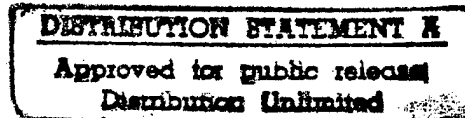



United States Air Force

**611th Air Support Group
611th Civil Engineer Squadron**

**Tin City
Long Range Radar Station, Alaska**

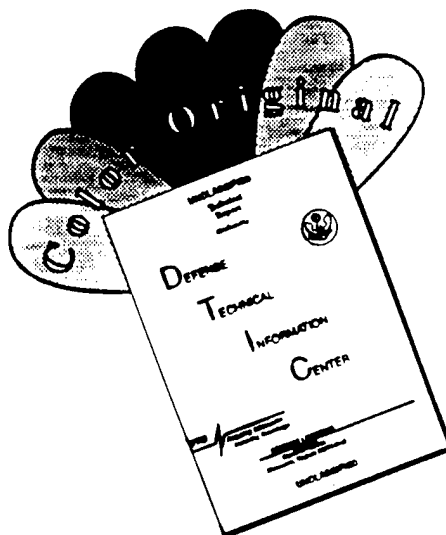


Final Management Action Plan

August 20, 1996

19960828 030

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RESPONSE TO
HQ PACAF/CEVR COMMENTS
ON

TIN CITY LRRS DRAFT MANAGEMENT ACTION PLAN (28 MAY 96)

1	Pg. 1-2	IRP objectives should be tailored toward Tin City and not so general.	Added text provided by Tim Hansen (AF611th).
2	Pg. 1-2	Paragraph following "IRP objectives" should also identify the Air Force relative risk goals.	Added text provided by Tim Hansen (AF611th).
3	Pg. 2-3 Chap 2.1.4	Source SS14 appears to have originated after the cutoff date of Jan 84. Need to explain the basis for identifying this area as an IRP site.	Air Force personnel have documentation that source SS 14 "spans" 1984 and therefore is included.
4	Chap 2.1.9 2.2.3	Site information presented in chapters 2.1.9 and 2.2.3 does not mesh with your Schedule To Complete (STC) developed in response to our 11 June 96 memo. For example, the STC shows sites SS07, SS04 (SD04?), ST12, and SS14 as requiring RD/RA while chapters 2.1.9 and 2.2.3 indicate that these sites qualify for No Further Response Action Planned (NFRAP) status.	Clarified site information and no further response action planned status of sites in Sections 2.2.3 and 2.2.4.
5	Chap 2.3	This chapter should discuss on-base, non-Air Force tenants, show where these tenants reside (or have resided), and describe the restoration work they are accomplishing or have accomplished.	Added discussion based on Air Force information regarding the FAA site, the only on-base, non-Air Force tenant.
6	Table 4	Table 4 is missing relative risk information for the active IRP sites. Regulatory interaction data in Table 4 does not correspond with the STC which shows sites SS07, SS04 (SD04?), ST12, and SS14 as requiring RD/RA. Table 4 indicates these sites qualify for NFRAP status. Also, ensure that the data in Table 4 corresponds with updated Work Information Management System (WIMS) site data.	Added relative risk to Table 4. Relative is noted as "not applicable" to sites that were closed prior to preparing relative risk information.
7	Pg 4-1 Chap 4.1.2	Missing environmental restoration site strategy narrative.	Added Section 4.1.2.1, Restoration Site Strategy. Text supplied by Tim Hansen (AF611th).
8	Pg 5-1 Chap 5.1	Environmental Restoration Schedule needs to include future planned actions for site closure with supporting narrative identifying all significant assumptions. This schedule should coincide with your STC timelines submitted in response to our 11 June 96 memo.	Added environmental restoration activities supplied by Tim Hansen (AF611th) to Chapter 5.1 and Schedule in Figure 12.
9	Appendix A	Appendix A funding data should be provided which corresponds to your STC timelines submitted in response to our 11 June 96 memo and your Cost to Complete data provided in response to our 12 Feb. 96 message. Also, site phase data needs to match up with your updated WIMS site data.	Air Force personnel indicate that fiscal year funding requirements/costs are not provided here. As requested, a note was inserted stating that documentation is to be obtained from the Air Force Program Manager.
10	Pg 6-3 Chap 6.9	No Appendix F with relative risk evaluations.	Reordered appendices to match MAP Guidance Document.

**Appendix A-1
Site Level Cost Summary
Tin City LRRS**

Relative Risk Rating	Site Name	Phase	\$ FY96 ¹	\$ FY97 ¹	\$ FY98 ¹ (CTC) ²
N/A ³	SS 01 Waste Accum Area	NFRAP ⁴ 1988			
N/A ³	LF 02	NFRAP ⁴ 1988			
N/A ³	LF 03	NFRAP ⁴ 1988			
N/A ³	SD 04	NFRAP ⁴ 1988			
N/A ³	OT 05	NFRAP ⁴ 1988			
N/A ³	SS 06	NFRAP ⁴ 1988			
N/A ³	SS 07	NFRAP ⁴ 1988			
N/A ³	DP 08	NFRAP ⁴ 1988			
N/A ³	LF 09	NFRAP ⁴ 1988			
N/A ³	LF 10	NFRAP ⁴ 1988			
High	DP 011	RD/RA ⁵			0.20 (0.21)
Medium	ST 12	RD/RA ⁵			0.40 (0.41)
Low	SS 13	Proposed NFRAP 1997			**
Low	SS 14	Proposed NFRAP 1997			**
N/A ³	AOC 1	Proposed NFRAP 1997			**
N/A ³	AOC 2	Proposed NFRAP 1997			**
N/A ³	AOC 3	Proposed NFRAP 1997			**

¹Cost in millions of dollars

²Cost to complete

³N/A = Not Applicable

⁴NFRAP = No Further Action Planned

⁵RD/RA = Remedial Design/Remedial Action

*Cost information is not available

**NFRAP Decision Document Drafted In-house

Appendix A-2
Funding Requirements by Fiscal Year for Compliance Projects
Tin City LRRS

Program Area/Project Description	\$FY96 ¹	\$FY97	\$FY98	\$FY99	\$FY20	\$FY01
UST Projects						
Bulk Storage Tanks	3.5					

¹Cost in millions

**Appendix A-3
Past Restoration Costs by Phase
Tin City LRRS**

	PA/SI	RI/FS	RD	RA	IRA	LTO	LTM	Closeout
FY87								
FY88								
FY89								
FY90								
FY91								
FY92								
FY93								
FY94								
FY95		529.7 ¹			399.5 ¹			

¹ Cost in Thousands of Dollars

Legend:

- PA/SI = Preliminary Assessment/Site Inspection
- RI/FS = Remedial Investigation/Feasibility Study
- RD = Remedial Design
- RA = Remedial Action
- IRA = Interim Removal or Remedial Action
- LTO = Long-Term Operation
- LTM = Long-Term Monitoring
- NFRAP = No Further Response Action Planned

Tin City
Long Range Radar Station, Alaska
Final Management Action Plan

August 20, 1996

Prepared for
611th Civil Engineer Squadron
Environmental Management Flight
Elmendorf Air Force Base, Alaska

Prepared by
EA Engineering, Science, and Technology, Inc.
and
Montgomery Watson Americas
Contract F41624-94-8052-0010

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PREFACE

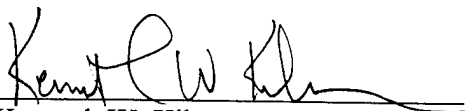
EA Engineering, Science and Technology (EA) and Montgomery Watson Americas (Montgomery Watson) are contractors for the Remedial Investigation/Feasibility Study (RI/FS) program which includes this Management Action Plan (MAP) at Tin City Long Range Radar Station (LRRS), Alaska. This work is performed for the Air Force Center for Environmental Excellence (AFCEE), F41624-94-D-8052-0010, Delivery Order 0010.

This MAP presents a status summary of environmental restoration and compliance programs, and comprehensive strategies for implementing environmental response actions necessary to protect human health and the environment at the Tin City LRRS.

The principal EA manager is Mr. Kenneth W. Kilmer, who serves as Program Manager for the joint EA/Montgomery Watson team.

The work presented herein was performed between 1 April 1996 and 20 August 1996. Mr. Robert Garland, Air Force Center for Environmental Excellence, Environmental Restoration Division (AFCEE/ESR) is the Contract Officer's Representative.

Approved:



Mr. Kenneth W. Kilmer
Program Manager

NOTICE

This Final Management Action Plan (MAP) has been prepared for the United States Air Force by EA Engineering Science and Technology, Inc. and Montgomery Watson to present a status summary of environmental restoration and compliance programs, and comprehensive strategies for implementing environmental response actions necessary to protect human health and the environment. The limited objectives of this Final MAP and the ongoing nature of the Installation Restoration Program, along with the evolving knowledge of site conditions and chemical effects on the environment and health, must be considered when evaluating this Final MAP since subsequent facts may become known that may make this Final MAP premature or inaccurate.

Copies of this Final MAP may be purchased from:

- a. Government agencies and their contractors registered with the Defense Technical Information Center (DTIC) should direct requests for copies of this Work Plan to: Defense Technical Information center, Cameron Station, Alexandria, VA 22304-6145.
- b. Non-Government agencies may purchase copies of this document from: National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.

REPORT DOCUMENTATION PAGE

OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection or information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE August 20, 1996	3. REPORT TYPE AND DATES COVERED Final Management Action Plan	
4. TITLE AND SUBTITLE Final Management Action Plan Tin City Long Range Radar Station, Alaska			5. FUNDING NUMBERS Contract No.: F41624-94-D-8052 Delivery Order: 0010	
6. AUTHOR(S) EA Science, Engineering and Technology, Inc. and Montgomery Watson				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) EA Science, Engineering and Technology, Inc. 601 West 41st Avenue Anchorage, AK 99503 Montgomery Watson 4100 Spenard Road, Anchorage, AK 99517			8. PERFORMING ORGANIZATION REPORT NUMBER None	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Department of the Air Force Air Force Materiel Command HSC/AK 8005 9th Street Brooks Air Force Base, Texas 78235-5353			10. SPONSORING/MONITORING AGENCY REPORT NUMBER F41624-94-D-8052-0010	
11. SUPPLEMENTARY NOTES None				
12a. DISTRIBUTION/AVAILABILITY STATEMENT			12b. DISTRIBUTION CODE None	
13. ABSTRACT (Maximum 200 words) The Tin City Long Range Radar Station (LRRS) Management Action Plan (MAP) presents a status summary of environmental restoration and compliance programs, and comprehensive strategies for implementing environmental response actions necessary to protect human health and the environment.				
14. SUBJECT TERMS Final Management Action Plan			15. NUMBER OF PAGES	
			16. PRICE CODE None	
17. SECURITY CLASSIFICATION OF REPORT U	18. SECURITY CLASSIFICATION OF THIS PAGE U	19. SECURITY CLASSIFICATION OF ABSTRACT U	20. LIMITATION OF ABSTRACT U	

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ACRONYMS

AAC	Alaska Air Command
ACCI	ACCI, Inc.
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish & Game
ADNR	Alaska Department of Natural Resources
AFB	Air Force Base
AFCEE	Air Force Center for Environmental Excellence
AMNWR	Alaska Maritime National Wildlife Reserve
AOC	Areas of Concern
ARAR	Applicable or Relevant and Appropriate Requirement
AST	Above-ground Storage Tanks
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CES	Civil Engineering Squadron
CEVC	Civil Engineering Environmental Compliance
CEVR	Civil Engineering Environmental Restoration
CFR	Code of Federal Regulations
CSM	Conceptual Site Model
DD	Decision Document
DERA	Defense Environmental Restoration Account
DOD	Department of Defense
EA	EA Engineering, Science, and Technology, Inc.
EAMW	EA Engineering, Science, and Technology, Inc./Montgomery Watson Americas, Inc.
ES	Engineering-Science
FAA	Federal Aviation Administration
FS	Feasibility Study
ft	Feet
GE	GE Government Services, Inc.
HARM	Hazard Assessment Rating Methodology
HRS	Hazard Ranking System
IRA	Interim Remedial Action
IRP	Installation Restoration Program
IRPIMS	Installation Restoration Program Information Management System
JSS	Joint Surveillance System
LRRS	Long Range Radar Station
LTT	Long Tramway Terminal
m	Meter
m ³	Cubic Meter
MAP	Management Action Plan
MAR	Minimally Attended Radar
mg	Milligram

mg/kg	Milligrams per Kilogram (parts per million)
mg/L	Milligrams per Liter (parts per million)
MILCON	Military Construction
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NFRAP	No Further Response Action Planned
NPL	National Priorities List
OU	Operable Unit
PA	Preliminary Assessment
PCB	Polychlorinated Biphenyls
PHS	Public Health Service
PLO	Public Land Order
POL	Petroleum, Oil, Lubricants
RA	Risk Assessment
RAB	Restoration Advisory Board
RD/RA	Remedial Design/Remedial Action
RI	Remedial Investigation
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SI	Site Investigation
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxic Characteristic Leaching Procedure
TPH	Total Petroleum Hydrocarbons
TSD	Technical Support Document
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
UST	Underground Storage Tank
WACS	White Alice Communications Station
WCC	Woodward-Clyde Consultants
WIMS-ES	Work Information Management System - Environmental Subsystem

EXECUTIVE SUMMARY

The environmental restoration program at Tin City LRRS has been in place for over 10 years. Past operations and waste management practices have been examined and source discovery and assessment efforts are complete. Two sites where elevated levels of petroleum were detected in soils have been identified for remedial action. At one site, ST 12, the former location of an underground fuel storage tank, administrative procedures were changed immediately to minimize the potential for adverse environmental impact. At the other site, DP 011, petroleum-containing soils at locations where drums were previously stored, remedial action has been selected and remedial action is pending allocation of funds.

Environmental compliance activities at the site primarily involve the non-hazardous waste landfill and bulk fuel storage facilities. The Air Force maintains an active, permitted solid waste landfill at Tin City LRRS for the disposal of non-hazardous waste. The site also operates a bulk fuel storage facility for Air Force use. The bulk fuel facility consists of two above-ground fuel storage tanks. The system is scheduled for upgrade in the summer of 1996 to meet the requirements of current state and federal environmental regulations. The project schedule may be postponed to 1997, because of budget short-falls.

Future environmental projects include decommissioning of selected out-of-service facilities. In 1999, the out-of-service power plant is scheduled for decommissioning and demolition under the Air Force Clean Sweep program.

The Air Force Cost Reduction Initiative may have some impact on environmental projects at Tin City LRRS. The initiative will examine the feasibility of operating the site as an unmanned station in the future. Some modifications to the environmental program at Tin City may be appropriate, if the station is unmanned.

A Trading Post is located adjacent to the site and unwanted Air Force property has been transferred to the Trading Post owner in the past. Much of the property retains its Air Force markings and is in a state of disrepair. Resolving the material management practices and identifying ways to assure that the transferred property does not become the responsibility of the Air Force should it be abandoned, is important to reducing the Air Force's future liability and associated costs. Resolving this issue has the highest potential for cost payback to the Air Force.

There is no community located at Tin City LRRS, however, the site is accessible by a dirt road from the Native Village of Wales, which is located about 5.5 miles away. Access to the site by road is not available from any other community. Residents of Wales have been contacted, but did not show an interest in participating in environmental decision-making at Tin City LRRS. The community will be approached periodically to reassess interest.

1. INTRODUCTION

The Tin City Long Range Radar Station (LRRS) Management Action Plan (MAP) presents a status summary of environmental restoration and compliance programs, and comprehensive strategies for implementing environmental response actions necessary to protect human health and the environment.

The Tin City LRRS MAP presents the following information:

- Description of environmental restoration program objectives; introduction to the MAP and project team; and a brief history of installation operations (Section 1).
- Summary of the environmental condition of the Tin City LRRS with emphasis on the adequacy of previous source discovery and assessment efforts. Identification of any off-base property associated with the Tin City LRRS (Section 2).
- Description of the status of the Tin City LRRS environmental restoration program, including restoration-related compliance projects, and community involvement efforts. Summary of information on all IRP sites, areas of concern (AOCs), zones and/or operable units at the Tin City LRRS (Section 3).
- Description of strategies and plans for completing the environmental restoration program. Specifically, a description of strategies and projects (e.g., zones, operable units) for investigating and remediating contamination, and summary of remedy selection and community involvement strategies (Section 4).
- Presentation of detailed schedule information on existing restoration and future restoration-related projects. Identification of dates and issues for upcoming Project Team meetings (Section 5).
- Description of specific technical and/or administrative issues to be resolved by the Tin City LRRS project team. Identification of action items and strategies for resolving these issues (Section 6).

1.1 ENVIRONMENTAL RESPONSE OBJECTIVES

The objective of the USAF IRP program is to assess past activities at USAF installations and to develop remedial actions consistent with the National Oil and Hazardous Substance Pollution Contingency Plan (NCP) for those sites which pose a threat to human health and/or the environment. Over the years, the IRP was developed to ensure Department of Defense (DOD) compliance with federal laws such as the Resource Conservation and Recovery Act (RCRA), title CERCLA, and title SARA. Executive Order 12316, executed in 1981, gave various federal agencies, including the DOD, the responsibility to act as lead agencies to conduct investigations

and implement remedial efforts when they are the sole or co-contributor to the contamination on or off DOD property.

The IRP objectives at Tin City LRRS are to:

- identify and evaluate four IRP sites and three AOCs where contamination may be present because of past hazardous waste disposal practices or spills;
- control the migration of hazardous contaminants at the sites; and
- control health hazards or hazards to the environment that may result from past installation operations.

The IRP was also developed to meet Applicable or Relevant and Appropriate Requirements (ARARs), be technically feasible to implement, and be cost effective. With the ultimate goal of site cleanup and closure, IRP follows Air Force relative risk criteria and a four-step remedial action process, similar to the CERCLA process. The four steps include the following:

- **Preliminary Assessment/Site Investigation (PA/SI)** is the process in which records are reviewed, sites are inspected, and interviews are conducted to identify sites where hazardous substances may have been released. Some testing may be done to determine if more investigation is required.
- **Remedial Investigation/Feasibility Study (RI/FS)** is the process in which sites are investigated to determine the nature and extent of contamination (and thus any threat to human health or the environment). A risk assessment (RA) is done to verify complete exposure pathways and estimate contaminant levels that protect human and ecological receptors (identifying the need to remediate and appropriate remediation requirements). During the FS, the appropriate method for remediating a site is identified and recommended.
- **Remedial Design/Remedial Action (RD/RA)** is the process of designing and implementing the selected remedial method/alternative. Included in this process is the long-term monitoring and verification to assess the effectiveness of remediation.
- **Site Closure** is the process in which the regulating authority, federal, state, or local environmental regulators, verifies that a site requires no further response action.

The Air Force relative risk is based on high, medium, and low levels of a contaminant hazard factor, migratory pathway factor, and a receptor factor.

The environmental restoration efforts at Tin City LRRS have proceeded in accordance with these steps.

1.2 MAP PURPOSE, UPDATES, AND DISTRIBUTION

The objective of this MAP is to integrate all Tin City site restoration activities and project team decisions into a single planning document. This MAP should be used as a road map for the site restoration efforts recommended in the RI/FS, and for incorporating changing restoration actions over the long planning period.

This Tin City LRRS MAP will be distributed to IRP team members, restoration advisory board members (if one is formed in the future), and appropriate USAF agencies. It will be used by these parties to direct and monitor ongoing environmental response actions, and to identify, prioritize, and schedule additional activities. The MAP will be updated periodically to accurately reflect the current status of environmental response activities at the Tin City LRRS.

1.3 PROJECT TEAM

The Tin City LRRS project team is lead by the USAF remedial project manager for the 611th Civil Engineering Squadron (611 CES). Project team meetings are the primary method of resolving technical issues, reaching consensus on decisions with state and federal regulators, and addressing any community concerns. Table 1 lists the team members, their address and phone, and their specific project role.

In accordance with Air Force procedures, a Restoration Advisory Boards (RAB) will be established if local residents are interested in participating in the environmental decision making process at Tin City LRRS. Because there are no local residents of Tin City, the Air Force identified residents of the Village of Wales, Alaska and the Tin City Trading Post Operator as the local community.

Restoration Advisory Boards bring together people who reflect diverse interests within the local community, enabling a continued flow of information between the affected community, the USAF, and environmental oversight agencies. RABs were created to ensure that all stakeholders have a voice and can actively participate in a timely and thorough manner in the review of restoration documents.

In 1995, initial mailers were sent to the approximately 165 postal patrons in the adjacent community of Wales regarding interest in establishing a RAB. No responses to the mailer were received, therefore, no RAB was established. The community will be approached again in 1996 to assess interest in establishing a RAB. In accordance with new USAF guidance, the community will be approached every two years to re-assess interest in a RAB.

1.4 HISTORY OF INSTALLATION

Tin City LRRS was one of the original permanent aircraft control and warning sites constructed in Alaska in the early 1950s. The installation at Tin City became operational as a coastal surveillance site in 1953 and was maintained by a military staff of 95. In 1985, 618 acre (250 hectare) were officially set aside for military use by Public Land Order (PLO) 5187. In 1959, the same PLO granted military use of an additional 6.2 acre (2.5 hectare) to be used for the White Alice

Communications Station (WACS). Rights-of-way exist for roads leading to the different sections of the installation. The WACS was built in 1958 replacing the high frequency radio system. The WACS was deactivated in 1975 and replaced with an Alascom-owned satellite earth terminal system. In 1977, Alaska Air Command (AAC) implemented a site support contract with RCA Services which eliminated 81 military positions at Tin City LRRS (ES 1985). A Joint Surveillance System (JSS) was installed in 1982.

Most of the land surrounding the installation was conveyed in March of 1982 to the Bering Straits Native Corporation in conjunction with the Wales Native Corporation. Several hundred hectares, located 1.9 miles (3 kilometers) northeast of the installation, are currently owned by the ADNR Division of Research and Development. The installation boundaries do not come into contact with ADNR land. The 6.2 acres (2.5 hectare) at the White Alice site were turned over to the Navy Facility Engineering Command in 1985. There are several mining claims situated between the two individual installation boundaries along Cape Creek including two mining claims that are within or intersect the installation perimeter near the Lower Camp. Both of these parcels are small (4 acre [1.6 hectare] each) and near the installation boundary. The title to this land was granted to the Bartels Tin Mining Company in 1911 (WCC 1988).

Tin City LRRS is a remote radar installation on a rocky, mountainous site, which fronts the Bering Sea near the Bering Straits (Figures 1 and 2). East of the Cape Creek valley is the installation's private airstrip. The airstrip is relatively flat with some tundra vegetation; it consists of a 4,690 foot (1,430 meter) runway, a weather station building, and the installation's active landfill.

The LRRS facility is operated and maintained by civilian USAF contractor personnel who live at the site.

Tin City LRRS consists of a Lower and Upper Camp, and is adjacent to a White Alice site. The installation has two camps and facilities in support of radar operations. The two camps are connected by road and a tramway. White Alice site was used by the USAF from the 1950s until 1970s and then turned over to the U.S. Navy (WCC 1993). The Upper Camp includes a radar dome, quarters for personnel, emergency generator, and water storage and treatment facilities. The Lower Camp includes various support facilities, including a large composite building with quarters, a mess facility, and a diesel-powered power production plant. Many of the buildings located at the facility have been abandoned and/or slated for demolition. Several buildings at the Lower Camp are no longer in use; these include the old power plant (Bldg. 110), the recreation building, a water storage building, and some fuel storage tanks (WCC 1988).

The locations of activities known or believed to involve hazardous substances and petroleum are shown on Figure 3. A history of the Tin City LRRS installation operations is summarized on Table 2. The installation had a dump area which was used for waste and construction debris from the 1950s until the late 1970s. A solid waste landfill has been operated from the 1950s to present. Several underground storage tanks (USTs) were used at the installation, but have since been removed. Above-ground storage tanks (AST) have also been used at the facility. A dump area was used as the hazardous substance collection point beginning in the 1950s until 1985, when the stored wastes were removed and the area was filled and graded. Runway oiling is not currently in practice, although it was common practice until the mid-1970s.

Mining activities took place around the Tin City LRRS site (U.S. Department of the Interior 1959), and for a short period, a community inhabited Tin City. American Tinfields operated a mill near the mouth of Cape Creek, and numerous small claims have been worked by individuals intermittently over the years. Existing information shows that the Air Force was not involved with any mining activities in this area.

