have been documented in several Air Force reports. The Management Action Plan report is updated regularly and made available to the public in order to provide a summary of all restoration activities in one document (USAF 1997b).

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3 SITE CONTAMINATION AND RISK

The following section presents the nature and extent of contamination as determined by remedial action activities, risk evaluation results, remedial action objectives, and ARARs.

PCBs, DRO and RRO were identified as COCs in the soil at SS009 during the RI/FS. The most heavily contaminated soil was removed from all thee areas (transformer buildings) in 1996 (USAF 1997a). After the IRA, only PCBs were present at concentrations above 18 ACC 75.341 cleanup levels for the Arctic zone. Therefore, PCBs in contaminated soil are only COC at the site. Figures II-1 and II-2 illustrate the areas where PCB contamination is estimated to be > 1 mg/kg based on sampling results at the conclusion of the IRA. The buildings and concrete slabs were removed from each location in 2002 but are left on the figures for reference purposes. It is estimated that a total of 55 to 85 yd^3 of soil containing PCBs above 1 mg/kg remain at the site (USAF 1997a).

Under typical conditions, the migration potential of PCBs is low, due to their insolubility and tendency to bind to soil particles. In addition, the permafrost should limit the vertical migration of contaminants. Until the summer of 2002, almost all the contaminated soil was located inside the transformer buildings. After the buildings were removed in 2002, this soil was exposed at the surface increasing the potential for erosion or contact with receptors (humans or wildlife). PCB contaminated soil exposed at the ground surface can be dispersed by erosion. Both sites are relatively flat which limits erosion caused by surface water runoff. However, wind and site activities that disturb the ground surface (e.g., equipment operation, foot traffic or animals) can disperse PCB contaminated soils.

3.1 Risk Evaluation

Baseline human health and ecological risk assessments were conducted using the data collected from 1993 through 1995 during the RI/FS at Cape Lisburne (USAF 1996b). The concentration used to calculate the cancer and non-cancer risk (hazard quotient) in the human health risk assessment was the maximum concentration of each contaminant detected at the site. These concentrations are listed in Table II-1. Since the risk assessment was performed prior to the 1996 IRA, it does not take into account the affects of the removal actions or the results of the additional sampling conducted in 1996. In addition, the risk assessments only evaluated the two Lower Camp Transformer Buildings. The Lower Tramway Transformer Building was not investigated during the RI/FS.

3.1.1 Human Health Risk

The human health baseline risk assessment determined that the following exposure scenarios were complete, and evaluated these pathways for human health risks.

- Installation workers who may be exposed to contaminants through ingestion of soil and sediment. The risk assessment assumed that an installation worker would live and work at the site for a total of ten years.
- Future residents (adults and children) who may be exposed to contaminants through ingestion of soil and sediment. The risk assessment assumed that a future resident would live at the site for a total of 55 years.

The ingestion of surface water was not considered a potential exposure pathway because surface water bodies are not present at the site.

