



Final

August 2014

REMEDIAL ACTION COMPLETION REPORT OPERABLE UNIT B-1

Former Adak Naval Complex

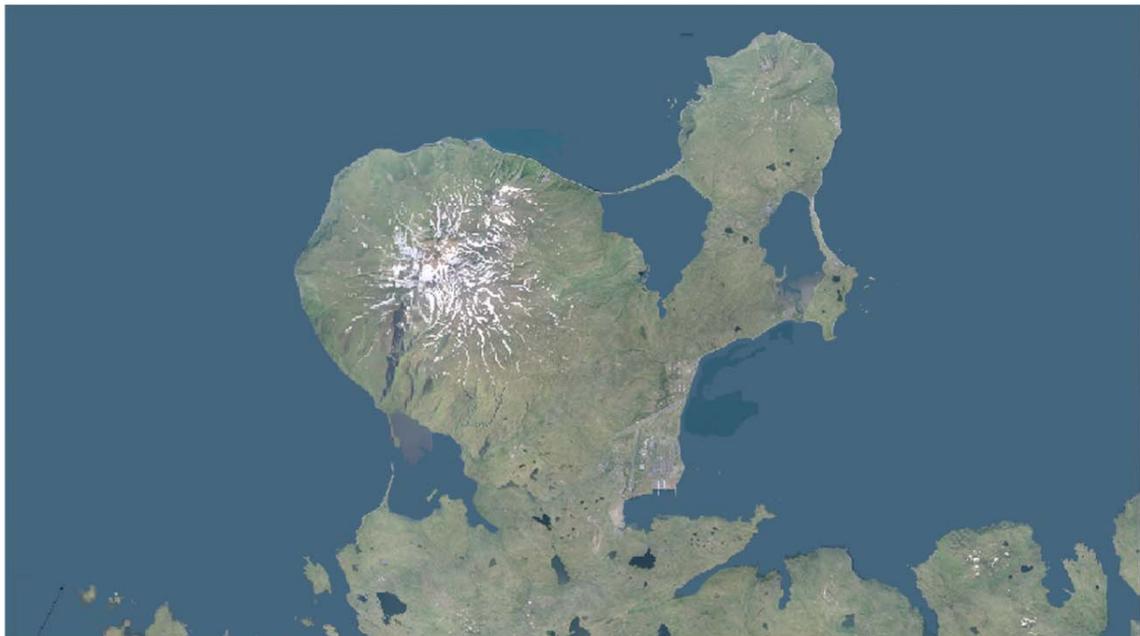
Adak, Alaska

Department of the Navy

Naval Facilities Engineering Command Northwest

1101 Tautog Circle

Silverdale, WA 98315

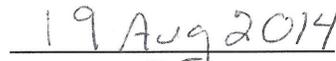


Remedial Action Completion Report signature sheet for soils
Operable Unit B-1, Former Adak Naval Complex, Adak, Alaska

Approved by:



Cindy L. O'Hare, PE
Adak BRAC Environmental Coordinator (BEC)
U.S. Navy



Date

Remedial Action Completion Report signature sheet for soils
Operable Unit B-1, Former Adak Naval Complex, Adak, Alaska

Approved by:

Cami Grandinetti

Cami Grandinetti
Program Manager, Remedial Cleanup Program
U.S. Environmental Protection Agency, Region 10

8/22/14

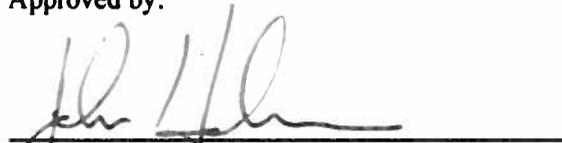
Date

**FINAL REMEDIAL ACTION COMPLETION REPORT
OU B-1, Former Adak Naval Complex
Naval Facilities Engineering Command Northwest**

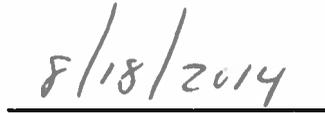
**Signature Page
Revision No.: 0
Date: August 2014
Page iv**

**Remedial Action Completion Report signature sheet for soils
Operable Unit B-1, Former Adak Naval Complex, Adak, Alaska**

Approved by:



**John Halverson
DqD Cleanup Unit Lead, Federal Facilities
Environmental Restoration Program
Division of Spill Prevention and Response
Alaska Department of Environmental Conservation**



Date

CONTENTS

FIGURES	vi
TABLES	vii
ABBREVIATIONS AND ACRONYMS	viii
1.0 INTRODUCTION	1-1
2.0 SITE DESCRIPTION AND OVERVIEW	2-1
2.1 OU B-1 Description.....	2-1
2.1.1 Summary of Sites Eligible for Closure.....	2-1
2.2 Previous Site Investigations and Major Findings.....	2-5
2.2.1 Clam Lagoon Minefield Investigation and Clearance.....	2-5
2.2.2 Unexploded Ordnance Investigations of Priority I, II, and III Areas.....	2-5
2.2.3 Small Arms Investigation.....	2-5
2.2.4 Minefield Investigation	2-5
2.2.5 Preliminary Assessment/Site Investigations.....	2-8
2.2.6 Remedial Investigation/Feasibility Study	2-8
2.2.7 Summary of NOFA Sites in OU B-1 ROD	2-9
3.0 REMEDIAL ACTION OBJECTIVES.....	3-1
3.1 Remedial Action Objectives to Control Explosive Hazards	3-1
3.2 Remedial Action Objectives to Control Chemical Risks	3-1
4.0 REMEDIAL ACTIONS.....	4-1
4.1 Selected Remedies for OU B-1	4-1
4.1.1 MEC Clearance to 4 Feet below Ground Surface	4-1
4.1.2 Observational Approach and Presumptive Clearance	4-2
4.1.3 Sites Selected for Explosive-Related Chemical Investigations.....	4-4
5.0 DEMONSTRATION OF COMPLETION	5-1
5.1 Bay of Islands Impact Area	5-1
5.2 Blind Cove/Campers Cove Impact Area	5-2
5.3 Combat Range #1	5-3
5.4 Combat Range #2	5-4
5.5 Combat Range #3	5-6
5.6 Combat Range #6.....	5-8
5.7 Combat Range #8.....	5-9
5.8 Finger Bay Ammunition Pier	5-11
5.9 Finger Bay Impact Area	5-12
5.10 Gun Emplacements.....	5-14
5.11 Husky Pass	5-17
5.12 Lake DeMarie Impact Area.....	5-18
5.13 Lake Jean Ammunition Complex.....	5-19
5.14 Mitt Lake Impact Area	5-20
5.15 Mount Moffett.....	5-22
5.16 NAF Adak/Lake DeMarie Ammunition Complex	5-29
5.17 Shagak Bay.....	5-32
5.18 WWII Ammunition Pier (Sweeper Cove).....	5-33

6.0 OPERATION AND MAINTENANCE PROGRAM6-1
 6.1 Institutional Controls6-1
 6.1.1 OU B-1 Adak UXO Awareness6-1
 6.1.2 Conveyance Documentation.....6-1
 6.2 Reporting of Institutional Controls.....6-1
 6.3 Five-Year Review.....6-2

7.0 COMMUNITY RELATIONS7-1

8.0 CERTIFICATON STATEMENT8-1

9.0 CONTACT INFORMATION.....9-1

10.0 REFERENCES10-1

FIGURES

Figure 1-2. Location Map, Adak Island, Alaska 1-2
Figure 2-1. Summary of OU B-1 Site Process at Former Adak Naval Complex 2-3
Figure 2-1. Operable Unit B-1 Munitions Sites 2-4
Figure 2-3. Priority Areas I, II, and III on Adak 2-6
Figure 2-4. Minefields and Small Arms Ranges on Adak 2-7
Figure 5-1. Bay of Islands Impact Area OU B-1 AOC Locations 5-1
Figure 5-2. Blind Cove/Campers Cove Impact Area OU B-1 AOC Locations 5-2
Figure 5-3. Combat Range #1 OU B-1 AOC Locations 5-3
Figure 5-4. Combat Range #2 OU B-1 AOC Locations 5-5
Figure 5-5. Combat Range #3 OU B-1 AOC Locations 5-6
Figure 5-6. Combat Range #6 OU B-1 AOC Locations 5-9
Figure 5-7. Combat Range #8 OU B-1 AOC Locations 5-10
Figure 5-8. Finger Bay Ammunition Pier OU B-1 AOC Locations 5-12
Figure 5-9. Finger Bay Impact Area OU B-1 AOC Locations 5-13
Figure 5-10. OU B-1 Gun Emplacement Locations..... 5-16
Figure 5-11. Husky Pass OU B-1 AOC Locations 5-17
Figure 5-12. Lake DeMarie Impact Area OU B-1 AOC Locations 5-19
Figure 5-13. Lake Jean Ammunition Complex OU B-1 AOC Locations 5-20
Figure 5-14. Mitt Lake Impact Area OU B-1 AOC Locations 5-21
Figure 5-15. Mount Moffett OU B-1 AOC Locations 5-23
Figure 5-16. NAF Adak/Lake DeMarie Ammunition Complex OU B-1 AOC Locations 5-30
Figure 5-17. DGM Area and Locations of MEC Items at Roberts Landfill Road Site..... 5-31
Figure 5-18. Shagak Bay OU B-1 AOC Location 5-32
Figure 5-19. WWII Ammunition Pier OU B-1 AOC Locations 5-33

TABLES

Table 2-1. Adak OU B-1 NOFA Sites 2-10
Table 4-1. Summary of Investigation Results for the OU B-1 Sites Requiring Remedial Action^(a) 4-3
Table 4-2. Sample Location Summary 4-6
Table 4-3. Summary of Soil Analytical Detections for OU B-1 4-8
Table 7-1. Adak RAB Meeting Dates 7-1

ABBREVIATIONS AND ACRONYMS

ADEC	Alaska Department of Environmental Conservation
AOC	area of concern
AOPC	area of potential concern
bgs	below ground surface
BLM	Bureau of Land Management
BRAC	base realignment and closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DDESB	Department of Defense Explosives Safety Board
DERP	Defense Environmental Restoration Program
DMM	discarded military munitions
DoD	U.S. Department of Defense
ECC	Environmental Chemical Corporation
EOD	Explosive Ordnance Disposal
EODT	EOD Technology, Inc.
EPA	U.S. Environmental Protection Agency
ESHA	explosive safety hazard assessment
FFA	Federal Facilities Agreement
FOST	Finding of Suitability to Transfer
FS	feasibility study
FUDS	Formerly Used Defense Sites
HE	high explosive
IC	institutional control
ICMP	Institutional Control Management Plan
JBER	Joint Base Elmendorf Richardson
MAUW	Modified Advanced Underwater Weapons
MC	munitions constituents
MD	munitions debris
MEC	munitions and explosives of concern
mg/kg	milligrams per kilogram
NAF	Naval Air Field
Navy	U.S. Navy
NOFA	no further action
NPL	National Priorities List
NSGA	National Security Group Activity
OU	operable unit

ABBREVIATIONS AND ACRONYMS (Continued)

PA	preliminary assessment
PQL	practical quantitation limit
PSE	preliminary source evaluation
QA	quality assurance
QC	quality control
RAB	Restoration Advisory Board
RACR	Remedial Action Completion Report
RAO	remedial action objective
RDX	cyclotrimethylenetrinitramine
RI	remedial investigation
ROD	Record of Decision
RSL	risk screening level
SAERA	State-Adak Environmental Restoration Agreement
SI	site investigation
SWMU	solid waste management unit
TAC	The Aleut Corporation
TNT	2,4,6-trinitrotoluene
URSG	URS Greiner, Inc.
USA	USA Environmental
USFWS	U.S. Fish and Wildlife Service
UXO	unexploded ordnance
WWI	World War I
WWII	World War II

1.0 INTRODUCTION

This Remedial Action Completion Report (RACR) documents that the U.S. Navy (Navy), under the oversight of the U.S. Environmental Protection Agency (EPA) and the Alaska Department of Environmental Conservation (ADEC), has completed the required response actions at the sites within Operable Unit (OU) B-1 of the former Adak Naval Complex, Adak, Alaska. This report is consistent with the requirements of the joint U.S. Department of Defense (DoD) and EPA guidance *Streamlined Site Close Out and National Priorities List, Deletion Process for DoD Facilities* (DoD and EPA, 2005).

This document provides information regarding completion of response actions in preparation for requesting that OU B-1 sites be removed from the National Priorities List (NPL). The following EPA deletion criteria have been met for all OU B-1 sites (EPA, 2011):

- All required response actions have been implemented.
- No further response actions are necessary.
- There is no health threat above EPA's target health goals to humans or the environment.

Adak Naval Complex was proposed for the EPA NPL in October 1992 (57 FR 47204) and formally listed in May 1994 (59 FR 27989). In November 1993, a Federal Facilities Agreement (FFA) among the Navy, EPA, and ADEC specified the procedural requirements for the environmental investigations and cleanups to be performed under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). A supplemental agreement—the State-Adak Environmental Restoration Agreement (SAERA)—was signed in April 1994 for petroleum impacted sites. In early 1998, the FFA was amended to designate OU B for munitions sites. The Navy is the lead agency for environmental cleanup at Adak under Executive Order 12580.

Adak Island is located off the Alaskan mainland near the center of the Aleutian Islands chain, approximately 1,200 miles west-southwest of Anchorage, Alaska. Its geographic position is 176°45'W longitude and 51°45'N latitude. With an area of 280 square miles, it is the largest of the Andreanof group of the Aleutian Islands. Adak Naval Complex occupied 76,800 acres on the northern portion of the island (Figure 1-2). It was used for national defense purposes pursuant to Public Land Order 1949, and it was closed operationally on March 31, 1997. In September 2000, the federal government entered into a land transfer agreement with The Aleut Corporation (TAC), as documented in the *Agreement Concerning the Conveyance of Property at the Adak Naval Complex, Adak, Alaska*, dated September 20, 2000, as amended, which is included as Attachment D-1 of the Comprehensive Monitoring Plan (U.S. Navy, 2012b). This agreement resulted in the conveyance of approximately 47,000 acres of Adak Naval Complex property to TAC in March 2004. The land transfer included all of the downtown area, housing units, and industrial facilities. Offshore islands, islets, rocks, reefs, and spires were not included in the land transfer. Other exclusions from the land transfer were fixtures and equipment owned by the United States and associated with the airfield, and those improvements owned by the United States and managed by the U.S. Fish and Wildlife Service (USFWS). The USFWS manages the southern 117,265 acres of the island, which is a designated wilderness within the Alaska Maritime Wildlife Refuge system. TAC transferred the portion of the former Adak Naval Complex known as Adak Airport and associated facilities and aviation easements to the State of Alaska.

In 1998, CERCLA response actions under the FFA at Adak were divided into OU A and OU B. In 2001, OU B was further divided into OU B-1 and OU B-2 to accommodate land transfer. OU A addresses non-munitions chemical releases to the environment, while OU B addresses munitions explosive safety hazards and human health and ecological risks associated with munitions-related chemicals.