1.4.1 Physiography

As shown in Figures 1 and 2, Tin City LRRS is located near the western tip of the Seward Peninsula on the Bering Sea. The elevation of the land surface at the site ranges from sea level at the beach to 2,289 feet (697.7 meter) at the top of Cape Mountain. The Lower Camp Tramway and Top Camp areas of Tin City LRRS are located on the steep, mostly barren, granitic slopes of Cape Mountain. The slopes of the mountain are cut by creek drainages, the largest of which is Cape Creek.

East of Cape Creek, the land surface is gently sloping, almost level in some areas, at an elevation of approximately 250 feet (76.2 meter). The Airstrip and Weather Station area are located on this relatively level area.

The Beach Area is a low-lying, mostly level area on the Bering Sea. The beach has a low natural berm with surface water ponded on the landward side of the berm. The Beach Area includes the former Tin City townsite, located near the mouth of Cape Creek.

1.4.2 Demographics

Tin City LRRS is an active installation and currently has a permanent, year round population of four resident civilian USAF contractor personnel (USAF 1994). The installation had higher staffing levels in the past, but staffing has decreased over time and was reported as 18 in 1985 and six in early 1992 (USAF 1991; USEPA 1992). No children are present on the site.

The Native village of Wales is located approximately 5-1/2 miles northwest of Tin City LRRS and Wales residents can travel to Tin City by a road through the mountains (Figure 2). Otherwise, the installation is surrounded by uninhabited land (Figure 1) and is accessible only by airplane or boat. Air traffic is prohibited unless prior clearance is obtained from the site commander (USAF 1991).

The Tin City former townsite, located 1/2 mile (0.80 kilometer) east of the Lower Camp, was populated in the past, but is currently abandoned, except for summer use by the Trading Post operator (ES 1985). In addition to the USAF staff, Richard Lee, the civilian trading post operator, resides in the abandoned community of Tin City during the summer.

1.4.3 Drinking Water and Subsistence Food Sources

The village of Wales is separated from the Tin City LRRS by Cape Mountain which rises from sea level to 2,289 feet (697.7 meters). The mountains are reported to create a hydraulic separation between the watersheds, effectively isolating the Tin City site (TSD/ROD 1988; USAF 1991).

Drinking water for the Tin City LRRS residents and Trading Post operator comes from two drinking water wells installed into water catchments topographically upgradient of the site.

The Tin City LRRS is not generally used by the inhabitants of Wales, except for periodic, brief visits to the Trading Post for supplies and the beach for fishing. According to local sources (PHS 1994), the population of Wales uses the following specific plants and animals in the vicinity of Wales and Tin City for subsistence food sources:

- Humpback whale and salmon around York, which is approximately 15 miles (24 kilometers) south of Tin City
- Blackberries on the cliffside between Tin City and Wales
- Salmon berries on the mountainside between Tin City and Wales
- Walrus, seal, bearded seal, and whales in the ocean between Wales and Tin City
- Moose in the mountains
- Reindeer herd which migrates between Shishmaref and Brevig

2. CONDITION OF PROPERTY

2.1 INSTALLATION-WIDE SOURCE DISCOVERY/ASSESSMENT STATUS

Several phases of IRP work have been completed at Tin City LRRS. The following is a brief summary of the work from each phase and the conclusions. Regulatory oversight in the past has been provided by USEPA and ADEC. After a Phase I records search in 1985, a PA/SI was completed in 1992. USEPA reviewed the PA/SI and decided that the facility did not qualify for inclusion on the NPL and that USEPA oversight was no longer required. ADEC has provided oversight of IRP work since that time. A chronology of previous IRP work is presented in Table 3 and source area status is listed in Table 4.

2.1.1 Phase I Records Search

In September 1985, Engineering-Science (ES) conducted a Phase I Records Search for the AAC-Northern Region, including Tin City LRRS and seven other LRRS locations (ES 1985). The purpose of the Phase I records search was to identify and prioritize locations where releases of hazardous materials might have occurred in the past, resulting in a hazard to human health or the environment. Twelve AOC at Tin City LRRS were evaluated on the basis of field inspections, reviews of AAC and installation records and files, interviews with installation personnel, and the assessment of waste characteristics, pathways for migration, potential receptors, and specific characteristics of each site related to waste management practices. Of the twelve AOC, eight sites were found to have potential for contaminant migration and contamination. The sites were: a dump at the Upper Camp (DP 08); a landfill near the runway (LF 03), a dump below the Lower Camp (LF 09), a waste accumulation area at the Lower Camp between Bldgs. 110 and 119 (SS 01); spill/leak areas at a pipeline near the incinerator at Bldg. 150 at the Lower Camp (SS 07); spill/leak at the White Alice site (SS 06); White Alice site PCB/oil disposal (DT 05); and past runway oiling (SD 04).

These sites were scored and ranked using the Hazard Assessment Rating Methodology (HARM) scoring system. Recommendations were made for additional investigation and monitoring work.

2.1.2 Technical Support Document for Record of Decision

In February 1988, Woodward-Clyde Consultants (WCC) prepared a Record of Decision (ROD) for six sites at Tin City LRRS, accompanied by a Technical Support Document (TSD) for the ROD (WCC 1988). The six sites included five of the eight sites identified in the 1985 Phase I and one additional site, named the mid-mountain dump (Figure 4). The remedy selected for all six sites was no further action. The ROD was signed by representatives of the USAF, the USEPA Region 10, and ADEC between February 1988 and September 1988.

Two sites identified in the Phase I study were not addressed in the ROD or the TSD. The landfill near the runway (LF 03) was not addressed because it was currently permitted by ADEC. The White Alice facility (including SS 06 and DT 05) was not addressed because it had been transferred

to the Department of the Navy prior to February 1988 and therefore is outside the scope of USAF IRP work.

The TSD was based on the Phase I report prepared by ES in 1985, a 1987 site visit conducted by WCC and USAF personnel, a comprehensive literature search and review, an inventory of the known chemicals and hazardous materials at the facility, and a Priority Assessment Form submitted by the USEPA. The analysis included a qualitative RA and an analysis of alternatives. The TSD was prepared following a 1987 field visit which verified that cleanup activities had occurred at several of the Phase I sites and that no evidence of contamination was observed at the sites where cleanup had not occurred.

The "no action" alternative was selected as the preferred alternative for all sites because it presented the lowest or same risk to human health as other alternatives and also had a lower environmental and economic cost than any other alternatives at each of the sites.

The decision documents for the NFRAP sites are summarized in Appendix D.

2.1.3 Preliminary Assessment/Site Investigation

In December 1991, USAF personnel prepared a Preliminary Assessment (PA) for Tin City LRRS (USAF 1991) using the list of questions in the USEPA Preliminary Assessment Data Requirements for Federal Facility Docket Sites. The PA contains information on sampling and data analysis, suspected sources of contamination, surface water and subsurface water, drinking water wells, site setting, land use, and population for the area surrounding Tin City LRRS.

The information presented included a summary of the Phase I report (ES 1985) and the TSD (WCC 1988). Information related to the site setting and land use, local receptors, surface water, physiography, and sensitive environments was provided by the USAF.

USEPA reviewed the PA and responded with a letter of comments (USEPA 1992) Additional detail was requested for specific sections.

WCC conducted a site investigation during August - September 1992 (WCC 1993). The SI was conducted to collect information to complete a Hazard Ranking System (HRS) score for Tin City LRRS to evaluate the site for possible inclusion on the NPL. Sites were selected for sampling and analysis based on the information in the PA. Some of the sources were subsequently eliminated from consideration based on historical information that the source consisted of fuel spills or that the source was not a threat to potential target populations.

Soil samples were collected from the Landfill (LF O2), Dump #2 (LF 09), Waste Accumulation Area (SS 01), the White Alice Site (DT 05), and the Runway Oiling area (SD 04). Soils were analyzed for Target Compound List (TCL) volatile organics, semi-volatile organics, pesticides and PCBs, and Target Analyte List (TAL) metals. Background soil samples were analyzed for pesticides and PCBs and metals. One subsurface water sample was collected from the potable water well and analyzed for TCL/TAL compounds. A sediment sample was collected from a creek

on the facility and from the ocean near the outfall of the creek. Sediment samples were analyzed for TCL/TAL compounds.

USEPA reviewed and evaluated the Site Investigation Report in accordance with the HRS. USEPA indicated that Tin City LRRS was not proposed for inclusion on the NPL and a recommendation of no further response action planned (NFRAP) was included in the USEPA's Federal Agency Hazardous Waste Compliance Docking tracking system (USEPA 1993).

2.1.4 SS 14: Three USTs (Removed) at SP 4 Near Bldg. 76-200 and AST #10 (Removed) at SP 4 Near Bldg. 76-200

In August 1991, a USAF contractor reported a release from a 1,000-gallon UST near Bldg. 76-200 at the Lower Camp. The release was discovered when three inactive USTs at this location were removed; the release was thought to have resulted from overfilling of the UST that had been used to store diesel fuel. A report was filed with ADEC on 27 August 1991 (GE 1991a). The release from the tank has been designated source area SS 14, Spill/Leak #4 near Bldg. 76-200 (Figure 5).

In September 1991, the contractor removed the three USTs near Bldg. 76-200 and collected soil samples from the tank excavation (GE 1991b). The tanks removed were two 6,000-gallon diesel tanks and one 1,000-gallon diesel tank; all three tanks were in a common tank pit, 25 ft from the building. The tank excavation measured 50 feet by 100 feet, and was 15 feet deep. Eleven soil samples were taken from the tank excavation pit and sent to a laboratory for analysis of TPH-diesel range by USEPA method 8100 modified. Sample locations were documented in photographs in the original report.

The tank excavation was lined with a plastic liner and then backfilled with the material previously removed from the pit (GE 1991b). The excavated material was coarse to fine unsorted fill typical of the Lower Camp area.

2.1.5 SS 13: Stained Soils from Spill/Leak #3 at Lower Tram (Not Including AST); and Transformers Formerly Sited on Stained Concrete Pad and Soils at Lower Tram

In July 1993, a USAF contractor unexpectedly encountered a buried 55-gallon drum during construction work in the fill adjacent to the Lower Tramway Terminal (LTT) (Figure 5). The drum had been punctured and contained diesel fuel. The drum was removed, and samples were collected from the rocky, unconsolidated fill in the vicinity of the drum and were sent to a laboratory for analysis for TPH-diesel range. A report summarizing the results was prepared (Martin Marietta 1993).

2.1.6 ST 12: UST #3 (Removed) at Power Plant (Bldg. 110); UST #20 (Removed) at Composite Building (Bldg. 150); and 4,000-Gallon Diesel Fuel Tank UST #16 (removed) at Weather Station, Bldg. 132

The USAF closed and removed four USTs at Tin City LRRS between August and September of 1993. The tanks were UST #3, a 10,000-gallon diesel tank located south of the power plant (Bldg. 110); UST #9, a 300-gallon gasoline tank located east of Bldg. 110; UST #16, a 4,000-gallon diesel tank located west of Bldg. 132 at the Airstrip, and UST #20, a 300-gallon waste oil tank located east of Bldg. 150 (Figure 6).

Soil samples were collected from each tank location and were sent to a laboratory for analysis of TPH-diesel range, TPH-gasoline range, BTEX, and toxic characteristic leaching procedure (TCLP) metals (silver, arsenic, barium, cadmium, chromium, mercury, lead, and selenium). Each UST pit was backfilled with the material previously removed from the excavation.

A tank closure report was prepared by the USAF for review by ADEC. The report indicated that UST #9 qualified for clean closure based on the analytical results of the closure samples and the application of the ADEC soil cleanup matrix. The sites of UST #3, UST #16, and UST #20 did not qualify for clean closure using the ADEC soil cleanup matrix, and were designated as IRP sources. The group of four tanks was collectively designated ST 12 (USAF 1993).

2.1.7 Regulatory Correspondence Concerning IRP Activities

In a November 1993 letter from ADEC to the 11th Air Control Wing, ADEC reaffirmed its concurrence with the no further action recommendation for six sites at Tin City LRRS included in the 1988 ROD. ADEC indicated that it considered four sites at Tin City LRRS to be active IRP sites: DP 011, Dump #3 at Beach; ST 12, Former USTs; SS 13, Spill/Leak #3 at LTT; and SS 14, Spill/Leak #4 near Bldg. 110 (ADEC 1993).

ADEC reviewed the Site Assessment report for USTs #3, #9, #16 and #20 and responded with a January 1994 letter to the 11th Air Control Wing (ADEC 1994), indicating that the UST #9 site is a clean closure and that no further action is required. The sites of former UST #3, UST #16, and UST #20 are considered active IRP sites. ADEC indicated that the soil cleanup matrix level for UST #16 should be Matrix Level B because of the presence of water in the tank excavation. ADEC requested additional information concerning the extent of surface water contamination at UST #16. Copies of both ADEC letters are included in Appendix D.

2.1.8 Drum Removal

In August 1995, a drum removal action was performed as an Interim Remedial Action (IRA) under IRP. The activity consisted of removal of all abandoned drums, USTs, and their contents from the beach area and adjacent uphill areas. After the removal, soil samples were collected and analyzed ACCI, Inc.

The intent of the removal action was to eliminate the potential for release of any remaining drum contents to the environment and removal of unsightly empty drums. The work was concentrated in nine areas:

- Crushed Drum Area A
- Crushed Drum Area B
- Crushed Drum Area C
- Drum Crushing Pad (soil sampling)
- Eastern Drum Area
- Central Drum Area
- Western Drum Area
- Sub B Drum Area
- Sub D Drum Area (drum sampling only)

The nine areas were designated by the Air Force as part of DP 011, and are shown on Figure 6.

The Interim Remedial Action consisted of:

- removing any drum contents from the abandoned drums
- consolidation of drum contents for off-site testing and disposal
- removal of the abandoned drums and metal debris
- collection and laboratory analysis of representative soil samples from each of the eight drum areas

A complete description of the IRA and results is contained in the final report prepared by ACCI, Inc. In all cases, no ongoing sources of releases to the environment were evident. With the removal of the abandoned drums, USTs, and their contents, all potential sources associated with these IRP Source Areas and AOC have been removed.

2.1.9 1995 Remedial Investigation/Feasibility Study (RI/FS)

A RI/FS conducted by EA/MW from July 10 through July 21, 1995, and addressed the following seven IRP Sources and AOC:

- DP 011, Dump #3 at Beach
- ST 012, Four USTs
- SS 013, Spill/Leak #3 at Lower Tramway Terminal (LTT)
- SS 014, Spill/Leak #4 near Bldg. 110
- AOC 1, Spill/Leak #5 at the Fuel Pump House at Bldg. 123
- AOC 2, Fuel tanks at Top Camp substation
- AOC 3, Substation at Lower Camp

The RI/FS concluded that predominant contaminant was petroleum products. Polychlorinated biphenyls (PCBs) were detected in isolated areas of SS 13, AOC 2, and AOC 3 at levels comparable to residential cleanup levels.

At isolated sampling locations, some metals were detected. However, in all cases, the levels were comparable to documented site background levels. Elevated concentrations of metals are not surprising since the Tin City LRRS is adjacent to many tin and platinum mining claims and elevated levels of metals are expected in mining areas. The USAF did not participate in mining activities in the vicinity of Tin City LRRS.

Based on the results of the RI/FS, the response actions are:

No further response action planned (NFRAP).

- SS 13, the Spill/Leak #3
- SS 14, 3 UST and AST #10
- AOC 1, Spill/Leak #5 at the Fuel Pump House at Bldg. 123
- AOC 2, Fuel tanks at Top Camp substation
- AOC 3, Substation at Lower Camp

Sites in this category consist of areas where minimal amounts of contamination were detected and the levels of contamination were comparable to background or regulatory benchmarks. In the case of petroleum contamination, the sites are either below the site-specific ADEC cleanup matrix levels or site-specific factors that minimized the risk to human health and the environment were documented (EA/MW 1996).

Response Action:

- ST 12, four USTs (contaminated soil associated with removed UST #16; no further response action recommended for two additional tanks based on the results of the 1995 RI/FS)
- DP 011, Dump #3 at the beach

ST 12: Remedial action is recommended for ST 12 (contaminated soil associated with removed UST #16) for the gravel pad contaminated with petroleum, because water-soluble petroleum constituents were observed migrating from the pad into the adjacent tundra in two areas. The gravel pad was for storing excess snow. At breakup, the snow melted and migrated through the pad, causing a driving force for the migration of petroleum constituents. The snow storage area was moved to an uncontaminated site and is expected to arrest the migration of petroleum from the pad. During unfrozen months the area will be monitored to determine whether moving the snow storage area is sufficient to halt contaminant migration into the tundra. Horizontal bioventing or intrinsic remediation will be pursued for the remaining hydrocarbons. Background samples of peat and tundra exhibited elevated levels of total petroleum hydrocarbon (TPH)-diesel range due to the presence of naturally-occurring organics.

DP 011: Soils under seven of the nine areas where abandoned drums were removed in the 1995 appear to be significantly stained, and the petroleum products appear viscous, sticky, and tacky. The analytical results show few identifiable SVOC and VOC, however, the levels of TPH-residual and diesel range are often quite high. The risk assessment shows the risk due to detectable compounds to be below the EPA threshold of $1.0E-6$. However, the high laboratory detection limits restrict the conclusions of the risk assessment on the non-detected compounds to showing only that the risk to human health is below $1.74E-4$, and that the majority of risk is attributable to dermal contact with soils (EA/MW 1996).

The area, located in the tundra, is typical wildlife habitat. Past experience has shown that the tacky hydrocarbons will sometimes be entrained on the feet, fur, or feathers of wildlife that come in contact with the surface soils, although little conclusive evidence on the impact of highly weathered, residual range petroleum hydrocarbons on wildlife is available.

The selected remedial action is to excavate stained soils, mix the excavated soils with clean gravel, and use the soil/gravel mixture for on-site road and/or runway maintenance. The excavated areas will be backfilled with clean fill.

2.2 ENVIRONMENTAL CONDITION OF PROPERTY

In order to assess the current environmental condition of the Tin City LRRS, the environmental restoration activities at the site have been categorized based on past site activities and known or suspected contamination.

All sites were placed into one of the seven Air Force identified categories, namely:

- **Area where no storage, release, or disposal (including migration) has occurred.** This is an area where (based on investigation results) no hazardous substances nor petroleum products have been stored, released to the environment, or disposed of on site.
- **Area where only storage has occurred.** This is an area where (according to investigation results) hazardous substances or petroleum products were stored.
- **Areas of contamination below action levels.** This is an area where hazardous substances and petroleum products are known to have been stored, released, or disposed of, but contaminants are present at concentrations that require no response action to protect human health and the environment.
- **Areas where all remedial action has been taken.** This is an area where hazardous substances or petroleum products are known to have been released or disposed of on site, but all remedial actions necessary to protect human health and the environment have taken place.
- **Areas of known contamination with removal and/or remedial action underway.** This is an area where hazardous substances or petroleum products are known

to have been released or disposed of on site. Removal or remedial action is underway, but contaminant concentrations are above action levels.

- **Areas of known contamination where required response actions have not yet been implemented.** This is an area where hazardous substances or petroleum products are known to have been released or disposed of on site, but where removal or remedial action necessary to protect human health and the environment has not yet taken place.
- **Areas that are unevaluated or that require further evaluation.** This is an area where hazardous substances or petroleum products are believed to have been stored, released, or disposed of, but where investigation activities are considered to not sufficiently characterize the environmental condition of the property. This may include unevaluated areas and only partially evaluated areas.

The following sections describe the sites at Tin City LRRS that fit into each category.

2.2.1 Area where no storage, release, or disposal (including migration) has occurred

Based on available information, all USAF property at Tin City LRRS not characterized as an IRP site or AOC is currently included in this category.

2.2.2 Area where only storage has occurred

Available information and the results of previous IRP activities indicate that no areas at the Tin City LRRS installation are currently in this category.

2.2.3 Areas of contamination below action levels

Based on the results of initial IRP work (WCC 1988), discussed in the previous sections, the following NFRAP sites are included in this category:

<u>Site Code</u>	<u>Site Name</u>	<u>Status</u>
DP 08	Dump No. 1 (UC)	NFRAP (1988)
LF 09	Dump No. 2 (LC)	NFRAP (1988)
SS 01	Waste Accumulation Area (LC)	NFRAP (1988)
SS 07	Spill/Leak No. 2 (LC)	NFRAP (1988)
SD 04	Runway Oiling	NFRAP (1988)
LF 10	Mid Mountain Dump	NFRAP (1988)

The location of each of these sites is shown on Figure 4.

Based on the results of the 1995 RI/FS, discussed in the previous sections, the following sites are proposed for inclusion in this category:

<u>Site Code</u>	<u>Site Name</u>
SS 13	Spill/Leak #3 at Lower Tramway Terminal (LTT)
SS 14	Spill/Leak #4 near Bldg. 76-200
AOC 1	Spill/Leak #5 at the Fuel Pump House at Bldg. 123
AOC 2	All Top Camp Fuel Tanks
AOC 3	Substation at Lower Camp

The location of each of these sites is shown on Figure 5.

2.2.4 Areas where all remedial action has been taken

Available information and the results of previous IRP activities indicate that no areas at the Tin City LRRS installation are currently in this category. Sites that were investigated but required no further action include:

<u>Site Code</u>	<u>Site Name</u>	<u>Status</u>
LF 02	Landfill-Privately Owned/AF responsible 3rd Party Site	NFRAP (1988)
LF 03	Landfill (LC) (Active)	NFRAP (1988)
OT 05	White Alice Site Demo/Navy Owned	NFRAP (1988)
SS 06	Spill/Leak No. 1/ Navy Owned	NFRAP (1988)

2.2.5 Area of known contamination with removal and/or remedial action underway.

Available information and the results of previous IRP activities indicate that no areas at the Tin City LRRS installation are currently in this category.

2.2.6 Area of known contamination where required response action has not yet been implemented.

Based on the results of the 1995 RI/FS, discussed in the previous sections, the following sites are identified for further remedial action:

<u>Site Code</u>	<u>Site Name</u>
ST 12	Four USTs (Contaminated soil associated with removed UST #16).
DP 011	Dump #3 at the beach

2.2.7 Area that is unevaluated or requires further evaluation.

Available information and the results of previous IRP activities indicate that no areas at the Tin City LRRS installation are currently in this category. However, in the future, the landfill (near the air strip) which is a currently active, permitted solid waste landfill may fall into this category.

2.3 OFF-BASE PROPERTY

The White Alice site which includes two potential IRP sources (SS 06 and DT 05) was turned over to the U.S. Navy, as discussed in Section 1. The third-party landfill (LF 02), near the former Tin City townsite, is considered off-base.

The Federal Aviation Administration (FAA) has a site on the installation, located between the composite building and the old power plant. No restoration work has been done at the FAA site.

The status of off-base property is summarized on Table 5 and the locations of off-base sites are shown on Figure 8.

3. INSTALLATION-WIDE ENVIRONMENTAL PROGRAM STATUS

This section provides a summary of environmental response activities at the Tin City LRRS, including the status of existing regulatory agreements, the status of ongoing restoration activities, and the restoration-related compliance activities, and the status of community relations efforts related to these activities.

3.1 INSTALLATION RESTORATION PROGRAM STATUS

The IRP is a CERCLA-based environmental restoration program. Section 211 and Executive Order 12,580 of SARA require that the IRP be conducted consistent with CERCLA Section 120. This includes environmental response processes under other federal and state statutes, when appropriate.

The USEPA has determined that based on the existing information, the Tin City LRRS does not warrant inclusion on the NPL. However, several specific Alaska state regulations govern situations at the Tin City LRRS. Regulated USTs are governed by 18 AAC 78, titled Underground Storage Tanks. Contamination resulting from discharges of oil or hazardous substances from other sources including unregulated USTs, such as USTs used solely for on-site heating, are governed by 18 AAC 75, titled Oil and Hazardous Substances Pollution Control. These two state regulations govern the primary reporting, cleanup actions, cleanup criteria, and disposal requirements for the situations identified at the Tin City LRRS.

Currently, the Air Force has completed all source discovery and assessment efforts. Eleven sites have been identified as NFRAP. Two sites were identified for remedial action. The Air Force is currently in the process of implementing any administrative remedial actions (e.g., moving snow storage areas) and working to procure funding for additional remedial actions.

3.1.1 Summary of Regulatory Agreements

In February 1988, a Record of Decision (ROD) and Technical Support Document (TSD) was prepared for six sites at Tin City LRRS (WCC 1988). The six sites included five of the eight sites identified in the 1985 Phase I and one additional site. The remedy selected for all six sites was NFRAP. The ROD was signed in 1988.

