

**UNITED STATES AIR FORCE
ELMENDORF AIR FORCE BASE, ALASKA**

ENVIRONMENTAL RESTORATION PROGRAM

**MANAGEMENT ACTION PLAN
REVISION NO. 5, FINAL**

DECEMBER 2001

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LIST OF ABBREVIATIONS AND ACRONYMS

AAA	anti-aircraft artillery
AAFES	Army/Air Force Exchange Service
ADEC	Alaska Department of Environmental Conservation
AFB	Air Force Base
AFCEE	Air Force Center for Environmental Excellence
AOCs	areas of concern
AKRR	Alaska Railroad
AVGAS	aviation gasoline
BCE	Base Civil Engineer
BIWP	basewide investigation work plan
BLM	Bureau of Land Management
BTEX	benzene, toluene, ethylbenzene, xylene
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Superfund)
COE	U.S. Army Corps of Engineers
DDT	dichlorodiphenyltrichloroethane
DRMO	Defense Reutilization and Marketing Office
DRO	diesel-range organics
DUSD(ES)	Department of Under Secretary of Defense (Environmental Security)
EBS	environmental baseline survey
EE/CA	engineering evaluation/cost analysis
EPA	U.S. Environmental Protection Agency
EQP	Environmental Quality Program

ERA	Environmental Restoration Account
ERP	Environmental Restoration Program
FFA	Federal Facilities Agreement
FFCA	Federal Facility Compliance Agreement
GP	General Plan
GRO	gasoline-range organics
GW	groundwater
HVE	high-vacuum extraction
JP	jet fuel
LFI	limited field investigation
LTM	long-term monitoring
MAP	Management Action Plan
MCL	maximum contaminant level
mg/L	milligrams per liter
MOGAS	motor vehicle gasoline
NFA	no further action
NOAA	National Oceanic and Atmospheric Administration
NPL	National Priorities List
OU	operable unit
PA/SI	preliminary assessment/site investigation
PAH	polynuclear aromatic hydrocarbons
PCBs	polychlorinated biphenyls
POL	petroleum, oils, and lubricants

ppb	parts per billion
ppm	parts per million
RA	remedial action
RAB	Restoration Advisory Board
RA-O	remedial action-operation
RCRA	Resource Conservation and Recovery Act
RFA	RCRA facility assessment
RI/FS	remedial investigation/feasibility study
ROD	record of decision
RPM	Remedial Project Manager
RPO	remedial process optimization
SARA	Superfund Amendments and Reauthorization Act of 1986
SERA	State-Elmendorf Environmental Restoration Agreement
SW	solid waste
TCE	trichloroethylene
TPH	total petroleum hydrocarbons
µg/L	micrograms per liter
USAF	United States Air Force
USTs	underground storage tanks
VOCs	volatile organic compounds
WWII	World War II

1.0 INTRODUCTION

This *Management Action Plan* (MAP) contains a status summary of the Elmendorf Air Force Base (AFB) Environmental Restoration Program (ERP) and presents the comprehensive strategy and goals for implementing response actions necessary to protect human health and the environment. The MAP also presents general policy for the base that will promote an organized and consistent approach in the execution of restoration activities.

1.1 ENVIRONMENTAL RESPONSE OBJECTIVES

The objectives of the environmental restoration program at Elmendorf AFB are as follows:

- Protect human health and the environment
- Comply with existing statutes and regulations
- Conduct all ERP activities in a manner consistent with Section 120 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and with State of Alaska statutes
- Meet federal facility agreement (FFA) and State-Elmendorf Environmental Restoration Agreement (SERA) deadlines and commitments
- Continue investigation and remediation efforts at all identified potential source areas
- Clean up to a lower relative risk category or have remedial systems in place for 50 and 100 percent of identified **high relative risk** sites by the end of FY 2002 and FY 2007, respectively (or within three years for any newly identified high relative risk sites); clean up all **medium relative risk** sites to a lower risk, or have remedial systems in place, by the end of FY 2011; clean up all **low relative risk** sites by FY 2014
- Identify and map the environmental condition of installation property, which incorporates the information derived from site characterization and remedial efforts to date, including long-term monitoring
- Continually evaluate and optimize the restoration process, implementing presumptive remedies where practicable

1.2 MANAGEMENT ACTION PLAN PURPOSE, UPDATES, AND DISTRIBUTION

This MAP represents a current “snapshot” of the restoration activities at Elmendorf AFB. It provides an overview of goals, schedules, and other requirements to complete restoration projects. It presents, in summary fashion, the status of the various ERP and the comprehensive strategy for implementing these activities. The MAP is a living document that is essential to

building, justifying, and presenting the environmental restoration requirements to various stakeholders, including community members, regulatory agencies, and higher headquarters.

The initial MAP process began with the Elmendorf *Basewide Investigation Work Plan* (BIWP), completed in January 1992. This basewide-planning document was for all CERCLA sources.

This MAP expands the scope of the BIWP to include all SERA sites, engineering evaluation/cost analysis (EE/CA) sites, and areas of concern (AOCs), at Elmendorf AFB.

The MAP in the present format was completed in December 1992 and has had five revisions. These revisions were made in December 1994, December 1996, March 1998, December 2000, and this revision scheduled for release in December 2001. This revision includes new sections to conform with the Department of the Under Secretary of Defense - Environmental Security [DUSD(ES)], March 1998 guidance.

A distribution list of this document is included in Appendix A.

2.0 ENVIRONMENTAL CONDITION OF PROPERTY

There have been many efforts to date to find all of the contaminated sites on Elmendorf AFB, including record searches accomplished in phases. Phase I was completed by Engineering-Science in 1983, Phase II was completed by Dames and Moore in 1986, Phase III was completed by Black and Veatch in 1989, and Areas Under Evaluation was completed by Jacobs Engineering in 1997. Appendix B provides a short description of the 86 sites currently in the ERP.

To document the information gained from various studies and remedial investigation/feasibility studies (RI/FSs), the Environmental Condition of Property map has been subdivided into two media-specific maps:

- Groundwater Contamination Map for CERCLA and SERA Programs (Plate 1)
- Soil Contamination Map for CERCLA and SERA Programs (Plate 2)

Plate 1, the groundwater map, details contaminated groundwater, monitoring wells and base water wells. The groundwater map information has been collected from various RI/FS reports and from the basewide groundwater monitoring program.

Plate 2, the soil contamination map, details areas of contamination in both the CERCLA and SERA programs.

The information provided in these maps was taken from all the investigations in the ERP and each site's status is updated annually on each map. These maps can be found in Appendix C.

2.1 INSTALLATION-WIDE SOURCE DISCOVERY AND ASSESSMENT STATUS

Since 1983, Elmendorf AFB has conducted source investigations under its ERP program. During the preliminary assessment/site investigation (PA/SI) and RI/FS an analyses of historical background information, including record searches and aerial photograph interpretations, were completed to determine the extent and nature of any releases of hazardous materials. Also, a Resource Conservation and Recovery Act (RCRA) facility assessment (RFA) was conducted in 1988 as part of the permitting requirements for Elmendorf's RCRA Part B permit application.

As part of revising the Environmental Condition of Property map, certain areas of the base are continuously evaluated. Evaluation includes detailed reviews of the historical records search and PA/SI activities, as well as third-party review of aerial photographs. This continuing effort, as well as others noted above, will ensure that all potential sources will be identified in the future.

In 1995, a multi-step strategy was developed to identify AOCs that may have been overlooked during the original 1983 record search and subsequent remedial investigations.

This effort focused on reviewing aerial photographs of the base taken in 1950, 1962, 1972, 1982, and 1993. The results of this effort can be found in the report titled Areas Under Evaluation Informal Technical Information Report, January 1997.

When contamination is discovered during a construction project on base, it is immediately evaluated to determine whether it fits in the ERP. If it does not meet the requirements for an ERP site the information is turned over to our Environmental Quality Program (EQP).

2.2 ENVIRONMENTAL CONDITION OF PROPERTY MAP

The Environmental Condition of Property map follows guidelines developed in the Management Action Plan Guidebook and Update, June 1995, and input from the various RI/FS reports. The maps were developed for Elmendorf AFB to assess the progress of the ongoing ERP, identify areas that require further investigation and facilitate the reuse planning effort. They are used to allow an overview of the investigations into contaminated and uncontaminated real estate sites on base. They show areas that have been investigated and the potential for contamination to continue to exist, if any, has been found at those sites. These maps present information in the following seven separate discreet condition classifications:

- Areas where no storage, release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas)
- Areas where only storage of hazardous substances or petroleum products has occurred (but no release, disposal, or migration from adjacent areas has occurred)
- Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred but at concentrations that do not require a removal or remedial action
- Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, and all remedial actions necessary to protect human health and the environment have been taken
- Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, removal and/or remedial actions are under way, but all required actions have not yet been taken
- Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, but required response actions have not yet been initiated
- Areas that are unevaluated or require additional evaluation

Land use controls, which have been initiated on base to limit the development of any contaminated real estate, are also identified on these maps. These land use controls, otherwise known as institutional controls, are in place to comply with operable units (OUs) 1, 2, 4, 5, and 6 records of decision (RODs).

The base was screened for the above seven condition classifications, using the various investigations and the latest RI/FS data. This information screening was accomplished by using the OU-specific RI/FS for the ERP sites on base. For areas inside and outside the OU-specific areas, data from the basewide groundwater monitoring program was used because monitoring wells provided the most reliable information on sites upgradient.

2.3 OFF BASE PROPERTY

The only off base real estate owned by Elmendorf AFB is 5½ acres at the Kenai Airport where the Civil Air Patrol operates a hangar. A PA was conducted at this site in 1999 and a SI is expected to be completed in May 2002.

Elmendorf AFB leases property from the city of Seward for the Seward Recreational Camp. This camp is located 130 miles south of Elmendorf AFB and was established in May 1960. The facilities at the camp include cabins, recreational vehicle sites, tent camping, a snack bar, small base exchange, showers, fish cleaning area, freezer and recreation room. The camp is operated each year from May to September.

3.0 INSTALLATION-WIDE ENVIRONMENTAL PROGRAM STATUS

Restoration activities at Elmendorf AFB are funded primarily by the Environmental Restoration Account (ERA).

During FFA negotiations, Elmendorf AFB determined that some source areas could be characterized and remediated faster and more cost effectively under various state regulatory programs rather than under the FFA. Consequently, the SERA was negotiated with the Alaska Department of Environmental Conservation (ADEC). SERA addresses petroleum, oil, and lubricant (POL)-contaminated source areas in the ERP.

3.1 ENVIRONMENTAL RESTORATION PROGRAM STATUS

The ERP consists of three major divisions: CERCLA sources, POL-contaminated sources, and AOCs. A description of all source areas can be found in Appendix B.

3.1.1 Summary of Regulatory Agreements

In August 1990, Elmendorf AFB was placed on the National Priorities List (NPL), bringing it under the federal facility provisions of CERCLA Section 120. The Air Force then entered into a FFA with the Environmental Protection Agency (EPA) and ADEC to conduct environmental restoration efforts at CERCLA-designated ERP sites. The FFA was finalized in November 1991.

On 6 August 1991, Elmendorf AFB entered into a RCRA Federal Facility Compliance Agreement (FFCA) (RCRA Docket No. 1090-01-27-6001) with EPA to address high-priority RCRA source areas requiring closure. This FFCA addresses five solid waste (SW) source areas requiring RCRA closure and possible corrective action.

On 2 October 1992, Elmendorf AFB and ADEC entered into the SERA, which set forth a strategy and compliance schedule to address priority POL-contaminated and SW source areas.

These three agreements set forth the mechanisms required to address all priority contaminant source areas under the Elmendorf AFB Basewide Restoration Program.

3.1.1.1 FFA Sources

Since the signing of the FFA in November 1991, the following source areas have been moved from their original OUs into other OUs determined to be more appropriate for those source areas:

- SD31 was moved to OU3 from OU4 in September 1992 because of its geographic location near other OU3 source areas.

- FT23 was moved to OU4 based on the results of the limited field investigation (LFI) performed during the summer of 1992. The field data suggested that the source of contamination in the drain field area of OU4 (SD24 and SD25) may, in fact, be the Fire Training Pit - FT23, which was originally listed to be investigated under OU7.
- SS10, the Asphalt Drum Storage Area, was also moved into OU4 from OU7 because of its proximity to other areas of study in OU4.
- SD15 was moved to OU6 from OU7 as a result of the 1993 LFI conducted at OU7, which showed contamination at SD15. EPA, ADEC, and Elmendorf AFB agreed that any source areas requiring additional investigations after the LFI would be placed in OU6 for continued investigations during the OU6 RI/FS.
- LF02 was moved to OU6 from the SERA SW program after lead concentrations in water were determined to exceed the maximum contaminant level (MCL). Whether LF02 is the source for this lead contamination has not been determined. However, because of its location near OU6, it was decided to investigate LF02 as part of OU6.
- SD73 was added to the CERCLA program, into OU6, as a result of contamination discovered in 1993 during an environmental baseline survey (EBS) conducted at the National Oceanic and Atmospheric Administration (NOAA) Research Facility. The NOAA facility was demolished as part of the Provider Drive realignment.
- SS19 was moved to OU6 from OU7 in FY 1996 and OU7 was closed. During the FY 1995 field season, an expedited response action to remove pesticide-contaminated soil was completed. As a result of the successful completion of the expedited response action, the agencies agreed this source qualifies as a no further action (NFA) site. The NFA document was prepared as part of the OU6 ROD.
- SS63 was moved to OU7 from OU4 to combine all CERCLA source areas north of the Elmendorf Moraine into one OU. (All other OU4 source areas are south of the moraine.) However, as a result of the LFI performed at OU7 during the 1993 field season, a NFA document for SS63 was prepared and approved on 27 September 1994.

Other Agreements Made Since the Signing of the FFA

Several other agreements have been made since the signing of the FFA that affect the CERCLA remediation activities at Elmendorf AFB. At OU4, a management decision was made to split this OU into an east and west area. This split allowed for a more focused investigation based on geographic area. OU4 East includes source areas SD28, SD29, and SS10. OU4 West includes source areas FT23, SD24, and SD25.

At OU7, a decision was made between project managers at EPA, ADEC, and Elmendorf AFB to conduct an LFI at the OU7 source areas instead of an RI/FS. This management decision allowed OU7 source areas requiring further investigation to be moved to OU6 for full RI/FS

activities, while source areas determined to require no further investigations could be processed for a NFA designation. This decision negated the need for an OU7 RI/FS and/or ROD.

Another agreement between project managers at EPA, ADEC, and Elmendorf AFB was made in May 1993 concerning Cherry Hill Ditch. Cherry Hill Ditch, formerly identified as SD52, was delisted from the ERP with the understanding that the historical impact to Cherry Hill Ditch from a solvent disposal trench, SD16, would continue to be investigated under OU3 and the impact to Cherry Hill Ditch resulting from ongoing airfield operations would be addressed under the EQP. This formal delisting of SD52 recognized Cherry Hill Ditch as a receptor for contaminants, rather than a source area.

During the summer of 1994, soil removal and related stormwater diversion activities were completed at Cherry Hill Ditch. The goals of the project were to remove soils in the area containing the highest levels of polychlorinated biphenyls (PCBs), about two cubic yards; backfill the ditch with clean soil, and divert stormwater flow away from Cherry Hill Ditch. Diverting stormwater eliminates the potential for any remaining contamination to be transported off site via ditch waters.

Finally, it was agreed that all groundwater from sources upgradient of OU5 would be addressed in the OU5 FS, Proposed Plan, and ROD instead of at each individual source area. Upgradient sources include ST20 (OU2), OU3, OU4 and, potentially, some SERA source areas. The rationale for addressing all groundwater from sources upgradient of OU5 is based primarily on direction of groundwater flow and hydraulic characteristics such as linear velocity. By addressing groundwater at OU5, contaminated soil is the primary focus of remedial action at upgradient CERCLA and SERA sources.

3.1.1.2 SERA Sources

SERA has become an extremely helpful tool because it allows the base to address non-CERCLA sources in a programmatic way and allows for more streamlined integration with CERCLA investigations. It also allows for sites to be transferred to the FFA program if hazardous substances, such as solvents, metals, or other non-petroleum compounds are found. For example, LF02, formerly classified in the SERA SW program, was moved to OU6 in 1993 after lead concentrations above MCLs were discovered in groundwater.

3.1.2 Sites and Areas of Concern

To date, the United States Air Force (USAF) has identified the 85 ERP sources outlined in Table 3-1. The location of these sources is shown in Figures 3-1 and 3-2. The majority of the clean-up activities are underway at numerous sites. Fifty-three of the 85 sites are closed with 21 sites in remedial action-operation (RA-O) and 7 in groundwater natural attenuation.

