
Decision Document

Hazardous, Toxic, and Radioactive Waste (HTRW)
Project # F10AK0251-05
Former Tank Farm and USTs 5-1 & 5-2
Formerly Used Defense Site (FUDS)
Wildwood Air Force Station
Kenai, Alaska

October 2013

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Prepared By:
U.S. Army Corps of Engineers - Alaska District
Environmental Engineering Branch
P.O. Box 6898
JBER, Alaska 99506-0898



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ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
ADNR	Alaska Department of Natural Resources
ADOC	Alaska Department of Corrections
AFS	Air Force Station
AST	above ground storage tank
bb1	barrel
BTEX	benzene, toluene, ethylbenzene, and xylenes
bgs	below ground surface
BLM	Bureau of Land Management
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COCs	contaminants of concern
DERP	Defense Environmental Restoration Program
DD	Decision Document
DPW	Department of Public Works
DRO	diesel range organics
EPA	U. S. Environmental Protection Agency
FUDS	Formerly Used Defense Site
GRO	gasoline range organics
HTRW	Hazardous, Toxic, or Radioactive Waste
ICs	Institutional Controls
JBER	Joint Base Elmendorf Richardson
KNA	Kenai Natives Association, Inc.
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
POC	Point of Contact
RAO	Remedial Action Objectives
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
ROST/LIF	Rapid Optical Screening Tool/Laser-Induced Fluorescence
RRO	residual range organics
SARA	Superfund Amendments and Reauthorization Act
SVOC	semi-volatile organic compound
TPH	total petroleum hydrocarbons
USACE	United States Army Corps of Engineers
USAF	United States Air Force
UST	underground storage tank
USC	United States Code
VOCs	volatile organic compounds

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1.0 PART 1: DECLARATION

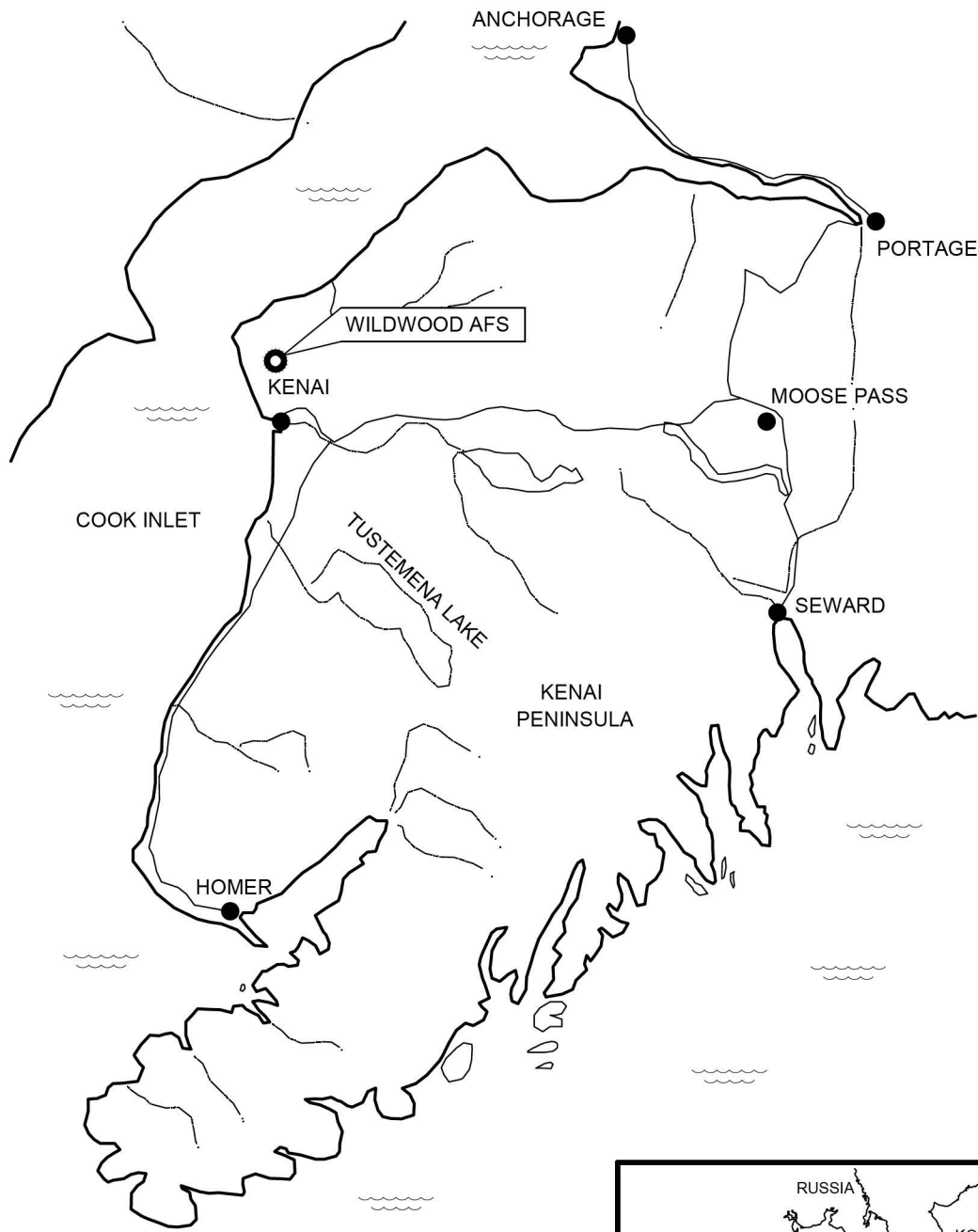
1.1 SITE NAME AND LOCATION

Facility Name: Former Wildwood Air Force Station (AFS), Alaska
Site Location: Kenai, Alaska
Latitude and Longitude: 60° 35' 13" North, 151° 17' 33" West
CERCLIS ID Number: AK0570000182
Site Name/Operable Unit: Former Tank Farm and USTs 5-1 & 5-2 Site
FUDS Project No: F10AK025105
ADEC Database File ID: Former Tank Farm and USTs 5-1 & 5-2 Site: 2320.38.051
ADEC Database Hazard ID: 25199

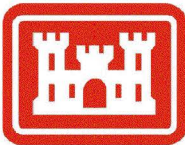
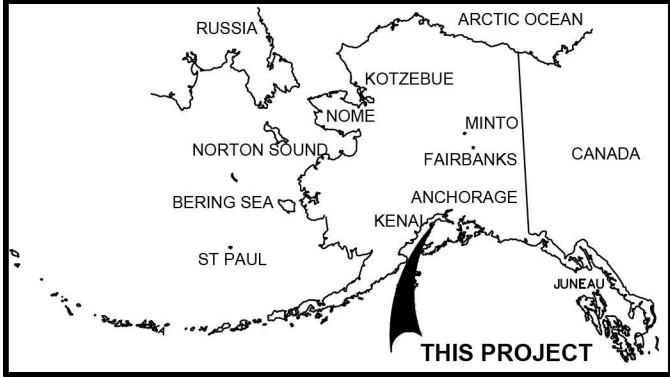
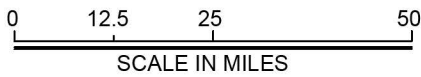
Former Wildwood AFS is located approximately 3.5 miles northwest of Kenai, Alaska, accessed via Wildwood Drive east of the Kenai Spur Highway (see Figure 1 – *Location and Vicinity Map* and Figure 2 – *Site Map*). The Former Tank Farm and USTs 5-1 & 5-2 Site is one of the 23 sites at the Former Wildwood AFS. Previously, the Former Tank Farm site was addressed under Project 03 along with all the other source areas at the Former Wildwood AFS. The Inventory Project Report was revised in 2006 to create 3 separate Hazardous, Toxic, or Radioactive Waste (HTRW) projects from among the various Wildwood source areas. The Former Tank Farm and USTs 5-1 & 5-2 were grouped as a single project (Project 05).

1.2 STATEMENT OF BASIS AND PURPOSE

This Decision Document presents the U.S. Army Corps of Engineers (USACE) selected remedy for the Former Tank Farm and USTs 5-1 & 5-2 site, chosen in accordance with the Defense Environmental Restoration Program (DERP), the Administrative Record for this site, and based upon the findings of previous investigations. Petroleum, oil, and lubricants (POL) contaminated sites fall under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) petroleum exclusion and are therefore being addressed under the authority of the DERP, United States Code (USC), Title 10, Section 2701, et seq.. The DERP provides authority to cleanup petroleum contamination when it may pose an imminent and substantial endangerment to public health, welfare or the environment. Although no CERCLA hazardous substances are identified as contaminants of concern (COCs) that pose an unacceptable risk to human health or the environment at the site, this remedy has also been chosen in accordance with CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and to the maximum extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Alaska's Site Cleanup Rules (18 AAC 75 Article 3 Oil and Other Hazardous Substances Pollution Control) are risk based and indicative of when an imminent and substantial endangerment to the public health or welfare or the environment has been mitigated, and will be the basis for the decision described herein.