On 16 April 1996, representatives of the Air Force met with ADEC in Fairbanks, Alaska, to discuss the 1995 RI/FS results and plans for remedial action. At that meeting, all parties verbally agreed to NFRAP for five sites and remedial action for two others.

3.1.2 IRP Sites and Areas of Concern

The status of all IRP sites and AOC is listed on Table 4.

Six NFRAP sites from the Phase I study are included in the ROD which was signed by representatives of the USAF, the USEPA Region 10, and ADEC between February 1988 and September 1988 (WCC 1988). The six NFRAP sites (Figure 4) are:

- DP 08, Dump #1 - Dump containing refuse, POL, scrap, cleanup in 1978 and 1984
- LF 09, Dump #2 - Dump containing refuse, POL, scrap, cleanup in 1978 and 1984
- SS 01, Waste Accumulation Area - Accumulation of liquid wastes; evidence of leaks and spills
- SS 07, Spill/Leak #2 - Release of estimated 300 gallons diesel from broken pipeline
- SD 04, Runway Oiling - POL/solvents applied to runway for dust control
- LF 10, Mid-Mountain Dump - Cleanup prior to 1987. Debris dump near Top Camp

Based on the results of the 1995 RI/FS, the following sites (Figure 5) are proposed for NFRAP:

- SS 13, Spill/Leak #3 at Lower Tramway Terminal (LTT)
- SS 14, Spill/Leak #4 near Bldg. 76-200
- AOC 1, Spill/Leak #5 at the Fuel Pump House at Bldg. 123
- AOC 2, All Top Camp Fuel Tanks
- AOC 3, Substation at Lower Camp

Based on the results of the 1995 RI/FS, discussed in the previous sections, the following sites (Figure 6) are identified for further remedial action:

- ST 12, Four USTs - Although four USTs were originally investigated, three were eliminated from further response action. Contaminated soils associated with UST #16 (removed) were identified for remedial action.
- DP 011, Dump #3 at the beach - Discrete areas of contaminated soils under previously-removed drum piles were identified for remedial action.

Summary information on these two sites is provided on the following pages.

3.1.3 DP 011 - Dump #3 at Beach

Primary source: Nine areas with abandoned drums and one drum crushing pad. The areas are identified by ACCI, Inc. as the Eastern Drum Area, Central Drum Area; Western Drum Area; Sub B Drum Area; Sub D Drum Area; Crushed Drum Pile A; Crushed Drum Pile B; and Crushed Drum Pile C, and Drum Crushing Pad.

Background and excluded constituents: Elevated levels of TPH-diesel range and TPH-gasoline range were detected in background samples of tundra and peat and may be contributing to the elevated levels detected in these samples due to naturally-occurring organic materials, especially since the soil samples were collected in tundra areas. Defining the extent of contamination may be complicated by the contributions of the naturally-occurring organics and should be considered during the planning phases of any removal action.

Primary contaminants by media: TPH-residual range (ND-131,000 mg/kg), TPH-diesel range (ND-160,000 mg/kg), and TPH-gasoline range (ND-450 mg/kg) at elevated levels in isolated areas of tundra. The analytical results showed elevated levels of petroleum hydrocarbons in the Eastern Drum Area, Central Drum Area; Western Drum Area; Sub B Drum Area; Sub D Drum Area; Crushed Drum Pile B; and Crushed Drum Pile C. Elevated levels of petroleum hydrocarbons were not detected at the Crushed Drum Pile A and Drum Crushing Pad. Concentrations of principal contaminants are shown on Figure 9.

Estimated areal extent (square feet): 9,050

Estimated total depth (feet): 1-4 feet depending on the specific isolated area

Estimated volume (cubic yards): 880 (based on ADEC level A matrix)

Assumptions/qualifiers for estimated areal extent and volumes:

Areal extent and volume should be used only as very rough numbers because:

1. Based on a very limited number of samples
2. Contamination may extend beyond sampling points
3. Areal extent based on visual indications of stained soil.
4. Collection of additional data is highly recommended prior to using these estimates for budgeting or executing additional services.

Surface contamination: Yes

Trends: No historical data are available for this area.

Media type: Unknown, suspected tundra mat.

Potential receptors: Humans and wildlife in contact with surface soils. Tundra.

ADEC Matrix Level: C

3.1.4 ST 12 4 USTs (Contaminated soil associated with removed UST #16)

Primary source: 4,000-gallon diesel fuel tank UST #16 (removed) at Weather Station, Bldg. 132.

Background and excluded constituents: Background samples of tundra showed slightly elevated levels of TPH-residual range and TPH-diesel range indicating that naturally-occurring organics may be contributing slightly to the elevated levels of TPH-diesel range in the one sediment sample and possibly the two surface water samples. Future studies may want to consider sampling and analysis methods which could minimize the interferences.

Primary contaminants by media: TPH-diesel range (130-24,000 mg/kg), TPH-gasoline range (ND-590 mg/kg), and BTEX (ND-577 ug/kg) were detected in the gravel pad. SVOC are absent except for low levels of 2-methylnaphthalene (26 mg/kg), phenanthrene (0.56 mg/ug), diethyl phthalate (20 ug/L), and 4-methylphenol (19 ug/L), which all occur in isolated locations. The relative levels of TPH-diesel range and TPH-gasoline range in soil samples are not consistent indicating that use of one analytical method as a surrogate for the petroleum contamination may be inappropriate. TPH-diesel range, TPH-gasoline range, ethylbenzene, xylenes and 4-methylphenol are apparently migrating to the surface water and sediment in the adjacent tundra at two distinct locations. No benzene and only minimal amounts of other BTEX constituents were detected. Concentrations of principal contaminants are shown on Figure 10.

Estimated areal extent (square feet): 11,250 (based on the most stringent ADEC cleanup matrix levels for petroleum constituents)

Estimated total depth (feet): 3 (an average, based on drilling gravel pad experience during investigation where boulders/bedrock was encountered at depths of approximately 3 feet)

Estimated volume (cubic yards): 1,250 (based on ADEC level A matrix)

Assumptions/qualifiers for estimated areal extent and volumes:

Areal extent and volume calculations should be used only as very rough numbers, because:

1. Based on limited number of samples
2. Contamination may extend beyond the sampled locations
3. Contamination may extend to greater depths
4. Collection of additional data is highly recommended prior to using these estimates for budgeting or executing additional activities.

Surface contamination: Yes

Trends: No trends can be discerned since comparable locations were not sampled during past investigations.

Media type: Sand and gravel, sediments, and surface water.

Potential receptors: Humans and wildlife in contact with soils, sediments, water, tundra.

ADEC Matrix Level: B

3.2 RESTORATION-RELATED COMPLIANCE PROGRAM STATUS

The Air Force Compliance Program consists of environmental activities required to support on-going activities at the Tin City LRRS. In general, these activities consist of management of solid waste, waste water and fuels.

3.2.1 Underground Storage Tanks (USTs)/Aboveground Storage Tanks (ASTs)

There are no USTs remaining at Tin City LRRS.

Bulk Fuel Storage (AST)

Deactivation of the two existing bulk fuel storage tanks and replacement with a new tank system is required to upgrade the Tin City LRRS bulk fuel storage facility to meet 18 AAC 75 and 40 CFR 112 requirements. Bulk fuel tank deactivation includes cleaning, capping, closing the existing tanks in-place, and cleaning the service line between the 10,000-gallon existing service tank and the two existing bulk fuel tanks. Installation of two new 30,000-gallon aboveground tanks will include diked, secondary containment, and aboveground piping with a below-ground connection to the existing 10,000-gallon service tank. The proposed location of the upgraded bulk fuel storage tanks is shown on Figure 11.

Deactivation of the two existing bulk storage tanks and installation of new tanks is proposed for Summer 1996. However, due to budget constraints, the work may not begin until 1997.

3.2.2 Hazardous Materials/Waste Management

Currently, there are no compliance projects in this category.

3.2.3 Solid Waste/Asbestos/Other

Active Solid Waste Landfill: There is one active non-hazardous waste landfill at the Tin City LRRS, and it is located near the airstrip (Figure 11). The landfill has an ADEC solid waste permit (Permit #9332-BA002) which was issued on 29 September 1993, and expires on 01 October 1998.

Septic System: Domestic wastewater is treated onsite with a septic system and leach field, so no wastewater discharge permit is required.

Stormwater: A stormwater permit is not required at the Tin City LRRS due to its small size.

Building Decommissioning and Demolition: At Tin City, the power plant is currently being considered for decommissioning and demolition under the Clean Sweep Program. Clean Sweep is an Air Force program intended to decommission and demolish out-of-service Air Force facilities, especially those that may have associated environmental issues, such as asbestos or lead paint. Work is scheduled currently for 1999.

Personnel Staffing: Tin City LRRS is scheduled to be reviewed under the Cost Reduction Initiative program, which would evaluate the site to determine the feasibility of operating it without on-site staff. The Air Force Cost Reduction Initiative program is intended to review the requirements of each Air Force installation and determine whether the site could be operated with reduced personnel or no personnel. In the absence of on-site personnel, the environmental program at the site would require review and revision to consider issues such as: closure of the on-site landfill, and the potential for vandalism, especially in areas or buildings containing materials that may have an adverse environmental impact (e.g., asbestos, fuels).

3.3 STATUS OF COMMUNITY INVOLVEMENT

The area surrounding Tin City LRRS is very sparsely populated. The Tin City LRRS is approximately 5-1/2 miles southeast of Wales, a Native Alaskan community, which has a permanent resident population of approximately 165 people (Wales Post Office 1995). The Air Force community relations specialist (611th CES) monitors communications to ensure that the local community is kept informed of IRP activities and results. The following paragraphs summarize community relations activities that are completed, in-progress, or planned.

The following community relations program activities have been completed:

- Restoration Advisory Board (RAB) initial contact

In 1995, mailers were sent to the approximately 165 postal patrons in the community of Wales requesting any interested residents to contact the Air Force concerning their interest in establishing a RAB. No responses were received from the community, so no RAB was established. The community will be approached during 1996 to again assess interest in establishing a RAB and every two years afterwards to re-assess interest in a RAB.

The following community relations program activities are planned, but are highly dependent on funding:

- Community Relations Plan
- Administrative Record

Community relations activities under consideration for the future are:

- a survey mailing to the community to assess knowledge of past site activities and the level of concern
- newsletter
- announcement of an 800 phone number for the IRP

In the future, the Air Force may consider alternative methods for communicating with the residents of Wales. One-on-one or personal contact with rural residents or a community leader is often more in keeping with rural communication methods than written notifications in English. The approach to verbal communications may be further enhanced by tailoring communication to be culturally sensitive.

4. INSTALLATION-WIDE ENVIRONMENTAL PROGRAM STRATEGY

The purpose of this section is to summarize the current environmental restoration and compliance strategy for the Tin City LRRS. This Management Action Plan (MAP) is a snap shot in time of the Tin City LRRS IRP program and reflects currently planned activities and strategies which are highly dependent upon funding.

4.1 RESTORATION PROGRAM STRATEGY

Zones and operable units (OUs) are designed to organize and define areas of environmental investigation and remediation. Zones facilitate an installation's investigative strategy. OUs facilitate an installation's remediation strategy. Typically, the smaller the installation the fewer the number of zones and OUs that will be designated.

4.1.1 Zone Designation

The current scope of environmental investigation activities at the Tin City LRRS installation has not required organization by zones. Investigative activities are currently being implemented on an installation-wide basis as a single investigative unit.

4.1.2 Operable Unit Designations

The Tin City LRRS does not require organization into separate OUs. An installation-wide source control is considered sufficient for management of the sites at this installation. The single investigative unit and the OU are synonymous, and each is defined as the entire area of the facility.

4.1.2.1 Restoration Site Strategy

Strategy for AOC01, AOC02, and AOC03, SS 013 and SS 014, was to obtain concurrence for NFRAP from ADEC, because contamination was either at or below State action levels or was not migrating or did not pose a threat to human health and the environment. The strategy at DP 011 is to remediate the site by removal of contaminated soil and using it for road maintenance. The strategy is bioremediation at ST 012. After remediation is completed at the sites, results will be submitted to ADEC with a request for closure. After concurrence is received, decision documents will be drafted for documenting closure.

4.1.3 Planned Removal Actions

Currently, there are two areas which were identified for proposed remedial action based on the 1995 RI/FS:

- ST 012, Four USTs (contaminated soil associated with Removed UST #16)
- DP 011, Dump #3 at the Beach

4.1.4 Community Relations Strategy

No responses to the 1995 mailer were received from the local community, therefore, no RAB was established. The community will be approached periodically to reassess interest.

4.2 RESTORATION-RELATED COMPLIANCE STRATEGY

Active solid waste landfill: The permit for the site non-hazardous waste landfill is up for renewal by October 1, 1998. Current plans are to renew the permit. It is anticipated that no environmental upgrades will be necessary to renew the permit. Permit renewal process should be started about eight months before the permit expires.

Bulk Fuel Storage (AST): Deactivation of the two existing bulk fuel storage tanks and replacement with a new tank system is required to upgrade the Tin City LRRS bulk fuel storage facility to meet 18 AAC 75 and 40 CFR 112 requirements. Bulk fuel tank deactivation includes cleaning, capping, closing the existing tanks in-place, and cleaning the service line between the 10,000-gallon existing service tank and the two existing bulk fuel tanks. Installation of two new 30,000-gallon aboveground tanks will include diked, secondary containment, and aboveground piping with a below-ground connection to the existing 10,000-gallon service tank. The proposed location of the upgraded bulk fuel storage tanks is shown on Figure 11.

Deactivation of the two existing bulk storage tanks and installation of new tanks is proposed for Summer 1996. However, due to budget constraints, the work may not begin until 1997.

Building decommissioning and demolition: The out-of-service power plant is proposed for decommissioning and demolition under the Air Force Clean Sweep Program. The purpose of the Clean Sweep program is to reduce Air Force environmental liability by dismantling facilities that may have components, such as asbestos insulation or lead-based paint, that require special handling.

Demolition is currently scheduled for 1999.

Personnel staffing: Tin City LRRS is scheduled for review under the Air Force Cost Reduction Initiative program. This program would look at the feasibility of operating the station without on-site staff. In the event that the station is recommended for operation without on-site staff, the environmental program would require review and consideration of issues such as closure of the active landfill and potential for vandalism.

4.3 NO FURTHER ACTION

As a result of the 1995 RI/FS, six sites have been designated as requiring no further action. Written agreement from ADEC has not been procured on the five sites discussed in the 16 April 1996 meeting with ADEC. Written agreement will be pursued.

5. ENVIRONMENTAL PROGRAM MASTER SCHEDULE

This section presents the master schedule of anticipated environmental restoration and compliance activities for the Tin City LRRS installation. The planned environmental restoration schedule and restoration related compliance master schedule is graphically shown on Figure 12.

5.1 ENVIRONMENTAL RESTORATION SCHEDULE

The schedule for environmental restoration program activities includes:

- June 1996 - Implement administrative procedural changes to permanently relocate the Tin City snow storage area.
- August 1996 - Procure ADEC written agreement on recommendations in 1995 RI/FS.
- Ongoing - Procure funding for remedial actions at DP 011 and ST 012.
- October 1997-October 1998 - Planning for program remediation activities at DP 011 and ST 012.
- October 1998-October 2000 - Complete remediation at DP 011 and ST 012.
- October 2000-October 2001 - Procure NFRAP status for DP 011 and ST 012.

5.2 RESTORATION-RELATED COMPLIANCE SCHEDULE

The following activities are scheduled under the restoration compliance program:

- 1996-1997 - Resolve storage/use of Air Force discarded material with Trading Post operator.
- 1996-1997 - Upgrade bulk fuel storage tanks (Air Force MILCON Program).
- 01 February - 01 October 1998 - Renew solid waste landfill permit #9332-BA002.
- 1999 - Decommission and demolish power plant (Air Force Clean Sweep Program)
- Unspecified - Evaluate personnel requirements at Tin City (Air Force Cost Reduction Initiative Program).

5.3 PROJECT TEAM AND RAB MEETING SCHEDULE

Project meetings will be scheduled on an as needed basis. A RAB meeting schedule will be prepared if a RAB is established in the future.

Table 7 has been provided for the project team's use as meeting dates and topics are established.

6. TECHNICAL AND OTHER ISSUES TO BE RESOLVED

This section describes specific technical and/or administrative issues to be resolved by the Tin City LRRS project team and identifies action items and strategies for resolving these issues. These issues may include data quality, information management, data gaps, background levels of specific elements and compounds, risk assessment protocols, relative risk evaluation, and contracting strategy.

6.1 FUNDING

Air Force funding is limited and is expected to decrease further as a result of federal budget reductions. Funding for Air Force environmental programs is allocated on the basis of priority. Funding has been allocated to address compliance issues, such as the upgrade of the bulk fuel storage facilities, but may have been underbudgeted. Restoration sites that rank as elevated risks to human health or the environment receive funding, while sites or conditions that present low risk are scheduled for ensuing years.

At Tin City LRRS, procuring funding for environmental restoration programs at ST 12 and DP 011 is anticipated to be difficult because the sites will likely be lower priority than sites at other Air Force bases, where contamination may impact groundwater, or there are more potential receptors or more toxic contaminants.

Scheduling of remedial actions that require funding (i.e., more than administrative changes) at DP 011 and ST 12 is an unresolved issue at Tin City LRRS.

6.2 AIR FORCE-TRANSFERRED MATERIALS

In the past, surplus materials from the Tin City LRRS have been transferred to the Trading Post operator at Tin City. Currently, the transferred materials, such as drums, machinery and equipment, are in various states of disrepair and are stored at various locations around the Tin City area. It is unclear whether the current owner, the Trading Post owner/operator, places any value on the materials or has definitive plans for the management of them. Many of the materials still have Air Force markings on them.

The Air Force views the current owner's material management practices as a potential source of future Air Force environmental liability. If the Trading Post owner should choose to abandon the transferred materials in place, the liability for assessment and cleanup of the materials may fall upon the Air Force. Costs associated with the cleanup would be elevated due to the remote location of the site and absence of established waste management facilities and transportation.

Prompting the Trading Post operator to proactively manage his materials is an important element in minimizing Air Force future environmental liability and associated costs. A starting point may be to prompt the Trading Post operator to dispose of unwanted former Air Force materials in the Air Force landfill.

6.3 UNMANNED STATION

The Air Force Cost Reduction Initiative will evaluate the feasibility of operating the Tin City LRRS as an unmanned facility at some point in the future. If the facility is unmanned, it is unclear what, if any, changes would be appropriate to the environmental program at Tin City to make the site amenable to operation as an unmanned station. At a minimum, the Air Force would consider closure of the active solid waste landfill and the potential for vandalism.

6.4 DATA QUALITY

This section is intended to summarize any outstanding issues regarding data quality. Data quality has been emphasized early in the planning and investigative process at the Tin City LRRS and there are subsequently no outstanding data quality issues.

6.4.1 Project Team Action Items

The following actions have been completed during execution of past project activities to ensure the quality of data collected for the Tin City LRRS:

- evaluated historical data to determine their usability in site screening, site characterization, risk assessment, monitoring, and in making compliance decisions. There are no outstanding issues with historical data.
- ensured that all data were evaluated as part of ongoing activities as to their ability to satisfy data quality objectives. There are no outstanding issues with data evaluation.
- ensure the quality of future data by implementing data quality management procedures. Quality assurance plans are required for all Air Force program activities.

6.5 DATA INTEGRATION AND INFORMATION MANAGEMENT

This section is intended to summarize issues that need to be resolved with regard to managing the information gathered and used in the Tin City LRRS environmental restoration and compliance programs.

The Installation Restoration Program Information Management System (IRPIMS) was not used for the Tin City LRRS, therefore, there are no outstanding issues. Additionally, other technical information systems (TIS) were not used and, therefore, there are no action items associated with TIS.

6.6 CONCEPTUAL MODELS/DATA GAPS

This section is intended to summarize issues regarding data needed to generate conceptual models and resolve data gaps for completion of IRP response activities.

The conceptual site model for the two IRP sites recommended for remedial action (DP 011 and ST 12) is shown on Figure 13. Remedial action is planned for both sites rather than further investigation or study. With this approach, there are no outstanding data gaps.

6.7 BACKGROUND LEVELS

This section identifies to what extent have background levels of contaminants been determined for each media and identifies any outstanding issues. Status, strategy, and any action items necessary for resolving any outstanding issues are outlined in this section.

Background levels were documented during the 1995 RI/FS program and are provided in the 1995 RI/FS (EA/MW 1996). There are no outstanding issues to be resolved regarding the evaluation of background levels of contaminants.

6.8 RISK ASSESSMENT PROTOCOLS, FUTURE LAND-USE, AND CLEANUP STANDARDS

This section summarizes issues regarding the need for a baseline risk assessment (RA), future land use, and other risk assessment assumptions, and selection of final cleanup standards or action levels.

There are no outstanding issues regarding the baseline risk assessment. The RA is complete (EA/MW 1996). The RA was used in assessment and decision making.

6.9 RELATIVE RISK EVALUATION

This section summarizes issues regarding relative risk site evaluation activities at the Tin City LRRS installation. Relative risk ratings are based on the concentrations of specific chemicals detected in the surface soil, the perceived potential for migration to a receptor, and the known or potential presence of human receptors at each site.

Relative risk evaluations are provided in **Appendix F** and will be updated to reflect the results of the 1995 RI/FS.

6.10 CONTRACTING STRATEGY

This section summarizes issues regarding contracting strategies and mechanisms available to the USAF and contracting Service Center/Service Agent.

Environmental restoration or compliance activities are executed by Air Force personnel or through a service agent, such as the Air Force Center for Environmental Excellence (AFCEE) or the United States Army Corps of Engineers, to access and hire local contractors.