Forty-one of the 85 source areas are designated as CERCLA sources. With the exception of those sites undergoing removal actions, sources have been grouped into OUs and remedial activities are being conducted under the FFA. Thirty-nine source areas have been designated

as POL-contaminated sources and remedial activities are being performed under the SERA. The SERA source areas have been grouped into SW sites, POL spills, and underground storage tanks (USTs). The POL spill/UST sources have been further grouped into Phase I, II, and III. The remaining five source areas are SW sites that were initially included in the ERP but were later determined to be RCRA sources. In regards to the ERP, these five SW source areas have been closed and transferred to the EQP.

In addition, 15 AOCs have been identified. Site investigations have been completed at 13 of the 15 AOCs and determined to require no further action. The remaining two AOCs are currently in SI phase. Figure 3-3 outlines the process to identify new ERP sites.

**TABLE 3-1
SOURCE SUMMARY TABLE
ELMENDORF AFB, ALASKA**

Base	Site ID	Description	RIP	RC	SC	Relative Risk	Comments
ELMENDORF	LF001	Landfill West Overrun	9/1/1994	9/1/1994	9/1/1994	NR	Closed
	LF002	Disposal Pit	10/2/1996	10/2/1996	9/1/2027	NR	Debris removal and limited cover completed in Sep 96, GW NA is underway
	LF003	Site D-3 Sanitary Landfill	12/1/1996	1/1/1997	1/1/1997	NR	Closed
	LF004	Site D-4 Disposal Site, Knik Bluff	8/30/1997	9/1/2031	9/1/2034	NR	Annual beach sweep conducted in August 2001, GW NA/RA-O is underway
	LF005	D-5 Sanitary Landfill	9/1/1994	9/1/1994	9/1/2027	NR	GW LTM is underway
	LF006	Construction Rubble Disposal	3/1/1993	3/1/1993	3/1/1993	NR	Closed
	LF007	D-7 Sanitary Landfill	9/1/1994	9/1/1994	9/1/2027	NR	GW LTM is underway
	LF008	Construction Rubble Disposal	3/1/1993	3/1/1993	3/1/1993	NR	Closed
	LF009	Construction Rubble Disposal	3/1/1993	3/1/1993	3/1/1993	NR	Closed
	SS010	D10 Abandoned Asphalt Drums	11/30/1995	9/1/2005	1/11/2006	NR	Bioventing system installed and operational
	OT011	Small Arms Ammunition Disposal Site	9/1/1991	9/1/1991	9/1/1991	NR	Transferred to the Environmental Quality Program
	LF012	Construction Rubble Disposal	1/1/1993	1/1/1993	1/1/1993	NR	Closed
	LF013	Site D-13 Disposal Site	5/23/1995	5/23/1995	9/1/2027	NR	GW LTM is underway
	WP014	POL Sludge Disposal Site	6/30/2002	9/30/2012	9/1/2013	Low	GW NA is underway
	SD015	Site D-16 POL Sludge Disposal #2	9/1/1996	9/30/2005	9/30/2008	NR	High-vacuum extraction system is installed and operational
	SD016	D-17 Shop Waste Disposal Site	1/1/1997	1/1/1997	1/1/1997	NR	Closed
	RW017	Low-Level Radiation Disposal Site	11/1/1991	11/1/1991	11/1/1991	NR	Closed
	SS018	Pesticide Storage Building 22-021	5/1/1993	5/1/1993	5/1/1993	NR	Closed
	SS019	Old DDT Drum Storage Building 64-580	11/30/1995	11/30/1996	1/1/1997	NR	Closed
	ST020	Building 11-433	5/1/1995	5/1/1995	5/1/1995	NR	Closed
	SS021	S-6 PCB Transformer Storage	8/15/1998	5/4/1999	5/4/1999	NR	PCB soil removal completed
	SS022	DRMO Yard	12/1/1991	12/1/1991	12/1/1991	NR	Closed
	FT023	FT-1 Fire Training Area	11/30/1995	10/1/2008	10/1/2009	NR	Bioventing system installed and operational, GW NA is underway
	SD024	Site IS-1, Building 42-400 Floor Drains	10/1/1995	10/1/2008	10/1/2009	NR	GW LTM is underway
	SD025	Site IS-2, Building 42-425 Floor Drains	11/1/1995	10/1/2008	10/1/2009	NR	Bioventing system installed and operational, GW NA is underway
	SD026	Site IS-3, Building 43-550 Floor Drains	5/1/1993	5/1/1993	5/1/1993	NR	Closed
	SD027	Site IS-4, Building 42-300 Floor Drains	5/1/1993	5/1/1993	5/1/1993	NR	Closed
	SD028	Site IS-5, Building 43-410 Floor Drains	10/1/1995	10/1/2002	10/1/2003	NR	GW LTM is underway
	SD029	Building 43-450 Floor Drains	10/1/1995	10/1/2002	10/1/2003	NR	GW LTM is underway

**TABLE 3-1 (Continued)
SOURCE SUMMARY TABLE
ELMENDORF AFB, ALASKA**

Base	Site ID	Description	RIP	RC	SC	Relative Risk	Comments
ELMENDORF	SD030	Site IS-7, Building 21-900 Floor Drains	5/1/1993	5/1/1993	5/1/1993	NR	Closed
	SD031	Site IS-8, Building 32-060 Area	1/1/1997	1/1/1997	1/1/1997	NR	Closed
	ST032	Abandoned Underground Storage Tanks	2/20/1998	9/1/2006	1/11/2007	NR	Bioventing systems installed and operational, GW NA is underway
	SS033	Hazardous Waste Storage Area	9/1/1991	9/1/1991	9/1/1991	NR	Transferred to the Environmental Quality Program
	ST034	MOGAS Line Leak	9/1/1994	9/1/1994	9/1/1994	NR	Closed
	SS035	Oil-Soaked Soil	9/1/1994	9/1/1994	9/1/1994	NR	Closed
	ST036	Diesel Fuel Line Leak, Building 62-250	7/9/1996	9/1/2007	9/30/2011	NR	Bioventing systems installed and operational, GW NA is underway
	ST037	Site SP-1, Diesel Fuel Line Leak	10/28/1996	10/1/2027	10/1/2027	NR	Wetland construction completed during the summer of 1996, GW NA/RA-O is underway
	ST038	SP-2, JP-4 Line Leak	8/1/1994	8/1/1994	8/1/1994	NR	Closed
	ST039	JP-4 Fuel Line Leak	8/1/1992	8/1/1992	8/1/1992	NR	Closed
	SD040	Site SP-4 Railroad Maintenance Area	8/1/1994	8/2/1994	8/2/1994	NR	Closed
	ST041	Four-Million Gallon Hill	10/1/1996	10/30/2017	10/30/2018	NR	USTs closed during the summer of 1996, GW treatment system shutdown in December 1998, GW NA underway
	SS042	Site SP-6 Diesel Fuel Spill	8/1/1994	2/2/1995	2/2/1995	NR	Closed
	SS043	SP-7 and SP-10 Pumphouse 3 Spill	11/4/1996	9/1/2004	9/1/2010	NR	GW NA is underway
	SS044	Hardstand #5, JP-4 Fuel Spill	8/1/1992	8/1/1992	8/1/1992	NR	Closed
	SS045	C-5 Parking Apron JP-4 Spill	8/1/1992	8/1/1992	8/1/1992	NR	Closed
	ST046	SP-11, JP-4 Line Leak, Building 23-714	8/1/1994	8/1/1994	8/1/1994	NR	Closed
	ST047	Site SP-12 Fuel Leak	5/1/1995	5/1/1995	4/1/1996	NR	Closed
	ST048	Site SP-13 Diesel Fuel Line Leak	12/11/1995	12/11/1995	9/30/2010	NR	GW NA is underway
	SS049	Site-14 MOGAS Spill Site	8/18/1995	8/18/1995	6/30/1998	NR	Closed
	SS050	Site SP-15 AVGAS Spill	8/18/1995	8/18/1995	6/30/1998	NR	Closed
	SS051	JP-4 Tank Truck Spill	8/1/1992	8/1/1992	8/1/1992	NR	Closed
	SD052	Cherry Hill Ditch	8/1/1993	1/1/1997	1/1/1997	NR	Closed
	SS053	Seep #4 Golf Course	8/1/1994	8/1/1994	8/1/1994	NR	Closed
	SS054	PCB Spill at Building 32-060	9/1/1992	9/1/1992	9/1/1992	NR	Transferred to the Environmental Quality Program
	SS055	Historic Surface JP-4 Spill	9/1/1994	9/1/1994	9/1/1994	NR	Closed

TABLE 3-1 (Continued)
SOURCE SUMMARY TABLE
ELMENDORF AFB, ALASKA

Base	Site ID	Description	RIP	RC	SC	Relative Risk	Comments
ELMENDORF	OT056	DRMO Scrap Pile	9/1/1994	9/1/1994	9/1/2027	NR	GW LTM is underway
	SS057	Oil-Soaked Soil	5/1/1995	5/1/1995	4/1/1996	NR	Closed
	SD058	Floor Drains in Building 22-023	9/1/1991	9/1/1991	9/1/1991	NR	Transferred to the Environmental Quality Program
	LF059	Asphalt Seep	11/30/1996	11/30/1996	9/1/2027	NR	Asphalt removal completed, GW LTM is underway
	ST060	Underground Waste Paint Tank	9/1/1991	9/1/1991	9/1/1991	NR	Transferred to the Environmental Quality Program
	ST061	Leaking Underground Storage Tank	8/1/1994	9/1/2004	12/1/2010	NR	Bioventing systems installed and operational, GW NA is underway
	SS062	AAFES Gas Station Leaking USTs	5/1/1995	12/1/1996	8/15/1997	NR	Closed
	SS063	Classic Owl Dry Well/Leach Field	9/1/1994	9/1/1994	9/1/1994	NR	Closed
	ST064	Leaking Storage Tank- Out Of Service	5/1/1995	10/1/1997	8/10/1998	NR	Closed
	ST065	Leaking UST- Out Of Service	5/1/1995	5/1/1995	4/1/1996	NR	Closed
	ST066	Leaking UST- Out Of Service	8/1/1996	6/1/2010	1/11/2011	NR	Bioventing systems installed and operational
	ST067	Leaking Tank- Out Of Service	8/15/1994	9/13/1994	10/6/1994	NR	Closed
	ST068	JP-4 Line Leak, Historic Spills	2/19/1996	5/1/2008	5/1/2009	NR	Bioventing systems installed and operational, GW NA is underway
	ST069	Leak from Diesel Piping	5/1/1995	4/1/1996	1/31/2006	NR	GW NA is underway
	ST070	Diesel Fuel Leak, Hillberg Ski Lodge	8/1/1992	8/1/1992	8/1/1992	NR	Closed
	ST071	Leaking UST, Building 31-338	2/24/1995	2/1/2003	9/1/2004	NR	Closure efforts underway
	ST072	Leaking UST, Building 42-500	5/1/1995	4/1/1996	7/20/1998	NR	Closed
	SD073	Surface Disposal Site - NOAA Research Station	12/1/1996	1/2/1997	1/2/1997	NR	Closed
	ST074	Heating Fuel Leak behind Old Fire Station #3	8/2/1996	8/22/2000	3/29/2003	NR	Closure efforts underway
	ST075	Leaking UST, Building 22-009	12/1/1997	12/1/1997	11/25/1998	NR	Closed
	ST076	Leaking Ust Bldg 9154	1/21/1997	10/1/1997	11/25/1998	NR	Closed
	ST077	Leaking USTs at Building 32-127	5/20/1997	5/20/1997	5/20/1997	NR	Closed
	ST078	Leaking UST at Building 10-875	8/17/1994	8/17/1994	8/17/1994	NR	Closed
	ST079	Leaking UST at Building 42-302	1/21/1997	5/12/1997	5/20/1997	NR	Closed

TABLE 3-1 (Continued)
SOURCE SUMMARY TABLE
ELMENDORF AFB, ALASKA

ELMENDORF	SS080	POL in Soil	8/17/2000	8/17/2000	1/31/2001	NR	Closed
	PL081	Abandoned 10" POL Line - North Jet	7/30/1998	7/30/1998	9/30/2007	NR	Pipeline removal completed in September 1998
	SS083	Search Light Area #4	9/30/2005	9/30/2006	9/30/2008	High	Site is being addressed under the EE/CA. RA is expected to be in place in FY04
	OT092	Abandoned Hydrant Lines - Segments B & E	9/30/2009	10/31/2009	10/31/2010	Low	
	DP098	DP98 (TCE Contamination)	10/1/2004	10/1/2034	10/1/2035	High	Site is being addressed under an RI/FS
	SA099	Drum Site Area with Silvex	3/1/2009	3/1/2010	12/30/2010	Low	Site is being addressed under an EE/CA

