SITE INVENTORY
NORTHEAST CAPE
ST. LAWRENCE ISLAND, ALASKA
CONTRACT NO. DACA85-91-D-0003
DELIVERY ORDER NO. D0011

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Prepared for:

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EXECUTIVE SUMMARY

This inventory documents materials deemed eligible for either investigation or cleanup under the present Defense Environmental Restoration Program (DERP) at formerly used defense sites (FUDS) in the vicinity of Northeast Cape, St. Lawrence Island, Alaska. The specific sites that were investigated are described individually in Section 3 of this report.

An environmental assessment and plans and specifications prepared in August 1985 for the United States Army Corps of Engineers (USACE) by URS Corporation identified 29 sites that potentially qualified for investigation or cleanup under a previous DERP program.

In September 1991, public meetings were held and interviews of natives who were present during Department of Defense (DoD) occupation were conducted prior to performing this site inventory. The approach to the field work and the selection of specific sites to be inventoried were based on the present DERP guidelines and information gathered at the meetings and interviews as well as information obtained from the URS documents.

In July 1992 twenty-seven specific areas were inventoried, 24 of which contain significant amounts of material deemed eligible for either investigation or cleanup under DERP guidelines.

Based on currently available information, it is estimated that there are 36,200 containers of potentially hazardous or toxic waste and over 30,000 cubic yards of potentially contaminated soil, noncontainerized hazardous waste, and unsafe structures or debris present at the site. However, these estimates may change after further investigation and sampling are conducted.

The information provided in this report will be used to update the forthcoming Chemical Data Acquisition Plan (CDAP) that addresses the sampling required to characterize and determine the extent of contamination at DERP-eligible sites. Both this Inventory Report

and the CDAP are meant to help USACE implement future remediation activities at DERP-eligible sites without requiring extensive design phase investigations.

1. INTRODUCTION

Pursuant to Contract DACA85-91-D-0003, Delivery Order No. 0011, the United States Army Corps of Engineers, Alaska District (USACE) has tasked Ecology and Environment, Inc. (E & E) to investigate formerly used defense sites (FUDS) at Northeast Cape, St. Lawrence Island, Alaska, under the Defense Environmental Restoration Program (DERP) of the U.S. Department of Defense (DOD).

1.1 PURPOSE OF REPORT

This inventory report presents the results of a review of previous investigations, interviews with knowledgeable local residents, and a site inspection. It documents the materials at the site determined to be eligible and qualified under DERP guidelines for inclusion in a future investigation or remediation contract. The report identifies suspected hazardous and toxic waste (HTW), suspected containerized HTW (CON/HTW), suspected soil contamination, unsafe structures and associated asbestos-containing materials (ACM), and unsafe debris. Sufficient detail is provided concerning locations, descriptions, and estimated volumes or quantities to allow layout for future sampling work and minimize further investigation work during the design phase of a remediation project. Where further data is needed, recommendations for sampling are provided.

This effort is in support of a Chemical Data Acquisition Plan (CDAP) and an update to the Debris/Material Inventory prepared by URS Consultants in August 1985.

1.2 SITE BACKGROUND

1.2.1 Site Description

The Northeast Cape site extends south from Kitnagak Bay to the lower slopes of Kangukheam Mountains to the western edge of the Kinipaghulghat Mountains and north to the

Bering Sea. The site encompasses the native fishing and hunting village at Kitmaak Bay and United States Air Force (Air Force) installations located at the beach, at the foot of the mountains, and three more sites west of a line between the two.

The project area consists of four main areas that were utilized for U.S. Air Force activities from 1952 through 1969. These areas are the terminal and runway, cargo beach and fuel pump house, housing/operations, and antenna areas. The individual sites, which are identified and inventoried in Section 3, are located within these main areas or along the roadway corridors that connect the areas one to another.

1.2.2 Site History

The first military-related activity was the construction of a United States Air Force (Air Force) Aircraft Control and Warning Station (ACW) in 1951. In 1952, it was formally activated by the assignment of the 712th ACW Squadron and the 6980th Security Squadron. The original site was designed to support 212 men. Throughout its existence, Northeast Cape was a surveillance station, providing radar coverage for the Alaskan Air Command, and later for North American Air Defense Command (NORAD), as a part of an Alaska-wide system constructed to reduce a potential vulnerability to bomber attack across the polar regions.

In 1954, the Air Force began construction of a White Alice radio relay, a communication system utilizing topographic scatter for transmission of information detected by the ACW Radar Facility.

In June 1969, the radar operations ceased and most military personnel were removed by the end of that year. Most of the facilities were left intact, with minimal removal of equipment due to the high cost of transport from the site.

The White Alice station area remained operational with minimal military staff until 1972. In 1982 the White Alice operations area was transferred to the United States Department of the Navy (Navy) (URS 1991). The White Alice operations area is not a part of this contract and is being addressed by the Navy via their Comprehensive Long-Term Environmental Action Navy (CLEAN) program.

All lands were withdrawn from the military in 1972 by PLO 5187, for classification under Section 17(d)(1) of the ANCSA. Interim Conveyance No. 203 (June 1979) conveyed unsurveyed lands of St. Lawrence Island to Sivuqaq Inc. and Savoonga Native Corporation. Excepted from transfer were surveyed land, easements, and land-use permits effective prior to

conveyance (URS 1985). This means that most of the site was abandoned 10 years (1969 to 1979) prior to transfer to current owners.

1.2.3 Previous Investigations

URS Corporation (URS) performed a preliminary site reconnaissance in July 1985. Dielectric oil, surface soil, river sediment, and suspect asbestos samples were collected at a limited number of locations in the project area. These were tested for polychlorinated biphenyls (PCBs), diesel oil, or asbestos. The results of the sampling are provided in Table 1-1.

1.3 REPORT ORGANIZATION

This inventory provides general information about DOD responsibilities at Northeast Cape. Information about the cultural and natural setting of the island is presented in Section 2; site descriptions and materials eligible for DERP clean-up or investigation are discussed in Section 3; summary and conclusions are discussed in Section 4; and references are presented in Section 5. Select photographs taken during the Northeast Cape site inventory are presented in Appendix A.

Table 1-1

PRELIMINARY RECONNAISSANCE SAMPLE RESULTS URS CORPORATION, JULY 1985

Sample Number	Site Location	Concentration
Fuel Hydrocarbons (river sediments)		
RS 1	Fuel storage tanks (URS #42, E & E #11)	10,000 ppm
RS 2a	Drainage area north of tanks (URS #42, E & E #11)	2,200 ppm
RS 2b	Stream junction north of tanks (URS #42, E & E N/A)	ND[1]
RS 3	Airport terminal road bridge (URS #15, E & E N/A)	ND[2]
RS 4	Cargo beach dump sites (URS #20, E & E #6 and 7)	ND[1]
RS 5	Cargo beach area (URS #18, E & E #4)	ND[1]
PCB (soils)		
SS 2	Airport terminal area (URS #15, E & E #2)	ND
SS 3	Fuel storage tanks (URS #42, E & E #11)	3.7 ppm
SS 4	Power and heat building, southeast oil spill (URS #36, E & E #15)	ND
SS 5	Power and heat building, southwest oil spill (URS #36, E & E #13)	0.8 ppm
SS 6	Paint and dope building, east side (URS #35, E & E #16)	Trace
SS 7	Paint and dope building, north side (URS #35, E & E #16)	Trace
SS 8	Emergency power/operations building (URS #32, E & E #14)	Trace
SS 13	Cargo beach area, building C27/C23 (URS #18, E & E#4)	1.1 ppm
SS 14	Cargo beach area, building C24 (URS #18, E & E #4)	1.6 ppm
SS 15	Cargo beach dump sites (URS #20, E & E #6 or 7)	ND
SS 16	Cargo beach dump sites (URS #20, E & E #6 or 7)	Trace
SS 17	Cargo beach area, building C40 (URS #18, E & E #4)	ND
SS 18	Power and heat building, northside (URS #36, E & E #13)	0.6 ppm
SS 19	Leaking transformer, west of white alice (URS #26, E & E #23)	ND
SS 20	Lower tram, oil spill (URS # unknown, E & E N/A)	ND

Table 1-1

PRELIMINARY RECONNAISSANCE SAMPLE RESULTS URS CORPORATION, JULY 1985

Sample Number	Site Location	Concentration
PCB (sediments)		
RS 1	Fuel storage tanks (URS #42, E & E #11)	1.0 ppm
RS 2a	Drainage area north of tanks (URS #42, E & E #11)	ND
RS 2b	Stream junction north of tanks (URS #42, E & E N/A)	ND
RS 3	Airport terminal road bridge (URS #15, E & E N/A)	ND
RS 4	Cargo beach dump sites (URS #20, E & E #6 or 7)	ND
RS 5	Cargo beach area (URS #18, E & E #4)	ND
PCB (transformer oil)		
TS 1	Airport terminal building (URS #15, E & E #2)	5.0 ppm
TS 9	Emergency power/operations building (URS #36, E & E #14)	590,000 ppm
TS 10	Power and heat building (URS #36, E & E #13)	620,000 ppm
TS 11	Power and heat building (URS #36, E & E #13)	630,000 ppm
TS 12	Power and heat building (URS #36, E & E #13)	730,000 ppm
Asbestos (insulation)		
AS 1	Airport terminal (URS #15, E & E #2)	21% Chrysotile
AS 2	Warehouse supply building 111 (URS #33, E & E #17)	14% Chrysotile, 18% amosite
AS 3	Emergency power plant/operations building 98 (URS #32, E & E #14)	<1% Chrysotile
AS 4	Recreation building 105 (URS #34, E & E #18)	20% Chrysotile, 16% amosite

Note: URS and E & E numbers represent those site numbers assigned and used in those companies' reports.

Key:

ND = Detection limit of 0.5 ppm.
ND^1 = Detection limit of 100 ppm.
ND^2 = Detection limit of 10 ppm.

Source: URS Corporation 1985.

2. SITE DESCRIPTION/BACKGROUND INFORMATION

2.1 PHYSIOGRAPHY

St. Lawrence Island is located in the Bering Sea, southwest of Nome, Alaska, near the territorial waters of Russia. The project site is located on the eastern end of the island and is approximately 135 air miles southwest of Nome (see Figure 2-1).

Two villages are located on St. Lawrence Island, Gambell and Savoonga. Both consist mainly of residential housing and community service facilities. Several seasonal hunting and fishing camps are located on the perimeter of the island. The majority of the island is wilderness, consisting of tundra-covered flatland and small lakes. Barren mountains rise out of the tundra and naturally divide the island into western, central, and eastern areas. This wilderness area provides habitat for a variety of seabirds, waterfowl, and mammals. The soils and vegetation provide range suitable for reindeer. The island and surrounding waters are used extensively for subsistence hunting (URS 1985).

2.2 ECOLOGY

There are no known endangered species of plants or animals on the island (50CFR17 1991). The vegetation, birds, mammals, and fish of St. Lawrence Island are discussed below.

2.2.1 Vegetation

Vegetation in the Northeast Cape area is classified as alpine tundra, dominated by mountain areas, mat-forming herbs, grasses, and sedges and some shrubs such as alpine bearberry, dwarf birch, narrow leaf labrador tea, willow, heath, and casseopea. In the low-lying areas, which are characterized by lakes, bogs, and poorly drained soils, the vegetation is classified as wet tundra and consists primarily of lichens, mosses, sedge, and cotton grass, and few woody plants. In the higher, drier areas, vegetation is almost nonexistent.

2.2.2 Birds

Although St. Lawrence Island provides habitat for a majority of the seabirds species in the northern Bering Sea, seabirds at Northeast Cape are limited. Few birds have been observed in the area and diversity is limited. The peregrine falcon (most likely the arctic variety) is listed as an irregular visitant and accidental on St. Lawrence Island (URS 1985; UC 1959; USFWS 1985).

2.2.3 Mammals

Generally, large mammals are not abundant on St. Lawrence Island. Polar bear may be found on the island year round, and their presence is common when the ice pack is near shore. Some may become stranded on the island from late spring to fall when the ice pack retreats. A reindeer herd, which once numbered in the thousands, has dwindled to a population of several hundred. Pacific walrus may be found on or near portions of the island year round; however, no walrus haul-out areas exist within the project area (URS 1985).

Arctic fox are found throughout the island and are trapped by the residents of Savoonga and Gambell (URS 1985).

2.2.4 Fish

St. Lawrence Island's streams and tundra ponds are dominated by blackfish, nine-spined stickleback, grayling, arctic char, and perhaps whitefish (URS 1985). All five species of Pacific salmon occur around the island, but there are no anadromous fish streams in the project area. The natives relate (Public Meeting 1991) that, prior to a large diesel fuel spill at Northeast Cape, the main stream north of the Housing and Operations area provided salmon breeding grounds.

2.3 GEOLOGY

The eastern part of St. Lawrence Island is a broad, wave-cut bedrock platform less than 100 feet above sea level. The surface of the platform is dotted with countless small shallow lakes and blanketed by a thin veneer of water-soaked mossy turf and peat (tundra). The Kinipaghulghat Mountains, which consist of several isolated groups of talus-covered hills bounded by ancient sea cliffs, rise to nearly 2,000 feet above the surface platform. Kangukhsan Mountain is the highest local peak at 1,820 feet above sea level. Soils on the eastern part of St. Lawrence Island consist of loose, well-rounded, medium coarse granitic sand and gravel. Sand, silt, and peat are found at

lower elevations and along the coast. In the higher elevations, quartz monzonite is present, and some small areas of undifferentiated volcanic rocks exist around Northeast Cape (URS 1991a; NEESA 1990).

2.4 HYDROLOGY

2.4.1 Surface Water

The Bering Sea bounds the project site on the north. All surface runoff from the project area ultimately discharges to the Bering Sea. There are numerous glacial runoff streams running through the area. They have vegetated, incised banks, sandy gravelly streambeds, and are clear. The streams range from a few feet to 30 feet wide. These streams are braided in the lowlands in contrast to high velocity streams in the mountainous areas.

The lowland areas of Northeast Cape are typical of a subarctic coastal plain where flat topography, frozen soils, and wet tundra have created numerous shallow thaw lake basins and peat in-filled thaw lake basins. These lakes are clear and tanic in appearance (URS 1991a; URS 1990a).

2.4.2 Groundwater

Very little is specifically known about the groundwater hydrology at the Northeast Cape. The information regarding permafrost, which markedly affects the distribution of groundwater, is limited as well. It is known that St. Lawrence Island is underlain by discontinuous permafrost. The depth of permafrost in the Northeast Cape area is unknown (URS 1985).

The following data was recorded at a well at the Northeast Cape:

Material	Thickness (feet)	Depth (feet)
Frozen muck	2	0 - 2
Soft mucky silt	11.5	2 - 13.5
Dry sand and silt	5.5	13.5 - 19
Coarse sand (water)	9	19 - 28
Clean gravel and sand	4	28 - 32

In addition the project area is situated where the soil consists primarily of unconsolidated deposits (mostly sand and gravel, silt and clay) with a water yield of 10 to 100 gallons per minute (gpm) (University of Alaska, 1976).

2.5 CLIMATE

St. Lawrence Island has a cool, moist, subarctic maritime climate. Some continental influences occur during the winter when much of the Bering Sea freezes. Winds and fog are common and precipitation is persistent, occurring approximately 300 days each year in Gambell. Precipitation is light rain, mist, or snow, with an annual total of only 10 to 15 inches. Annual snowfall is 60 to 80 inches, and it is usually distributed evenly from November to May. Winter temperatures range from -2°F (-19°C) to 10°F (-12°C). Summer temperatures average between 34°F (1°C) and 48°F (9°C). The island's most complete wind data was collected at the Northeast Cape area. The mean wind speed at Northeast Cape is approximately 10 knots, with winds exceeding 22 knots approximately 10% of the year. Calm weather occurs only about 10% of the year. Generally, the island has constant wind (URS 1985).

2.6 SITE HISTORY

2.6.1 Island History

Currently, St. Lawrence Island is occupied by the descendants of the original Russian Yupik Eskimos who apparently traversed the Bering Land Bridge approximately 12,000 to 14,000 years ago. The Yupiks survive in a subsistence lifestyle of hunting and fishing, as well as selling ivory or ivory carvings.

During the winter months, the permanent population of approximately 1,200 Eskimos and a small number of non-natives reside in the villages of Gambell and Savoonga. However, in the warmer months, many residents travel to coastal hunting and fishing camps. The Native Village at the Northeast Cape is one such hunting and fishing camp.

There are known historic and prehistoric sites of Eskimo and Punuk affiliation. Site features include house pits, house remains, middens, and artifacts. These sites are located on wet tundra areas along the coast. Natives are in the process of excavating these sites to obtain the artifacts. One of these sites (Qitneqat Bay I, AHRS #XSL-042) is recorded within the Northeast Cape project area (URS 1985). According to the State of Alaska, Department of Natural Resources, Division of Parks and Outdoor Recreation, Office of History and Archaeology, this Alaska Historical Resource Site (AHRS) is within the native hunting and fishing camp of the project area.

2.6.2 Land Ownership

St. Lawrence Island is jointly owned by Sivuqaq Inc. and Savoonga Native Corporation. The private ownership of the island by the native corporations results from the Alaska Native Claims Settlement Act (ANCSA) of 1971, which entitled native village corporations to select and receive specific amounts of federal land.

The non-native land on St. Lawrence Island consists of state land used for airstrips and related facilities in Gambell and Savoonga. The St. Lawrence Island native corporations are not subject to the 14(c) reconveyance provision of ANCSA, and there are no native allotments on St. Lawrence Island (URS 1985).

Between 1903 when the island was established as a reindeer reserve by Executive Order and 1971 when ANCSA was enacted, much occurred on St. Lawrence Island with regard to land ownership, including the presence of the military and its use of sites on the island. In 1952, 21,013 acres in the Northeast Cape area were withdrawn from the reservation for use by the Air Force (Public Land Order [PLO] 790). A large portion of the original withdrawal of lands was revoked in 1958, when 16,213 acres were restored to the reindeer reserve. Under PLO 1602, 4,800 acres continued to be withdrawn from the reserve.

All lands were withdrawn from the military in 1972 by PLO 5187, for classification under Section 17(d)(1) of the ANCSA. Interim Conveyance No. 203 (June 1979) conveyed unsurveyed lands of St. Lawrence Island to Sivuqaq Inc. and Savoonga Native Corporation. Excepted from transfer were surveyed land, easements, and land-use permits effective prior to conveyance (URS 1985).

2.6.3 Demographic Characteristics

The ethnic makeup of the St. Lawrence Island population is approximately 95% native. Caucasians, Blacks, and Indians comprise the remaining 5% of the population (URS 1985). Table 2-1 identifies the historic and projected populations of St. Lawrence Island.

2.6.4 Project Site History

The first military-related activity was the construction of a United States Air Force (Air Force) Aircraft Control and Warning Station (ACW) in 1951. In 1952, it was formally activated by the assignment of the 712th ACW Squadron and the 6980th Security Squadron. The original site was designed to support 212 men. Throughout its existence, Northeast Cape was a

surveillance station, providing radar coverage for the Alaskan Air Command, and later for North American Air Defense Command (NORAD), as a part of an Alaska-wide system constructed to reduce a potential vulnerability to bomber attack across the polar regions.

In 1954, the Air Force began construction of a White Alice radio relay, a communication system utilizing topographic scatter for transmission of information detected by the ACW Radar Facility.

In June 1969, the radar operations ceased and most military personnel were removed by the end of that year. Most of the facilities were left intact, with minimal removal of equipment due to the high cost of transport from the site. Transfer to the current owners did not occur until June 1979 (see Section 2.6.2 above), which means that the majority of the site was abandoned 10 years prior to the transfer of ownership.

The White Alice station area remained operational with minimal military staff until 1972. In 1982 the White Alice operations area was transferred to the United States Department of the Navy (Navy) (URS 1991). The White Alice operations area is not a part of this contract and is being addressed by the Navy via their Comprehensive Long-Term Environmental Action Navy (CLEAN) program.

Table 2-1

ST. LAWRENCE ISLAND POPULATION DATA

Year	Gambell	Savoonga	Total
Historic			
1903	261	--	261
1910	221	--	221
1930	250	139	389
1940	296	209	505
1950	309	249	558
1960	358	299	657
1970	372	264	636
1980	445	491	936
1984	432	477	909
Projected			
2000	484	527	1,011

Source: URS 1985.

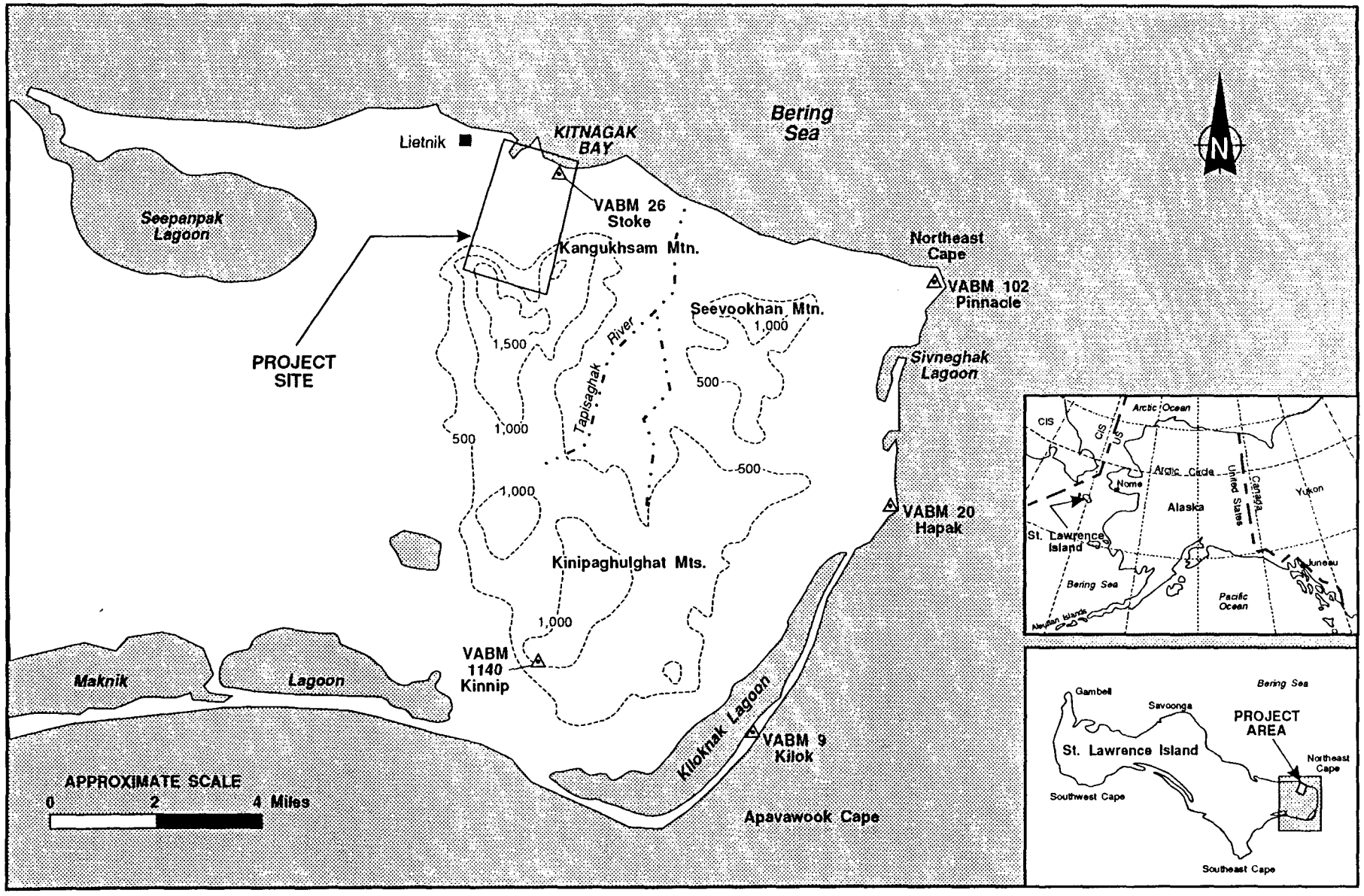

Figure 2-1
NORTHEAST CAPE AREA, SITE LOCATION MAP, ST. LAWRENCE ISLAND, ALASKA

3. DERP CLASSIFICATION CRITERIA

The DERP program was established to investigate, clean up or remove hazards left at a site by a DoD agency. DERP categorizes hazards as building demolition and debris removal (BD/DR), hazardous and toxic waste (HTW), containerized hazardous and toxic waste (CON/HTW), ordnance and explosive waste (OEW), and radiological wastes. No evidence of OEW or radiological wastes was apparent at Northeast Cape.