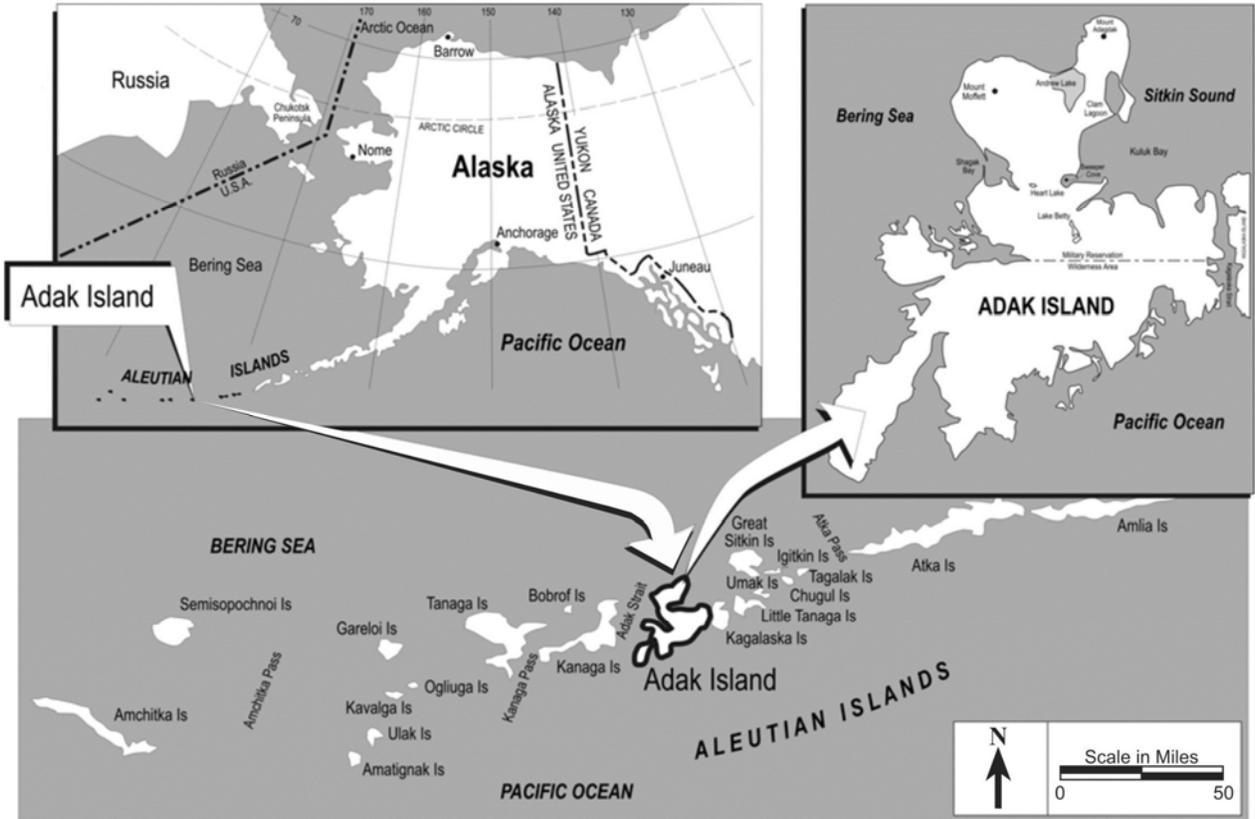


Figure 1-2. Location Map, Adak Island, Alaska

2.0 SITE DESCRIPTION AND OVERVIEW

This section includes a brief discussion of the OU characteristics, contaminants of concern, major findings and results of site investigation activities.

2.1 OU B-1 Description

Contamination at OU B-1 sites includes munitions and explosives of concern (MEC) which varied from small arms cartridges and casings up to 155-mm projectiles. Sites that make up OU B-1 include small arms ranges, potential minefields, firing points, impact areas, buffer zones, munitions loading areas, and munitions storage areas.

The development of Adak is limited to the northern portion of the island. The Adak Naval Complex had two main developed areas: Naval Air Facility (NAF) Adak and Naval Security Group Activity (NSGA). Land uses at NAF Adak, located in the developed “downtown” area, include the airfield; port facilities; and light industrial, administrative, commercial/recreational, and residential areas. NSGA is located approximately 5 miles north of NAF Adak, at the northwestern corner of Clam Lagoon. NSGA ceased all operations in 1995. The structures and road system remain, but the area is not inhabited.

Three steep, highly weathered volcanic peaks dominate the topography of Adak Island. These peaks are cut with deep valleys resulting from erosion by streams that also provide runoff to the coastal areas. Deltaic and tidal lagoon areas are found near the coastline in some portions of the island; however, steep rocky slopes or cliffs characterize most of the coastline. The terrain surrounding the former naval facility at Adak Island includes steep ridges, deep ravines, rolling hills, and some flatlands.

The tundra vegetation on Adak consists of grasses, lichens, mosses, and other species adapted to the wet, cold, and windy polar climate. Tundra tussocks, referred to as “haystacks”, are one of the most predominant features and are often interspersed with hollows or holes in the ground under the vegetation. Low-growing tundra is often thick and spongy, making access difficult, even on level terrain.

Adak Island has a polar maritime climate characterized by persistent overcast skies, high winds, frequent and often violent storms, and a narrow range of temperature fluctuation throughout the year. The mean annual temperature is 40°F, the average annual rainfall is 47 inches, and the average annual snowfall is 71 inches. The average wind speed is 15 miles per hour. Weather on the island can be varied and localized with fog, low ceilings, precipitation, and clear weather experienced at the same time, separated by a distance of only a few miles.

Figure 2-1 shows the OU B-1 sites which are the subject of this RACR. Investigations and remedial actions at OU B-1 sites were conducted between 1999 and 2010. The OU B-2 sites are still under investigation and are not candidates for deletion.

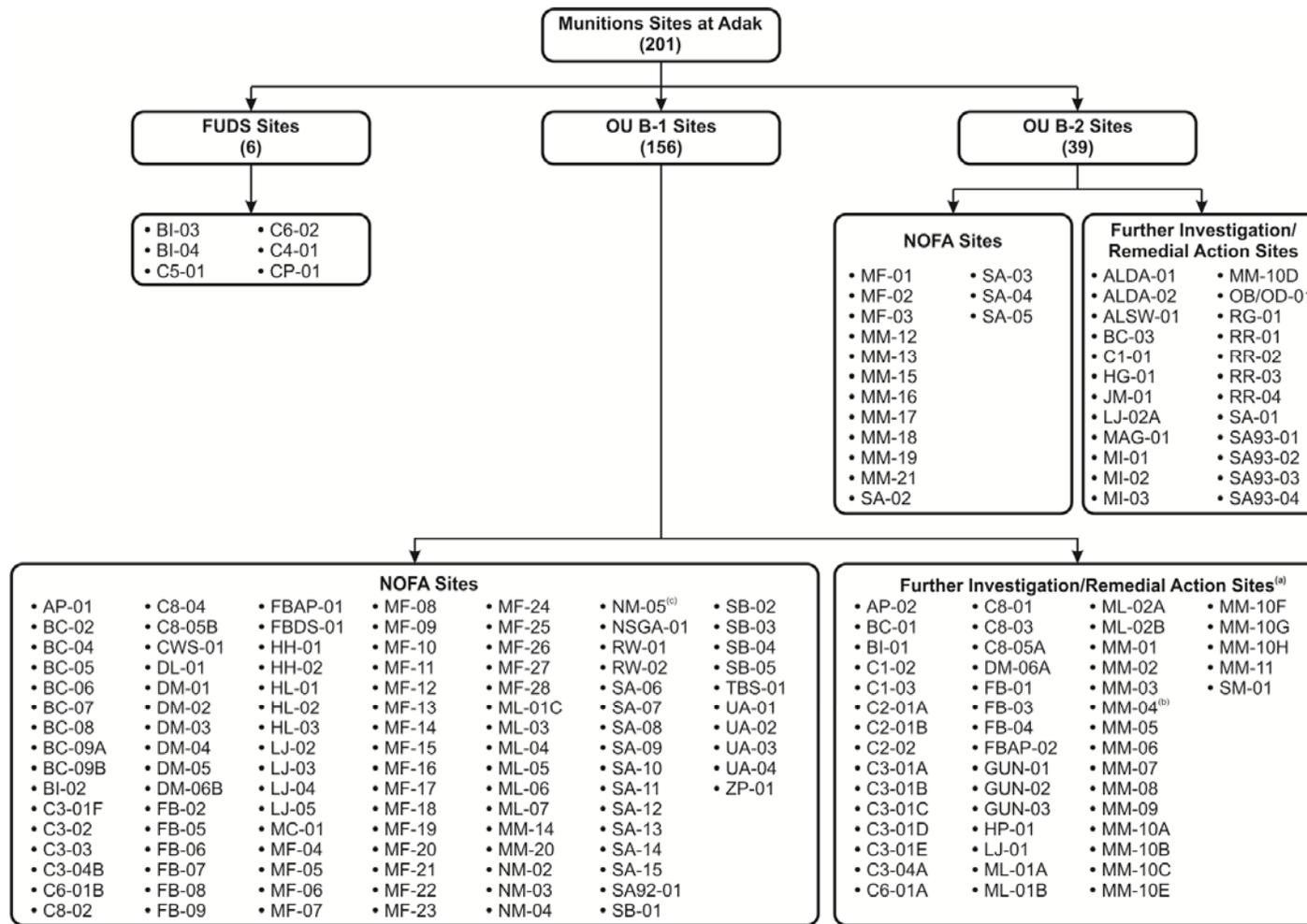
2.1.1 Summary of Sites Eligible for Closure

One hundred and fifty-six sites are within OU B-1 and are covered within this RACR for site closure including:

- 117 areas of potential concern (AOPCs) evaluated during the preliminary assessment (PA) screening process which were designated as OU B-1 sites. Of these 117 sites:

- 57 received a no further action (NOFA) designation during the PA phase and were eliminated from the remedial investigation/feasibility study (RI/FS) process; and
- 60 were redesignated as areas of concern (AOCs) and forwarded to the RI/FS for further investigation. Of these 60 AOCs, 47 were evaluated in the RI process and 13 were evaluated in the FS or investigated after the RI;
- Two sites (HP-01 and SH-01) not included in the PA process were added to the OU B-1 sites and evaluated in the RI process;
- 12 additional sites were created during the RI process because several AOCs were divided into subunits;
- 20 sites originally designated as OU B-2 sites were transferred to OU B-1 after the completion of the RI but were included in the OU B-1 Record of Decision (ROD) (MM-22 and MM-23 were initially transferred from OU B-2 to OU B-1 but later incorporated into MM-04 and removed from the site list);
- Two sites (MM-14 and MM-20) were inadvertently left out of the OU B-1 RI/FS process and were included in the OU B-1 ROD (Navy, 2001c);
- Three additional sites were added during the 2004 field season when MM-10E was further divided into AOCs MM-10F, MM-10G, and MM-10H. The majority of MM-10A and MM-10B was included within the boundaries of MM-10F.

NOFA was recommended for 106 of the sites and the remaining 50 sites were recommended for additional evaluation, remedial action, and/or soil sampling for explosives-related chemicals and soil removal, treatment, and disposal. Figure 2-2 shows the locations of the 156 OU B-1 sites on Adak.



AK_SITESCHART02.CDR

^(a)Investigations and remedial actions have been completed for all OU B-1 sites and they have been recommended for NOFA.
^(b)MM-22 and MM-23 have been incorporated into MM-04 and have been removed from the list of OU B-1 sites.
^(c)MEC was discovered in NM-05 in 2012 and additional investigation was conducted in 2014, which is described in Section 5.16.

Figure 2-1. Summary of OU B-1 Site Process at Former Adak Naval Complex

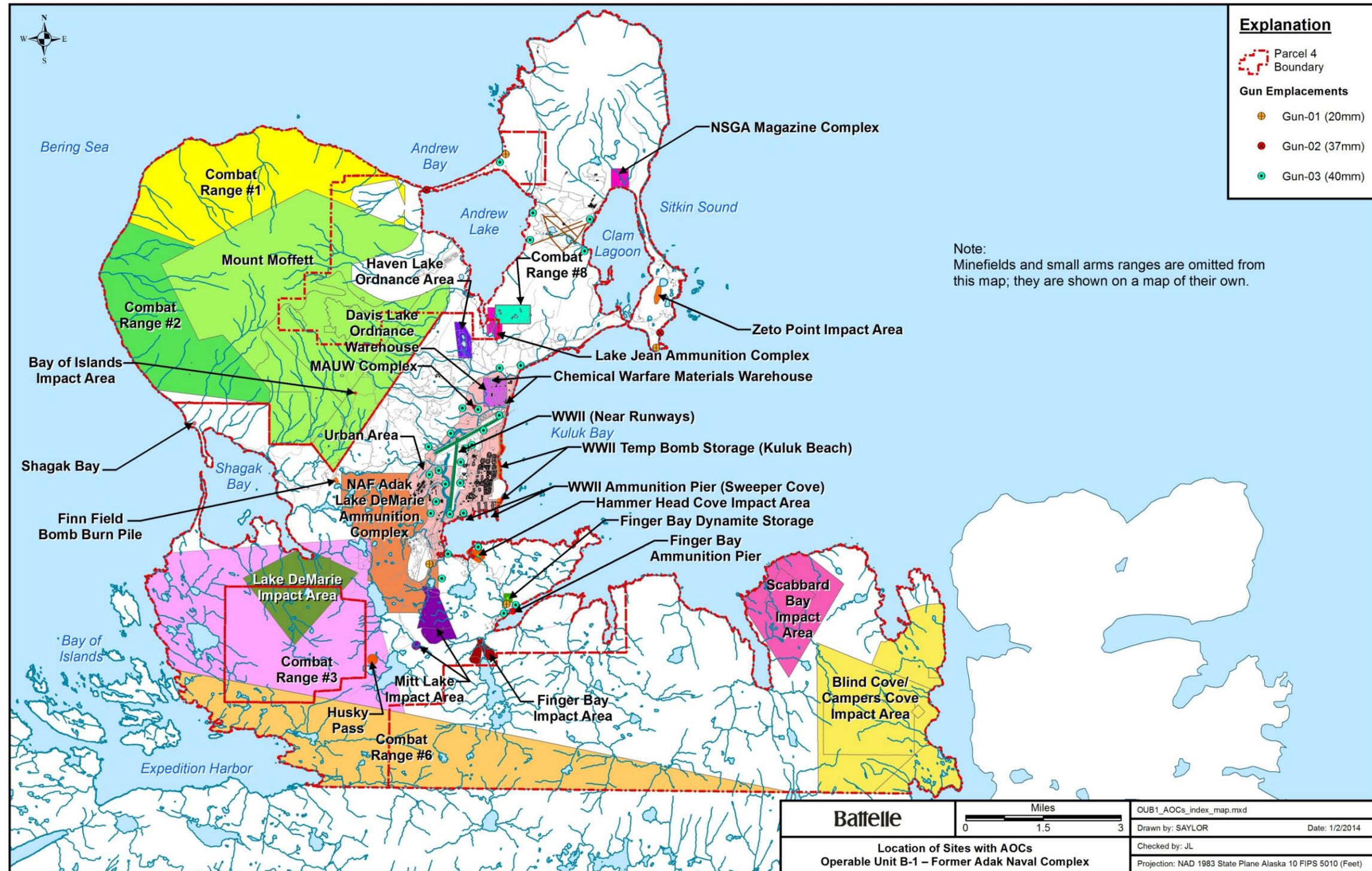


Figure 2-1. Operable Unit B-1 Munitons Sites

2.2 Previous Site Investigations and Major Findings

Numerous investigations took place at OU B-1 munitions sites on Adak between 1996 and 2000. These investigations are described in detail in the OU B-1 RI/FS report (Navy, 2001b) and the results of the investigations are summarized below.

2.2.1 Clam Lagoon Minefield Investigation and Clearance

The 1996 explosive ordnance disposal (EOD) survey indicated that the proposed minefield at the north end of Clam Lagoon (SWMU 2) may have contained mines placed during World War II. In 1996, SWMU 2 was investigated and a mine was located, confirming that mines were physically present in this area. The minefield clearance was completed in 1998. Live and inert training mines were located, as well as a small number of live service mines and remnants of Bangalore torpedoes which were used in minefield clearance. There was no discernible pattern to the mines found in this area which suggests that SWMU 2 may have been a training area rather than a defensive minefield. The Department of Defense Explosives Safety Board (DDESB) issued a memorandum concurring with the Navy's decision to remove the institutional controls (ICs) and return the land to its planned use as a wildlife preserve.

2.2.2 Unexploded Ordnance Investigations of Priority I, II, and III Areas

In 1997 and 1998, the 2,407-acre downtown area was divided into three priority areas which were investigated for munitions items (Figure 2-3).

The investigation of these areas included a historical records/archive search; physical survey; surface clearance; geophysical investigation; anomaly selection; and intrusive investigation. During the surface clearance, three MEC items were found in the Priority II Area (50-mm mortar, 37-mm anti-aircraft cartridge case, and 20-mm high explosive [HE] projectile). There were 7,116 targets investigated and MEC items were found in three excavations (practice bomb with spotting charge; 4-lb incendiary bomblets; and flares) in the Priority III Area.

2.2.3 Small Arms Investigation

A qualitative study, primarily focusing on human and ecological exposures to lead, was reported in the 1997 Preliminary Source Evaluation (PSE)-1 Report for Small Arms Ranges (U.S. Navy, 1997). The site conditions suggested migration pathways and exposures to receptors are unlikely and declared the sites NOFA. A follow-up quantitative study was reported in 1998 under the Report for Small Arms Ranges (U.S. Navy, 1998), which reported analytical results with lead not detected above concentrations of concern. This study closed the data gap and both validated and reported a NOFA status (Figure 2-4).