7. REFERENCES

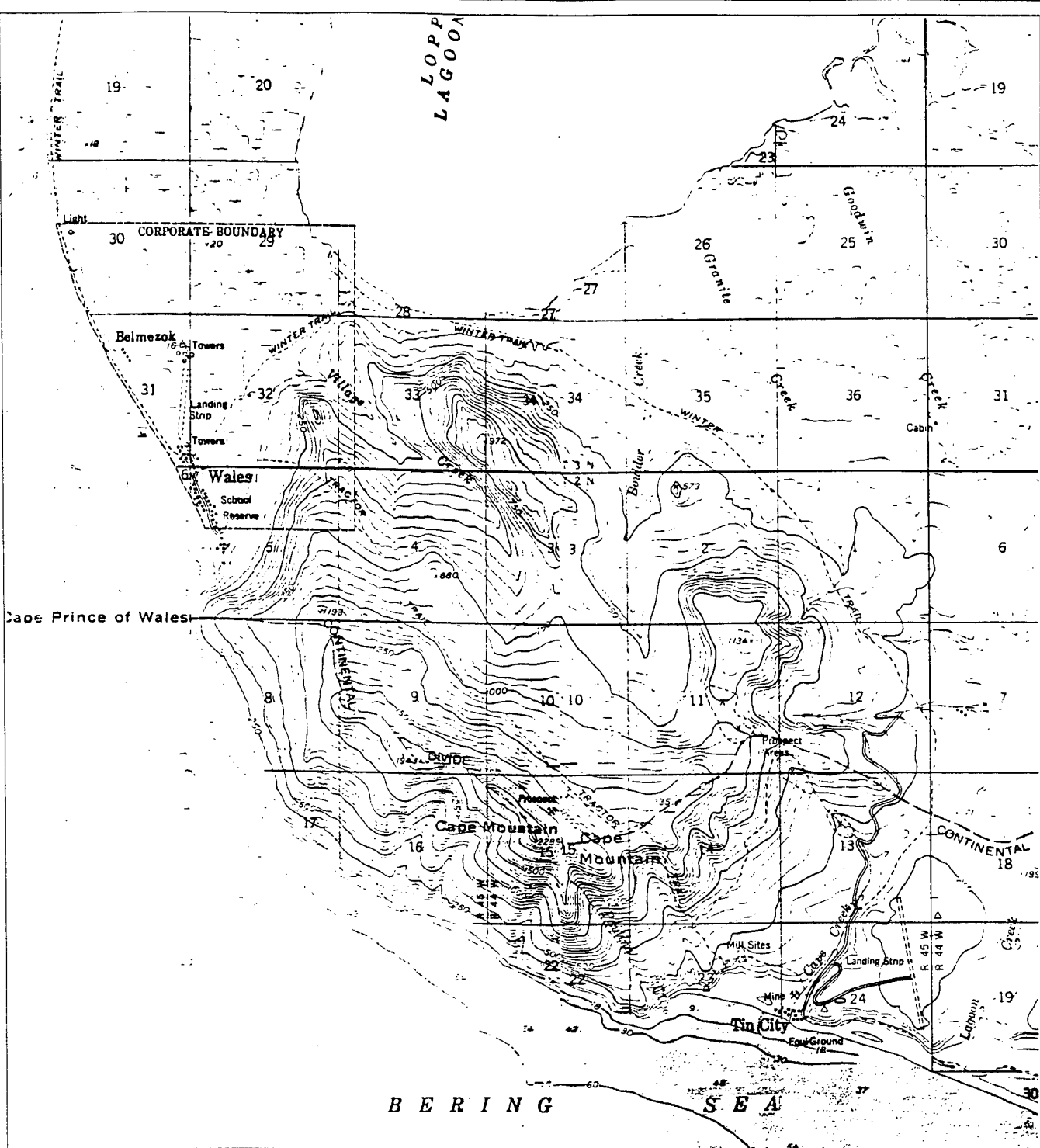
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Figures



Source: U.S. Geological Survey
 Reston, Virginia 22092
 Teller (C-6 & C-7), Alaska
 1950, Minor Revisions 1982
 Scale 1:63,360

FIGURE 1
 TIN CITY LRRS, ALASKA

GENERAL PROJECT AREA

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Source: U.S. Geological Survey
Reston, Virginia 22092
National Atlas, Northern Alaska
Compiled 1967, Revised 1973
Sheet Number 40-41
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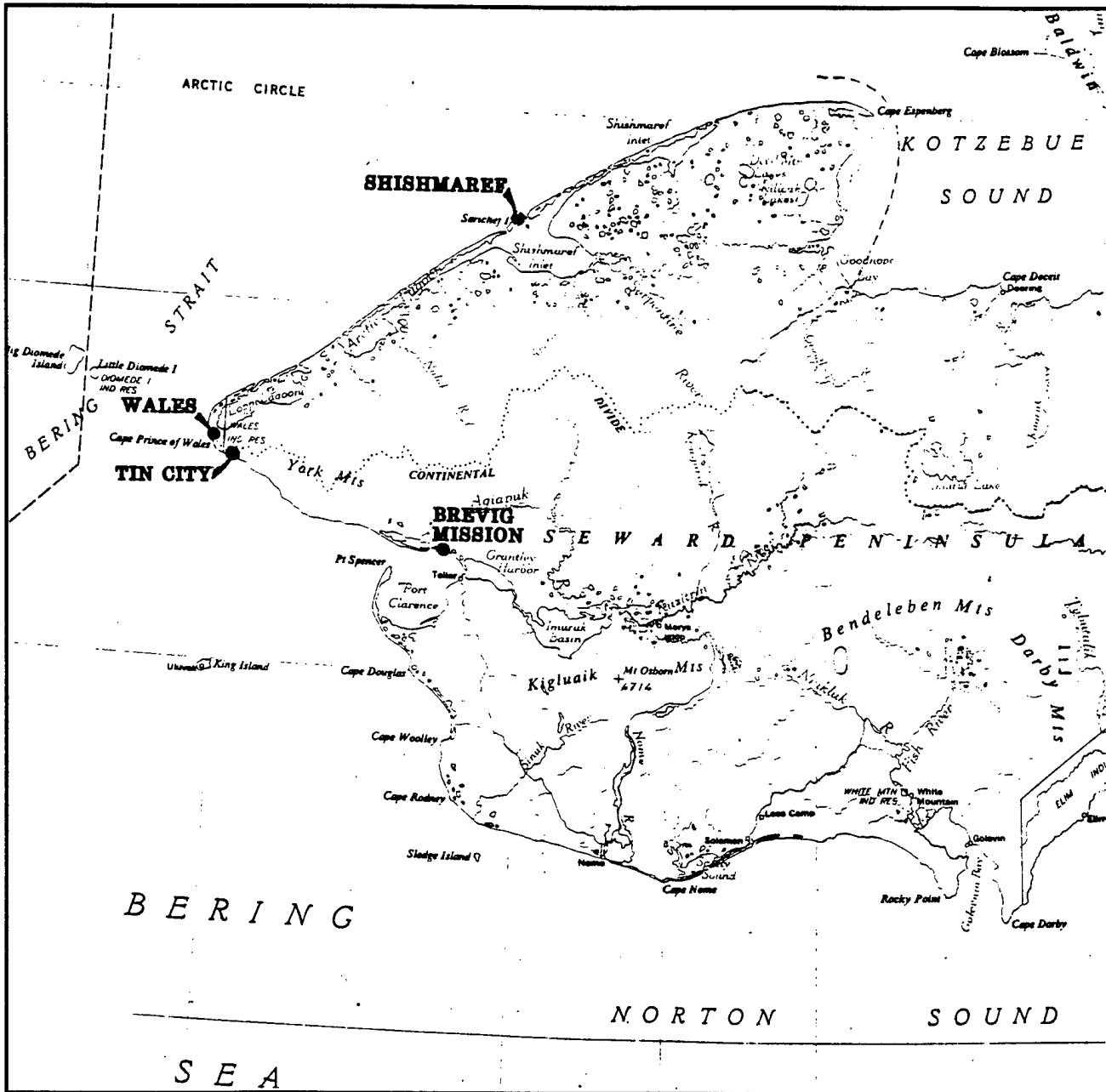
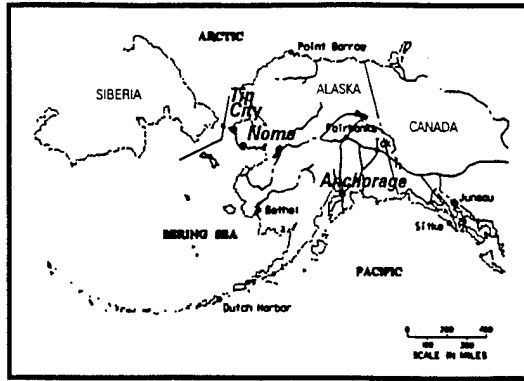


FIGURE 2
TIN CITY LRRS, ALASKA

PROJECT LOCATION

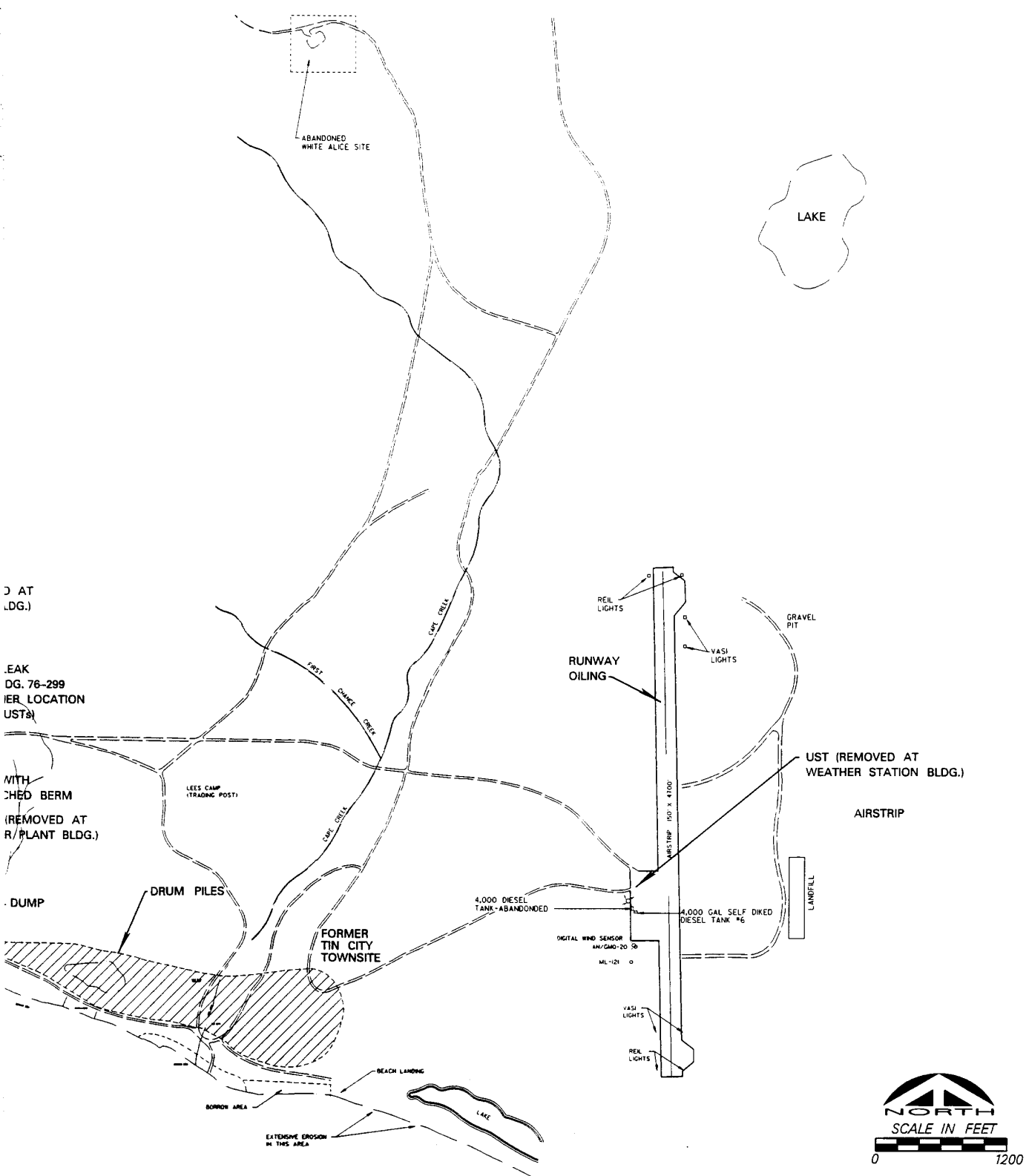
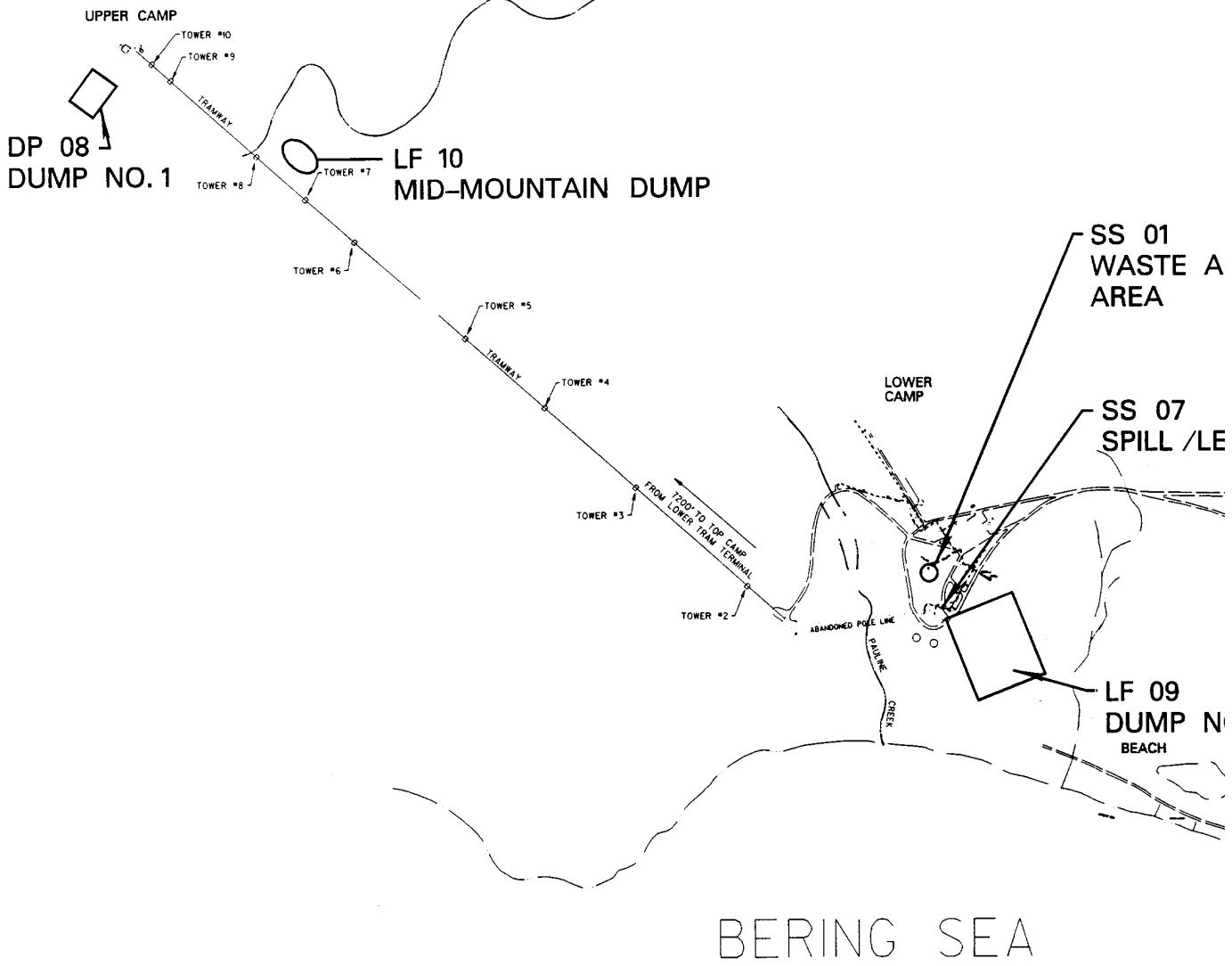


FIGURE 3

TIN CITY LRRS, ALASKA

POTENTIAL LOCATION OF PAST HAZARDOUS SUBSTANCES AND PETROLEUM ACTIVITIES



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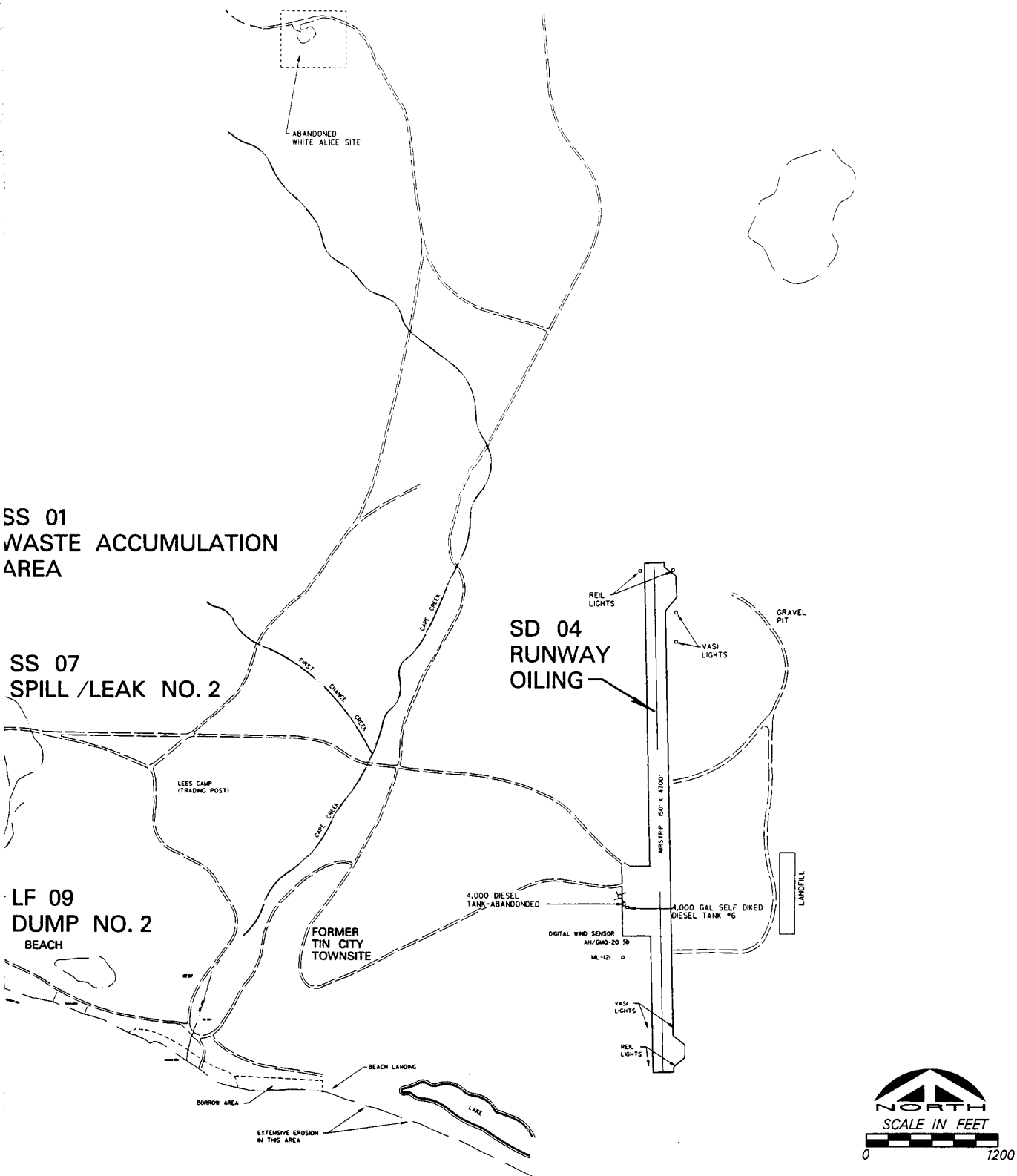
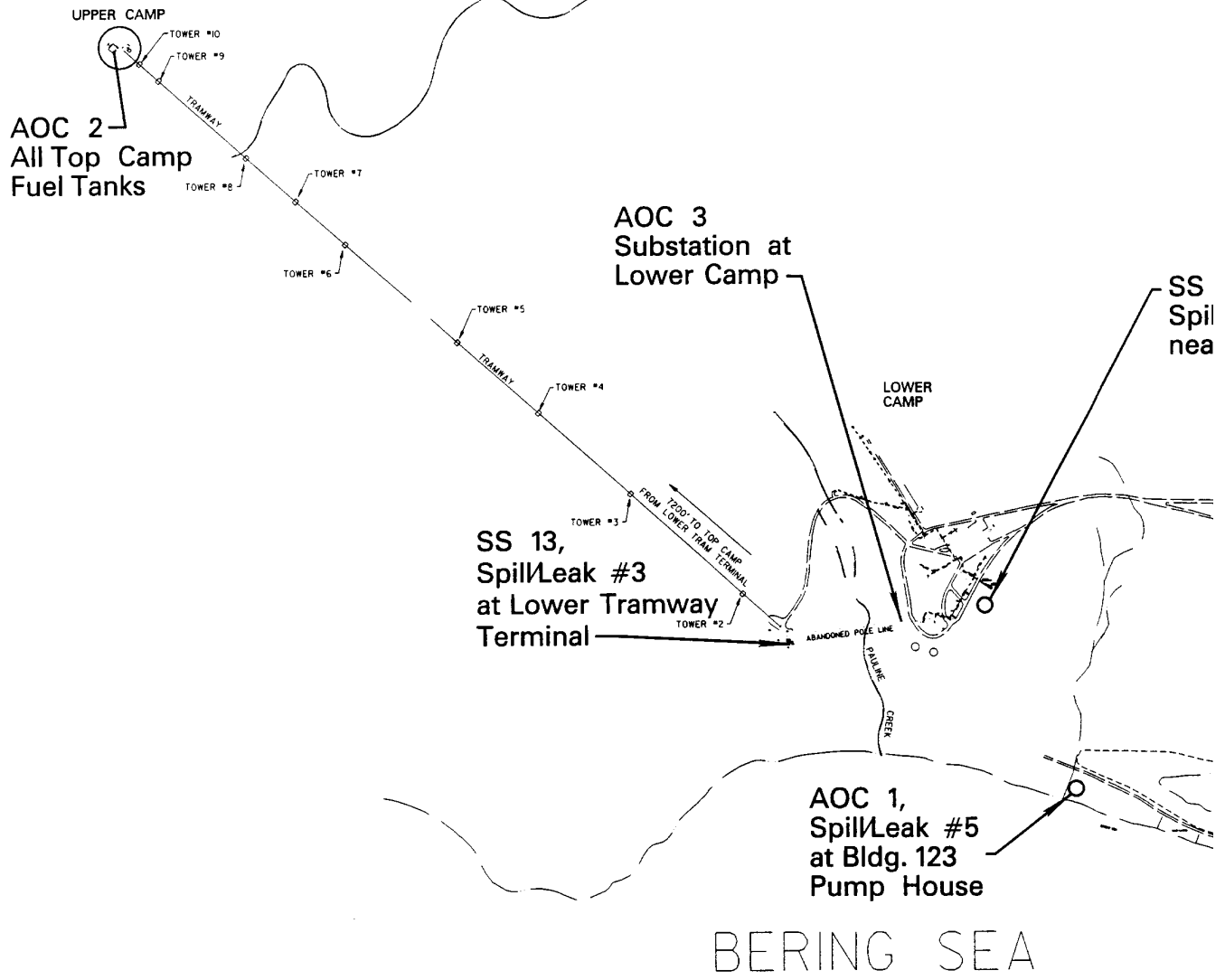