According to DERP guidelines, DERP-eligible BD/DR "must have been hazardous as a result of DoD usage and must have been inherently dangerous when the property was transferred" (DERP FUDS 1990). If former DoD property has fallen into disrepair under the ownership of another party, then it is ineligible. This base was under military control from 1969 through 1972 but was not occupied or maintained by the military during that time. In 1972 it was withdrawn from military control and placed under Bureau of Land Management (BLM) control for study and classification under Section 17(d)(1) of ANSCA. The site was transferred to the native corporations in June 1979. The site was not occupied or maintained during this time period (1972 to 1979). Since transfer, in 1979, the site has not been beneficially used by the native corporations and has continued to deteriorate due to lack of maintenance. Eligible building demolition or debris removal must "present a clear danger, likely to cause or having already caused death or serious injury ... to a person exercising ordinary and reasonable care" (DERP FUDS 1990). For this report it is judged by the structural engineer on the investigation team that all the buildings are presently dangerous and were deteriorated sufficiently at the time of transfer (1979) to have been inherently dangerous at that time since ten years of no maintenance in this climate would have done the bulk of the damage observed during the site inspection. Further, it is the opinion of the investigating team that severely deteriorated suspect lead paint- and asbestos-containing materials are strewn

throughout the buildings and intermixed with the HTW present. In their crumbling and deteriorated state, these suspect building materials, when dry, would potentially release large amounts of fibers or particulate into the air with the wind blowing through these open buildings.

Although the same criteria described above pertain to HTW and CON/HTW, they may not be applied as rigorously. Materials in these categories may be eligible for DERP-funded investigation or cleanup even if they were not hazardous when the property was transferred from DoD.

The following list provides examples of DERP-eligible materials by category:

- Containerized HTW:
  - Drums intact;
  - Aboveground storage tanks (ASTs);
  - Underground storage tanks (USTs);
  - Pipeline;
  - Transformers;
  - Engines;
  - Batteries;
  - Chemicals, solvents, cleaning solutions, paints, etc.
  - Herbicides, pesticides; and
  - Human waste.
- HTW:
  - POLs;
  - PCBs;
  - Uncontainerized chemicals;
  - Broken batteries;
  - Septic tank sludge;

- Soil with obvious staining or odor; and
- Soil adjacent to battery remnants.

- Building Demolition:
  - Foundation damage;
  - Substantial floor, wall, or frame damage;
  - Roof collapse;
  - Drowning hazard;
  - Cave-in hazard;
  - Climbing or falling hazard;
  - Suspect asbestos containing materials; and
  - Suspect lead paint.

- Unsafe Debris:
  - Drum remnants;
  - Marston matting;
  - Sheet metal;
  - Wood;
  - Cable and cable spools;
  - Pipe;
  - Wire, glass, nails, bolts, and other construction materials; and
  - Vehicles and vehicle parts.

Items included in the above list represent potential physical or chemical hazards to the seasonal residents of Northeast Cape. Since debris is not inherently dangerous, it can only become potentially dangerous when people come in contact with it. None of the debris areas or structures at Northeast Cape are fenced or otherwise secured. Therefore, all of the aboveground debris is accessible to the seasonal residents, and children were observed to play

in the debris during the July 1992 inventory work. The seasonal residents travel primarily by ATV or snow machine. Debris lying on the ground is frequently obscured by vegetation in the summer and by snow in the winter, making it less visible and more dangerous. Objects were considered potentially hazardous if they could injure a rider when hit or run over.

Only unsafe surficial debris has been quantified in this report. Partially buried objects were included if they were considered potential hazards. Soil contamination was assumed if soil was visibly stained by materials believed to be other than rust. Lead contamination may be present in the soil in areas containing broken batteries on the ground surface. Debris identified as or associated with engines that were presumably part of a fuel delivery system are eligible for cleanup as CON/HTW. According to DERP guidelines, other items such as intact drums and transformers are also eligible for cleanup under the CON/HTW category.

Quantity estimates are often based on judgment calls that could not be field verified. In addition, there is undoubtedly debris present in the surveyed areas that was buried or not readily visible. Due to the extent of the military occupation, parts of the island that were not surveyed probably contain some debris. No estimates have been made for hidden or unsurveyed debris. The reader is cautioned that the debris estimates are intended to be used as preliminary, reconnaissance level estimates only. They are subject to the inaccuracies of the assumptions and contain only the debris noted in this survey. They are not intended to be complete and inclusive of the entire island and are not meant to be used as the basis for construction cost estimates.

Former DOD facilities at Northeast Cape have been divided into 27 sites according to their use when the military was active on St. Lawrence Island (see Figures 3-1 through 3-5):

- Site No. 1: Burn Site Southeast of Landing Strip;
- Site No. 2: Airport Terminal and Landing Strip Area;
- Site No. 3: Fuel Line Corridor and Pumphouse;
- Site No. 4: Native Fishing and Hunting Camp;
- Site No. 5: Cargo Beach;
- Site No. 6: Cargo Beach Road Drum Field;
- Site No. 7: Cargo Beach Road Landfill;

- Site No. 8: POL Spill Site;
- Site No. 9: Housing and Operations Landfill;
- Site No. 10: Buried Drum Area;
- Site No. 11: Fuel Storage Tank Area;
- Site No. 12: Gasoline Tank Area;
- Site No. 13: Heat and Electric Power Building;
- Site No. 14: Emergency Power/Operations Building;
- Site No. 15: Buried Fuel Line Spill Area;
- Site No. 16: Paint and Dope Storage Building;
- Site No. 17: General Supply Warehouse and Mess Hall Warehouse;
- Site No. 18: Housing Facilities and Squad Headquarters;
- Site No. 19: Auto Maintenance and Storage Facilities;
- Site No. 20: Aircraft Control and Warning (AC&W) Building;
- Site No. 21: Wastewater Treatment Facility;
- Site No. 22: Water Wells and Water Supply Building;
- Site No. 23: Power and Communication Line Corridors;
- Site No. 24: Receiver Building Area;
- Site No. 25: Direction Finder Area;
- Site No. 26: Former Construction Camp Area; and
- Site No. 27: Diesel Fuel Pump Island.

Sections 3.1 through 3.27 include the following associated with each site:

- Description of site and location;
- Inventory of potential HTW and BD/DR;
- Nature and extent of potential contaminant sources;

- Potential routes of contaminant exposure or migration;
- Potential receptors of contaminants; and
- Recommended environmental media samples and analytical parameters.

3.1 SITE 1: BURN SITE SOUTHEAST OF LANDING STRIP

This site was reported by the Savoonga Native Corporation (Public Meeting 1991) as formerly used for the burning of fuel oil collected in absorbent materials and snow that were used to clean up a 40,000-gallon fuel oil spill in the housing and operations area.

The E & E field team found several slight depressions in the tundra between 100 and 300 feet east of the runway near its southern end (see Figure 3-2). These depressions contained no debris, burn marks, soil staining, odor, sheen, or ash. Only a minor amount of debris was found scattered adjacent to and along the length of the airstrip. This site requires no further investigation.

3.1.1 DERP Eligibility

This site is not eligible for DERP-funded cleanup or investigation because no HTW are suspected of being present and no CON/HTW, hazardous structures, or hazardous debris are present.

3.1.2 Potential Contamination, Unsafe Structures, and Debris

This site contained no visible contaminant sources.

3.2 SITE 2: AIRPORT TERMINAL AND LANDING STRIP AREA

The airport terminal area consists of two buildings and an apron pad located on the east side of the airstrip at approximately the midpoint of its north to south length (see Figure 3-1). The structures consist of 25-foot-wide by 64-foot-long by 18-foot-high operations/control tower building (Photos 1-3 and 1-4) and an approximately 6-foot-wide by 9-foot-long by 8-foot-high transformer shed located approximately 30 feet east of the operations/control tower building and seven gas cylinders in the garage. There is a 1,000-gallon fuel tank at the southeast corner of the operations/control tower building and seven gas cylinders in the garage. The first floor of this building consists of a double-bay garage and

office space, which occupies the northernmost 29 feet of the building; the control tower (approximately 12 feet by 12 feet by 8 feet) comprises the second floor and is accessed from the office area by a straight ladder through a ceiling opening. The structure is standard wood-frame construction with a continuous exterior concrete slab-on-grade garage floor. Exterior walls have plywood sheathing and panel siding believed to be transite. Interior walls are finished with gypsum wallboard. As a result of broken windows, open doors, and large holes in the roof, the building has sustained extensive water damage, resulting in partial collapse of the floors and ceilings.

The apron area is immediately south of the structures and is presumed to have been for arrival/departure staging. No aircraft are known to have been stationed here and no aircraft fueling facilities existed.

3.2.1 DERP Eligibility

This site is eligible for DERP-funded cleanup because the operations/control tower building is unsafe (see Page 3-1) and there are potential CON/HTWs present. The potential CON/HTWs are obviously remains of military activities that were abandoned in place. This site is eligible for further investigation due to the potential soil contamination near the garage, the fuel tank, and the transformers.

3.2.2 Potential Contamination, Unsafe Structures, and Debris

3.2.2.1 Nature and Extent of Contamination

The following potential CON/HTW are present at the site:

- Seven gas cylinders (9 inches by 4 feet) labeled helium, in the garage;
- One 1,000-gallon fuel tank at the southeast corner of the operations/control tower building;
- Three transformers, marked GE model B306925 25kva, in the shed; and
- Capacitors of unknown quantity in the racks of communications gear in the office area (three racks) and garage (one rack);

The operations/control tower is unsafe due to roof collapse over the garage, foundation wall settling and fractures, and floor weakness due to extensive water damage. The wood framing and finish materials comprise approximately 110 cubic yards of material. This is estimated by calculating the surface area of the assemblies and using 0.5 feet as an average thickness.

Within the unsafe structure there is suspect lead paint throughout and asbestos-containing material (ACM). The office area and control tower are tiled with 9-inch by 9-inch floor tiles (approximately 870 square feet). The exterior siding is transite paneling (approximately 1,780 square feet). There is roll paper insulation on the water piping (approximately 110 linear feet).

There was no evidence of contamination of the pad area. Some debris is present on the pad and along its east edge and along the west central edge of the landing strip, but this was not judged to be unsafe for a person exercising reasonable care.

3.2.2.2 Potential Sources of Contamination

Potential sources of contamination include the fuel tank, the transformers, and the garage slab. The soils adjacent to or under these points have the potential for POL, PCB, and/or metals contamination. The URS Corporation collected a single surface soil sample at the transformer shed entrance; the sample was analyzed for PCBs and had an analytical result of non-detect.

3.2.2.3 Potential Migration Routes

The primary migration route of potential POL, PCB, and metals contamination is surface runoff. Surface runoff will eventually flow to the stream east of the building and then north to the Bering Sea.

3.2.2.4 Potential Contaminant Receptors

Potential receptors of contaminant migration from this site are vegetation, fish, wildlife, and people that subsistence fish and hunt in the area.

3.2.3 Recommended Sampling

It is recommended that surface soil samples be collected from the area of the garage, fuel tank, and transformers. Samples should be analyzed for POLs, PCBs, and metals associated with spent engine lubricating oil spills, accordingly. Sampling of suspect ACM and lead paint is also recommended if the sampler is not endangered by entering the structure. Sampling of a transformer was performed by URS in 1985 (see Table 1-1). The other two transformers should be sampled and analyzed for PCBs. The AST should be sampled and analyzed for POLs. The floor of the garage should be wipe sampled and analyzed for POLs and PCBs.

3.3 SITE 3: FUEL LINE CORRIDOR AND PUMPHOUSE

A 4-inch welded steel pipeline was used to transport diesel fuel approximately 8,000 feet from Cargo Beach to the bulk fuel storage tanks at the housing/operating area. The pipeline was laid directly on the ground adjacent to Cargo Beach Road. The fuel pumphouse (Photo 2-8) is located approximately 300 feet inland from Cargo Beach and housed the engine-driven pumps that provided pressure for the pipeline. The pumphouse is a 28-foot-long by 16-foot-wide wood-frame construction with suspect asbestos shingle siding and a concrete foundation. The interior of the pumphouse has a dirt floor and two concrete engine pads. There was a noticeable fuel odor in the pumphouse and staining of the dirt floor. A steel fuel tank (6 feet long, 3.9 feet in diameter) is located just south of the pumphouse and presumably was used to store fuel for the pump engines.

The pumphouse is structurally sound due to native restoration work but has deteriorating suspected siding and a potentially contaminated dirt floor. Debris located near the pumphouse includes two engine-pump sets, lumber, building materials, 4-inch flexible hoses, and batteries. The pipeline has extensive surface corrosion and a longitudinal split at a low point, possibly as a result of water collecting and freezing.

3.3.1 DERP Eligibility

This site is eligible for DERP-funded cleanup of the potential CON/HTW (pipelines and tanks) and DERP-funded investigation of the potential HTW petroleum-contaminated soils at the pumphouse. The building potentially is eligible for cleanup in order to remediate its floor.

3.3.2 Potential Contamination, Unsafe Structures, and Debris

3.3.2.1 Nature and Extent of Contamination

The following areas of potential contamination, unsafe structures, and debris were observed:

- One 500-gallon fuel tank at the pumphouse building;
- Two abandoned pump engines at the pumphouse;
- Abandoned batteries at the pumphouse building;
- Potential petroleum-contaminated soil at the pumphouse;
- 8,000 linear feet of 4-inch steel fuel pipeline; and
- 880 square feet of suspect ACM (shingle siding).

No visible areas of petroleum spills were observed along the length of the pipeline; however, one short section near the Cargo Beach Road intersection was installed with compression couplings (possible field repair). This is at the location of a reported fuel spill (Toolie 1992 and Public Meeting, 1991) and is addressed in Section 3.8.

3.3.2.2 Potential Sources of Contamination

Potential sources of contamination include the fuel tank, the pipeline, and the batteries. The soils and surface waters near these sources have the potential for POL and lead contamination.

3.3.2.3 Potential Migration Routes

Migration routes for potential contamination include rain and snow melt runoff to surface water and seepage to groundwater.

3.3.2.4 Potential Contaminant Receptors

Potential contaminant receptors include the area's vegetation, fish, and wildlife; eventually, the contaminant would move up the food chain to the families that subsistence hunt and fish in the area.

3.3.3 Recommended Sampling

A surface soil sample is recommended from the potential petroleum-contaminated soil at the pumphouse and should be analyzed for POLs, PCBs, and lead from batteries. The UST should be sampled and analyzed for POLs. The suspect ACM should also be sampled and analyzed.

3.4 SITE 4: NATIVE FISHING AND HUNTING CAMP

A native fishing and hunting camp is located directly west of the Cargo Beach barge off-loading area. The site includes 36 wood-frame structures originally constructed as housing for the native civilian employees of the base. The structures are approximately 250 to 500 square feet in floor area. Construction is simple wood framing with no foundations or utilities. Two of the houses are presently used by natives as a fishing and hunting camp for part of the year; the remainder are in a state of partial or total collapse due to weathering. The area is littered with large quantities of empty POL drums, wood and metal debris, and general household debris.

Two abandoned vehicles and two abandoned tanks are located just south of the housing area and next to the Cargo Beach Road (Photo 1-8). The larger tank is steel construction, 27 feet long and 10 feet in diameter. The second tank is double-walled and insulated, 5.5 feet long and 3.6 feet in diameter. Both tanks appear intact and empty.

3.4.1 DERP Eligibility

The majority of the native housing area is not eligible for DERP-funded cleanup because the materials present are a result of civilian activities that took place there. The houses were constructed by the native residents for their own use (Toolie 1992). The POL drums contained heating oil and motor fuel that were purchased from the military for personal use (Toolie 1992).

The only debris that appears to have resulted from DOD activities and are eligible for cleanup or further investigation are the two abandoned vehicles and two abandoned tanks and associated soils.

3.4.2 Potential Contamination, Unsafe Structures, and Debris

3.4.2.1 Nature and Extent of Contamination

The following areas of potential contamination, unsafe structures, and debris were observed:

- One 6,000-gallon aboveground fuel tank;
- One 400-gallon tank; and
- Two abandoned vehicles.

No visible areas of contamination were observed.

3.4.2.2 Potential Sources of Contamination

Potential sources of contamination at this site include the fuel tank, and fuels, lubricants, and batteries in the abandoned vehicles. Soils near these sources have the potential for POL and lead contamination.

3.4.2.3 Potential Migration Routes

The migration route for potential contamination is rain and snow melt runoff to surface water.

3.4.2.4 Potential Contaminant Receptors

Potential receptors of contaminant migration from this site through surface water is vegetation, fish, wildlife, and people that subsistence fish and hunt in the area.

3.4.3 Recommend Sampling

It is recommended that surface soil samples be collected near the abandoned tank and vehicles. The samples should be analyzed for POLs and lead. The larger ASTs should be sampled and analyzed for POLs, and the smaller ASTs should be classified under RCRA characterization (HAZCAT) in the field and also analyzed specific to HAZCAT findings.

3.5 SITE 5: CARGO BEACH

The Cargo Beach site extends along the beach for approximately 1,700 feet west of the village, 3,000 feet east of the village, and from the low tide level to approximately 150 feet inland (see Figure 3-3). All debris in this area was inventoried under the Cargo Beach site.

This site contains widely scattered metallic debris, including drums, paint cans, cable, Marston matting, a bulldozer, and household debris (Photos 50-11, 5-12, and 50-15). Much of this debris appears to have been placed along the beach during barge loading and unloading operations. Some of the debris, especially widely scattered empty drums and aluminum siding, appears to be windblown.

3.5.1 DERP Eligibility

The Cargo Beach site is eligible for DERP-funded investigation and/or cleanup due to the presence of potential HTW (contaminated soils), CON/HTW, and hazardous debris.

3.5.2 Potential Contamination, Unsafe Structures, and Debris

3.5.2.1 Nature and Extent of Contamination

A small area (approximately 9 square feet) of petroleum-stained soil and petroleum sheen was present around drums near the western edge of the site. The source of the petroleum product was presumably the adjacent drums. No other stained soil, fuel sheen, or odor was noted at this site.

The Cargo Beach site contains approximately 275 drums in various states of decay. Two of the drums contain a significant volume of fluid, and the remainder are empty. One full paint can (1-quart size) was found near the eastern edge of the site. Assorted hazardous debris consisting of approximately 265 Marston mats, a bulldozer, vehicle parts, trash cans, food cans, bottles, and aluminum siding is also located on the site.

3.5.2.2 Potential Sources of Contamination

Potential sources of contamination include any drums that still contain product and the full paint can located at the eastern edge of the site. Presumably the drums originally contained diesel fuel but later may have contained diesel, used motor oil, and waste oil containing transformer fluid. Based on this uncertainty, the drums must be viewed as possible

sources of POL, PCBs, and metals contamination. The paint can has not yet leaked, and no other paint cans were visible. Therefore, if the paint is removed, no sampling to identify paint contamination (volatile hydrocarbons and possible lead) will be necessary.

3.5.2.3 Potential Migration Routes

Migration routes of potential POLs, PCBs, and metals contamination include surface water (rainfall, runoff, or snow melt) or penetration to groundwater. Both surface runoff and groundwater lead directly to the Bering Sea.

3.5.2.4 Potential Contaminant Receptors

Potential receptors of contaminant migration from this site through ground and surface water are vegetation, fish, wildlife, and people that subsistence fish and hunt in the area.

3.5.3 Recommended Sampling

Surface soil samples should be collected from the stained soil beneath the drum near the western edge of the site and product samples from the drain itself. These samples should be analyzed for POLs, PCBs, and metals associated with spent lubricating oil.

3.6 SITE 6: CARGO BEACH ROAD DRUM FIELD

This site was used primarily for the disposal of empty drums generated during operation of the former base. The drum field is located 0.6 mile south of the native fishing and hunting camp, 150 feet east of Cargo Beach Road (see Figure 3-1). The site consists primarily of drums scattered over a 13,500-square-foot area (Photos 50-24 and 51-3). In addition to the drums, one empty 500-gallon storage tank and small amounts of metal debris are located on this site. All drums and debris at this site are aboveground and are easily accessible from Cargo Beach Road.

3.6.1 DERP Eligibility

The Cargo Beach Road drum field is eligible for DERP-funded cleanup due to the presence of CON/HTW (drums and tank). The suspect CON/HTW are obviously remains of

materials used during military activities. The Cargo beach Road drum field is eligible for DERP-funded investigation due to the potentially contaminated soil and water present there.

3.6.2 Potential Contamination, Unsafe Structures, and Debris

3.6.2.1 Nature and Extent of Contamination

The Cargo Beach Road drum field consists of an estimated 1,500 drums and one 500-gallon fuel storage tank. The drum estimate is based on an actual sample count of 250 drums per 2,500 square feet plus an additional number of counted outlying drums. The majority of the drums are empty and completely intact. It was noted that approximately 30 drums contain less than 20 gallons of potential POL-based products such as diesel fuel and used motor oil. It appears that the drum field was used primarily for the disposal of empty diesel fuel drums.

A 2,500-square-foot area of potential petroleum-stained soil with moderate petroleum odor exists within the drum field.

3.6.2.2 Potential Sources of Contamination

Potential sources of contamination include the drums and the fuel tank. The soils adjacent to or under these points either have been or have the potential for POL, PCB, BNA, VOC and metals contamination.

3.6.2.3 Potential Migration Routes

Potential migration routes of the contamination include surface runoff or penetration to groundwater and subsequent transport. The surface runoff would eventually lead to the pond south of the drum field or to the stream west of the drum field; both water bodies eventually drain north to the Bering Sea. It is assumed that the groundwater in this area flows north to the sea.

3.6.2.4 Potential Contaminant Receptors

Potential receptors of contaminant migration from this site through ground and surface water are vegetation, fish, wildlife, and people that subsistence fish and hunt in the area.

3.6.3 Recommended Sampling

It is recommended that surface soil samples be collected from the stained soil beneath the drums. Surface water and sediment samples should be collected from the pond south of the site. Subsurface soil and groundwater samples should be collected to establish the extent of subsurface contamination. Surface soil, surface water, and sediment samples should be analyzed for POLs, PCBs, BNAs, and metals associated with spent lubricating oil. Subsurface soil and groundwater samples should be analyzed for POLs, PCBs, BNAs, VOCs, and metals associated with spent lubricating oil. Container sampling of the AST is recommended with analysis for POLs. The drums should be HAZCATTED in the field followed by lab analysis specific to the HAZCAT findings.

3.7 SITE 7: CARGO BEACH ROAD LANDFILL

The Cargo Beach Road Landfill (CBRL) was used for the disposal of wastes generated in the power building, the auto shop, the communications facilities, and the housing area (URS 1985 and Toolie 1992). The landfill is located approximately 0.8 mile south of the native fishing and hunting camp (see Figure 3-1). The defined landfill area extends to the west and east of Cargo Beach Road. The landfill consists of approximately 2,300 exposed drums and miscellaneous debris, which is visible at the fill slopes of the landfill perimeter (Photos 2-16, 2-17, 2-18, 2-19, 2-20, 2-22, and 2-23).

3.7.1 DERP Eligibility

The CBRL is eligible for DERP-funded cleanup or investigation due to the presence of potential CON/HTW, HTW (contaminated soil and water and broken batteries) and unsafe debris.

3.7.2 Potential Contamination, Unsafe Structures, and Debris

3.7.2.1 Nature and Extent of Contamination

The potential CON/HTW at the site consist of a total 2,300 visible POL drums and one drum labeled as dry cleaning solvent. The majority of the drums (approximately 2,000), including the dry cleaning solvent drum, are visible east of Cargo Beach Road. The remaining 300 drums were observed to be scattered around the perimeter of the landfill area west of the Cargo Beach Road. Most of the drums were crushed, cut, or otherwise open.

Other CON/HTW present at the site consists of several discarded vehicle batteries and engines located at the northeast corner of the landfill area.

Potentially unsafe debris was visible in several areas around the perimeter of the landfill. The unsafe debris included vehicle and equipment debris (i.e., tires, airplane wing, and caterpillar cab), housing operations debris (i.e., sinks, water tanks, food cans, laundry machine, and fan housings without motors), a boiler, and cable on spools.

Several areas of contaminated soil beneath drums were also noted and represent the possibility of extensive contamination beneath the 2,000 drums east of the Cargo Beach Road. Soils within the landfill could include dioxins (residue from incomplete burning of PCBs), since material was occasionally burned before burial (Public Meeting 1991).

3.7.2.2 Potential Sources of Contamination

Potential sources of contamination include the unmarked drums, the drum labeled "dry cleaning solvent," the engines, the vehicle batteries, and food containers. The soils adjacent to or under these points have the potential for POL, miscellaneous chemical, dioxin, PCB, pathogens, or metal contamination.

3.7.2.3 Potential Migration Routes

The routes available for migration of the potential contamination include surface runoff and penetration to groundwater and subsequent transport. Surface runoff from the landfill area east of Cargo Beach Road flows mainly to the stream system and pond located east of the landfill. Surface runoff from the landfill area west of Cargo Beach Road flows mainly to the stream and pond located west of the landfill. All surface runoff eventually flows north to the Bering Sea. It is assumed that the groundwater in this area also flows north to the Bering Sea.

3.7.2.4 Potential Contaminant Receptors

Potential receptors of contaminant migration from this site through ground and surface water are vegetation, fish, wildlife, and people that subsistence fish and hunt in the area.

3.7.3 Recommended Sampling

It is recommended that surface soil samples be collected from the landfill, especially in stained areas. Surface water and sediment samples should be collected from the ponds on both sides of Cargo Beach Road. Surface soil, surface water, and sediment should be analyzed for POLs, BNAs, PCBs, priority pollutant metals, persistent pathogens, and dioxins. Subsurface soil and groundwater samples should be collected to establish the extent of subsurface contamination. Subsurface soil and groundwater samples should be analyzed for POLs, BNAs, VOCs, PCBs, metals on the MCL list, persistent pathogens, and dioxins. The sampling of containers is recommended. The analyses for such samples should be specific to the results of field HAZCAT results for the containers. Any suspect ACM found should also be sampled and analyzed.