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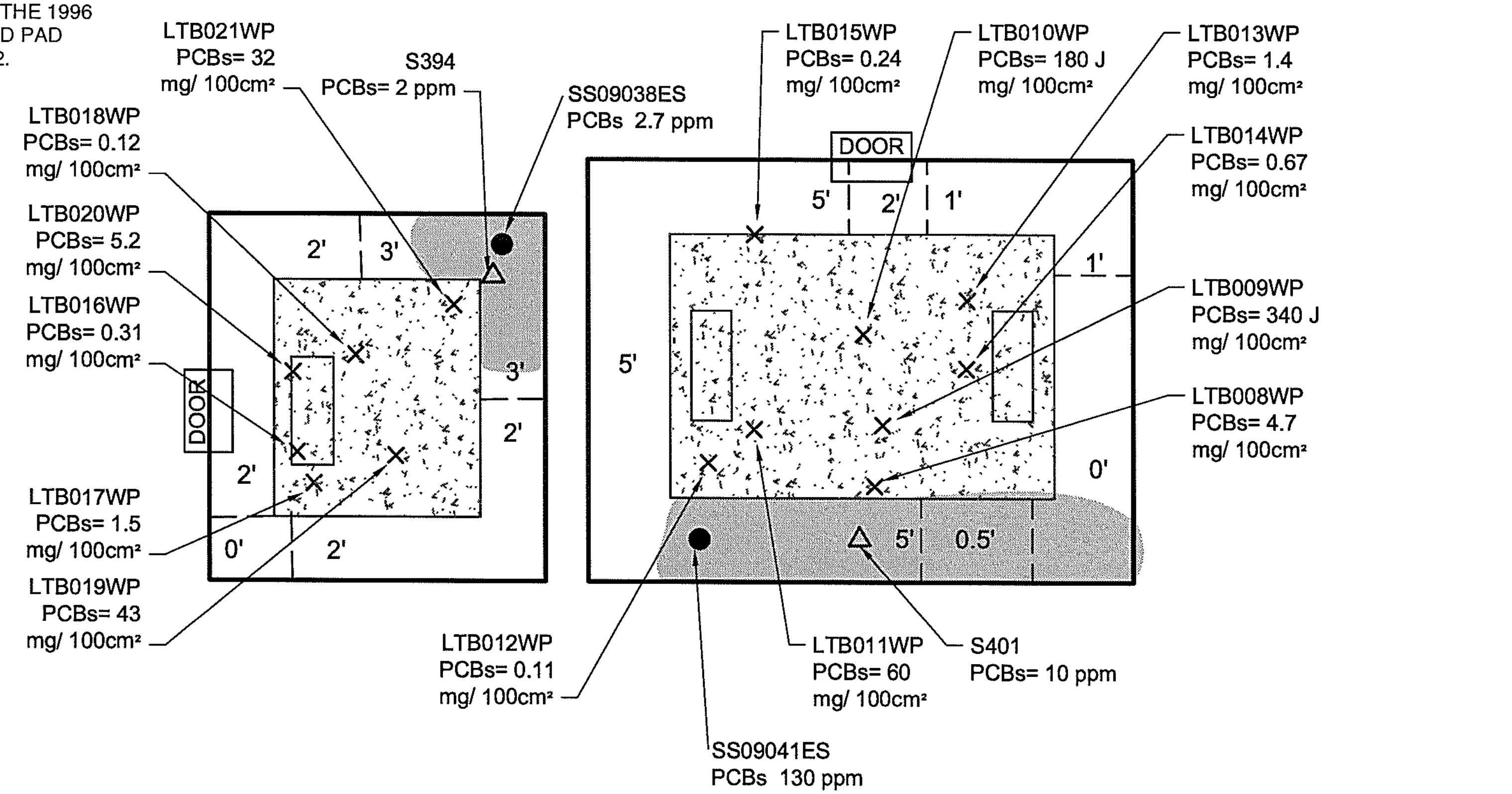
NOTE:
SAMPLES COLLECTED FROM EXCAVATION BOTTOM AT THE CONCLUSION OF THE 1996 IRA. BUILDING AND PAD REMOVED IN 2002.