AAFES Army/Air Force Exchange

AVGAS aviation fuel

DDT dichlorodiphenyltrichloroethane

DRMO Defense Reutilization and Marketing Office

EE/CA engineering evaluation/cost analysis

GW groundwater

JP jet fuel

LTM long-term monitoring

MOGAS motor vehicle gasoline

NA natural attenuation

NOAA National Oceanic and Atmospheric Administration

NR not required

PCBs polychlorinated biphenyls

POL petroleum, oil, and lubricants

RA remedial action

RA-O remedial-action operation

RC response complete

RI/FS remedial investigation/feasibility study

RIP remedy in place

SC site closed

TCE trichloroethylene

UST underground storage tank

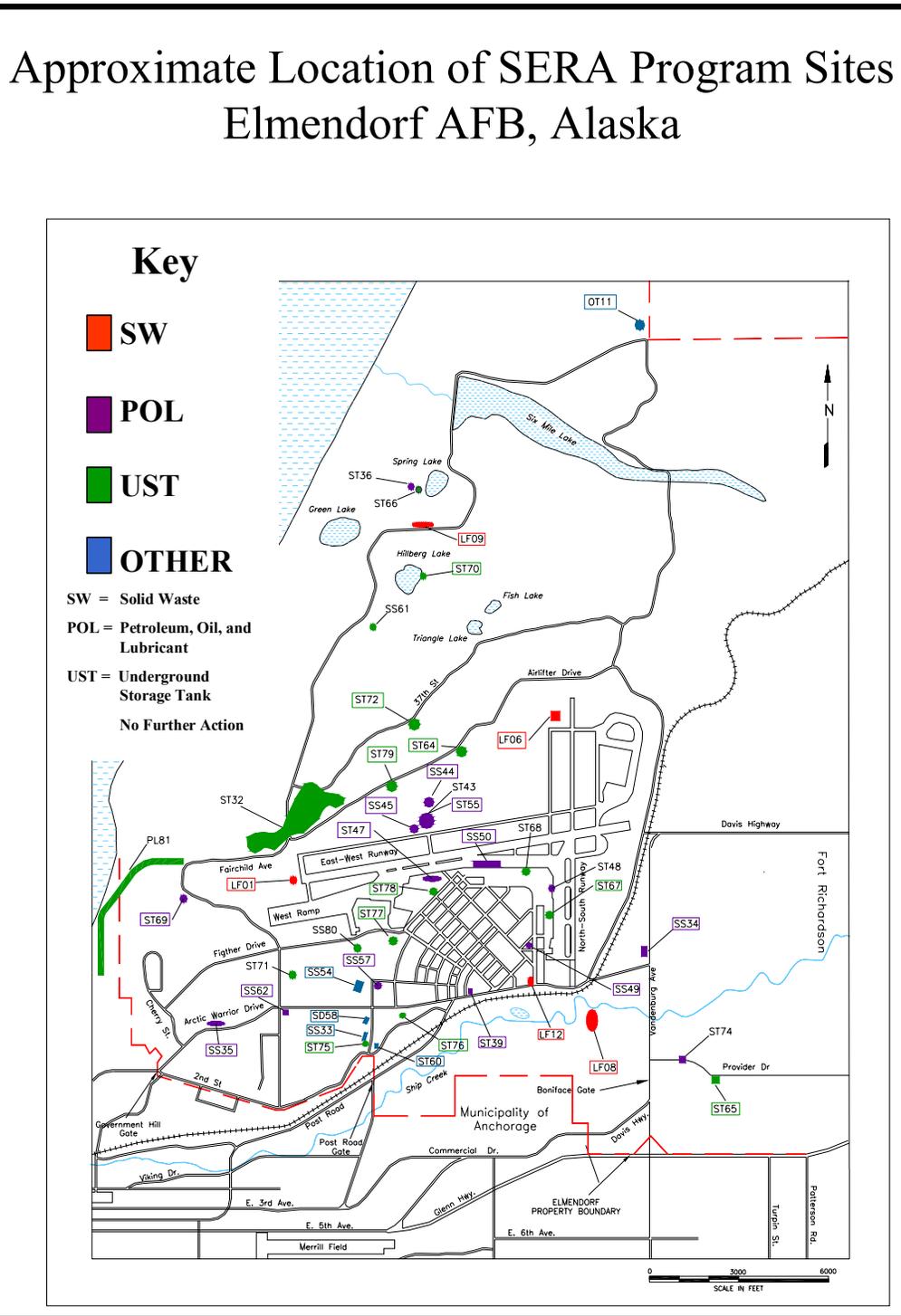


Figure 3-2. Location of SERA Sites

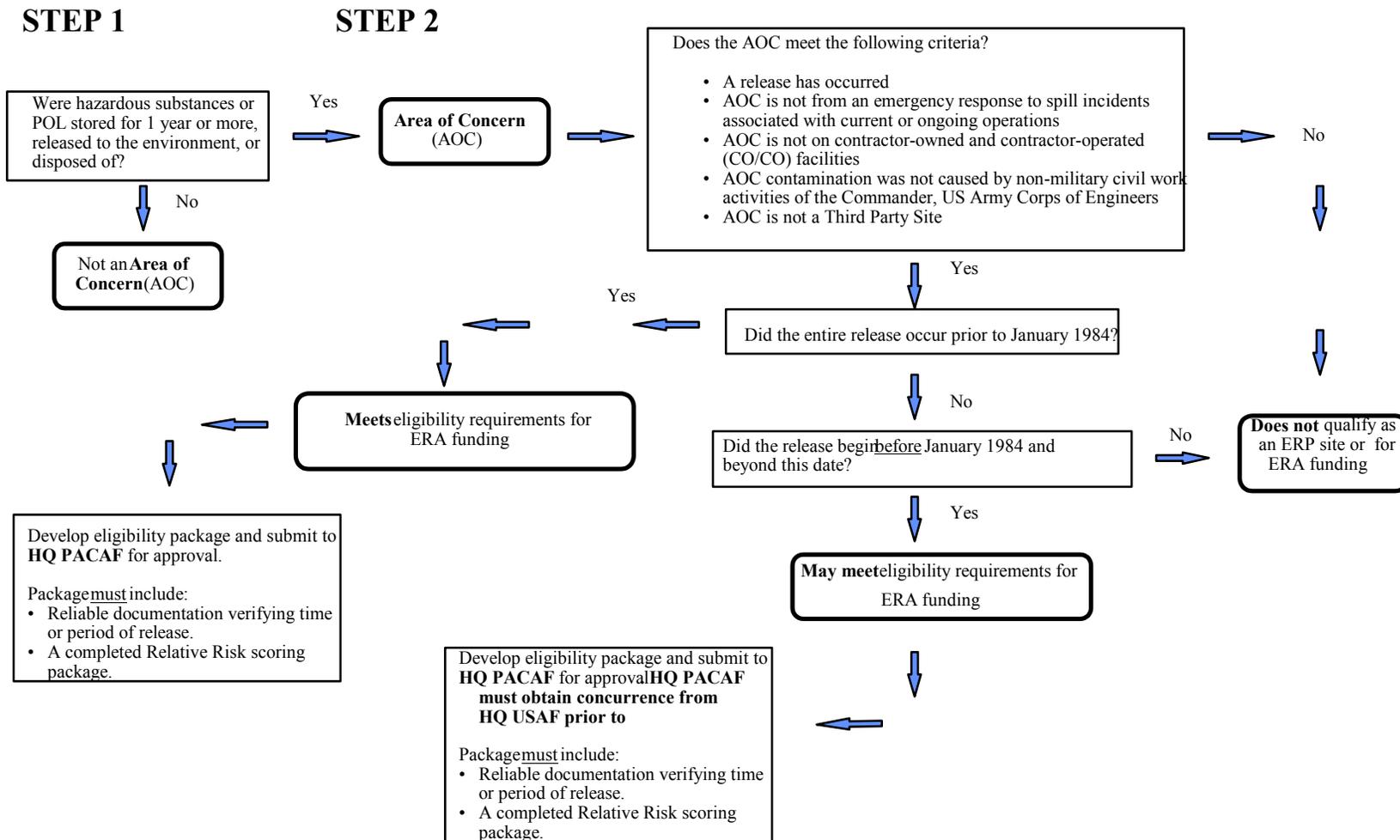


Figure 3-3. Process to Identify New ERP Sources.

4.0 INSTALLATION-WIDE ENVIRONMENTAL PROGRAM STRATEGY

The purpose of this section is to summarize the installation-wide environmental restoration strategy for Elmendorf AFB.

4.1 ENVIRONMENTAL RESTORATION PROGRAM STRATEGY

Restoration activities at CERCLA and state source areas (SERA Phases I, II, and III) are implemented at Elmendorf AFB by the USAF with support and regulatory oversight provided by the EPA Region X and/or the ADEC. The USAF is the lead agency for work performed at Elmendorf AFB with the FFA for CERCLA activities and the SERA for state source areas as the governing documents.

4.1.1 Zone Designations

Investigation activities are essentially complete at Elmendorf AFB. However, when the sequence for remedial investigations was established in 1992, the investigative strategy was to complete field investigations at those sources with a *perceived* higher risk.

CERCLA sources. OUs 1, 2, and 5 were thought to have a higher *perceived* risk and investigations were initiated at these OUs first. The following year, field investigations were initiated at OUs 3 and 4. Investigations at OU6 were scheduled to be finished last because OU6 is the most complex and difficult of all the OUs. In addition, experience gained during the RI/FSs at other OUs would be applied to the remedial activities at OU6. Finally, the *Basewide Cumulative Risk Evaluation* would be completed as part of the OU6 RI/FS and would incorporate the data and results of the ecological assessments at OUs 1 through 5.

State Program sources. Sources were grouped into SW sources, UST and POL spills. Each source was then further grouped into phases (i.e. SW Phase I, SW Phase II, UST Phase I, UST Phase II, UST Phase III, POL Phase I, POL Phase II, and POL Phase III). Phase I sources were the first batch of sites identified for investigation and each following phase represents identified sites grouped into a phase as available for investigation.

4.2 REQUIREMENTS SUMMARY FOR SITE CLOSEOUT

4.2.1 Planned and Ongoing Removal/Remedial and Interim Actions

4.2.1.1 SS83 EE/CA Removal

SS83 is located on the north end of the base near Six-Mile Creek. The site is a former World War II (WWII) anti-aircraft artillery (AAA) site that was abandoned in the late 1950s. The site has gone through a PA/SI and the first of two phases of the EE/CA process. The first phase consisted of the original AAA site while the second phase will consist of a landfill discovered during the Phase I investigation. In Phase I, POL and lead contaminated soil was discovered. The lead contaminated soil was removed to below the cleanup goal during this

investigation. Phase II of the EE/CA process is planned for FY02. In FY03, the POL contaminated soil will be removed during the remedial action (RA).

4.2.1.2 DP98 RI/FS

DP98 is located at a high security communications facility situated in the northwestern portion of EAFB. Built in the early 1950s, this facility is currently operated by the 381st Intelligence Squadron.

The field investigation was performed in summer 2001. Following the site investigation, it became apparent the level and extent of soil and groundwater contamination at DP98 was beyond what could be adequately addressed in an EE/CA, and a more comprehensive study was necessary to close the site. Upon review of the preliminary results of the EE/CA, the Air Force has determined, with agreement by the EPA and ADEC, that a RI/FS should be performed.

4.2.1.3 SA99 Silvex Drum Removal

SA99 is a former drum disposal and storage area. This site is located approximately 70 feet north of Airlifter Drive, across from Hangar 18. The drums were discovered in the area during excavation work for construction of aboveground storage tanks and trenching for utility lines.

The original investigation of this site discovered petroleum-contaminated soils and metal drums in various stages of decay. Sample results determined that some of the soil was not only contaminated with petroleum products, but also had traces of lead, PCBs and pesticides. A removal action for SA99, scheduled for 2008, is planned to remove and dispose of contaminated soil.

4.2.2 Planned and Ongoing Remedial Action-Operation

Elmendorf currently has remedial action-operation ongoing at 17 sites. To ensure maximum efficiency, remedial process optimization (RPO) will be completed on all projects. Each year a Phase I RPO will be completed using the Air Force Center for Environmental Excellence's (AFCEE's) June 2001 *Remedial Process Optimization Handbook*. If the results from the Phase I RPO indicate cost savings can be achieved through optimization of the system, a Phase II RPO project will be programmed and executed.

4.2.2.1 Basewide Groundwater

In 1993, a comprehensive groundwater monitoring program was implemented with the following components:

- evaluate the seasonal variations in water levels, gradients, and flow directions across Elmendorf AFB.
- validate the predictions made in the OU5 groundwater model
- validate assumptions made in site-specific RODs and to characterize the extent of contamination in each OU or SERA site

Since 1996, all groundwater monitoring requirements have been consolidated into a basewide program to reduce costs and facilitate the collection of groundwater samples. Over 120 monitoring wells have been sampled twice a year to provide a comprehensive monitoring program.

Over the next three years, optimization efforts will be implemented to address the following goals and objectives of the groundwater monitoring program:

- monitor natural attenuation as required by RODs or other decision documents to validate assumptions made
- provide upgradient groundwater information to insure the successful operation of the ST37 Wetland Treatment system, as required by the OU5 ROD
- provide long-term monitoring to ensure contamination is not moving towards a receptor, such as Ship Creek, Knik Arm, etc

As part of this optimization initiative the groundwater monitoring program was streamlined in 2001, which achieved an 11 percent reduction in the number of wells monitored per year and reduced the number of sample events to once per year at Operable Unit 1. The optimization initiative will continue through 2003 with the focus to address the goals and objectives listed above. Once completed this initiative should reduce the number of sampling events and the number of wells sampled per year.

4.2.2.2 Bioventing Systems

Bioventing systems were installed to treat POL-contaminated soil. All bioventing systems were constructed based on a generic design, which was completed in 1994. Also, all systems were constructed of the same components to ensure standardized systems. The RA-O of bioventing systems has been consolidated into a basewide project to reduce costs. Currently, there are 21 bioventing systems installed at 9 sites.

4.2.2.3 ST37 Remedial Action

OU5 is located along the southern boundary of the base and to the north of Ship Creek. OU5 covers an area more than 7,000 feet long and 1,200 feet wide. Ninety percent of the uppermost aquifer groundwater flowing through Elmendorf is thought to flow into OU5. OUs 1, 3, 4 and the SERA sites all contribute to the contamination in OU5. OU5 consists of six source areas, with five of them being NFA areas under the OU5 ROD and one (ST37) requiring action. The OU5 ROD was signed in February 1995. The selected remedy for OU5 included intrinsic remediation of the groundwater at the west section that flowed into a beaver pond by the golf course. The east section of OU5 required passive extraction of seep water, which is being treated in an engineered wetland.

Three of the four seep locations being intercepted and the engineered wetland are located on Alaska Railroad (AKRR) property. A 30-year easement for 10 acres was required. This action benefits the AKRR by providing them an access road along the north side of their yard and covers over PCBs in the snowmelt pond at the base of OU5. The remedial action contract was awarded in June 1996.

The snowmelt pond was dewatered and the engineered wetland was constructed. Once the cell of the wetland was brought to the appropriate grade, interior berms were constructed. These berms make long flowing channels through the wetland, which gives the water about a 5-day retention time in the wetland cell.

The wetland cell was planted with native vegetation in mid-August 1996. The overland flow cell, which aerates the water and the passive extraction systems at the seeps were also completed. An access road was constructed to get to the four seep locations. As part of the clean-up action, approximately 500 cubic yards of soil contaminated with fuel products was excavated from two of the seep locations and taken to a land farm cell. The engineered wetland system was up and operational by the end of April 1997 and is expected to run for 30 years.

4.2.2.4 SD15 Remedial Action

SD15 is located in the northeastern portion of the base west of Talley Avenue. SD15 contains three separate concrete pads, each 30 by 50 feet. The pads were used for weathering fuel filters and fuel pads from the early 1970s through 1983. SD15 was also used to dispose of tank sludge.

The high-vacuum extraction (HVE) system was installed in October 1996 and became operational as of December 1996. The system was installed in compliance with the ROD for OU6, which identified HVE as the removal method for fuel-related contaminants and halogenated volatile organics in the perched aquifer and soils at SD15. Cleanup of soils and groundwater at SD15 is anticipated to be completed by December 2003. The Air Force selected HVE for cleaning this site because it is a relatively innovative technology, which quickly and efficiently extracts gasoline-type contaminants from underground soils. The

system relies on applying a high vacuum to the ground through specially modified wells and vacuum pumps. The technique removes soil vapors and groundwater from the ground at the same time, then separates them at the surface for additional treatment if needed. The continuously applied high vacuum results in a relatively large treatment area around each extraction well, when compared to other treatment methods. An added benefit of this system is that it treats both the groundwater beneath the site and after the water has been removed, it also treats the soil through which the groundwater flowed.

The vacuum causes high-speed airflow in the well piping (50 to 60 miles per hour). The speed is enough to transport tiny droplets out of the groundwater, and up the well. While these droplets are traveling to the surface, the fuel contamination is pulled out of the water and into the air. This means that the water arrives at the system relatively clean, so that water treatment costs are minimized.

At the surface, the liquid and vapor phases are separated. The vapor phase is discharged to the atmosphere. The liquid phase is pumped to an oil/water separator. Oil is put in drums and disposed of through base facilities. The water is pumped through a carbon system to remove any remaining contamination. The treated water is then re-injected into the ground just outside SD15.

To date, over 9,813 pounds of volatile organic compounds have been removed through the vapor phase and over 246,750 gallons of contaminated groundwater have been treated to a level suitable for drinking and re-injected into the ground.

4.2.2.5 LF04 Remedial Action

LF04 is also known as the Knik Bluff Landfill. Old cars, construction rubble, 55-gallon drums, and general refuse were placed in a landfill that runs approximately 3,000 feet along the Knik Arm and is roughly 600 feet wide. It was used as a surface dump from 1945 to 1957. Much of the waste was burned in place. Tidal action is eroding the bluff and increasingly undermining and exposing portions of the landfill. As a result, landfill debris has moved downhill onto the beach. Because of the variable nature of the contamination in different areas, LF04 was divided into two areas: the landfill area called LF04 South, and the north part of the landfill and the entire beach area called LF04 North/Beach. The debris that accumulates on the beach is cleaned up once a year. The beach cleanups are to be accomplished yearly until no more debris accumulates on the beach or 30 years.

4.2.3 Planned and Ongoing Long-Term Monitoring and Site Closeout

4.2.3.1 Institutional Controls Strategy

With the signing of RODs for OUs 1-6, several institutional controls have been established. To various degrees, all of the RODs have requirements for institutional controls at contaminated sites. These institutional controls include specific land use restrictions at base landfills and

the prohibition of the use of groundwater from the shallow aquifer. Plates 1 and 2 in Section 2.0 of this MAP outline the basewide and site-specific institutional controls.

The following procedures have been adopted to ensure compliance with institutional controls.

- **New or Proposed Facilities.** For proposed facility siting and/or new construction, the institutional controls are enforced through Base Development (3 CES/CECD) and the Environmental Planning element (3 CES/CEVP). 3 CES/CECD has incorporated the institutional controls into the Base General Plan (GP). When a project is proposed on base, 3 CES/CECD reviews the Base GP to determine if the project is in an area affected by institutional controls. If the project is within an area where institutional controls are in place, then the project is forwarded to 3 CES/CEVP for review. 3 CES/CEVP, in consultation with Environmental Restoration (3 CES/CEVR), reviews the project to determine if it complies with specific institutional controls. If the project conflicts with an institutional control, then it is disapproved.
- **Work Orders (AF Form 332) and Base Civil Engineer's (BCE) Work Clearance Requests.** All AF Form 332s and BCE Work Clearance Requests are routed through the Environmental Flight (3 CES/CEV) for review. 3 CES/CEVP reviews all AF Form 332s to ensure compliance with environmental requirements, including institutional controls. If an activity is proposed to occur in an area affected by institutional controls, 3 CES/CEVR is consulted to determine if the activity complies with specific institutional controls. If the activity conflicts with the institutional controls, the activity is disapproved. All BCE Work Clearance Requests are routed through 3 CES/CEVR for review because these types of requests normally involve some type of excavation. 3 CES/CEVR staff review each request and conduct site visits, as appropriate, to ensure institutional controls and other restrictions are enforced. To streamline this review process the 3rd Wing Instruction 32-1007 *Safeguarding Utilities from Damage* was revised to include the basewide groundwater institutional control, the requirement for certification of compliance with institutional controls, and a sample of a certification of compliance form. This revision of 3rd Wing Instruction 32-1007 speeds up the review time for 95 percent of the BCE Work Clearance Requests that are reviewed by 3 CES/CEVR.
- **Real Estate Transactions.** The Real Estate office (3 CES/CERR) is responsible for ensuring institutional controls are incorporated into all real estate instruments such as easements, licenses, right-of-entry, and permits. Tenants, permittees, etc. are required to provide an annual certification of compliance with institutional controls. For new real estate transactions and renewals of existing real estate instruments, Air Force regulations require the 3 CES/CEV to perform an EBS. Land use and other restrictions are incorporated into the EBS and the real estate instrument to ensure institutional controls are enforced.