SOURCE:
 PSI ANNUAL REPORT
 WILDWOOD AS/SVE SYSTEM
 JUNE 2006

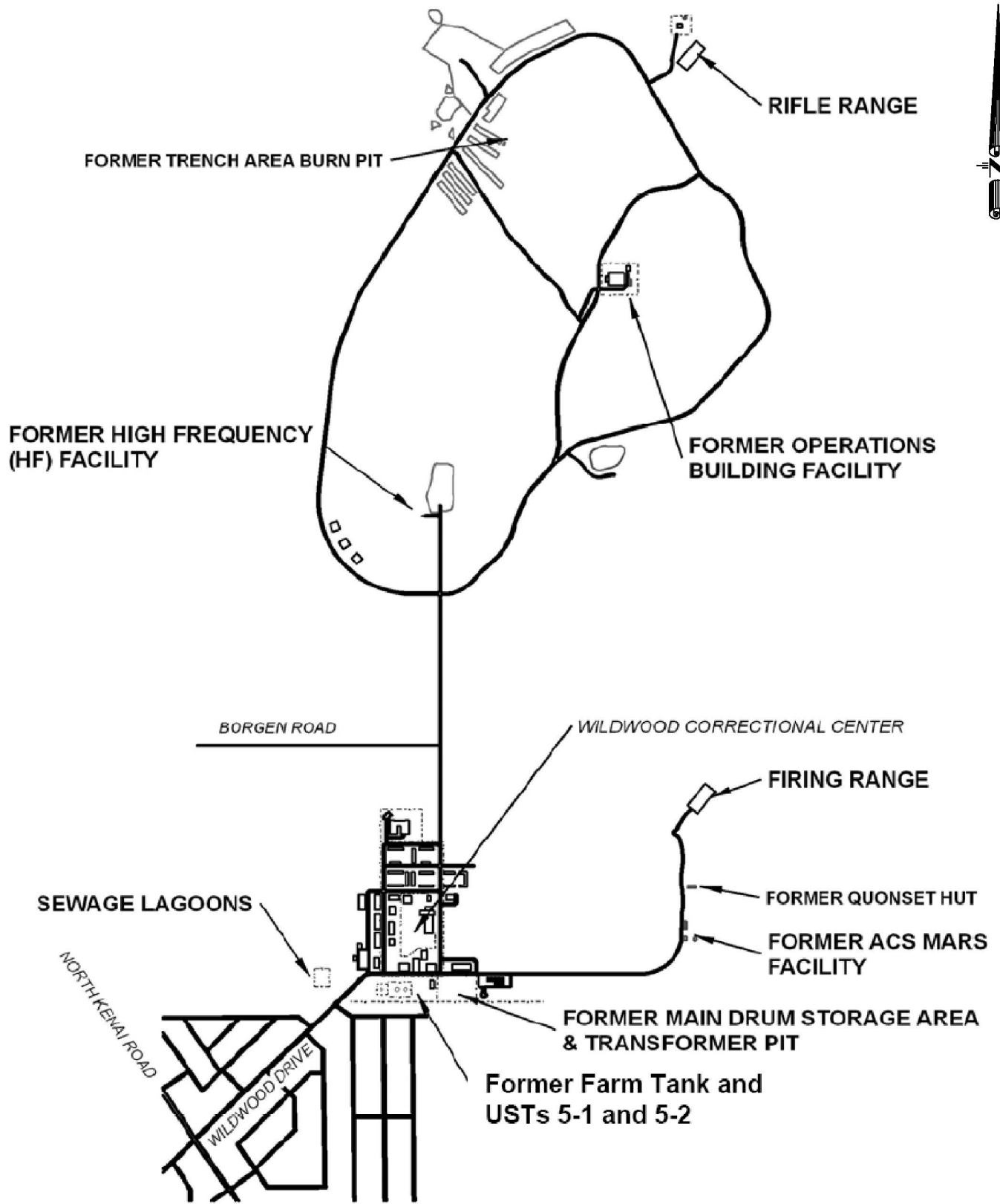


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 Alaska District

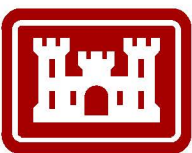
Wildwood Air Force Station
 FUDS F10AK0251-05
Location and Vicinity

27 July 2011
 Revision 0
 Scale: Noted

Figure
 1



0 2000
APPROX. SCALE (FEET)



U.S. Army Corps
of Engineers
Alaska District

Wildwood Air Force Station
FUDS F10AK0251-05

Site Map

27 July 2011
Revision 0
Scale: Noted

Figure
2

Detailed information supporting the selected remedial action is contained in the Administrative Record for this site, located at the U.S. Army Corps of Engineers, Alaska District office on Joint Base Elmendorf Richardson, Alaska. A copy of the Administrative Record is available at the Information Repository located at the:

Kenai Community Library
 163 Main Street Loop
 Kenai, AK 99611
 (907) 283-4378

This Decision Document (DD) is based on the recent site characterization (2005 Rapid Optical Screening Tool/Laser-Induced Fluorescence (ROST/LIF) Investigation; 2006 subsurface soil investigation and 2007/2010 Annual Groundwater monitoring), evaluation of 1997 through 2005 in-situ remedial system operation; and other documents contained in the administrative record file for Former Tank Farm and USTs 5-1 & 5-2 Site, including, but not limited to, 1993 Remedial Investigations, 1995 Groundwater monitoring program, Human Health Risk Assessment, 1996 Feasibility Studies and Screening Ecological Risk Assessment.

1.3 ASSESSMENT OF THE SITE

This Decision Document provides an overview of the Former Tank Farm and USTs 5-1 & 5-2 Former Wildwood AFS FUDS. It summarizes the site description, previous investigations and remedial activities, risk evaluation, and the selected remedial action. This document also explains the rationale for selecting the action and is consistent with the State of Alaska Administrative Code 18 AAC 75, Article 3 regulations and associated guidance.

Soil and groundwater in the Former Tank Farm area were contaminated with petroleum hydrocarbons as a result of fuel transfers to and from trucks, piping leaks and fuel spillage through a floor drain inside the pump house. Groundwater contamination extends offsite to the southwest. The cleanup levels for the identified contaminants of concern in various media at the Former Tank Farm and USTs 5-1 & 5-2 site include:

Table 1. Maximum Remaining Concentrations and Cleanup Levels

Media	Contaminant of Concern	Maximum Remaining Concentration*	Cleanup Level
Soil [#]	DRO	6,150 mg/kg	250 mg/kg
	GRO	556 mg/kg	300 mg/kg
Groundwater	DRO	6.4 mg/l	1.5 mg/l
	Benzene	2.7 µg/l	5 µg/l
	1,2 dichloroethane	7.6 µg/l	5 µg/l

Key: mg/kg – milligrams per kilogram mg/L – milligrams per liter µg/L – micrograms per liter
 Note: Cleanup Levels are from 18 AAC 75, Table B2, migration to groundwater pathway, Under 40 inch Zone, and Table C (as modified through 8 April 2012)
 *Based on data through May 2010
[#] Maximum concentrations detected in soil at depths greater than 20 feet below ground surface, which is below depth at which direct contact is expected.

A summary of site cleanup work and investigations at the site is as follows:

1988	Preliminary Assessment (PA) (areas and items of concern were identified)
1990-1991	Interim Removal Action (waste containers, transformers, and limited stained soil was removed)
1993-1994	Removal of ASTs, USTs, and fuel piping;
1993	Remedial Investigation (sampling to identify types, locations, and extents of contaminants in soil and groundwater)
1995	Groundwater monitoring program was initiated and continues today.
1995	Extended public water system for private properties.
1995	Human Health Risk Assessment
1995-1996	Feasibility Study (identified and evaluated approaches for mitigating contaminated soil and groundwater)
1995-1996	Screening Ecological Risk Assessment (determine if contamination poses a significant risk to the ecosystem)
1996-1998	Remedial Action (constructed insitu remediation system)
1997-2005	Operated insitu remediation system
2005	ROST/LIF Investigation to further delineate contamination and evaluate remaining contaminant levels
2006	Subsurface soil Investigation to monitor contamination level at the site
2008	Fall 2006/Spring 2007 Annual Groundwater Monitoring
2008	Fall 2007/Spring 2008 Annual Groundwater Monitoring
2008	Proposed plan to close out 12 no further action sites
2009	Spring Annual Groundwater Monitoring
2010	Spring Annual Groundwater Monitoring
2011	Proposed Plan for the Former Tank Farm and USTs 5-1 & 5-2 Site

1.4 DESCRIPTION OF THE SELECTED REMEDY

The response action selected in this Decision Document is protective of public health, welfare, and the environment. DRO in subsurface soil and DRO and 1,2 dichloroethane in groundwater continue to exceed cleanup levels at the Former Tank Farm and USTs 5-1 & 5-2 site. All other petroleum related contaminants in soil were remediated during the remedial system operation between 1997 and 2005, to a level below the ADEC Method Two cleanup levels.

The overall cleanup strategy for the Former Tank Farm and USTs 5-1 & 5-2 site is to reduce the risk to public health, welfare, and the environment and to monitor and prevent the use of contaminated groundwater. The principal components of the selected remedy are Natural Attenuation with Monitoring and Institutional Controls (ICs). Administrative measures will include an entry in the ADEC Contaminated Sites Database and recording a Notice of Environmental Contamination with the State Land Recorder's Office for each impacted parcel. In addition, an information packet will be developed and distributed to the City of Kenai, parcel landowners and leaseholders.