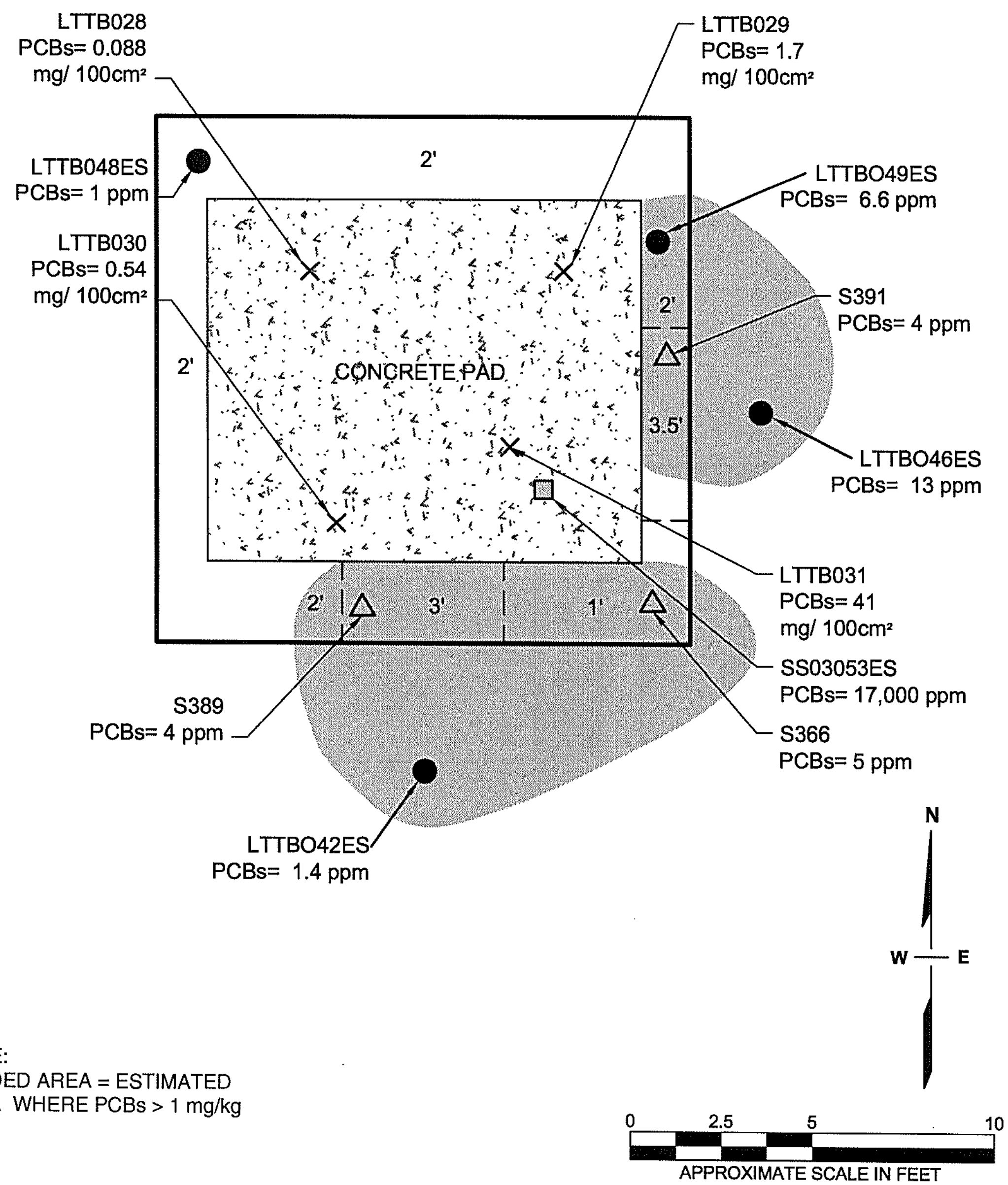
LEGEND

———	OUTSIDE WALL OF TRANSFORMER BUILDINGS
- - - -	EXCAVATION BOUNDARIES
4'	EXCAVATION DEPTH
(stippled box)	CONCRETE PAD
●	CONFIRMATION/FINAL SITE CHARACTERIZATION SAMPLE
ppm	PARTS PER MILLION (mg/kg)
△	OHMICRON FIELD SCREENING SAMPLE
PCBs	POLYCHLORINATED BIPHENYLS
mg/100cm²	MILLIGRAMS PER 10 CENTIMETER BY 10 CENTIMETER AREA
×	LAB WIPE SAMPLE (AFTER CLEANING PAD)
164 ppm	SAMPLE RESULT
▭	ELECTRICAL EQUIPMENT
J	ESTIMATED CONCENTRATION

NOTE:
SHADED AREA = ESTIMATED AREA WHERE PCBs > 1 mg/kg

LOWER CAMP
TRANSFORMER BUILDINGS (SS009)
CAPE LISBURNE LRRS, ALASKA

PROJECT 74-FAF00064.03	DRAWN BY ARN	**FIGURE** II-2
DATE SEPTEMBER, 2001	FILE CAPE LISBURNE.DWG	



NOTE:
SAMPLES COLLECTED FROM EXCAVATION BOTTOM AT THE CONCLUSION OF THE 1996 IRA. BUILDING AND CONCRETE PAD REMOVED IN 2002.

LEGEND

———	OUTSIDE WALL OF TRANSFORMER BUILDINGS
- - - -	EXCAVATION BOUNDARIES
4'	EXCAVATION DEPTH
●	CONFIRMATION/FINAL SITE CHARACTERIZATION SAMPLE
ppm	PARTS PER MILLION (mg/kg)
164 ppm	SAMPLE RESULT
PCBs	POLYCHLORINATED BIPHENYLS
mg/100cm²	MILLIGRAMS PER 10 CENTIMETER BY 10 CENTIMETER AREA
×	LAB WIPE SAMPLE (AFTER CLEANING PAD)
▢	"CHIP" SAMPLE
△	OHMICRON FIELD SCREENING SAMPLE

NOTE:
SHADED AREA = ESTIMATED AREA WHERE PCBs > 1 mg/kg

LOWER CAMP TRAMWAY TRANSFORMER BUILDING (SS009) CAPE LISBURNE LRRS, ALASKA

PROJECT 74-FAF00064.03	DRAWN BY ARN	FIGURE II-3
DATE SEPTEMBER, 2001	FILE CAPE LISBURNE.DWG	

Cancer Risk

Results of the human health baseline risk assessment identified the following exposure pathways that exceeded the ADEC cancer risk management standard of 1×10^{-5} from exposure to the COCs (PCBs, RRO and DRO).

- **Installation worker** – The cancer risk from ingestion of soil was calculated to be 5×10^{4}.
- **Future resident** – The cancer risk from ingestion of soil was calculated to be 1×10^{-2}.