FIGURE 4

TIN CITY LRRS, ALASKA

**NO FURTHER RESPONSE ACTION
PLANNED (NFRAP) IRP SITES AND
AREAS OF CONCERN (AOC)**



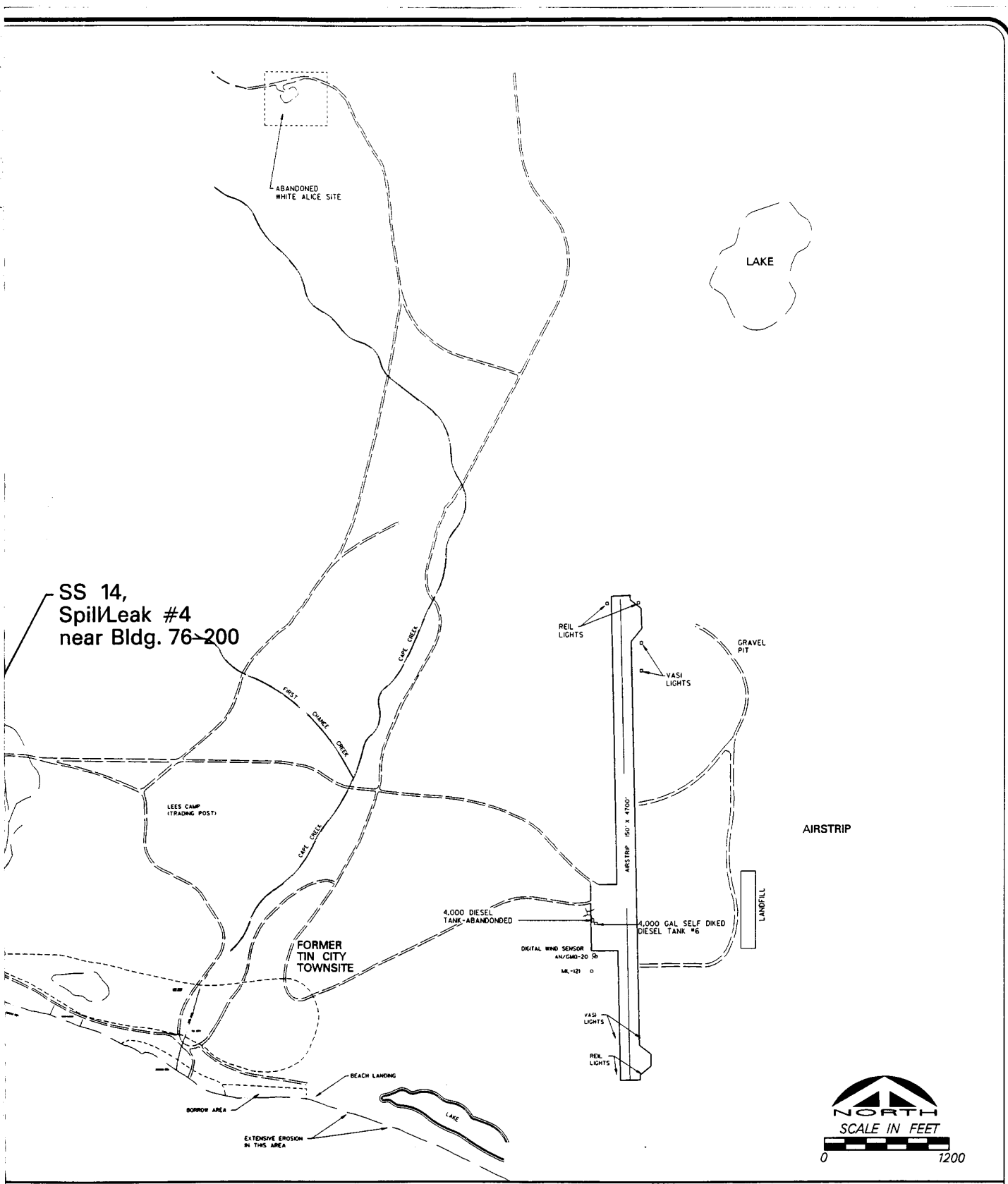


FIGURE 5

TIN CITY LRRS, ALASKA

PROPOSED NFRAP IRP SITES AND AREAS OF CONCERN

UPPER CAMP



TOWER #10
TOWER #9

TRAMWAY

TOWER #8

TOWER #7

TOWER #6

TOWER #5

TRAMWAY

TOWER #4

TOWER #3

FROM T200 TO UP CAMP
FROM LOWER TRAM TERMINAL

TOWER #2

LOWER CAMP

ABANDONED POLE LINE

PAULINE CREEK

BERING SEA

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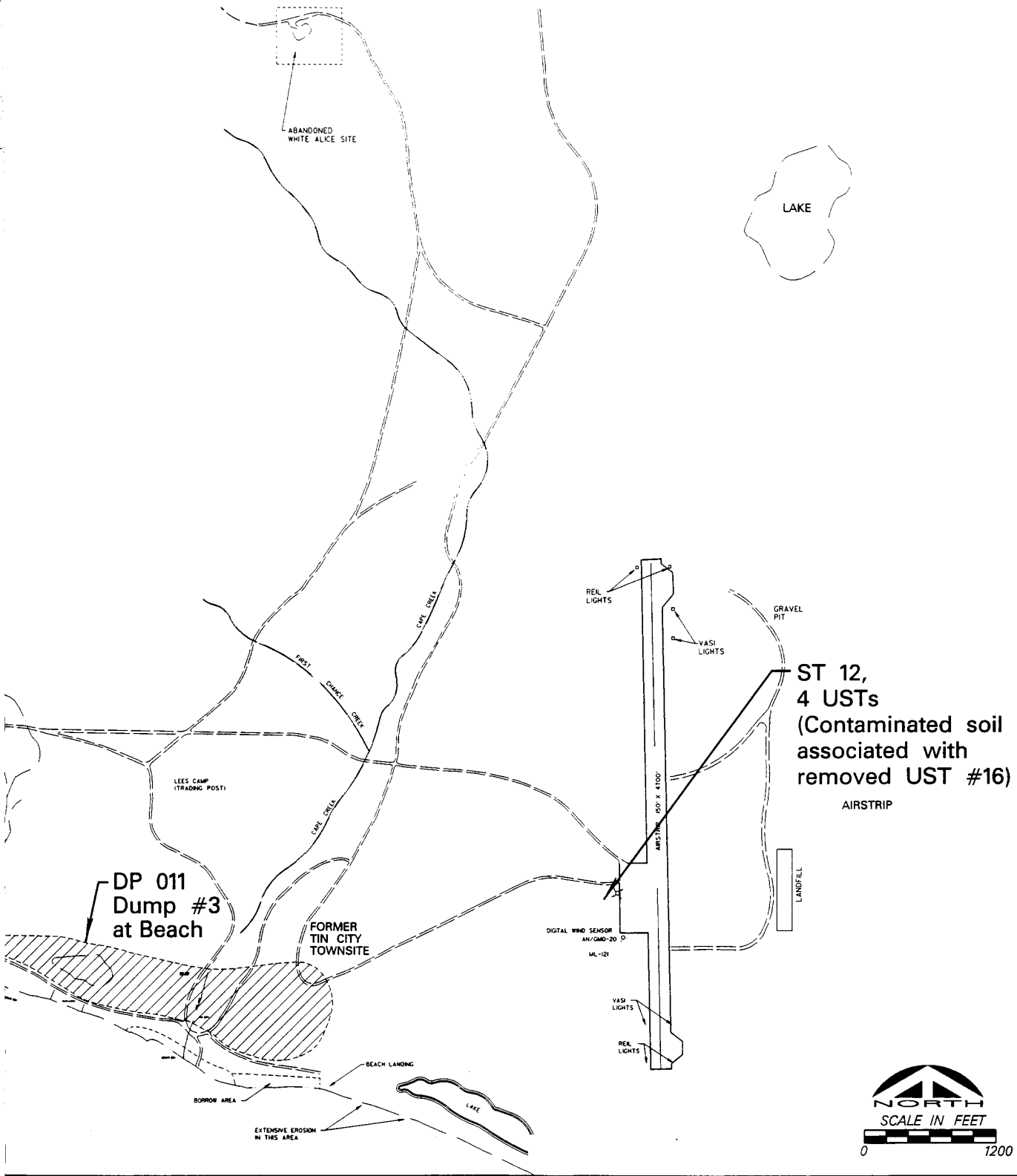
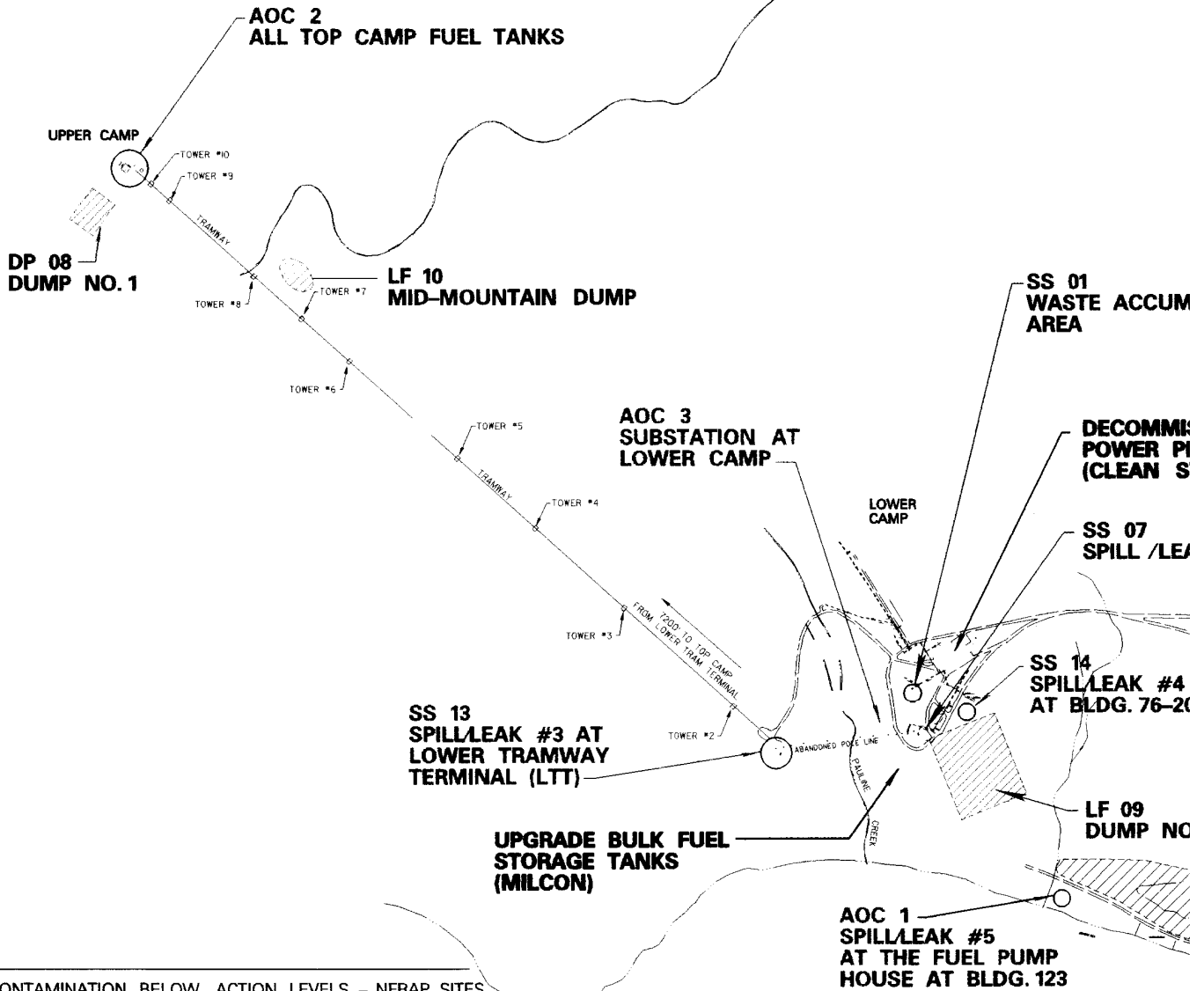


FIGURE 6

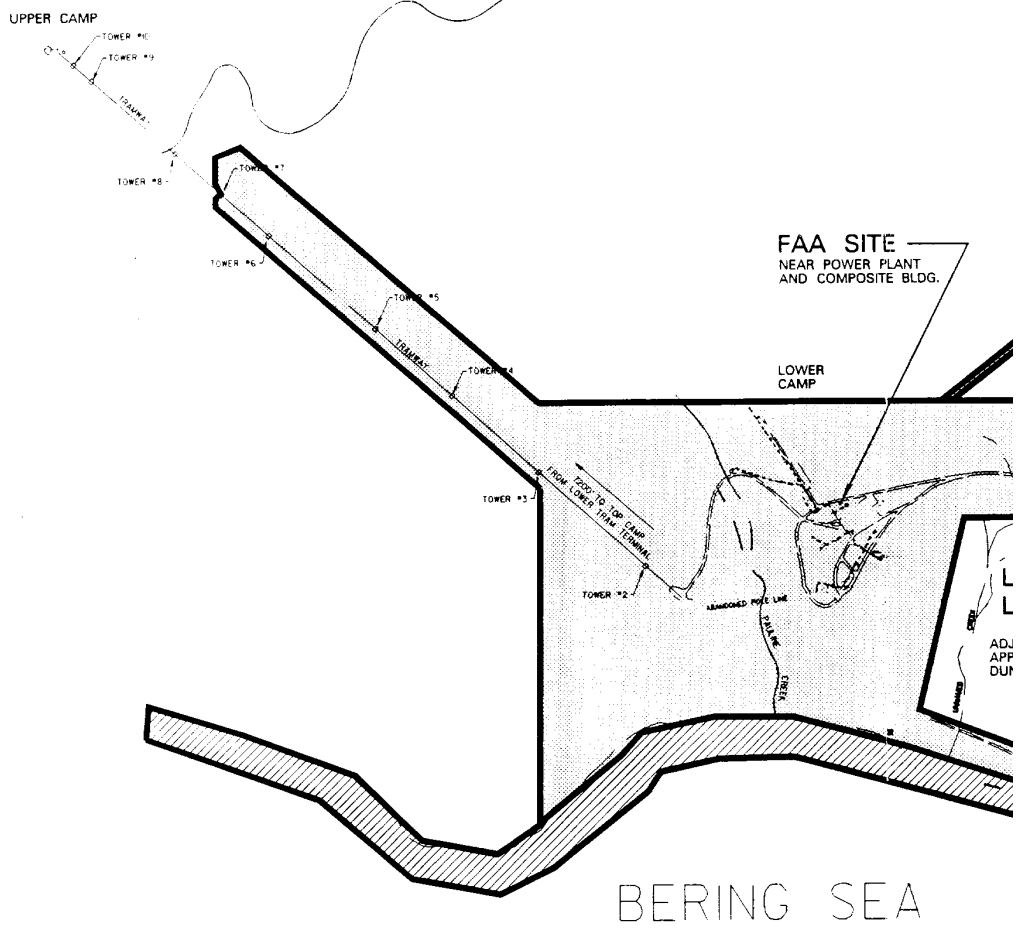
TIN CITY LRRS, ALASKA

IRP SOURCES AND AOC IDENTIFIED FOR FURTHER INVESTIGATION/REMEDIAL ACTION






KEY:

- AREAS OF CONTAMINATION BELOW ACTION LEVELS - NFRAP SITES
- AREAS OF CONTAMINATION BELOW ACTION LEVELS - PROPOSED NFRAP SITES
- AREAS OF KNOWN CONTAMINATION WHERE REQUIRED RESPONSE ACTIONS HAVE NOT YET BEEN IMPLEMENTED
- COMPLIANCE PROJECTS
- OFF-BASE IRP SITES



LEGEND:

-  ALASKA MARITIME NATIONAL WILDLIFE REFUGE
-  US AIR FORCE
-  US NAVY

PLANT E BLDG.

SS 06 SPILL/LEAK NO. 1
OT WHITE ALICE PCB/POL

ABANDONED WHITE ALICE SITE

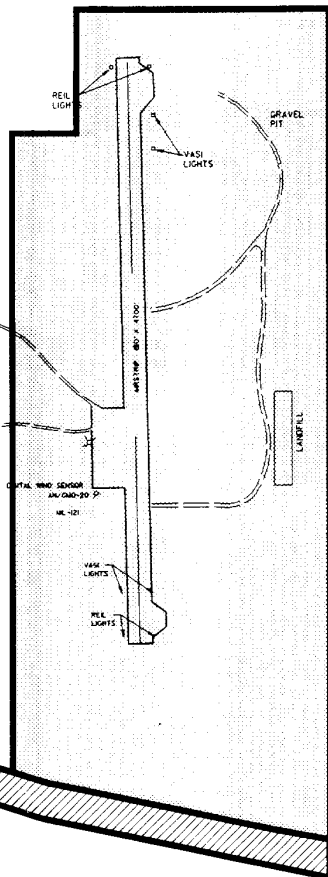
LAKE

TRADING POST DEBRIS

LF 02 LANDFILL 2
ADJACENT TO BEACH IS APPROXIMATE LOCATION DUNBAR PROPERTY

LEES CAMP (TRADING POST)

FORMER TIN CITY TOWNSITE



AIRSTRIP

EXTENSIVE EROSION IN THIS AREA



FIGURE 8

TIN CITY LRRS, ALASKA

OFF-BASE IRP SITES

CRUSHED DRUM
PILE C 3±0.5 FT.

3,100	ND
ND	ND
13,000	ND

CRUSHED DRUM
PILE B 3±0.5 FT.

720-2,650	ND-6.5
5-124	ND-3.1J
2,400-3,950	ND-120J

STORM
CUT BANK

GRAVEL

UNNAMED CREEK

PONDED SURFACE WATER

PILE CRUSHED
DRUMS

BERING SEA

BEACH LANDING

LEGEND

ND NOT DETECTED

- NOT ANALYZED

mg/kg MILLIGRAMS PER KILOGRAM

CRUSHED DRUM PILE C 3±0.5 FT.

AK 102 (mg/kg)	PCBs (ug/kg)
AK 101 (mg/kg)	VOCs (ug/kg)
AK 103 (mg/kg)	Semi-volatiles (ug/kg)

SOIL SAMPLE RESULTS FROM ACCI 1995
WORK. THE DEPTH (IN FEET BGS) AT
WHICH THE SAMPLE WAS COLLECTED
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THE END OF THE SAMPLE NAME

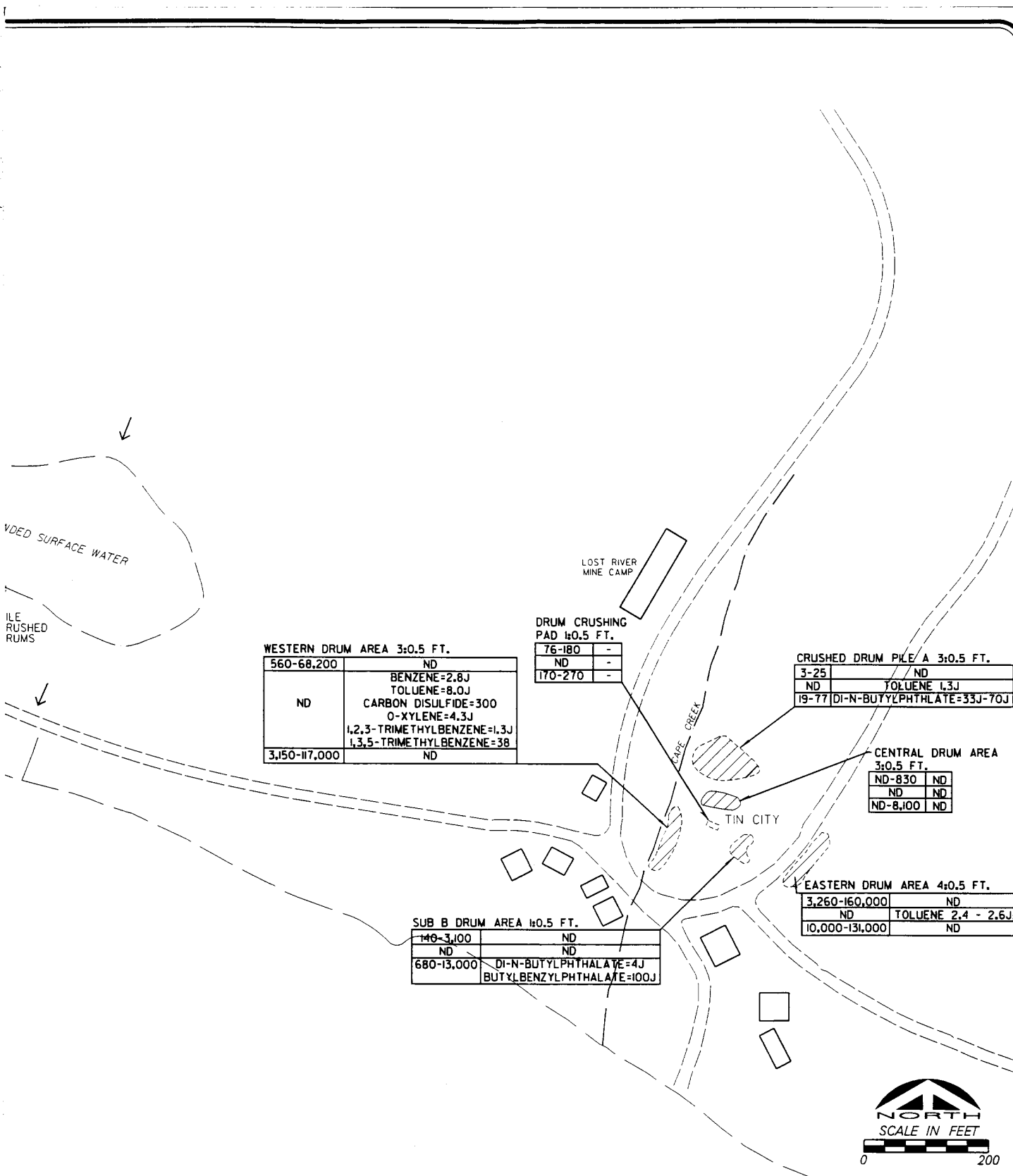
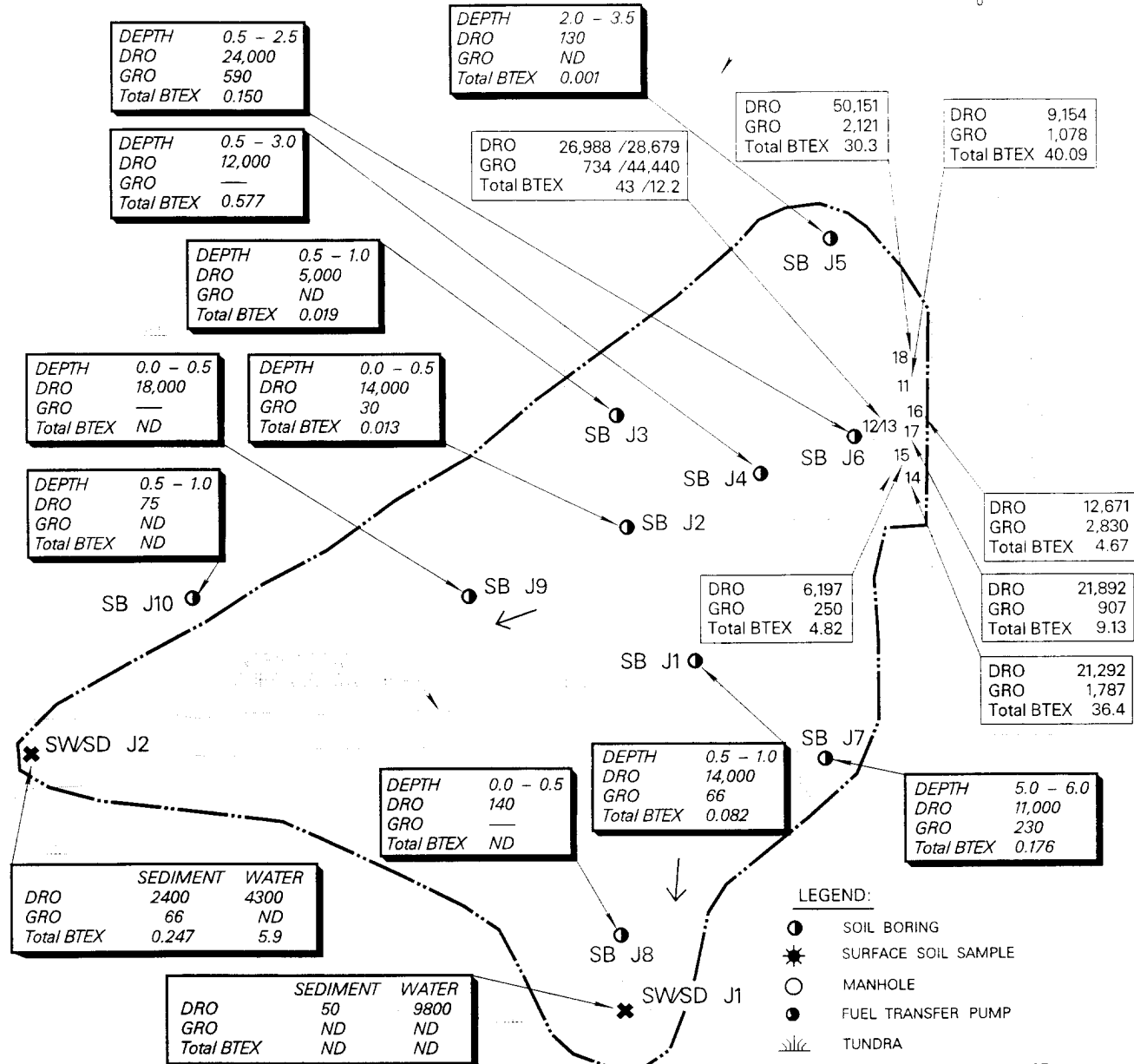


FIGURE 9

TIN CITY LRRS, ALASKA

CONCENTRATIONS OF PRINCIPAL CONTAMINANTS -
DP 011 DUMP #3 AT BEACH



NOTE:
SOIL AND SEDIMENT RESULTS IN MILLIGRAMS PER KILOGRAM. WATER RESULTS IN MICROGRAMS PER LITER. DEPTHS ARE IN FEET.