2.2.4 Minefield Investigation

In April 1998, ongoing archival research on historical ordnance-related activities on Adak resulted in the discovery of World War II-era defensive plans for the Island. These plans contained proposed locations for defensive works, including 27 minefields (Figure 2-4). Previously, the only suspected minefield was SWMU 2 at the north end of Clam Lagoon. Twenty-three of the potential minefield locations on Adak were investigated either intrusively, using geophysical and surface clearance data from previous unexploded ordnance (UXO) investigations, or by visual inspection. Two additional potential minefield sites at Shagak Bay were inspected during the course of a project to clear Rommel stakes from

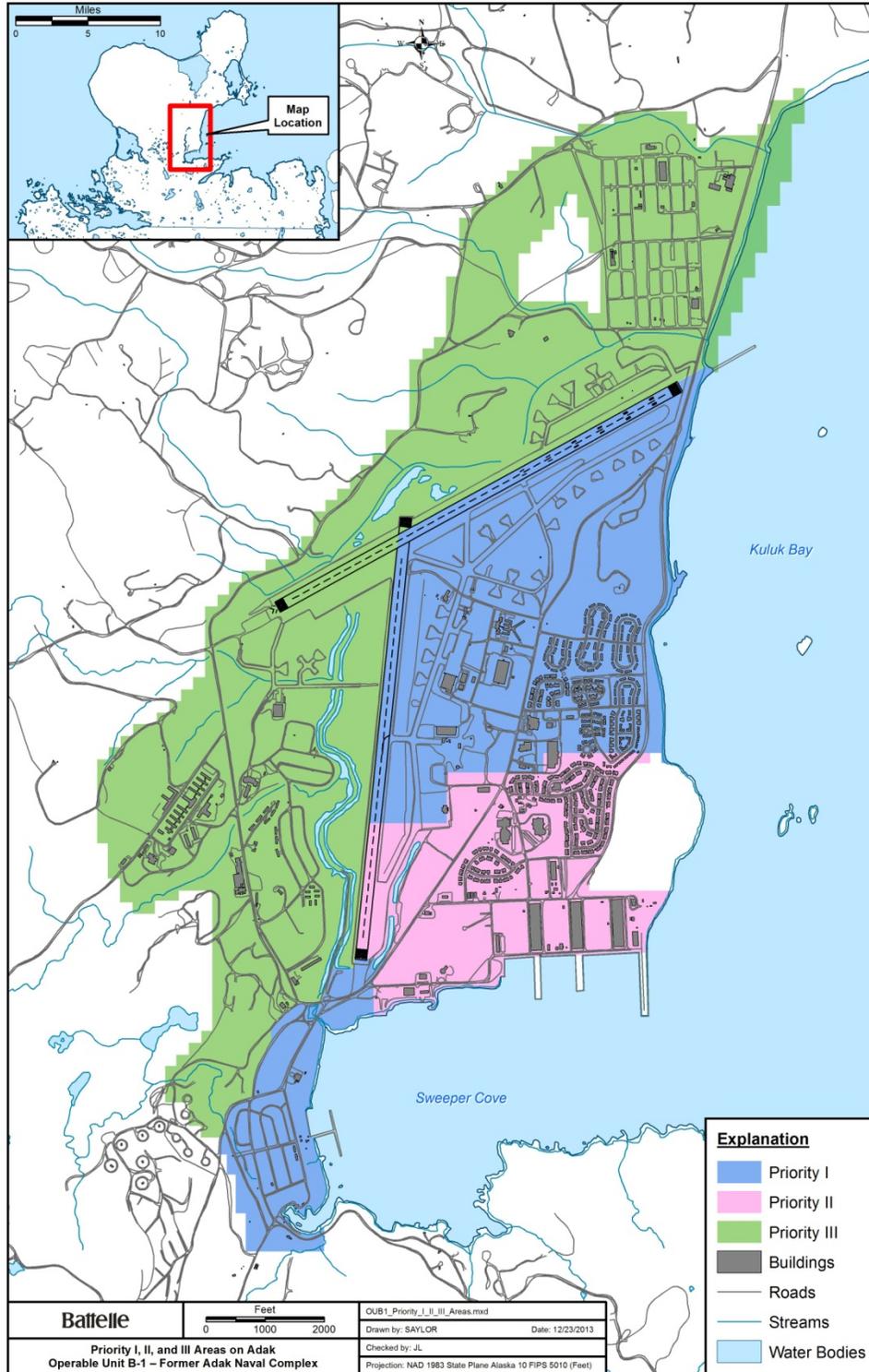


Figure 2-3. Priority Areas I, II, and III on Adak

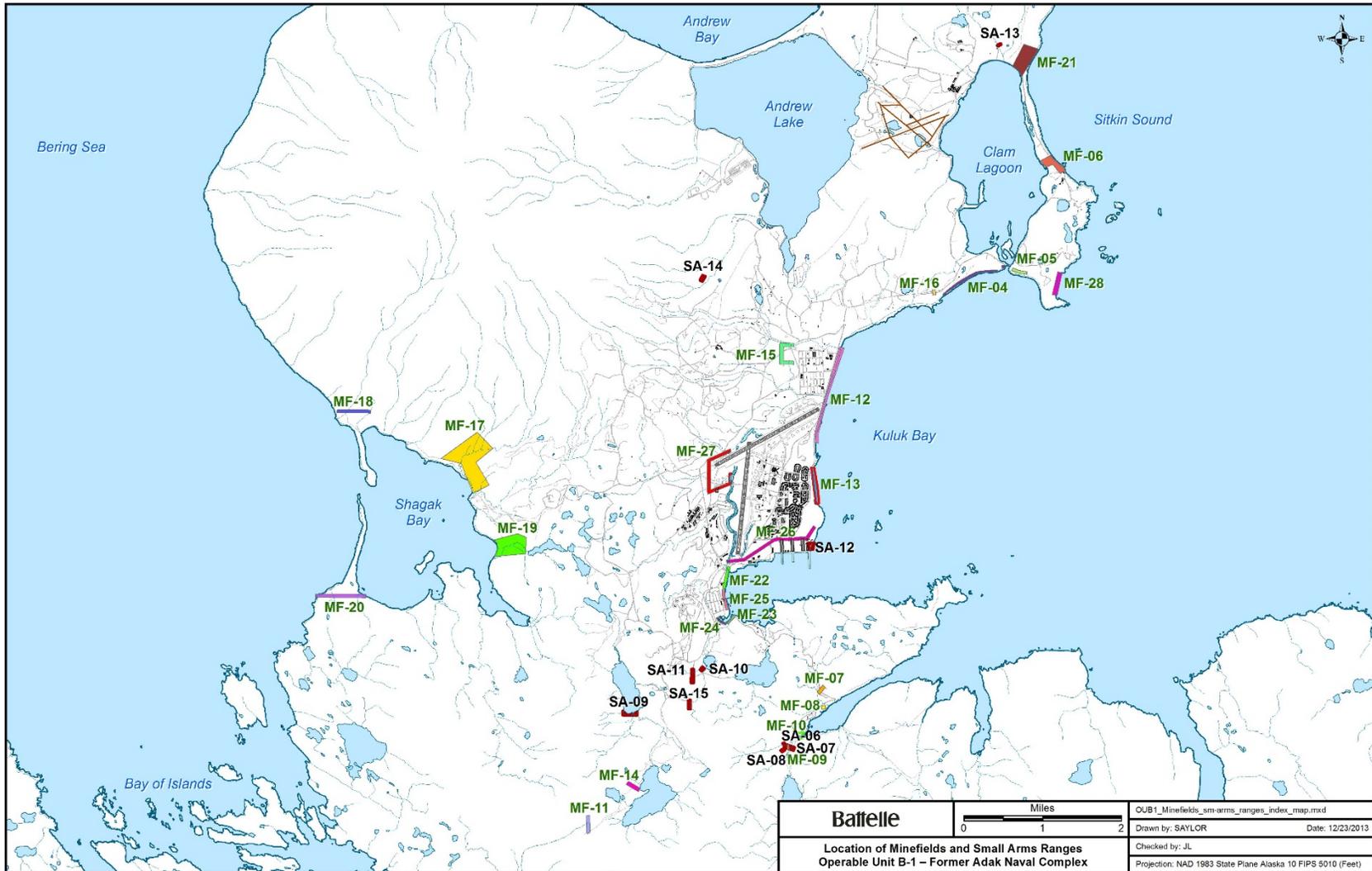


Figure 2-4. Minefields and Small Arms Ranges on Adak

these sites. The Navy determined that, based upon the evidence available, there was no need for further action at any of the potential minefield sites (Navy, 1999). In 1999, the Navy received a memorandum from DDESB concurring with this decision and approving the use of these sites for recreation or other specified uses.

MF-01 through MF-03 are OU B-2 sites that were not included in the minefield investigation. These sites were evaluated in the PA and were recommended for NOFA. MF-21 was the only minefield identified with mines and it was investigated and cleared between 1996 and 1998. MF-04 through MF-11, MF-14, MF-16, MF-17, MF-19, and MF-28 were included in the 1998 minefield investigation. MF-12, MF-13, MF-15, and MF-22 through MF-27 were included in the Priority I, II, and III Area investigations. MF-18 and MF-20 were investigated during the 2000 field season as part of the Rommel stake removal action. MF-14 was not on the historical defensive plans but was discovered during reconnaissance for the Husky Pass minefield survey. All 28 minefields were recommended for NOFA in the ROD.

2.2.5 Preliminary Assessment/Site Investigations

The initial step in evaluating potential explosive safety hazards was developing a preliminary framework. The framework was based on the following four screening criteria to categorize an AOPC:

- Likelihood of MEC contamination
- Density of MEC contamination
- Munitions hazard severity
- Strength of archival and field evidence.

Phase I of the PA screening process determined whether or not each AOPC represented a hazard significant enough to warrant further consideration. Those sites not initially screened as NOFA were forwarded to the next phase of the PA screening process for decision making on the need for future actions such as investigation or remediation.

Phase II of the PA screening process evaluated AOPCs with respect to the ease of access for assessment of exposure to munitions and access for potential receptors. Following Phase II, AOPCs having a high enough ranking for further action were evaluated to determine the most appropriate level of action. This determination was based on the qualitative hazard for the AOPC (munitions hazard ranking) and the relative access for public exposure.

Initially, 183 AOPCs were evaluated in the PA screening process which was conducted prior to the division of OU B into OU B-1 and OU B-2. Six of these AOPCs were not carried forward in the RI process under the Base Realignment and Closure (BRAC) program because they encompass areas outside the military reservation. These sites will be addressed under the Defense Environmental Restoration Program (DERP)—Formerly Used Defense Sites (FUDS) program. Fifty-seven of the OU B-1 AOPCs evaluated in the PA screening process were recommended for NOFA (Navy, 2000). The remaining AOPCs were further evaluated using the Explosives Safety Hazard Assessment (ESHA) process described in Section 2.2.6. The PA/SI process was a procedural part of the RI for Adak.

2.2.6 Remedial Investigation/Feasibility Study

The ESHA is a site-specific hazard assessment process for explosive dangers that addresses the unique character of the island, as allowed by DoD 6055.9_STD C12.3.4.3. DoD 6055.0_STD was superseded by DoD 6055.09-M in 2010. The methodology is qualitative in nature, but makes use of both qualitative and

quantitative inputs in a framework that results in recommendations for proper site management of MEC. For example, sites scored as an “A” or “B” are recommended for NOFA; those with a “C” or “D” are recommended for further investigation or remediation.

During the RI/FS, site information was assessed for explosive hazard through the risk evaluation process using RI data. A reconnaissance was used at several sites where insufficient data were available to determine whether there was a need for an RI including firing points, a bivouac area, and munitions storage areas. If evidence of munitions use was found at a site, follow-up activities using the approved search methodology were performed; otherwise, the sites were recommended for NOFA at this phase and no additional investigation was performed. At sites where munitions were suspected to be present in significant densities, a search methodology within the accessible areas (i.e., slopes ≤ 30 degrees) of the sites was applied in accordance with the type of munitions historically used in that area. Geophysical data were collected along transects. Transect spacing ranged from 20 meters for areas with small munitions (i.e., 20 mm or 37 mm) to 115 meters for areas with larger munitions (i.e., 155 mm). The project team agreement specified collecting data at 105-meter transect spacing for combat ranges where the specific type of munitions used was unknown.

Once sites were identified and validated, the targets were intrusively investigated to 4 feet (ft) below ground surface (bgs) and characterized as MEC (i.e., UXO or discarded military munitions [DMM]), munitions debris (MD) (e.g., fragment), metal waste (e.g., nails, metal cans), other waste, hot geology, no finds, no digs, or dig abandoned. Hot geology generally consisted of actual rocks containing remnant magnetism or high iron content; a “no find” is when there was no evidence of a target anomaly; a “no dig” is when a dig was not attempted due to standing water or an obstacle at the site; and “dig abandoned” is when the team stopped digging for safety reasons if there was standing water or an obstacle (i.e., large rock) in the hole. Anomalies located below 4 ft were left in place and noted as greater than 4 feet (>4ft) in the project database. No-find verification was performed at sites as a quality control (QC) measure. A portion of no finds were investigated a second time to validate that there was no target in the area (Navy, 2001b).

2.2.7 Summary of NOFA Sites in OU B-1 ROD

Of the sites evaluated in the PA/SI and RI/FS phases of the CERCLA process, 106 were determined to require NOFA. NOFA was recommended for 57 sites during the PA/SI process and an additional 49 sites during the RI phase. Table 2-1 summarizes the NOFA sites and the phase in which NOFA was recommended.

Table 2-1. Adak OU B-1 NOFA Sites

Site	PA/SI			RI	
	NOFA	RI/ Inspect	FS	ESHA Score	NOFA
<i>WWI Ammunition Pier (Sweeper Cove)</i>					
AP-01	√			N/A	N/A
<i>Blind Cove/Campers Cove Impact Area</i>					
BC-02	√			N/A	N/A
BC-04	√			N/A	N/A
BC-05		√		A	√
BC-06		√		A	√
BC-07		√		A	√
BC-08		√		N/A	√
BC-09A		√		A	√
BC-09B	√			A	N/A
<i>Bay of Islands Impact Area</i>					
BI-02	√			N/A	N/A
<i>Combat Range #3</i>					
C3-01F		√		A	√
C3-02		√		B	√
C3-03		√		A	√
C3-04B		√		A	√
<i>Combat Range #6</i>					
C6-01B		√		A	√
<i>Combat Range #8</i>					
C8-02		√		A	√
C8-04		√		B	√
C8-05B		√		B	√
<i>Chemical Warfare Materials Warehouse</i>					
CWS-01	√			N/A	N/A
<i>Davis Lake Ordnance Warehouses</i>					
DL-01	√			N/A	N/A
<i>Lake DeMarie Impact Area</i>					
DM-01		√		A	√
DM-02		√		A	√
DM-03		√		N/A	√
DM-04		√		N/A	√
DM-05		√		N/A	√
DM-06B		√		A	√
<i>Finger Bay Impact Area</i>					
FB-02		√		N/A	√
FB-05		√		N/A	√
FB-06		√		A	√
FB-07		√		A	√
FB-08		√		A	√
FB-09		√		A	√
<i>Finger Bay Ammunition Pier</i>					
FBAP-01	√			N/A	N/A
<i>Finger Bay Dynamite Storage</i>					
FBDS-01	√			N/A	N/A
<i>Hammer Head Cove Impact Area</i>					
HH-01	√			N/A	N/A

Table 2-1. Adak OU B-1 NOFA Sites(Continued)