The presence of PCBs accounted entirely for the quantifiable lifetime cancer risk for these receptors and pathways.

Non-Cancer Risk

Results of the human health baseline risk assessment identified the following exposure pathways that met or exceeded the ADEC risk management standard of a hazard index of 1.0.

- **Installation Worker** – The non-cancer risk from ingestion of soil was calculated to be 22.
- **Future Resident** – The non-cancer risk from ingestion of soil was calculated to be 445.

The presence of PCBs (Aroclor 1260 and 1254) accounted for almost all (99%) of the quantifiable non-cancer risk for both the installation worker and future resident.

3.1.2 Ecological Risks

The baseline ecological risk assessment evaluated risks to receptors in the terrestrial and aquatic environments. The ecological risk assessment determined that the following pathways were complete or potentially complete for SS009, and evaluated them for risks to ecological receptors:

- Plants may be exposed to contaminants through direct contact with soil.
- Terrestrial birds and mammals may be exposed to contaminants through ingestion of soil/sediment, direct contact with soil, and ingestion of biota exposed to contaminants.

The ecological baseline risk assessment identified the following risks to ecological receptors at SS009:

- Terrestrial plants had moderate risk from the higher concentrations of PCBs. However, the risk assessment noted that the areas with high levels of PCBs were not favorable for plant growth due to the soil conditions. Therefore, based on qualitative comparisons, the estimated risk to plants was not considered significant.
- Birds had insignificant to moderate risks from exposure to PCBs depending upon the species.
- Terrestrial mammals had insignificant risks from exposure to PCBs, except for the brown lemming which had moderate risk.
- It was noted that the future risks may increase because PCBs have a high potential for bioaccumulation and future concentrations may be magnified in the food chain. These future risks were not calculated.

In evaluating the risk assessment, it was determined human health risks were greater than the risks to ecological receptors. Therefore, adequately protecting human health would also protect the environment.

3.2 Remedial Action Objectives and ARARs

As part of the cleanup effort, environmental remediation objectives have been established for Cape Lisburne LRRS. These objectives as presented in the Final Management Action Plan, Cape Lisburne Long Range Radar Station, Alaska (USAF 1997b), include:

- Protect human health by minimizing or eliminating exposure pathways;
- Protect the environment by ensuring that wildlife, subsistence activities, and vegetation in the surrounding areas are not affected by contamination and cleanup activities at Cape Lisburne LRRS;
- Comply with existing statutes and regulations;
- Conduct IRP activities in a manner consistent with Section 120 of CERCLA, as amended by the Superfund Amendments and Reauthorization Act;
- Initiate selected restoration actions to control, eliminate, or reduce risks to acceptable levels;
- Develop, screen, and select remedial actions that reduce risk in a manner consistent with statutory requirements;
- Commence remedial actions for priority areas as soon as practical; and,
- Conduct long-term groundwater monitoring and five-year reviews, as needed.

The objectives were developed along with preliminary ARARs and to-be-considered (TBC) criteria. The objectives were established to be protective of human health and the environment and comply with ARARs as defined in current state and federal regulations. The basis for these objectives was the current and reasonably foreseeable future land use at Cape Lisburne LRRS. Collectively, the remedial action objectives will reduce potential exposure to human or ecological receptors through the investigation, and elimination or reduction of contaminants onsite.

The chemical-specific ARAR for OT003 is the cleanup level identified in 18 AAC 75.341, Table B1 for PCB contaminated soil in the Arctic zone. The action specific ARAR is the EPA spill cleanup and disposal procedures for PCBs set forth in 40 CFR, Part 761. There are no location specific ARARs for this site.

3.3 Cleanup Levels

Cleanup levels were developed for the COCs at Cape Lisburne based on the ARARs. Priority was given to using the cleanup levels in 18 AAC 75.325 – 18 AAC 75.390, referred as the ADEC "site cleanup rules." The site cleanup rules establish administrative processes and standards to determine the necessity for and degree of cleanup required to protect human health, safety, and the environment at a site where a hazardous substance is located. These regulations contain cleanup levels for soil, surface water and groundwater.

3.3.1 Soil Cleanup Levels

The human health and ecological risk assessments calculated risks to human health and ecological receptors, but did not calculate risk-based cleanup levels (USAF 1996b). The risks to human health were greater than the risks to ecological receptors for all the contaminants. Therefore, selection of cleanup levels was based on protection of human health because these cleanup levels will also protect ecological receptors.

At SS009, the risk assessment performed in 1995 identified risk due to PCBs, DRO and RRO. However, almost all of the risk was due to PCBs. After the 1996 IRA, DRO and RRO were no longer contaminants of concern because they were below 18 AAC 75 cleanup levels. Therefore, ingestion of PCB contaminated soil is the only complete pathway currently posing a risk to human health.