3.8 SITE 8: POL SPILL SITE

The natives reported (Public Meeting 1991) the fuel supply line had a leak of approximately 8,000 gallons near the intersection of the runway and weather station and Cargo Beach roads (see Figure 3-1). This site has no visible indication of POL contamination. There is no staining of soil, no distressed vegetation, and no sheen on the water. The only physical evidence that a break in the line may have occurred is a field improvised expansion joint or patch in the pipeline. This joint is located immediately south of the intersection of the roads on the western side. The pipeline goes under the roadway immediately to the north of the joint and crosses a stream approximately 30 feet to the south. The ground slopes sharply away from the roadways to a swale, that has standing water in its low spots and flows south to the stream.

3.8.1 DERP Eligibility

This site is not eligible for further DERP-funded investigation at this time. No evidence was found during site inspection to suggest that an actual spill occurred at this location.

3.9 SITE 9: HOUSING AND OPERATIONS LANDFILL

This site is located approximately 500 feet northeast of the former housing and operations area (see Figure 3-4). The landfill consists of an estimated 2.2 acres of backfilled

area east of Cargo Beach Road. Drums, trash, and miscellaneous debris are exposed at fill slopes and throughout the landfill cover (Photos 51-7 and 51-8). The landfill was apparently used for disposal of everyday trash generated during activities in the housing and operations area.

3.9.1 DERP Eligibility

This site is eligible for DERP-funded cleanup or investigation due to the presence of unsafe debris and CON/HTW and potential HTW (contaminated soil and/or water).

3.9.2 Potential Contamination, Unsafe Structures, and Debris

3.9.2.1 Nature and Extent of Contamination

The nature and extent of CON/HTW present at this site includes:

- An unknown quantity of POL drums partially visible at fill slopes and through landfill cover; and
- One 2-quart amber jar of a white powdery chemical.

The nature and extent of potentially unsafe debris present is as follows:

- Metallic debris (i.e., Marston matting, steel cable, truck frames, aluminum, etc.);
- Building materials (i.e., sections of concrete and wood); and
- Glass.

The above-listed CON/HTW and potentially unsafe debris are visible over a landfilled area measuring approximately 270 feet by 350 feet. Based on the height of the fill slopes and surrounding natural contours, it is estimated that the depth of the landfill varies from 3 to 5 feet.

3.9.2.2 Potential Sources of Contamination

Potential sources of contamination include the drums, the amber jar of chemicals, and other buried CON/HTW. The soils adjacent to or under these points have the potential for POL, PCBs, miscellaneous chemicals, dioxin, pathogens, and/or metals contamination.

3.9.2.3 Potential Migration Routes

The routes available for migration of the contamination include surface runoff and penetration to groundwater and subsequent transport. The surface runoff may lead to the ponds on the north, east, and west boundaries of the landfill and from there north to the Bering Sea. It assumed that the groundwater in this area also flows north to the Bering Sea.

3.9.2.4 Potential Contaminant Receptors

Potential receptors of contaminant migration from this site through ground and surface water are vegetation, fish, wildlife, and people that subsistence fish and hunt in the area.

3.9.3 Recommended Sampling

It is recommended that surface soil, surface water, and sediment samples be collected from the site, and subsurface soil and groundwater sampling should be collected to establish the extent of subsurface contamination. Container sampling and suspect ACM sampling is also recommended. All samples should be analyzed like those for Site 7 (Cargo Beach Road Landfill).

3.10 SITE 10: BURIED DRUM AREA

At the 1991 public meeting natives indicated that drums believed to contain 90-weight waste oil were buried west of Cargo Beach Road and adjacent to the fuel storage tank area (see Figure 3-4). The site inspection found visible evidence to support the report of buried drums. A bermed area was found in the curve in the road just northeast of Tank No. 1 of the storage tank area (Photos 52-21 and 52-22). This area measures approximately 300 feet in length and has a width at the north end of approximately 150 feet, a width in the middle of approximately 113 feet, and a width at the south end of approximately 63 feet. The area is level with the road and drops off on the west side approximately 8 feet. Heavy staining is evident on the top of the southern third of the area around the surface of an exposed, crushed drum (Photo 52-24). The west bank also has heavy staining in its central area (Photo 52-25) as well as staining just below the surface in the central third of the area (Photo 52-23). Drainage from this site is assumed to be to the west of the site, which is the area of drainage affected by the spill from the fuel storage tanks (Site 11).

3.10.1 DERP Eligibility

This site is eligible for DERP-funded investigation because the potential contamination now present is the result of waste put there at the time of military occupancy. The source of the soil contamination appears to be CON/HTW also of military origin.

3.10.2 Potential Contamination, Unsafe Structures, and Debris

3.10.2.1 Nature and Extent of Contamination

The CON/HTW present at this site is reportedly waste oil. The visible staining and color observed during site inspection support the assumption that it is oil. The samples of soil and sediments collected by URS had 3.7 ppm and 1.0 ppm PCBs, respectively, and could potentially be from this source rather than the fuel storage tanks or the spill associated with them. The extent of contamination is difficult to estimate because it is buried; however, based on the size of the area (300 feet by 100 feet) and depth (6 feet), it is estimated that with minimal crushing (5% reduction in volume) there could be as many as 18,600 55-gallon drums. If extensive crushing (80% reduction) occurred during burial, there could be as many as 88,400 drums. One drum was partially exposed and was crushed to approximately 30% of its original volume. Since the drum was at the surface, it was judged to be worst case. Therefore, for this inventory, it is assumed that the average reduction in volume was 40%, which results in an estimate of 29,500 buried drums. It is assumed that the drums are 5% full.

The areal extent of contaminated soil and sediment at this site is estimated to encompass the burial area (300 feet by 100 feet) and the surface staining plume area (approximately 100 feet by 100 feet). Assuming that the vadose zone water table is very near the surface in proximity to the drainage area immediately west of this site, the depth of contamination is estimated to average approximately 2 feet. This represents a total of approximately 3,300 cubic yards of soil if the barrels occupy 95% of the burial area.

3.10.2.2 Potential Sources of Contamination

The potential source of soil, sediment, surface water, and groundwater contamination is the leaking CON/HTW buried here, which is leaking due to the method of disposal.

3.10.2.3 Potential Migration Routes

The potential routes of contaminant migration include runoff to the east and into the drainage flow, and penetration to groundwater.

3.10.2.4 Potential Contaminant Receptors

Potential receptors of contaminant migration from this site through ground and surface water are vegetation, fish, wildlife, and people that subsistence fish and hunt in the area.

3.10.3 Recommended Sampling

It is recommended that surface soil, subsurface soil, sediments, surface water and groundwater samples be collected in this area. Some of the surface soil samples should be collected from the stained soil. To characterize this site, it is recommended that analysis of the samples include BNAs, VOCs (subsurface soil and groundwater only), POLs, PCBs, and metals associated with spent lubricating oil. It is also recommended that the samples collected from the stained soil be analyzed prior to doing further sampling at the site. This will allow the delineation samples to be analyzed for only those constituents present in the source. The sampling at this site should be coordinated with the sampling of Site No. 11 so that by location, analytes, or concentration the proper source and relevant plume can be identified for cleanup.

3.11 SITE 11: FUEL STORAGE TANK AREA

This site consists of three welded steel fuel tanks (Photos 3-11, 3-12, and 3-13) that are each 50 feet in diameter, 28 feet high, and contain 9,790 barrels (411,180 gallons). The tanks are located at the northeast edge of the housing and operations area about 100 feet northwest of Cargo Beach Road (see Figure 3-4). An aboveground pipeline connects all three tanks, and the supply pipeline from Cargo Beach. The 20,000-gallon UST at the power building and the diesel fuel pump island are serviced from these tanks via an underground pipeline (see Section 3.15). The tanks formerly contained diesel fuel but have since been cleaned and contain only a small volume of water with a minor petroleum sheen. The tanks are identified as Tanks No. 1, No. 2, and No. 3 from east to west. Tank No. 2 was punctured in the late 1960s by heavy snowplowing machinery, and approximately 180,000

gallons of diesel fuel were released (Toolie 1992 and Public Meeting 1991). The spill occurred in the winter, and much of the fuel was intentionally burned. Most of the fuel collected in the wetlands north of the tanks, and significant soil staining and stressed vegetation are present in the wetlands (Photo 51-9). In addition, several empty drums are scattered across the site.

3.11.1 DERP Eligibility

This site is eligible for DERP-funded cleanup due to the presence of CON/HTW and DERP-funded investigation due to the presence of HTW (contaminated soils and water).

3.11.2 Potential Contamination, Unsafe Structures, and Debris

3.11.2.1 Nature and Extent of Contamination

The area of fuel-stained soil measures approximately 90,000 square feet and is located immediately north of Tanks No. 1 and No. 2. The depth of this contamination is unknown. Much of the stained soil is within the wetlands that extend to the northwest. URS Corporation documented diesel contamination at 10,000 mg/kg in soils within the spill area. In addition, a soil sample collected near the tanks contained PCBs at 1 mg/kg. There is no known source for PCBs near the tanks. It is assumed that the source for PCBs is the drum burial area of Site 10.

3.11.2.2 Potential Sources of Contamination

The source of the documented soil contamination is the large diesel spill from Tank No. 2. The large fuel tanks are not a source for continued contamination because they are empty of fuel. Drums scattered across the site are empty, but their former contents are unknown. They are not considered a source for continued contamination. The contamination at this site is expected to be POLs (diesel).

3.11.2.3 Potential Migration Routes

The potential routes of contaminant migration from this site include surface water (rainfall runoff or snowmelt) and penetration to groundwater. Both surface runoff and groundwater flow directly to the Bering Sea.

3.11.2.4 Potential Contaminant Receptors

Potential receptors of contaminant migration from this site through ground and surface water are vegetation, fish, wildlife, and people that subsistence fish and hunt in the area.

3.11.3 Recommended Sampling

It is recommended that surface soil, surface water, and sediment samples be collected at and around this site to determine the areal extent of contamination. Subsurface soil and groundwater samples should be collected to establish the extent of subsurface contamination. The ASTs should also be sampled. All samples should be analyzed for POLs.

3.12 SITE 12: GASOLINE TANK AREA

Two storage tanks set on earthen cradles are located southeast of the Pumphouse Access Road and Cargo Beach Road intersection (Figure 3-4 and Photo 3-14). The smaller tank is 8 feet in diameter and 34 feet long (12,784 gallons) and has rolled off its cradle toward the larger tank. The larger tank is 10.5 feet in diameter and 38 feet long (24,614 gallons). Both tanks are empty and apparently intact. These tanks contained leaded gasoline and a fuel pump was mounted in a shed immediately to the east of the tanks (Toolie 1992). What may be the remains of the shed are present north of Cargo Beach Road; a shed rests on its side as if blown there. No visible staining exists, but spills could have occurred during filling operations and, if so, would have occurred at the east end of the tanks.

3.12.1 DERP Eligibility

The tanks are eligible for DERP cleanup as CON/HTW.

3.12.2 Potential Contamination, Unsafe Structures, and Debris

3.12.2.1 Nature and Extent of Contamination

No spills are evident at this site.

3.12.2.2 Potential Sources of Contamination

Potential sources of contamination at this site do not exist as the tanks are empty and there is no evidence of contaminated soil.

3.12.2.3 Potential Migration Routes

Not applicable.

3.12.2.4 Potential Contaminant Receptors

Not applicable.

3.2.3 Recommended Sampling

Not applicable.

3.13 SITE 13: HEAT AND ELECTRIC POWER BUILDING

Building 110 of the housing and operations area contains the central heating and power-generating facilities for the base (Photos 6-21, 6-22, 6-23, 7-10, and 7-11). It is located directly inside the north perimeter road of the housing and operations area (see Figure 3-4). The site consists of the building and the immediately surrounding land, including two underground storage tanks (USTs). One is south of the building, and was reported by the natives to be 20,000 gallons (Public Meeting 1991). The other is on the west side of the building and is of unknown size. The two-story wood-frame construction building has steel web roof/ceiling joists, a 24-inch concrete sill foundation, and a 10-inch slab floor. The overall building dimensions are approximately 144 feet by 103 feet with 7,400 square feet of footprint area. The generator room is set up for ten generators and presently houses four Cummins diesel generators. Overhead ducts and blowers exist for ten generators with the ventilation chambers making up the second floor. Two Ray oil burners and boilers are located in another room (approximately 30 feet by 50 feet) and are set on 4-foot by 10-foot by 5-foot brick bases. A Cleaver Brooks skid-mounted standby boiler and a 500-gallon pressure tank are also located in this room. Stacks extend from the burners to 15 feet above the roof. The water pump room houses a 24-foot-diameter, 20-foot-high water storage tank. The room to the west of this houses the generator and pump for the fire hydrant and stand pipe system. It is fueled by the UST just outside the building to the west. There are miscellaneous valves,

piping, pressure tanks, and blowers throughout the building. Three banks of three large transformers each are all suspected or confirmed (see Table 2-2) to contain PCB-containing fluids. One bank is in a room on the south side of the building. Another is in a room on the north and the third in an add-on room at the southwest corner. An oil spill site is located near the southwest transformer bank, which is housed in a collapsing wood-frame, dirt-floor addition to the main building. Potentially asbestos-containing material insulates the boilers, generator exhaust pipes, pressure tanks, and most of the piping. Transite panels cover the walls in the generator room, second- floor ventilation chambers, and the electrical control room. The building is sided with potentially asbestos-containing shingles. Evidence of spills on soils around the transformers and on concrete slabs within the building raises concerns for fuels, lubricants, PCBs, and other materials commonly found around transformer, generator, and boiler operations. As for the structure itself, the southwest transformer room is collapsed, and the rest of the structure is in weathered condition. The roofing is gone and most of the windows are broken, and there is water damage throughout the building creating the potential for interior ceiling or wall collapse.

Three 5-gallon cans (CON/HTW) were observed in the second-floor ventilation chambers and one was observed near the south side UST. One can was marked auto grease (at UST) and one was marked thinner/synthetic resin enamel (in ventilation chamber). The two other cans were not marked.

3.13.1 DERP Eligibility

The USTs, transformers, generators, fuel tanks, boilers, miscellaneous electrical equipment, and miscellaneous 5-gallon cans qualify for DERP-funded cleanup as CON/HTW. The stained soil, floors, and equipment pads are potentially contaminated and qualify for further investigation. The building is eligible for demolition because of contaminated slabs and unsafe structure (see page 3-1).

3.13.2 Potential Contamination, Unsafe Structures, and Debris

3.13.2.1 Nature and extent of Contamination

The following items or areas of potential contamination, unsafe structures, and debris were observed:

- One 20,000-gallon underground storage tank;

- One underground storage tank (estimated size 5,000 gallons);
- One aboveground fuel tank (estimated size 1,000 gallons);
- Four 5-gallon cans of unknown contents;
- Four Cummins diesel generators;
- One diesel generator for fire system;
- Nine electrical transformers;
- Two banks of electric starters and controls;
- Six electric oil-filled switches;
- Two Ray oil burner boilers;
- One Cleaver Brooks boiler;
- Scattered building materials with protruding nails;
- A collapsed transformer room approximately 24 feet by 18 feet;
- A stained floor slab in the generator room;
- Stained soil in the southwest transformer room; and
- Suspect ACM (8,100 sq. ft. siding, 3,500 LF pipe insulation, 3,300 sq. ft. equipment insulation, 2,000 sq. ft. from site).

3.13.2.2 Potential Sources of Contamination

Potential sources of contamination are the aboveground and underground fuel tanks, the transformers, and the oil-filled electrical switches, the generators, and the oil-burning boilers, and miscellaneous cans of grease and thinner. Previous sampling by URS has indicated the presence of PCBs in soils and transformers at the southwest corner of the building (see Table 1-2).

3.13.2.3 Potential migration Routes

Potential migration routes of contaminants include runoff to surface water and penetration to groundwater.

3.13.2.4 Potential Contaminant Receptors

Potential receptors of contaminant migration from this site through ground and surface water are vegetation, fish, wildlife, and people that subsistence fish and hunt in the area.

3.13.3 Recommended Sampling

It is recommended that surface soil samples be collected near the north and south transformer rooms and from around the fuel tanks, that borehole samples be collected from around the USTs, that groundwater samples be collected upgradient and downgradient of the USTs, and that wipe samples be collected from the stained floor areas. Container sampling of the six transformers not previously sampled and the six oil-filled electrical switches. In addition, the 5-gallon cans and fuel tanks should also be sampled.

It is recommended that soil samples collected near the transformers and the transformer and oil-filled electric switch container samples be analyzed for PCBs. The surface and subsurface soil and groundwater samples collected around the fuel tanks and stained soils associated with them should be analyzed for POLs. Samples collected from the fuel tanks should be analyzed for POLs. Samples from the miscellaneous cans should be field HAZCATTED and lab analyzed specific to HAZCAT results. The wipe samples collected from the stained floor areas should be analyzed for PCBs.

It is also recommended that suspect ACM and lead paint be sampled and analyzed accordingly.

3.14 SITE 14: EMERGENCY POWER/OPERATIONS BUILDING

This building housed the emergency power generation and communications equipment and is located at the western edge of the housing and operations area (see Figure 3-4). The single-story building, 16,250 square feet in area, is constructed with reinforced concrete foundations and columns (Photo 3-22). Floor slabs and wall panels consist of reinforced concrete. Steel trusses support the roof system, which is constructed of steel purlins, foam-glass insulation, and sheet steel roofing. Interior walls and ceilings are finished with plaster on metal lathe (suspect ACM) and sheetrock on wood furring strips. Some floors are finished with 9-inch by 9-inch floor tiles, a suspect ACM. Mechanical piping has insulation that is

suspect ACM. An underground corridor for utilities (utilidor) enters the building at the east end.

Three Westinghouse transformers are located in a room on the south side of the building.

Most of the exterior sheet roofing has been removed by wind or by people salvaging building materials. This has resulted in extensive water damage to the interior of the building. The structural support system shows evidence of some differential heave and settlement in the floor slabs and the wall panels.

A 5,000-gallon steel aboveground fuel storage tank is located just south of the building (Photo 4-5). The tank is in sound condition and is one-half full of water; there is a slight sheen on the water. A small number of military grease cans were observed scattered near the fuel tank, and at least one 55-gallon drum of unknown contents is located inside the building.

No areas of stained soil were observed as reported in the URS report (URS 1986) and no UST was found south of the building (Public Meeting 1991).

3.14.1 DERP Eligibility

The transformers, miscellaneous containers (cans and one drum), and the fuel storage tank are eligible for cleanup under DERP guidelines as CON/HTW. Miscellaneous building debris is eligible for cleanup as unsafe debris. The building is eligible for cleanup as an unsafe structure (see page 3-1).

3.14.2 Potential Contamination, Unsafe Structures, and Debris

3.14.2.1 Nature and Extent of Contamination

The following areas of potential contamination, unsafe structures, and debris were observed:

- One 5,000-gallon aboveground fuel storage tank;
- One 55-gallon drum inside the building;
- Abandoned grease cans;
- Falling debris inside the building;

- Scattered wood boards with protruding nails;
- Three transformers;
- Suspect ACM (12,000 sq. ft. surface material, 900 LF pipe insulation); and
- Miscellaneous electrical equipment.

3.14.2.2 Potential sources of Contamination

Potential sources of contamination include the fuel storage tank, the transformers, and the electrical equipment. Previous sampling by URS in 1985 indicated that PCBs are present in one of the transformers (see Table 1-2).

3.14.2.3 Potential Migration Routes

Potential migration routes for contamination include runoff to surface water and penetration to groundwater.

3.14.2.4 Potential Contamination Receptors

Potential receptors of contaminant migration from this site through ground and surface water are vegetation, fish, wildlife, and people that subsistence fish and hunt in the area.

3.14.3 Recommended Sampling

A container sample is recommended to be taken from the transformers not sampled in 1985 by URS to confirm the presence of PCBs and from the tank to confirm the presence of POLs. Suspect ACM and lead paint should also be sampled and analyzed accordingly.

3.15 SITE 15: BURIED FUEL LINE SPILL AREA

The three main fuel storage tanks are connected to a 20,000-gallon UST located immediately south of the Heat and Electric Power Building by a buried fuel line approximately 350 feet in length (see Figure 3-4). This line presumably runs west from the fuel storage tanks and angles southwest to the diesel fuel pump island and then south toward the 20,000-gallon UST, which serves the generators in the power building. A break in the buried fuel line resulted in a spill of approximately 40,000 gallons of diesel fuel (Toolie 1992 and Public

Meeting 1991). The spill resulted in a significant area of stained surface soil that is still present (Photos 52-7 and 52-8). The broken line was abandoned in place and a second line was installed; the second line parallels the original but at a shallower depth.

3.15.1 DERP Eligibility

This site qualifies for DERP-funded investigation due to the presence of potential HTW (contaminated soils and/or water).

3.15.2 Potential Contamination, Unsafe Structures, and Debris

3.15.2.1 Nature and Extent of Contamination

Surface soil staining is most prevalent along the eastern edge of the power building. The area of visible staining measures approximately 2,300 square feet. The largest stained area is approximately 40 feet east to west by 50 feet north to south and is centered approximately under the small shed attached to the east end of the power building. Another stained area at the northeast corner of the power building measures approximately 30 feet east to west and 10 feet north to south. The depth of soil contamination is unknown. It is likely that groundwater was also impacted by this break and spill.

3.15.2.2 Potential Sources of Contamination

The source of the diesel spill at this site is known to be the broken pipeline. The only potential sources for continued contamination are the two buried pipelines. However, the pipelines are probably empty because the tanks at either end of the pipeline no longer contain fuel. Therefore, there is little chance for continued release of fuel. The only contamination likely to be found at this site are POLs (diesel); PCBs, metals, and other contaminants are not expected.

3.15.2.3 Potential Routes of Migration

The routes available for migration of POLs from this site include runoff to surface water or penetration to groundwater. Both surface runoff and groundwater flow north toward the Bering Sea.

3.15.2.4 Potential Receptors

Potential receptors of contaminant migration from this site through ground and surface water are vegetation, fish, wildlife, and people that subsistence fish and hunt in the area.

3.15.3 Recommended Sampling

It is recommended that surface soil, subsurface soil, and groundwater samples be collected at this site to determine the extent of contamination. All samples should be analyzed for POLs.

3.16 SITE 16: PAINT AND DOPE STORAGE BUILDING

The paint and dope storage building was used for storage of paint, solvents, and other miscellaneous flammable liquids.

The building is a small, single-room, wood-frame structure with a reinforced concrete floor and foundation (Photo 6-3). Siding is suspect asbestos shingles. All doors and windows are missing, resulting in weather damage to the interior.

Approximately 150 gallons of solvents, paints, POLs, dielectric fluids, cleaners, and various other liquids are contained within the building (Photo 6-4). All of the containers are in poor condition and many labels are illegible. Many containers have leaked or are leaking. Several 1-gallon cans of electrical insulating oil and 1,1,1-trichloroethane were observed. Numerous other leaking containers are scattered outside of the building. A steel tank presumed to have been for oiling of roads is located just north of the building. Its size is 7.5 feet long with an oval cross section of 6 feet by 4 feet.

3.16.1 DERP Eligibility

The liquid HTW containers, the spilled liquids, and the steel tank are eligible for DERP-funded cleanup. The potentially contaminated soil is eligible for further investigation. To clean up the potentially contaminated floor slab, the building requires demolition. Pending further investigation the building is eligible for demolition.

3.16.2 Potential Contamination, Unsafe Structures, and Debris

3.16.2.1 Nature and Extent of Contamination

The concrete floor slab of the building is covered with paints, solvents, oils, and other spilled products. Many of the containers outside of the building are leaking.

3.16.2.2 Potential Sources of Contamination

Potential sources of contamination include the HTW containers and the steel tank. Soils, surface water, and groundwater near these sources are potentially contaminated with POLs, solvents, paints, PCBs, and metals. A previous grab soil sample taken by URS in 1985 from in front of the building tested positive for PCBs at a trace level below the detection limit of 0.5 mg/kg (see Table 1-2).

3.16.2.3 Potential Migration Routes

Available migration routes for potential contamination include surface water runoff, groundwater, sediment, and airborne particulates.

3.16.2.4 Potential Contaminant Receptors

Potential receptors of contaminant migration from this site through ground and surface water are vegetation, fish, wildlife, and people that subsistence fish and hunt in the area.

3.16.3 Recommended Sampling

It is recommended that surface soil samples be collected near the leaking containers outside of the building. Subsurface soil and groundwater samples should be collected to establish the extent of subsurface contamination. All soil and groundwater samples should be analyzed for VOCs (except for surface soil), BNAs, PCBs, and priority pollutant metals. Product samples should also be collected from the congealed spilled product and from the unknown containers; these samples should be field HAZCATTED and analyzed in a lab according to HAZCAT results. The tank should be sampled for POLs and PCBs. Suspect ACM and lead paint should be sampled and analyzed accordingly.