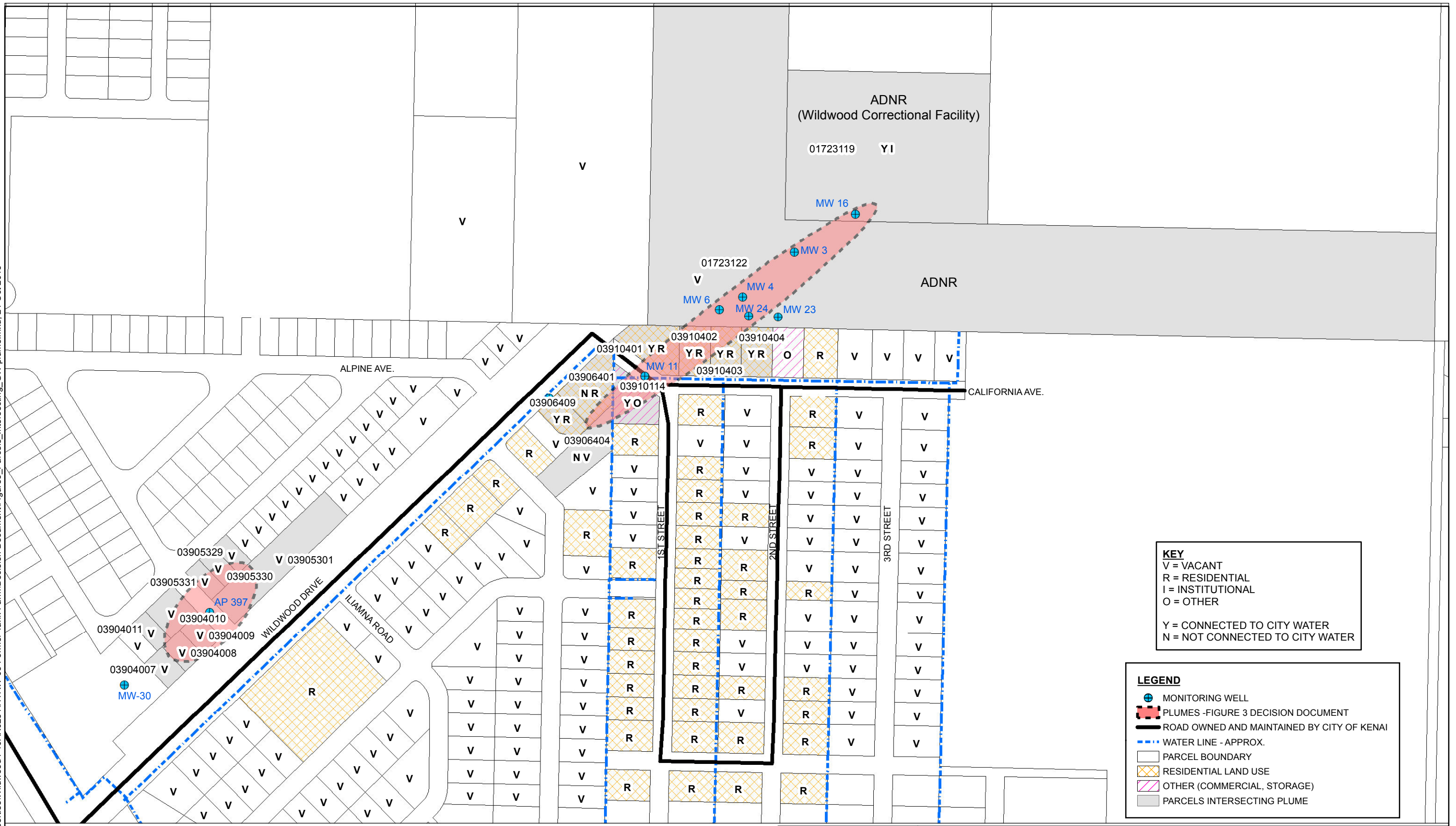
Major components of the selected remedy include:

- Residual contaminated soil present at >15 feet below ground surface will be left in place.
- Natural attenuation of groundwater with monitoring.
- Groundwater will be monitored annually for five years to document and evaluate the natural attenuation progress and remaining level of DRO and 1,2 dichloroethane contamination at the site. Groundwater monitoring frequency may be revised after the first Periodic Review (i.e., after five years) with ADEC concurrence. Data will be re-evaluated every sampling event until groundwater contaminant levels at the site meet the ADEC Table C criteria.
- Implementation of informational devices including a Notice of Environmental Contamination recorded with the State of Alaska Recorder's Office for each parcel with impacted soil and/or groundwater. The Notices of Environmental Contamination will document the areas with residual soil or groundwater contamination, and describe the requirements for managing residual contamination in accordance with 18 AAC 75.325. ADEC approval is required prior to moving contaminated soil off-site and prior to using or pumping and discharging contaminated groundwater. Table 2 identifies parcels that have contaminated soil or groundwater and Figure 3 shows the parcels intersecting the groundwater plume. A second Notice of Environmental Contamination may be recorded when groundwater contamination levels achieve the cleanup levels.
- Information packages will be provided to the City of Kenai documenting the areas with residual soil or groundwater contamination and the location of groundwater monitoring wells within roadways.
- Periodic reviews will be conducted every five years to evaluate the remedy, determine when cleanup levels have been achieved, verify land use controls remain effective, and communicate with landowners.

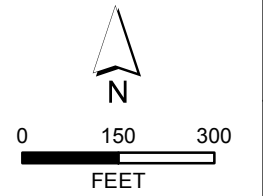
Table 2. Contaminated Parcels

PARCEL	USEAGE	ADDRESS	LEGAL DESCRIPTION
3905301	100 Residential Vacant	2620 WILDWOOD DR	T 6N R 12W SEC 25 SEWARD MERIDIAN KN 0001399 BLACK GOLD EST SUB AMD LOT 1 THRU 7 BLOCK 7
3904009	100 Residential Vacant	2710 WILDWOOD DR	T 6N R 12W SEC 25 SEWARD MERIDIAN KN 0001399 BLACK GOLD ESTATES SUB AMENDED LOT 13 BLK 8
3904011	100 Residential Vacant	2705 WINDFLOWER DR	T 6N R 12W SEC 25 SEWARD MERIDIAN KN 0001399 BLACK GOLD ESTATES SUB AMENDED LOT 16 BLK 8
3905330	100 Residential Vacant	2631 WINDFLOWER DR	T 6N R 12W SEC 25 SEWARD MERIDIAN KN 0001399 BLACK GOLD ESTATES SUB AMENDED LOT 30 BLK 7
3904007	100 Residential Vacant	2714 WILDWOOD DR	T 6N R 12W SEC 25 SEWARD MERIDIAN KN 0001399 BLACK GOLD ESTATES SUB AMENDED LOT 11 BLK 8
3904008	100 Residential Vacant	2712 WILDWOOD DR	T 6N R 12W SEC 25 SEWARD MERIDIAN KN 0001399 BLACK GOLD ESTATES SUB AMENDED LOT 12 BLK 8
3906401	110 Residential Dwelling	2501 WILDWOOD DR	T 6N R 12W SEC 25 SEWARD MERIDIAN KN 0000216 CARL F AHLSTROM SUB LOT 1 BLK 8
3904010	100 Residential Vacant	1303 ORCHID WAY	T 6N R 12W SEC 25 SEWARD MERIDIAN KN 0001399 BLACK GOLD EST SUB AMD LOT 14 & 15 BLOCK 8
3906404	100 Residential Vacant	1110 SPUR DR	T 6N R 12W SEC 25 SEWARD MERIDIAN KN 0000216 CARL F AHLSTROM SUB LOT 5 BLK 8
3905331	100 Residential Vacant	1304 ORCHID WAY	T 6N R 12W SEC 25 SEWARD MERIDIAN KN 0001399 BLACK GOLD ESTATES SUB AMENDED LOT 31 BLK 7
3905329	100 Residential Vacant	2629 WINDFLOWER DR	T 6N R 12W SEC 25 SEWARD MERIDIAN KN 0001399 BLACK GOLD ESTATES SUB AMENDED LOT 29 BLK 7
3906409	110 Residential Dwelling	2503 WILDWOOD DR	T 6N R 12W SEC 25 SEWARD MERIDIAN KN 0800084 SEDERHOLM SUB LOT 2A
3910114	350 General Commercial	1127 FIRST ST	T 6N R 12W SEC 25 SEWARD MERIDIAN KN 0001355 MOMMSENS SUB REPLAT ADDN NO 1 & 2 LOT 7 BLK 7 ADDN NO 2
3910404	110 Residential Dwelling	2426 CALIFORNIA AVE	T 6N R 12W SEC 25 SEWARD MERIDIAN KN 0001355 MOMMSENS SUB REPLAT ADDN NO 1 & 2 LOT 7 BLK 6 ADDN NO 2
3910402	110 Residential Dwelling	2434 CALIFORNIA AVE	T 6N R 12W SEC 25 SEWARD MERIDIAN KN 0001355 MOMMSENS SUB REPLAT ADDN NO 1 & 2 LOT 9 BLK 6 ADDN NO 2
3910403	110 Residential Dwelling	2430 CALIFORNIA AVE	T 6N R 12W SEC 25 SEWARD MERIDIAN KN 0001355 MOMMSENS SUB REPLAT ADDN NO 1 & 2 LOT 8 BLK 6 ADDN NO 2
3910401	110 Residential Dwelling	2438 CALIFORNIA AVE	T 6N R 12W SEC 25 SEWARD MERIDIAN KN 0001355 MOMMSENS SUB REPLAT ADDN NO 1 & 2 LOT 10 BLK 6 ADDN NO 2
1723122	100 Residential Vacant	ADNR	T 6N R 12W SEC 25 SEWARD MERIDIAN KN 0920073 WILDWOOD CORRECTIONS SUB TRACT 5
1723119	850 General Institutional	ADNR	T 6N R 12W SEC 25 SEWARD MERIDIAN KN 0920073 WILDWOOD CORRECTIONS SUB TRACT 2
N/A	City of Kenai	Wildwood Dr., California Ave., Orchid Way	T 6N R 12W SEC 25 SEWARD MERIDIAN KN