The cleanup level for PCB contaminated soil and sediment at SS009 is 1 mg/kg. This cleanup level is the cleanup level in 18 AAC 75.341, Table B1 for the Arctic zone.

The State of Alaska allows the determination of risk-based cleanup levels. However, the use of a risk-based cleanup level was not pursued for multiple reasons. The use of a risk-based cleanup level would likely result in only a small reduction in the total volume of soil requiring remediation. However, to apply site-specific risk based cleanup levels under 18 AAC 75, the Air Force would be required to establish and maintain institutional controls at this site in perpetuity. This would add considerably to long-term costs associated with this site. In addition, due to the uncertainties in the risk assessment from not evaluating risks associated with bioaccumulation of PCBs, the Air Force and ADEC agreed that site-specific risk-based cleanup levels are not appropriate for this site.

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4 SUMMARY OF CLEANUP ALTERNATIVES

This section describes the potential cleanup options for sites at Cape Lisburne LRRRS, including PCB contaminated sites such as SS009. Cleanup alternatives were evaluated for the entire facility because several COCs were present at multiple sites. Many technologies were considered to remediate the contaminated materials, including PCB contaminated soil. The most feasible options were selected based on the effectiveness, implementability and relative cost. The proposed options that were evaluated are discussed below.

Option 1: No Action

CERCLA requires evaluation of a no-action option as a baseline reflecting current site conditions without any cleanup effort. The No Action option assumes that the site would be left in its current condition. This option is also used for comparison to each of the other options.

Option 2: Off-Site Treatment/Disposal

This option includes excavating and containerizing all contaminated soil and transporting the soil by barge to a TSD in the Lower 48 for treatment and disposal. This also includes containerizing and barging PCB contaminated concrete and PCB contaminated wood debris to the Lower 48 for disposal in a permitted solid waste landfill. This option removes all contaminated material from the Cape Lisburne LRRS.

Option 3: On-Site Treatment (Vitrification)

In Option 3, contaminated soil would be excavated, and treatment equipment would be shipped from the Lower 48 to Cape Lisburne. Treatment would consist of using plasma arc torches to heat contaminated materials (soil, concrete, and wood debris) to high temperatures. This treatment process melts the contaminated materials and converts organic contaminants (i.e., PCBs and petroleum products) into a non-toxic, non-leachable, glass-like product. Once treatment is complete, the glass product would be placed in the landfill at Cape Lisburne LRRS. Air vapors produced during the treatment process would be treated to destroy contaminants as required by state and federal regulations. This option would remove all contamination although the treated material would remain at Cape Lisburne.

Option 4: On-Site Treatment (Thermochemical)

In Option 4, contaminated soil would be excavated, and treatment equipment would be shipped from the Lower 48 to Cape Lisburne. Treatment would consist of adding binding agents to contaminated materials and then heating the mixture to high temperatures to destroy the organic contaminants (i.e., PCBs and petroleum products). Treated materials produced by this process would look like rock materials and be disposed of in the landfill at Cape Lisburne LRRS. Air vapors produced during the treatment process would be treated to destroy contaminants as required by state and federal regulations. This option would remove all contamination although the treated material would remain at Cape Lisburne.

Option 5: On-Site Treatment of Soil and Off-Site Disposal of Other Materials

In Option 5, contaminated soil would be excavated, and treatment equipment would be shipped from the Lower 48 to Cape Lisburne. Thermal desorption uses heat to separate PCBs, water, and fuel from the soil. The water separated from the soil would be discharged on or near the site if it meets ADEC discharge standards. The PCBs and fuel removed from the soil would be shipped to the Lower 48 for proper disposal. Once treatment is complete, the treated soil will be used as backfill in the open excavations. Air vapors produced during the treatment process would be treated to destroy contaminants as required by state and federal regulations. Thermal desorption cannot remediate contaminated concrete or wood debris. Therefore, these materials would be containerized and barged to the Lower 48 for disposal in a permitted solid waste landfill.

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5 EVALUATION OF SELECTED CLEANUP REMEDY

The sections that follow describe how the nine CERCLA criteria were used to evaluate and compare cleanup options, and to select the preferred cleanup option (USF 1998 and 2002a).

1) **Overall protection of human health and the environment:** How well does the option, as a whole, protect the health and safety of humans, animals, and plants?

2) **Compliance with regulations:** Does the option meet all state and federal laws? If a waiver is required, how is it justified?

3) **Long-term effectiveness and permanence:** How long will it take to complete cleanup? What is the long-term risk at the site? Are the contaminants permanently removed or destroyed?