4.2.4 Short-Term Strategy and Goals for Optimizing Site Closeout

At Elmendorf AFB, we have the following short-term goals planned for FY2001 to 2003:

- Achieve response complete for 66 of 85 sites (or 78 percent) by the end of FY2002
- Achieve site closeout for 53 of 85 sites (or 62 percent) by the end of FY2002
- Complete an EE/CA report for SS83 by the end of FY2002

To achieve these short-term goals, the ERP Project Team plans to pursue the following strategies:

- Initiate the five-year review process for all sites which have not been closed. This review will begin in FY2002 and will be finalized by August 2003
- Initiate a RPO at all sites in RA-O as described in Section 4.2.2

4.2.5 Long-Term Strategy and Goals for Optimizing Site Closeout

At Elmendorf AFB, we have the following long-term goals planned for FY2003 to program completion:

- Achieve response complete and site closeout as listed in Table 3-1
- Reduce costs to operate treatment systems
- Complete Phase II RPO for basewide groundwater monitoring program

To achieve these long-term goals, the ERP Project Team plans to pursue the following strategies:

- Continue project member team meetings to focus on cost reduction and site closeout
- Implement RPO as described in Section 4.2

4.2.6 Manpower Drawdown

As the CERCLA program winds down, manpower standards (or projections) have been prepared. There are currently three project managers, one administrative assistant, one community relations coordinator, and one supervisor working the base's ERP. It was determined that one fiscal year after completion of the last scheduled RI/FS and/or EE/CA the community relations coordinator position would be eliminated. This is expected to be in 2005.

One fiscal year after 80 percent of the ERP sites reach site closure phase, one project manager position would be eliminated. This is expected to be in 2009. The next project manager position expected to be eliminated would occur one fiscal year after the completion of the five-year review, which happens after 100 percent of the ERP sites have remedy in place. This is also considered to be NPL construction complete. This is expected to happen in 2013. The next position expected to be eliminated would be the supervisor. This would occur one fiscal year after 95 percent of the ERP sites reach the response complete phase. This is expected to happen in 2017. The last project manager position to be eliminated would occur one fiscal year after long-term monitoring (LTM) is completed at all sites and the base is delisted from the NPL. This is expected to occur in 2026. It is expected that the administrative assistant position would be transitioned into a technician position as the ERP moves closer to completion. This technician position is expected to be eliminated one year after 100 percent of the ERP sites reach the site closure phase, which is expected to happen in 2030.

This drawdown plan is dependent upon whether any additional sites are discovered and their schedule for completion. The manpower standards depend directly on the progress of the ERP.

5.0 ENVIRONMENTAL RESTORATION PROGRAM MASTER SCHEDULE

This section presents the Elmendorf AFB master schedule of anticipated activities in the environmental restoration program. This schedule is simplified from detailed network and operational schedules developed to support site-specific work plans and compliance agreements.

5.1 ENVIRONMENTAL RESTORATION PROGRAM

Tables 5-1 and 5-2 provide an overview of the CERCLA and SERA ERP schedules. These schematics show completion dates for all OUs and SERA Phase I, II, and III activities.

5.2 PROJECT TEAM MEETING SCHEDULE

Communication is the key to the success of Elmendorf's environmental restoration program. The following team meetings are held throughout the year to facilitate information exchange among Elmendorf AFB, regulatory agencies, and contractor team personnel.

- Remedial Project Manager (RPM) Meetings. The RPMs for Elmendorf, EPA, and ADEC meet quarterly to discuss management, policy, or schedule issues. These meetings are important to the planning and execution of restoration activities.
- Technical Project Team Meetings. Technical project team meetings are called by the RPMs to discuss project specific issues. Meetings typically include the RPMs from Elmendorf, EPA, ADEC, and Air Force contractors. A project team member takes notes during the meeting, and written minutes are later distributed to all attendees. The meeting minutes include the action items discussed during the meeting and list the person(s) identified to be responsible for implementation of each action item.
- Air Force Team Meetings. The Air Force team meets weekly to share information and discuss specific program or technical issues.
- Conference Calls. In addition to periodic technical project team meetings, conference calls are held with the AFCEE contractors as needed. The RPMs and OU contractor teams take part in the conference call. Technical meetings for OU management are held as required to resolve an issue.
- Quarterly Progress Reports. A quarterly progress report is issued in January, April, July, and October of each year. These reports, required by the FFA, detail the activities completed during the quarter, the planned activities for the following quarter, and a status on the schedule for each OU and SERA site.

Restoration Advisory Board (RAB) Meetings. The RAB meets on a pre-established basis twice per year with a base tour conducted in the summer. Meetings are held off base and are open to the public.

Table 5-1
Summary of Project Milestones
CERCLA Source Areas

ID	Task Name	Start	Finish	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1	Operable Unit 1	11/1/1991	9/1/2026																
2	RI/FS	11/1/1991	1/6/1994																
3	Management Plan/RI Field Program	11/1/1991	8/31/1993																
4	Management Plan	11/1/1991	11/1/1991																
5	RI/FS Report	1/6/1994	1/6/1994																
6	Proposed Plan and ROD	11/8/1993	9/28/1994																
7	Proposed Plan Process	11/8/1993	5/3/1994																
8	ROD	5/3/1994	9/28/1994																
9	GW Long-Term Monitoring (LF05, LF07, LF13, OT56, LF59)	5/23/1995	9/11/2025																
10	Asphalt Removal -- LF59	8/29/1994	11/29/1996																
11	Operable Unit RA Completion	6/30/1998	6/30/1998																
12	OU 1 Source Completion	9/1/2026	9/1/2026																
13	Operable Unit 2	11/15/1991	9/30/2016																
14	RI/FS	11/15/1991	3/18/1994																
15	Management Plan/RI Field Program	11/15/1991	2/28/1994																
16	Management Plan	11/2/1992	11/2/1992																
17	RI/FS Report	3/18/1994	3/18/1994																
18	IRA Proposed Plan and ROD	12/2/1991	12/15/1992																
19	IRA Proposed Plan	12/2/1991	3/17/1992																
20	IRA ROD	3/17/1992	12/15/1992																
21	Proposed Plan and ROD	12/14/1993	5/19/1995																
22	Proposed Plan Process	12/14/1993	7/13/1994																
23	ROD	7/13/1994	5/19/1995																
24	IRA Design/Cons't/LTO	12/16/1992	9/30/2002																
25	Design/Cons't	12/16/1992	9/30/1993																
26	Free Product Removal	9/30/1993	9/30/2002																
27	ST41 Design/Tank Removal	10/12/1994	10/31/1996																
28	GW Long-Term Monitoring (LTO - Intrinsic Remediation)	7/3/1995	9/30/2015																
29	Operable Unit RA Completion	6/30/1998	6/30/1998																
30	OU 2 Source Completion	9/30/2016	9/30/2016																
31	Operable Unit 3	11/2/1992	10/30/2000																
32	RI/FS	11/2/1992	3/13/1995																
33	Management Plan/RI Field Program	11/2/1992	2/1/1995																
34	Management Plan	9/30/1993	9/30/1993																
35	RI/FS Report	3/13/1995	3/13/1995																

Table 5-1
Summary of Project Milestones
CERCLA Source Areas

ID	Task Name	Start	Finish	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
1	Operable Unit 1	11/1/1991	9/1/2026																
2	RI/FS	11/1/1991	1/6/1994																
3	Management Plan/RI Field Program	11/1/1991	8/31/1993																
4	Management Plan	11/1/1991	11/1/1991																
5	RI/FS Report	1/6/1994	1/6/1994																
6	Proposed Plan and ROD	11/8/1993	9/28/1994																
7	Proposed Plan Process	11/8/1993	5/3/1994																
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15	Management Plan/RI Field Program	11/15/1991	2/28/1994																
16	Management Plan	11/2/1992	11/2/1992																
17	RI/FS Report	3/18/1994	3/18/1994																
18	IRA Proposed Plan and ROD	12/2/1991	12/15/1992																
19	IRA Proposed Plan	12/2/1991	3/17/1992																
20	IRA ROD	3/17/1992	12/15/1992																
21	Proposed Plan and ROD	12/14/1993	5/19/1995																
22	Proposed Plan Process	12/14/1993	7/13/1994																
23	ROD	7/13/1994	5/19/1995																
24	IRA Design/Const/LTO	12/16/1992	9/30/2002																
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30	OU 2 Source Completion	9/30/2016	9/30/2016																
31	Operable Unit 3	11/2/1992	10/30/2000																
32	RI/FS	11/2/1992	3/13/1995																
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34	Management Plan	9/30/1993	9/30/1993																
35	RI/FS Report	3/13/1995	3/13/1995																

Table 5-1
Summary of Project Milestones
CERCLA Source Areas

ID	Task Name	Start	Finish	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	
1	Operable Unit 1	11/1/1991	9/1/2026																
2	RI/FS	11/1/1991	1/6/1994																
3	Management Plan/RI Field Program	11/1/1991	8/31/1993																
4	Management Plan	11/1/1991	11/1/1991																
5	RI/FS Report	1/6/1994	1/6/1994																
6	Proposed Plan and ROD	11/8/1993	9/28/1994																
7	Proposed Plan Process	11/8/1993	5/3/1994																
8	ROD	5/3/1994	9/28/1994																
9	GW Long-Term Monitoring (LF05, LF07, LF13, OT56, LF59)	5/23/1995	9/11/2025																
10	Asphalt Removal -- LF59	8/29/1994	11/29/1996																
11	Operable Unit RA Completion	6/30/1998	6/30/1998																
12	OU 1 Source Completion	9/1/2026	9/1/2026																
13	Operable Unit 2	11/15/1991	9/30/2016																
14	RI/FS	11/15/1991	3/18/1994																
15	Management Plan/RI Field Program	11/15/1991	2/28/1994																
16	Management Plan	11/2/1992	11/2/1992																
17	RI/FS Report	3/18/1994	3/18/1994																
18	IRA Proposed Plan and ROD	12/2/1991	12/15/1992																
19	IRA Proposed Plan	12/2/1991	3/17/1992																
20	IRA ROD	3/17/1992	12/15/1992																
21	Proposed Plan and ROD	12/14/1993	5/19/1995																
22	Proposed Plan Process	12/14/1993	7/13/1994																
23	ROD	7/13/1994	5/19/1995																
24	IRA Design/Const/LTO	12/16/1992	9/30/2002																
25	Design/Const	12/16/1992	9/30/1993																
26	Free Product Removal	9/30/1993	9/30/2002																
27	ST41 Design/Tank Removal	10/12/1994	10/31/1996																
28	GW Long-Term Monitoring (LTO - Intrinsic Remediation)	7/3/1995	9/30/2015																
29	Operable Unit RA Completion	6/30/1998	6/30/1998																
30	OU 2 Source Completion	9/30/2016	9/30/2016																
31	Operable Unit 3	11/2/1992	10/30/2000																
32	RI/FS	11/2/1992	3/13/1995																
33	Management Plan/RI Field Program	11/2/1992	2/1/1995																
34	Management Plan	9/30/1993	9/30/1993																
35	RI/FS Report	3/13/1995	3/13/1995																

Table 5-1
Summary of Project Milestones
CERCLA Source Areas

ID	Task Name	Start	Finish	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
36	Proposed Plan and ROD	12/12/1994	12/15/1996																
37	Proposed Plan Process	12/12/1994	7/21/1995																
38	ROD	7/21/1995	12/15/1996																
39	PCB Removal at SS21	10/21/1996	9/30/1998																
40	SS21 Design	10/21/1996	1/30/1997																
41	SS21 PCB Removal	10/1/1997	9/30/1998																
42	Operable Unit RA Completion	10/30/1998	10/30/1998																
43	OU 3 Source Completion	10/30/2000	10/30/2000																
44	Operable Unit 4	1/1/1992	10/1/2009																
45	Limited Field Investigation	1/1/1992	11/30/1992																
46	RI/FS	10/30/1992	9/2/1994																
47	Management Plan/RI Field Program	10/30/1992	7/1/1994																
48	Management Plan	2/16/1993	2/16/1993																
49	RI/FS Report	9/2/1994	9/2/1994																
50	Proposed Plan and ROD	1/10/1994	2/1/1995																
51	Proposed Plan Process	1/10/1994	7/6/1994																
52	ROD	7/6/1994	2/1/1995																
53	GW Long-Term Monitoring (LTO - Intrinsic Remediation)	5/1/1995	10/1/2008																
54	Bioventing at SS10	7/17/1995	12/1/2003																
55	Bioventing at FT23	7/17/1995	9/29/2000																
56	Bioventing at SD25	7/17/1995	9/29/2000																
57	Remedial Action (RA) Start	3/2/1998	3/2/1998																
58	Operable Unit RA Completion	10/1/2009	10/1/2009																
59	Operable Unit 5	11/15/1991	10/2/2025																
60	RI/FS	11/15/1991	9/2/1994																
61	Management Plan/RI Field Program	11/15/1991	4/29/1994																
62	Management Plan	4/6/1992	4/6/1992																
63	RI/FS Report	9/2/1994	9/2/1994																
64	Proposed Plan and ROD	6/21/1993	2/1/1995																
65	Proposed Plan Process	6/21/1993	5/13/1994																
66	ROD	5/13/1994	2/1/1995																
67	ST37 Wetland Cons't/LTO	10/5/1994	10/1/2015																
68	Wetland Design/Cons't	10/5/1994	12/10/1996																
69	Long-Term Ops	12/10/1996	10/1/2015																
70	GW Long-Term Monitoring (LTO - Intrinsic Remediation)	10/4/1994	10/2/2025																

Table 5-1
Summary of Project Milestones
CERCLA Source Areas

ID	Task Name	Start	Finish	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
36	Proposed Plan and ROD	12/12/1994	12/15/1996															
37	Proposed Plan Process	12/12/1994	7/21/1995															
38	ROD	7/21/1995	12/15/1996															
39	PCB Removal at SS21	10/21/1996	9/30/1998															
40	SS21 Design	10/21/1996	1/30/1997															
41	SS21 PCB Removal	10/1/1997	9/30/1998															
42	Operable Unit RA Completion	10/30/1998	10/30/1998															
43	OU 3 Source Completion	10/30/2000	10/30/2000															
44	Operable Unit 4	1/1/1992	10/1/2009	█														
45	Limited Field Investigation	1/1/1992	11/30/1992															
46	RI/FS	10/30/1992	9/2/1994															
47	Management Plan/RI Field Program	10/30/1992	7/1/1994															
48	Management Plan	2/16/1993	2/16/1993															
49	RI/FS Report	9/2/1994	9/2/1994															
50	Proposed Plan and ROD	1/10/1994	2/1/1995															
51	Proposed Plan Process	1/10/1994	7/6/1994															
52	ROD	7/6/1994	2/1/1995															
53	GW Long-Term Monitoring (LTO - Intrinsic Remediation)	5/1/1995	10/1/2008	█														
54	Bioventing at SS10	7/17/1995	12/1/2003															
55	Bioventing at FT23	7/17/1995	9/29/2000															
56	Bioventing at SD25	7/17/1995	9/29/2000															
57	Remedial Action (RA) Start	3/2/1998	3/2/1998															
58	Operable Unit RA Completion	10/1/2009	10/1/2009															
59	Operable Unit 5	11/15/1991	10/2/2025	█														
60	RI/FS	11/15/1991	9/2/1994															
61	Management Plan/RI Field Program	11/15/1991	4/29/1994															
62	Management Plan	4/6/1992	4/6/1992															
63	RI/FS Report	9/2/1994	9/2/1994															
64	Proposed Plan and ROD	6/21/1993	2/1/1995															
65	Proposed Plan Process	6/21/1993	5/13/1994															
66	ROD	5/13/1994	2/1/1995															
67	ST37 Wetland Cons't/LTO	10/5/1994	10/1/2015	█														
68	Wetland Design/Cons't	10/5/1994	12/10/1996															
69	Long-Term Ops	12/10/1996	10/1/2015	█														
70	GW Long-Term Monitoring (LTO - Intrinsic Remediation)	10/4/1994	10/2/2025	█														

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Summary of Project Milestones
CERCLA Source Areas