Site	PA/SI			RI	
	NOFA	RI/ Inspect	FS	ESHA Score	NOFA
HH-02	√			N/A	N/A
<i>Haven Lake Ordnance Area</i>					
HL-01		√		A	√
HL-02		√		A	√
HL-03	√			N/A	N/A
<i>Lake Jean Ammunition Complex</i>					
LJ-02		√		A	√
LJ-03		√		A	√
LJ-04		√		A	√
LJ-05	√			N/A	N/A
<i>Moffett Advanced Underwater Weapons (MAUW) Complex</i>					
MC-01	√			N/A	N/A
<i>Minefields</i>					
MF-04	√			N/A	N/A
MF-05	√			N/A	N/A
MF-06	√			N/A	N/A
MF-07	√			N/A	N/A
MF-08	√			N/A	N/A
MF-09	√			N/A	N/A
MF-10	√			N/A	N/A
MF-11	√			N/A	N/A
MF-12	√			N/A	N/A
MF-13	√			N/A	N/A
MF-14	√			N/A	N/A
MF-15	√			N/A	N/A
MF-16	√			N/A	N/A
MF-17	√			N/A	N/A
MF-18	√			N/A	N/A
MF-19	√			N/A	N/A
MF-20	√			N/A	N/A
MF-21			√	N/A	√
MF-22	√			N/A	N/A
MF-23	√			N/A	N/A
MF-24	√			N/A	N/A
MF-25	√			N/A	N/A
MF-26	√			N/A	N/A
MF-27	√			N/A	N/A
MF-28	√			N/A	N/A
<i>Mitt Lake Impact Area</i>					
ML-01C		√		A	√
ML-03		√		A	√
ML-04		√		A	√
ML-05		√		A	√
ML-06	√			N/A	N/A
ML-07	√			N/A	N/A
<i>Mount Moffett</i>					
MM-14 ^(a)				N/A	√
MM-20 ^(a)				N/A	√

Table 2-1. Adak OU B-1 NOFA Sites(Continued)

Site	PA/SI			RI	
	NOFA	RI/ Inspect	FS	ESHA Score	NOFA
<i>NAF Adak Lake DeMarie Ammunition Complex</i>					
NM-02		√		A	√
NM-03		√		A	√
NM-04		√		A	√
NM-05 ^(b)	√			N/A	N/A
<i>NSGA Magazine Complex</i>					
NSGA-01	√			N/A	N/A
<i>WWI (Near Runways)</i>					
RW-01		√		A	√
RW-02	√			N/A	N/A
<i>Small Arms Ranges</i>					
SA-06	√			N/A	N/A
SA-07	√			N/A	N/A
SA-08	√			N/A	N/A
SA-09	√			N/A	N/A
SA-10	√			N/A	N/A
SA-11	√			N/A	N/A
SA-12	√			N/A	N/A
SA-13	√			N/A	N/A
SA-14	√			N/A	N/A
SA-15	√			N/A	N/A
<i>Finn Field Bomb Burn Pile</i>					
SA92-01	√			N/A	N/A
<i>Scabbard Bay Impact Area</i>					
SB-01		√		A	√
SB-02		√		N/A	√
SB-03		√		N/A	√
SB-04		√		N/A	√
SB-05		√		N/A	√
<i>WWII Temp Bomb Storage (Kuluk Beach)</i>					
TBS-01	√			N/A	N/A
<i>Urban Area</i>					
UA-01		√		A	√
UA-02		√		A	√
UA-03	√			N/A	N/A
UA-04	√			N/A	N/A
<i>Zeto Point Impact Area</i>					
ZP-01		√		A	√
Total NOFA Sites	57	-	-	-	49

Notes:

- (a) MM-14 and MM-20 were not included in the OU B-1 RI/FS process; however, these sites were recommended for NOFA in the OU B-1 ROD and are checked as NOFA in RI in this table.
(b) MEC was discovered in 2012 in NM-05 and an additional investigation was conducted in 2014 (see Section 5.16).

N/A – not applicable
WWI – World War I
WWII – World War II

3.0 REMEDIAL ACTION OBJECTIVES

The goal of the OU B-1 investigation and remediation activities on Adak Island was to take steps to effectively reduce and manage potential explosive hazards and risks posed by MEC to protect human health and the environment for current and reasonably expected future land use. Two remedial action objectives (RAOs) were established: one addressed explosive safety hazards and the other addressed the chemical residues in soil resulting from munitions use.

3.1 Remedial Action Objectives to Control Explosive Hazards

The RAO pertaining to the explosive safety aspect of the munitions is to reduce any remaining potential explosive safety hazards throughout OU B-1 through the application of the ESHA process and subsequent remediation of MEC, as necessary, to support current and reasonably expected future land use. Cleanup levels are typically numeric expressions of RAOs. However, for explosive hazards associated with the OU B-1 sites, the cleanup level goal entails removing all suspected MEC items to a depth of 4 ft bgs that are located in accessible areas, using a munitions detection system that meets performance criteria established for Adak.

3.2 Remedial Action Objectives to Control Chemical Risks

The RAO for potential munitions-related chemical risks is to prevent future residents and recreational users from being exposed to explosives-related contamination in soils above the cleanup levels. The cleanup levels established in the ROD were taken from the EPA Region 9 risk screening levels (RSLs) for residential soil. This chemical-risk RAO is applicable at the seven locations identified in the ROD as having potential chemical risks and at the additional locations where subsequent field investigations indicated the potential for chemical residues.

A complete baseline risk assessment for sites in OU B-1 where ordnance-related chemicals may be present was not undertaken; however, baseline risks for munitions constituents were evaluated under OU A activities. Although OU A included only sites with chemical contamination, one OU A site (SWMU 1) was identified as the most heavily contaminated MEC site on Adak and considered the worst case scenario for potential MC contamination. Based on the sampling performed at SWMU 1, contaminant migration of explosives-related compounds was not considered a risk to human health or the environment. Additional details on the chemical contamination evaluation of MEC can be found in the OU A RI/FS Report (URSG, 1997). SWMU 1 (OB/OD-01 Andrew Lake Disposal Area) was later deferred to OU B-2.

Metals were not considered to pose a potential for adverse human health or ecological risk due to the nature of the sites, including those with single or limited rounds where explosive filler release was noted or where soil staining was observed. These observations would not indicate the presence of metals in sufficient quantity to pose potential adverse risks. In a similar manner, explosive filler material was not evaluated for potential adverse ecological risks due to the limited area of release. Several MEC sites with much greater areal extent investigated during the OU A RI/FS were determined not to pose significant adverse ecological risk, given the small number of munitions constituents (MC) detected and the very low risk based screening concentrations (below detection limits) for some MC (URS Greiner, Inc. [URSG], 1997). For these reasons, it was determined that human health risk-based screening criteria associated with the explosive filler materials would be relied upon for soil remediation decisions.

In addition, the OU B Project Team developed a combined soil screening and cleanup approach based on risk based soil screening levels for an assumed residential exposure scenario. Sampling locations were selected based on field observations during MEC clearance activities. Soil in areas where breached munitions were located and where staining was observed was sampled and the analytical results were compared to the conservative risk based U.S. EPA Region 9 RSLs.

4.0 REMEDIAL ACTIONS

4.1 Selected Remedies for OU B-1

Of the 156 sites evaluated (including three sites added after the completion of the OU B-1 ROD), 106 sites were recommended for NOFA and 50 sites required some action. The 50 sites where some action was required by the ROD fall into three categories:

- Three sites to be cleared of MEC to a depth of 4 ft bgs (C3-01A, C6-01A, and ML-01A). C3-01A and C6-01A also required soil sample collection and analysis for MC.
- Forty-six sites to receive observational approach and presumptive clearance (BI-01, BC-01, C1-02, C1-03, C2-01A, C2-01B, C2-02, C3-01B, C3-01C, C3-01D, C3-01E, C3-04A, C8-01, C8-03, C8-05A, FBAP-02, FB-01, FB-03, FB-04, GUN-01, GUN-02, GUN-03, SH-01, DM-06A, HP-01, LJ-01, ML-01B, ML-02A, MM-01, MM-02, MM-03, MM-04, MM-05, MM-06, MM-07, MM-08, MM-09, MM-10A, MM-10B, MM-10C, MM-10E, MM-10F, MM-10G, MM-10H, MM-11, and AP-02). In addition, four of these sites (C3-04A, C8-01, C8-05A, and LJ-01) also required soil sample collection and analysis for MC.
- One site to have soil samples collected and analyzed for MC (ML-02B).

The summary of the investigation results are provided in Table 4-1 for these 50 sites and described in detail in Section 5.0.

This section describes the general approach followed to complete remedial actions; however, separate contractors conducted work in each of the field seasons. Each contractor prepared their own work plans which detailed the methods used to complete the tasks and the data quality requirements used to ensure the sites data quality objectives were achieved (Foster Wheeler Environmental and Environmental Chemical Corporation [ECC], 2002; ECC, 2004; USA Environmental [USA], 2008; EOD Technology [EODT], 2008). There was a consistency of methods and performance criteria between work plans from different contractors.

4.1.1 MEC Clearance to 4 Feet below Ground Surface

The ROD required MEC removal at three locations (C3-01A, C6-01A, and ML-01A) where geophysical mapping had already been conducted and anomalies that could be MEC had been identified. Removal activities specified in the ROD started in 2001 and were completed for C6-01A and ML-01A during the 2001 field season. Removal activities for C3-01A were completed in the 2002 field season. The specific activities conducted at each of these three sites are presented in Section 5.0.

Section 11.2 of the OU B-1 ROD (Navy, 2001c) describes the requirements for remediation which consisted of the following:

- Removing all metallic debris from the surface that could interfere with geophysical mapping
- Conducting geophysical mapping and processing the electronic geophysical data
- Digging at all locations identified during the survey as potential MEC items
- Identifying targets to a depth of 4 ft bgs
- Excavating and removing/destroying targets

- Performing quality assurance (QA)/QC of the data collected during field activities.

The remediation of sites included a six-phase AOC certification process to ensure uniform methodology and QC of gathered data. The site received an AOC certification from a board which consisted of five people comprising members of the OU B-1 Project Team and the contractor, once each site had been through each phase and the remedial action was completed.

4.1.2 Observational Approach and Presumptive Clearance

The ROD identified 43 sites as requiring observational approach remediation and possible MEC removal because of data gaps in areas of these sites. Three additional sites (MM-10F, MM-10G, and MM-10H) were split out of MM-10E and added to the list of sites requiring remediation after the ROD was finalized making a total of 46 sites recommended for observational approach and presumptive clearance.

The goal was to determine whether munitions items were present within the sites and, if MEC items were present, to conduct clearance to 4 ft bgs as detailed in Section 4.1.1 above. The 46 sites include munitions disposal sites, impact areas, ammunition storage areas, firing points, training areas, and gun emplacements. MEC identified during the site investigation (SI) and RI activities was removed; however, additional information was needed at each site to determine if further remediation of MEC was needed. The objective of the observational remediation approach was to determine the extent of additional remediation, if any, required beyond the identification and removal of MEC items during previous investigations. The investigation, remediation, and sampling activities required by the ROD at these 46 sites took place during 2001, 2002, 2004, 2008, 2009, and 2010.

Table 4-1 summarizes the investigation results for the 46 OU B-1 AOC sites and provides the year the remedial action was completed. Of the 46 completed sites, MEC items were identified at 15 sites during the 2001 through 2010 field seasons. The activities completed at each of these sites are presented in Section 5.0.

Table 4-1. Summary of Investigation Results for the OU B-1 Sites Requiring Remedial Action^(a)

Site	Year	Number of Targets Investigated	MEC ^(b)	Munitions Debris ^(b)	Metal Waste ^(b)
BI-01	2004	0	0	0	0
BC-01	2002	110	0	71	0
C1-02 ^(c)	2008	0	0	0	0
C1-03	2002	206	0	6	0
C2-01A	2002	27	0	0	0
C2-01B	2002	5	0	1	0
C2-02	2002	699	0	15	6
C3-01A	2001	1,007	106	269	314
	2002	853	132	188	260
C3-01B	2001	29	0	1	28
C3-01C	2001	0	0	0	0
C3-01D	2001	1	0	1	0
C3-01E	2001	64	14	25	19
	2002	74	1	10	13
C3-04A	2001	384	3	204	156
C6-01A	2001	153	2	98	19
C8-01	2001	30	1	1	27
	2004	27	0	0	24
C8-03	2001	225	116	70	19
	2002	12	6	4	1
C8-05A	2001	14	0	0	14
FBAP-02	2001	0	0	0	0
FB-01	2001	0	0	0	0
FB-03	2001	47	2	12	24
	2002	2,413	13	612	1,296
FB-04	2001	0	0	0	0
GUN-01	2001	1	0	1	0
GUN-02	2001	1	1	0	0
GUN-03	2001	0	0	0	0
DM-06A ^(d)	2001	4	0	1	0
HP-01	2001	3	0	3	0
LJ-01	2001	119	4	51	62
	2004	847	65	159	349
	2008	569	48	NA	NA
ML-01A	2001	181	18	19	87
ML-01B	2001	1	0	0	0
ML-02A	2001	9	3	0	0
ML-02B ^(e)	2001	0	0	0	0
MM-01	2004	0	0	0	0
MM-02	2004	220	0	18	0
MM-03	2004	1	0	0	0
MM-04	2004	0	0	0	0
MM-05	2004	1	0	0	0
MM-06	2004	11	0	0	4
MM-07	2004	31	0	6	19
MM-08	2004	0	0	0	0
MM-09	2004	14	0	3	1
MM-10A ^(f)	2004	(f)	(f)	(f)	(f)
MM-10B ^(f)	2004	(f)	(f)	(f)	(f)
MM-10C	2001	21	0	16	5
	2002	2,037	2	1,294	145
MM-10E ^(f)	2001	519	6	193	145
	2002	655	4	276	147
	2004	1,083	33	340	18

**Table 4-1. Summary of Investigation Results for the OU B-1 Sites Requiring Remedial Action^(a)
 (Continued)**

Site	Year	Number of Targets Investigated	MEC ^(b)	Munitions Debris ^(b)	Metal Waste ^(b)
MM-10F	2001	112	2	87	0
	2002	540	21	463	11
	2004	3,973	19	3,116	64
	2008-2009	36,796	29	29,750	140
MM-10G	2001	72	2	40	22
	2002	191	2	85	39
	2004	876	3	343	75
	2008-2009	3,743	8	1,891	531
MM-10H	2008-2009	854	1	313	4
MM-11	2002	93	4	8	0
	2004	150	1	2	0
SH-01 ^(d)	2001	0	0	0	0
AP-02	2001	0	0	0	0

- (a) All target numbers available in the Adak database are provided (2001 to 2010).
 (b) The table includes the number of targets classified as “MEC”, “MD”, or “metal waste”. Some targets may have had more than one item recovered; however, this is not reflected in the count. 672 MEC (UXO and DMM) items were safely removed and disposed of properly. MD and metal waste were identified, then removed or left in place. The items left in place may include spent cartridges or MD, sheet metal, reinforcement steel, angle iron, bolts, and nails.
 (c) C1-02 was not investigated due to inaccessibility. Two attempts were made to access the site in 2004 but were terminated due to weather and rough terrain. The site received concurrence from ADEC for closure due to inaccessibility in 2008.
 (d) These sites were reinvestigated in the 2004 field season and again recommended for NOFA status in 2004.
 (e) The ROD remedy selected for ML-02B was chemical sampling. Soil samples were collected in the 2001 field season. See Section 5.0 for a discussion of the chemical sampling results.
 (f) MM-10A and MM-10B were not separated out of MM-10E during field activities; therefore, all target counts are included in with the MM-10E values on the table.

4.1.3 Sites Selected for Explosive-Related Chemical Investigations

Confirmatory soil sampling was performed at 15 OU B-1 AOCs to document the absence of chemical MEC residues that could constitute a health risk. Initially nine locations at seven sites were identified in the ROD as requiring sampling and sample locations at an additional seven sites were identified during field activities. Sampling was performed where field observations indicated that breached munitions or staining may have contaminated the soil with MC. The nine locations listed in the OU B-1 ROD were identified using year 2000 field notes.

The nine locations at seven sites identified in the OU B-1 ROD included four of the 46 observational approach and presumptive clearance sites (C3-04A, C8-01, LJ-01, and C8-05A); two of the clearance to 4 ft bgs sites (C3-01A and C6-01A); and one site that did not require additional MEC removal (ML-02B). Based on observations during the 2001 field season, additional sampling was conducted at C3-01A (open detonation site and several dozen burn sites) and C3-04A (two detonation sites). Eight additional sites (FB-03, C8-03, ML-01A, MM-10A, MM-10E, MM-10F, MM-10G, and MM-11) were selected for sampling during the investigative process. Table 4-2 lists all of the samples collected during the 2001, 2002, and 2009 field seasons.

Sampling sites, whether identified before or after the ROD, were selected for chemical sampling if the type and condition of munitions found at the site were associated with potential chemical contamination in soil, including breached munitions and/or soil staining. Soil samples were collected following removal of the munitions item.