3.17 SITE 17: GENERAL SUPPLY WAREHOUSE AND MESS HALL WAREHOUSE

The general supply warehouse (Building 111) is a single-story building approximately 9,900 square feet in size (see Figure 3-4). The building was used to store miscellaneous materials required for general base operations, including furniture, forms, toilet paper, stationary, and cleaning fluids. The warehouse has a reinforced concrete foundation, wood-frame walls and ceiling, built-up roof, and suspect ACM shingle siding (Photos 6-11 and 6-12). The interior of the building has concrete floor slabs, interior wood columns, drywall ceilings, and wood slats on the walls. Water and steam heating pipes are insulated with suspect ACM.

The mess hall warehouse (Building 107) is a single-story building approximately 10,200 square feet in size (see Figure 3-4). This building provided warm- and cold-storage facilities to support the adjoining mess hall operations. The warehouse has a reinforced concrete foundation, wood-frame walls and ceiling, built-up roof, and shingle siding (Photos 5-23, 5-24, 5-25, and 5-26). The interior of the building has concrete floor slabs, interior wood columns, drywall ceiling, and wood slats on the walls. Water and steam heat pipes are insulated. A later addition to the north end of the warehouse has been dismantled for the building materials. The steel foundation and concrete floor are still in fair condition, but nothing remains of the walls or roof. Eight 55-gallon drums were observed in the north end addition. At least one drum has leaked. A walk-in cold storage room in this warehouse has numerous discarded 1-gallon and 5-gallon cans of unknown contents.

3.17.1 DERP Eligibility

All abandoned containers that contain or may contain HTW are eligible for DERP-funded cleanup and/or investigation. Soils north of the mess hall warehouse are eligible for further investigation. The potentially contaminated floor slabs are eligible for further investigation and potential cleanup which would qualify the building for demolition.

3.17.2 Potential Contamination, Unsafe Structures, or Debris

3.17.2.1 Nature and Extent of Contamination

The following HTW and potential HTW were observed:

- General Supply Warehouse

  - Nine 5-gallon cans of bromochloromethane;
  - Seven metal and poly containers of unknown liquids;
  - One 55-gallon drum, contents unknown;
  - Ten cases of aerosol cans containing de-icing fluid (heavily corroded);
  - Four cases of 1-pint cans, possibly containing sodium hydroxide (heavily corroded);
  - Undetermined quantity of water treatment chemicals; and
  - Suspect ACM (6,300 sq. ft. siding, 500 LF pipe insulation).

- Mess Hall Warehouse

  - Seven 1-quart bottles of isopropyl alcohol;
  - Ten 1-quart cans of Capella oil;
  - Six 1-gallon cans of Americoat dimetcoat powder, labeled "Harmful dust";
  - Aerosol spray cans of de-icing fluid;
  - One 5-gallon can of "Multi-clean";
  - Stack of molded asbestos pipe lagging;
  - Four cases, 24 1-lb. cans each, septic cleaner (enzyme/bacteria type);
  - Six 5-gallon cans, heavily corroded and leaving white solid residue;
  - Six 55-gallon drums of unknown contents;
  - Two 55-gallon drums of calcium hypochlorite;
  - Discarded 1-gallon and 5-gallon containers of unknown contents; and
  - Suspect ACM (4,600 sq. ft. siding, 400 LF pipe insulation).

3.17.2.2 Potential Sources of Contamination

No other sources of potential contamination are known beyond what is noted above. Soils near the north end of the mess hall warehouse have the potential for contamination from leaking 55-gallon drums.

3.17.2.3 Potential Migration Routes

The primary migration route for potential contamination is by surface runoff from rainfall and snowmelt and then to penetrate to groundwater.

3.17.2.4 Potential Contaminant Receptors

The primary contaminant receptors would be wildlife and people from direct contact. Secondary receptors would be through the surface and groundwater system to vegetation, fish, and wildlife and to people who subsistence hunt and fish.

3.17.3 Recommended Sampling

It is recommended that surface soil samples be collected from the soils near the north end of the mess hall warehouse. The samples should be analyzed for VOCs and BNAs. In addition, the containers with unknown contents should be sampled for field HAZCAT and lab analyzed specific to HAZCAT results. The floor slabs should be wipe sampled and analyzed for BNAs and PCBs.

3.18 SITE 18: HOUSING FACILITIES AND SQUAD HEADQUARTERS

This site includes buildings 99, 100, 101, 102, 104, 105, 106, 125, and 130 as wells as the immediate surrounding land and associated connecting corridors/utilidors (see Figure 3-4) of the Housing and Operations Area. Photos 4-8, 4-10, 4-17, 4-19, 4-21, 4-23, 4-25, 5-4, 5-9, 5-10, and 5-12 give views of all these buildings. All of the buildings except temporary buildings 125 and 130 and recreation building 99 are wood-frame construction on concrete or wood pillars with spread footings. Building 125 is a totally collapsed wood-frame facility with wood foundation. Building 130 consisted of modular panel walls on a double-channel base rail set on piers; it is totally collapsed. Building 99 is a steel-frame/aluminum-sided structure with a concrete slab floor and foundation. All of these buildings are single story except the north wing of Dorm 100, which has two stories. The total square footage of these buildings is approximately 72,050 square feet excluding buildings 125 and 130, which are totally collapsed. The connecting corridors are of wood-frame construction and are 6.5 feet wide by 850 feet in length in this area. Most of these buildings are structurally deteriorated to the point that they cannot be accessed more than a few feet beyond the doorways. The kitchen area of building 130 (mess hall), and building 105 (recreation hall), and 99 (gymnasium) allowed further entry, but extreme caution was required due to overhanging debris, debris on floors, and potential weak spots in floors.

Suspect ACM was noted as insulation on the heating system and plumbing system piping in the buildings and utilidors. In addition, floor tile throughout the buildings and the siding on all buildings except Building 99 is suspect ACM. Ceiling tiles in the theater of Building 105 and transite panels at fire break walls in connecting corridors are suspect ACM as well.

Debris is scattered all around these buildings. This debris has protruding nails and pointed objects throughout.

Other items that were noted are listed below:

- Bottles of cleaning fluids in closets;
- Suspect lead paint flaking off walls in the buildings;
- Incinerator in mess hall presumably for garbage/trash (insulated with suspect ACM); and
- One 5-gallon can in kitchen of mess hall (unmarked).

3.18.1 DERP Eligibility

This site is eligible for DERP-funded cleanup due to the unsafe nature of the debris and structure and miscellaneous CON/HTW (see page 3-1). With most of the roofs gone, there is extensive damage to the interiors of the buildings. Support walls are buckled, floors are sagging or collapsed, and foundations are shifted with floor framing about to slide off piers.

3.18.2 Potential Contamination, Unsafe Structures, and Debris

3.18.2.1 Nature and Extent of Contamination

The nature of contamination associated with the unsafe structures is suspect lead paint particulate and suspect asbestos particulate throughout the buildings. It is estimated that there is approximately 8,000 LF of pipe insulation, 63,000 square feet of floor tile, single siding and transite panels, and 130 square feet of block insulation on the incinerator. The painted wall surfaces that are suspect lead containing is estimated to be 81,500 square feet. Total cubic yardage of building material is estimated to be 4,500 cubic yards.

3.18.22 Potential Sources of Contamination

Sources of contamination include deteriorating suspect lead paint and asbestos-containing materials. In their crumbling and deteriorated state, these would if allowed to dry out, be suspected of releasing large amounts of particulate or fibers into the air when the wind is blowing through the buildings. During inspection of the buildings, they were extremely wet throughout; it is unknown if they dry out during some part of the year.

3.18.2.3 Potential Routes of Migration

The route of migration for these particulates and fibers is airborne.

3.18.2.4 Potential Receptors

Potential receptors are the seasonal native residents that scavenge in and around (every few days during the summer) these structures.

3.18.3 Recommended Sampling

It is recommended that any sampling of the suspect ACM materials and suspect lead paint be done with great care due to the structural instability of these buildings.

Types of ACM to sample include the following:

- Formed pipe insulation;
- Aircell pipe insulation;
- Mudded fittings;
- Floor tile;
- Shingle siding;
- Transit panels;
- Equipment block insulation;
- Acoustical ceiling titles; and
- Mudded fittings (second story of 100 north wing different age).

Also the occasional bottle of cleaning fluid should be sampled and analyzed for BNAs and VOCs.

3.19 SITE 19: AUTO MAINTENANCE AND STORAGE FACILITIES

This site is located southeast of Site 13 and inside the housing and operations are perimeter road (see Figure 3-4). Buildings 108 (Photos 7-16 and 7-17) and 109 (Photos 7-22, 7-23, 7-24) are wood-frame construction on concrete slabs with steel columns and trusses supporting the roof. The exterior is shingle sided and suspected of being ACM. The slabs

are oil stained and have drains at each bay. The northernmost bay of 109 has a grease pit that is half full with water that has a petroleum sheen on it. It is common for these to drain to an open drain field at sites such as these, and based on the layout it is assumed that they drain to the north.

Approximately two dozen smudge pots are stored at the south end of Building 108, some with product in them. The pipe insulation varies between some preformed (suspect ACM) and some fiberglass. Just outside the northeast corner of Building 108 is a tank (approximately 250 gallons) marked antifreeze (Photo 7-21) that appears intact and contains some liquid (estimate of 50 gallons).

In Building 109 at the north end there are 39 5-gallon cans of foam forming liquid type-5 (Photo 7-25). The south end is a two-story firehall with suspect ACM floor tile. The pipe insulation in this building is partially formed, suspect ACM.

At the southwest corner of building 108 there is a room that appears to have been used for battery storage/maintenance. There is a slop sink which was likely used to dump the spent battery acid. If this drains to waste handling facility (Site 21), then lead will be a concern at that site.

3.19.1 DERP Eligibility

The CON/HTW present (i.e., smudge pits, 5-gallon cans, and anti-freeze tank) qualify for cleanup under the DERP guidelines. The potentially contaminated floor slabs and soil at the floor drain and grease pit drainage area qualify for HTW investigation. The buildings will qualify for demolition pending the investigation.

3.19.2 Potential Contamination/Unsafe Structures or Debris

3.19.2.1 Nature and Extent of Contamination

The extent of contamination is the drain field(s) for the floor drains and grease pit. This location is not known at this time and will require further investigation to determine. The nature of contamination would be POLs and TCLP metals.

3.19.2.2 Potential Sources of Contamination

The source will have been the drains and drain piping from both buildings; that is six drains in Building 108 and six drains and a grease pit in Building 109.

3.19.2.3 Potential Routes of Migration

Routes of migration will be penetration to groundwater and surface runoff to surface water.

3.19.2.4 Potential Contaminant Receptors

Potential receptors of contaminant migration from this site through ground and surface water are vegetation, fish, and wildlife, and people that subsistence hunt in the area.

3.19.3 Recommended Sampling

It is recommended that surface soils outside the vehicle bays and subsurface soil and groundwater in the suspect drainfield areas be sampled and analyzed for POLs and metals associated with spent lubricating oil. Also, container sampling is recommended for the smudge pots, 5-gallon cans, and anti-freeze tank. Analyses should be POLs for the smudge pots, and VOCs and BNAs for the tank and 5-gallon cans.

The suspect lad paint and ACM should also be sampled and analyzed. Wipe samples of the floor slabs should be taken and analyzed for POLs and metals associated with lube oil.

3.20 SITE 20: AIRCRAFT CONTROL AND WARNING (AC&W) BUILDING

Building 103 of the housing and operations area is inside the eastern perimeter road and south of Site 19 (see Figure 3-4). This is a shingle-sided wood-frame building with steel web roof joists on a concrete sill and slab. Sixty percent of the roof has collapsed (Photo 5-2). There is suspect ACM-insulated piping, siding, floor tile, and acoustical wall and ceiling tile in the building (Photo 5-3). The building was judged unsafe for entry so none of the unexposed rooms could be inventoried.

3.20.1 DERP Eligibility

This site qualifies for DERP cleanup as an unsafe structure (see page 3-1 for discussion).

3.20.2 Potential Contamination/Unsafe Structure and Debris

3.20.2.1 Nature and Extent of Contamination

The building is 73 feet by 46 feet with a height to the eave of the roof of approximately 14 feet. The total cubic yards of building material is estimated to be approximately 200 cubic yards. Asbestos and lead paint contamination is suspect but will not be safe to sample prior to demolition because of the instability of the structure.

3.20.2.2 Potential Sources

Sources of contamination include deteriorating suspect lead paint and asbestos-containing materials. In their crumbling and deteriorated state, these would, if allowed to dry out, be suspected of releasing large amounts of particulate or fibers into the air when the wind is blowing through the buildings. During inspection the buildings, they were extremely wet throughout, but it is unknown if they do dry out during some part of the year.

3.20.2.3 Potential Receptors

The route of migration for these particulates and fibers is airborne.

3.20.2.4 Potential Receptors

Potential receptors are the seasonal native residents that scavenge in and around (every few days during the summer) these structures.

3.20.3 Recommended Sampling

It is recommended to sample the suspect ACM and lead paint if it is deemed safe to access the building for such purpose.

3.21 SITE 21: WASTEWATER TREATMENT FACILITY

This is the site of the wastewater treatment system which served the Housing/ Operations Area. The facility is located to the northwest of the Emergency Power and Operations Building (see Figure 3-4). The facility consists of two side by side settling tanks approximately 15 feet wide by 50 feet long by 8 feet deep each and a control room 8 feet wide by 9.5 feet long by 8 feet high (Photos 51-17 and 51-18). Each settling tank has a 4-foot by 4-foot opening in the cover and there is another 6-foot by 6-foot opening near the

effluent line. Effluent is discharged via an 8-inch insulted cast iron pipe to a stream 450 feet east of the facility. Sludge was disposed of in a small impoundment adjacent to the settling tanks.

3.21.1 DERP Eligibility

This site is eligible for DERP cleanup because the facility is unsafe as an open access confined space. It is eligible for investigation because there is potential HTW present. The facility and influent/effluent piping may qualify as CON/HTW, depending on the sampling of accumulated water within the settling tanks.

3.21.2 Potential Contamination/Unsafe Structures or Debris

3.21.2.1 Nature and Extent of Contamination

The nature of the unsafe structure is due to the three openings in the cover of the settling tanks. The existing structure represents both a confined space and a drowning hazard as each settling tank contains an estimated 7,500 gallons of accumulated water. The reinforced concrete structure represents approximately 100 cubic yards of material. This is estimated by calculating the surface area of the structure and using 0.5 feet as an average thickness.

The nature of the NTW at the site consists of sewage material present in the tanks or piping and the sludge at the surface impound area. This could all be potentially contaminated with POLs, PCBs, metals, bacteria, and miscellaneous chemicals.

3.21.2.2 Potential Sources of Contamination

Potential sources of contamination are the settling tanks and the soils in the sludge disposal impoundment and the discharge outfall sediments.

3.21.2.3 Potential Routes of Migration

The routes available for migration of the potential contaminants are surface runoff or penetration to groundwater and subsequent transport. The surface runoff would eventually lead to the stream west of the facility at the effluent discharge and from there north to the Bering Sea. It is assumed that the groundwater would flow north to the sea or west to the stream if an interface exists there.

3.21.2.4 Potential Contaminant Receptors

Potential receptors of contaminant migration from this site through ground and surface water are vegetation, fish, wildlife, and people that subsistence fish and hunt in the area.

3.21.3 Recommended Sampling

Surface soil, surface water, and sediment samples are recommended at the outfall and impoundment to determine the extent of surface contamination. Subsurface soil and ground-water samples are recommended at the outfall and impoundment to determine the extent of subsurface contamination. The holding tanks require product sampling also. All samples should be analyzed for VOCs (except at surface soil, water, and sediment), POLs, BNAs, PCBs, metals on the MCL list, and persistent pathogens. The suspect ACM on the piping should also be sampled.

3.22 SITE 22: WATER WELLS AND WATER SUPPLY BUILDING

Four 6-inch steel cased water supply wells are present at the site:

- Well No. 1 adjacent to the south side of the water supply building. This well is housed in a partially collapsed wood-frame shed;
- Well No. 2 100 feet west of the water supply building in Building 14, a shingle-sided (suspect ACM) wood-frame structure on a concrete slab. It contains a 15 HP Fairbanks-Morse pump and a standby diesel motor pump drive. An underground fuel storage tank is located on the south side of this building.
- Well No. 3 20 feet northeast of the water supply building. This well has a 10-inch steel surface casing extending 2.5 feet above grade; and
- Well No. 4 at the former Morrison-Knudsen construction camp 500 feet southwest of the housing/operations area. This well is housed on a 10-foot by 14-foot wood-frame building on a concrete slab. The well head and pump base remain in the building.

The water supply building (number 113, Figure 3-4) is a wood-framed shingle-sided (suspect ACM) structure approximately 20 feet in height above grade with concrete foundation extending 8 feet below grade (Photo 8-3). The building contains 4 cylindrical welded steel

water tanks, 23 feet in diameter by 26 feet in height. The southeast corner of the building has partially collapsed, resulting in significant structural damage to all walls and the steel-truss roof system (Photo 8-5). The building also contains approximately 150 gallons of asbestos cement, 150 gallons of fire brick paint, and miscellaneous galvanized pipe.

3.22.1 Eligibility

The underground fuel tank and the containerized material in the water storage building are eligible for DERP cleanup as CON/HTW and the building qualifies for demolition (see page 3-1 for discussion).

The soil in the floor of the building, near the UST and wells, qualifies for further investigation due to the potential contamination.

3.22.2 Potential Contamination/Unsafe Structures or Debris

3.22.2.1 Nature and Extent of Contamination

The following areas of potential contamination, unsafe structures, and debris were observed:

- Underground fuel storage tank at Building 114;
- Containerized HTW at the water supply building;
- Oiled sand base for water storage tanks;
- 150 gallons of asbestos cement;
- 4,600 square feet of suspect ACM (siding);
- Fuel supply at Well No. 4, details are unknown;
- Abandoned, unsealed water supply wells;
- Collapsing water supply building; and
- Scattered wood debris with protruding nails.

3.22.2.2 Potential Sources of Contamination

The CON/HTW continue to be potential sources for contamination.

3.22.2.3 Potential Routes of Migration

The most likely migration route for potential contamination at these locations is groundwater because the tank is underground and the other containers are on a dirt floor some 81 below the surrounding grade. Groundwater flow and direction is unknown but assumed to be north toward the sea.

3.22.2.4 Potential Contaminant Receptors

There is no known use of groundwater near the site at this time.

3.22.3 Recommended Sampling

Surface soil samples are recommended for soils surrounding the water wells and in the floor of the supply building. The samples should be analyzed for POLs, BNAs, PCBs, and metals associated with spent lubricating oil. The UST and surface soils, subsurface soils, and groundwater around the UST should be sampled and analyzed for POLs. It is recommended that the paint cans be sampled and analyzed for VOCs, BNAs, and lead. The suspect ACM are also recommended for sampling.

3.23 SITE 23: POWER AND COMMUNICATION LINE CORRIDORS

Four main powerline and communication line corridors provide electrical power and communication from the main camp to outlying facilities (see Figure 3-1 and Photos 51-20 and 51-24). Three of the four corridors originate from the main camp and serve the direction finder building, airport terminal area, and lower tram building. The fourth corridor originates a little north of the White Alice site and travels northeast to a dead end. Transformers present at the direction finder building, airport terminal, and lower tram building area not covered by the powerline corridor site. Within the corridor itself, three locations formerly contained transformers: 1) the beginning point of the powerline in the main camp, 2) a platform adjacent to the White Alice site, and 3) a platform 200 feet southeast of the Receiver Building Site. The soil beneath the White Alice transformer platform is slightly stained. The corridors contain significant wood and metal debris, glass, cable, and drums. Drums are most prevalent between the Direction Finder Building and the Receiver Building because in this area the transmission lines were not suspended from utility poles, but rather laid over empty drums to keep them off the tundra.

3.23.1 DERP Eligibility

This site is eligible for DERP-funded cleanup due to the presence of hazardous debris and CON/HTW. This site is also eligible for further investigation due to the potentially contaminated soils present.

3.23.2. Potential Contaminants, Migration, and Receptors

3.23.2.1 Nature and Extent of Contamination

A small area (approximately 4 square feet) of stained soil is located immediately beneath the transformer platform adjacent to the White Alice site. The source of this staining is presumably the three former transformers. Since the transformers are suspected to have contained PCBs, the stained soil below may well be HTW-contaminated. No other stained soil was present along the corridors.

All of the corridors, except between the receiver and direction finder buildings, contain hazardous debris in the form of wooden power poles which are generally 20 feet tall and spaced at 150-foot intervals. Approximately 175 utility poles are contained within this site.

The powerline corridor contains approximately 140 drums. Approximately 135 of those were between the receiver and direction finder buildings and were used for powerline supports. None appeared to contain fluid and no stained soil was evident. Approximately five drums were located in the lower tram building corridor. One of those drums contained approximately 5 gallons of potential petroleum product; however, no stained soil was evident.

3.23.2.2 Potential Sources

The source of the stained soil beneath the transformer platform adjacent to the White Alice site was presumably the former transformers. The transformers have been removed and thus, also the source for continued contamination. The wood utility poles were likely treated with a wood preservative which could be a source of contamination. Only one of the approximately 140 drums at this site contained petroleum product. This drum is a potential, although minor, contaminant source. Some of the large diameter utility cables contained a lead sheath which presumably served as an insulating layer. Given the large volume of cable present at this site, the volume of lead contained within the cable is significant. However, the

cable is not considered a likely contaminant source for lead due to the lack of a leaching mechanism. In summary, the contamination at this site is expected to be POLs, PCBs, and wood preserving chemicals (BNAs and metals).

3.23.2.3 Potential Routes of Migration

The routes available for migration of POLs, PCBs, and wood preservatives are surface water (rainfall runoff or snowmelt) or penetration to groundwater. Both surface and groundwater are assumed to flow predominantly north toward the Bering Sea.

3.23.2.4 Potential Receptors

Potential receptors of contaminant migration from this site through ground and surface water are vegetation, fish, wildlife, and people that subsistence fish and hunt in the area.

3.23.3 Recommended Sampling

Surface soil sampling is recommended for PCBs, POLs, BNAs, and metals associated with spent lubricating oil to determine the extent of surface contamination. No subsurface sampling is recommended. The single barrel with liquid in it should be field HAZCATTED and lab analyzed specific to the HAZCAT results.

3.24 SITE 24: RECEIVER BUILDING AREA

The Receiver Building Area is located 1.5 miles west of the Housing and Operations Area (see Figure 3-5). One reinforced concrete building on concrete pillars remains at the site (Photo 3-20). The burned-out structure measures approximately 14 feet wide by 22 feet long by 10 feet high with 0.7-foot-thick walls. All electrical equipment has been removed form the building. At the north corner of the receiver building pad there is approximately 450 exposed POL drums, most of which are rusted through. To the southeast of the building, there is evidence of buried drum rows. Based on partially exposed drums and soil settling patterns, it was estimated that there are 1,000 drums buried at Site 24. Building materials, cable, drums, and other debris have been pushed over the northwest edge of the pad into the wetlands area (Photo 51-12). It was noted during the site investigations that, due to the

volume of debris, a second building may have existed to the west of the receiver building but was destroyed and pushed aside.

3.24.1 DERP Eligibility

The Receiver Building area is eligible for DERP-funded cleanup due to the presence of suspect CON/HTW and unsafe debris and for further investigation due to the presence of potentially contaminated soil and water.

3.24.2 Potential Contamination/Unsafe Structures or Debris

3.24.2.1 Nature and Extent of Contamination

The nature and extent of the CON/HTW present is approximately 1,450 empty POL drums. The estimate includes 450 exposed drums, and 1,000 buried drums. The number of buried drums was estimated as two tiers of 500 drums each, based on visual observation of partially exposed drums.

The nature of the receiver building does not appear to be unsafe. The amount of reinforced concrete is estimated 35 cubic yards using the measured surface area of the building and 0.7 foot as an average thickness.

Debris dumped to the northwest of the receiver building represents the unsafe debris at the site. The debris consists mainly of building materials (i.e., wood, concrete, and steel) but also includes isolated drums and other metal debris. The total amount of visible debris is approximately 150 cubic yards.

3.24.2.2 Potential Sources of Contamination

A potential source of contamination is the drums that exist both aboveground and buried at the site. The soils under the drums have the potential for POL contamination.

3.24.2.3 Potential Routes of Migration

The routes available for migration of potential POL contamination is surface runoff or penetration to groundwater and subsequent transport. The surface runoff and groundwater would all eventually lead north to the Bering Sea.

3.24.2.4 Potential Receptors

Potential receptors of contaminant migration from this site through ground and surface water are vegetation, fish, wildlife, and people that subsistence fish and hunt in the area.

3.24.3 Recommended Sampling

Surface soil, surface water, and sediment samples are recommended to determine the extent of surface contamination. Subsurface soil and groundwater samples are recommended to determine the extent of subsurface contamination. All samples require analyses for BNAs, VOCs (for subsurface and groundwater only), POLs, PCBs, and metals on the MCL list.

3.25 SITE 25: DIRECTION FINDER AREA

The Direction Finder area is located 0.4 mile west of the Receiver Building site and 1.9 miles west of the Housing and Operations area (see Figure 3-5). A 17-foot-wide by 31.5-foot-long concrete foundation is all that remains of the former wooden Direction Finder building (Photos 3-16 and 51-10). There exists some evidence that the building had been burned down. The area surrounding the concrete foundation contains approximately 50 scattered POL drums and miscellaneous building materials debris. On the east side of the foundation there is a 4-foot-high transformer casing of 1.5-foot diameter.