4) **Reduction of toxicity, mobility, or volume through treatment:** How well does the treatment reduce toxicity, mobility, or volume of the contaminants?

5) **Short-term effectiveness:** Could human, animal, or plant health and safety be impacted during implementation of the option?

6) **Implementability:** Is the option available and able to be constructed, maintained and/or enforced?

7) **Cost:** Is the option cost effective?

8) **State acceptance:** What are the State's comments or concerns about the alternatives considered and about the preferred alternatives? Does the state support the preferred alternative?

9) **Community acceptance:** The Air Force has reviewed and considered all comments received during the public comment period before making a final decision. Public comments are discussed in the Responsiveness Summary.

5.1 Evaluation of Options

Overall Protection of Human Health and the Environment — Option 1 (no further action) is not protective of human health or the environment because contaminated material would remain on site at levels that would pose a risk to human health and environmental receptors through direct exposure.

Options 2, 3, 4 and 5 are all protective of human health and the environment. Option 2 permanently removes the contaminated materials from the Cape Lisburne LRRS. This option eliminates contact with contaminated media, protects human health by removing the source of contamination, eliminates exposure pathways; and protects the environment by ensuring that wildlife, subsistence activities, and vegetation in the surrounding areas are not affected by contamination and cleanup activities. Options 3 and 4 may be protective of human health and the environment because contaminated media could be potentially treated onsite to regulatory cleanup levels. This would limit or eliminate the source of the contamination and the exposure pathways for humans and wildlife. These options differ from Option 2, because the treated materials would be disposed of at Cape Lisburne LRRS, and the method for soil treatment would be at a remote location (Cape Lisburne) verses an established location in the Lower 48. Option 5 also is protective of human health and the environment because contaminated soil and concrete/wood debris would be actively treated to cleanup levels and then disposed of at Cape Lisburne LRRS.

Compliance with Regulations — Option 1 would not comply with state and federal regulations because contaminated materials with unacceptably high contaminant concentrations would remain exposed at the site. Options 2, 3, 4, and 5 can be made to comply with state and federal regulations.

Long-Term Effectiveness and Permanence —This criterion addresses long-term protection of human health and the environment (reduction of risk) and the adequacy and reliability of any controls installed at the site. Option 1 (no further action) does not provide adequate protection to human health or the environment as contaminated media would remain onsite and may be available to human and wildlife receptors. Option 2 eliminates the need for long-term onsite management (institutional controls and monitoring) at project completion because the contaminated materials are permanently removed from the site. Although some materials may be landfilled off-site, the disposal faculty will not be at a remote location, and will be better suited to provide long-term management of the waste. Options 3, 4, and 5 would involve permanent and active reduction of contamination at the site by treating and disposing of the impacted materials at Cape Lisburne.

Reduction of Toxicity, Mobility, or Volume Through Treatment — This criterion considers the type and quantity of waste that would remain following the implementation of each option. Option 1 (no further action) through natural degradation processes, may reduce the toxicity and volume of wastes present at the Cape Lisburne LRRS. These natural processes occur very slowly in the Arctic climate. The mobility of the contaminants at this site would not be affected. Option 2 reduces the volume of contamination remaining onsite by physically removing waste. However, removal and transport of the impacted material off-site will not reduce the volume, and the toxicity or the mobility of the contaminants in the impacted material unless off-site treatment or incineration occurs prior to disposal. In Option 2, most of the waste will be placed in a permitted landfill without treatment. However, off-site incineration could be performed at a higher cost than landfilling to reduce the volume, mobility and toxicity of contaminants. Options 3, 4, and 5 involve treatment technologies that reduce the toxicity and mobility of contaminants, but may generate air emissions, which could allow other contaminants to enter the environment. All three of these options would be effective in reducing the toxicity and volume of contamination. However, under Options 4 and 5 some waste such as ash, contaminated concrete and wood debris would still be transported to a permitted landfill off-site. At the off-site landfill the liability for the waste is reduced, but not eliminated.

Short-Term Effectiveness —This section evaluates each option based on its effectiveness in reducing the potential risk to human and ecological receptors during the construction and implementation of each option until cleanup goals are met.

Option 1 poses no short-term risk because no construction is done to the site. Options 2, 3, 4 and 5 would pose some short-term potential risk to onsite workers from exposure to contaminated soil and demolition debris during excavation and removal activities. These potential risks could be minimized by engineering and institutional controls. Options 3, 4, and 5 could also generate air emissions and water discharges, which while manageable, add another possible source for release of contaminants to the environment.

Implementability — Implementability considers the demonstrated performance of the technology, including the operation and maintenance (O&M), the monitoring requirements, the availability of skilled workers and facilities, the post removal site control requirements, the potential for long and short term failures, the need for replacements and the potential threats from equipment failure or replacement.