O:\ESP\Private\FUDS\Properties\Wildwood F10AK0251\HTRW-05 Former Tank Farm\Decision Document\Figure3_Parcels_Intersecting_GW plume.mxd, 24 Oct 2013



- NOTES:
 1. PARCEL BOUNDARIES ARE FROM DATA DOWNLOADED FROM KENAI PENINSULA BOROUGH ON 20 DECEMBER 2012.
 2. ROAD AND UTILITY LOCATIONS ARE BASED ON "CITY OF KENAI COMPREHENSIVE PLAN", DATED 5 NOVEMBER 2003.
 3. LAND USE DESIGNATIONS ARE FROM "CITY OF KENAI COMPREHENSIVE PLAN", DATED 5 NOVEMBER 2003, UPDATED BY REVIEW OF GOOGLE EARTH PRO IMAGERY DATED 17 APRIL 2011.
 4. ONLY THOSE PARCELS THAT INTERSECT THE PLUME HAVE CONNECTED/NOT CONNECTED TO CITY WATER DESIGNATED.



PARCELS INTERSECTING GROUNDWATER PLUME AREAS



WILDWOOD AFS - F10AK0251
 KENAI, ALASKA

FIGURE 3

1.5 DETERMINATIONS

The Department of Defense (DoD) is authorized to carry out a program of environmental restoration at former military sites pursuant to the DERP program (10 USC 2701 et seq). Under that Program, FUDS properties are defined as real property that was owned by, leased by, or otherwise possessed by the United States and that were transferred from DoD control prior to 17 October 1986.

The DoD can remediate releases of petroleum under the DERP program where the release poses an imminent and substantial endangerment to the public health or welfare or to the environment per 10 USC 2701(b)(2). The petroleum release at the Former Tank Farm and USTs 5-1 & 5-2 site creates an imminent and substantial endangerment to current and future site residents and for administrative convenience this Decision Document in general follows CERCLA guidance.

The selected remedies are protective of human health and the environment and comply with pertinent risk-based standards for petroleum hydrocarbons. The remedy is cost-effective, and utilizes a permanent solution to the maximum extent practicable.

1.6 AUTHORIZING SIGNATURE

This Decision Document presents the Selected Remedy of Natural Attenuation with Monitoring and Institutional Controls at the Former Tank Farm and USTs 5-1 & 5-2 Formerly Used Defense Site (FUDS) located at Kenai, Alaska. This Decision Document will be incorporated into the Administrative File for the Former Tank Farm and USTs 5-1 & 5-2 FUDS which is available for public review. The U.S. Army Corps of Engineers is the lead agency under the Defense Environmental Restoration Program at the Former Tank Farm and USTs 5-1 & 5-2 FUDS (#F10AK025105), and has developed this Decision Document consistent with the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, the National Oil and Hazardous Substances Pollution Contingency Plan, and state law. This document, presenting a selected remedy with a present worth cost estimate of less than \$2 million, is approved by the undersigned, pursuant to Memorandum, DAIM-ZA, September 9, 2003, Subject: Policies for Staffing and Approving Decision Documents (DDs) and Engineer Regulation 200-3-1, Formerly Used Defense Sites Program Policy.



CHRISTOPHER D. LESTOCHI
Colonel, Corps of Engineers
District Commander

Date 11/17/13

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2.0 PART 2: DECISION SUMMARY

The Decision Summary provides an overview of the conditions at the Former Tank Farm and USTs 5-1 & 5-2 Site, summarizes data from the remedial investigations, describes the remedial alternatives considered, and explains the rationale for selecting the remedy.

2.1 SITE NAME, LOCATION, AND BRIEF DESCRIPTION

Facility Name: Former Wildwood Air Force Station, Alaska
Site Location: Kenai, Alaska
Latitude and Longitude: 60° 35' 13'' North, 151° 17' 33'' West
CERCLIS ID Number: AK0570000182
Site Name/Operable Unit: Former Tank Farm and USTs 5-1 & 5-2 Site
FUDs Project No: F10AK025105

ADEC Database Record Key: Former Tank Farm and USTs 5-1 & 5-2 Site: 2320.38.051
ADEC Database Hazard ID: 25199

The former Wildwood AFS property is located 3.5 miles northwest of Kenai, Alaska, accessed via Wildwood Drive East of the Kenai Spur Highway (see Figure 2 – *Site Map*).

The Former Tank Farm contained three large ASTs, USTs 5-1 and 5-2, underground fuel piping, and a pump house. The tanks were installed in 1953 and removed in 1993 and 1994, and consisted of one 50,000-gallon mogas (gasoline) tank, one 630,000-gallon diesel tank, and one 710,000-gallon diesel tank. Former USTs 5-1 and 5-2 were located north of the large ASTs, and were each 5,000-gallon diesel storage tanks. The USTs supplied fuel to the power plant and were connected to the pump house inside the former tank farm by piping buried beneath First Street. The ASTs, USTs, pump house, and the piping connecting them have been removed. Soil and groundwater in the former tank farm area were contaminated with petroleum hydrocarbons as a result of fuel transfers to and from trucks, piping leaks and fuel spillage through a floor drain inside the pump house. Groundwater contamination extends offsite to the southwest.

2.2 SITE HISTORY

Wildwood AFS, originally named Seward Station, was activated by the United States Army in 1953 and used as a communications station. In 1966, the Alaska Air Command order transferred the facility to the United States Air Force (USAF). The facility included a landfill, rifle and firing ranges, communications facilities, operations and housing facilities, and other facilities. USAF closed Wildwood AFS on July 1, 1972. The facility was transferred to the United States Department of the Interior, Bureau of Land Management (BLM), who, in 1974, transferred approximately 4,300 acres to Kenai Natives Association, Inc. (KNA), including all property developed by the USAF. KNA used the former military housing in the complex for apartment rentals, and in 1982 leased 125 acres to the State of Alaska for use as a correctional facility. KNA sold this 125-acre tract to the Alaska Department of Natural Resources (ADNR) in 1994.

The Alaska Department of Corrections (ADOC) currently operates the Wildwood Correctional Center on a portion of the property. Currently ADNR owns the remaining buildings and structure in the main complex that includes the Former Tank Farm and USTs 5-1 & 5-2 Site. Current land ownership is shown in Figure 4 – *Land Ownership*.

2.3 COMMUNITY PARTICIPATION

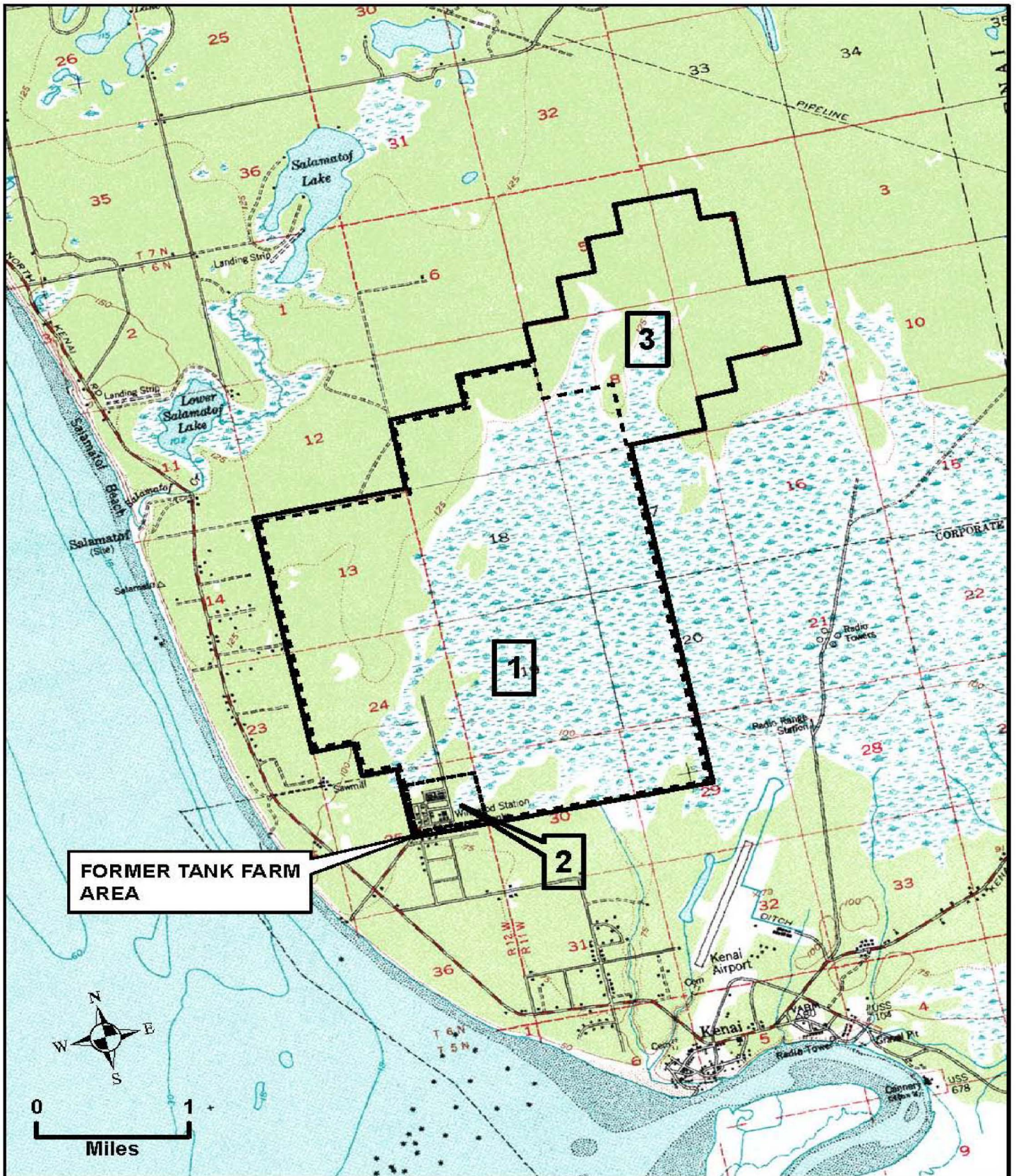
Public participation has been an important component of the cleanup process at the Former Tank Farm and USTs 5-1 & 5-2 Site. A public notice of Proposed Plan for remedial actions was published in May 2011. The USACE instituted an initial comment period from 30 May 2011 to 30 June 2011. The Kenai Community Library maintains the Administrative Record and Information Repositories for the Former Tank Farm and USTs 5-1 & 5-2 Site. All data collected and primary documents produced for the Former Tank Farm and USTs 5-1 & 5-2 Site are maintained as part of the Administrative Record at the USACE Alaska District office, JBER, Alaska. The USACE received no requests to extend the public comment periods. A Public Meeting was held on 6 June 2011 at the Challenger Learning Center of Alaska in Kenai.