3.25.1 DERP Eligibility

The Direction Finder area is eligible for DERP-funded cleanup due to the presence of suspect CON/HTW and unsafe debris and for further investigation due to the presence of potentially contaminated soil and water.

3.25.2 Potential Contamination/Unsafe Structures or Debris

3.25.2.1 Nature and Extent of Contamination

The nature and extent of CON/HTW present is approximately 50 POL drums. None of the drums were found to contain any liquid or product. Most of the drums were scattered within a 100-foot radius of the concrete foundation.

Unsafe debris at this site consists of one transformer casing and building materials debris.

3.25.2.2 Potential Sources of Contamination

Potential sources of contamination are the drums and the transformer casing. The soils adjacent to or under these points have the potential for POL and/or PCB contamination.

3.25.2.3 Potential Routes of Migration

The routes available for migration of potential POL and/or PCB contamination is surface runoff or penetration to groundwater and subsequent transport. The surface runoff and groundwater would all eventually lead north to the Bering Sea.

3.26.2.4 Potential Receptors

Potential receptors of contaminant migration from this site through ground and surface water are vegetation, fish, wildlife, and people that subsistence fish and hunt in the area.

3.25.3 Recommended Sampling

Surface soil, surface water, and sediment samples are recommended to determine the extent of surface contamination. Subsurface soil and groundwater samples are recommended to determine the extent of subsurface contamination. All samples require analyses for BNAs, VOCs (for subsurface and groundwater only) POLs, PCBs, and metals on the MCL list.

3.26 SITE 26: FORMER CONSTRUCTION CAMP AREA

A graded gravel pad located immediately southeast of the housing/operations area was the site of the work camp used by Morrison-Knudsen during the original construction of the base (Figure 3-4 and Photo 52-3). All that remains at the site is the wood-frame structure housing well no. 4 and the concrete foundation of the wash house/lavatory building.

3.26.1 DERP Eligibility

There is no visible debris or HTW eligible for DERP cleanup or investigation at this site.

3.26.2 Potential Contamination/Unsafe Structures or Debris

3.26.2.1 Nature and Extent of Contamination

There were no visible areas of contamination, however general construction activities at the site may have resulted in POL, solvent, and other contamination.

3.26.2.2 Potential Sources of Contamination

No potential sources of contamination were observed during the site visit.

3.26.2.3 Potential Routes of Migration

Not applicable.

3.26.2.4 Potential Receptors

Not applicable.

3.26.3 Recommended Sampling

No sampling is recommended for the former construction camp because the area is not eligible for further investigation under DERP.

3.27 SITE 27: DIESEL FUEL PUMP ISLAND

A diesel fuel pump island used to refuel heavy equipment and vehicles is located about 50 feet northeast of the power building (see Figure 3-4 and Photo 52-10). The pump provided diesel fuel only and is connected by underground pipeline to the three fuel storage tanks which are approximately 250 feet east. The pump island area consists of three main components:

1. The buried pipeline from the large storage tanks.
2. A cement valve box measuring 4 feet by 4 feet which is immediately north of the fuel pump.
3. The fuel pump shed which measures 4 feet by 6 feet and contains one fuel pump.

No documented fuel releases occurred at the filling station but there is a significant area of stained soil at this site.

3.27.1 DERP Eligibility

This site is eligible for DERP-funded investigation due to the presence of potentially contaminated soils and for cleanup due to the pipeline, which constitutes CON/HTW.

3.27.2 Potential Contaminants, Migration, and Receptors

3.27.2.1 Nature and Extent of Contamination

Surface soil staining is most prevalent north of the fuel pump and valve box. Staining covers approximately 1,500 square feet and extends north across the road into the adjacent wetlands. The depth of soil contamination is unknown and the impact on groundwater, if any, is also unknown.

3.27.2.2 Potential Sources

The source of the surface soil staining is assumed to be diesel fuel. However, without further investigation, it is impossible to determine if the contamination was caused by surface spills that occurred during refueling and/or leaks from buried piping. It is also uncertain if any fuel remains in the pipeline supplying the fuel pump. Any remnant fuel in the pipeline could serve as a future contaminant source if corrosion penetrates the line. The contamination at this site is expected to be POLs (diesel) only and no PCBs, metals, etc. are expected.

3.27.2.3 Potential Routes of Migration

The routes available for migration of POLs from this site are surface water (rainfall runoff or snowmelt) or penetration to groundwater. Both surface water and groundwater lead directly to the Bering Sea.

3.27.2.4 Potential Receptors

Potential receptors of contaminant migration from this site through ground and surface water are vegetation, fish, wildlife, and people that subsistence fish and hunt in the area.

3.27.3 Recommended Sampling

Surface soil, sediment, and surface water sampling is recommended to characterize surface contamination. Subsurface soil and groundwater samples are recommended to determine subsurface contamination. All samples require POL analyses.

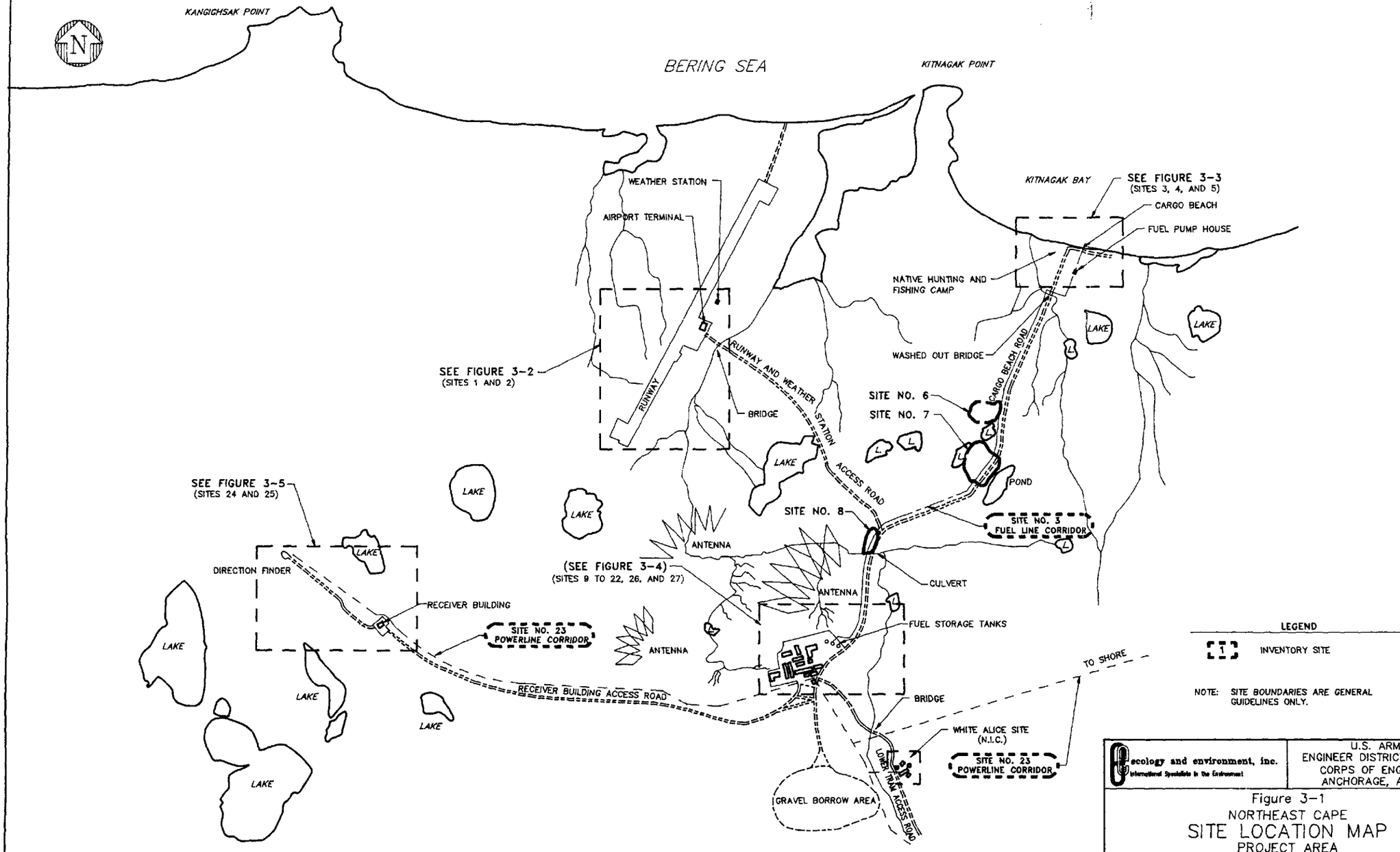

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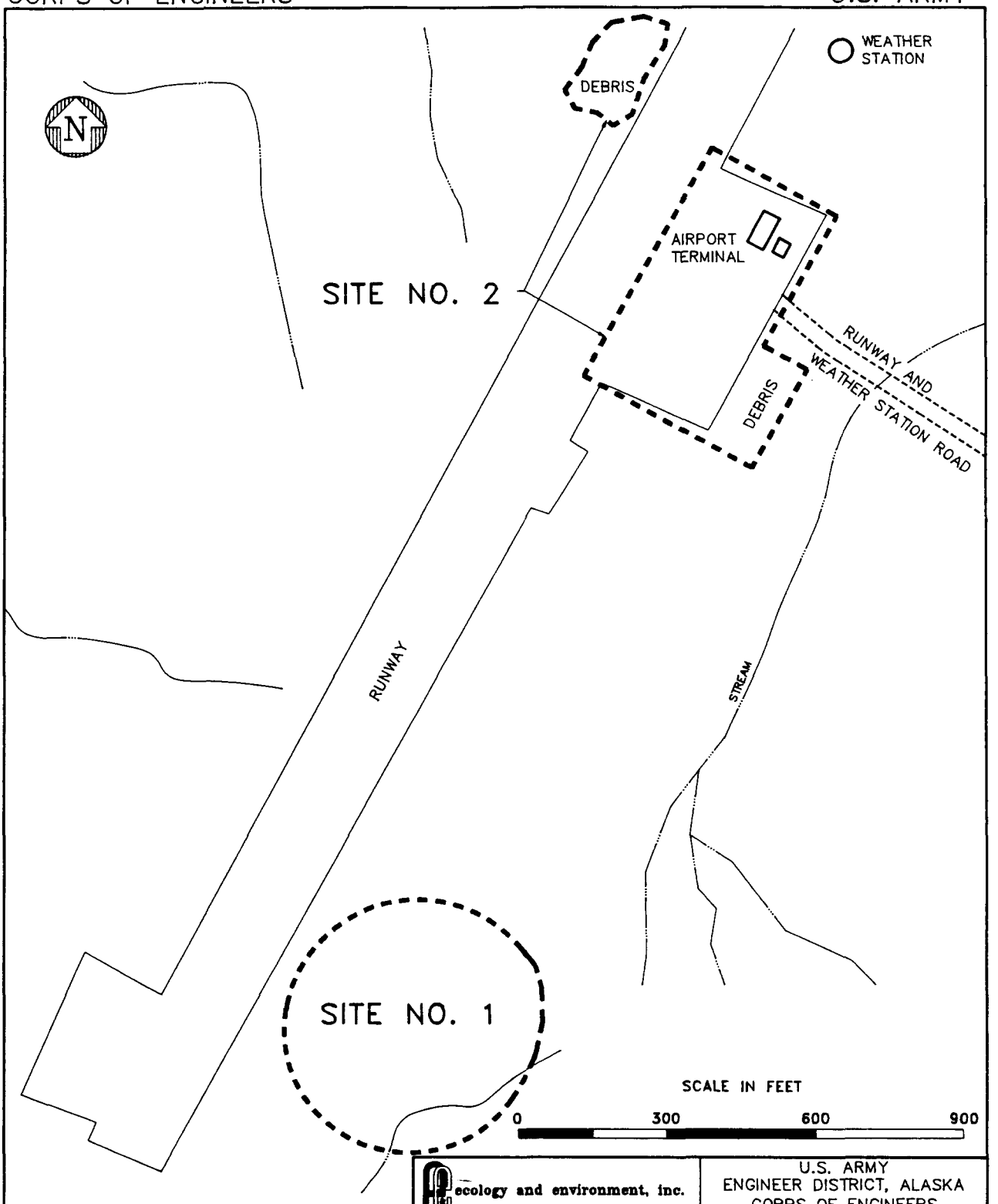
Figure 3-1
NORTHEAST CAPE
SITE LOCATION MAP
PROJECT AREA
ST. LAWRENCE ISLAND ALASK

SIZE	JOB. NO.	FILE NO.	DATE:	PLAT
B	KP4050	KP4-SLI-SITE-SAMPN	X	
DSGN.	X	CHK. X	SHEET	X

DACA85-91-D-000



LEGEND

[1] INVENTORY SITE

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Figure 3-2
NORTHEAST CAPE
SITE LOCATION MAP
RUNWAY AREA
ST. LAWRENCE ISLAND ALASKA

SIZE	JOB. NO.	FILE NO.	DATE:	PLATE
B	KP4050	KP4-SLI-AIR2-SAMPN	X	
DSGN. X		CHK. X	SHEET X	

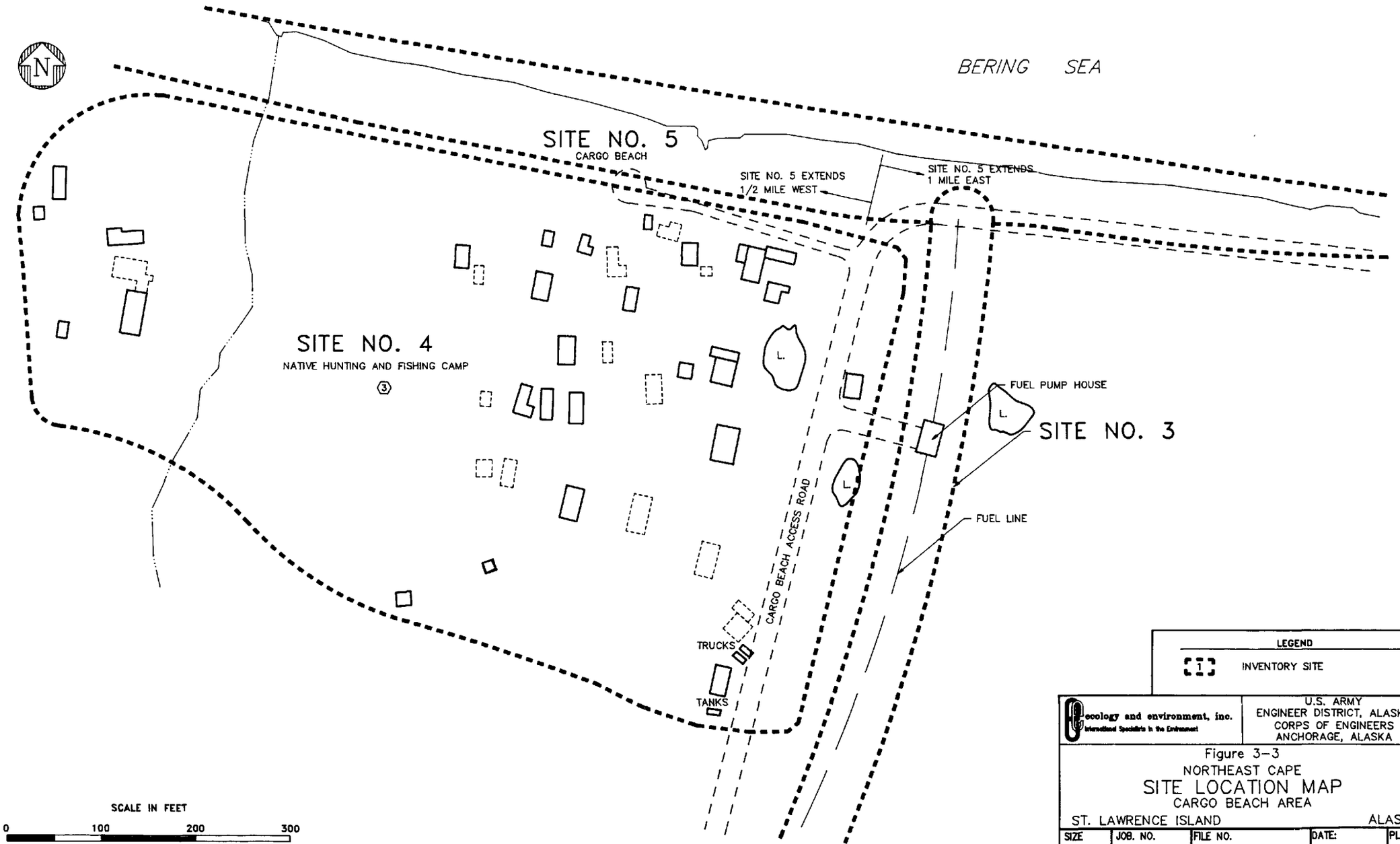

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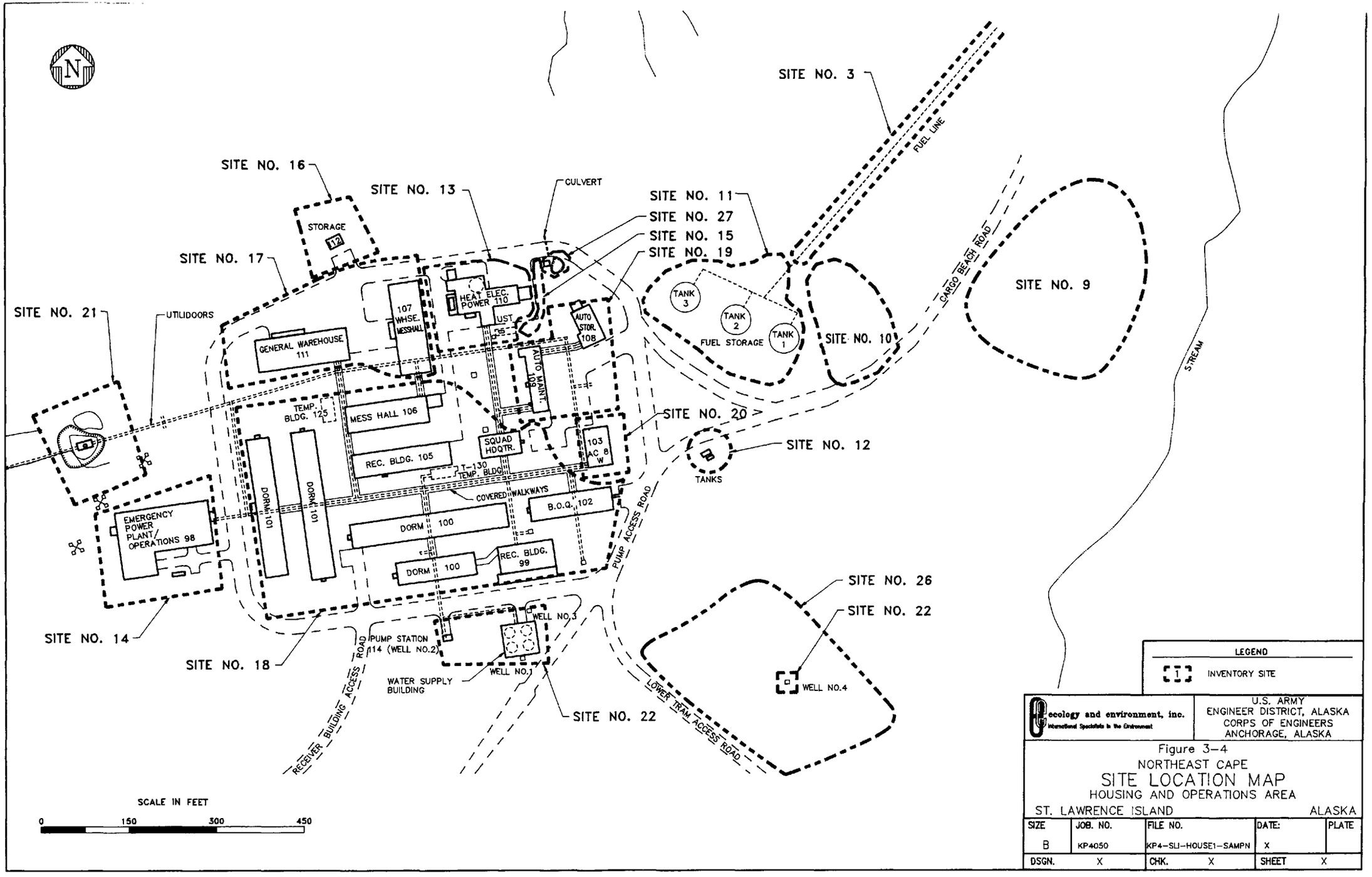
Figure 3-3
NORTHEAST CAPE
SITE LOCATION MAP
CARGO BEACH AREA
ST. LAWRENCE ISLAND ALASKA

SIZE	JOB. NO.	FILE NO.	DATE:	PLATE
B	KP4050	KP4-SLI-BEACH-SAMPN	X	
DSGN.	X	CHK. X	SHEET	X

DACA85-91-D-000.



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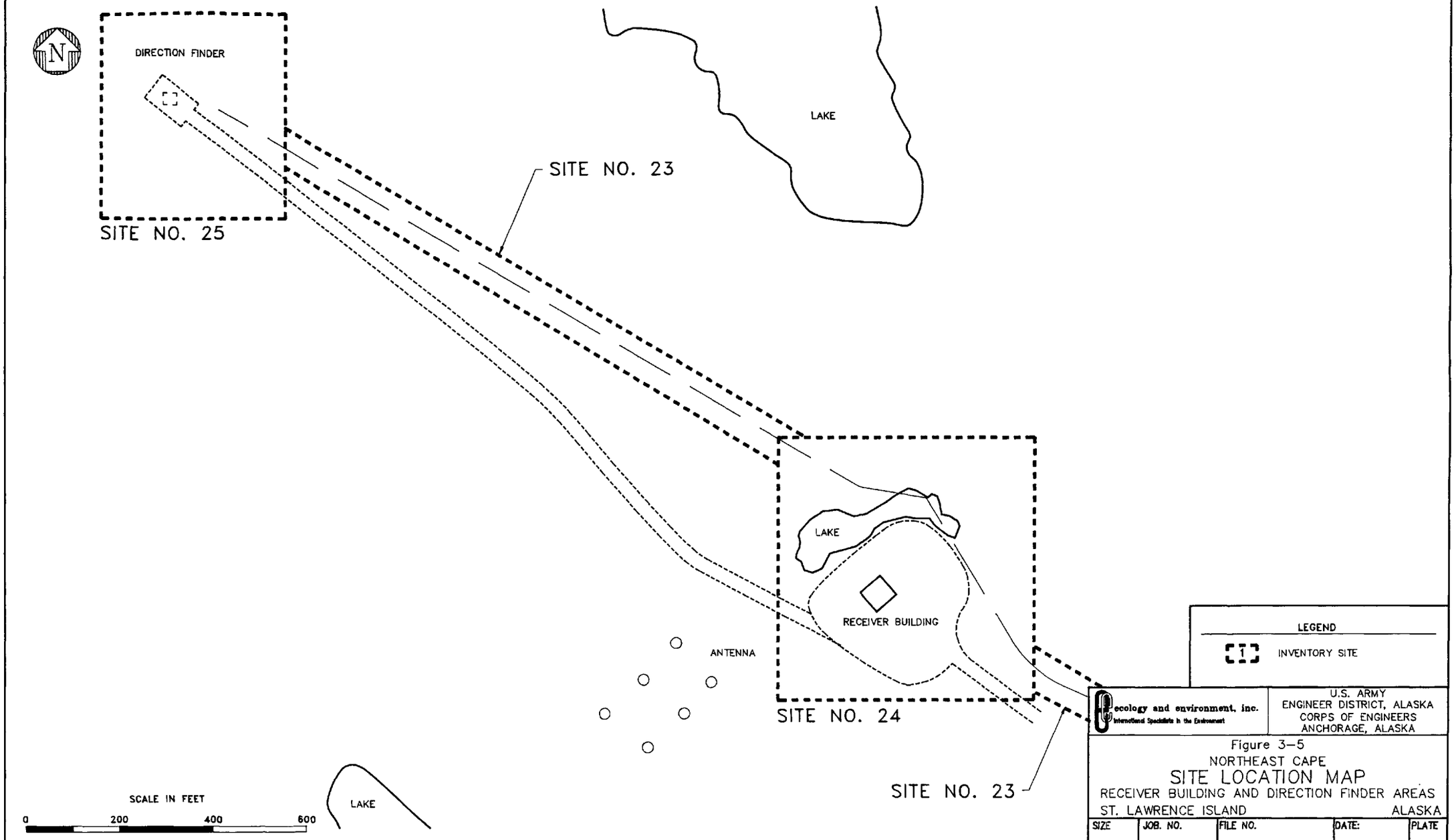

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4. SUMMARY AND CONCLUSIONS

4.1 SUMMARY

Twenty-four of the 27 sites examined at the former Aircraft Control and Warning Station at Northeast Cape have DERP-eligible materials present at them (see Table 4-1).