No technical or administrative implementability issues were identified for Option 1.

The technical feasibility of Option 2 is high. Similar construction and excavation activities have been conducted successfully at other sites in Alaska. Services, equipment and materials required to complete Option 2 are generally available, but the resources may be limited if other construction projects are in progress simultaneously. If several contractors were on site at the same time, the availability of services, equipment and backfill materials would be diminished and may affect the cost of the option, especially if equipment and materials have to be shipped to the site prior to work beginning. Barge service to and from Cape Lisburne is restricted to a short time period from about July to mid-September because of ice in the shipping lanes. Also once the materials are loaded and the barges depart from Cape Lisburne to Washington, travel times allow only four roundtrips during one field season. However, multiple tugboats and barges could be used.

The availability of barges, tugboats, crew, and containers necessary to containerize the waste may make it difficult to complete the shipping in one season. Reducing the quantity of the waste shipped annually will add to the project duration and cost.

For Options 3, 4, and 5 there is a lot of uncertainty involved with using a technologically complex treatment system at a remote location. Treatment could be accomplished in one season if there are no complications. Treatment could be accomplished in one season. In Option 3 the soil would be destroyed and the treated materials would remain on site. No shipping of hazardous waste or disposal costs would be associated with this option. In Options 4 and 5 some waste (ash, contaminated concrete and wood debris) would still need to be shipped off-site.

Cost — The capital costs associated with the development and construction of each option and the O&M costs have been evaluated. According to CERCLA regulation, cost estimates are accurate to plus 50% or minus 30%. The least expensive of these options are Option 2 and Option 5. Both Option 3 and Option 4 were estimated at 200% more then either Option 2 or Option 5.

5.2 Selected Remedy

Option 2 is the preferred option and selected remedy for addressing PCB contaminated sites at Cape Lisburne, including SS009. ADEC agrees with the selection of this remedy. Support for this remedy is documented in ADEC's review comments on the Feasibility Study (FS) and Engineering Evaluation/Cost Evaluation (EE/CA), and approval of the Proposed Plan (ADEC 2002). The selected remedy is protective of human health and the environment, complies with federal and state ARARs, and is cost-effective. For contaminated soil, this remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. The statutory preference for remedies that employ treatment could not be satisfied because of the impractability of destroying PCBs, given the potential air emissions and limited infrastructure at the remote location.

Components of the selected remedy for SS009 include:

- Excavating and removing the PCB contaminated soil that is above the approved cleanup level of 1 mg/kg;
- Collecting soil samples from the bottom and sides of the excavations to verify the cleanup level was attained;
- Backfilling excavations with clean fill and grading the areas as needed to minimize surface water ponding and erosion; and
- Shipping the contaminated soil with PCB concentrations greater than 1 mg/kg to a TSD in the Lower 48 for disposal.

Revegation will not be performed at the site. The Lower Camp Tramway Building area consists of a gravel pad that is part of the facility. The area surrounding the former Lower Tramway Transformer Building has sandy gravel soil with little vegetation.

6 STATUTORY DETERMINATIONS

CERCLA and the NCP require that the selected remedy is protective of human health and the environment, complies with ARARs, is cost effective, and utilizes permanent solutions to the maximum extent practical. In addition, CERCLA includes a preference for remedies whose principal element is treatment that significantly and permanently reduces the volume, toxicity or mobility of hazardous substances. The selected remedy best meets these objectives because:

- It protects human health and the environment by removing the source of contamination, and eliminating potential exposure pathways with contaminated media.
- It complies with state and federal regulations, and other applicable ARARs.
- It eliminates the need for long-term onsite management (institutional controls and monitoring) at project completion because the contaminated materials are permanently removed from the site.
- It eliminates the volume and mobility of contamination remaining at the site by physically removing the waste.
- The short-term risks posed by the remedial activities are less than all the other options, except for the no action alternative.
- The implimentability is high because it relies on conventional removal and disposal methods.
- The remedy is the least expensive option, except for the no action alternative.

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7 REFERENCES

Alaska Department of Environmental Conservation (ADEC). 2002. *Approval of the Proposed Plan for Cleanup for the Cape Lisburne Long Range Radar Site (letter to Mr. Stanley Slagle, 611 CES/CEVR)*. December 4, 2002.

Engineering Science (ES). *Installation Restoration Program, Phase I - Records Search ACC - Northern Region, Galena AFS, Cape Lisburne AFS, Fort Yukon AFS, Indian Mountain AFS, Kotzebue AFS, Murphy Dome AFS, Tin City AFS*. 1985.