ID	Task Name	Start	Finish	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
36	Proposed Plan and ROD	12/12/1994	12/15/1996															
37	Proposed Plan Process	12/12/1994	7/21/1995															
38	ROD	7/21/1995	12/15/1996															
39	PCB Removal at SS21	10/21/1996	9/30/1998															
40	SS21 Design	10/21/1996	1/30/1997															
41	SS21 PCB Removal	10/1/1997	9/30/1998															
42	Operable Unit RA Completion	10/30/1998	10/30/1998															
43	OU 3 Source Completion	10/30/2000	10/30/2000															
44	Operable Unit 4	1/1/1992	10/1/2009															
45	Limited Field Investigation	1/1/1992	11/30/1992															
46	RI/FS	10/30/1992	9/2/1994															
47	Management Plan/RI Field Program	10/30/1992	7/1/1994															
48	Management Plan	2/16/1993	2/16/1993															
49	RI/FS Report	9/2/1994	9/2/1994															
50	Proposed Plan and ROD	1/10/1994	2/1/1995															
51	Proposed Plan Process	1/10/1994	7/6/1994															
52	ROD	7/6/1994	2/1/1995															
53	GW Long-Term Monitoring (LTO - Intrinsic Remediation)	5/1/1995	10/1/2008															
54	Bioventing at SS10	7/17/1995	12/1/2003															
55	Bioventing at FT23	7/17/1995	9/29/2000															
56	Bioventing at SD25	7/17/1995	9/29/2000															
57	Remedial Action (RA) Start	3/2/1998	3/2/1998															
58	Operable Unit RA Completion	10/1/2009	10/1/2009															
59	Operable Unit 5	11/15/1991	10/2/2025															
60	RI/FS	11/15/1991	9/2/1994															
61	Management Plan/RI Field Program	11/15/1991	4/29/1994															
62	Management Plan	4/6/1992	4/6/1992															
63	RI/FS Report	9/2/1994	9/2/1994															
64	Proposed Plan and ROD	6/21/1993	2/1/1995															
65	Proposed Plan Process	6/21/1993	5/13/1994															
66	ROD	5/13/1994	2/1/1995															
67	ST37 Wetland Cons't/LTO	10/5/1994	10/1/2015															
68	Wetland Design/Cons't	10/5/1994	12/10/1996															
69	Long-Term Ops	12/10/1996	10/1/2015															
70	GW Long-Term Monitoring (LTO - Intrinsic Remediation)	10/4/1994	10/2/2025															

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Summary of Project Milestones
CERCLA Source Areas

ID	Task Name	Start	Finish	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
71	Operable Unit 6	Mon 10/5/92	Tue 9/29/26																
72	RI/FS	Mon 10/5/92	Thu 12/7/95																
73	Management Plan/RI Field Program	Mon 10/5/92	Fri 9/30/94																
74	Management Plan	Mon 3/1/93	Mon 3/1/93																
75	RI/FS Report	Thu 12/7/95	Thu 12/7/95																
76	Proposed Plan and ROD	Thu 12/7/95	Wed 11/20/96																
77	Proposed Plan Process	Thu 12/7/95	Wed 6/19/96																
78	ROD	Wed 6/19/96	Wed 11/20/96																
79	GW Long-Term Monitoring	Tue 10/4/94	Thu 10/2/25																
80	Landfill Closure -- LF02	Fri 9/13/96	Wed 10/2/96																
81	LF04 Annual Beach Sweeps	Mon 6/2/97	Tue 9/29/26																
82	Expedited Response Action at SS19	Mon 5/1/95	Thu 11/30/95																
83	High-Vacuum Extraction -- SD15	Mon 7/1/96	Thu 9/30/04																
84	Remedial Action (RA) Start	Fri 10/30/98	Fri 10/30/98																
85	Operable Unit RA Completion	Thu 10/30/25	Thu 10/30/25																
86	Other CERCLA	Fri 11/1/91	Thu 9/30/32																
87	SS83 Search Light Area #4	Mon 5/1/95	Tue 9/30/03																
88	PA/SI Effort	Mon 5/1/95	Thu 9/30/99																
89	EE/CA, Phase I	Mon 5/15/00	Fri 3/29/02																
90	Work Plan/Field Program	Mon 5/15/00	Fri 9/1/00																
91	EE/CA Report	Mon 10/23/00	Mon 10/23/00																
92	Action Memorandum	Thu 11/1/01	Fri 3/29/02																
93	Public Comment Period	Tue 1/29/02	Thu 2/28/02																
94	Action Memorandum	Thu 11/1/01	Fri 3/29/02																
95	EE/CA, Phase II (Landfill)	Wed 1/30/02	Tue 9/30/03																
96	Work Plan/Field Program	Wed 1/30/02	Fri 8/30/02																
97	EE/CA Report	Wed 10/30/02	Fri 3/28/03																
98	Action Memorandum	Wed 4/30/03	Tue 9/30/03																
99	Public Comment Period	Wed 4/30/03	Fri 5/30/03																
100	Action Memorandum	Wed 4/30/03	Tue 9/30/03																
101	Removal Action, Phase I	Mon 3/3/03	Tue 3/30/04																
102	Removal Action, Phase II	Tue 3/30/04	Wed 3/30/05																
103	DP98 381st TCE Contamination	Fri 11/1/91	Thu 9/30/32																
104	PA/SI Effort	Thu 6/25/98	Thu 9/30/99																
105	EE/CA	Wed 4/12/00	Tue 9/4/01																

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Summary of Project Milestones
CERCLA Source Areas

ID	Task Name	Start	Finish	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
71	Operable Unit 6	Mon 10/5/92	Tue 9/29/26															
72	RI/FS	Mon 10/5/92	Thu 12/7/95															
73	Management Plan/RI Field Program	Mon 10/5/92	Fri 9/30/94															
74	Management Plan	Mon 3/1/93	Mon 3/1/93															
75	RI/FS Report	Thu 12/7/95	Thu 12/7/95															
76	Proposed Plan and ROD	Thu 12/7/95	Wed 11/20/96															
77	Proposed Plan Process	Thu 12/7/95	Wed 6/19/96															
78	ROD	Wed 6/19/96	Wed 11/20/96															
79	GW Long-Term Monitoring	Tue 10/4/94	Thu 10/2/25															
80	Landfill Closure -- LF02	Fri 9/13/96	Wed 10/2/96															
81	LF04 Annual Beach Sweeps	Mon 6/2/97	Tue 9/29/26															
82	Expedited Response Action at SS19	Mon 5/1/95	Thu 11/30/95															
83	High-Vacuum Extraction -- SD15	Mon 7/1/96	Thu 9/30/04															
84	Remedial Action (RA) Start	Fri 10/30/98	Fri 10/30/98															
85	Operable Unit RA Completion	Thu 10/30/25	Thu 10/30/25															
86	Other CERCLA	Fri 11/1/91	Thu 9/30/32															
87	SS83 Search Light Area #4	Mon 5/1/95	Tue 9/30/03															
88	PA/SI Effort	Mon 5/1/95	Thu 9/30/99															
89	EE/CA, Phase I	Mon 5/15/00	Fri 3/29/02															
90	Work Plan/Field Program	Mon 5/15/00	Fri 9/1/00															
91	EE/CA Report	Mon 10/23/00	Mon 10/23/00															
92	Action Memorandum	Thu 11/1/01	Fri 3/29/02															
93	Public Comment Period	Tue 1/29/02	Thu 2/28/02															
94	Action Memorandum	Thu 11/1/01	Fri 3/29/02															
95	EE/CA, Phase II (Landfill)	Wed 1/30/02	Tue 9/30/03															
96	Work Plan/Field Program	Wed 1/30/02	Fri 8/30/02															
97	EE/CA Report	Wed 10/30/02	Fri 3/28/03															
98	Action Memorandum	Wed 4/30/03	Tue 9/30/03															
99	Public Comment Period	Wed 4/30/03	Fri 5/30/03															
100	Action Memorandum	Wed 4/30/03	Tue 9/30/03															
101	Removal Action, Phase I	Mon 3/3/03	Tue 3/30/04															
102	Removal Action, Phase II	Tue 3/30/04	Wed 3/30/05															
103	DP98 381st TCE Contamination	Fri 11/1/91	Thu 9/30/32															
104	PA/SI Effort	Thu 6/25/98	Thu 9/30/99															
105	EE/CA	Wed 4/12/00	Tue 9/4/01															

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Summary of Project Milestones
CERCLA Source Areas

ID	Task Name	Start	Finish	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035															
71	Operable Unit 6	Mon 10/5/92	Tue 9/29/26																														
72	RI/FS	Mon 10/5/92	Thu 12/7/95																														
73	Management Plan/RI Field Program	Mon 10/5/92	Fri 9/30/94																														
74	Management Plan	Mon 3/1/93	Mon 3/1/93																														
75	RI/FS Report	Thu 12/7/95	Thu 12/7/95																														
76	Proposed Plan and ROD	Thu 12/7/95	Wed 11/20/96																														
77	Proposed Plan Process	Thu 12/7/95	Wed 6/19/96																														
78	ROD	Wed 6/19/96	Wed 11/20/96																														
79	GW Long-Term Monitoring	Tue 10/4/94	Thu 10/2/25																														
80	Landfill Closure -- LF02	Fri 9/13/96	Wed 10/2/96																														
81	LF04 Annual Beach Sweeps	Mon 6/2/97	Tue 9/29/26																														
82	Expedited Response Action at SS19	Mon 5/1/95	Thu 11/30/95																														
83	High-Vacuum Extraction -- SD15	Mon 7/1/96	Thu 9/30/04																														
84	Remedial Action (RA) Start	Fri 10/30/98	Fri 10/30/98																														
85	Operable Unit RA Completion	Thu 10/30/25	Thu 10/30/25	10/30																													
86	Other CERCLA	Fri 11/1/91	Thu 9/30/32																														
87	SS83 Search Light Area #4	Mon 5/1/95	Tue 9/30/03																														
88	PA/SI Effort	Mon 5/1/95	Thu 9/30/99																														
89	EE/CA, Phase I	Mon 5/15/00	Fri 3/29/02																														
90	Work Plan/Field Program	Mon 5/15/00	Fri 9/1/00																														
91	EE/CA Report	Mon 10/23/00	Mon 10/23/00																														
92	Action Memorandum	Thu 11/1/01	Fri 3/29/02																														
93	Public Comment Period	Tue 1/29/02	Thu 2/28/02																														
94	Action Memorandum	Thu 11/1/01	Fri 3/29/02																														
95	EE/CA, Phase II (Landfill)	Wed 1/30/02	Tue 9/30/03																														
96	Work Plan/Field Program	Wed 1/30/02	Fri 8/30/02																														
97	EE/CA Report	Wed 10/30/02	Fri 3/28/03																														
98	Action Memorandum	Wed 4/30/03	Tue 9/30/03																														
99	Public Comment Period	Wed 4/30/03	Fri 5/30/03																														
100	Action Memorandum	Wed 4/30/03	Tue 9/30/03																														
101	Removal Action, Phase I	Mon 3/3/03	Tue 3/30/04																														
102	Removal Action, Phase II	Tue 3/30/04	Wed 3/30/05																														

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Summary of Project Milestones
CERCLA Source Areas

ID	Task Name	Start	Finish	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
106	Work Plan/Field Program	Wed 4/12/00	Fri 9/29/00																
107	EE/CA Report	Mon 11/6/00	Tue 9/4/01																
108	RI/FS	Wed 1/30/02	Tue 7/11/06																
109	Management Plan/RI Field Program	Wed 1/30/02	Mon 7/29/02																
110	RI/FS Report	Mon 9/30/02	Tue 12/9/03																
111	Proposed Plan and ROD	Mon 9/15/03	Tue 7/11/06																
112	Proposed Plan Process	Mon 9/15/03	Fri 2/27/04																
113	ROD	Thu 1/29/04	Tue 7/11/06																
114	Remedial Action	Fri 11/1/91	Mon 11/2/92																
115	Remedial Action (RA) Start	Fri 11/1/91	Fri 11/1/91																
116	Remedial Action - Operation	Fri 10/1/04	Thu 9/30/32																
117	SA99 -- Silvex Drum Site	Tue 10/1/02	Mon 3/1/10																
118	EE/CA	Tue 10/1/02	Wed 6/30/04																
119	EE/CA Field work and report	Tue 10/1/02	Tue 12/30/03																
120	Action Memorandum	Wed 10/1/03	Wed 6/30/04																
121	Removal action	Sun 3/1/09	Mon 3/1/10																
122																			
123	Five-Year ROD Review	Tue 1/20/98	Wed 11/4/98																
124	Five-Year ROD Review	Wed 2/26/03	Tue 11/4/03																
125	Five-Year ROD Review	Fri 12/21/07	Tue 11/4/08																
126	Five-Year ROD Review	Fri 12/21/12	Mon 11/4/13																
127	Five-Year ROD Review	Thu 12/21/17	Sun 11/4/18																
128	Five-Year ROD Review	Wed 12/21/22	Sat 11/4/23																
129	Five-Year ROD Review	Tue 12/21/27	Sat 11/4/28																
130	Five-Year ROD Review	Tue 12/21/32	Fri 11/4/33																
131	Final Close Out Report	Mon 10/2/34	Mon 12/25/34																
132	Site Completion	Mon 10/2/34	Mon 12/25/34																

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Summary of Project Milestones
CERCLA Source Areas

ID	Task Name	Start	Finish	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
106	Work Plan/Field Program	Wed 4/12/00	Fri 9/29/00															
107	EE/CA Report	Mon 11/6/00	Tue 9/4/01															
108	RI/FS	Wed 1/30/02	Tue 7/11/06															
109	Management Plan/RI Field Program	Wed 1/30/02	Mon 7/29/02															
110	RI/FS Report	Mon 9/30/02	Tue 12/9/03															
111	Proposed Plan and ROD	Mon 9/15/03	Tue 7/11/06															
112	Proposed Plan Process	Mon 9/15/03	Fri 2/27/04															
113	ROD	Thu 1/29/04	Tue 7/11/06															
114	Remedial Action	Fri 11/1/91	Mon 11/2/92															
115	Remedial Action (RA) Start	Fri 11/1/91	Fri 11/1/91															
116	Remedial Action - Operation	Fri 10/1/04	Thu 9/30/32															
117	SA99 -- Silvex Drum Site	Tue 10/1/02	Mon 3/1/10															
118	EE/CA	Tue 10/1/02	Wed 6/30/04															
119	EE/CA Field work and report	Tue 10/1/02	Tue 12/30/03															
120	Action Memorandum	Wed 10/1/03	Wed 6/30/04															
121	Removal action	Sun 3/1/09	Mon 3/1/10															
122																		
123	Five-Year ROD Review	Tue 1/20/98	Wed 11/4/98															
124	Five-Year ROD Review	Wed 2/26/03	Tue 11/4/03															
125	Five-Year ROD Review	Fri 12/21/07	Tue 11/4/08															
126	Five-Year ROD Review	Fri 12/21/12	Mon 11/4/13															
127	Five-Year ROD Review	Thu 12/21/17	Sun 11/4/18															
128	Five-Year ROD Review	Wed 12/21/22	Sat 11/4/23															
129	Five-Year ROD Review	Tue 12/21/27	Sat 11/4/28															
130	Five-Year ROD Review	Tue 12/21/32	Fri 11/4/33															
131	Final Close Out Report	Mon 10/2/34	Mon 12/25/34															
132	Site Completion	Mon 10/2/34	Mon 12/25/34															

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Summary of Project Milestones
CERCLA Source Areas

ID	Task Name	Start	Finish	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
106	Work Plan/Field Program	Wed 4/12/00	Fri 9/29/00															
107	EE/CA Report	Mon 11/6/00	Tue 9/4/01															
108	RI/FS	Wed 1/30/02	Tue 7/11/06															
109	Management Plan/RI Field Program	Wed 1/30/02	Mon 7/29/02															
110	RI/FS Report	Mon 9/30/02	Tue 12/9/03															
111	Proposed Plan and ROD	Mon 9/15/03	Tue 7/11/06															
112	Proposed Plan Process	Mon 9/15/03	Fri 2/27/04															
113	ROD	Thu 1/29/04	Tue 7/11/06															
114	Remedial Action	Fri 11/1/91	Mon 11/2/92															
115	Remedial Action (RA) Start	Fri 11/1/91	Fri 11/1/91															
116	Remedial Action - Operation	Fri 10/1/04	Thu 9/30/32															
117	SA99 -- Silvex Drum Site	Tue 10/1/02	Mon 3/1/10															
118	EE/CA	Tue 10/1/02	Wed 6/30/04															
119	EE/CA Field work and report	Tue 10/1/02	Tue 12/30/03															
120	Action Memorandum	Wed 10/1/03	Wed 6/30/04															
121	Removal action	Sun 3/1/09	Mon 3/1/10															
122																		
123	Five-Year ROD Review	Tue 1/20/98	Wed 11/4/98															
124	Five-Year ROD Review	Wed 2/26/03	Tue 11/4/03															
125	Five-Year ROD Review	Fri 12/21/07	Tue 11/4/08															
126	Five-Year ROD Review	Fri 12/21/12	Mon 11/4/13															
127	Five-Year ROD Review	Thu 12/21/17	Sun 11/4/18															
128	Five-Year ROD Review	Wed 12/21/22	Sat 11/4/23															
129	Five-Year ROD Review	Tue 12/21/27	Sat 11/4/28															
130	Five-Year ROD Review	Tue 12/21/32	Fri 11/4/33															
131	Final Close Out Report	Mon 10/2/34	Mon 12/25/34															
132	Site Completion	Mon 10/2/34	Mon 12/25/34															