Analytical results confirmed that the removal of stained soils and explosive filler from excavations was effective in removing soils with possible munitions-derived chemical contamination.

EPA's Region 9 RSLs were established as screening levels for dinitrotoluene (mixture of 2,4-dinitrotoluene and 2,6-dinitrotoluene); 2,4,6-trinitrotoluene (TNT); nitroglycerin; nitroguanidine; tetryl (trinitrophenylmethylnitramine); and cyclotrimethylenetrinitramine (RDX) and are presented in the OU B-1 ROD. There were detections for 1,3,5-trinitrobenzene, 2-amino-4,6-dinitrotoluene, and 4-amino-2,6-dinitrotoluene in several samples; therefore, EPA Region 9 2013 RSLs are presented in Table 4-3 for these analytes, in addition to the analytes listed above. The results are summarized below, and detected concentrations are listed in Table 4-3.

Soil samples were collected during the 2001, 2002, and 2009 field seasons. During the 2001 field season (U.S. Navy, 2002), soil sampling occurred at 30 locations within AOCs C3-04A, C6-01A, C8-01, C8-03, C8-05A, FB-03, LJ-01, ML-01A ML-02B, MM-10A, and MM-10E. The analytical results were screened against EPA's Region 9 RSLs. Additional sampling occurred at sites other than those proposed in the ROD to provide the data quality necessary for making remedial decisions. Most of the soil samples were not detected above the practical quantitation limit (PQL) for munitions-related compounds. Only one sampling location, C803-042 (from area C8-03), exceeded the RSLs for RDX, and excavation was recommended. Although no soil was excavated in 2002, additional sampling occurred in C8-03 and only 2,3,6-trinitrotoluene and nitroguanidine were detected at concentrations well below their respective RSLs.

Additional soil sampling at 21 locations within sites C3-01A, C8-03, FB-03, MM-10E, and MM-11 occurred during the 2002 field season (U.S. Navy, 2003b), and the analytical results were screened against EPA's Region 9 RSLs. None of the samples exceeded the RSLs for munitions-related compounds and most samples were not above the PQL.

Soil samples were also collected at four locations in 2009 at MM-10F and MM-10G due to breached projectiles that were encountered. At MM-10F, concentrations in both composite samples collected were below RSLs. At MM-10G, concentrations of 2,4,6-TNT (53 milligrams per kilogram [mg/kg]) exceeded the action levels of 18 mg/kg in the samples collected. After a discussion between representatives of Navy, EPA, and ADEC, it was determined that additional sampling or soil excavation was not necessary on the basis that the concentration of TNT remaining in the soil does not pose risk to either human or ecological receptors.

Table 4-2. Sample Location Summary

Site	Sample ID	Detections
<i>2001 Field Season Sampling</i>		
C3-01A	C301-086 (not sampled in 2001 – work suspended at this site)	NA
C3-04A	C304-035	No
	C304-008A	No
C6-01A	C601-287	No
C8-01	C801-006	No
C8-03	C803-005A	No
	C803WX-001A	No
	C803-011A	Yes
	C803-014C	No
	C803-016	No
	C803-018A	No
	C803-019A	Yes
	C803-022A	Yes
	C803-029AEG	No
	C803-025KK	No
	C803-025L	Yes
C8-05A	C805-GF-004A	Yes
	C805-050	No
FB-03	FB03DX-002	No
LJ-01	LJ01-033 (only analyzed for nitroglycerin and nitrogaunidine)	No
	LJ01-053	No
	LJ01-070A (only analyzed for nitroglycerin and nitrogaunidine)	No
	LJ01-119 (only analyzed for nitroglycerin and nitrogaunidine)	No
ML-01A	ML01AG15-005	No
ML-02B	ML02-002A	No
	ML02-053	No
MM-10E	MM10E-488	No
	MM10E-490	No
MM-10A	MM10AG-408300	Yes
	MM10A-338	No
<i>2002 Field Season Sampling</i>		
C3-01A	C301ABP1	No
	C301ABP2	No
	C301AG8QC-034	No
C8-03	C803GridBQC-13	No
	C803QC-019C	Yes
	C803eQC-025E	No
	C803QC-19 Extra	No
	C803X3-001	Yes
	C803X4-001	No
	C803X3-002	No
FB-03	FB03G37-042A	No
	FB03G47-121	No

Table 4-2. Sample Location Summary (Continued)

Site	Sample ID	Detections
	FB03G47-122	No
	FB03G55-005	No
	FB03G64-006	No
MM-10E	M10ET01-299	No
	M10ET06D	No
	M10ET06FUZEC	No
	M10ET07FUZE2C	No
	M10ET07FUZEB	No
MM-11	MM11-001	No
<i>2009 Field Season Sampling</i>		
MM-10F	MM-10F-SOIL-01	Yes
	MM-10F-SOIL-02	Yes
MM-10G	MM-10G-SOIL-01	Yes
	MM-10G-SOIL-02	Yes

Table 4-3. Summary of Soil Analytical Detections for OU B-1

Sample ID	Concentration (mg/kg)								
	1,3,5-trinitrobenzene	2,4,6-TNT	2,4-DNT	2,6-DNT	2-amino-4,6-dinitrotoluene	4-amino-2,6-dinitrotoluene	RDX	Nitroguanidine	Tetryl
<i>Region 9 2013 RSLs</i>	2,200	19	1.6	0.33	150	150	5.6	6,100	120
<i>2001 ROD RSLs</i>	N/A	18	0.72 ^(b)	0.72 ^(b)	N/A	N/A	4.4	6,100	610
2001									
C803-19A		0.098	--	--	--	--	--	--	--
C803-22A		0.13	5.2	0.31	--	--	--	--	--
C803-25L		0.12	--	--	--	--	--	--	--
C803-042		--	--	--	0.19	--	5.9	--	--
C803-011A		0.18	--	--	0.11	0.16	--	--	--
C805-GF-004A		0.13	--	--	0.23	0.29	--	--	--
MM10AG-408300		0.088	--	--	--	--	--	--	--
2002									
C803X3-001		1.8 J	--	--	--	--	--	--	--
C803QC-019C		--	--	--	--	--	--	0.14 J	--
2009									
MM-10F-SOIL-01	--	--	--	--	--	--	--	--	0.24 J
MM-10F-SOIL-02	--	0.13 J	--	--	--	--	--	--	--
MM-10G-SOIL-01	0.11 J	53	--	--	0.27 J	0.38 J	--	--	0.79 J
MM-10G-SOIL-02 ^(a)	0.12 J	110	--	--	0.49 J	0.69 J	--	--	--

(a) Two 5-gallon buckets of soil were removed from the area of elevated soil concentrations at MM-10G. A sample of this excavated soil was collected.

(b) Value is EPA Region 9 RSL for 2,4-DNT and 2,6-DNT mixture. Only individual concentrations were provided (rather than the mixture results); therefore, the results were not compared to the mixture RSL from the 2001 ROD.

Bold value indicates exceedance of EPA Region 9 RSLs.

-- not detected above the PQL

J - estimated concentration

Note: EPA Region 9 RSLs from 2013 and 2001 ROD RSLs are listed.

5.0 DEMONSTRATION OF COMPLETION

This section describes remedial actions conducted at sites not designated as NOFA. Detailed description of activities completed and results of remedial actions are reported in the After Action Reports for Field Seasons 2001, 2002, 2004, and 2008, and 2008-2010 (Navy, 2002; Navy 2003b; Navy, 2005b; Navy, 2010; Navy, 2012a). A description of activities completed in NM-05, a NOFA site in the ROD, is also included in this section due to a discovery of MEC in 2012, which resulted in additional investigation at the site.

5.1 Bay of Islands Impact Area

The Bay of Islands Impact Area was identified from a single archive record that identifies the weapon system as a 155-mm gun located on the lower southeastern flanks of Mt. Moffett. It includes the firing point on Mt. Moffett and the safety range fan for the impact area which is southwest of downtown Adak on Expedition Harbor and outside the boundaries of the military installation. There are four AOCs within the Bay of Islands Impact Area. Two of the AOCs (BI-03, and BI-04) are in FUDS, one AOC (BI-01) was recommended for remedial action, and one AOC (BI-02) was recommended for NOFA in the OU B-1 ROD (Figure 5-1). Remedial actions were completed at BI-01 in 2004.

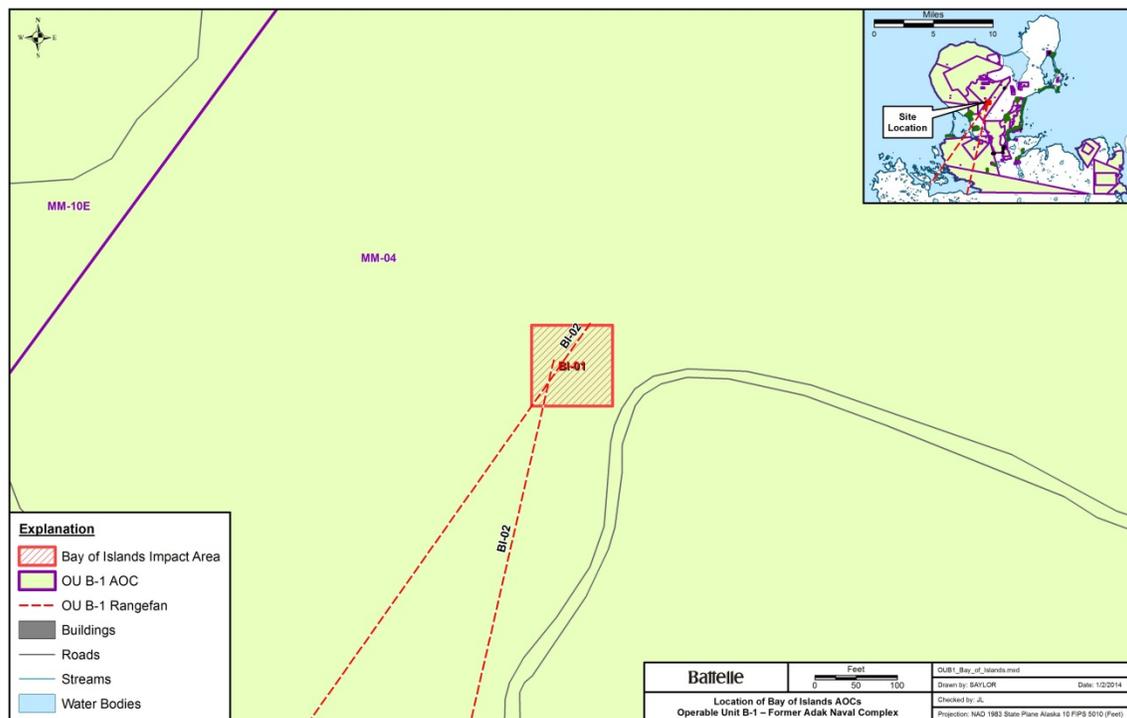


Figure 5-1. Bay of Islands Impact Area OU B-1 AOC Locations

BI-01

BI-01 firing point surrounds the former location of the 155-mm gun battery and is a documented defensive gun position. BI-01 is 0.22 acre located northwest of downtown Adak on the lower southwestern flanks of Mt. Moffett.

The ROD states that BI-01 was reconnoitered during the 2000 RI and recommended NOFA. However, no documentation of that inspection has been located so observational approach and presumptive clearance was the selected remedy for this site. The site was investigated again in the 2004 field season. No MEC items or related MD were identified, and the site was again recommended for NOFA. The ROD remedy was completed in 2004. In 2008, ADEC designated conditional closure with ICs for this site (ADEC, 2008).

5.2 Blind Cove/Campers Cove Impact Area

The Blind Cove/Campers Cove Impact Area is southeast of downtown Adak along the eastern shoreline of Adak Island. It is approximately 4,469 acres, including an area outside the military reservation. Terrain varies significantly, from the coastal lowlands to the steep, rocky peaks along the western boundary. This area includes two firing points and associated range safety fans, gun battery firing area and associated impact zone, and a maneuver area. There are 10 AOCs in Blind Cove/Campers Cove Impact Area. One AOC (BC-03) is included in OU B-2, eight AOCs (BC-02, BC-04, BC-05, BC-06, BC-07, BC-08, BC-09A, and BC-09B) were recommended for NOFA, and one AOC (BC-01) was recommended for remedial action in the OU B-1 ROD (Figure 5-2). Remedial actions were completed at BC-01 in 2002.

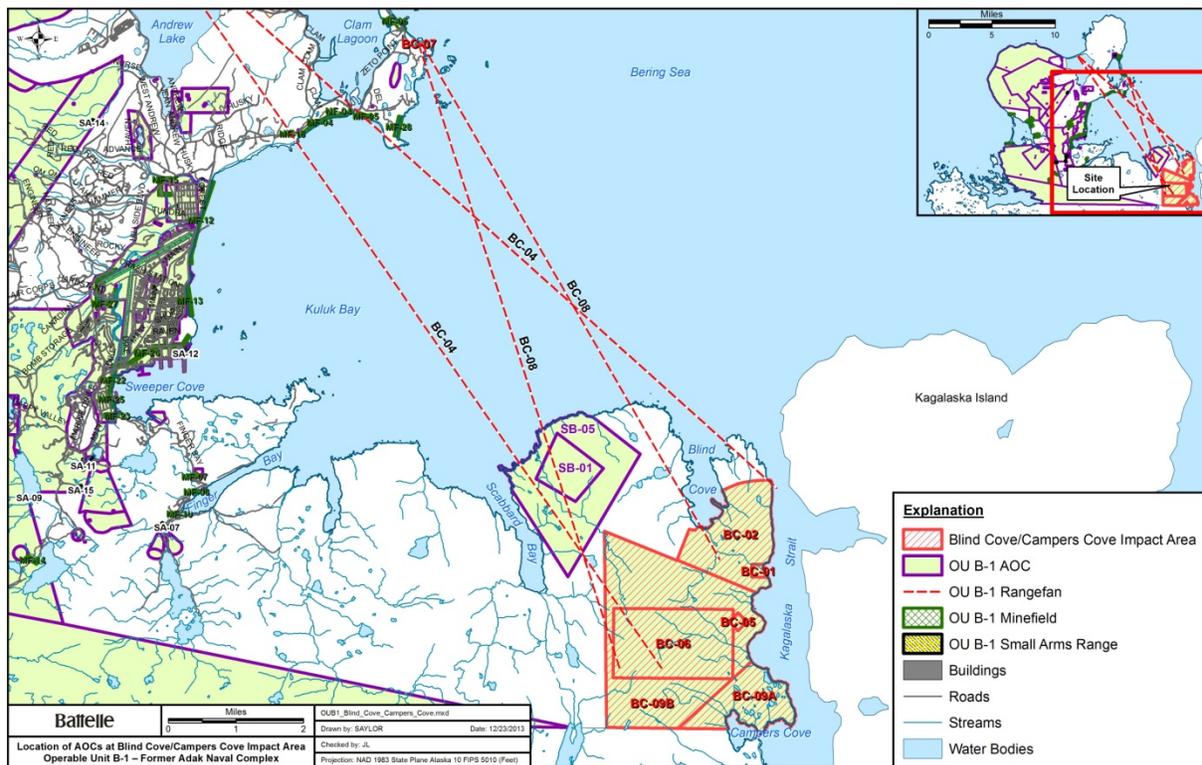


Figure 5-2. Blind Cove/Campers Cove Impact Area OU B-1 AOC Locations

BC-01 is located along the Kagalaska Strait where the terrain is relatively flat. This AOC is approximately 22 acres (300 by 300 meters) and served as an impact zone for gun battery firing.

Observational approach and presumptive clearance was the selected remedy for this site. In 2001, geophysical survey was conducted to the south of BC-01 and north of BC-09 with survey transects spaced at 115-m intervals. Nine targets were investigated, resulting in eight MD and one no find. Additional geophysical mapping in the form of 100-meter mini-grids was performed in 2002 as a result of the 2001 findings. Four 100-meter by 100-meter mini-grids and two 100-meter by 150-meter mini-grids were surveyed. One hundred and one targets were investigated. Sixty-three items were MD, one was non-ordnance related material, and 37 were no finds. Since no MEC items were identified during final characterization activities, the ROD remedy was completed in 2002.