The USACE responses to comments received during the public comment periods are included in the Responsiveness Summary, which is provided as Section 3 of this DD.

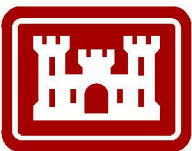
2.4 SCOPE AND ROLE OF RESPONSE ACTION

In 1986, USACE initiated environmental investigations at the former Wildwood AFS under the DERP FUDS program. Transformers, drums of tar, and other environmental impacts were determined to be eligible for cleanup under the DERP FUDS program. A total of 23 different sites spread across the former Wildwood AFS were identified, investigated and remediated by USACE. In 2005, USACE separated the Wildwood project into three groups of sites. The Former Tank Farm and USTs 5-1 & 5-2 were grouped into a single project (Project 05) and are addressed under this DD. Sites that were remediated to their cleanup targets were viewed as ready for closure and were placed into the group addressed under Project 03. Sites that have been substantively remediated and yet have residual contamination above the cleanup targets were grouped under Project 04.

The Former Tank Farm and USTs 5-1 & 5-2 Site is being proposed for Natural Attenuation with Monitoring and Institutional Controls.



- 1 = Kenai Natives Association
- 2 = ADNR
- 3 = BLM



U.S. Army Corps
of Engineers
Alaska District

Wildwood Air Force Station
FUDS F10AK0251-05
Land Ownership

27 July 2011
Revision 0
Scale: Noted

Figure
4

2.5 SITE CHARACTERISTICS

2.5.1 Soils and Geology

The former Wildwood AFS is located within the Nikishka Lowland physiographic region on the Kenai Peninsula. The region is characterized by flat to undulating terrain with abundant wetlands, lakes, and streams. The western portion of site, including the areas impacted by military construction, generally is well-drained, forested, and is characterized by flat to gently sloping terrain. The eastern portion of the site has not been impacted by military construction and generally consists of poorly drained swamp and muskeg areas. The site is approximately four miles northwest of the mouth of the Kenai River and one mile east of Cook Inlet. No streams flow through any part of the AFS; however, numerous wetlands, ponds, and lakes are located nearby. Surface water runoff paths from areas of concern are not apparent from aerial photographs or topographic maps. However, surface water runoff from the Landfill and Trench Areas discharges into adjacent small ponds visible on maps and aerial photographs.

Soils in the site vicinity consist of inter-bedded Quaternary-age glacial, fluvial, lacustrine, and marine deposits. Lacustrine sediments consisting of fine-grained sand and silt underlie the near surface soil horizon and extend to approximately 10 feet to 20 feet below ground surface (bgs). Glacial and fluvial deposits of inter-bedded sand and gravel underlie the lacustrine deposits and range in thickness from 10 to 80 feet. Marine silt and clay occur beneath the sand and gravel layers, range in thickness from 10 to 100 feet, and tend to exist at approximately 80 feet bgs. Complex inter-bedded sand and gravel layers underlie the marine silt and clay and range in thickness from 5 to 100 feet. A second, lower marine silt and clay deposit, beneath the interbedded sand and gravel layers, constitutes the remainder of the unconsolidated sediments above bedrock. According to a lithologic log for a supply well located near the facility, unconsolidated sediments extend to a depth of more than 650 feet bgs. On terraces and outwash plains, the well-drained soils consist of a surface mat of forest organics overlying silt loam. In depressions, the poorly drained soils consist of a surface layer of decomposed sphagnum moss overlying moss and sedge peat. These soils are approximately 2 to 10 feet thick.

The structures within the Main Complex Area are located mainly on well-drained soils. Poorly drained soils occur north and east of the Quonset Hut Area. A thin layer of poorly drained soil, approximately 1 to 4 feet thick, occurs in the Landfill and Trench Areas. Permafrost has not been reported in the Kenai area. Bedrock consists of the Tertiary-age Kenai Formation. The Kenai Formation is comprised of alternating strata of semi-consolidated silt, sand, and gravel and is locally coal-bearing. The thickness of the Kenai Formation ranges from approximately 5,000 to 11,000 feet.

2.5.2 Hydrogeology

Groundwater at the site occurs at 4 to 25 feet bgs in soil of an upper unconfined aquifer. The aquifer matrix varies by location, and consists of silt, sand, and gravel of lacustrine, glacial, and fluvial origin. The unconfined aquifer extends to marine clay/silt deposits at approximately 80

feet bgs. The unconfined aquifer has been a source of drinking water in the past, although properties in the area of the site have increasingly tied to the Kenai city water system. The City of Kenai municipal code (Chapter 17.10.010) has a mandatory requirement for all structures being a source from which water is being used, to be connected to the public water system provided the structure is within 200 feet of an existing public water main. A confined artesian aquifer occurs beneath the uppermost marine silt and clay layer and is the source of drinking water for the City of Kenai. This silt and clay layer acts as a relatively impermeable layer between the unconfined and confined aquifers. The potentiometric surface of the confined aquifer ranges from 20 feet bgs to 40 feet above ground surface.

In general, groundwater flows southwest in the unconfined surficial aquifer. Topography in the former Wildwood AFS vicinity also slopes to the southwest. To maintain hydrologic baseflow, groundwater from the surficial aquifer may discharge into the streams, drainage ditches, and wetlands adjacent to the former Wildwood AFS; however, during periods of runoff greater than baseflow, the streams, ditches, and wetlands may recharge the surficial aquifer. The former Wildwood AFS is located in an area where neither groundwater recharge nor discharge is dominant.

2.5.3 Previous Site Characterization Activities

Remedial investigation (RI) and remedial action activities at this site have been extensive and are therefore only summarized below. The details of RI and remedial action work can be reviewed in prior documentation, as available.

2.5.3.1 Remedial Investigation

The RI work at the tank farm area included sampling of surface soil, subsurface soil, and groundwater. The work included installation and sampling of 9 monitoring wells, 10 microwells and 10 soil borings. Twenty-two surface soil samples were collected in 1993. The RI down-gradient of the tank farm area included sampling of subsurface soil and groundwater, including the installation and sampling of 3 monitoring wells and 11 soil borings. Note that additional monitoring wells have been installed during subsequent remedial action and monitoring activities. Contaminants at the tank farm consist of petroleum and volatile organic compounds (VOCs) that are constituents of petroleum. The analytical testing program included analyses for DRO, GRO, Total Recoverable Petroleum Hydrocarbons, VOCs (including benzene, toluene, ethylbenzene, and xylenes (BTEX)), Semi-volatile Organic Compounds - Base Neutral & Acid Extractables, Fuel Identification, lead, and Resource Conservation and Recovery Act metals.

Petroleum-contaminated surface soil was present throughout the tank farm's berm area, presumably from surface spills of diesel fuel. Surface soil adjacent to the former pump house was also contaminated. This contamination may have occurred during fuel transfer to and from tanker trucks.

Subsurface soil beneath the former ASTs and adjacent to the former pump house was contaminated with petroleum down to groundwater. This contamination is attributed to oiled sands used as foundation for the ASTs, as well as probable tank and piping releases. Fuel

spillage through a floor drain inside the pump house also contaminated subsurface soil to groundwater. Subsurface soil at former USTs 5-1 and 5-2 was also contaminated with petroleum. This contamination was attributed to leaking USTs and/or associated piping, not surface spills.