LEGEND:

DRO	258	RESULTS FROM PREVIOUS SAMPLING DURING TANK REMOVAL OPERATIONS BETWEEN 8/22/93 AND 9/6/93. (AF, 1993).
GRO	49	
Total BTEX	2.58	

DEPTH	4.0-6.0	RESULTS FROM 1995 INVESTIGATION, THIS REPORT
DRO	14	
GRO	—	
Total BTEX	ND	

- LEGEND:**
- SOIL BORING
 - ★ SURFACE SOIL SAMPLE
 - MANHOLE
 - FUEL TRANSFER PUMP
 - ▬ TUNDRA
 - SURFACE WATER DRAINAGE
 - PCB WIPE
 - ✱ SURFACE WATER/SEDIMENT SAMPLE
 - ESTIMATED AREAL EXTENT OF PETROLEUM IN SOIL, BASED ON MOST STRINGENT ADEC MATRIX SCORE
 - F--- UNDERGROUND FUEL LINE
 - DRO DIESEL RANGE ORGANICS
 - GRO GASOLINE RANGE ORGANICS
 - BTEX BENZENE, TOLUENE, ETHYLBENZENE, TOTAL XYLENES
 - ND NOT DETECTED
 - NOT ANALYZED

FIGURE 10
TIN CITY LRRS, ALASKA
CONCENTRATIONS OF PRINCIPAL CONTAMINANTS - ST 12, 4 - USTs (CONTAMINATED SOIL ASSOCIATED WITH REMOVED UST #16)

UPPER CAMP

TOWER #10
TOWER #9
TRAMWAY

TOWER #8
TOWER #7

TOWER #6

TOWER #5

TRAMWAY

TOWER #4

TOWER #3

FROM TOWER TO TOP CAMP
FROM LOWER TRAM TERMINAL

TOWER #2

ABANDONED POLE LINE

LOWER CAMP

DECOMMISSIONED
POWER PILE
(CLEAN SITE)

UPGRADE BULK FUEL
STORAGE TANKS
(MILCON)

CRACK

BEACH

BERING SEA

JOB No. 3380.0020 TIME: 28-MAY-1996 15:25 FILE: cr:\incity\map\fgl.dgn

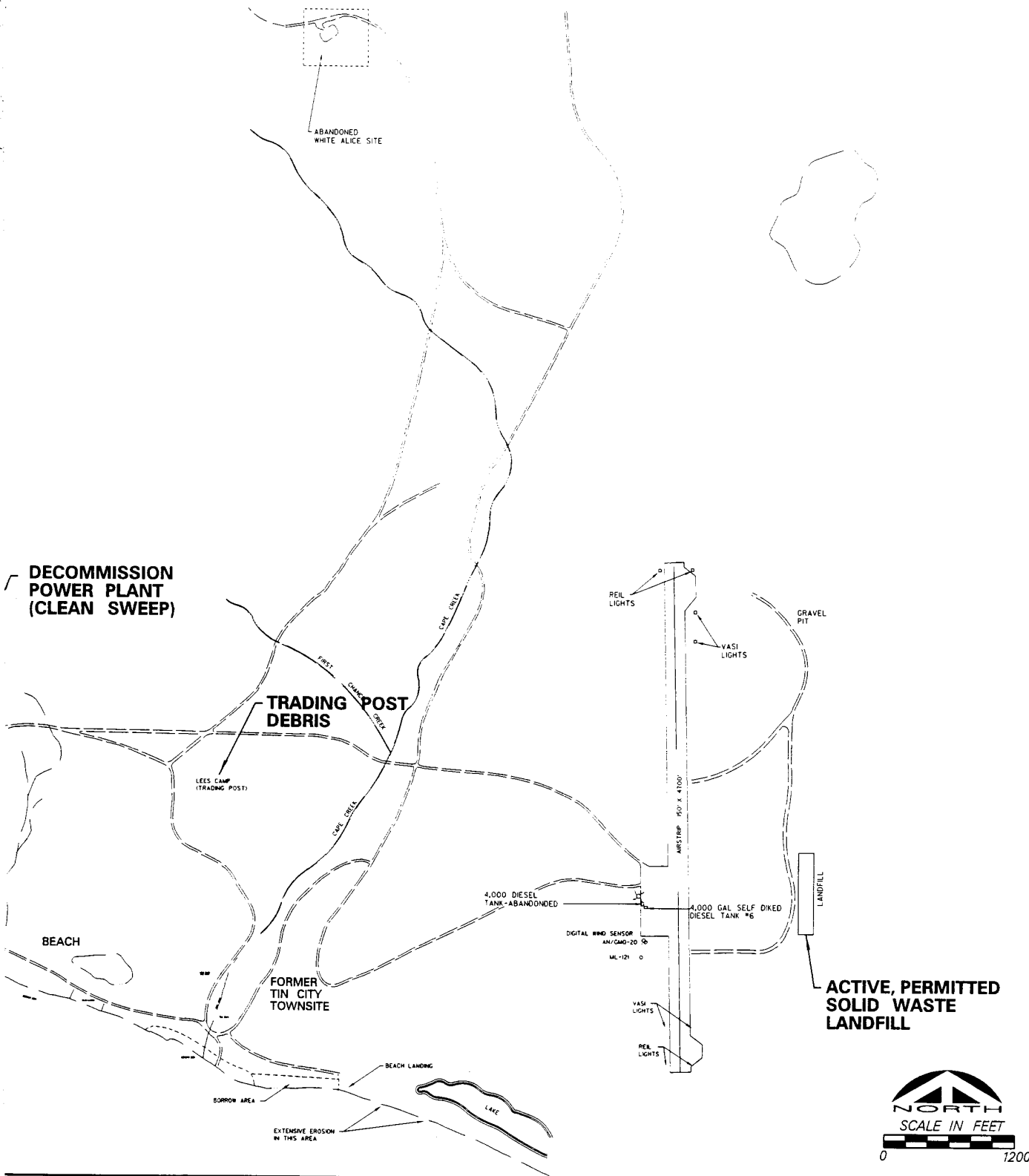
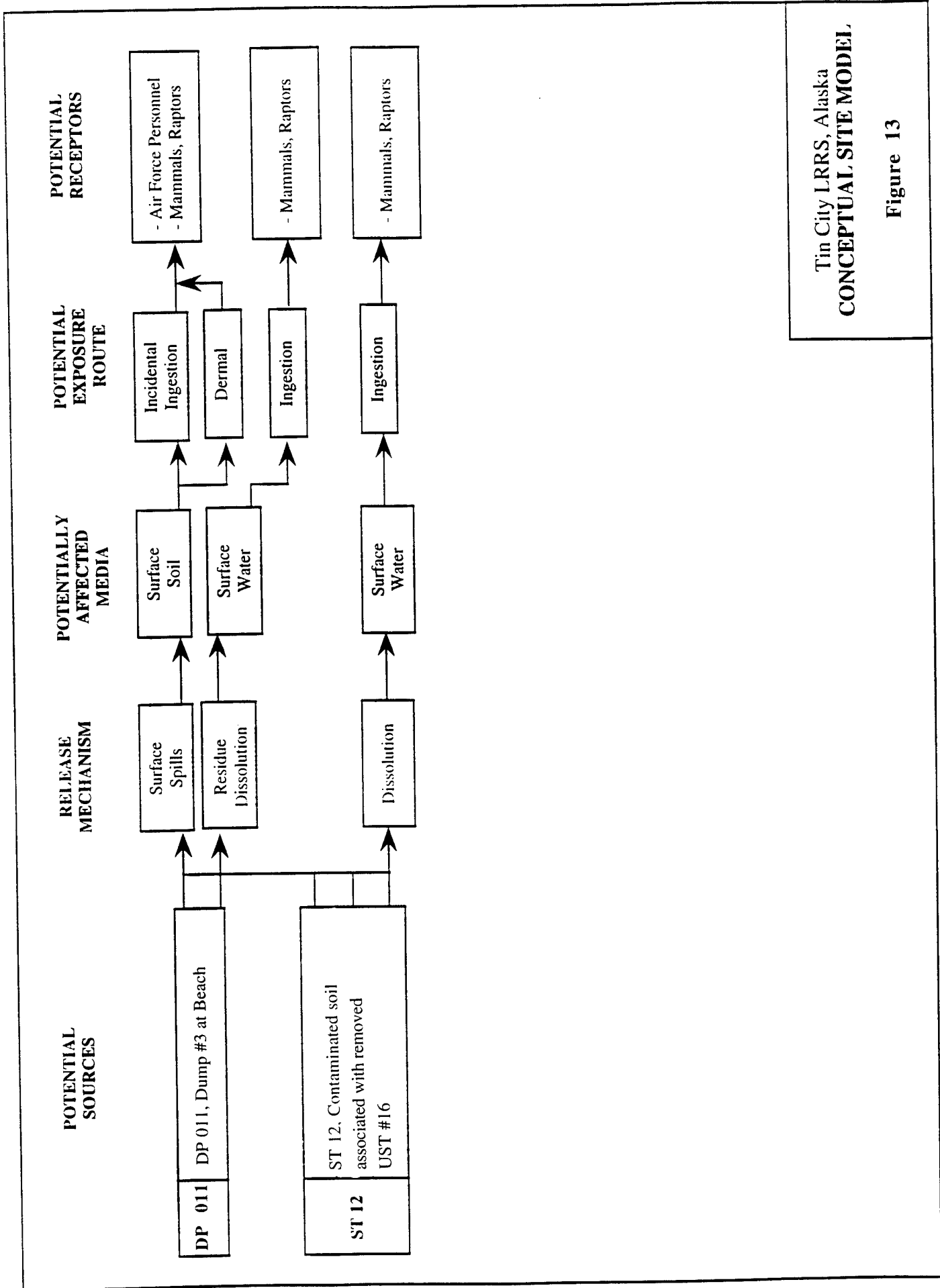


FIGURE 11

TIN CITY LRRS, ALASKA

COMPLIANCE PROJECTS



Tin City LRRS, Alaska
CONCEPTUAL SITE MODEL

Figure 13

Tables

TABLE 1
Project Team Members
Tin City LRRS

CORE TEAM MEMBERS	ADDRESS	PHONE
Mr. Tim Hansen	Air Force Remedial Project Manager 611 CES/CEVC 6900 9th Street Elmendorf AFB, AK 99506-2270	907/552-4490
Mr. Bob Elyard	Community Relations Program Coordinator 611 CES/CEVR 6900 9th Street Elmendorf AFB, AK 99506-2270	907/552-4532
Captain John DeWine	Demolition Program 611 CES/CEVR 6900 9th Street Elmendorf AFB, AK 99506-2270	907/552-4532
Ms. Tamar Stephens	Alaska Department of Environmental Conservation 610 University Avenue Fairbanks, AK 99709-3643	907/451-2360
OTHER KEY PARTICIPANTS	ADDRESS	PHONE
Mr. Bret Berglund ,	611 CES/CEVC 6900 9th Street Elmendorf AFB, AK 99506-2270	907/552-4532
Mr. Scott Hansen	IRP Program Manager 611 CES/CEVR 6900 9th Street Elmendorf AFB, AK 99506-2270	907/552-4532

TABLE 2
History of Installation Operations
Tin City LRRS

Period	Types of Operations	Weapon System	Hazardous Substance Activity	Map Reference
1953-1958	Aircraft Control and Warning Site; Coastal Surveillance	None	Landfill; fuel, lube oil, and heating oil storage; waste oils; runway dye; ethylene glycol; solvents; transformers (PCBs); machinery maintenance.	Figure 3
1958-1975	White Alice Communications System (WACS) replaced radio communications system.	None	Landfill; fuel, lube oil, and heating oil storage; waste oils; runway dye; ethylene glycol; solvents; transformers (PCBs); machinery maintenance.	Figure 3
1975-1984	White Alice Communications System (WACS) was deactivated and replaced with an Alascom-owned satellite earth terminal.	None	N/A	N/A
1984-present	Minimally Attended Radar (MAR) unit was installed and is currently active.	None	Landfill; fuel, lube oil, and heating oil storage; waste oils; runway dye; ethylene glycol; solvents; transformers (PCBs); machinery maintenance.	Figure 3

TABLE 3
Chronology of Previous IRP Work
Tin City LRRS

Period	Types of Operations	Weapon System	Hazardous Substance Activity	Map Reference
1985	Phase I Records Search	None	Record search was conducted by ES to identify and prioritize locations where releases of hazardous substances might have occurred.	Figure 3
1988	Technical Support Document for Record of Decision (ROD)	None	A technical support document was prepared for a ROD by WCC. Six sites identified in the Phase I work were recommended for "no further response action planned" (NFRAP).	Figure 4
1991	Preliminary Assessment/Site Investigation (PA/SI)	None	An installation-wide preliminary assessment and site inspection was performed by the USAF.	Figure 3
1991	Removal Action	None	Three USTs and one AST near Bldg. 76-200 were removed.	Figure 3
1993	Removal Action	None	A USAF contractor encountered and punctured a buried 55-gallon diesel drum during construction work. The drum was removed.	Figure 3
1993	Removal Action	None	The USAF closed and removed four USTs (#3, #9, #16 and #20; near the Composite Bldg., Power Plant Bldg., and the Weather Station Bldg.).	Figure 3
1995	Interim Removal Action	None	A USAF contractor (ACCI, Inc.) performed removal of all scrap drums.	Figure 3
1995	Remedial Investigation/Feasibility Study (RI/FS)	None	EA Engineering, Science and Technology and Montgomery Watson conducted a RI/FS for previously identified IRP sites and areas of concern (AOC). Five IRP sites and AOCs proposed for NFRAP, and two sites were identified for remedial action.	Figures 5 & 6

TABLE 5
Status of Off-Base Property
Tin City LRRS

Name	Acres	Location	Date Acquired	Dates of Operation	Number of Restoration Sites
White Alice Communications Station		White Alice site (Figure 8)	1958	1958-1975	Two: SS 06, Spill/Leak #1 and DT 05, POL/PCB suspected release
Landfill		Third-party landfill near former Tin City townsite (Figure 8)			One: LF 02, Landfill

TABLE 6
Compliance Projects
Tin City LRRS

Project	Status	Regulatory Program
Above-ground Storage Tank: Upgrade of Bulk Fuel Storage Tanks	Proposed for 1996. May be delayed due to inadequate funding.	18 AAC 75; 40 CFR 112
Solid Waste: Active Landfill	Remain active indefinitely	18 AAC 60
Air Force materials accumulated by Tin City Trading Post owner	Under negotiation	None
Decommissioning of Out-of-Service Power Plant	Planned 1999	None
Wastewater: On-site Septic System	Operational	None

APPENDIX A
FISCAL YEAR FUNDING REQUIREMENTS/COST

**Appendix A-1
Site Level Cost Summary
Tin City LRRS**

Relative Risk Rating	Site Name	Phase	\$ FY96 ¹	\$ FY97 ¹	\$ FY98 ¹ (CTC) ²
N/A ³	SS 01 Waste Accum Area	NFRAP ⁴ 1988			
N/A ³	LF 02	NFRAP ⁴ 1988			
N/A ³	LF 03	NFRAP ⁴ 1988			
N/A ³	SD 04	NFRAP ⁴ 1988			
N/A ³	OT 05	NFRAP ⁴ 1988			
N/A ³	SS 06	NFRAP ⁴ 1988			
N/A ³	SS 07	NFRAP ⁴ 1988			
N/A ³	DP 08	NFRAP ⁴ 1988			
N/A ³	LF 09	NFRAP ⁴ 1988			
N/A ³	LF 10	NFRAP ⁴ 1988			
High	DP 011	RD/RA ⁵			*
Medium	ST 12	RD/RA ⁵			*
Low	SS 13	Proposed NFRAP 1997			**
Low	SS 14	Proposed NFRAP 1997			**
N/A ³	AOC 1	Proposed NFRAP 1997			**
N/A ³	AOC 2	Proposed NFRAP 1997			**
N/A ³	AOC 3	Proposed NFRAP 1997			**

¹Cost in millions of dollars

²Cost to complete

³N/A = Not Applicable

⁴NFRAP = No Further Response Action Planned

⁵RD/RA = Remedial Design/Remedial Action

*Cost information can be obtained from the Air Force Program Manager

**NFRAP Decision Document Drafted In-house

Appendix A-2
Funding Requirements by Fiscal Year for Compliance Projects
Tin City LRRS

Program Area/Project Description	\$FY96 ¹	\$FY97	\$FY98	\$FY99	\$FY20	\$FY01
UST Projects						
Bulk Storage Tanks	*					

¹Cost in millions

*Cost information can be obtained from the Air Force Program Manager

Appendix A-3
Past Restoration Costs by Phase for Example AFB (\$000)

	PA/SI	RI/FS	RD	RA	IRA	LTO	LTM	Closeout
FY87								
FY88								
FY89								
FY90								
FY91								
FY92								
FY93								
FY94								
FY95		**	**					

Legend:

- PA/SI = Preliminary Assessment/Site Inspection
- RI/FS = Remedial Investigation/Feasibility Study
- RD = Remedial Design
- RA = Remedial Action
- IRA = Interim Removal or Remedial Action
- LTO = Long-Term Operation
- LTM = Long-Term Monitoring
- NFRAP = No Further Response Action Planned

*To include the preparation of the proposed plan (PP) and Record of Decision (ROD).

**Cost information can be obtained from the Air Force Program Manager

APPENDIX B
LIST OF ENVIRONMENTAL RESTORATION DELIVERABLES

APPENDIX C
DECISION DOCUMENT SUMMARIES

APPENDIX C

No sites are in this category at this time.

APPENDIX D
SUMMARY OF NFRAP DECISIONS

TABLE D-1
Status of IRP Sources and Areas of Concern
Tin City LRRS

IRP Sources	Description	Conclusion or Recommendation	Regulatory Interaction	Relative Risk
DP 08, Dump #1 (Top Camp)	Dump containing refuse, POL, scrap, cleanup in 1978 and 1984	No further response action proposed (NFRAP)	1988 ROD: NFRAP	N/A
LF 09, Dump #2 (Lower Camp)	Dump containing refuse, POL, scrap, cleanup in 1978 and 1984	NFRAP recommended	1988 ROD: NFRAP	N/A
SS 01, Waste Accumulation Area (Lower Camp)	Accumulation of liquid wastes; evidence of leaks and spills	NFRAP Recommended	1988 ROD: NFRAP	N/A
SS 07, Spill/Leak #2 at Incinerator Pipeline (Lower Camp)	Release of estimated 300 gallons diesel from broken pipeline	NFRAP Recommended	1988 ROD: NFRAP	N/A
SD 04, Runway Oiling (Lower Camp)	POL/solvents applied to runway for dust control	NFRAP Recommended	1988 ROD: NFRAP	N/A
LF 10, Mid-Mountain Dump	Cleanup prior to 1987	Debris dump near Top Camp. NFRAP Recommended.	1988 ROD: NFRAP	N/A
SS 13, Spill/Leak #3	Stained soils from spill/leak #3 at lower tram and transformers formerly sited on stained concrete pad and soils at lower tram	Recommended for NFRAP after 1995 RI/FS	Verbal agreement with ADEC for NFRAP.	Low
SS 14, 3 UST and AST #10	3 USTs (removed) and AST #10 (removed); near Bldg. 76-200	Recommended for NFRAP after 1995 RI/FS	Verbal agreement with ADEC for NFRAP.	Low
AOC 1, Spill/Leak #5 at the fuel pump house at Bldg. 123	Spill/leak #5 at fuel transfer station	Recommended for NFRAP after 1995 RI/FS	Verbal agreement with ADEC for NFRAP.	N/A
AOC 2, Fuel tanks at Top Camp substation	Fuel tanks	Recommended for NFRAP after 1995 RI/FS	Verbal agreement with ADEC for NFRAP.	N/A
AOC 3, Substation at Lower Camp	Potential petroleum products and PCBs	Recommended for NFRAP after 1995 RI/FS	Verbal agreement with ADEC for NFRAP.	N/A
ST 12, Four USTs (UST #3, 9, 16, 20)	UST #3 (removed) at Power Plant, UST #20 (removed) at Composite Bldg., UST #16 (removed) at Weather Station	Identified for remedial action after 1995 RI/FS.	UST #3 - Verbal agreement with ADEC for NFRAP. UST #9 - Previously closed. UST #16 - Verbal agreement on remedial action plans. UST #20 - Verbal agreement with ADEC for NFRAP.	Medium
DP 011, Dump No. 3 at the beach	Dump #3 at beach with several piles of abandoned drums and machinery.	Identified for remedial action after 1995 RI/FS	Verbal ADEC agreement on remedial action plans.	High

Sources: ES 1985
WCC 1988
USAF 1991; WCC 1993
USEPA 1993

ADEC 1993b
ADEC 1996
EA/MW 1996

N/A = Not applicable

STATE OF ALASKA

DEPT. OF ENVIRONMENTAL CONSERVATION

Northern Regional Office
1001 Noble Street, Suite 350, Fairbanks, AK 99701-4980

WALTER J. HICKEL, GOVERNOR

Telephone: (907) 451-2360
Fax: (907) 451-2187

NRO File: 475.38.011
475.26.003

November 12, 1993

Lt. Colonel Rodney L. Hunt
11th Air Control Wing
21885 2nd Street
Elmendorf AFB, AK 99506-4460

Dear Lt. Colonel Hunt:

FILE COPY

Re: Tin City Long Range Radar Station

The Department of Environmental Conservation has the following comments concerning Air Force correspondence dated September 21, 1993, which describes current Installation Restoration Program (IRP) sites at the Tin City Long Range Radar Station.

- 1) The Department concurs with the recommendation contained in the report that no further IRP investigation is necessary at the six sites originally identified during IRP investigations. Analytical data collected at the six sites indicate contaminants are either non-detect, or below regulated concentrations (1985, 1988, 1992). Therefore, the Department considers the following six sites to be no further action sites:

SS01, Waste Accumulation Area
SD04, Runway Oiling
SS07, Spill/Leak #2
DP08, Dump #1
LF09, Dump #2
LF10, Midmountain Dump

As you are aware, if conditions should change at the facility, and/or additional information should become available which indicates that more substantial environmental problems exist than those identified to date, the Air Force will need to provide additional analytical data and possible correction action.

- 2) The following sites are considered active sites at Tin City LRRS and are to be addressed through the IRP:

DP11, Dump #3 at Beach
ST12, Four USTs
SS13, Spill/Leak #3 at LTT
SS14, Spill/Leak #4 near Bldg 110

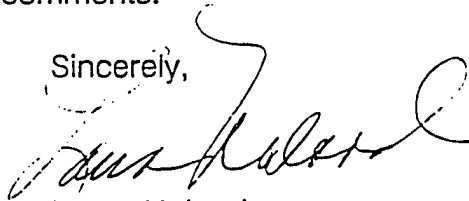
November 12, 1993

Underground storage tank removals were conducted at the facility during the 1993 construction season.

- 3) The Air Force states that LF02, although the Air Force's responsibility, is privately owned and will be managed as a third party site. Please provide additional information regarding this site, specifically, where is it located and how does the Air Force intend to resolve any contamination issues which may exist at the site?

The Department looks forward to working with the Air Force in the coming field season to further address restoration issues at the facility. Please contact Laura Noland at 451-2139, if you have any questions, or comments.

Sincerely,



Laura Noland
Environmental Specialist

LN/blt (h:\eq\lauran\tincity.n10)

cc: Tim Hansen, Remedial Project Manager/Elmendorf AFB
Rielle Markey, ADEC/Fairbanks
Kris McCumby, ADEC/Fairbanks
Randy Romenesko, ADEC/Fairbanks

Telephone: (907) 451-2360
Fax: (907) 451-2187

DEPT. OF ENVIRONMENTAL CONSERVATION

Northern Regional Office
610 University Avenue, Fairbanks, AK 99709-3643

NRO File: 475.38.002
475.26.003

FILE COPY

January 19, 1994

Lt. Colonel Rodney L. Hunt
11th Air Control Wing
21885 2nd Street
Elmendorf AFB, AK 99506-4460

**Re: Tin City Long Range Radar Station
Underground Storage Tanks 3, 9, 16, and 20**

Dear Lt. Colonel Hunt:

The Department of Environmental Conservation has completed review of the Site Assessment report which describes removal activities for underground storage tanks (USTs) 3,9,16, and 20 at Tin City LRRS. The USTs and associated piping were removed, cleaned, demolished and buried in the active Tin City landfill. Each UST pit was backfilled with the excavated soils.



UST No. 9

UST No. 9, located near Building 110, is a 300 gallon gasoline tank which was used for the installation power plant from the mid 1950s through 1986. Five soil samples were collected and analyzed for DRO, GRO, BTEX and TCLP metals. All samples results were below the Level A as determined by the Matrix Score. **The Department agrees that this tank site is a clean closure and no further action is required at the site.**

UST No. 3

UST No. 3 is a 10,000 gallon UST used to store diesel fuel at the heating plant (Bldg 110). The tank was reportedly deactivated in 1989. During removal activities obvious soil contamination was noted and estimated at one hundred to five hundred cubic yards. A drinking water well is located upgradient and approximately 1200 feet from the tank site. Matrix cleanup level was determined to be Level B. **Based on the level of contamination found, the Department agrees with the Air Force recommendation that future remedial activities are needed. The Air Force has determined that future restoration activities will be conducted and funded through the Installation Restoration Program.**

Post-It™ brand fax transmittal memo 7671		# of pages ▶
To <i>TIM HANSEN</i>	From <i>LAURA NILAND</i>	
Co. <i>11th CEOS</i>	Co.	
Dept.	Phone #	
Fax # <i>552-3248</i>	Fax #	

UST No. 16

UST No. 16 is a 4000 gallon diesel tank located near the runway and it was used for heating a support building. The tank was found to contain approximately 18 gallons of fuel. Weld breaks were evident. GRO soil contamination was detected as high as 44,440 ppm and BTEX as high as 470 ppm. An area of standing surface water approximately less than two tenths of an acre adjacent to the contaminated gravel pad area appears to be receiving leachates from the tank site. A surface sheen on the surface water and stressed vegetation was noted during removal activities.