Based on currently available information, it is estimated that there are 36,200 containers of potentially hazardous or toxic waste and over 30,000 cubic yards of potentially contaminated soil, noncontainerized hazardous waste, and unsafe structures or debris present at the site. However, these estimates may change after further investigation and sampling are conducted.

4.2 CONCLUSIONS

4.2.1 Recommendations for Future Work

Since no sampling was included in the inventory work and only limited sampling was performed previously, it is recommended that a chemical investigation be performed. This investigation should be planned such that contaminants of concern are identified with limited parameters of analysis based on the potential contaminants identified in this report. Further, the plan for chemical investigation should delineate the extent of contamination in all matrices indicated to be of concern within this report.

It is also recommended that immediate removal actions be conducted in areas such as the drum field, the drum burial site, the paint and dope storage building, and other sites posing significant health hazards.

4.2.2 Recommended Site Characterization Objectives to Support Remedial Action

The recommended site characterizing chemical investigation should accomplish three objectives. The first objective recommended is to characterize the source or sources of site

contamination. At the sites deemed eligible for cleanup because of soil contamination, delineate the contaminants present and the extent of their migration in the soil.

The second objective should be to characterize the surface water and/or groundwater contamination present as a result of the uncontrolled sources of contamination.

The third objective should be to assess the project area in light of the potential cleanup approaches viable for a remote location such as this. Examples of this would be gathering information on the soil relevant to possible incineration and the rate of flow of groundwater to support fate and transport calculations and pumping calculations. Also, scouting out a potential local site for use as a solid or hazardous waste landfill.

With these objectives, a well planned and executed chemical investigation should support remedial action without the need for extensive design phase investigation.

Table 4-1

SITE INVENTORY SUMMARY TABLE
DERP-ELIGIBLE MATERIALS

Site Number	Site Name	CON/ HTW	HTW	Contaminated Soil/Water	Unsafe Structures	Unsafe Debris
1	Burn site southeast of landing strip					
2	Airport terminal and landing strip area	CU & FI		FI	CU	
3	Fuel line corridor and pumphouse	CU		FI	FI	
4	Native fishing and hunting camp	CU		I		
5	Cargo Beach	CU		I		CU
6	Cargo Beach Road drum field	CU		I		
7	Cargo Beach Road landfill	CU & FI	CU	FI		CU
8	POL spill site					
9	Housing and operations landfill	CU		FI		CU
10	Buried drum area	CU		FI		
11	Fuel storage tank area	CU		FI		
12	Tanks east of Hsg/Operations	CU				
13	Heat and electric power building	CU & FI	FI	FI	CU	CU
14	Emergency power/operations building	CU & FI			CU	CU
15	Buried fuel line spill			FI		
16	Paint and dope storage building	CU & FI	FI	FI	FI	
17	Warehouses	CU & FI		FI	FI	
18	Housings and squad headquarters	CU & FI			CU	CU
19	Auto maintenance and storage	CU & FI	FI	FI	FI	

Table 4-1

SITE INVENTORY SUMMARY TABLE
DERP-ELIGIBLE MATERIALS

Site Number	Site Name	CON/ HTW	HTW	Contaminated Soil/Water	Unsafe Structures	Unsafe Debris
20	AC&W building				CU	
21	Wastewater treatment facility	FI	FI	FI	CU	
22	Water wells and water supply building	CU & FI		FI	CU	CU
23	Power and communication line corridors	CU		FI		CU & FI
24	Receiver building area	CU		FI		CU
25	Direction finder area	CU		FI		CU
26	Former construction camp area					
27	Diesel fuel pump island	CU		FI		

Key:

CON = Containerized.
HTW = Hazardous or toxic waste.
CU = Eligible for cleanup.
FI = Eligible for further investigation.

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APPENDIX A

PHOTO LOGS

Appendix A

PHOTO LOGS
NORTHEAST CAPE

Photo Number		Date	Site	Description	Section Reference
Roll Number	Frame Number				
1	3	7/14/92	2	Airstrip Building looking NW.	3.2
1	4	7/14/92	2	Airstrip Building looking SE.	3.2
1	8	7/14/92	4	Looking SE at abandoned trucks and tanks in fishing village area.	3.4
2	8	7/14/92	3	Looking SE at fuel pump house (Panoramic).	3.3
2	16	7/15/92	7	Looking SW drums at east side of cargo beach road landfill (Panoramic).	3.7
2	17	7/15/92	7	Looking W at drums (Panoramic).	3.7
2	18	7/15/92	7	Looking NW at drums (Panoramic).	3.7
2	19	7/15/92	7	Looking N at drums (Panoramic).	3.7
2	22	7/15/92	7	Looking south at exposed part of landfill on north edge and west of road (Panoramic).	3.7
2	23	7/15/92	7	Looking south at exposed part of landfill on north edge and west of road (Panoramic).	3.7
3	11	7/15/92	11	Starting with east tank and moving to west tank looking south to southwest (Panoramic).	3.11
3	12	7/15/92	11	Starting with east tank and moving to west tank looking south to southwest (Panoramic).	3.11
3	13	7/15/92	11	Starting with east tank and moving to west tank looking south to southwest (Panoramic).	3.11
3	14	7/15/92	12	Looking SW at gasoline storage tanks south of road and diesel storage tanks.	3.12
3	16	7/15/92	25	Looking NW at direction finder building remains.	3.25
3	20	7/15/92	24	Looking NW at receiver building site.	3.24
3	22	7/15/92	14	Looking SE at Building No. 98 of housing/ops - emergency operations building -.	3.14
4	5	7/15/92	14	AST at Building No. 98.	3.14
4	8	7/15/92	18	Exterior of east wing of Dorm No. 101 looking SE.	3.18
4	10	7/15/92	18	Looking north at Temporary Building No. 125.	3.18
4	17	7/15/92	18	Exterior of Dorm No. 100 north z-story wing looking NE.	3.18

Appendix A

PHOTO LOGS
NORTHEAST CAPE

Photo Number		Date	Site	Description	Section Reference
Roll Number	Frame Number				
4	18	7/15/92	18	Exterior of east side of east wing of Dorm No. 101 showing structural collapse.	3.18
4	19	7/15/92	18	South side of south wing of Dorm No. 100 showing roof that is blown off.	3.18
4	21	7/15/92	18	Looking east at buckled south wall of BOQ.	3.18
4	23	7/16/92	18	Looking east inside bowling area of gymnasium Building No. 99.	3.18
4	25	7/16/92	18	Looking SE inside gym of Building No. 99.	3.18
5	2	7/16/92	20	Looking SE at collapsed west portion of Building No. 103 (AC&W).	3.20
5	3	7/16/92	20	Looking S inside main room of Building No. 103.	3.20
5	4	7/16/92	18	Looking W at Squad HQ. building.	3.18
5	9	7/16/92	18	Looking SW at Temporary Building No. 130.	3.18
5	10	7/16/92	18	Looking SW at exterior of Building No. 105 (recreation hall).	3.18
5	12	7/16/92	18	Looking NW at exterior of Building No. 106 (mess hall).	3.18
5	23	7/16/92	17	Clockwise pattern a south end of north end of Building No. 107 that has collapsed. Going clockwise looking west to NE (Panoramic).	3.17
5	24	7/16/92	17	Clockwise pattern on south end of north end of Building No. 107 that has collapsed. Going clockwise looking west to NE (Panoramic).	3.17
5	25	7/16/92	17	Clockwise pattern on south end of north end of Building No. 107 that has collapsed. Going clockwise looking west to NE (Panoramic).	3.17
5	26	7/16/92	17	Clockwise pattern on south end of north end of Building No. 107 that has collapsed. Going clockwise looking west to NE (Panoramic).	3.17
6	3	7/16/92	16	Building No. 112 (paint and dupe) looking NE at exterior.	3.16
6	4	7/16/92	16	Building No. 112 interior looking east.	3.16
6	11	7/16/92	17	Looking SW at exterior of Building 111 (general warehouse).	3.17

Appendix A

PHOTO LOGS
NORTHEAST CAPE

Photo Number		Date	Site	Description	Section Reference
Roll Number	Frame Number				
6	12	7/16/92	17	Looking SE at exterior of Building No. 111.	3.17
6	21	7/16/92	13	Looking north at Building No. 110 shooting clockwise from west to east (Panoramic).	3.13
6	22	7/16/92	13	Looking north at Building No. 110 shooting clockwise from west to east (Panoramic).	3.13
6	23	7/16/92	13	Looking north at Building No. 110 shooting clockwise from west to east (Panoramic).	3.13
7	10	7/16/92	13	Exterior looking NE (Building No. 110) going clockwise from N to E (Panoramic).	3.13
7	11	7/16/92	13	Exterior looking NE (Building No. 110) going clockwise from N to E (Panoramic).	3.13
7	16	7/16/92	19	Building No. 108 exterior looking SW shooting clockwise from SE to NW (Panoramic).	3.19
7	17	7/16/92	19	Building No. 108 exterior looking SW shooting clockwise from SE to NW (Panoramic).	3.19
7	21	7/16/92	19	Collapsed add-on room at north end of No. 108.	3.19
7	22	7/16/92	19	Exterior of Building No. 109 shooting clockwise looking west (Panoramic).	3.19
7	23	7/16/92	19	Exterior of Building No. 109 shooting clockwise looking west (Panoramic).	3.19
7	24	7/16/92	19	Exterior of Building No. 109 shooting clockwise looking west (Panoramic).	3.19
7	25	7/16/92	19	5 gallon cans in north room of No. 109 - "foam forming liquid Type-5".	3.19
8	3	7/16/92	22	Exterior of Building No. 113 (water supply building) looking SW.	3.22
8	5	7/16/92	22	Looking N at collapsed SE corner of No. 113.	3.22
50	11	7/14/92	5	Looking west at Drum Pile No. 1.	3.5
50	12	7/14/92	5	Looking west at Drum Pile No. 2.	3.5
50	15	7/14/92	5	Looking east from western edge of cargo beach area.	3.5
50	24	7/15/92	6	Looking southeast at drum pile.	3.6
51	3	7/15/92	6	Looking west at drum site.	3.6

Appendix A

PHOTO LOGS
NORTHEAST CAPE

Photo Number		Date	Site	Description	Section Reference
Roll Number	Frame Number				
51	7	7/15/92	9	Looking south of eastern fill slope.	3.9
51	8	7/15/92	9	Looking south at landfill debris.	3.9
51	9	7/15/92	11	Looking norheast at stained soil.	3.11
51	10	7/15/92	25	Looking southeast at building foundation and drums.	3.25
51	12	7/15/92	24	Looking southwest at exposed drums and wetlands.	3.24
51	17	7/15/92	21	Looking east at discharge into wetlands.	3.21
51	18	7/15/92	21	Looking northwest at treatment facility.	3.21
51	20	7/16/92	23	Looking north along powerline.	3.23
51	24	7/16/92	23	Looking north at transformer platform.	3.23
52	3	7/16/92	26	Looking north at dump site.	3.26
52	7	7/16/92	15	Looking west at stained soil east of generator building.	3.15
52	8	7/16/92	15	Looking north at stained soil east of generator building.	3.15
52	10	7/16/92	27	Looking south at fuel pump and soil staining.	3.27
52	21	7/17/92	10	Drum burial site NE of fuel storage tanks looking N to NE in clockwise pattern (Panoramic).	3.10
52	22	7/17/92	10	Drum burial site NE of fuel storage tanks looking N to NE in clockwise pattern (Panoramic).	3.10
52	23	7/17/92	10	Cover soil of drum burial site showing staining.	3.10
52	24	7/17/92	10	Revealed crushed drum and staining on south center top of drum burial site.	3.10
52	25	7/17/92	10	Looking east at west bank of drum burial site showing staining.	3.10


R2F17


R51F3


R2F18


R2F16


R2 F23

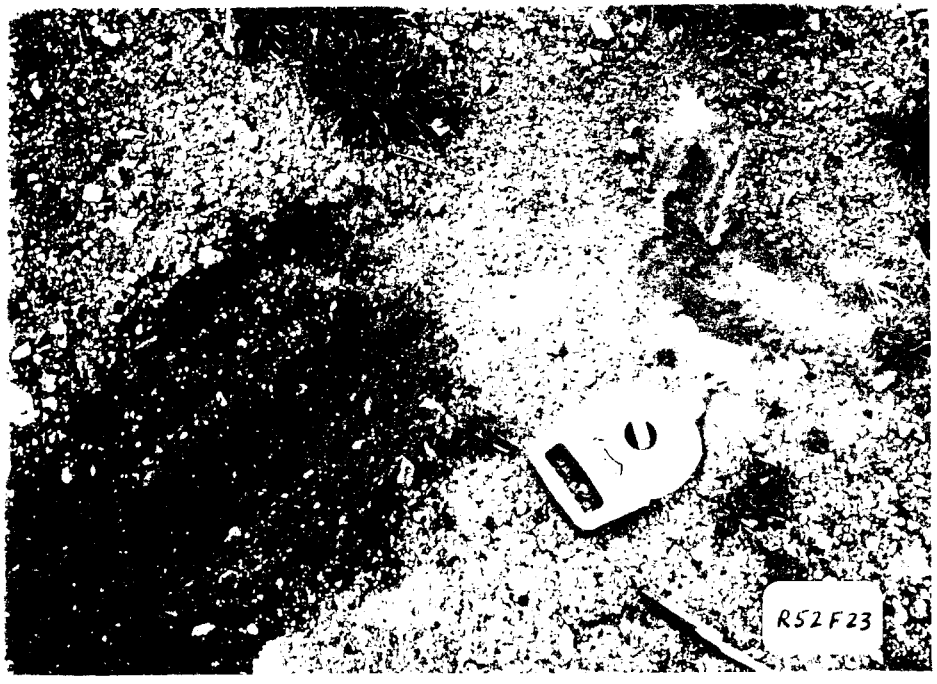

R2 F19


RS1 F7


R2 F22


R52F22


R52F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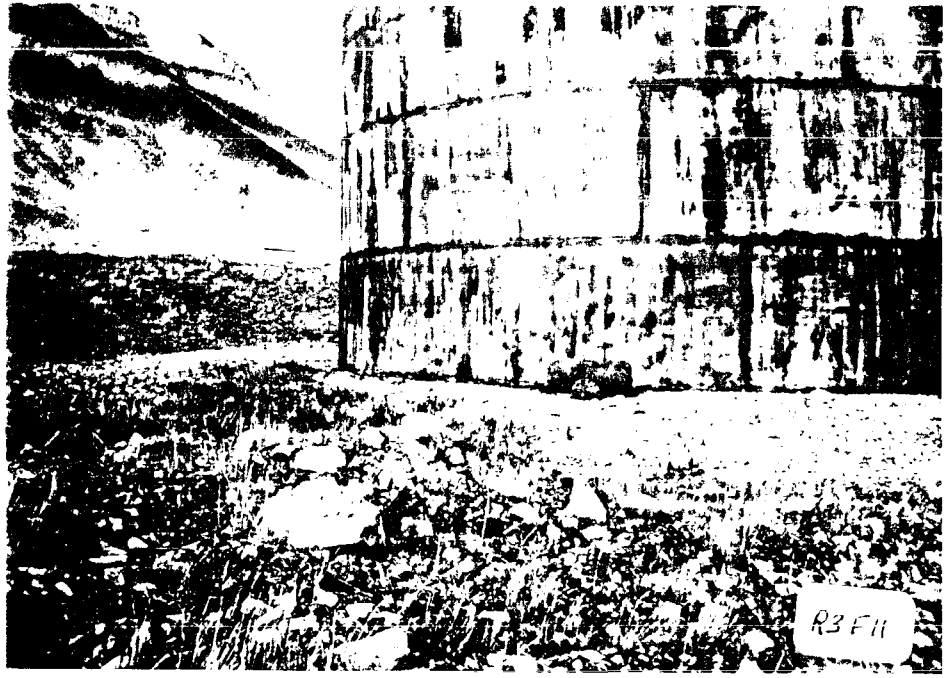
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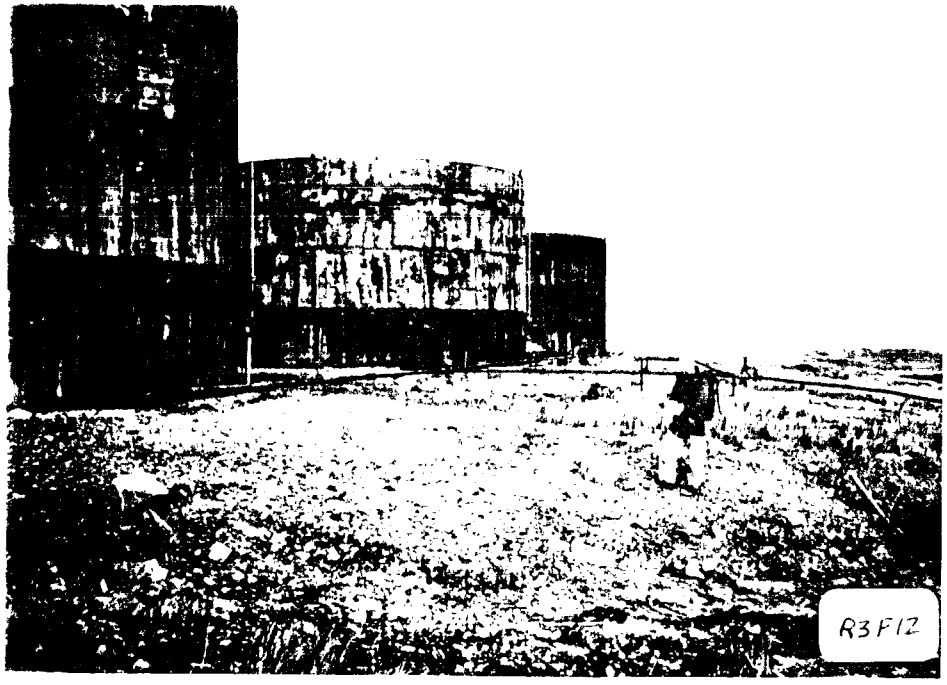
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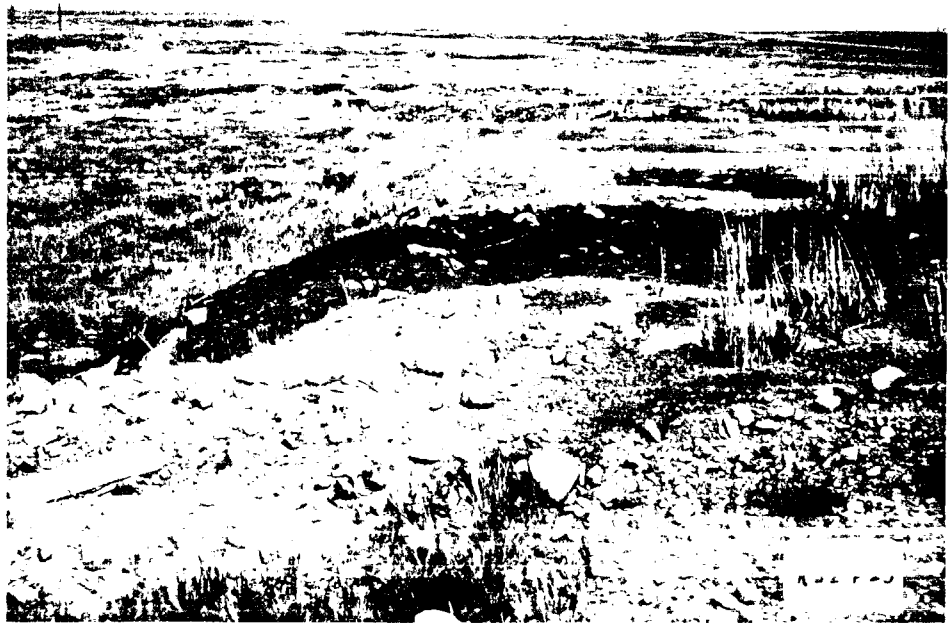

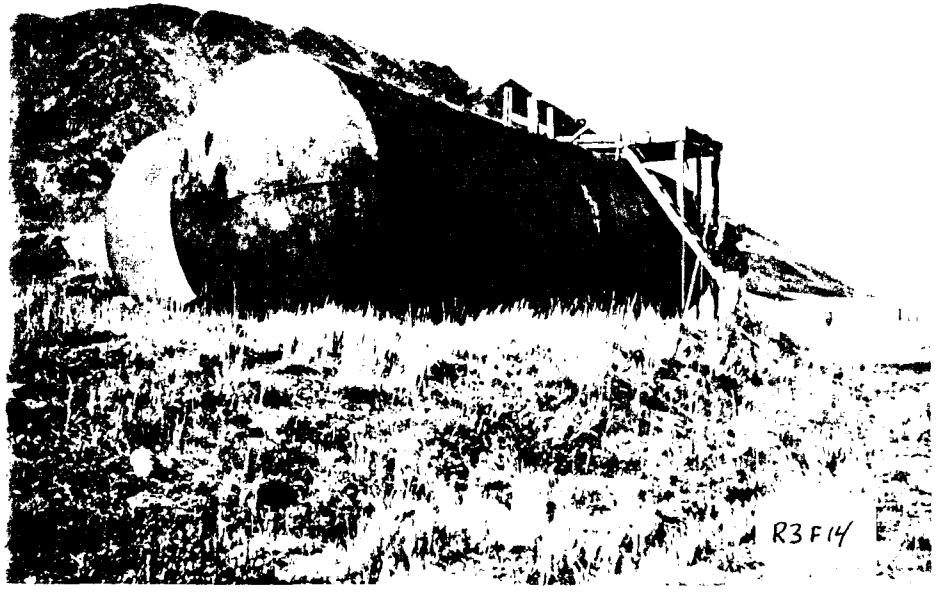
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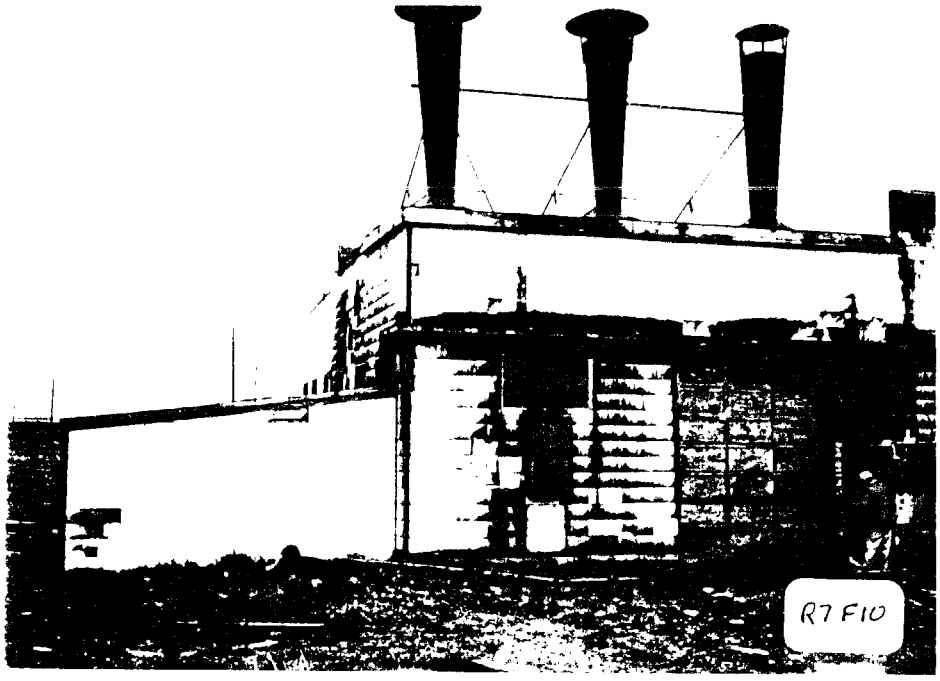
R3F13