Non-aqueous phase liquid has been detected in a smear zone at the groundwater table inside the tank farm area intermittently during groundwater monitoring, depending on groundwater table fluctuation and remediation system operation. Free product liquid was last detected in 2011 in groundwater monitoring wells near the former tank farm.

Dissolved-phase petroleum contamination exists in groundwater in the unconfined aquifer beneath the former Tank Farm Area and USTs 5-1 and 5-2. A dissolved-phase plume also extends approximately 2,000 feet southwest of the Former Tank Farm Area. The plume from USTs 5-1 and 5-2 has migrated southwest and merged with the plume from the tank farm ASTs.

2.5.3.2 Feasibility Study

Following the RI, a human health risk assessment was conducted in 1995. A Feasibility Study to identify and evaluate approaches for mitigating contaminated soil and groundwater was conducted in 1996. The original risk-based remediation system cleanup goals for the source area soil and groundwater are presented in Table 3 - *Remediation System Cleanup Goals*:

Table 3. Remediation System Cleanup Goals

Contaminant	Goal
Soil	
Benzene (mg/kg)	0.1
Total BTEX (mg/kg)	10
DRO (mg/kg)	3,200
Groundwater	
Benzene (µg/l)	5

2.5.3.3 Remedial Actions

In 1993, KNA hired contractor to demolish and remove the two diesel ASTs and one mogas AST. After AST removal, petroleum-contaminated sand and gravel was observed beneath the ASTs. This contaminated soil was excavated, removed and stockpiled in an ADEC-approved manner north of the High Frequency Facility. Clean sand and gravel was backfilled into the shallow (approximately 2-foot deep) excavation. USTs 5-1 and 5-2, the pump house and piping connecting these facilities were also removed.

An air sparging and soil vapor extraction system was installed at the former tank farm area during 1997 and 1998. The system extended north to former USTs 5-1 and 5-2. The system injected air beneath the groundwater table and removed air from the vadose zone. This volatilized contaminants from both soil and water mediums. It also added oxygen and heat to the subsurface, which enhanced biological degradation of petroleum contamination. The system was originally started on November 14, 1997, and was operated intermittently between periods of system upgrades in 1998. The system then included 80 sparge wells, 23 sparge probes, 24 vapor

extraction wells, 2 blower buildings containing positive displacement blowers and controls, and 2 valve buildings with piping distribution manifolds.

The system was operated continuously from January 6, 1999 until November 14, 2002, except for periods of microbial respiration testing and system maintenance. As of April 2002, estimates indicated approximately 10,115 pounds of hydrocarbon (1,501 gallons of gasoline equivalent) had been removed via vadose zone biodegradation. An additional estimated 24,962 pounds of hydrocarbon (3,704 gallons as gasoline) had been removed by vapor extraction.

In 2005, an investigation was conducted using ROST/LIF followed by additional soil sampling in 2006 to evaluate system performance. System performance is summarized as follows:

- The overall hydrocarbon mass removal rate was evaluated and the system had reached near asymptotic conditions. Further operation of the system would not improve the site conditions. See Figure 5 – *Mass Removal through October 2004*.
- The benzene plume at the tank farm area, and down-gradient of the source area, had been remediated to below the cleanup goal. The cleanup goal (5 µg/l) is consistent with the 18 AAC 75.345 Table C (revised April 2012) regulatory level. Benzene is believed to be the contaminant of concern (COC) that contributes the highest risk.
- Toluene, ethylbenzene, and xylenes concentrations also have been remediated to below 18 AAC 75.345 Table C regulatory levels.
- GRO was detected at the site but only in two soil-borings (05WILDTF13SO, W06B-07) at depths of 20-25 feet bgs with a concentration of 556 and 356 mg/kg, respectively, slightly above the 18 AAC 75.341 Table B2 cleanup level of 300 mg/kg. Review of groundwater GRO concentrations over time shows a significant reduction, and suggests the GRO plume has been adequately remediated.
- DRO concentrations have decreased substantially at most monitoring wells locations. However, DRO sample concentrations remain above 1.5 mg/l at nine well locations in the core of the source area where contamination resides in the smear zone. DRO concentrations in samples from down-gradient well MW-11 also remain above 1.5 mg/l.

Review of remediation system operation and monitoring data was conducted in 2006. The remedial system reached a point of diminished return. USACE commenced treatment system decommissioning in summer 2008 with ADEC approval.

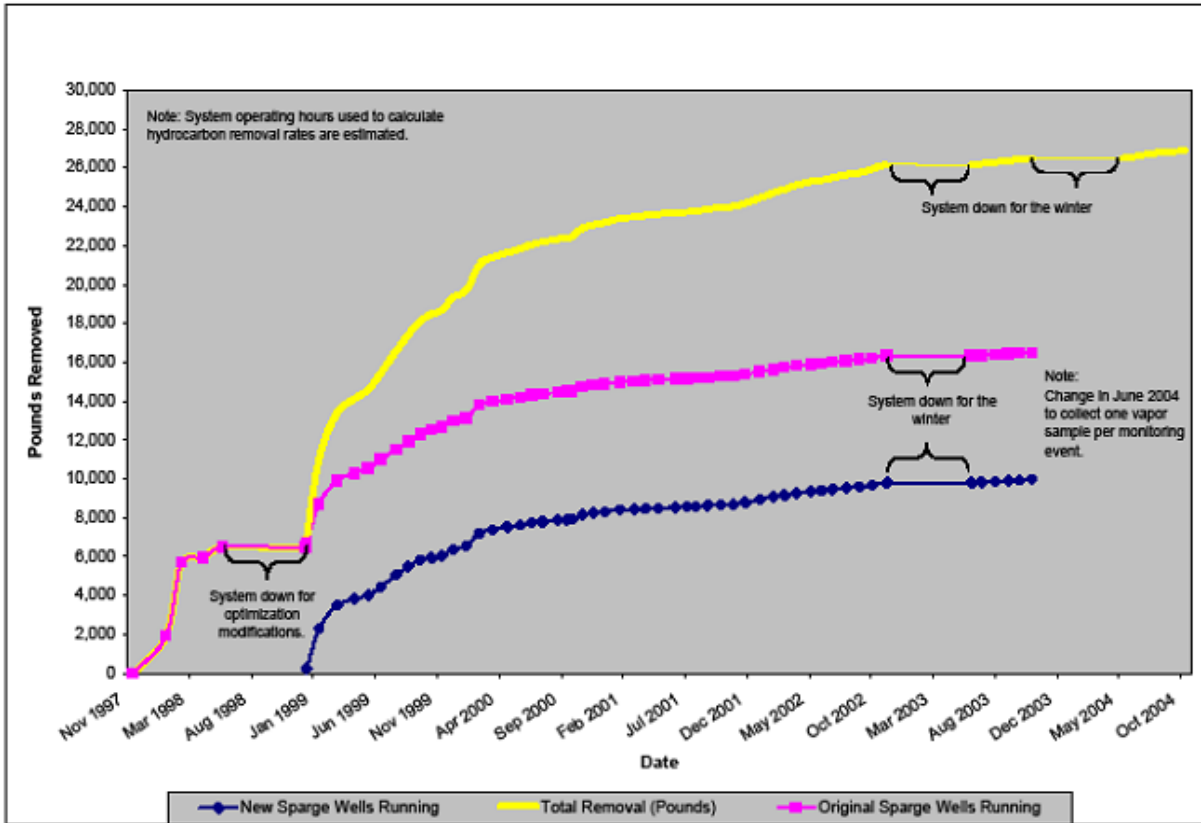


Figure 5 - Mass Removal through October 2004

2.5.3.4 Groundwater Monitoring

A groundwater monitoring program was initiated during the RI and is ongoing. Sampling was conducted quarterly from 1994 through April 2006. With ADEC approval, the groundwater sampling frequency was reduced to biannual monitoring in 2007 and annual monitoring in 2009. The program includes monitoring wells located within and down gradient of the Former Tank Farm area. Additional monitoring wells have been installed during the monitoring program, and some wells have been decommissioned.

Groundwater samples are analyzed for field parameters (pH, temperature, conductivity, turbidity, dissolved oxygen, and REDOX), GRO, DRO, and BTEX. Selected samples are also analyzed for VOCs. Results of sampling over the period of time the insitu remediation system has operated have shown a decrease in dissolved phase contaminant concentrations.

A total of 38 groundwater monitoring wells or microwells were installed at the Former Tank Farm and USTs 5-1 and 5-2 area. A total of 12 groundwater monitoring wells or microwells were installed down gradient of the Former Tank Farm area. In 2010, 19 monitoring wells were decommissioned.

Currently, 16 monitoring wells or microwells are still remaining within and down gradient of the Former Tank Farm and USTs 5-1 and 5-2 area. Ten of those 16 monitoring wells or microwells are programmed sampling annually as shown in Figure 3 – *Parcels and Groundwater Plume*.

2.5.4 Nature and Extent of Contamination

The only contaminants left at the site above the most stringent ADEC Method Two cleanup level are DRO in subsurface soil and groundwater and 1,2 dichloroethane in groundwater. GRO was detected in a single subsurface soil boring slightly above the ADEC Method Two cleanup level during the 2005 sampling event but this occurrence was not repeated in other samples. All other COCs such as BTEX, VOCs, semi-volatile organic compounds (SVOCs) were remediated to a level below ADEC cleanup levels.