The matrix level for UST No. 16 was calculated to be at Level C, however, the Department notes that groundwater or seasonal high water table is known or suspected to exist within five feet of the bottom of the UST. Matrix levels for depth to subsurface water must be determined based on the presence of subsurface water:

Depth to groundwater is measured from the lowest point of the zone of soil contamination to the seasonal high groundwater table. (Guidance Manual for Underground Storage Tank Regulations 18 AAC 78, June 18, 1991. Page 30)

Matrix Level B would be a more appropriate cleanup level for this site due to the presence of subsurface water near and at the surface. **The Department has no objection to the Air Force recommendation that restoration be accomplished under the Installation Restoration Program, however, it appears that this site is an active release area therefore, remediation activities may need to be conducted in 1994. The Department requests additional information concerning the extent of surface water contamination and the possible threat to the environment.**

UST No. 20

UST No. 20 is a 300 gallon tank which was part of an oil/water separator system at the main composite building (Bldg 150). Reports indicate that the tank was never in service, however, the UST was found to contain approximately 17 gallons of a substance estimated to be green runway dye. Weld breaks were noted in seams located on the bottom of the tank. Matrix cleanup level was determined to be Level B. **Based on the level of contamination found, the Department agrees with the Air Force recommendation that future remedial activities are needed. The Air Force has determined that future restoration activities will be conducted and funded through the Installation Restoration Program.**

To summarize, UST No. 9 is a clean closure site, UST No. 3 and UST No. 20 will have further remediation work accomplished through the Installation Restoration Program, and UST No. 16, may require an interim action.

The Department appreciates the opportunity to provide comments and review for this tank removal project. Please contact Laura Noland at 451-2139, if you have any questions, or comments.

Sincerely,

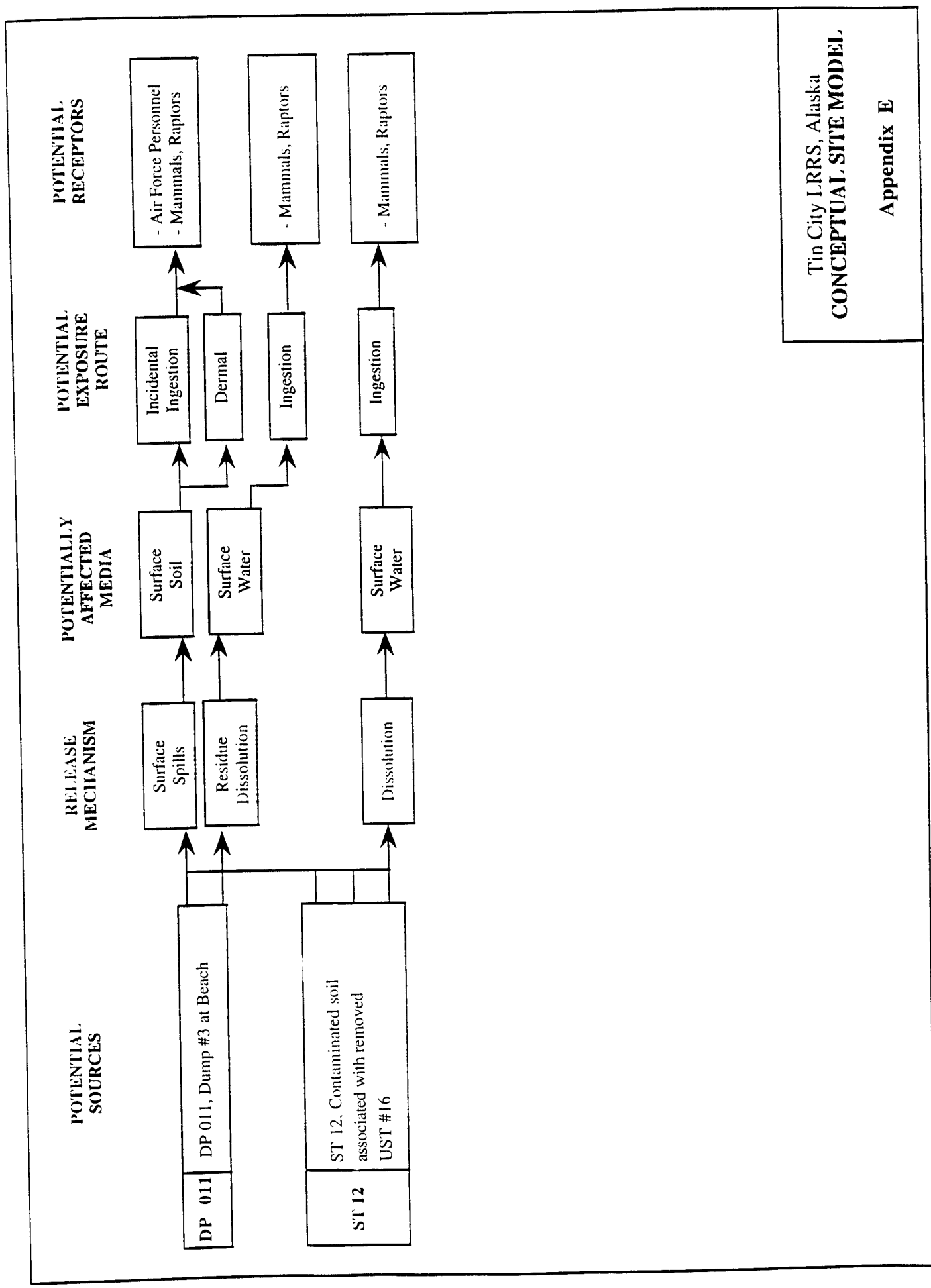


Laura Noland
Environmental Specialist

LN/rg (h:\eq\lauran\tinctyus.118)

cc: Tim Hansen, Remedial Project Manager/Elmendorf AFB
Rielle Markey, ADEC/Fairbanks
Joe Millhouse, Supervisory Geologist/Elmendorf AFB
Linda Neutcherlein, ADEC/FAP/Anchorage
Randy Romenesko, ADEC/Fairbanks

**APPENDIX E
CONCEPTUAL SITE MODEL AND
SUMMARY OF PRINCIPAL CONTAMINANTS**



Tin City LRRS, Alaska
CONCEPTUAL SITE MODEL

Appendix E

DP 011 - Dump #3 at Beach

Primary source: Nine areas with abandoned drums and one drum crushing pad. The areas are identified by ACCI, Inc. as the Eastern Drum Area, Central Drum Area; Western Drum Area; Sub B Drum Area; Sub D Drum Area; Crushed Drum Pile A; Crushed Drum Pile B; and Crushed Drum Pile C, and Drum Crushing Pad.

Background and excluded constituents: Elevated levels of TPH-diesel range and TPH-gasoline range were detected in background samples of tundra and peat and may be contributing to the elevated levels detected in these samples due to naturally-occurring organic materials, especially since the soil samples were collected in tundra areas. Defining the extent of contamination may be complicated by the contributions of the naturally-occurring organics and should be considered during the planning phases of any removal action.

Primary contaminants by media: TPH-residual range (ND-131,000 mg/kg), TPH-diesel range (ND-160,000 mg/kg), and TPH-gasoline range (ND-450 mg/kg) at elevated levels in isolated areas of tundra. The analytical results showed elevated levels of petroleum hydrocarbons in the Eastern Drum Area, Central Drum Area; Western Drum Area; Sub B Drum Area; Sub D Drum Area; Crushed Drum Pile B; and Crushed Drum Pile C. Elevated levels of petroleum hydrocarbons were not detected at the Crushed Drum Pile A and Drum Crushing Pad. Concentrations of principal contaminants are shown on Figure 9.

Estimated areal extent (square feet): 9,050

Estimated total depth (feet): 1-4 feet depending on the specific isolated area

Estimated volume (cubic yards): 880 (based on ADEC level A matrix)

Assumptions/qualifiers for estimated areal extent and volumes:

Areal extent and volume should be used only as very rough numbers because:

1. Based on a very limited number of samples
2. Contamination may extend beyond sampling points
3. Areal extent based on visual indications of stained soil.
4. Collection of additional data is highly recommended prior to using these estimates for budgeting or executing additional services.

Surface contamination: Yes

Trends: No historical data are available for this area.

Media type: Unknown, suspected tundra mat.

Potential receptors: Humans and wildlife in contact with surface soils. Tundra.

ADEC Matrix Level: C

IRP SOURCE AREA: DP 011b

1.	Depth to Subsurface Water			
	<5 feet	(10)	<u>10</u>	
	5 - 15 feet	(8)	<u> </u>	
	15 - 25 feet	(6)	<u> </u>	
	25 - 50 feet	(4)	<u> </u>	
	>50 feet	(1)	<u> </u>	
2.	Mean Annual Precipitation			
	>40 inches	(10)	<u> </u>	
	25 - 40 inches	(5)	<u> </u>	
	15 - 25 inches	(3)	<u> </u>	
	<15 inches	(1)	<u>1</u>	
3.	Soil Type			
	clean, coarse-grained soils	(10)	<u> </u>	
	coarse-grained soils with fines	(8)	<u> </u>	
	fine-grained soils (low organic carbon)	(3)	<u>3</u>	
	fine-grained soils (high organic carbon)	(1)	<u> </u>	
4.	Potential Receptors			
	public well within 1,000 feet, or private well(s)			
	within 500 feet	(15)	<u> </u>	
	municipal/private well within 1/2 mile	(12)	<u> </u>	
	municipal/private well within 1 mile	(8)	<u> </u>	
	no known well within 1/2 mile	(6)	<u> </u>	
	no known well within 1 mile	(4)	<u> </u>	
	non-potable groundwater	(1)	<u>1</u>	
5.	Volume of Contaminated Soil			
	>500 cubic yards	(10)	<u>10</u>	
	100 - 500 cubic yards	(8)	<u> </u>	
	25 - 100 cubic yards	(5)	<u> </u>	
	>De Minimis - 25 cubic yards	(2)	<u> </u>	
	De Minimis	(0)	<u> </u>	
		Matrix Score	<u>25</u>	
		Level	<u>C</u>	

		Cleanup Level Estimate in mg/kg			
		Diesel	Gasoline/Unknown		
		Diesel-Range	Gasoline-Range		Total
Matrix Score		Petroleum Hydrocarbons	Petroleum Hydrocarbons	Benzene	BTEX
Level A	>40	100	50	0.1	10
Level B	27-40	200	100	0.5	15
Level C	21-26	1,000	500	0.5	50
Level D	<20	2,000	1,000	0.5	100

ST 12 4 USTs (Contaminated soil associated with removed UST #16)

Primary source: 4,000-gallon diesel fuel tank UST #16 (removed) at Weather Station, Bldg. 132.

Background and excluded constituents: Background samples of tundra showed slightly elevated levels of TPH-residual range and TPH-diesel range indicating that naturally-occurring organics may be contributing slightly to the elevated levels of TPH-diesel range in the one sediment sample and possibly the two surface water samples. Future studies may want to consider sampling and analysis methods which could minimize the interferences.

Primary contaminants by media: TPH-diesel range (130-24,000 mg/kg), TPH-gasoline range (ND-590 mg/kg), and BTEX (ND-577 ug/kg) were detected in the gravel pad. SVOC are absent except for low levels of 2-methylnaphthalene (26 mg/kg), phenanthrene (0.56 mg/ug), diethyl phthalate (20 ug/L), and 4-methylphenol (19 ug/L), which all occur in isolated locations. The relative levels of TPH-diesel range and TPH-gasoline range in soil samples are not consistent indicating that use of one analytical method as a surrogate for the petroleum contamination may be inappropriate. TPH-diesel range, TPH-gasoline range, ethylbenzene, xylenes and 4-methylphenol are apparently migrating to the surface water and sediment in the adjacent tundra at two distinct locations. No benzene and only minimal amounts of other BTEX constituents were detected.

Estimated areal extent (square feet): 11,250 (based on the most stringent ADEC cleanup matrix levels for petroleum constituents)

Estimated total depth (feet): 3 (an average, based on drilling gravel pad experience during investigation where boulders/bedrock was encountered at depths of approximately 3 feet)

Estimated volume (cubic yards): 1,250 (based on ADEC level A matrix)

Assumptions/qualifiers for estimated areal extent and volumes:

Areal extent and volume calculations should be used only as very rough numbers, because:

1. Based on limited number of samples
2. Contamination may extend beyond the sampled locations
3. Contamination may extend to greater depths
4. Collection of additional data is highly recommended prior to using these estimates for budgeting or executing additional activities.

Surface contamination: Yes

Trends: No trends can be discerned since comparable locations were not sampled during past investigations.

Media type: Sand and gravel, sediments, and surface water.

Potential receptors: Humans and wildlife in contact with soils, sediments, water, tundra.

ADEC Matrix Level: B

IRP Source Area: SS 12

1.	Depth To Subsurface Water		
	<5 Feet	(10)	<u>10</u>
	5 - 15 Feet	(8)	<u> </u>
	15 - 25 Feet	(6)	<u> </u>
	25 - 50 Feet	(4)	<u> </u>
	>50 Feet	(1)	<u> </u>
2.	Mean Annual Precipitation		
	>40 inches	(10)	<u> </u>
	25 - 40 inches	(5)	<u> </u>
	15 - 25 inches	(3)	<u> </u>
	<15 inches	(1)	<u>1</u>
3.	Soil Type		
	clean, coarse-grained soils	(10)	<u> </u>
	coarse-grained soils with fines	(8)	<u>8</u>
	fine-grained soils (low organic carbon)	(3)	<u> </u>
	fine-grained soils (high organic carbon)	(1)	<u> </u>
4.	Potential Receptors		
	public well within 1,000 feet, or private well(s)		
	within 500 feet	(15)	<u> </u>
	municipal/private well within 1/2 mile	(12)	<u> </u>
	municipal/private well within 1 mile	(8)	<u> </u>
	no known well within 1/2 mile	(6)	<u> </u>
	no known well within 1 mile	(4)	<u> </u>
	non-potable groundwater	(1)	<u>1</u>
5.	Volume of Contaminated Soil		
	>500 cubic yards	(10)	<u>10</u>
	100 - 500 cubic yards	(8)	<u> </u>
	25 - 100 cubic yards	(5)	<u> </u>
	>De Minimis - 25 cubic yards	(2)	<u> </u>
	De Minimis	(0)	<u> </u>
		Matrix Score	<u>30</u>
		Level	<u>B</u>

		Cleanup Level Estimate in mg/kg			
		Diesel		Gasoline/Unknown	
		Diesel-Range		Gasoline-Range	
Matrix Score		Petroleum Hydrocarbons	Petroleum Hydrocarbons	Benzene	Total BTEX
Level A	>40	100	50	0.1	10
Level B	27-40	200	100	0.5	15
Level C	21-26	1,000	500	0.5	50
Level D	<20	2,000	1,000	0.5	100

APPENDIX F
RELATIVE RISK EVALUATION WORKSHEETS

RELATIVE RISK EVALUATION WORKSHEET

SITE BACKGROUND INFORMATION

Installation Name: TIN CITY AFS Date Entered (month/day/year): 9/14/95
Location (City/County and State): Seward Peninsula, Alaska Media Evaluated (GW, SW, Sediment, Soil): SOIL
Site Name/DERPMIS ID: SPILL/LEAK #4 NEAR BLDG 76-200 / SS014 Site Type: SS - Spill Site Area - SS
Point of Contact (Name/Phone): Mr. T. Hansen/DSN 552-4532 Phase of Execution (SI, RI, FS, EE/CA, IRA, RD/RA, or equivalent RCRA Stage): SI
NPL/Proposed NPL (Y/N): No Agreement Status (enter the appropriate DERP regulatory agreement code): Q

Overall Project Risk: LOW

SITE SUMMARY

Brief Project Description (include site type, materials disposed, dates of operation, and other relevant information)
Site is location of three (3) USTs used to store MOGAS and diesel fuel. Tanks removed in 1991. Leakage occurred over an unknown period

Brief Description of Pathways (Groundwater, Soil, Surface Water (human), Sediment (human), Sediment (ecological)):
Contaminated soil has been capped with clean gravel. There is potential for contaminants to be carried to a point of exposure through seeps at the toe of the gravel/rubble pad comprising the site.

Brief Description of Receptors (Human and Ecological):
NA

GROUNDWATER

CONTAMINANT HAZARD FACTOR (CHF):

Significant (If Total > 100):
 Moderate (If Total 2-100):
 Minimum (If Total < 2):

Contaminant No Contaminants	Max Concentration (ppb)	Standard (ppb)	Ratio
Total			

MIGRATION PATHWAY FACTOR (MPF):

- Evident - Analytical data or observable evidence indicates that contamination in the media is moving away from the source.
- Potential - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined.
- Confined - Information indicates that the potential for contaminant migration from the source is limited (due to geological structures or physical controls).

Evident:
 Potential:
 Confined:

Brief rationale/source for selection: ENTER COMMENTS HERE

RECEPTOR FACTOR (RF):

- Identified - There is a threatened or potentially threatened water supply downgradient of the source. The groundwater (contaminated or not) is a current source of drinking water or source of water for other beneficial uses such as irrigation/agricultures (equivalent to Class I or IIA aquifer).
- Potential - There is no potentially threatened water supply well downgradient of the source. The groundwater is potentially usable for drinking water, irrigation, or agricultures, but is not presently used (equivalent to Class IIB aquifer).
- Limited - There is no potentially threatened water supply well downgradient of the source. The groundwater is not considered a potential source of drinking water or is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only)

Identified:
 Potential:
 Limited:

Brief rationale/source for selection: ENTER COMMENTS HERE

Groundwater Category: NE

SURFACE WATER - HUMAN

CONTAMINANT HAZARD FACTOR (CHF):

Significant (If Total > 100):
Moderate (If Total 2-100):
Minimum (If Total < 2):

<u>Contaminant</u> No Contaminants	<u>Max Concentration (ppb)</u>	<u>Standard (ppb)</u>	<u>Ratio</u>
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Total

MIGRATION PATHWAY FACTOR (MPF):

- Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, or moving toward, has moved to a point of exposure.
- Potential** - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined.
- Confined** - Information indicates that the potential for contaminant migration from the source is limited (due to geological structures or physical controls).

Evident:
Potential:
Confined:

Brief rationale/source for selection: ENTER COMMENTS HERE

RECEPTOR FACTOR (RF):

- Identified** - Receptors identified that have access to surface water or sediment.
- Potential** - Potential for receptors to have access to surface water of sediment.
- Limited** - Little or no potential for receptors to have access to surface water or sediment.

Identified:
Potential:
Limited:

Brief rationale/source for selection: ENTER COMMENTS HERE

Surface Water - Human Category: NE

SURFACE WATER - ECOLOGICAL

CONTAMINANT HAZARD FACTOR (CHF):

Significant (If Total > 100):
Moderate (If Total 2-100):
Minimum (If Total < 2):

<u>Contaminant</u> No Contaminants	<u>Max Concentration (ppb)</u>	<u>Standard (ppb)</u>	<u>Ratio</u>
			Total

MIGRATION PATHWAY FACTOR (MPF):

- Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, or moving toward, has moved to a point of exposure.
- Potential** - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined.
- Confined** - Information indicates that the potential for contaminant migration from the source is limited (due to geological structures or physical controls).

Evident:
Potential:
Confined:

Brief rationale/source for selection: ENTER COMMENTS HERE

RECEPTOR FACTOR (RF):

- Identified** - Receptors identified that have access to surface water or sediment.
- Potential** - Potential for receptors to have access to surface water of sediment.
- Limited** - Little or no potential for receptors to have access to surface water or sediment.

Identified:
Potential:
Limited:

Brief rationale/source for selection: ENTER COMMENTS HERE

Surface Water - Ecological Category: NE

SEDIMENT - HUMAN

CONTAMINANT HAZARD FACTOR (CHF):

Significant (If Total > 100):
 Moderate (If Total 2-100):
 Minimum (If Total < 2):

<u>Contaminant</u> No Contaminants	<u>Max Concentration (ppb)</u>	<u>Standard (ppb)</u>	<u>Ratio</u> 0.00
			Total 0.00

MIGRATION PATHWAY FACTOR (MPF):

- Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, moving toward, or has moved to a point of exposure
- Potential** - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined
- Confined** - Information Indicates that the potential for contaminant migration from the source is limited (due geological structures or physical controls).

Evident:
 Potential:
 Confined: X

Brief rationale/source for selection: ENTER COMMENTS HERE

RECEPTOR FACTOR (RF)

- Identified** - Receptors identified that have access to surface water or sediment
- Potential** - Potential for receptors to have access to surface water or sediment
- Limited** - Little or no potential for receptors to have access to surface water or sediment

Identified:
 Potential:
 Limited: X

Brief rationale/source for selection: ENTER COMMENTS HERE

Sediment - Human Category:

NE

SEDIMENT - ECOLOGICAL

CONTAMINANT HAZARD FACTOR (CHF):

Significant (If Total > 100):
Moderate (If Total 2-100):
Minimum (If Total < 2):

Contaminant No Contaminants	Max Concentration (ppb)	Standard (ppb)	Ratio
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Total

MIGRATION PATHWAY FACTOR (MPF):

- Evident - Analytical data or observable evidence indicates that contamination in the media is present at, moving toward, or has moved to a point of exposure
- Potential - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined
- Confined - Information Indicates that the potential for contaminant migration from the source is limited (due geological structures or physical controls).

Evident:
Potential:
Confined:

Brief rationale/source for selection: ENTER COMMENTS HERE

RECEPTOR FACTOR (RF)

- Identified - Receptors identified that have access to surface water or sediment
- Potential - Potential for receptors to have access to surface water or sediment
- Limited - Little or no potential for receptors to have access to surface water or sediment

Identified:
Potential:
Limited:

Brief rationale/source for selection: ENTER COMMENTS HERE

Sediment - Ecological Category:

NE

SOIL

CONTAMINANT HAZARD FACTOR (CHF):

Significant (If Total > 100):
Moderate (If Total 2-100):
Minimum (If Total < 2):

<u>Contaminant</u>	<u>Max Concentration (ppb)</u>	<u>Standard (ppb)</u>	<u>Ratio</u>
Toluene	1.00	870,000.00	0.00
Xylene (mixed)	1.00	980,000.00	0.00
<u>Total</u>			0.00

MIGRATION PATHWAY FACTOR (MPF)

Evident - Analytical data or observable evidence that contamination is present at, is moving towards, or has moved to a point of exposure.
Potential - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined.
Confined - Low possibility for contamination to be present at or migrate to a point of exposure

Evident:
Potential:
Confined:

Brief rationale/source for selection: Potential for contaminants to be carried to a point of exposure by seeps at base of base of gravel/rubble pad

RECEPTOR FACTOR (RF):

Identified - Receptors identified that have access to contaminated soil
Potential - Potential for receptors to have access to contaminated soil
Limited - Little or no potential for receptors to have access to contaminated soil

Identified:
Potential:
Limited:

Brief rationale/source for selection: Humans and wildlife occasionally pass through the area. Site has limited wildlife habitat value.

Soil Category: LOW

RELATIVE RISK EVALUATION WORKSHEET

SITE BACKGROUND INFORMATION

Installation Name:

TIN CITY AFS

Location (City/County and State):

Seward Peninsula, Alaska

Site Name/DERPMIS ID:

SPILL/LEAK #3 at LTI / SS013

Point of Contact (Name/Phone):

Mr. T. Hansen/DSN 552-4532

NPL/Proposed NPL (Y/N): No

Overall Project Risk: LOW

SITE SUMMARY

Brief Project Description (include site type, materials disposed, dates of operation, and other relevant information)

At the Lower Tramway Terminal extensive soil contamination from diesel fuel. Time of spill is unknown.

Brief Description of Pathways (Groundwater, Soil, Surface Water (human), Surface Water (ecological), Sediment (human), Sediment (ecological)):

Contaminants at the soil surface down to 5 ft.