5.3 Combat Range #1

Combat Range #1 is northwest of downtown Adak, encompassing approximately 4,400 acres of land area on the northern flank of Mt. Moffett. The entire sector is composed of rocky steep slopes separated by deep near-vertical ravines continuing down to the water's edge. A small rocky beach is present at the base of the mostly vertical cliffs. Three AOCs are within Combat Range #1. One AOC (C1-01) is included in OU B-2 and the other two AOCs (C1-02 and C1-03) were recommended for remedial action in the OU B-1 ROD (Figure 5-3). Remedial action was completed at C1-02 in 2004 and C1-03 in 2002.

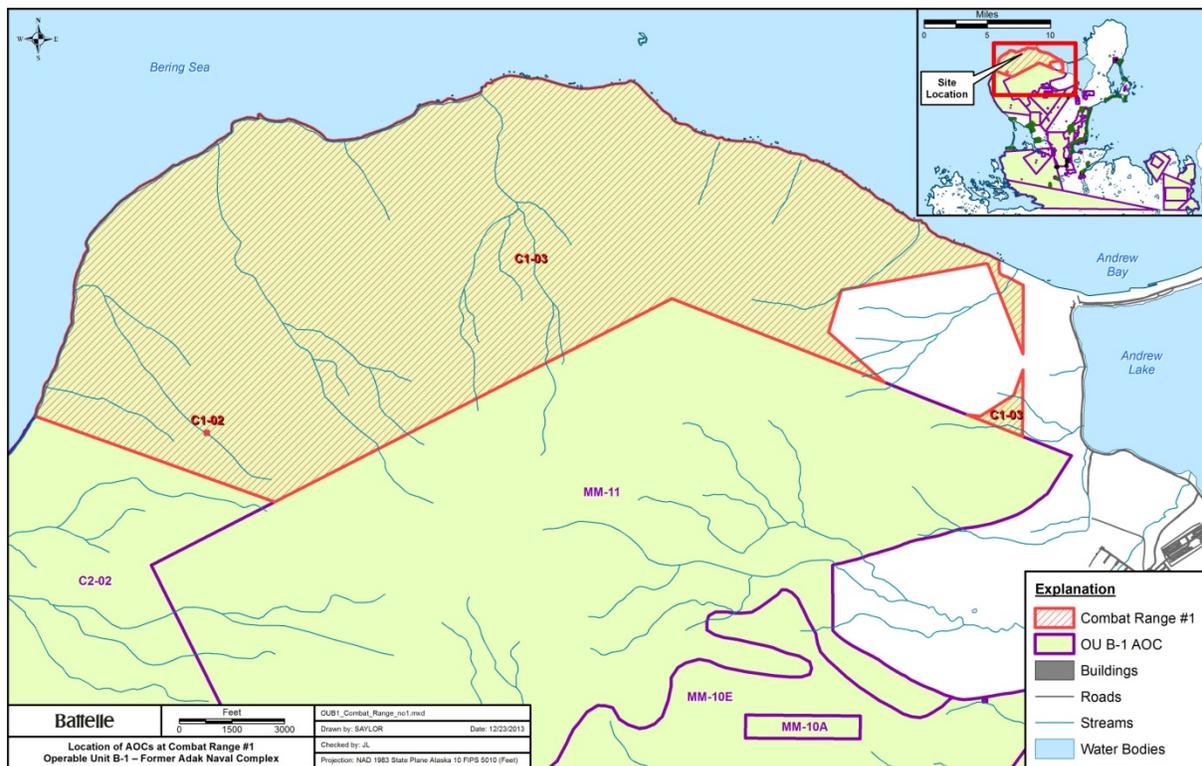


Figure 5-3. Combat Range #1 OU B-1 AOC Locations

C1-02

C1-02 is located within the Combat Range #1 sector on the northwest flank of Mt. Moffett, and is 0.22 acre. Access to this site is severely limited by its location and topography. The nearest vehicle access point is 4.3 miles.

Observational approach and presumptive clearance was the selected remedy for this site due to a mechanical time fuze found during the SI. Two attempts were made to reach this site using an all-terrain vehicle in 2004, but both attempts were terminated due to dense fog, heavy rain, and difficult terrain. The extremely isolated location of C1-02 significantly reduces the potential for the occurrence of casual hikers, and there are no locations of significant interest associated with this site. Further, this site is covered in snow approximately eight months out of the year. Because C1-02 is at least as unlikely to experience human usage as many of the sites deemed inaccessible (i.e., slopes in excess of 30 degrees) that are much closer to downtown Adak, the Navy recommended C1-02 for NOFA due to inaccessibility. In 2008, ADEC designated conditional closure with ICs for the site (ADEC, 2008).

C1-03

Mortar Target Area, C1-03, is approximately 4,125 acres and encompasses the northern side of Mt. Moffett and is characterized by steep terrain and inaccessible slopes. C1-03 was transferred from OU B-2 to OU B-1 to facilitate transfer of real property to BLM and then to TAC.

Because the targets identified during the RI in 2000 were not intrusively investigated, this site was selected for observational approach and presumptive clearance remedy. In 2002, the targets identified in 2000 were intrusively investigated. Two additional 30-meter by 30-meter grids were identified and investigated, bringing the total number of targets identified to 206. Six items were identified as MD and the remaining 200 targets were classified as no finds. The ROD remedy was completed in 2002.

5.4 Combat Range #2

Combat Range #2 is northwest of downtown Adak, encompassing approximately 3,401 acres of land area on the western flank of Mt. Moffett. This sector is mainly composed of large sloping plateaus on the side of Mt. Moffett between moderately steep drainages. Combat Range #2 sites were transferred from OU B-2 to OU B-1 to facilitate transfer of the property. There were originally two AOCs within Combat Range #2; however, C2-01 was divided into two separate AOCs. All three AOCs (C2-01A, C2-01B, and C2-02) were recommended for remedial action in the OU B-1 ROD (Figure 5-4). Remedial action was completed at all three sites in 2002.

C2-01A

C2-01A is located at the northwestern end of Combat Range #2 on the lower flanks of Mt. Moffett and encompasses 0.2 acre. C2-01A lies within a small patch of rolling terrain surrounded on the north and south by inaccessible terrain.

The targets identified during the RI were not intrusively investigated; therefore, the site was selected for observational approach and presumptive clearance remedy. The 27 targets identified during the RI in 2000 were intrusively investigated in 2002. No MEC or MD items were found. All 27 targets investigated were classified as no finds. The ROD remedy was completed in 2002.

C2-01B

C2-01B is located at the northwestern end of Combat Range #2 on the lower flanks of Mt. Moffett and encompasses 0.2 acre. C2-01B area lies within a small patch of rolling terrain surrounded on the north and south by inaccessible terrain.

Five targets were identified during the RI but were not intrusively investigated; therefore, the site was selected for observational approach and presumptive clearance. The five targets identified in 2000 were intrusively investigated in 2002. One MD item was identified and the remaining four targets were classified as no finds. The ROD remedy was completed in 2002.

C2-02

Combat Range C2-02 is approximately 3,365 acres and encompasses the western side of Mt. Moffett and is characterized by steep terrain with some flatter areas near the base of the mountain and many inaccessible slopes near the top.

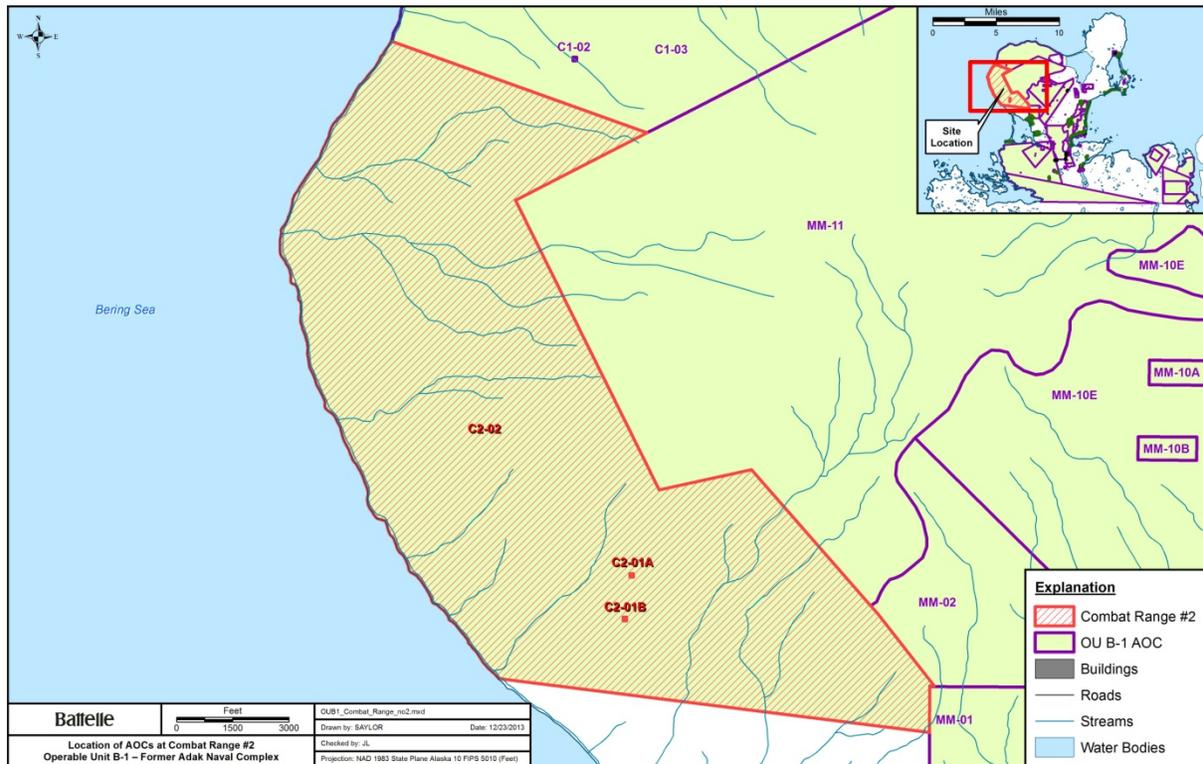
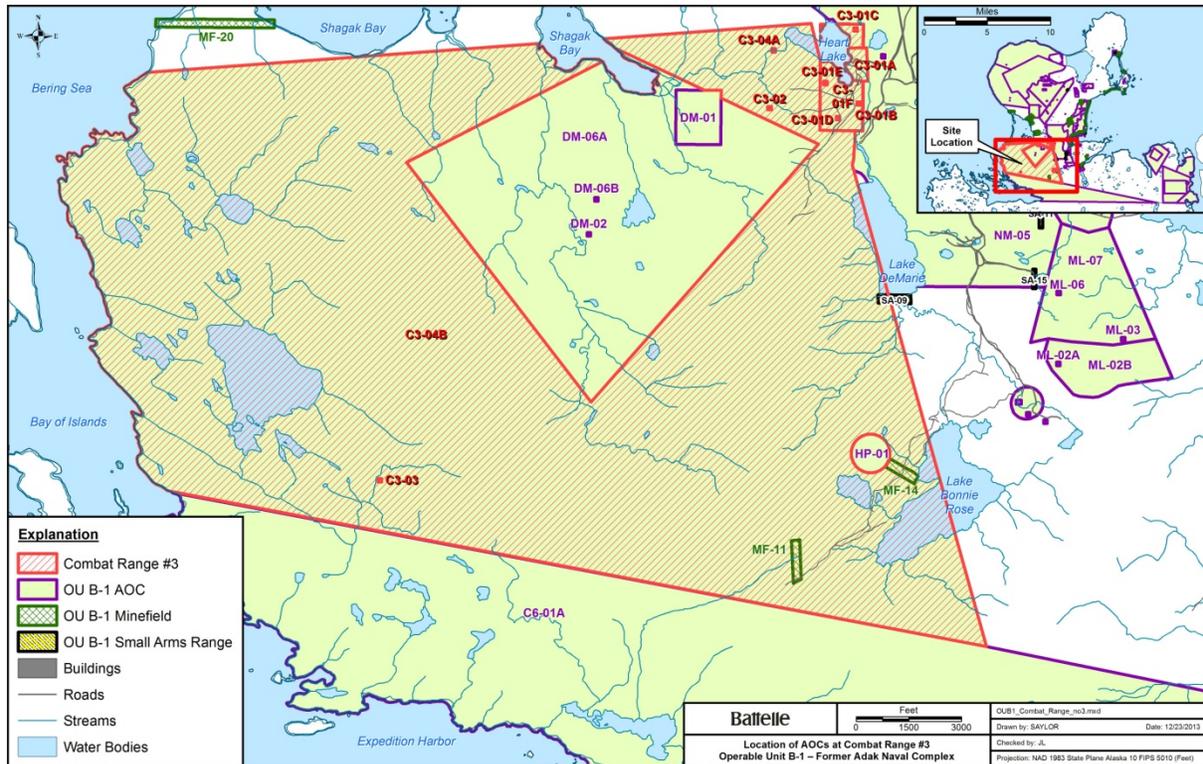


Figure 5-4. Combat Range #2 OU B-1 AOC Locations

Five hundred and ninety targets were identified during the RI but were not intrusively investigated; therefore, the site was selected for observational approach and presumptive clearance remedy. An additional six 30-meter by 30-meter grids were mapped during the 2002 field investigation making a total of 698 targets identified and intrusively investigated. Fifteen MD and five metal waste items were recovered and 678 targets were classified as no finds. Verification sampling was performed on 17% of the no finds in this AOC by a QC intrusive team and no additional metallic items were recovered. The high number of no finds is likely due to the roughness of the terrain in this AOC. The ROD remedy was completed in 2002.

5.5 Combat Range #3

Combat Range #3 is a trapezoidal area southwest of downtown Adak. The area stretches between Mt. Reed and Shagak Bay and encompasses the Lake DeMarie Impact Area, which was evaluated separately. Combat Range #3 is approximately 6,124 acres (excluding the Lake DeMarie Impact Area) and has a variety of terrain and vegetation. This area is divided north to southeast by the Mt. Reed mountain range. There were originally four AOCs in this area; however, C3-01 has been divided into six AOCs (C3-01A through F) and C3-04 has been divided into C3-04A and C3-04B, creating a total of 10 AOCs. Four AOCs (C3-01F, C3-02B, C3-02, and C3-03) were recommended for NOFA. The remaining six AOCs (C3-01A through E and C3-04A) were recommended for remedial action in the OU B-1 ROD (Figure 5-5). The remedial action was completed at C3-01B, C3-01C, C3-01D, and C3-04 in 2001 and at C3-01A and C3-01E in 2002.



C3-01A

AOC C3-01A, the Cove Disposal Area, encompasses approximately 18 acres along the southeastern shoreline of Heart Lake. The terrain is flat along the lakeshore with a steep bank rising up from the lake to the east.

C3-01A is an area that clearly appeared to have been extensively used for munitions disposal. Two hundred and thirty-four targets were identified during the RI; however, only a portion of the targets was intrusively investigated. The site was selected for MEC removal to 4 ft bgs and chemical sampling, removal, and on-site/off-site treatment and disposal of soils.

In the 2001 field season, a 10-acre area was investigated as part of C3-01A. A 100% geophysical survey was conducted and intrusive activity was completed for 22 of 29 grids in 2001. Of the 1,009 targets investigated, 113 were MEC and 263 were MD. Remedial actions at this site could not be completed in the 2001 field season because of the high degree of metallic contamination at the site.

Remedial activities resumed in the 2002 field season. The site was expanded to 18 acres as a result of the grid expansion associated with MEC finds (i.e., the number of 100% geophysical survey grids increased from 29 to 34 and 24 buffer zone expansions). In addition, 1,070 yd³ of soil was excavated, spread into 6-inch layers and the material was searched for anomalies using handheld metal detectors. Sixteen hundred and forty-three targets were investigated in 2002, resulting in the recovery of 242 MEC, 327 MD, and 576 metal waste items. The remaining 498 targets were no finds, no digs, and digs abandoned. C3-01A was certified as completed by the AOC Certification Board on December 18, 2002.

C3-01B

C3-01B (Mortar #1) is a 30-meter by 30-meter square encompassing 0.2 acre. The terrain is relatively flat in this AOC.

Because the area was not subjected to the prescribed search methodology for a lone MEC item during the RI, insufficient data were available to adequately score the site according to the ESHA process. The site was selected for observational approach and presumptive clearance. The remedial action technique used consisted of geophysical mapping of the grid using 5-meter transect spacing. Twenty-eight targets were investigated and all were classified as metal waste. No MEC or MD items were found. The ROD remedy was completed in 2001.