Table 5-2
 Summary of Project Milestones
 SERA Source Areas

ID	Task Name	Start	Finish	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1	SERA Solid Waste	Wed 4/15/92	Wed 9/7/94			■	■	■											
2	Site Assessments	Wed 4/15/92	Wed 9/7/94			■	■	■											
3	SERA Phase I	Mon 3/22/93	Sat 9/1/07			■	■	■	■	■	■	■	■	■	■	■	■	■	■
4	Site Assessments	Mon 3/22/93	Tue 2/15/94			■	■	■											
5	Corrective Action Plan	Fri 8/12/94	Wed 5/3/95					■	■										
6	Bioventing -- SS43	Wed 6/19/96	Wed 9/1/04							■	■	■	■	■	■	■	■	■	■
7	Bioventing -- ST61	Tue 7/27/93	Wed 9/1/04				■	■	■	■	■	■	■	■	■	■	■	■	■
8	Bioventing -- ST71	Wed 7/27/94	Fri 1/31/03					■	■	■	■	■	■	■	■	■	■	■	■
9	Bioventing -- ST36	Fri 3/1/96	Sat 9/1/07							■	■	■	■	■	■	■	■	■	■
10	GW Long-term Monitoring	Wed 5/17/95	Wed 5/17/95						■										
11	SERA Phase II	Mon 5/3/93	Thu 9/30/10			■	■	■	■	■	■	■	■	■	■	■	■	■	■
12	Site Assessments	Thu 9/1/94	Fri 8/18/95					■	■										
13	Bioventing -- ST68	Fri 6/30/95	Wed 12/31/03						■	■	■	■	■	■	■	■	■	■	■
14	Bioventing -- ST32	Fri 8/9/96	Fri 9/1/06							■	■	■	■	■	■	■	■	■	■
15	Bioventing -- ST66	Thu 6/1/95	Sat 9/1/07						■	■	■	■	■	■	■	■	■	■	■
16	Bioventing -- ST74	Mon 7/1/96	Tue 8/22/00							■	■	■	■	■	■	■	■	■	■
17	ST32 - 29 UST Removal	Mon 5/3/93	Mon 11/1/93			■	■	■											
18	ST32 - Pipeline Removal/Design	Tue 3/5/96	Wed 10/1/97							■	■	■	■	■	■	■	■	■	■
19	GW Long-Term Monitoring	Wed 5/17/95	Thu 9/30/10						■	■	■	■	■	■	■	■	■	■	■
20	SERA Phase III	Mon 6/3/96	Fri 10/30/98							■	■	■	■	■	■	■	■	■	■
21	Site Assessments	Mon 6/3/96	Mon 9/30/96							■	■	■	■	■	■	■	■	■	■
22	PL81 Pipeline Removal/Design	Wed 1/1/97	Fri 10/30/98								■	■	■	■	■	■	■	■	■

Table 5-2
Summary of Project Milestones
SERA Source Areas

ID	Task Name	Start	Finish	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1	SERA Solid Waste	Wed 4/15/92	Wed 9/7/94															
2	Site Assessments	Wed 4/15/92	Wed 9/7/94															
3	SERA Phase I	Mon 3/22/93	Sat 9/1/07															
4	Site Assessments	Mon 3/22/93	Tue 2/15/94															
5	Corrective Action Plan	Fri 8/12/94	Wed 5/3/95															
6	Bioventing -- SS43	Wed 6/19/96	Wed 9/1/04															
7	Bioventing -- ST61	Tue 7/27/93	Wed 9/1/04															
8	Bioventing -- ST71	Wed 7/27/94	Fri 1/31/03															
9	Bioventing -- ST36	Fri 3/1/96	Sat 9/1/07															
10	GW Long-term Monitoring	Wed 5/17/95	Wed 5/17/95															
11	SERA Phase II	Mon 5/3/93	Thu 9/30/10															
12	Site Assessments	Thu 9/1/94	Fri 8/18/95															
13	Bioventing -- ST68	Fri 6/30/95	Wed 12/31/03															
14	Bioventing -- ST32	Fri 8/9/96	Fri 9/1/06															
15	Bioventing -- ST66	Thu 6/1/95	Sat 9/1/07															
16	Bioventing -- ST74	Mon 7/1/96	Tue 8/22/00															
17	ST32 - 29 UST Removal	Mon 5/3/93	Mon 11/1/93															
18	ST32 - Pipeline Removal/Design	Tue 3/5/96	Wed 10/1/97															
19	GW Long-Term Monitoring	Wed 5/17/95	Thu 9/30/10															
20	SERA Phase III	Mon 6/3/96	Fri 10/30/98															
21	Site Assessments	Mon 6/3/96	Mon 9/30/96															
22	PL81 Pipeline Removal/Design	Wed 1/1/97	Fri 10/30/98															

Table 5-2
Summary of Project Milestones
SERA Source Areas

ID	Task Name	Start	Finish	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
1	SERA Solid Waste	Wed 4/15/92	Wed 9/7/94															
2	Site Assessments	Wed 4/15/92	Wed 9/7/94															
3	SERA Phase I	Mon 3/22/93	Sat 9/1/07															
4	Site Assessments	Mon 3/22/93	Tue 2/15/94															
5	Corrective Action Plan	Fri 8/12/94	Wed 5/3/95															
6	Bioventing -- SS43	Wed 6/19/96	Wed 9/1/04															
7	Bioventing -- ST61	Tue 7/27/93	Wed 9/1/04															
8	Bioventing -- ST71	Wed 7/27/94	Fri 1/31/03															
9	Bioventing -- ST36	Fri 3/1/96	Sat 9/1/07															
10	GW Long-term Monitoring	Wed 5/17/95	Wed 5/17/95															
11	SERA Phase II	Mon 5/3/93	Thu 9/30/10															
12	Site Assessments	Thu 9/1/94	Fri 8/18/95															
13	Bioventing -- ST68	Fri 6/30/95	Wed 12/31/03															
14	Bioventing -- ST32	Fri 8/9/96	Fri 9/1/06															
15	Bioventing -- ST66	Thu 6/1/95	Sat 9/1/07															
16	Bioventing -- ST74	Mon 7/1/96	Tue 8/22/00															
17	ST32 - 29 UST Removal	Mon 5/3/93	Mon 11/1/93															
18	ST32 - Pipeline Removal/Design	Tue 3/5/96	Wed 10/1/97															
19	GW Long-Term Monitoring	Wed 5/17/95	Thu 9/30/10															
20	SERA Phase III	Mon 6/3/96	Fri 10/30/98															
21	Site Assessments	Mon 6/3/96	Mon 9/30/96															
22	PL81 Pipeline Removal/Design	Wed 1/1/97	Fri 10/30/98															

APPENDIX A

DISTRIBUTION LIST

ELMENDORF AIR FORCE BASE
MANAGEMENT ACTION PLAN
DISTRIBUTION LIST

HQ PACAF/CEVR	2
11 AF/JACE	1
3 WG/JA	1
3 WG/PA.....	1
3 CONS/LGCC	1
3 CES/CC	2
3 CES/CEC	1
3 CES/CECC	1
3 CES/CECD	1
3 CES/CEO	2
3 CES/CERR	1
3 CES/CEV	1
3 CES/CEVP	2
3 CES/CEVQ	2
3 CES/CEVR	7
3 AMDS/SGPB	2
EPA	1
ADEC	1
SERVICE CENTER (AFCEE)	1
NOAA	1

Ms. Alyce Fritz
NOAA/CRC Branch Orca 32
7600 San Point Way NE
BNC
Seattle, WA 98115

CORPS OF ENGINEERS	1
3 WG/HO	<u>1</u>

TOTAL 34

APPENDIX B

SOURCE DESCRIPTIONS

1.0 CERCLA PROGRAM SOURCES

1.1 OPERABLE UNIT 1

OU1 is one of two landfill OUs. It consists of five source areas (LF05, LF07, LF13, LF59, and OT56) located next to Vandenberg Avenue. Because of the proximity of LF05, LF07, LF13, and OT56, these areas are generally combined and referred to as the landfill area.

1.1.1 Source Area LF05

This 17-acre landfill on the southeastern portion of the base was in operation from 1951 to 1972. Trench and fill procedures were used to dispose of general refuse, scrap metal, spent chemicals, and other scrap materials. LF05 has been closed and is covered with brush, trees, and grasses. The northern portion of this source area has scattered areas of scrap metal, including automobile bodies, storage tanks, and drums at the surface. A 30-foot deep, former gravel pit exists at the southeast side of the contaminant source area.

1.1.2 Source Area LF07

LF07 was a sanitary landfill that covered approximately 35 acres south of LF05 and was in operation from 1965 to 1982. The area was used for the disposal of base-generated general refuse, scrap metal, construction rubble, asphalt drums, and empty pesticide containers. During the 1960s, small quantities of miscellaneous shop wastes were disposed of in the landfill. The landfill was first studied in 1982. An active area for disposal of asbestos waste was in operation in the southeastern portion of the source area until 1992.

1.1.3 Source Area LF13

This 2-acre former gravel pit was used from 1967 to 1971 for disposal of empty drums, metal piping, drums of asphalt, and small quantities of quicklime. After the site was closed and covered with soil, a growth of dense brush developed. Rainwater from this source area drains into Ship Creek. LF13 is located immediately southwest of LF05 and overlaps parts of source areas LF05 and LF07. The source area was first characterized in 1982. The total landfill volume is approximately 360,000 cubic yards.

1.1.4 Source Area LF59

During a site visit in June 1991, "fluid asphalt" was seeping out of the ground at this source, where it had pooled and partially solidified on top of a hiking trail. As a result, the trail was closed. It is speculated that this source area may have been used in the past as a landfill associated with historical asphalt batch plant operations.

Site D-8, located near LF59, was used from 1965 to at least 1983 for the disposal of construction rubble. The reported asphaltic material observed at LF59 may be consistent with

the disposal of construction rubble at Site D-8. A review of aerial photography suggested previous uses of the area for borrow materials, landfills, and possibly an asphalt batch plant.

1.1.5 Source Area OT56

OT56, encompassing approximately 2.5 acres, was a Defense Reutilization and Marketing Office (DRMO) scrap pile located immediately north of LF12. Drums containing various types of materials that had stained the soil surface were located in the vicinity of the site. The site was first characterized in 1982. A 1988 facilities assessment report, prepared by ADEC, showed low potential for environmental contamination and stated no further study was warranted under RCRA at the time.

1.2 OPERABLE UNIT 2

OU2 consists of two source areas where USTs have been, or are, buried (ST20 and ST41).

1.2.1 Source Area ST20

This source is located west of the north-south runway. ST20 once contained a 338,000-gallon underground waste storage tank located next to an old power plant that was demolished in 1987. During plant operations, the tank was used to store Bunker C fuel oil for the power plant. After the power plant stopped operating, the tank was used for disposal of waste oils, hydraulic fluid, used solvents, PCBs, and other waste generated by industrial shops in the flight line area. Tests conducted in 1983 indicated the waste in the tank had a flash point of 50°F. The tests also verified the presence of chlorinated solvents, organic solvents, and toxic metals. The tank contained approximately 105,000 gallons of commingled waste until early 1986.

1.2.2 Source Area ST41

This source area is located northwest of the east-west runway and east of Knik Arm. ST41 contains four one million-gallon bulk fuel storage tanks. Since they were installed in the early 1940s, numerous spills occurred. A 60,000-gallon aviation gas (AVGAS) spill occurred in the mid-1960s. None of the AVGAS was recovered. On 30 August 1974, an estimated 33,000 gallons of jet fuel (JP-4) spilled when an UST was filled beyond capacity. An estimated 16,000 gallons of fuel was recovered. The remainder seeped into the ground northwest of the tanks. Cleanup efforts prevented fuel from reaching surface water. In 1976, an oil/water separator was installed at ST41.

During a 1983 inspection of the source area, several seeps were observed in a drainage ditch and the flat areas to the south. The potential exists for contaminant migration as a result of past spills and the observed contamination in the area.

An ADEC inspection noted fuel seeping from the hillside into the oil/water separator and adjacent ditch, and existing flight line storm drainage ditches. In 1989, a dam with a siphon was installed in the ditch to contain any products that seeped from the ground.

1.3 OPERABLE UNIT 3

OU3 consists of a shop waste disposal site (SD16), Building 7309 drains (SD31), Cherry Hill Ditch (SD52), and a former PCB transformer storage facility (SS21). In September 1992, a re-examination of source areas at this OU resulted in adding source area SD31, Building 7309 drains, because of its geographic location.

1.3.1 Source Area SD16

SD16 is located east of Building 8197 and south of the west ramp. During the 1950s and 1960s, a variety of shop-generated wastes, including solvents, paint thinners, and other liquid wastes were disposed of into a ditch or ditches, or applied directly on the soil at this source area. Due to regrading and revegetation of part of the source area, the exact locations of the former ditch and disposal areas are unknown. Currently, the eastern area of the source is used as a parking area for heavy equipment. Additionally, there is a snow accumulation area located in the northern portion of SD16 where snow from the east-west runway and associated taxiway is routinely stockpiled during the winter. Surface drainage from this source is directed toward the south and to Cherry Hill Ditch, which receives runoff from SD16.

1.3.2 Source Area SD31

Building 7309 is used for general storage and workshop space, and as an aerial delivery facility. Four floor drains on the main floor are piped into a drainpipe network, which ultimately discharges into a dry well. In the past, 55 gallons of degreasing solvent were used every three months for maintaining equipment. Spent waste was dispatched by floor drains to a dry well on the southwest side of the building. Soil and groundwater contamination was detected during sampling of the source.

1.3.3 Source Area SD52

Cherry Hill Ditch is an artificial drainage channel on the west side of the base. The ditch channels surface water to the bluff above Knik Arm where it then flows west toward Cook Inlet. Prior to the 1990s, a surface slick was occasionally observed in a retention pond upstream, and an oily sheen and an emulsion that created foam appeared on water in the ditch. The sources for these materials are unknown. During this period, the ditch carried water from drains under the runway and possibly from other shop drains on Elmendorf AFB.

ADEC issued a notice of violation in 1987 and requested that the stream sediments be sampled for halogenated hydrocarbons. An investigation conducted in 1990 at SD52 revealed that organic compounds, petroleum hydrocarbons, polynuclear aromatic hydrocarbons (PAHs), and metals were present in the sediment and surface water samples. During the summer of 1992, a tracer study was conducted to locate all potential drains from buildings that may discharge to Cherry Hill Ditch. Following reconnaissance of SD52 in the spring of 1993, USAF, EPA, and ADEC project managers agreed to delist SD52 and continue to investigate the historical impact to Cherry Hill Ditch as a receptor of source area SD16.

1.3.4 Source Area SS21

SS21 was used to store PCB transformers during the 1970s. The original building has since been demolished, but the concrete foundation and loading dock remain. Large quantities of transformers were stored on the ground, and leakage of PCBs and/or oils may have occurred.

SS21 is a former transformer storage area. Results of a RI conducted at SS21 confirmed soil contamination as a result of transformer oil being spilled or leaked from transformers stored at this site. The transformers were known to contain oil laden with PCBs. Soil samples collected from SS21 soils confirmed that PCB contamination was primarily limited to the top 6 inches of soil and limited to the area immediately surrounding the former transformer storage area. In addition, one monitoring well, MW-6, was installed in the area of known soil contamination. No impacts to groundwater due to PCB contamination were identified.

1.4 OPERABLE UNIT 4

OU4 is divided into two study areas, OU4 East and OU4 West. OU4 East includes an area encircling Building 16710 (SD28) and Hangar 15 (Building 16716, SD29) and the Asphalt Drum Storage Area (SS10). OU4 West includes an area that encompasses Hangar 10 (Building 15455, SD24) and Hangar 11 (Building 16430, SD25), the Fire Training Area (FT23), and Hangars 14 (Building 16521, SD26) and 8 (Building 14410, SD27).

1.4.1 Source Area FT23

This source, located west of the north-south runway, consists of two areas: a drum storage area and a bermed burn area. The drum storage area contained as many as one hundred 55-gallon drums of contaminated waste oils, paint thinners, waste fuels, and waste solvents from aircraft maintenance and other shop operations on base.

From the 1940s to 1960s, ignitable wastes were used as fuel for the fire training exercises. During each exercise 250 to 3,000 gallons of contaminated waste materials were spread on the ground surface and ignited. Protein foams or chlorobromoethane were used to extinguish the fires. The bermed area remained saturated with unconsumed fuel following each training exercise. Tests conducted in 1987 and 1988 showed groundwater and soil contamination.