R6F21


R51F9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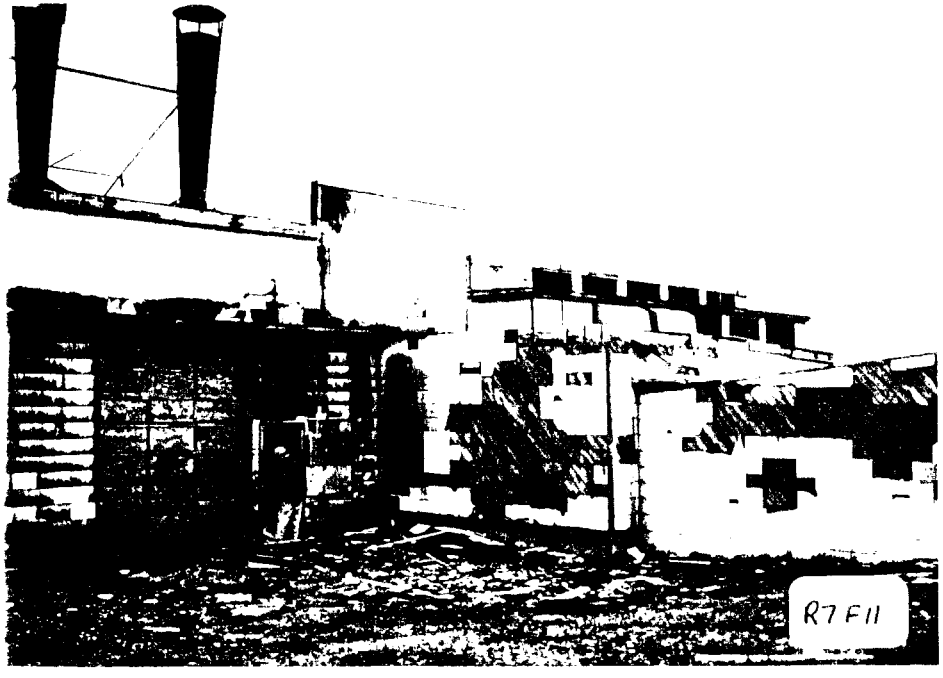
R6 F22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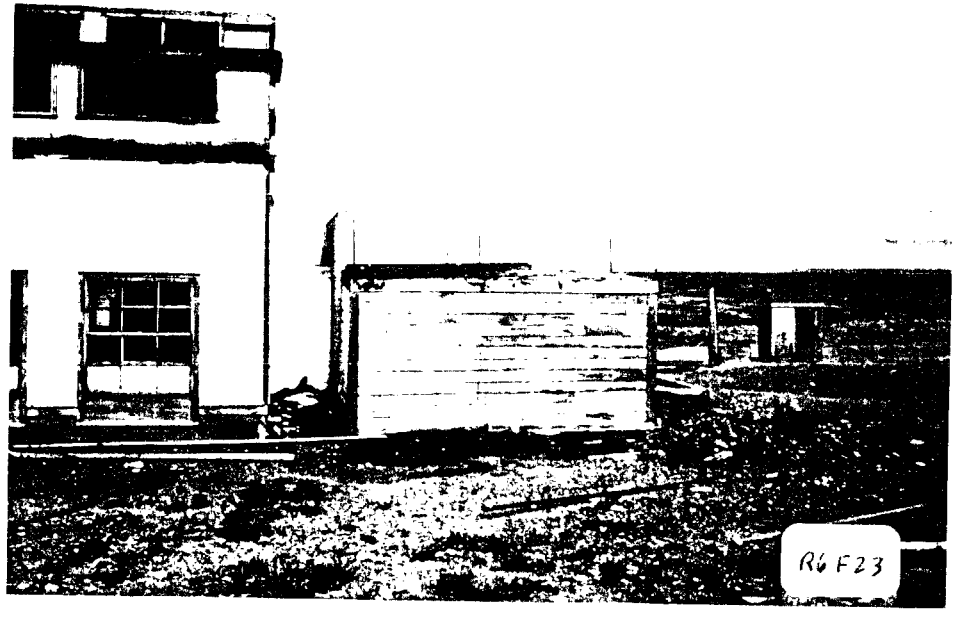
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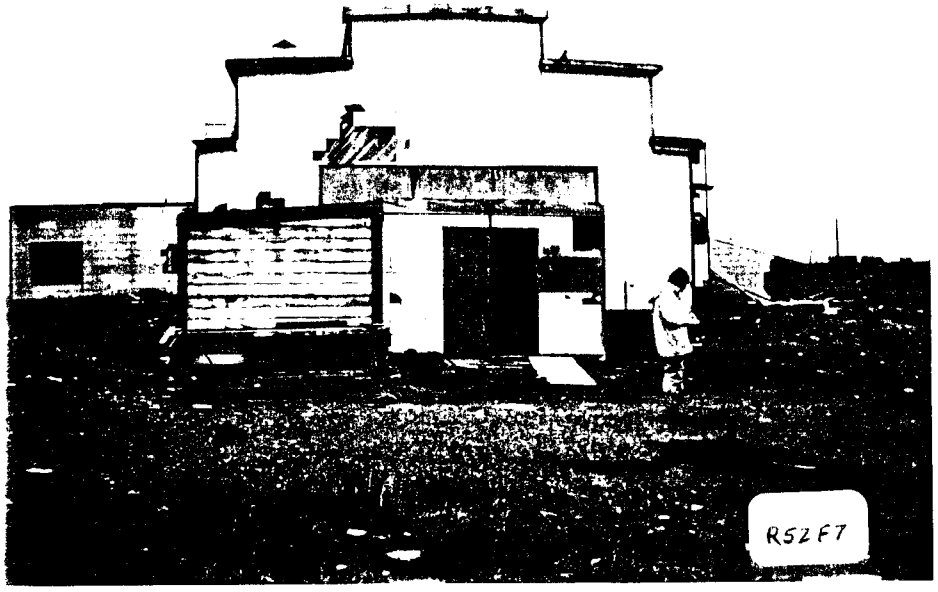
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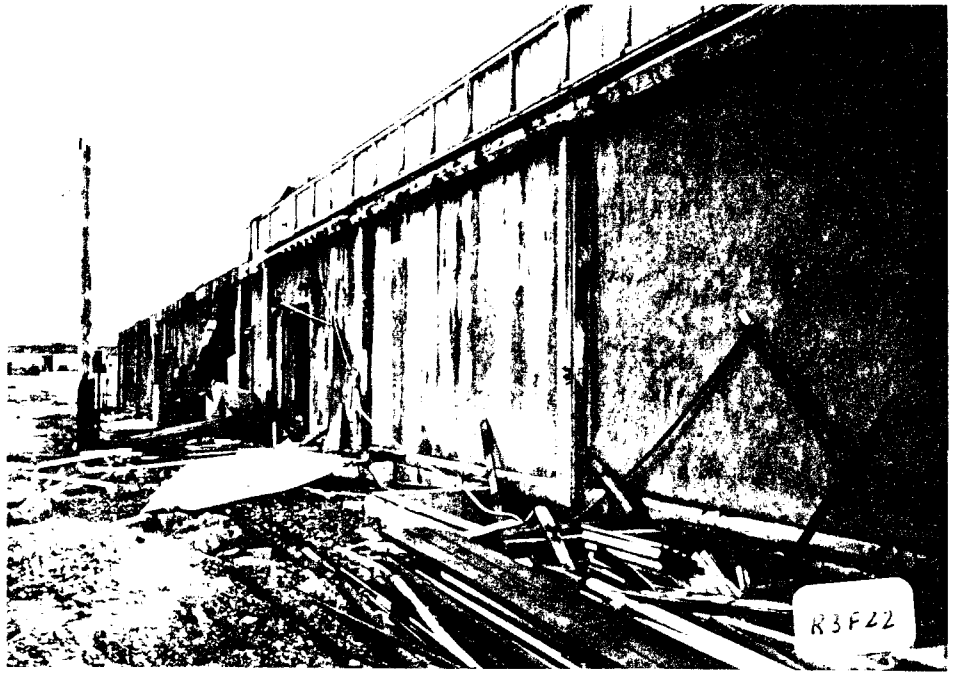
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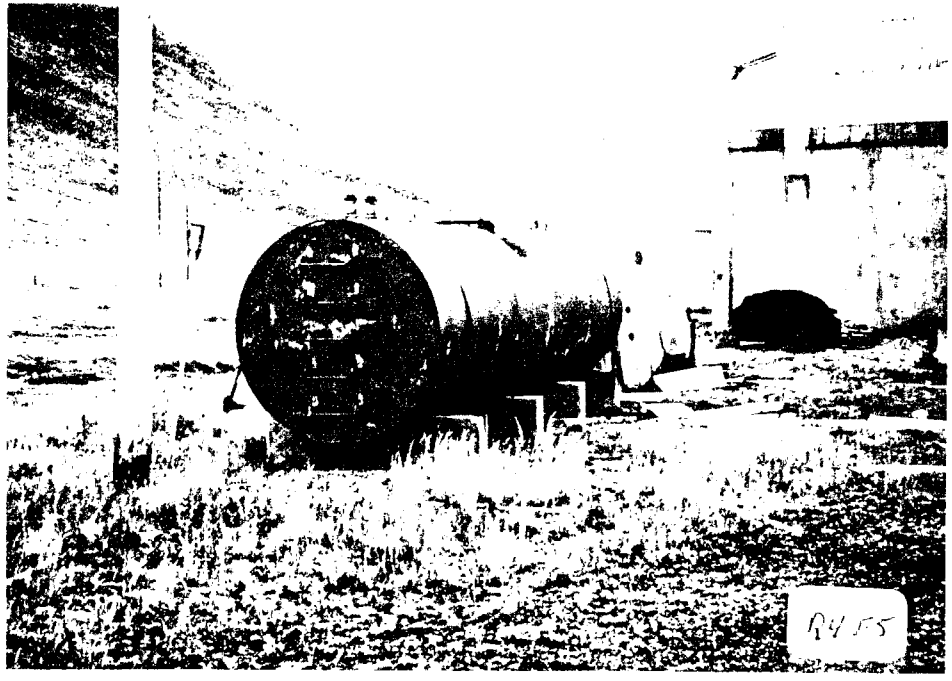
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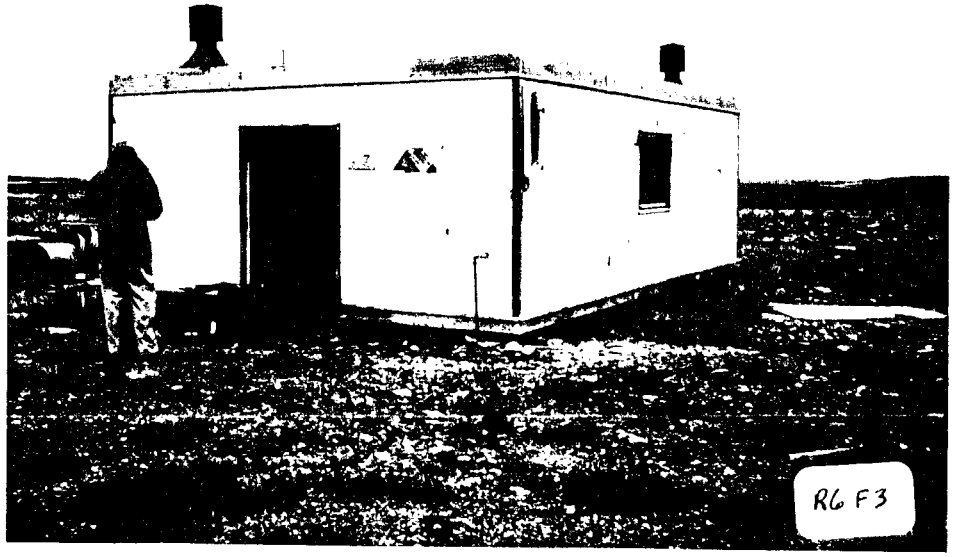
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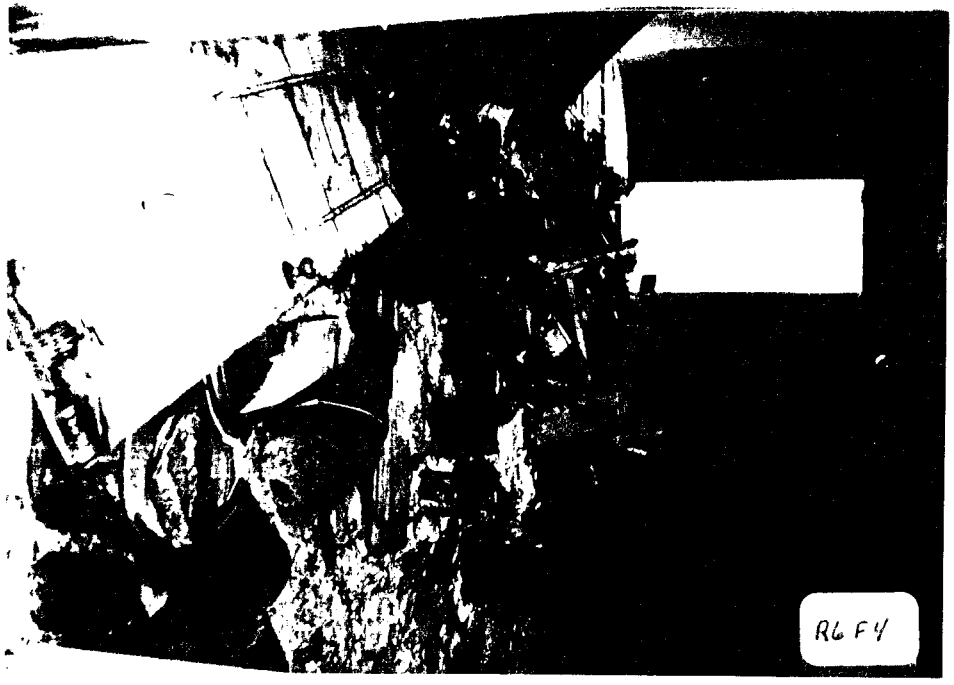
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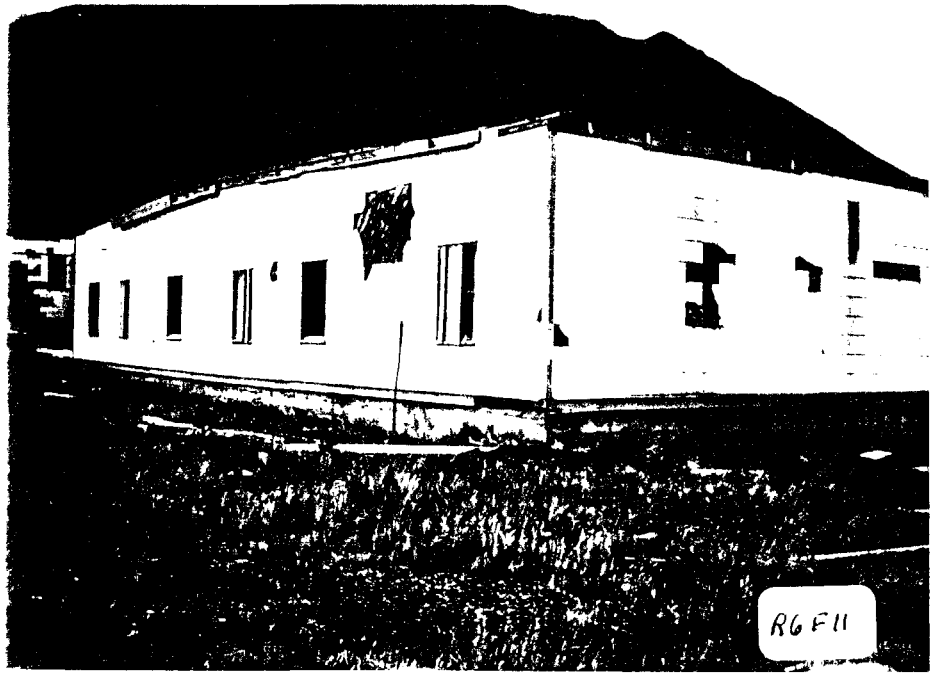
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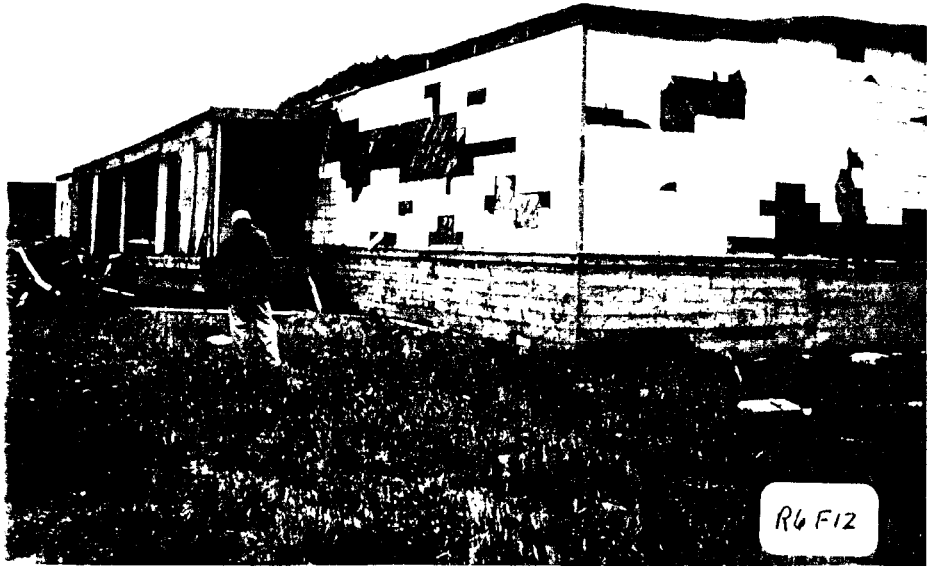
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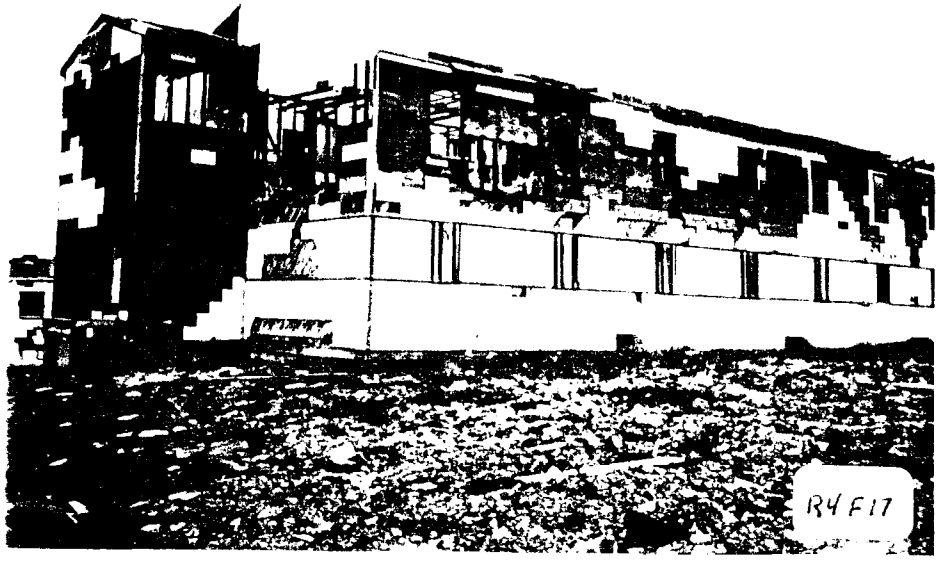
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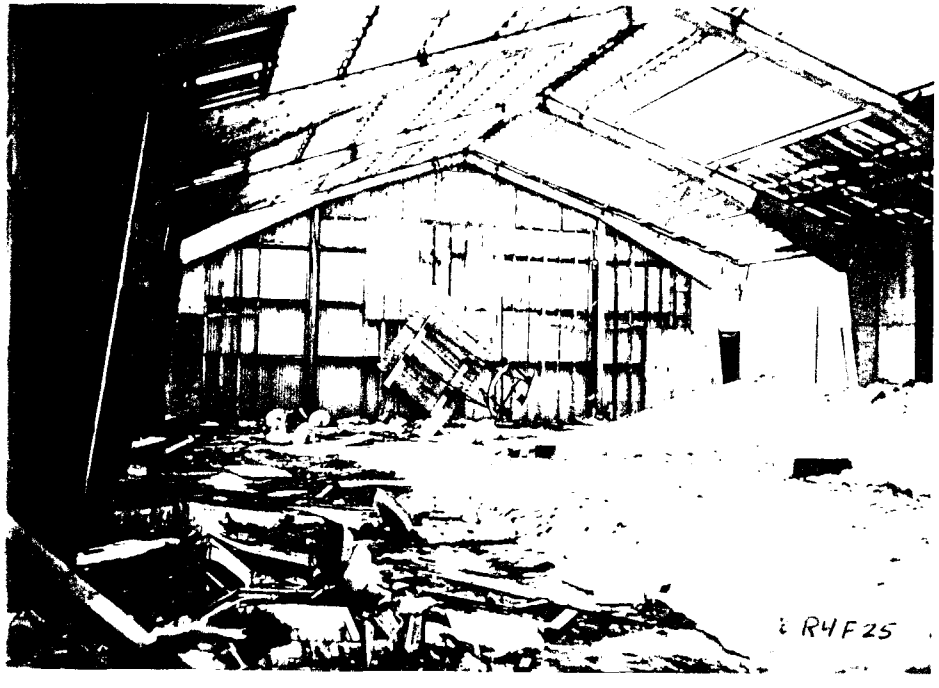
R4 F8


R4 F18


R4 F10


R4F23


R4F19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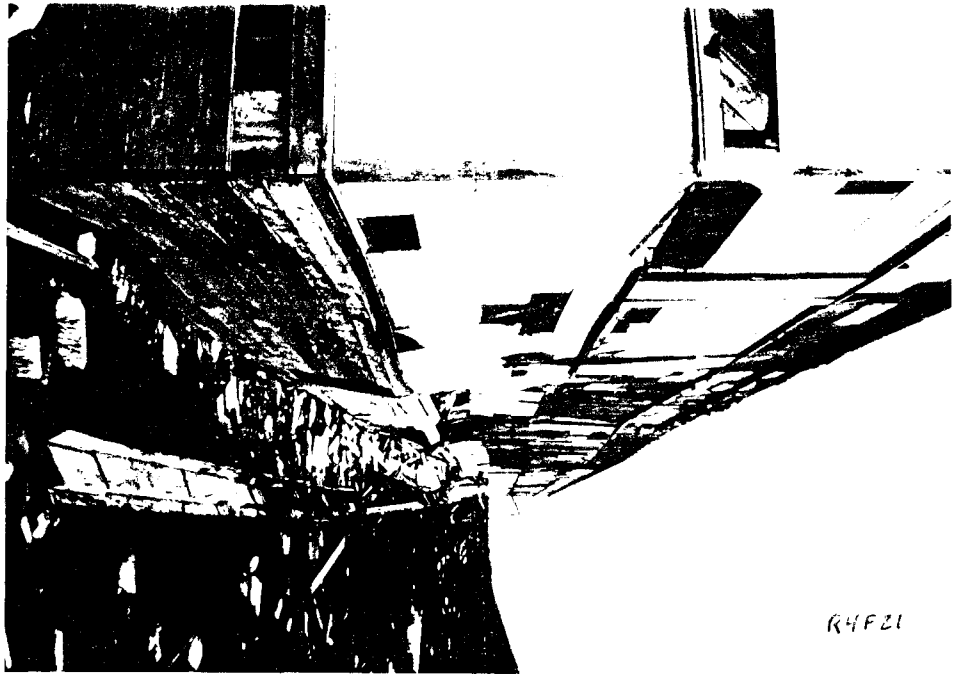
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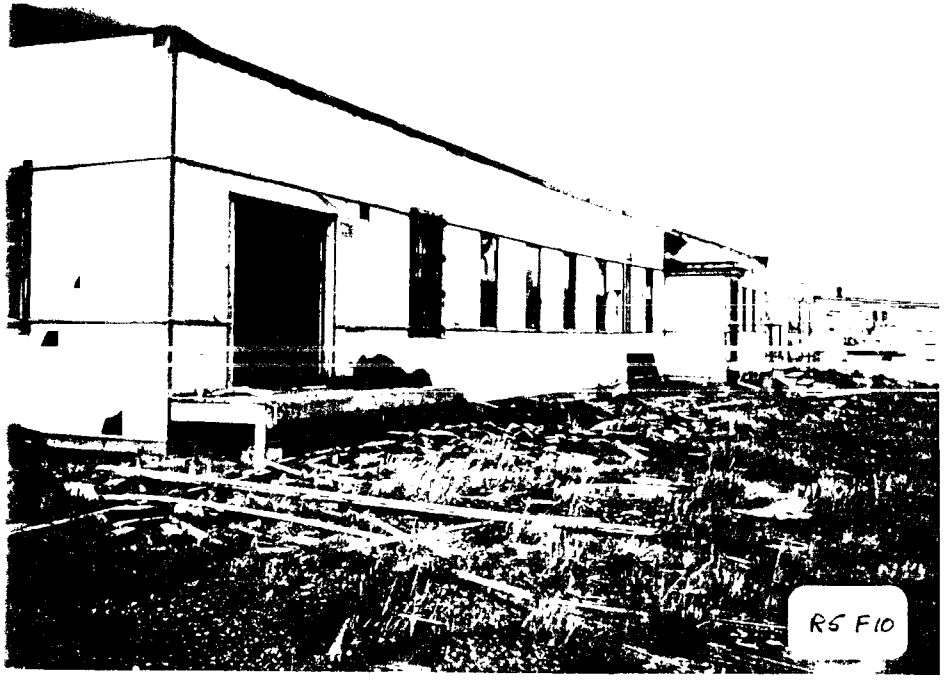
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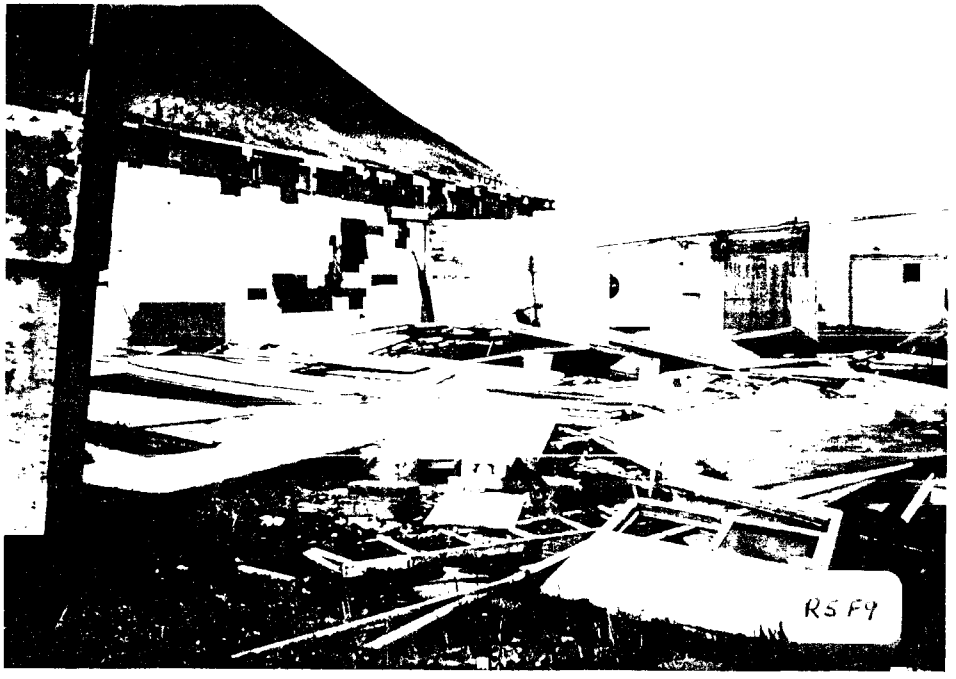
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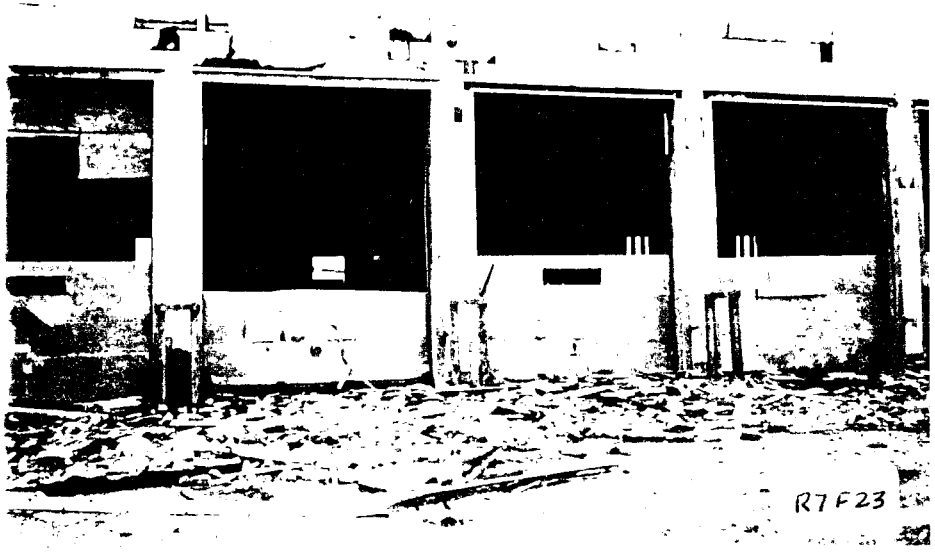
R7F22