Brief Description of Receptors (Human and Ecological):

Humans pass through the site

Date Entered (month/day/year):

9/14/95

Media Evaluated (GW, SW, Sediment, Soil):

SOIL

Site Type:

SS - Spill Site Area - SS

Phase of Execution (SI, RI, FS, EE/CA, IRA, RD/RA, or equivalent RCRA Stage):

SI

Agreement Status (enter the appropriate DERP regulatory agreement code):

Q

GROUNDWATER

CONTAMINANT HAZARD FACTOR (CHF):

Contaminant
No Contaminants

Max Concentration (ppb) Standard (ppb) Ratio

Total

Significant (If Total > 100):
Moderate (If Total 2-100):
Minimum (If Total < 2):

MIGRATION PATHWAY FACTOR (MPF):

- Evident** - Analytical data or observable evidence indicates that contamination in the media is moving away from the source.
- Potential** - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined.
- Confined** - Information indicates that the potential for contaminant migration from the source is limited (due to geological structures or physical controls).

Evident: _____
Potential: X
Confined: _____

Brief rationale/source for selection: ENTER COMMENTS HERE

RECEPTOR FACTOR (RF):

- Identified** - There is a threatened or potentially threatened water supply downgradient of the source. The groundwater (contaminated or not) is a current source of drinking water or source of water for other beneficial uses such as irrigation/agricultures (equivalent to Class I or IIA aquifer).
- Potential** - There is no potentially threatened water supply well downgradient of the source. The groundwater is potentially usable for drinking water, irrigation, or agriculture, but is not presently used (equivalent to Class IIB aquifer).
- Limited** - There is no potentially threatened water supply well downgradient of the source. The groundwater is not considered a potential source of drinking water or is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only)

Identified: _____
Potential: _____
Limited: X

Brief rationale/source for selection: ENTER COMMENTS HERE

Groundwater Category: NE

SURFACE WATER - HUMAN

CONTAMINANT HAZARD FACTOR (CHF):

Significant (If Total > 100):
Moderate (If Total 2-100):
Minimum (If Total < 2):

Contaminant No Contaminants	Max Concentration (ppb)	Standard (ppb)	Ratio
			Total

MIGRATION PATHWAY FACTOR (MPF):

- Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, or moving toward, has moved to a point of exposure.
- Potential** - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined.
- Confined** - Information indicates that the potential for contaminant migration from the source is limited (due to geological structures or physical controls).

Evident:
Potential:
Confined:

Brief rationale/source for selection: ENTER COMMENTS HERE

RECEPTOR FACTOR (RF):

- Identified** - Receptors identified that have access to surface water or sediment.
- Potential** - Potential for receptors to have access to surface water or sediment.
- Limited** - Little or no potential for receptors to have access to surface water or sediment.

Identified:
Potential:
Limited:

Brief rationale/source for selection: ENTER COMMENTS HERE

Surface Water - Human Category: NE

SURFACE WATER - ECOLOGICAL

CONTAMINANT HAZARD FACTOR (CHF):

Significant (If Total > 100):
Moderate (If Total 2-100):
Minimum (If Total < 2):

<u>Contaminant</u> No Contaminants	<u>Max Concentration (ppb)</u>	<u>Standard (ppb)</u>	<u>Ratio</u>
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Total

MIGRATION PATHWAY FACTOR (MPF):

- Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, or moving toward, has moved to a point of exposure.
- Potential** - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined.
- Confined** - Information indicates that the potential for contaminant migration from the source is limited (due to geological structures or physical controls).

Evident:
Potential:
Confined:

Brief rationale/source for selection: ENTER COMMENTS HERE

RECEPTOR FACTOR (RF):

- Identified** - Receptors identified that have access to surface water or sediment.
- Potential** - Potential for receptors to have access to surface water of sediment.
- Limited** - Little or no potential for receptors to have access to surface water or sediment.

Identified:
Potential:
Limited:

Brief rationale/source for selection: ENTER COMMENTS HERE

Surface Water - Ecological Category: NE

SEDIMENT - HUMAN

CONTAMINANT HAZARD FACTOR (CHF):

Significant (If Total > 100):
Moderate (If Total 2-100):
Minimum (If Total < 2):

<u>Contaminant</u> No Contaminants	<u>Max Concentration (ppb)</u>	<u>Standard (ppb)</u>	<u>Ratio</u> 0.00
		Total	0.00

MIGRATION PATHWAY FACTOR (MPF):

- Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, moving toward, or has moved to a point of exposure
- Potential** - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined
- Confined** - Information Indicates that the potential for contaminant migration from the source is limited (due geological structures or physical controls).

Evident:
Potential:
Confined:

Brief rationale/source for selection: ENTER COMMENTS HERE

RECEPTOR FACTOR (RF)

- Identified** - Receptors identified that have access to surface water or sediment
- Potential** - Potential for receptors to have access to surface water or sediment
- Limited** - Little or no potential for receptors to have access to surface water or sediment

Identified:
Potential:
Limited:

Brief rationale/source for selection: ENTER COMMENTS HERE

Sediment - Human Category:

NE

SEDIMENT - ECOLOGICAL

CONTAMINANT HAZARD FACTOR (CHF):

Significant (If Total > 100):
Moderate (If Total 2-100):
Minimum (If Total < 2):

Contaminant No Contaminants	Max Concentration (ppb)	Standard (ppb)	Ratio
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Total

MIGRATION PATHWAY FACTOR (MPF):

- Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, moving toward, or has moved to a point of exposure
- Potential** - Possibility for contamination to be present at or migrate to a point of exposure, or information is not sufficient to make a determination of Evident or Confined
- Confined** - Information Indicates that the potential for contaminant migration from the source is limited (due geological structures or physical controls).

Evident:
Potential:
Confined:

Brief rationale/source for selection: ENTER COMMENTS HERE

RECEPTOR FACTOR (RF)

- Identified** - Receptors identified that have access to surface water or sediment
- Potential** - Potential for receptors to have access to surface water or sediment
- Limited** - Little or no potential for receptors to have access to surface water or sediment

Identified:
Potential:
Limited:

Brief rationale/source for selection: ENTER COMMENTS HERE

Sediment - Ecological Category: NE

SOIL

CONTAMINANT HAZARD FACTOR (CHF):

Significant (If Total > 100):
Moderate (If Total 2-100):
Minimum (If Total < 2):

Contaminant	Max Concentration (ppb)	Standard (ppb)	Ratio
Toluene	1.00	870,000.00	0.00
Xylene (mixed)	1.00	980,000.00	0.00
Total			0.00

MIGRATION PATHWAY FACTOR (MPF)

Evident - Analytical data or observable evidence that contamination is present at, is moving towards, or has moved to a point of exposure.
Potential - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined.
Confined - Low possibility for contamination to be present at or migrate to a point of exposure

Evident:
Potential:
Confined:

Brief rationale/source for selection: Samples verify that petroleum contamination of soil is present at a point of exposure

RECEPTOR FACTOR (RF):

Identified - Receptors identified that have access to contaminated soil
Potential - Potential for receptors to have access to contaminated soil
Limited - Little or no potential for receptors to have access to contaminated soil

Identified:
Potential:
Limited

Brief rationale/source for selection: Risk assessment shows that there is not a significant threat to human health or the environment.

Soil Category: **LOW**

RELATIVE RISK EVALUATION WORKSHEET

SITE BACKGROUND INFORMATION

Installation Name: TIN CITY AFS Date Entered (month/day/year): 9/14/95
Location (City/County and State): Seward Peninsula, Alaska Media Evaluated (GW, SW, Sediment, Soil): SOIL
Site Name/DERPMIS ID: 4 UNDRGRND STORA / SI012 Site Type: SS - Spill Site Area - SS
Point of Contact (Name/Phone): Mr. T. Hansen/DSN 552-4532 Phase of Execution (SI, RI, FS, EE/CA, IRA, RD/RA, or equivalent RCRA Stage): SI
NPL/Proposed NPL (Y/N): No Agreement Status (enter the appropriate DERP regulatory agreement code): Q

Overall Project Risk: MEDIUM

SITE SUMMARY

Brief Project Description (include site type, materials disposed, dates of operation, and other relevant information)
Former locations of four USTs for storage of diesel fuel, gasoline, and waste oil. Tanks were abandoned before 1989. Tanks were removed in 1993.

Brief Description of Pathways (Groundwater, Soil, Surface Water (human), Surface Water (ecological), Sediment (human), Sediment (ecological)):
Gravel soils. Ground water 2-3 ft below ground surface at air strip UST location.

Brief Description of Receptors (Human and Ecological):
Only scenario is remote chance of direct dermal contact and consumption of diesel fuel contaminated soil at the airstrip location and potential for wildlife dermal contact or ingestion of contaminated soil.

GROUNDWATER

CONTAMINANT HAZARD FACTOR (CHF):

Contaminant
No Contaminants

Max Concentration (ppb) Standard (ppb) Ratio

Total

Significant (If Total > 100):
Moderate (If Total 2-100):
Minimum (If Total < 2):

MIGRATION PATHWAY FACTOR (MPF):

- Evident - Analytical data or observable evidence indicates that contamination in the media is moving away from the source.
- Potential - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined.
- Confined - Information indicates that the potential for contaminant migration from the source is limited (due to geological structures or physical controls).

Evident:
Potential:
Confined:

Brief rationale/source for selection: ENTER COMMENTS HERE

RECEPTOR FACTOR (RF):

- Identified - There is a threatened or potentially threatened water supply downgradient of the source. The groundwater (contaminated or not) is a current source of drinking water or source of water for other beneficial uses such as irrigation/agricultures (equivalent to Class I or IIA aquifer).
- Potential - There is no potentially threatened water supply well downgradient of the source. The groundwater is potentially usable for drinking water, irrigation, or agricultures, but is not presently used (equivalent to Class IIB aquifer).
- Limited - There is no potentially threatened water supply well downgradient of the source. The groundwater is not considered a potential source of drinking water or is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only)

Identified:
Potential:
Limited:

Brief rationale/source for selection: ENTER COMMENTS HERE

Groundwater Category: NE

SURFACE WATER - HUMAN

CONTAMINANT HAZARD FACTOR (CHF):

Contaminant No Contaminants	<u>Max Concentration (ppb)</u>	<u>Standard (ppb)</u>	<u>Ratio</u>
<u>Total</u>			

Significant (If Total > 100):
Moderate (If Total 2-100):
Minimum (If Total < 2):

MIGRATION PATHWAY FACTOR (MPF):

- Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, or moving toward, has moved to a point of exposure.
- Potential** - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined.
- Confined** - Information indicates that the potential for contaminant migration from the source is limited (due to geological structures or physical controls).

Evident:
Potential:
Confined:

Brief rationale/source for selection: ENTER COMMENTS HERE

RECEPTOR FACTOR (RF):

- Identified** - Receptors identified that have access to surface water or sediment.
- Potential** - Potential for receptors to have access to surface water of sediment.
- Limited** - Little or no potential for receptors to have access to surface water or sediment.

Identified:
Potential:
Limited:

Brief rationale/source for selection: ENTER COMMENTS HERE

Surface Water - Human Category: NE

SURFACE WATER - ECOLOGICAL

CONTAMINANT HAZARD FACTOR (CHF):

Significant (If Total > 100):
Moderate (If Total 2-100):
Minimum (If Total < 2):

<u>Contaminant</u> No Contaminants	<u>Max Concentration (ppb)</u>	<u>Standard (ppb)</u>	<u>Ratio</u>
			Total

MIGRATION PATHWAY FACTOR (MPF):

- Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, or moving toward, has moved to a point of exposure.
- Potential** - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined.
- Confined** - Information indicates that the potential for contaminant migration from the source is limited (due to geological structures or physical controls).

Evident:
Potential:
Confined:

Brief rationale/source for selection: ENTER COMMENTS HERE

RECEPTOR FACTOR (RF):

- Identified** - Receptors identified that have access to surface water or sediment.
- Potential** - Potential for receptors to have access to surface water or sediment.
- Limited** - Little or no potential for receptors to have access to surface water or sediment.

Identified:
Potential:
Limited:

Brief rationale/source for selection: ENTER COMMENTS HERE

Surface Water - Ecological Category: NE

SEDIMENT - HUMAN

CONTAMINANT HAZARD FACTOR (CHF):

Significant (If Total > 100):
Moderate (If Total 2-100):
Minimum (If Total < 2):

<u>Contaminant</u>	<u>Max Concentration (ppb)</u>	<u>Standard (ppb)</u>	<u>Ratio</u>
No Contaminants			0.00
		<u>Total</u>	0.00

MIGRATION PATHWAY FACTOR (MPF):

- Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, moving toward, or has moved to a point of exposure
- Potential** - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined
- Confined** - Information Indicates that the potential for contaminant migration from the source is limited (due geological structures or physical controls).

Evident:
Potential:
Confined:

Brief rationale/source for selection: ENTER COMMENTS HERE

RECEPTOR FACTOR (RF)

- Identified** - Receptors identified that have access to surface water or sediment
- Potential** - Potential for receptors to have access to surface water or sediment
- Limited** - Little or no potential for receptors to have access to surface water or sediment

Identified:
Potential:
Limited:

Brief rationale/source for selection: ENTER COMMENTS HERE

Sediment - Human Category: NE

SEDIMENT - ECOLOGICAL

CONTAMINANT HAZARD FACTOR (CHF):

Significant (If Total > 100):
Moderate (If Total 2-100):
Minimum (If Total < 2):

<u>Contaminant</u> No Contaminants	<u>Max Concentration (ppb)</u>	<u>Standard (ppb)</u>	<u>Ratio</u>
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Total

MIGRATION PATHWAY FACTOR (MPF):

- Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, moving toward, or has moved to a point of exposure
- Potential** - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined
- Confined** - Information Indicates that the potential for contaminant migration from the source is limited (due geological structures or physical controls).

Evident:
Potential:
Confined:

Brief rationale/source for selection: ENTER COMMENTS HERE

RECEPTOR FACTOR (RF)

- Identified** - Receptors identified that have access to surface water or sediment
- Potential** - Potential for receptors to have access to surface water or sediment
- Limited** - Little or no potential for receptors to have access to surface water or sediment

Identified:
Potential:
Limited:

Brief rationale/source for selection: ENTER COMMENTS HERE

Sediment - Ecological Category: NE

SOIL

CONTAMINANT HAZARD FACTOR (CHF):

Significant (If Total > 100):
 Moderate (If Total 2-100):
 Minimum (If Total < 2):

Contaminant	Max Concentration (ppb)	Standard (ppb)	Ratio
Arsenic	600.00	22,000.00	0.05
Barium and compounds	890.00	5,300,000.00	0.00
Benzene	410.00	190,000.00	0.00
Cadmium and compounds	20.00	38,000.00	0.00
Chromium VI and compounds	500.00	380,000.00	0.00
Ethylbenzene	2,000.00	3,400,000.00	0.00
Lead	290.00	400,000.00	0.00
Selenium	50.00	380,000.00	0.00
Silver and compounds	180.00	380,000.00	0.00
Toluene	22,000.00	870,000.00	0.03
Xylene (mixed)	467,000.00	980,000.00	0.48
Total			0.55

MIGRATION PATHWAY FACTOR (MPF)

Evident - Analytical data or observable evidence that contamination is present at, is moving towards, or has moved to a point of exposure.
Potential - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined.
Confined - Low possibility for contamination to be present at or migrate to a point of exposure

Evident:
 Potential:
 Confined:

Brief rationale/source for selection: Visual seepage of POL Product at the airstrip former UST location

RECEPTOR FACTOR (RF):

Identified - Receptors identified that have access to contaminated soil
Potential - Potential for receptors to have access to contaminated soil
Limited - Little or no potential for receptors to have access to contaminated soil

Identified:
 Potential:
 Limited:

Brief rationale/source for selection: Humans and wildlife (fox, caribou, musk ox, shore birds) pass through area intermittently.

Soil Category: MEDIUM

RELATIVE RISK EVALUATION WORKSHEET

SITE BACKGROUND INFORMATION

Installation Name: TIN CITY AFS Date Entered (month/day/year): 9/14/95
Location (City/County and State): Seward Peninsula, Alaska Media Evaluated (GW, SW, Sediment, Soil): SOIL
Site Name/DERPMIS ID: DUMP NO.3 AT BEACH / DP011 Site Type: SS - Spill Site Area - SS
Point of Contact (Name/Phone): Mr. T. Hansen/DSN 553-4532 Phase of Execution (SI, RI, FS, EE/CA, IRA, RD/RA, or equivalent RCRA Stage): SI
Agreement Status (enter the appropriate DERP regulatory agreement code): Q

NPL/Proposed NPL (Y/N): No

Overall Project Risk: HIGH

SITE SUMMARY

Brief Project Description (include site type, materials disposed, dates of operation, and other relevant information)

Site consists of approximately 2,000 linear feet of beach were approximately 2,000-3,000 POL drums and associated debris was stacked or skattered as a result of off loading activities and storms. Approximately 10% of drums are estimated to contain product. Of these, 10%-25% are estimated to have leaked.

Brief Description of Pathways (Groundwater, Soil, Surface Water (human), Sediment (human), Sediment (ecological)):
The beach soils are highly permeative. POL contaminants are exposed at the ground surface

Brief Description of Receptors (Human and Ecological):

NA
Shorebirds and waterfowl utilize the entire beach

GROUNDWATER

CONTAMINANT HAZARD FACTOR (CHF):

Significant (If Total > 100):
 Moderate (If Total 2-100):
 Minimum (If Total < 2):

Contaminant No Contaminants	<u>Max Concentration (ppb)</u>	<u>Standard (ppb)</u>	<u>Ratio</u>
Total			

MIGRATION PATHWAY FACTOR (MPF):

- Evident** - Analytical data or observable evidence indicates that contamination in the media is moving away from the source.
- Potential** - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined.
- Confined** - Information indicates that the potential for contaminant migration from the source is limited (due to geological structures or physical controls).

Evident:
 Potential:
 Confined:

Brief rationale/source for selection: NA

RECEPTOR FACTOR (RF):

- Identified** - There is a threatened or potentially threatened water supply downgradient of the source. The groundwater (contaminated or not) is a current source of drinking water or source of water for other beneficial uses such as irrigation/agricultures (equivalent to Class I or IIA aquifer).
- Potential** - There is no potentially threatened water supply well downgradient of the source. The groundwater is potentially usable for drinking water, irrigation, or agricultures, but is not presently used (equivalent to Class IIB aquifer).
- Limited** - There is no potentially threatened water supply well downgradient of the source. The groundwater is not considered a potential source of drinking water or is of limited beneficial use (equivalent to Class IIIA or IIIB aquifer, or where perched aquifer exists only)

Identified:
 Potential:
 Limited:

Brief rationale/source for selection: NA

Groundwater Category: NE

SURFACE WATER - HUMAN

CONTAMINANT HAZARD FACTOR (CHF):

Contaminant
No Contaminants

Max Concentration (ppb)

Standard (ppb)

Ratio

Total

Significant (If Total > 100):
Moderate (If Total 2-100):
Minimum (If Total < 2):

MIGRATION PATHWAY FACTOR (MPF):

- Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, or moving toward, has moved to a point of exposure.
- Potential** - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined.
- Confined** - Information indicates that the potential for contaminant migration from the source is limited (due to geological structures or physical controls).

Evident:
Potential:
Confined:

Brief rationale/source for selection: NA

RECEPTOR FACTOR (RF):

- Identified** - Receptors identified that have access to surface water or sediment.
- Potential** - Potential for receptors to have access to surface water of sediment.
- Limited** - Little or no potential for receptors to have access to surface water or sediment.

Identified:
Potential:
Limited:

Brief rationale/source for selection: NA

Surface Water - Human Category: NE

SURFACE WATER - ECOLOGICAL

CONTAMINANT HAZARD FACTOR (CHF):

Significant (If Total > 100):
Moderate (If Total 2-100):
Minimum (If Total < 2):

Contaminant No Contaminants	Max Concentration (ppb)	Standard (ppb)	Ratio
			Total

MIGRATION PATHWAY FACTOR (MPF):

- Evident - Analytical data or observable evidence indicates that contamination in the media is present at, or moving toward, has moved to a point of exposure.
- Potential - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined.
- Confined - Information indicates that the potential for contaminant migration from the source is limited (due to geological structures or physical controls).

Evident:
Potential:
Confined:

Brief rationale/source for selection: NA

RECEPTOR FACTOR (RF):

- Identified - Receptors identified that have access to surface water or sediment.
- Potential - Potential for receptors to have access to surface water of sediment.
- Limited - Little or no potential for receptors to have access to surface water or sediment.

Identified:
Potential:
Limited:

Brief rationale/source for selection: NA

Surface Water - Ecological Category:

NE

SEDIMENT - HUMAN

CONTAMINANT HAZARD FACTOR (CHF):

Significant (If Total > 100):
Moderate (If Total 2-100):
Minimum (If Total < 2):

Contaminant	Max Concentration (ppb)	Standard (ppb)	Ratio
No Contaminants			0.00
Total			0.00

MIGRATION PATHWAY FACTOR (MPF):

- Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, moving toward, or has moved to a point of exposure
- Potential** - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined
- Confined** - Information Indicates that the potential for contaminant migration from the source is limited (due geological structures or physical controls).

Evident:
Potential:
Confined:

Brief rationale/source for selection: NA

RECEPTOR FACTOR (RF)

- Identified** - Receptors identified that have access to surface water or sediment
- Potential** - Potential for receptors to have access to surface water or sediment
- Limited** - Little or no potential for receptors to have access to surface water or sediment

Identified:
Potential:
Limited:

Brief rationale/source for selection: NA

Sediment - Human Category:

NE

SEDIMENT - ECOLOGICAL

CONTAMINANT HAZARD FACTOR (CHF):

Significant (If Total > 100):
 Moderate (If Total 2-100):
 Minimum (If Total < 2):

Contaminant No Contaminants	<u>Max Concentration (ppb)</u>	<u>Standard (ppb)</u>	<u>Ratio</u>
Total			

MIGRATION PATHWAY FACTOR (MPF):

- Evident** - Analytical data or observable evidence indicates that contamination in the media is present at, moving toward, or has moved to a point of exposure
- Potential** - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined
- Confined** - Information Indicates that the potential for contaminant migration from the source is limited (due geological structures or physical controls).

Evident:
 Potential:
 Confined:

Brief rationale/source for selection: NA

RECEPTOR FACTOR (RF)

- Identified** - Receptors identified that have access to surface water or sediment
- Potential** - Potential for receptors to have access to surface water or sediment
- Limited** - Little or no potential for receptors to have access to surface water or sediment

Identified:
 Potential:
 Limited:

Brief rationale/source for selection: NA

Sediment - Ecological Category: NE

SOIL

CONTAMINANT HAZARD FACTOR (CHF):

Significant (If Total > 100):
Moderate (If Total 2-100):
Minimum (If Total < 2):

X

Contaminant	Max Concentration (ppb)	Standard (ppb)	Ratio
Toluene	1.00	870,000.00	0.00
Xylene (mixed)	1.00	980,000.00	0.00
Total			0.00

MIGRATION PATHWAY FACTOR (MPF)

Evident - Analytical data or observable evidence that contamination is present at, is moving towards, or has moved to a point of exposure.
Potential - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined.
Confined - Low possibility for contamination to be present at or migrate to a point of exposure

Evident: X
Potential:
Confined:

Brief rationale/source for selection: Contaminants at the soil surface

RECEPTOR FACTOR (RF):

Identified - Receptors identified that have access to contaminated soil
Potential - Potential for receptors to have access to contaminated soil
Limited - Little or no potential for receptors to have access to contaminated soil

Identified: X
Potential:
Limited

Brief rationale/source for selection: Wildlife observed utilizing area

Soil Category: HIGH

SOIL

CONTAMINANT HAZARD FACTOR (CHF):

Significant (If Total > 100):
Moderate (If Total 2-100):
Minimum (If Total < 2):

<u>Contaminant</u>	<u>Max Concentration (ppb)</u>	<u>Standard (ppb)</u>	<u>Ratio</u>
Toluene	1.00	870,000.00	0.00
Xylene (mixed)	1.00	980,000.00	0.00
<u>Total</u>			0.00

MIGRATION PATHWAY FACTOR (MPF)

Evident - Analytical data or observable evidence that contamination is present at, is moving towards, or has moved to a point of exposure.
Potential - Possibility for contamination to be present at or migrate to a point of exposure; or information is not sufficient to make a determination of Evident or Confined.
Confined - Low possibility for contamination to be present at or migrate to a point of exposure

Evident:
Potential:
Confined:

Brief rationale/source for selection: Contaminants at the soil surface

RECEPTOR FACTOR (RF):

Identified - Receptors identified that have access to contaminated soil
Potential - Potential for receptors to have access to contaminated soil
Limited - Little or no potential for receptors to have access to contaminated soil

Identified:
Potential:
Limited

Brief rationale/source for selection: Wildlife observed utilizing area

Soil Category: HIGH