Table 4 - *Maximum Concentration of Contaminants Remaining at the Site* compares the maximum concentrations of the remaining contaminants detected in soil and groundwater samples with ADEC cleanup levels.

Table 4. Maximum Concentration of Contaminants Remaining at the Site

Contaminant	Concentration	ADEC Cleanup Level
Soil		
DRO (mg/kg)	5,320	250
GRO (mg/kg)	356	300
Groundwater		
DRO (mg/l)	6.4	1.5
Benzene (µg/l)	2.7	5
1,2 dichloroethane (µg/l)	7.6	5

Soil samples from seven borings drilled at the former tank farm site were analyzed for DRO, GRO, BTEX and SVOCs during the 2005 and 2006 site evaluation investigation conducted by USACE. The highest detected DRO concentration was 5,320 mg/kg at 25 to 27 feet bgs. This detection exceeds the most stringent ADEC Method Two cleanup level of 250 mg/kg.

Groundwater samples have been collected since 1993 during the RI. The most recent data shows DRO continues to persist above cleanup levels at 5 monitoring wells within or down gradient of the treatment area. One of which (MW-16) is adjacent to slightly down-gradient from the Former Diesel USTs 5-1 and 5-2. The other 4 wells with persistent elevated DRO concentrations are within or down-gradient of the Former Tank Farm area. The maximum DRO concentration was detected at a level of 6.4 mg/L at MW 4 in spring 2010. This level is approximately 4 times higher than the ADEC Table C cleanup level of 1.5 mg/l. 1,2 dichloroethane is detected above cleanup level in a single monitoring well (MW 397) consistently. Benzene was detected in one monitoring well (MW 3) above the cleanup level during the fall 2007 and spring 2008 monitoring events at a level of 6.36 µg/l and 8.81 µg/l respectively. However, during subsequent monitoring years the benzene level in groundwater dropped below cleanup level. In 2010,

benzene was below method detection limits at all monitoring wells, with the exception of MW 4 with a detection of 2.7 µg/l.

2.6 CURRENT AND FUTURE POTENTIAL LAND USES

After the USAF closed Wildwood AFS on July 1, 1972, the facility was transferred to the United States Department of the Interior, BLM, who, in 1974, transferred approximately 4,300 acres to KNA, including all property developed by the USAF. KNA used the former military housing in the complex for apartment rentals, and in 1982 leased 125 acres to the State of Alaska for use as a correctional facility. KNA sold this 125-acre tract to the ADNR in 1994. The ADOC currently operates the Wildwood Correctional Center on a portion of the property. Current land ownership is shown in Figure 4 – *Land Ownership*.

The Former Tank Farm and USTs 5-1 & 5-2 Site is within the boundaries of the Wildwood Correctional Center and access to that portion of the site is restricted. The properties to the south and southwest of the site (down-gradient) are primarily residential. The residential parcel sizes are typically 0.17 to 0.5 acres. Approximately 25% of the downgradient parcels are currently occupied residential, the remaining parcels are vacant land.

2.7 SUMMARY OF SITE RISKS

DRO contamination was detected in soil above the ADEC migration to groundwater cleanup level but below the ingestion and inhalation levels. DRO and 1,2 dichloroethane are present in groundwater above the ADEC Table C cleanup levels.

2.7.1 Human Health Risk

The potential risks to human health at the Former Tank Farm and UST 5-1 and 5-2 Site were evaluated and site-specific risk-based cleanup levels were developed in 1996. Contamination levels were compared to the site-specific risk-based levels as well as the ADEC cleanup levels in 18 AAC 75, Table B. The ADEC cleanup levels are also risk-based, but are not site-specific. The evaluation considered results from all the previous investigations of the site. Those chemicals that were detected above one-tenth of the cleanup levels were evaluated for risks to human health. There is no current risk to residents due to incidental ingestion of soil, because the contamination is deeper than 20 feet below ground surface. There is potential current risk due to ingestion of groundwater, but this exposure pathway is currently incomplete and controlled by the City of Kenai municipal code requirement to connect and utilize the public water supply.

The calculated human health risks exceeded ADEC risk standards for a future residential use scenario at the Former Tank Farm and USTs 5-1 and 5-2 Site. Under a future onsite residential scenario, complete exposure pathways include incidental ingestion or contact with soils and ingestion or contact with groundwater.

2.7.2 Environmental Risk

The remaining contamination at the project site is minor in toxicity, extent, and availability. The extent of contamination is limited to isolated areas of subsurface soil and groundwater. The type of contamination does not attract wildlife (such as antifreeze, which attracts wildlife due to its sweet odor). In addition, the site is considered lower-quality habitat than the surrounding terrain and thus is not likely to attract wildlife. The site is currently a developed area, and there are no indications that this land use will change.

The lack of sensitive receptors, the location of and low frequency of exposure, low levels of toxicity (concentration and potency), and the current use and management of the site are indications of no risk to the plant and wildlife communities or ecosystem.

2.8 REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) provide a description of what the cleanup will accomplish. These goals typically serve as the design basis for the remedial alternative which will be presented in the next section. The remedial actions will prevent current and future exposure to contamination that exceeds risk-based cleanup standards. The RAOs for the former Tank Farm and UST 5-1 and 5-2 Site are:

- Prevent human contact with subsurface petroleum contamination above ADEC soil cleanup levels.
- Prevent ingestion of groundwater with petroleum contamination above ADEC groundwater cleanup levels.

Contaminant	Cleanup Level
Soil	
DRO (mg/kg)	250
GRO (mg/kg)	300
Groundwater	
DRO (mg/l)	1.5
Benzene (mg/l)	0.005
1,2 dichloroethane (mg/l)	0.005

These RAOs were developed based on the currently and reasonably anticipated future land use of the Former Tank Farm and USTs 5-1 & 5-2 Site as described in Section 2.6.

These RAOs address reducing the concentration of petroleum contamination in groundwater below State of Alaska groundwater criteria (18 AAC 75) and preventing exposure to subsurface petroleum contaminated soil at the Former Tank Farm and USTs 5-1 & 5-2 Site. Alaska's Site Cleanup Rules (18 AAC 75 Article 3 Oil and Other Hazardous Substances Pollution Control) are risk based and indicative of when an imminent and substantial endangerment to the public health

or welfare or the environment has been mitigated, and will allow for unrestricted land use and access at Former Tank Farm and USTs 5-1 & 5-2 Site once cleanup actions at this site are complete.

2.9 DESCRIPTION OF ALTERNATIVES

Alternatives were developed to address remediation at Former Tank Farm and USTs 5-1 & 5-2 Site. This section provides a summary overview of the components of those alternatives. The alternatives were analyzed using the evaluation criteria as described in the 1996 Feasibility Study, as well as regulatory and community acceptance. Following are the alternatives evaluated for the site:

- Alternative 1: No further remedial action
- Alternative 2: Natural Attenuation with Monitoring and Institutional Controls

Alternative 1 – No Action

This alternative involves no action or costs at the site. This option would reduce the contamination to below state cleanup levels over time. However, monitoring of the contamination level at the site would not occur.

Alternative 2 – Natural Attenuation with Monitoring and Institutional Controls

The natural attenuation option includes monitoring over time the degradation of fuel contamination. Contamination levels, fate and transport, and the concentration of the products of degradation would be monitored annually for a period of five years to evaluate the natural attenuation progress. The monitoring frequency will be evaluated in the first periodic review (i.e., after five years) and may be modified with ADEC concurrence. Monitoring may be discontinued when groundwater cleanup levels are achieved. There will be a higher level of effort in the first year or two when the focus is on determining the rates of degradation. After the initial work, monitoring the natural attenuation process will consist of periodic sampling and analysis to confirm that fuel compounds are being degraded and cleanup levels will be reached within a reasonable time frame. The sampling must also verify that contamination is not spreading. Natural attenuation will involve developing models, collecting samples for analysis, and monitoring to ensure remediation goals are met.

Institutional controls are actions that help reduce the potential for human exposure to contamination by restricting the interaction of people with the contamination. Institutional controls for the Former Tank Farm and USTs 5-1 & 5-2 Site include recording a Notice of Environmental Contamination entry at the State Land Recorders Office and distribution of an information packet to the City of Kenai, and landowners and leaseholders of property intersecting the contaminated groundwater plume. The information packet and Notice of Environmental Contamination recording will summarize the history of the contamination and indicate the contaminated areas.

The City of Kenai Municipal Code, Chapter 17.10 Connection to Public Water System, Section 17.10.010 has a mandatory requirement for all residential or commercial structures susceptible to being or currently being a source from which water is being used, to be connected to the City of Kenai public water system provided that any part of the structure is or is to be within two hundred feet (200') of an existing public water main. It is also mandatory for the owner, operator, or users of private well supplying water to a structure to connect to the available municipal water system and the abandonment of well(s) no longer being utilized. All the downgradient-impacted properties where dissolved contamination exists in groundwater are within 200' of the existing public water main. There are no known private water wells being utilized in the site vicinity. All built structures downgradient of the contaminated plume, with the exception of residential parcel 03906401, are currently connected to the City of Kenai public water system. Residential parcel 03906401 contains a seasonal cabin without running water.

The City of Kenai Department of Public Works (DPW) will be notified of the presence of all monitoring wells located within roads which are owned and maintained by the City, so that the City Master Plan ensures any construction activity associated with the roads will not damage or destroy the contamination monitoring wells.