C3-01C

C3-01C (Mortar #2) is a 30-meter by 30-meter square encompassing 0.2 acre. The terrain is relatively flat in this AOC.

Because the area was not subjected to the prescribed search methodology for a lone MEC item during the RI, insufficient data were available to adequately score the site according to the ESHA process. The site was selected for observational approach and presumptive clearance. The remedial action technique used consisted of geophysical mapping of the grid using 5-meter transect spacing. No targets were identified at this site. The ROD remedy was completed in 2001.

C3-01D

C3-01D, Mortar #3, is a 30-meter by 30-meter square encompassing 0.2 acre. The terrain is relatively flat in this AOC.

Because the area was not subjected to the prescribed search methodology for a lone MEC item during the RI, insufficient data were available to adequately score the site according to the ESHA process. The site was selected for observational approach and presumptive clearance. The remedial action technique used consisted of geophysical mapping of the grid with a 5-meter transect mini-grid. One target was identified and investigated and classified as MD. The ROD remedy was completed in 2001.

C3-01E

C3-01E, Bomb Tail Fuze, is a 30-meter by 30-meter square encompassing 0.2 acre. This area was expanded to 2.71 acres in 2002 due to buffer zone expansions. The terrain is relatively flat in this AOC.

Because the area was not subjected to the prescribed search methodology for a lone MEC item during the RI, insufficient data were available to adequately score the site according to the ESHA process. The site was selected for observational approach and presumptive clearance. The technique used consisted of 100% geophysical mapping of the 30-meter grid. During the 2001 fieldwork, the boundary for this area was expanded to the west and northeast nine times due to the presence of MEC and MD. There were 65 targets investigated with 17 MEC items, 23 MD, and 19 metal waste items recovered. The remaining six targets were no finds. Since MEC and MD were encountered within 15 meters of the boundary, the site required additional investigation in 2002. Work included eight expansions comprising 100% geophysical mapping to achieve the required 15-meter buffer zone around any MEC. Seventy-two targets were identified and intrusively investigated. One MEC (a bomb fuze), 10 MD, and 13 metal waste items were recovered. Forty-eight targets were classified as no finds. The ROD remedy was completed in 2002.

C3-04A

C3-04A, Bomb Booster, is a small 30-meter by 30-meter square encompassing 0.2 acre. The terrain is relatively flat in this AOC.

The area was not investigated using the prescribed search pattern for a lone MEC item during the RI, and, therefore, insufficient data were available to adequately score the site according to the ESHA process. The site was selected for observational approach and presumptive clearance and chemical sampling, removal, and on-site/off-site treatment and disposal of soils. The technique used consisted of geophysical mapping in the 15-meter expansion areas using 5-meter transects. The boundary of the area was significantly expanded due to the presence of MEC and MD. Four hundred targets were identified and intrusively investigated. Four MEC items and 208 MD were identified. The remaining targets were metal waste, no finds, and no digs. The booster was one of the items identified and all items were removed and treated on October 9, 2001 after a full sweep of the area was completed. All of the items discovered were determined to be from a one-time aircraft jettison. The ROD remedy was completed in 2001.

5.6 Combat Range #6

Combat Range #6 is a triangular area that stretches nearly across the entire width of Adak near the military reservation boundary. The orientation is such that a portion of Combat Range #6 is in the military reservation and a portion of the range is located outside the military reservation in the wildlife refuge. Only the approximately 6,820 acres located in the military reservation was included in OU B-1. The majority of the topographic formations noted in Combat Range #6 consist of high mountains separated by large, wide valleys. There were originally two AOCs in Combat Range #6. C6-01 was divided into two AOCs (C6-01A and C6-01B) during the RI due to different levels of munitions-related historical land use on each area. C6-02 was determined to be the responsibility of Army Corps of Engineers under the DERP/FUDS program and has been removed from the Navy BRAC program. C6-01B was recommended for NOFA and C6-01A was recommended for remedial action in the OU B-1 ROD (Figure 5-6). Remedial action was completed at C6-01A in 2001.

C6-01A

C6-01A is a 1-acre portion of the Military Reservation Area located in Combat Range #6 on the southwest slope of Mt. Reed. The terrain is moderately steep and rolling.

The site was selected for MEC removal to 4 ft bgs and chemical sampling, removal, and on-site/off-site treatment and disposal of soils. During the 2001 field season, Site C6-01A was expanded as a result of the multiple MEC items found along the eastern boundary during the RI. A 100% geophysical survey was conducted over the C6-01A AOC along with the buffer areas. One hundred and fifty-eight targets were identified and investigated. Two MEC items were found and the remaining targets were identified as MD or metal waste. C6-01A was certified as completed by the AOC Certification Board following the 2001 field season activities.

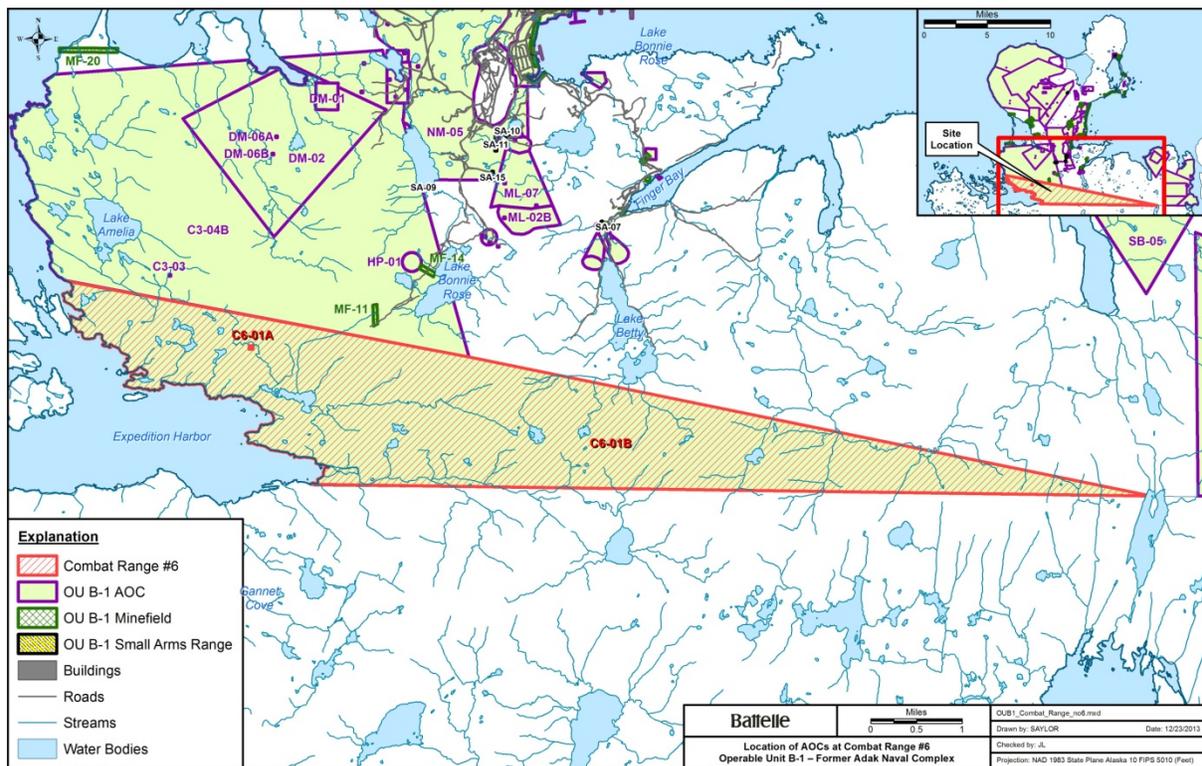


Figure 5-6. Combat Range #6 OU B-1 AOC Locations

5.7 Combat Range #8

Combat Range #8 is located a short distance east of the southern tip of Andrew Lake. The range is approximately 158 acres and encompasses a wide variety of terrain and vegetation. A very large, steep ravine bisects the area from north to south near the eastern side. At the head of this ravine is a small lake and associated wetlands. Near the southern border of the sector is a larger lake and another wetland. This sector also contains a manmade rock quarry in the southeastern corner. Near the east end of Combat Range #8, above the rock quarry, there are numerous foundations, piles of wood debris and trash associated with former Quonset huts or other small buildings which may have been used to house troops. There were originally five AOCs in Combat Range #8. AOC C8-05 was divided into two AOCs (C8-05A and C8-05B) due to evidence of different levels of munitions-related land use in the area resulting in a total of six AOCs in Combat Range #8. AOCs C8-02, C8-04, and C8-05B were recommended for NOFA and AOCs C8-01, C8-03, and C8-05A were recommended for remedial action the OU B-1 ROD (Figure 5-7). Remedial action was completed at C8-05A in 2001, C8-03 in 2003, and C8-01 in 2004.

C8-01

C8-01, Eastern Disposal Site, is a small 30-meter by 30-meter square encompassing 0.2 acre. This area was expanded to approximately 0.3 acre in 2004 to ensure an adequate buffer. The site is located on the eastern boundary of Combat Range #8, midway along the boundary in the north/south direction. The terrain is characterized by rolling steep hills and ravines with interspersed flat areas.

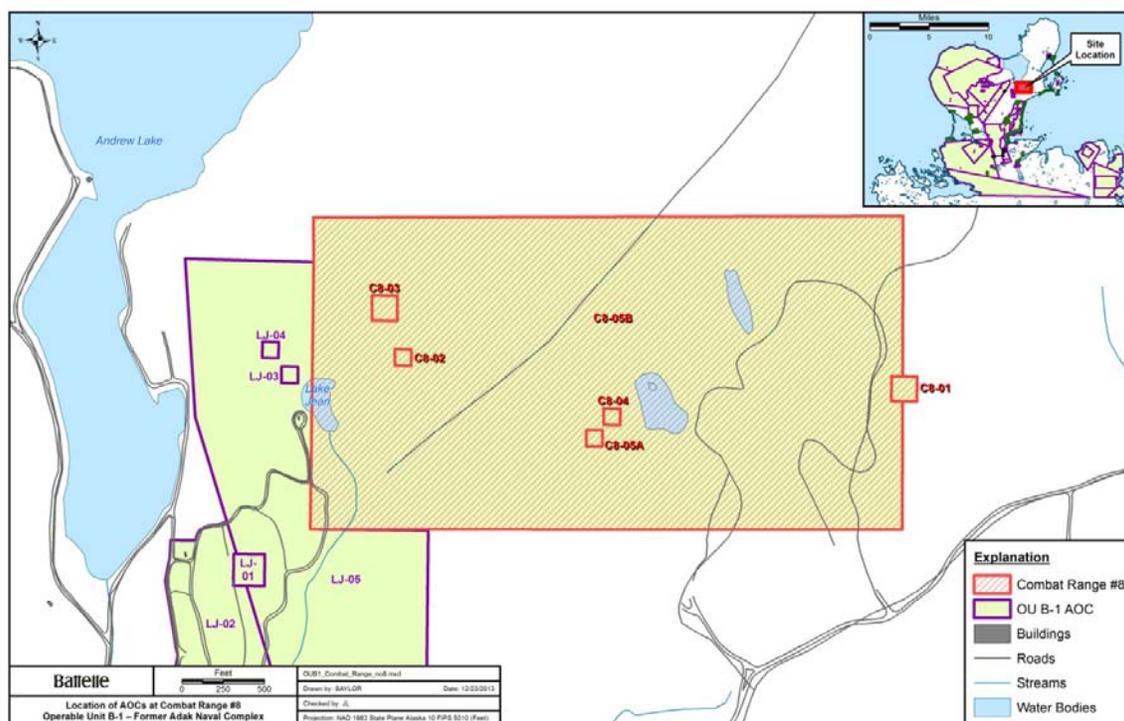


Figure 5-7. Combat Range #8 OU B-1 AOC Locations

The site was selected for observational approach and presumptive clearance and chemical sampling, removal, and on-site/off-site treatment and disposal of soils. During the 2001 field season, 100% geophysical mapping of the site was conducted due to items discovered during the RI including four MEC items. Thirty-four targets were identified and intrusively investigated. One MEC item and one MD item were found near the boundary of the site. Based on these findings, additional remedial activity in expansion areas was performed in 2004. The expansion area received 100% geophysical mapping to ensure an adequate 15-meter buffer around the previously discovered items. Twenty-two targets were identified and 19 targets were classified as metal waste and the remaining three were no finds. No MEC items or MD were found during the 2004 field season. The ROD remedy was completed in 2004. In 2008, ADEC designated conditional closure with ICs for this site (ADEC, 2008).

C8-03

C8-03, Western Disposal Site, is located in the northwestern portion of Combat Range #8, about 300 ft northwest of C8-02. C8-03 encompasses approximately 0.6 acre and the terrain is moderately steep. Expansion of the boundary conducted in 2002 increased the site to approximately 5 acres.

Insufficient data were collected during the RI to conduct the ESHA; therefore, the site was selected for observational approach and presumptive clearance in the ROD. Geophysical grids were laid out along the southern and eastern border of the site, and around the additional item found outside of the site boundaries in 2001. A 100% geophysical survey was conducted at the site. Two hundred and twenty-five targets were investigated and 120 were MEC. Sixty targets were MD, 19 were metal waste, and 20 targets were no finds. This site required further expansion due to the presence of MEC at the eastern, southern, and western boundaries. In 2002, 100% geophysical mapping was performed in three buffer zone expansions and 267 targets were investigated. Twenty-six MEC, 93 MD, 10 metal waste, and one other item were recovered. The remaining 137 targets were no finds. The ROD remedy was completed in 2002.

C8-05A

C8-05A is a 30-meter by 30-meter square where the terrain is moderately steep.

Because the area was not subjected to the prescribed search methodology for a lone MEC item during the RI, insufficient data were available to adequately score the site according to the ESHA process. The site was selected for observational approach and presumptive clearance and chemical sampling, removal, and on-site/off-site treatment and disposal of soils. The technique used consisted of a 100% geophysical mapping of the 30-meter square grid. Fifteen targets were investigated and no MEC or MD items were found. All targets were classified as metal waste. The ROD remedy was completed in 2001.

5.8 Finger Bay Ammunition Pier

This area is located along the northern shoreline of Finger Bay, south of downtown Adak. It consisted of a large L-shaped, wooden pier where munitions were off loaded during the WWII-era. The pier has been dismantled. The terrain in the area where the pier met the shoreline is relatively flat and somewhat rocky. There is little or no vegetation along the shore. There are two AOCs in this area (FBAP-01 and FBAP-02). FBAP-01 was recommended for NOFA and FBAP-02 was recommended for remedial action in the OU B-1 ROD (Figure 5-8). Remedial action was completed at FBAP-02 in 2001.