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USAF. 1997b. *Final Management Action Plan, Cape Lisburne LRRS, Alaska.* Prepared by Hart Crowser. November 1997.

USAF. 1998. *Treatment Alternatives Evaluation for PCB Contaminated Soil Volumes I and II, Cape Lisburne LRRS, Alaska.* Prepared by Arctic Slope Construction, Inc. February 1998.

USAF. 2002a. *Engineering Evaluation and Cost Analysis, revised draft, Cape Lisburne LRRS, Alaska.* Prepared by URS. June 2002.

USAF. 2002b. *Final Proposed Plan, Cape Lisburne LRRS, Alaska.* Prepared by URS. November 2002.

USAF. 2003. *Decision Document for LF001, Cape Lisburne LRRS, Alaska (Draft).* Prepared by Hoefler Consulting Group. March 28, 2003.

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Part III
RESPONSIVENESS SUMMARY

This section summarizes and responds to substantive comments received during the public comment period following the issuance of the proposed plan. Comments and responses in this section are arranged by topic. Those that applied to more than one topic were responded to under the heading considered most appropriate. Paraphrasing was used to incorporate related concerns expressed in more than one comment. Every attempt has been made to respond to concerns raised during the public comment period.

No comments from the public were received regarding this Proposed Plan during the public comment period.

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APPENDIX A
INFORMATION REPOSITORY
DOCUMENTS FOR CAPE LISBURNE

	Title of Document	Prepared By	Date Published	Approx. # of Pages
1	Final Site Investigation Report, Cape Lisburne (July 93)	Woodward-Clyde	July -93	82
2	Final Site Investigation Report, Cape Lisburne LRRS, AK Appendix III Data Validation Reports (July 93)	Woodward-Clyde	July -93	350
3	Final Interim Remedial Action Report, Cape Lisburne Long Range Radar Station, AK (30 Nov 95)	ICF Technology Inc.	30-Nov-95	104
4	Final RI/FS, Cape Lisburne Long Range Installation; Vol. 1 of 2 Includes Appendix A & B (05 Feb 96)	ICF Technology Inc.	05-Feb-96	166
5	Final RI/FS, Cape Lisburne Long Range Installation; Vol. 2 of 2 Includes Appendix C through G (05 Feb 96)	ICF Technology Inc	05-Feb-96	498
6	Final Risk Assessment, Cape Lisburne Long Range Radar Installation, AK (05 Feb 97)	ICF Technology Inc.	05-Feb-96	162
7	Final Interim Remedial Action Report, Cape Lisburne Long Range Radar Station, AK (Feb 97)	ASRCContracting Company, Inc (ACCI).	Feb-97	176
8	Final MAP, Cape Lisburne Long Range Radar Station, AK (25 Nov 97)	Hart Crowser	25-Feb-97	63
9	Treatment Alternatives Evaluation for PCB Contaminated Soil at Cape Lisburne Long Range Radar Station, AK, Vol. I (Feb 98)	Artic Slope Construction, Inc (ASCI)	Feb-98	56
10	Treatment Alternatives Evaluation for PCB Contaminated Soil at Cape Lisburne Long Range Radar Station, AK, Vol. II, Appendix A, Cost Estimate (Feb 98)	ASCI	Feb-98	117
11	Final Interim Remedial Action Report, Cape Lisburne Long Range Radar Station, AK (Dec 98)	ASCI	Dec-98	230
12	Review of RI/FS for Cape Lisburne Long Range Radar Site, AK (Aug 99)	KEA Environmental	Aug-99	14
13	A Compilation of PCB Sampling Results for Site LF001, Cape Lisburne Long Range Radar Station, AK, Draft Report (Jan 00)	ASCI	Jan-00	71
14	Final Report Evaluation of Beach Erosion Along the Coastline of LF001, Cape Lisburne Long Range Radar Station, AK (Apr 00)	ASCI	Apr-00	19
15	Draft IRP Remediation System Report (May 00)	URS Corporation	May-00	80
16	Operation Clean Sweep, Landfill Lateral Expansion and Existing Landfill Closure, Year 2000 Field Season Final Report	AGLAQ/CONAM, J.V.	14-Mar-01	30
17	Final Report, A Compilation of PCB and Petroleum Sampling Results for Site LF001, Cape Lisburne LRRS, Alaska	ASCI	Apr-01	50
18	Revised Draft Engineering Evaluation / Cost Analysis, Cape Lisburne LRRS, Alaska, (June 2002)	URS Corporation	June-02	85
19	Proposed Plan for Cleanup, Cape Lisburne Long Range Radar Site, Cape Lisburne, Alaska, Version 4 (Nov-02)	URS Corporation	Nov-02	30