1.4.2 Source Area SD24

Hangar 10 (SD24) is an aircraft hangar used for fuel-loading operations and has a potential for small spills. Base documents indicate past spills of up to 1,300 gallons have occurred at the facility. The building drains discharge into two dry wells. A 1988 ADEC facility inspection determined a potential for contamination because the fuels spilled were discharged directly into a dry well and left to percolate to the subsurface. Because there are no base wells downgradient of the source, the threat to water supplies is limited. However, further study was still recommended.

1.4.3 Source Area SD25

Hangar 11 (SD25) is an aircraft hangar used for aircraft maintenance operations. Approximately 100 gallons of used PD-680 were washed into the floor drains monthly. The drains discharge into dry wells. PD-680 is a non-halogenated petroleum-based solvent usually used in degreasing operations. Solvents are no longer washed down the drains.

1.4.4 Source Area SD26

Hangar 14 (SD26) is an active aircraft hangar for C-130 propellers and engines. This hangar was historically used for helicopter maintenance operations and as a wash rack. The hangar was constructed in 1957 and has been an active facility for 44 years. Historical records indicate that from 1970 until the early 1980s, waste engine oil, hydraulic fluids, JP-4, and PD-680 were produced at the facility. An estimated 55 gallons per month of a degreasing solvent were washed down the drains. EPA and ADEC approved this source for NFA based on the LFI. Groundwater and soil contamination will be considered part of the overall cleanup of OU4.

1.4.5 Source Area SD27

Hangar 8 (SD27) is an aircraft hangar used for aircraft cleaning and also for painting aircraft interior parts. Rinse water was historically, washed down the drains. The drainage system has been altered, and rinse water now flows through oil/water separators before being discharged into the storm drains.

1.4.6 Source Area SD28

This hangar was used as a wash rack for ground refueling equipment. An estimated 55 gallons of degreasing solvent were used each month. Wash and rinse water drained into a dry well. The facility is now used for storage, and the drain has been redirected to the sanitary sewer.

1.4.7 Source Area SD29

The primary wastes in this aircraft hangar, Hangar 15 (SD29), were fuels from minor spills that flowed down floor drains to dry wells. The drainage system now is diverted to a septic tank and leaching pits east of the building. Initial test results showed soil and groundwater contamination.

1.4.8 Source Area SD30

This source is located on the northeast corner of the intersection between Arctic Warrior Drive and Fairchild Avenue. SD30 (Building 6211) is used as an automotive maintenance facility that services base vehicles. The vehicle maintenance shop generates 4,500 gallons per year of used hydraulic fluid and engine oil, and 1,200 gallons of used PD-680. The floor drains

originally discharged fuels from minor spills and solvents to a dry well south of the building but are now directing this waste to a septic tank and to leaching pits east of the building.

1.4.9 Source Area SS10

SS10, located along the AKRR tracks immediately northeast of the east-west runway, was used as an asphalt plant during the 1940s and 1950s. When production ended, an estimated 4,500 drums filled with asphalt and related materials were left onsite. An additional 50 drums contained non-asphaltic materials.

From exposure to the elements over several decades, many of the drums had become corroded and leaked asphalt onto the ground. Discolored soils around the drums and pools of asphalt, ranging from 3 to 10 inches deep, confirmed the presence of asphalt leaks. Discolored soil was discovered at a depth of about 4 feet at several locations, indicating asphalt had migrated. Eighteen of these drums were analyzed, and almost all of them contained fuel. Sixteen drums contained pesticides, which had been used for mosquito control, and some drums had flash points of less than 60°F.

1.4.10 Source Area SS18

Building 5327 (SS18), located south of Arctic Warrior Drive and east of Kenney Drive, has been used to store pesticides and herbicides since the early 1960s. This enclosed building, which rests on a concrete floor, houses the pest management operations of the base. Although no releases of pesticides were documented as of 1988, a drain plugged with concrete was discovered during a site inspection in 1991. Building 5327 is currently used to store and maintain pesticide equipment and vehicles. EPA and ADEC approved this source for NFA based on the LFI.

1.5 OPERABLE UNIT 5

OU5 consists of six sources (SD40/ST46, SS53, ST37, and ST38/SS42) located in the southern portion of the base to the north of Ship Creek.

1.5.1 Source Area SD40/ST46

These two source areas were combined because of their common location. During the late 1960s, at SD40, brownish oil gobs were seen seeping from the bank near the railroad maintenance facility into the marsh area to the south that flows into Ship Creek. The source of oil was believed to have come from maintenance activities at the railroad facility. The area is located approximately 600 feet north of Ship Creek and is near the cooling pond on the south portion of the base. The marsh area is a direct pathway for contaminant movement to Ship Creek; therefore, further study was completed in 1992.

At ST46 in 1978, an undetermined amount of JP-4 jet fuel leaked as a result of a crack in an underground pipe. The pipe was repaired, but fuel continued to seep from the bank of a nearby

stream that flows into wetlands that drain into Ship Creek. Benzene and petroleum hydrocarbons have been found in the groundwater. EPA and ADEC approved these sources for NFA in 1994.

1.5.2 Source Area SS53

SS53 is located along Pease Avenue north of Ship Creek and immediately north of the base golf course pro shop. For an unspecified number of years, a fuel seep of unknown origin was seen during spring breakup at SS53. The fuel seep appears to flow into a drainage ditch that parallels Pease Avenue. During a 1987 inspection, fuel was found in small holes dug in the ground, and fuel-stained soil was seen in the ditch. However, during the 1988 and 1989 investigations, no fuel was found in the area.

An Army POL line crosses the area, and a USAF JP-4 pipeline is located immediately north of SS53. The JP-4 pipeline has had minor leaks in the past. The site is less than 500 feet northwest of Ship Creek, and a base well is within 500 feet downgradient, creating the potential for offsite contaminant movement via groundwater and surface water runoff. EPA and ADEC approved these sources for NFA in 1994.

1.5.3 Source Area ST37

Between 1956 and 1958, a diesel fuel line broke just south of Building 2204, about 600 feet north of Ship Creek. Fuel reportedly seeped out of the ground near the railroad tracks located approximately 200 feet to the south. Even though thousands of gallons of fuel were recovered, an unknown amount may have remained below ground. Tests revealed soil and groundwater contamination, requiring further investigation of the source to determine the extent and amount of contamination and possible movement of the spilled diesel fuel. Fly ash, a by-product of coal used by Elmendorf AFB power plants before the late 1960s, can also be found at this source area. The fly ash is a continuous horizontal layer approximately 8 feet thick and 500 feet long, extending from monitoring well SP-102 to the bluff edge.

1.5.4 Source Area ST38/SS42

Studies at these two sources have also been combined because of their common location, the similarity of contaminants, and the potential for both sources to affect Ship Creek.

ST38, located north of the AKRR, was known for periodic seeps throughout the 1950s and 1960s. As a result of a fuel line leak during 1964 and 1965, an unknown quantity of JP-4 jet fuel seeped out of the bank near the drainage ditch crossing Pease Avenue, southeast of the source.

An estimated 8,000-gallon diesel fuel spill occurred at SS42 in 1976 as fuel was being transferred from aboveground to underground tanks. Frozen ground conditions contributed to the recovery of most of the fuel. Very little fuel is believed to have seeped into the subsurface.

1.6 OPERABLE UNIT 6

OU6 is the last operable unit to be investigated at Elmendorf, and as such is comprised of a mixed assemblage of source areas.

1.6.1 Source Area LF02

LF02 is located in the southeastern portion of the base to the west of Vandenberg Avenue. From 1940 to 1942, this eight-acre landfill was used as a surface dump for hard fill, construction rubble, scrap metal, and general refuse. No daily cover was applied while the landfill was active. However, the area is currently covered with several feet of soil and vegetation, with landfilled materials left in place.

Hazardous wastes are not known or suspected at this source because according to available records, no hazardous or industrial wastes were disposed of at the site. Chemicals of concern at this site are gasoline-range organics (GROs), diesel-range organics (DROs), volatile organic compounds (VOCs), and RCRA metals.

1.6.2 Source Area LF03

This 15-acre landfill is surrounded by relatively flat land that slopes to the west. Local drainage is toward Ship Creek. The landfill, located west of Hospital Housing, was used from 1943 to 1957. Materials disposed of at the landfill include general refuse, construction rubble, spent small arms ammunition from World War II, and small quantities of shop waste. Some limited open burning occurred during the 1950s. The landfill was closed in 1957 because of odor complaints.

1.6.3 Source Area LF04

LF04 is located east of Knik Arm Bluff on the west side of the base. The landfill extends about 3,000 feet along the southern portion of Knik Arm and between 400 to 800 feet inland. From 1945 to 1957, LF04 was used as a surface dump for the disposal of old cars, construction rubble, and small quantities of general refuse. Empty 55-gallon drums have also been found at this source. Debris from LF04 has drifted downhill to the beach, and tidal action is causing erosion and exposing the landfill. There have been reports of oil seeps on Knik Arm beach and chemical and fuel-like odors along the bluff. Soil and groundwater contamination was found, but clay layers found at 84- to 113-foot depths (Bootlegger Cove formation) appear to be preventing any deeper movement of the contaminants.

1.6.4 Source Area SD15

SD15 is a former sludge disposal site located in the northern portion of the base, just west of Talley Avenue, on what is known as Elmendorf Moraine. It consists of three 4- to 6-inch thick concrete pads that each measure 30 by 50 feet. The concrete pads were used from the early 1970s until 1983 to weather fuel filters and to dispose of tank sludge. Fuel odors are evident,

and minor fuel stains and soil stains are visible. The presence of total petroleum hydrocarbons (TPHs) and lead was confirmed in soil samples from this site.

1.6.5 Source Area SD73

SD73 is a surface disposal area around Building A-6 at the former NOAA Research Station. This building is a former film processing and research laboratory. The area of concern at SD73 includes a surface disposal area and building drains adjacent to the building. It is unknown when operations began in this building; however, operations in the building ceased in the summer of 1992.

1.6.6 Source Area WP14

This source is located near Knik Arm and slopes to the west. WP14 was used to dispose of sludge generated from POL tank cleanouts. Oil filters and other liquid petroleum wastes also were buried here. The area was also used for the weathering or drying out of fuel filters and pads.

1.7 OPERABLE UNIT 7

OU7 consisted of two source areas (SS19 and SS63). SS63 was added to the ERP in 1992 after construction activities in the area uncovered a dry well. SS19, a pesticide storage area, was included in OU7; however, it was closed in the OU6 ROD because it was the single source area left in OU7 and could be closed in OU6 less expensively.

1.7.1 Source Area SS19

This source is located in the northeasternmost corner of the base to the northeast of Six-Mile Lake and 46th Street. An estimated one hundred 55-gallon drums of 20 percent dichlorodiphenyl-trichloroethane (DDT) and other pesticides were stored at this source area before offsite contract disposal began in the 1960s. No spills have been documented; however, the LFI conducted in the summer of 1993 identified dieldrin-contaminated soil at an isolated area at SS19.

1.7.2 Source Area SS63

SS63 is located in the western portion of the base to the east of 46th Street. Building 52-140, now used as an administrative building, was constructed in 1943 and is the former location of the vehicle maintenance shop. In September 1991, during pre-construction preparatory activities, the US Army Corps of Engineers (COE) uncovered a dry well to the east of this building. A floor drain at the bottom of a former oil-changing pit apparently was connected to the dry well. Groundwater contamination was identified at monitoring wells installed near this building, based on test results for volatile organics and petroleum hydrocarbons.

1.8 FEDERAL FACILITIES AGREEMENT SOURCE AREAS

Two CERCLA source areas, RW17 and SS22, were classified as NFA sites in the FFA.

1.8.1 Source Area RW17

RW17, formerly called RD-1, is located approximately 1 1/2 miles north of the north end of the north-south runway. It was suspected that this low-level radioactive waste disposal site contained small quantities of cyanide and radium buried in the ground.

1.8.2 Source Area SS22

SS22, formerly called S-7, is the current DRMO storage facility and is operated under the base's Part B Permit. The site is located approximately one mile east of the east end of the east-west runway. SS22 has been used to store used, empty 55-gallon oil drums. Contamination potential for this source area appears to be nonexistent. Elmendorf AFB reported that no known spills exist based on visual evidence.

1.9 OTHER CERCLA SOURCES

Three CERCLA source areas, DP98, SA99, and SS83, were recently discovered in the final areas of the base under evaluation.

1.9.1 Source Area DP98

DP98 is located in the northwestern portion of Elmendorf AFB on the Elmendorf Moraine and is in a restricted access area. This site is situated on a local topographic rise surrounded by relatively flat vegetated grasslands. Regional groundwater in the study area flows generally west towards Knik Arm. The shallow aquifer is located approximately 15 feet below the site.

DP98 consists of Building 18224, the facilities immediately adjacent to the building, and the undeveloped land north of the building. The site was previously referred to as ST423 under the SERA for investigation of the underground storage tanks that serviced this building. During SERA Phase VI investigation, trichloroethylene (TCE) at 9 micrograms per liter ($\mu\text{g/L}$) was detected, which is above the ADEC groundwater cleanup standard of 5 $\mu\text{g/L}$, at well 41755-WL08. This detection resulted in the addition of this site to the ERP in 1999 for further investigation.

1.9.2 Source Area SA99

SA99 is located approximately 70 feet north of Airlifter Drive, across from Hangar 18. SA99 is a former drum disposal and storage area. The drums were discovered in the area during excavation work for construction of aboveground storage tanks and trenching for utility lines. The initial investigation discovered petroleum-contaminated soils and metal drums in various

stages of decay. Sample results determined some of the soil was also contaminated with lead, traces of PCBs and pesticides (Silvex).

1.9.3 Source Area SS83

SS83 is located in the northwestern portion of the base. This site is a WWII-vintage AAA site. It is located in an area of the base that is uninhabited and consists of trees and brush. Located near Six-Mile Creek, the site is now on the edge of an antenna field, which is a restricted area. The area was mentioned on maps as the Battalion D, 96th AAA. Identified on old aerial photographs are individual areas, which include a motor pool, offices, generator buildings, bermed areas, radar sites, generators, transportation shops, and support buildings.

2.0 STATE PROGRAM SOURCES

2.1 SOLID WASTE PHASE I SOURCES

Five solid waste landfills are covered under Phase I of the state program. These are source areas LF01, LF06, LF08, LF09, and LF12. Of these, LF06, LF08, and LF09 were administratively moved to the EQP for action.

2.1.1 Source Area LF01

This landfill lies underneath the west overrun of the east-west runway. This seven-acre landfill was used from 1938 to 1941 for disposal of wastes such as hard fill, construction rubble, and general refuse during construction of Elmendorf AFB. No known hazardous wastes were disposed of in LF01. The landfill was overlain by the west overrun in the mid-1940s.

2.1.2 Source Area LF06

This source is located to the west of the north-south runway. This landfill was used for construction rubble disposal. Records and collected evidence indicate that LF06 was originally a gravel-borrow site between 1951 and 1964 and was later filled with clean construction and demolition debris, such as concrete and pavement. There is no evidence of contamination. The site has been covered with more than 2 feet of soil, is vegetated, and is level with the surrounding area. LF06 appears stable and shows no indication of erosion, contamination, or other compliance problems. The site area is within the clear zone of the north-south runway and access is restricted by airfield management.

2.1.3 Source Area LF08

LF08 is located south of Ship Creek and west of Vandenberg Avenue. This landfill was also used for construction rubble and was active during a 1983 investigation that showed no visible signs of contamination. Records and collected evidence indicate that LF08 was a bog-like area with uneven terrain that was filled in since the 1960s to form a level, clear zone at the southern end of the north-south runway. Fill material consisted of stumps, brush, and clean construction and demolition debris, such as concrete and pavement. Construction and demolition waste, consisting primarily of concrete and pavement rubble, wood, and scrap metal, presents a low leachate potential.

2.1.4 Source Area LF09

This source is located in the northeastern portion of the base to the north of Hillberg Lake. This landfill was in operation from 1964 to 1976 and was used for disposal of construction rubble. Records and collected evidence indicate that LF09 was originally a gravel-borrow site in the early 1960s and was later used for the disposal of construction and demolition debris, such as concrete, pavement, scrap metal, and building debris.

2.1.5 Source Area LF12

LF12 is reportedly located near the intersection of Arctic Warrior Drive and Sijan Avenue, north of the AKRR tracks. This landfill is said to contain construction rubble and hard fill. Reports indicate that the site used in the late 1940s and early 1950s consisted of less than one acre, and was later closed and landscaped with local soils. This site was supposedly used for disposal of general refuse, hard fill, and construction rubble. No visual evidence of contamination or evidence of waste disposal activities was found in the area. Aerial photography review revealed no disturbance to topography or vegetation typical of landfill practices. Additionally, boring logs from two borings performed in 1988 to facilitate monitoring well installation for another source area revealed no evidence of landfill activities in the boring location. Undisturbed sandy gravels typical to the developed portion of the base underlie the LF12 source area.