R7F7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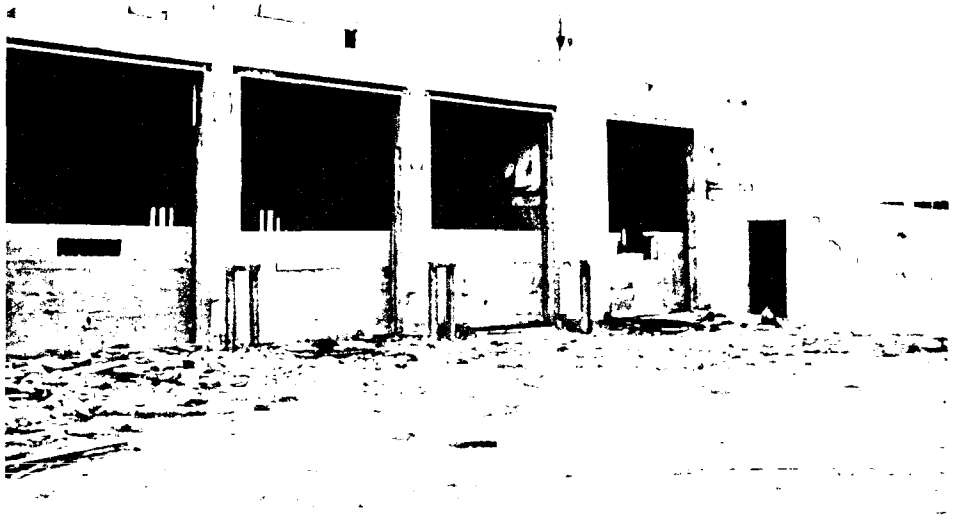

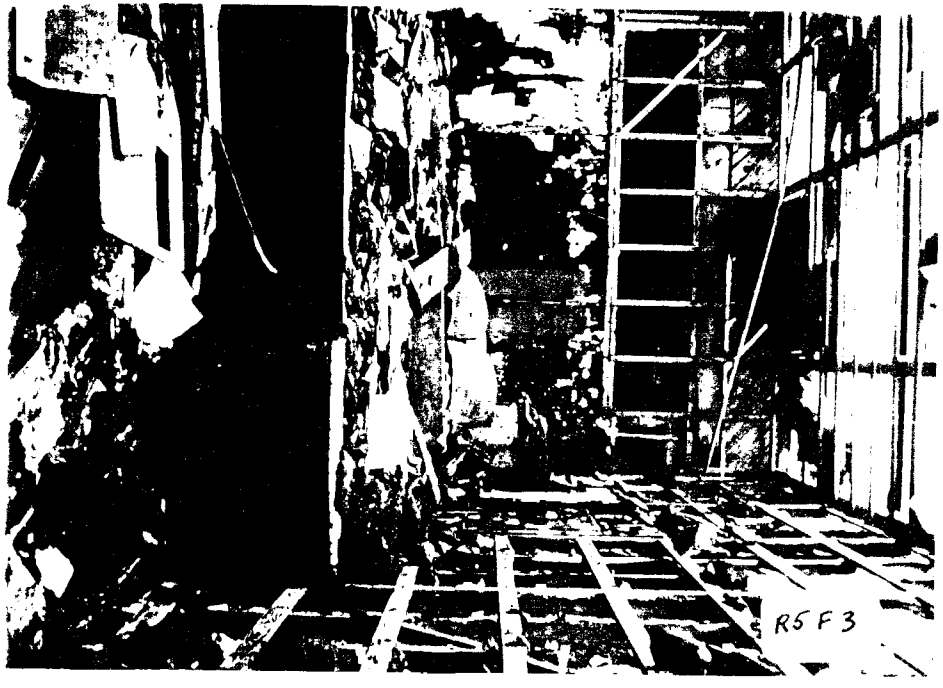
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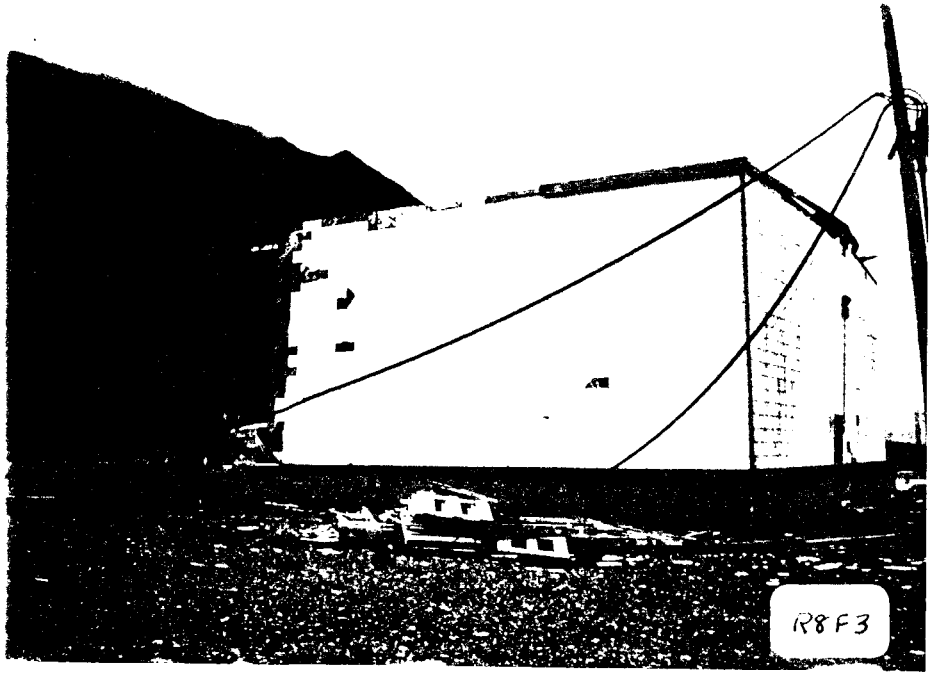
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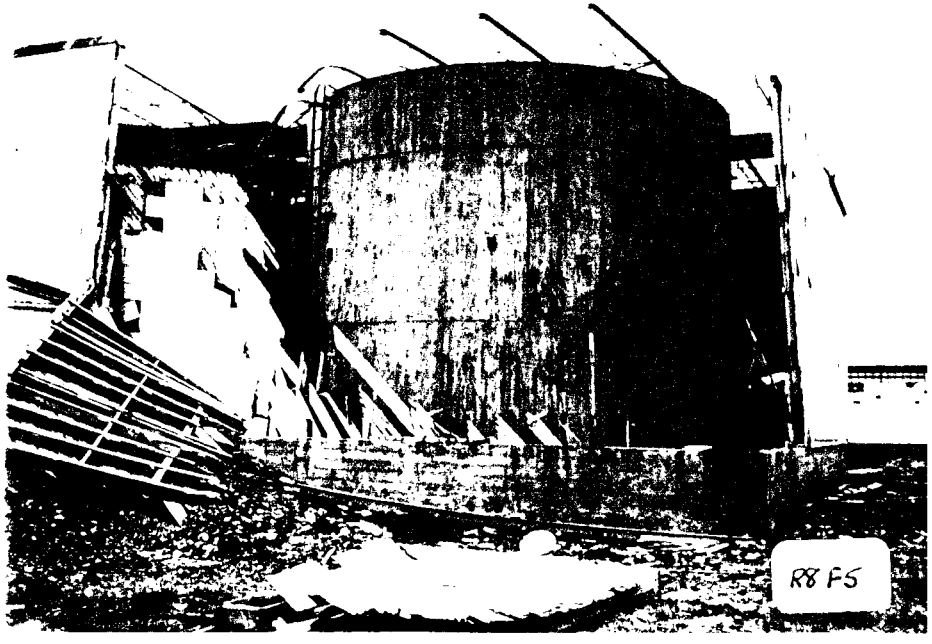
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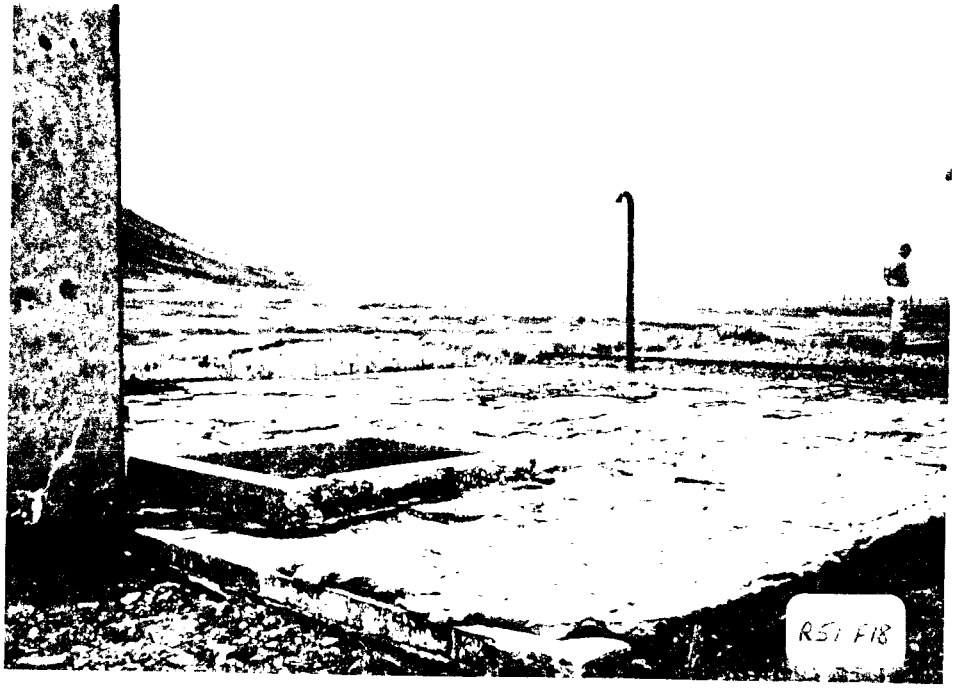
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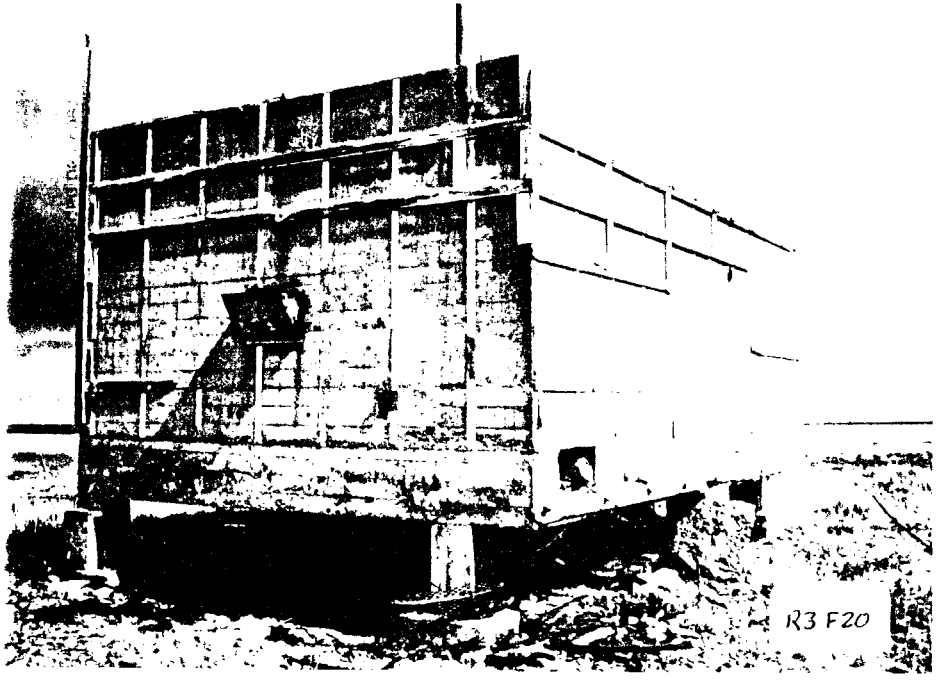
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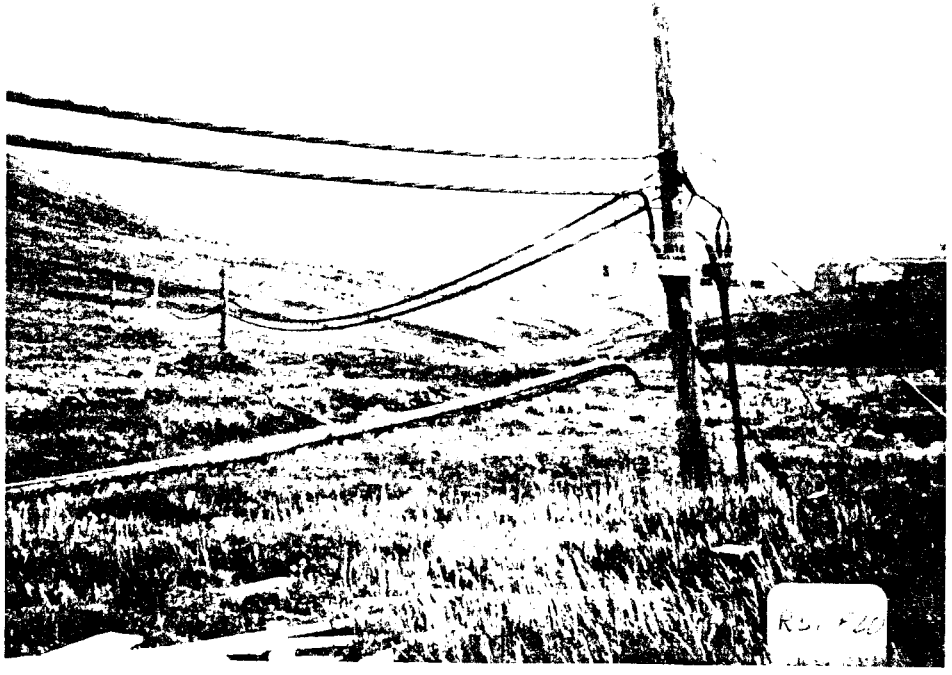

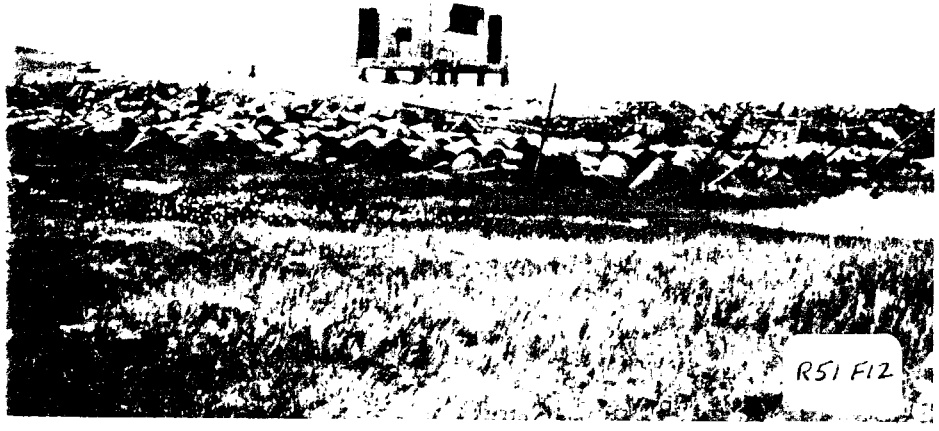
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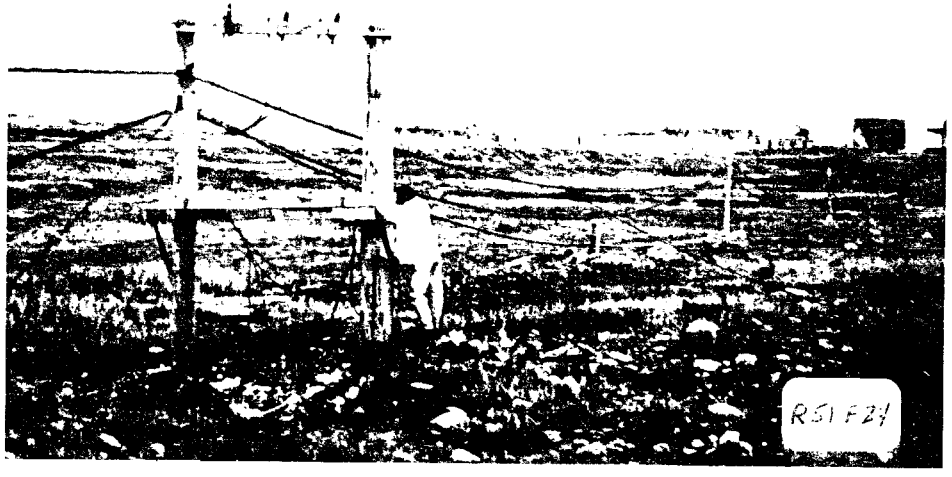
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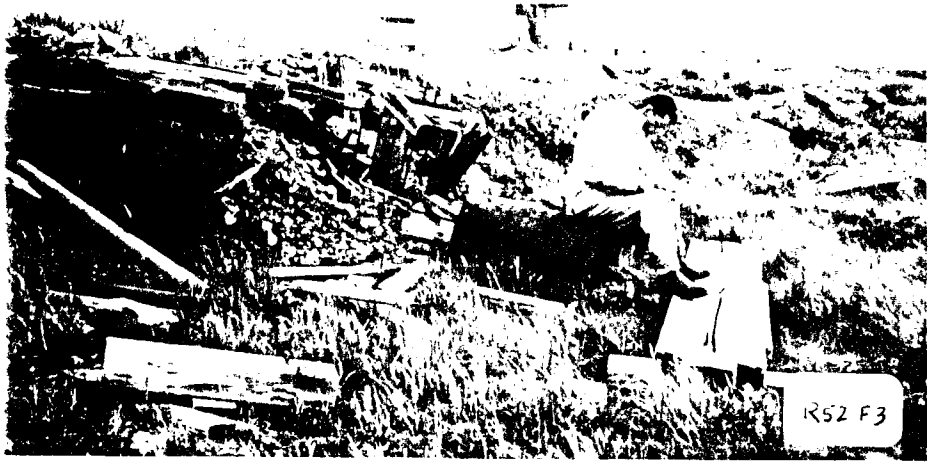
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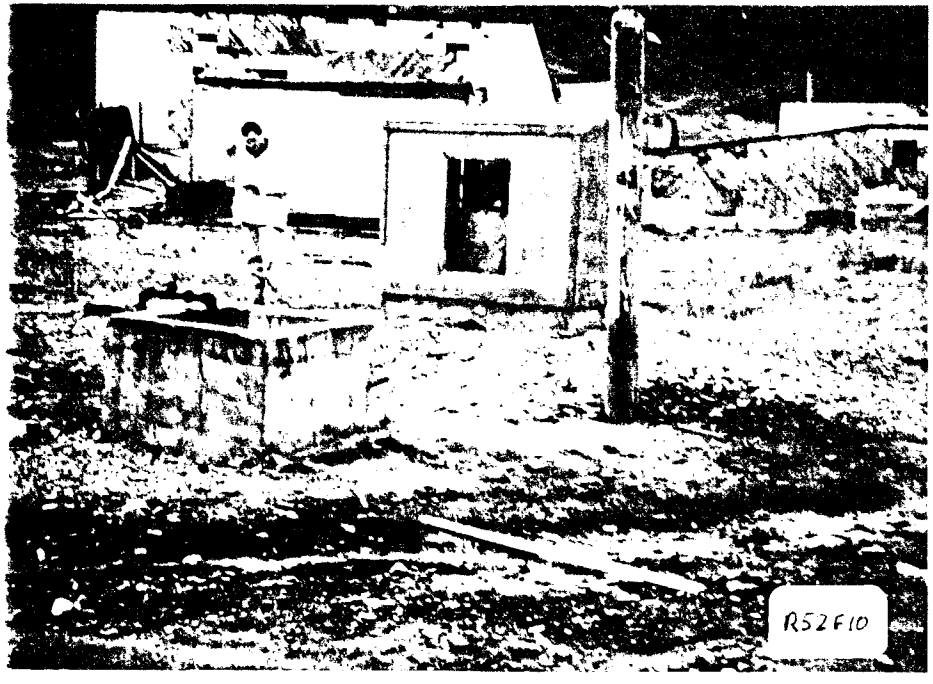
R51 F16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R51 F10

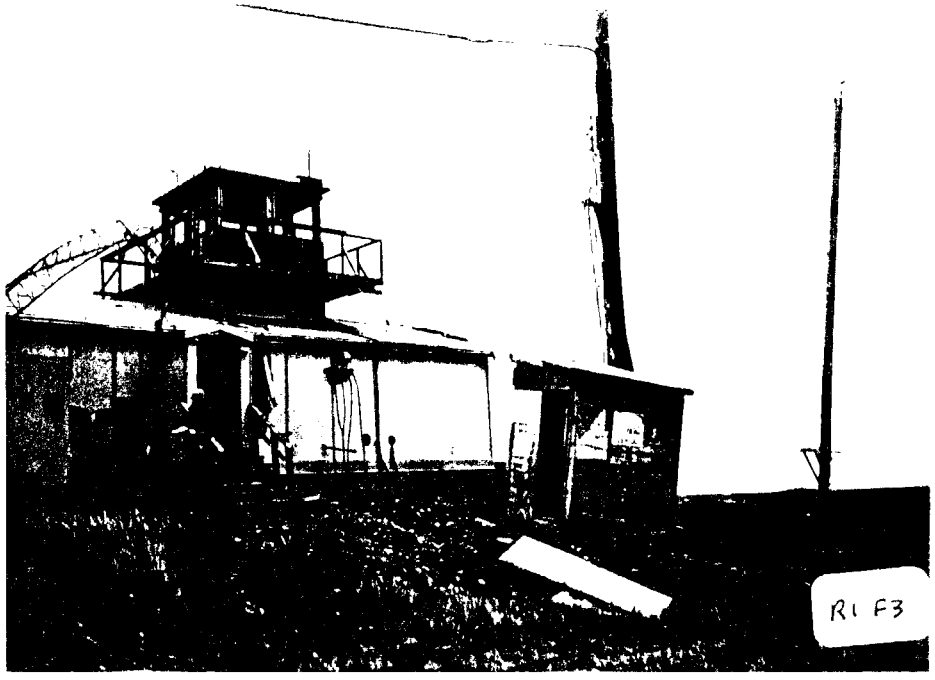

R50 F15


R50 F11


R50 F24


R50 F12


R1 F8


R1 F3


R2F8


R1 F4