2.10 SELECTED REMEDY

The primary indicator of remedial action performance will be satisfying the RAOs for the Former Tank Farm and USTs 5-1 & 5-2 Site and protecting human health and the environment. It is anticipated that successful implementation, operation, maintenance, and completion of the performance measures will achieve a protective and legally compliant remedy for Former Tank Farm and USTs 5-1 & 5-2.

The remedy for the Former Tank Farm and USTs 5-1 & 5-2 Site is Alternative 2 – Natural Attenuation with Monitoring and Institutional Controls. Alternative 2 is protective of human health and the environment and is acceptable to the community.

2.10.1 Summary of the Rationale for the Selected Remedy

The selected remedy for Former Tank Farm and USTs 5-1 & 5-2 Site is Alternative 2 – Natural Attenuation with Monitoring and Institutional Controls. The USACE believes that the selected remedy provides the best balance of among the alternatives. The remedy is expected to satisfy the following remedy selection criteria:

- Protectiveness
- Regulatory Compliance
- Short and Long-term effectiveness
- Reduction in toxicity
- Practicability/Implementable

- Cost
- Public and Regulatory Acceptance

Alternative 1 does not meet all of the above criteria because it does not assure regulatory compliance, address short-term risk or long-term effectiveness, and will fail to gain public acceptance.

Alternative 2 meets all of the above criteria. Alternative 2 is both protective of human health and the environment. The use of ICs will restrict exposure to groundwater and subsurface contaminated soil, reducing risk to human health. Alternative 2 meets the criteria of short-term risk and long-term effectiveness. Alternative 2 is acceptable to both the State of Alaska and the community of Kenai.

2.10.2 Description of the Selected Remedy

The selected remedial action at Former Tank Farm and USTs 5-1 & 5-2 Site is Alternative 2 – Natural Attenuation with Monitoring and Institutional Controls. Major components of the selected remedy include:

- Residual contaminated soil present at >15 feet below ground surface will be left in place.
- Natural attenuation of groundwater with monitoring.
- Groundwater will be monitored annually for five years to document and evaluate the natural attenuation progress and remaining level of DRO and 1,2 dichloroethane contamination at the site. Groundwater monitoring frequency may be revised after the first Periodic Review (i.e., after five years) with ADEC concurrence. Data will be re-evaluated every sampling event until groundwater contaminant levels at the site meet the ADEC Table C criteria.
- Implementation of informational devices including a Notice of Environmental Contamination recorded with the State of Alaska Recorder's Office for each parcel with impacted soil and/or groundwater. The Notices of Environmental Contamination will document the areas with residual soil or groundwater contamination, and describe the requirements for managing residual contamination in accordance with 18 AAC 75.325. ADEC approval is required prior to moving contaminated soil off-site and prior to using or pumping and discharging contaminated groundwater. Table 2 identifies parcels that have contaminated soil or groundwater and Figure 3 shows the parcels intersecting the groundwater plume. A second Notice of Environmental Contamination may be recorded when groundwater contamination levels achieve the cleanup levels.
- An information package will be provided to the City of Kenai and affected landowners summarizing the history of the contamination and indicating the areas with residual soil or groundwater contamination and the location of groundwater monitoring wells within roadways. The information packages may be updated as necessary during periodic reviews.

- Periodic reviews will be conducted every five years to evaluate the remedy, determine when cleanup levels have been achieved, and verify land use controls remain effective.

It is important to note that the remedy may change somewhat as a result of the remedial design and implementation process (i.e., development of the Long-term Management Plan). USACE will seek prior ADEC concurrence for any changes to the remedy described in this DD.

2.10.3 Summary of Estimated Remedy Costs

The estimated cost for the selected remedy described above is \$20,000 for the Remedial Action-Construction (RA-C) phase (e.g., landowner coordination), and \$2,520,000 for the long term management (LTM) phase (e.g., annual groundwater monitoring, periodic reviews, and well abandonment). This is a rough order of magnitude engineering estimate that is expected to be within +50 to -30 percent of the actual project cost. The costs were estimated using the Remedial Action Cost Engineering and Requirements (RACER) tool that estimates costs for all phases of remediation. The estimate assumes groundwater cleanup levels will be achieved via natural attenuation within 30 years. Annual groundwater monitoring occurs for an estimated 25 years, periodic reviews occur every 5 years for 30 years (6 events), and all groundwater monitoring wells will be properly abandoned prior to site closeout.

2.10.4 Expected Outcome of the Selected Remedy

The expected outcome of the remedial action is unrestricted land use at the Former Tank Farm and USTs 5-1 & 5-2 Site for residential, recreational and subsistence uses.

2.11 DETERMINATIONS

USACE attempts to select remedies that are protective of human health and the environment, comply with legal requirements, are cost effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. The following subsections discuss how the selected remedy meets these goals.

2.11.1 Protection of Human Health and the Environment

The selected remedy, Natural Attenuation with Monitoring and Institutional Controls, is protective of human health and the environment. Under a future residential scenario, complete exposure pathways include incidental ingestion or contact with soils and ingestion or contact with groundwater. The selected remedy provides protection by implementing land use controls to prevent use of groundwater until the remedial action objectives are achieved through natural attenuation. The selected remedy, Alternative 2 will be protective of human health and the environment by assuring that DRO in subsurface soil and groundwater and 1,2 dichloroethane in groundwater is remediated to cleanup levels for unrestricted future use.

2.11.2 Compliance with Pertinent Regulations

The DERP provides authority to cleanup petroleum contamination when it may pose an imminent and substantial endangerment to public health, welfare or the environment. Alaska's Site Cleanup Rules (18 AAC 75 Article 3 Oil and Other Hazardous Substances Pollution Control) are risk based and indicative of when an imminent and substantial endangerment to the public health or welfare or the environment has been mitigated, and is the basis for the selected actions. The remedial actions will prevent current and future exposure to contamination that exceeds risk-based, site-specific cleanup standards. The selected remedy will eventually meet the risk-based cleanup levels for petroleum hydrocarbons.

2.12 DOCUMENTATION OF SIGNIFICANT CHANGES

No significant changes have been made to Alternative 2 since it was evaluated during the 2011 public review of the Proposed Plan.

3.0 PART 3: RESPONSIVENESS SUMMARY

This section provides a summary of the public comments regarding the *Proposed Plan for the Former Tank Farm and USTs 5-1 & 5-2 Site, Wildwood Air Force Station, May 2011*.

The public was encouraged to participate in the decision making process for the proposed remedial actions during two public comment periods in 1996, prior to remedial action, and in June 2011 following remedial action. The Proposed Plans were released to the public during a Public Meeting held June 6, 2011 and were available online.

A public meeting was held at the Challenger Learning Center in Kenai on June 6, 2011. The meeting was open to the public and was advertised in the local newspaper, the *Peninsula Clarion*, but was sparsely attended. The following questions were presented at the meeting:

COMMENT

Does the area north of Wildwood Drive (by the KNA property) that is currently undeveloped have access to municipal water?

RESPONSE

Service is available on Wildwood Drive and on the west side of the Kenai Spur Highway on Cook Inlet View Dr. and Lilac Ln. Service may be available at a future date to any properties within the City of Kenai. For more information, contact the City of Kenai Public Works Department:

Public Works Director
210 Fidalgo Avenue
Kenai, Alaska 99611
Phone (907) 283-7535 Ext. 240
Fax (907) 283-3014

COMMENT

Will KNA and private landowners be notified of the groundwater and soil contamination?
Will an actual Deed Notice be sent to the recorder's office?

RESPONSE

All landowners and leaseholders affected by the contamination have been notified and will continue to be notified of updates. All relevant documents are available in the Administrative Record housed at the:

Kenai Community Library
163 Main Street Loop
Kenai, AK 99611
(907) 283-4378

Deed Notices will be recorded in the ADNR Land Records for the affected properties to prohibit the disturbance of soil at the Former Tank Farm and USTs 5-1 & 5-2 Site and disturbance of soil below 15' bgs at the affected offsite impacted properties without prior approval by ADEC.

A Deed Notice will be recorded in the ADNR Land Records and a Notice will be filed with the City of Kenai to restrict use of ground water for domestic use on the impacted properties.

4.0 PART 4: REFERENCES

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Attachment A – Notice of Public Meeting



**US Army Corps
of Engineers
Alaska District**

PUBLIC MEETING

**Proposed Plan for the Former Tank Farm and USTs
5-1 & 5-2 Site, former Wildwood Air Force Station, a
Formerly Used Defense Site**

The U.S. Army Corps of Engineers has scheduled a public meeting to present the Proposed Plan for the Former Tank Farm and USTs 5-1 & 5-2 at the former Wildwood Air Force Station, a Formerly Used Defense Site located near Kenai, Alaska. Wildwood Air Force Station was used by the Army and Air Force as a communications facility from 1953 to 1972.

Corps representatives will provide information on the proposed plan and answer any questions the public may have. The purpose of the proposed plan is to present the recommended remedial action for the site, to request public comment, and to provide information on how the public can be involved in the final decision. Copies of the Proposed Plan can be downloaded at: <ftp://ftp.usace.army.mil/pub/poa/wildwood/>

Monday, June 6
6 - 8 p.m.

Challenger Learning Center
9711 Kenai Spur Highway

For more information, please call 907-753-2578