2.2 SERA PHASE I SOURCES

Of the 39 SERA source areas included in the state program, 15 have been investigated under Phase I of SERA. Six of these are currently being assessed (SS43/SS55, ST36, ST61, ST69, and ST71) and nine have been closed (SS35, SS57, SS62, ST34, ST39, ST47, ST64, ST65, and ST72).

2.2.1 Source Area SS35

SS35, the Paxson Park Site, is located on Arctic Warrior Drive in the southwestern quadrant of Elmendorf AFB. The park is bordered to the south by a fire station, Mt. Illiamna School, and Orion Elementary School. It is bordered to the west by Aurora School and Building 5091, and to the north by the park pavilion. This source area was a military housing complex that was demolished before being converted to a park. This site is included in the SERA program because POL odor and oil-soaked soil was reported by workers installing subsurface pipe at this source area in 1988. The source(s) of both the odor and/or the stained soil have not been determined.

2.2.2 Source Area SS43/SS55

SS43/SS55, also known as the hydrant refueling area, is located on the north side of the east-west runway at Elmendorf AFB. The site is comprised of various pumphouse buildings, underground hydrant refueling lines, parking areas, and the surrounding areas. The area is bound on the north and west by Taxiway 6; on the east by Taxiway 2; and on the south by aircraft ramps A-38, A-39, and A-40. Pumphouse 3 has been the source of several large and small fuel spills. In 1964, a 50,000-gallon release of JP-4 occurred as a result of a pump failure. In 1980, a 36,000-gallon release occurred during the refueling of a C-5 aircraft. In both cases, the fuel infiltrated the soil before any response could be initiated. Following the

1980 release, soil in the spill area was excavated to a depth of 13- to 14-feet (the excavation limit of the backhoe). The soil was still saturated with fuel when excavating activities stopped at the depth limit of the backhoe. The contaminants of concern for the area are DRO and benzene, toluene, ethylbenzene, and xylene (BTEX).

2.2.3 Source Area SS57

SS57 is located on the southeast corner of Kenney Avenue and 15th Street. The site is south of the POL parking lot, southwest of Building 7348, east of Hangar 5 (Building 7309, SD31), and north of Building 6326. SS57 was identified as a contaminated site in 1989 when the COE drilled 12 soil borings at SS57 to characterize soil conditions for proposed construction of an over-the-horizon backscatter operations building. During this activity, petroleum odors were noted both in the soil and groundwater. BTEX concentrations in soil samples ranged from undetected to 151 parts per million (ppm). Construction plans have been halted at this source area, pending the results of further studies.

2.2.4 Source Area SS62

SS62, the Army/Air Force Exchange Service (AAFES) service station, is located at Building 6210 on the corner of Arctic Warrior Drive and 4th Street. This site is bordered by a package store (Building 6210) and car wash to the south, the vehicle maintenance shop (Building 6211) to the north, a paved parking lot and Building 6230 to the east, and the Shoppette (Building 5201) to the west. Two waste oil tanks (500- and 1,500-gallon capacities) were reportedly installed at SS62 in 1962. Four 6,000-gallon gasoline tanks and one 10,000-gallon diesel fuel tank were installed in 1975. In the fall of 1990, some or all of the USTs were tested for tightness and no leaks were detected. During an UST replacement in the fall of 1991, hydrocarbon contaminated soil was discovered around several of the USTs. All seven USTs were removed in 1991, and five new USTs were installed to replace the seven tanks that were removed. Contaminated soil around the waste oil USTs was removed to a depth of 18 feet (depth limit of the backhoe). Some contaminated soils remained because of the limitations of the backhoe. The excavation was then backfilled. Laboratory analysis of the waste oil contaminated soil indicated detectable levels of PCBs and TCE.

2.2.5 Source Area ST34

ST34, a former AAFES self-service station, is located on Vandenberg Avenue just north of Arctic Warrior Drive. The site is comprised of an attendant booth (Building 8704) and four gas pump islands. Four 10,000-gallon motor vehicle gasoline (MOGAS) USTs provided fuel to the pump islands. In January 1991, a 5,000-gallon discrepancy was noted in the station's fuel inventory. A subsequent investigation determined that a release had occurred from one of the feed lines. Visibly contaminated soil was removed at the time of the investigation.

2.2.6 Source Area ST36

ST36, the site of a heating oil leak, is located on a hilltop to the west of Spring Lake on the north end of Elmendorf AFB. ST36 is on the west side of a radar control building (Building 27369), north of an emergency generator building (Building 27365), and northwest of ST66. An UST of unknown capacity and age services Building 27369 with heating oil via underground piping. In May 1988, a heating oil leak occurred from a failed cap elbow in the piping system connecting the UST to Building 27369. Workers collected at least eight 55-gallon drums of contaminated soil from this location, primarily from above the UST. A domestic water supply well (Base Well 27), located near the UST, showed low levels of hydrocarbons [70 parts per billion (ppb)] in a water sample collected two days after the leak was noticed. Analyses of samples collected from this well, since that time, have not detected hydrocarbons.

2.2.7 Source Area ST39

ST39, located at the intersection of Arctic Warrior Drive and Pease Avenue in the cantonment portion of the base, was the site of a surface spill of less than 200 gallons of JP-4 jet fuel in 1962. In response to the spill, the top one-half foot of contaminated peat and topsoil was removed and placed in the base landfill (LF07). Records indicate that the majority of contamination was removed from the site in the excavated soil. No contamination of surface waters occurred at the time of the spill.

2.2.8 Source Area ST47

This source is located south of the east-west runway and north of Fire Station 1 (Building 11415). An estimated 1,000 gallons of JP-4 jet fuel were spilled at this source area in 1971. The majority of the spill was recovered, and contaminated soil was hauled to the base landfill in 1982. Two monitoring wells, W-9 and GW-3A, were installed in 1986 and 1987, respectively. Groundwater samples from W-9 showed low levels of oil and grease 110 milligrams per liter (mg/L). Groundwater samples from GW-3A indicated non-purgeable (semi-volatile) aromatics and petroleum hydrocarbons (0.1 mg/L). In later investigations, petroleum hydrocarbons were detected in both wells.

2.2.9 Source Area ST61

This source is located approximately 1 1/4 miles north of the east-west runway on the east side of Fairchild Avenue. The 1,000-gallon heating oil UST at the north end of Building 21309 was removed in the fall of 1992. It was observed to be in poor condition with corrosion along the bottom. The US Department of the Navy (Navy) has razed Building 21309 at ST61 so that a new building can be constructed. Well 8, a potable water well, is located at the south end of Building 21309.

2.2.10 Source Area ST64

ST64 is located on Airlifter Drive, approximately 2,000 feet from Building 16430 (Hangar 11). The site is bordered to the south by Taxiway 6, to the north by a 25,000-gallon deicer tank, and to the east by Hangar 11. The ground surface of the site is grass and gravel surrounded by an asphalt-covered circular drive. This site is located within CERCLA OU4. ST64 became a source of concern when a soil-vapor survey conducted in March and April 1991 detected a leak from one of the four USTs. ST64 is comprised of the following four USTs:

- Tank 57, a 500-gallon diesel UST;
- Tank 102, a 3,000-gallon diesel UST;
- Tank 68, a 3,000-gallon JP-4 jet fuel UST; and
- Tank 26, a 2,500-gallon MOGAS UST.

2.2.11 Source Area ST65

ST65 is adjacent to Provider Drive and nearby Fire Station 3 (Building 3784). The site is located in the vicinity of a fuel dispenser and one out-of-service 500-gallon diesel UST. The UST at this site was identified as possibly leaking because of a positive result from a soil-vapor survey conducted in December 1990. The chemicals of concern for this site are DROs.

2.2.12 Source Area ST69

ST69 is located on Fairchild Avenue at Building 76-520, which houses electrical equipment for use in instrument landing on the east-west runway. The site is located approximately one-half mile west of the West Overrun in the southwestern portion of the base. The site is bordered to the south and west by a predominantly hardwood forest, to the north by Fairchild Avenue, and to the east by the runway field. A 500-gallon diesel fuel spill reportedly occurred at ST69 between 1989 and 1990. In addition, a 50-gallon MOGAS spill occurred on 22 April 1991. The MOGAS spill was caused by a ruptured standpipe from an UST north of Building 76-520. The UST was removed at the time of the spill. A hydrocarbon sheen was noticed on the groundwater encountered during the excavation and removal of the UST.

2.2.13 Source Area ST71

ST71 is located south of the east-west runway off Gibson Avenue. This source area is being investigated because of contamination noted during removal of a 500-gallon JP-4 fuel tank in August 1992. The UST was located north of Building 7228, a vehicle maintenance shop. The contaminants of concern from the vehicle maintenance shop are GRO, DRO, and BTEX.

2.2.14 Source Area ST72

ST72 is the location of reported contaminated soils believed to have been caused by a leaking UST pipe. This source is located on a hilltop on the north side of Building 16322 and south of 37th Street. An UST, located at Building 16322, was removed in 1989.

2.3 SERA PHASE II SOURCES

Under SERA Phase II, 12 source areas were investigated. Five of these are currently being assessed (ST32, ST48, ST66, ST68, and ST74) and seven have been closed (SS44, SS45, SS49, SS50, SS51, ST67, and ST70).

2.3.1 Source Area SS44

This source is located north of the east-west runway. In November 1980, an estimated 200 gallons of JP-4 jet fuel spilled at Hardstand 5 because of a fuel-line pipe cap being severed by a snowplow. Fuel-saturated snow and ice were removed to a disposal area.

2.3.2 Source Area SS45

SS45 is located north of the east-west runway. In March 1983, a JP-4 jet fuel spill of approximately 3,000 gallons was discovered on the C-5 parking apron. According to a report, most of the fuel was recovered.

2.3.3 Source Area SS49

SS49 is located near the intersection of 20th Street and Sijan Avenue. A 25,000-gallon tank was used at this location to store MOGAS in the 1960s. In 1965, a 1,500-gallon MOGAS spill occurred at a nearby gas station. The material seeped into the ground and was not recovered. Soil and groundwater tests revealed contamination.

2.3.4 Source Area SS50

This source is located south of the east-west runway. A 1,000-gallon AVGAS spill occurred at SS50 in 1961. The majority of the spill was contained and collected; however, some of the AVGAS seeped into the ground.

2.3.5 Source Area SS51

The location of this source area on the base is uncertain. An estimated 5,000-gallon JP-4 jet fuel spill occurred in 1965 at this site at the location of a tank truck sump drain. According to spill logs, the entire contents of the spill were recovered for reuse in base operations. Therefore, no contamination took place at the time of the spill.

2.3.6 Source Area ST32

This 80-acre source area is located in the western portion of the base north of Airlifter Drive. Twenty-nine 50,000-gallon fuel tanks were buried, or partially buried, and covered with soil in the rough terrain of the Elmendorf Moraine. The tanks were manifolded together and gravity-fed. They were emptied and taken out of service in 1982 when 11 tanks failed visual inspection. The fuels stored have been both AVGAS and JP-4. Evidence of soil contamination

was detected. Testing of water from the wells revealed low-level fuel contamination in groundwater at three of the tank locations at concentrations ranging from 2.6 to 100 ppm.

2.3.7 Source Area ST48

ST48 is located north of the intersection of Rickenbacker and Sijan avenues. In 1968, a line leak resulted in a diesel fuel spill at ST48. An estimated 700 to 800 gallons of fuel seeped into the ground. None was recovered. Soil tests conducted in 1990 showed evidence of contamination. Further investigation will be required.

2.3.8 Source Area ST66

ST66, the site of a suspected diesel leak, is located on a hilltop to the west of Spring Lake on the northern portion of Elmendorf AFB. ST66 is on the east side of the emergency generator building (Building 27365) in the vicinity of a radar control building, and southeast of ST36.

The site is located on a kame deposit within the Elmendorf Moraine and in typical kame and kettle glacial topography. Several shallow test pits excavated in 1950 uncovered a thin organic layer.

One 5,000-gallon diesel UST and one 4,000-gallon diesel UST are located on ST66. Both USTs supply diesel fuel to Building 27365. A 500-gallon aboveground diesel tank was also located in this area. Tank 1 was tested in November 1990 and was identified as potentially leaking at a rate of more than 0.05 gallon per hour. Contaminant of concern at ST66 is DRO.

2.3.9 Source Area ST67

This source area is located east of Heritage Circle and west of the north-south runway. This source, a regulated UST storing diesel fuel at Building 9559, failed a tank tightness test and was taken out of service in early 1992. The contaminant of concern for this site is DRO.

2.3.10 Source Area ST68

ST68 is located north of Sijan Avenue and west of the north-south runway. This regulated UST, storing JP-4 jet fuel at Building 11567, failed a tank tightness test and was taken out of service in early 1992. The contaminants of concern for this site are GRO and DRO.

2.3.11 Source Area ST70

ST70 is located at Building 23400, a ski lodge on the northern portion of Elmendorf AFB near Hillberg Lake. Petroleum-contaminated soil was discovered during the excavation of a heating oil UST at this location in May 1990. Contamination was reportedly the result of spillage and overfills during tank filling operations.

2.3.12 Source Area ST74

ST74 is an area of contamination from a former fuel tank leak. The tank was believed to be used for heating fuel and was associated with Fire Station 3 (Building A-3) at the NOAA Research Station. It is not known whether the tank was an aboveground or underground tank. The building was used by the Bureau of Land Management (BLM) in the 1930s, possibly for fire training exercises. In the late 1970s and early 1980s, the USAF used Building A-3 as a fire station. The specific area of concern is a suspected area of POL contamination behind the building.

2.4 SERA PHASE III SOURCES

Under SERA Phase III, six source areas were planned to be investigated. All of these sites have been closed.

2.4.1 Source Area SS80

SS80 is the location of petroleum spills, which occurred at some unknown time in the past. The contamination was discovered during the design of the new Corrosion Control Facility by the COE. Several soil boring samples were collected in this area by the COE. Contamination ranged from 100 to 1,800 ppm for diesel range hydrocarbons.

2.4.2 Source Area ST75

ST75 is the location of a former 2,600-gallon heating oil UST that was situated adjacent to Building 4314. This building was built in 1944 and is currently in use as a hazardous waste storage facility. Based on the excessive quantity of fuel drawn by this building, the UST was believed to be leaking and was removed from service sometime in the 1983-1984 time period. During the tank removal, two soil samples were collected at a depth of seven feet below ground level. One of the samples contained 5,900 ppm of TPH.

2.4.3 Source Area ST76

ST76 is the location of a 6,500-gallon leaking diesel fuel tank (Tank 155) adjacent to Building 5374. This tank was excavated and removed from the ground during the summer of 1993. Two soil samples were collected from beneath the tank during excavation. Results from the sampling indicated TPH contamination in the range from 240 to 2,300 ppm.

2.4.4 Source Area ST77

ST77 is the location of two former 2,500-gallon MOGAS USTs that were situated adjacent to Building 8326. The tanks were in service for approximately 15 years and were used until they were excavated and removed. The tanks contained gasoline and JP-8. During the removal of these tanks, visual staining of the soil was observed. The soil sample taken near two vent piping joints indicated GROs at 640 ppm.

2.4.5 Source Area ST78

ST78 is the location of a former 650-gallon UST that was adjacent to Building 11415. This tank was used principally as the collection point for used motor oil.

2.4.5 Source Area ST79

ST79 is the location of a former 1,500-gallon gasoline UST and two 5,200-gallon diesel fuel USTs. These tanks were situated adjacent to Building 14415. The tanks had been in service for five years and were used until they were excavated and removed. Several soil samples were collected from this site during the tank removal process. Contamination ranged from 900 ppm for gasoline-range hydrocarbons to 150,000 ppm for diesel-range hydrocarbons.

2.5 OTHER SERA SOURCES

2.5.1 Source Area PL81

PL81 consists of approximately 13,000 feet of 10-inch diameter (reported as wrought iron) pipe which runs from the "spaghetti works" at the Port of Anchorage to Valve Pit #14 near Four-Million Gallon Hill. The 10-inch pipeline was installed in 1942 as part of the fuel storage and distribution system. An active 12-inch pipeline that runs in the same right of way was installed in 1958. The 10-inch pipeline was damaged in the 1964 earthquake and abandoned. During its lifetime, the 10-inch pipeline carried AVGAS and was not properly abandoned.

APPENDIX C

ENVIRONMENTAL CONDITION OF PROPERTY MAPS

APPENDIX D

SUMMARY OF PAST ENVIRONMENTAL RESTORATION PROGRAM INVESTIGATIONS

See separate file titled "Appendix D"