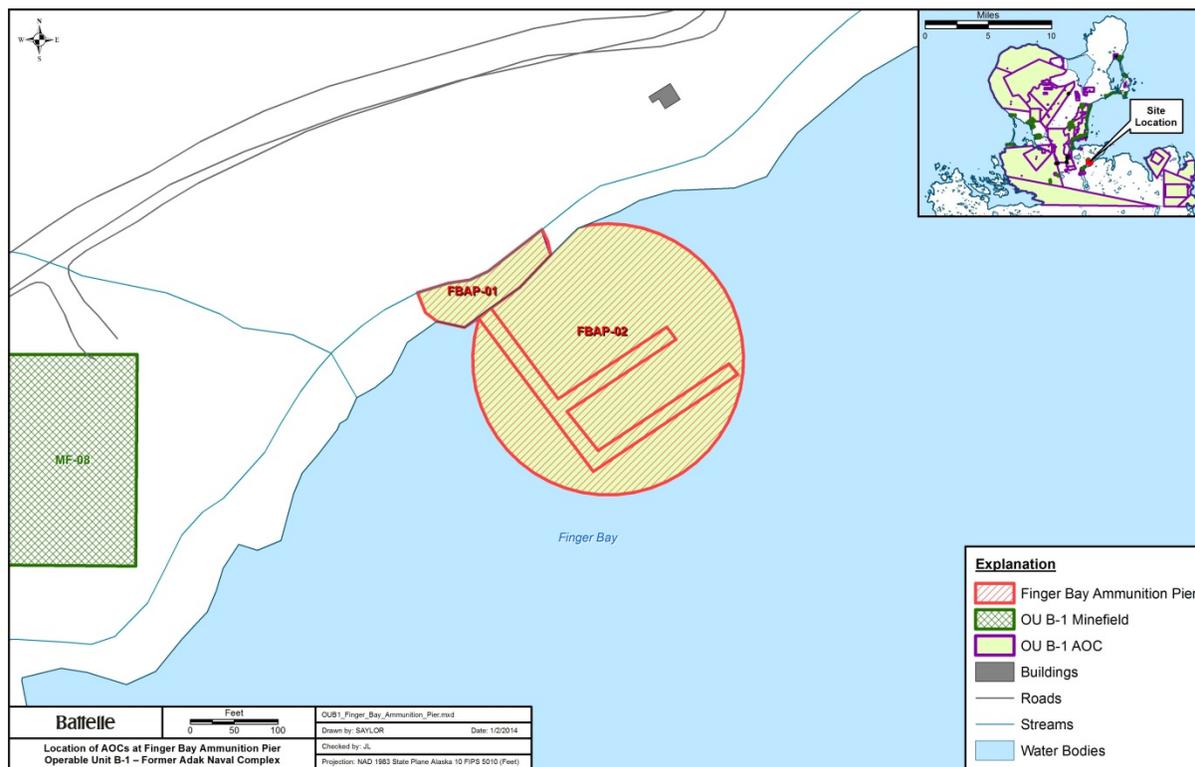


Figure 5-8. Finger Bay Ammunition Pier OU B-1 AOC Locations

FBAP-02

FBAP-02 is the area underlying the location of the former Finger Bay Ammunition Pier. This AOC was not investigated during the RI and was not evaluated in the ESHA process; therefore, it was selected for observational approach and presumptive clearance and final characterization by underwater survey. The reconnaissance survey was performed during an underwater dive in 2001. The goal of this dive was to determine whether any unauthorized abandonment of munitions occurred at the site. Observational data collected during the reconnaissance survey revealed that no munitions-related materials were observed at this site. The ROD remedy was completed in 2001.

5.9 Finger Bay Impact Area

Finger Bay Impact Area is located southeast of downtown Adak and upgradient from the head of Finger Bay. This sector is about 446 acres and has a variety of terrain and vegetation. A large stream running north between Lake Betty and Finger Bay bisects the area. Some structural remnants are visible in the Finger Bay Impact Area including fence poles and small wooden foundations. There are nine AOCs in this impact area. Six AOCs (FB-02, FB-05, FB-06, FB-07, FB-08, and FB-09) were recommended for NOFA and three AOCs (FB-01, FB-03, and FB-04) were recommended for remedial action in the OU B-1 ROD (Figure 5-9). Remedial action was completed at FB-01 and FB-04 in 2001 and FB-03 in 2002.

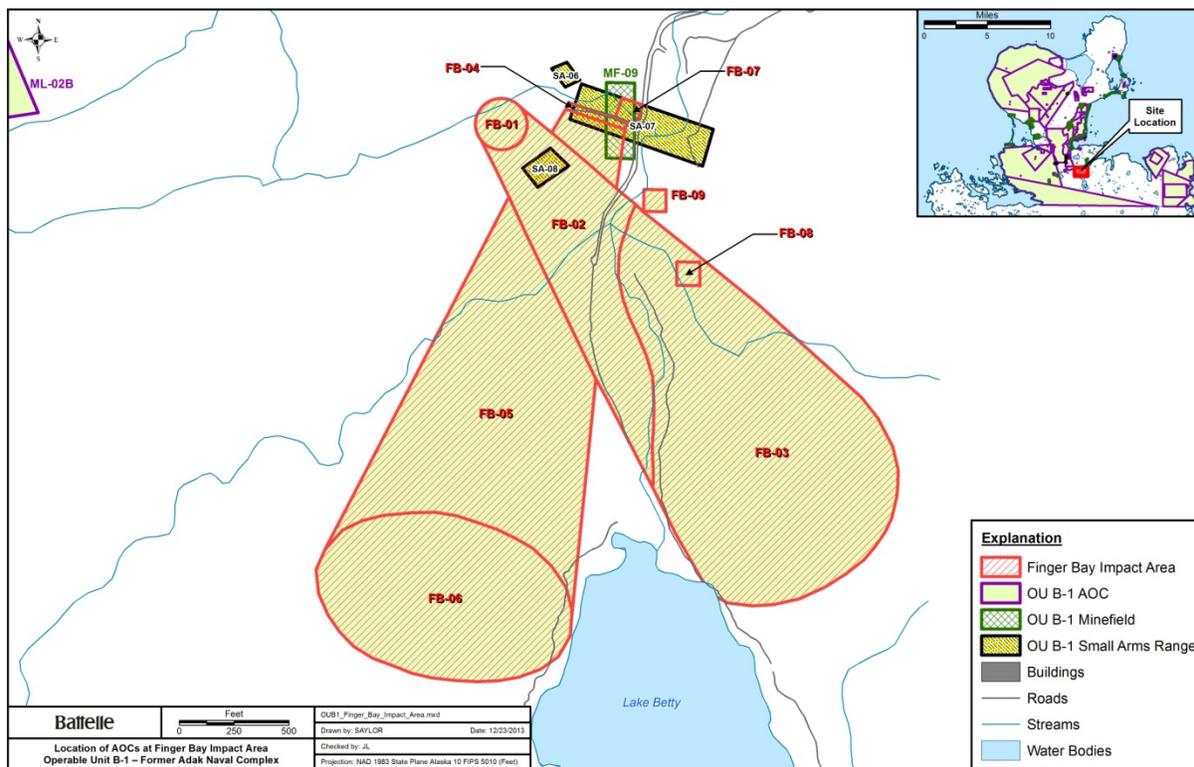


Figure 5-9. Finger Bay Impact Area OU B-1 AOC Locations

FB-01

FB-01, Mortar Firing Point, is a circular area, approximately 200 ft in diameter (0.7 acre), which has been identified from historical photographs as the firing point for the mortar target area within the Finger Bay Impact Area. The terrain is relatively flat, sloping gently toward the creek at the center of the Finger Bay Impact Area.

This AOC was not investigated during the RI or evaluated in the ESHA process. While this site was not evaluated in the FS, the FS identified this site as one that requires additional investigation and potential remedial action, based on historical use of the site. The site was selected for observational approach and presumptive clearance. Reconnaissance data collected in 2001 showed no indication of contamination by MEC or MD. The ROD remedy was completed in 2001.

FB-03

FB-03, Mortar Impact Area, begins about 1,000 ft from the Mortar Firing Point site and continues out to a distance of about 2,500 ft and encompasses approximately 31 acres (18 acres of which are accessible). FB-03 begins on the east side of the creek, central to the Finger Bay Impact Area. The terrain is generally very steep.

Although the site received an ESHA score of “A” during the RI, it was identified for additional investigative work at four target sites where MD was found. The site was selected for observational approach and presumptive clearance. In 2001, geophysical mapping of the 30-meter square grids comprising 5-meter transects centered on the referenced anomalies was conducted. The site was divided into four subsites, FB-03A through FB-03D, corresponding to the previously-identified anomalies.

Geophysical work was completed at sites FB-03A and FB-03B during the 2001 field season. The investigation area expanded well beyond the initial two grids for FB-03C and FB-03D to nearly 13 acres. Fifty-seven anomalies were investigated at these four subsites and two MEC items were found. Sites FB-03C and FB-03D contained the MEC which included a 3.5-inch rocket found at FB-03C and a 2.36-inch anti-tank rocket found at FB-03D. MEC and MD were not found at FB-03A or FB-03B. The work in FB-03C and FB-03D was not completed during the 2001 field season due to boundary expansions.

During the 2002 field season, 38 50-meter by 50-meter 100% geophysical mapping grids were completed. Two thousand four hundred and two targets were investigated. Thirteen MEC, 709 MD, 1,298 metal waste and 87 other items were recovered. The remaining targets included four identified as hot geology, 167 no finds, 108 no digs, and 21 excavations abandoned. Three exception areas were not completely excavated. One exception area included anomalies associated with a heavy cargo sled. The second exception area included anomalies associated with a large electric motor bolted to a concrete pad, and the final exception area included anomalies associated with a maintenance area, wooden structures, and a small arms firing line. The Project Team approved these exceptions. The ROD remedy was completed in 2002.

FB-04

FB-04 is a narrow rectangular area that encompasses approximately 0.2 acre and is identified as the firing point for projectiles in the Finger Bay Impact Area. The terrain is relatively flat in this AOC.

This site was referred to the RI; however, it was not investigated in the RI and was not evaluated in the ESHA process. While this site was not evaluated in the FS, the FS identified this site as one that requires additional investigation and potential remedial action based on historical use of the site.

The site was selected for observational approach and presumptive clearance. Implementing the remedy first required performing a reconnaissance survey using visual inspection and hand-held geophysical detectors to define the areas requiring final characterization. The goal was to determine whether any unauthorized burial or munitions abandonment occurred at this site. Reconnaissance data collected in 2001 showed no indication of contamination by munitions-related materials and no MEC items were observed. The ROD remedy was completed in 2001.

5.10 Gun Emplacements

Gun emplacements were used on Adak for several types of weapons. There were four 20-mm, two 37-mm, and 29 40-mm gun emplacement locations reportedly on Adak. Additional larger caliber coastal defense artillery emplacements have been identified and are included as separate AOCs. These three gun-type emplacement areas (GUN-01, GUN-02, and GUN-03) were recommended for remedial action in the OU B-1 ROD (Figure 5-10). Remedial action was completed for all three gun-type emplacement AOCs in 2001.

GUN-01

Four general locations for 20-mm gun emplacements have been identified on Adak using the historical data available. These weapons were mounted on fixed gun mounts in relatively small gun emplacements with protective berms. It was assumed that the area of interest for each potential location would be a 30-meter by 30-meter square surrounding the gun that would represent the likely area for storage or disposal of ammunition.

The exact locations of these four sites are not well documented and none of the sites were inspected or investigated during the SI or RI. The sites were selected for site reconnaissance and observational

approach and presumptive clearance. Implementing the remedy first required performing a reconnaissance survey using visual inspection and hand-held geophysical detectors to define the areas requiring final characterization. The goal of the work was to determine whether any unauthorized burial or abandonment of munitions occurred at this site. Reconnaissance data collected in 2001 revealed the presence of MD; however it was determined to not be from the firing point at GUN-01. Therefore, no further investigation was warranted and the ROD remedy was completed in 2001.

GUN-02

Two general locations for 37-mm gun emplacements have been identified on Adak using available historical data. These weapons were mounted on fixed gun mounts in relatively small gun emplacements with protective berms. It was assumed that the area of interest for each potential location would be a 30-meter by 30-meter square surrounding the gun that would represent the likely area for storage or disposal of ammunition.

The exact locations of these two sites are not well documented and neither site was inspected or investigated during the SI or RI. The sites were selected for site reconnaissance and observational approach and presumptive clearance. Implementing the remedy first required performing a reconnaissance survey using visual inspection and hand-held geophysical detectors to define the areas requiring final characterization. The goal of the work was to determine whether any unauthorized burial or abandonment of munitions occurred at this site. Reconnaissance data collected in 2001 revealed MEC (non-electrical blasting cap). This type of MEC is not associated with activity at the firing point at GUN-02. Therefore, no further investigation was warranted and the ROD remedy was completed in 2001.

GUN-03

Twenty-nine potential locations for 40-mm gun emplacements were identified on Adak using historical aerial photography and available data. These weapons were placed on fixed locations that had specially constructed protective berms and nearby ammunition storage trenches.

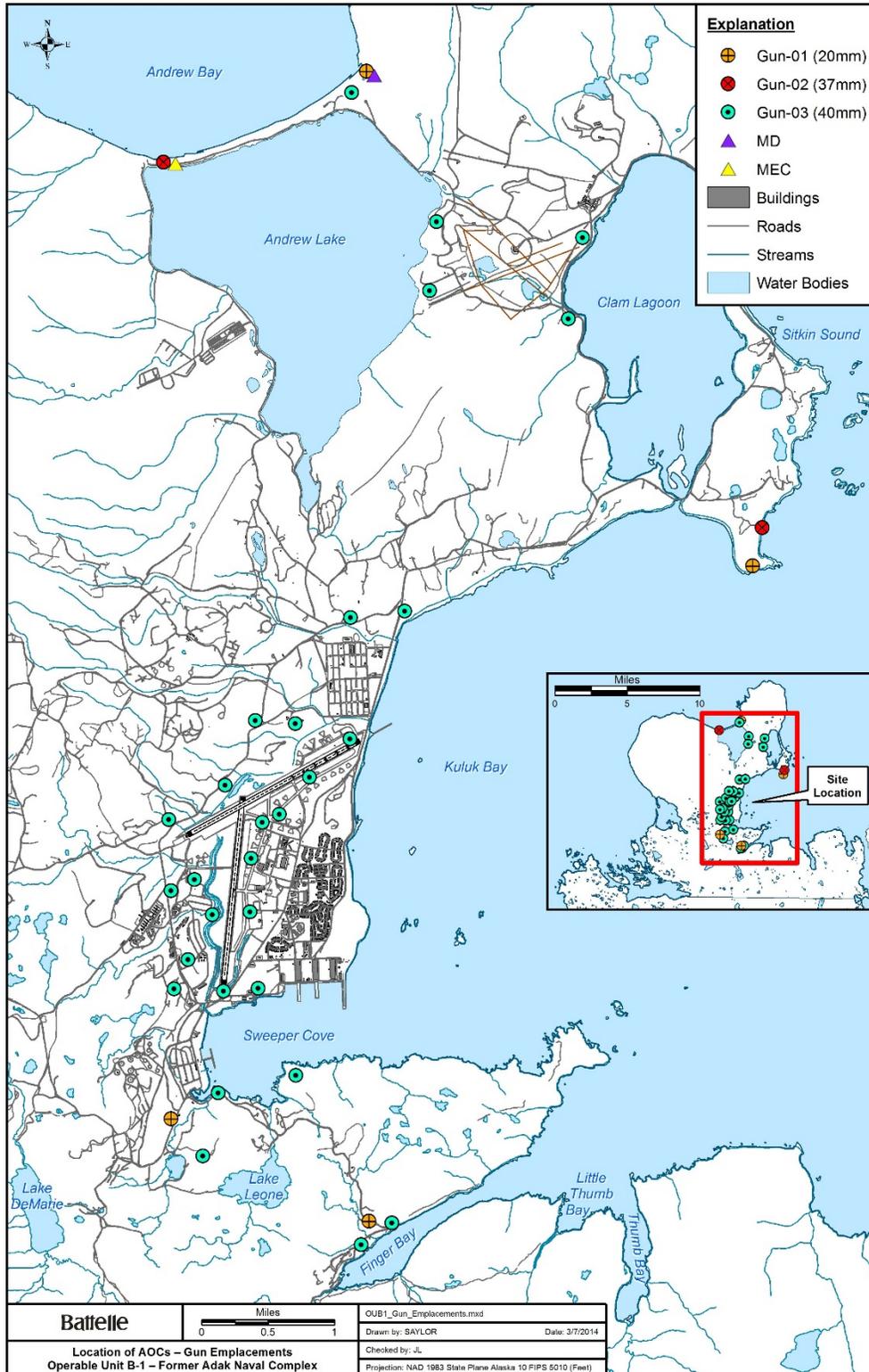


Figure 5-10. OU B-1 Gun Emplacement Locations

The majority of the GUN-03 sites were not investigated during the SI or RI. The area of each gun site was assumed to be a 30-meter by 30-meter square surrounding the gun that would represent the storage or disposal area for ammunition.

The GUN-03 sites were selected for site reconnaissance and observational approach and presumptive clearance. Implementing the remedy first required performing a reconnaissance survey using visual inspection and hand-held geophysical detectors to define the areas requiring final characterization. The goal was to determine whether any unauthorized burial or abandonment of munitions occurred at this site. No MEC or MD items were found during the reconnaissance survey in 2001. Therefore, no further investigation was warranted and the ROD remedy was completed in 2001.

5.11 Husky Pass

Husky Pass is located to the south of downtown Adak. There is one AOC (HP-01) in this area. This site was identified after the PA/SI and RI/FS activities; therefore, it was recommended for remedial action in the OU B-1 ROD (Figure 5-11). Remedial action was completed at HP-01 in 2001.

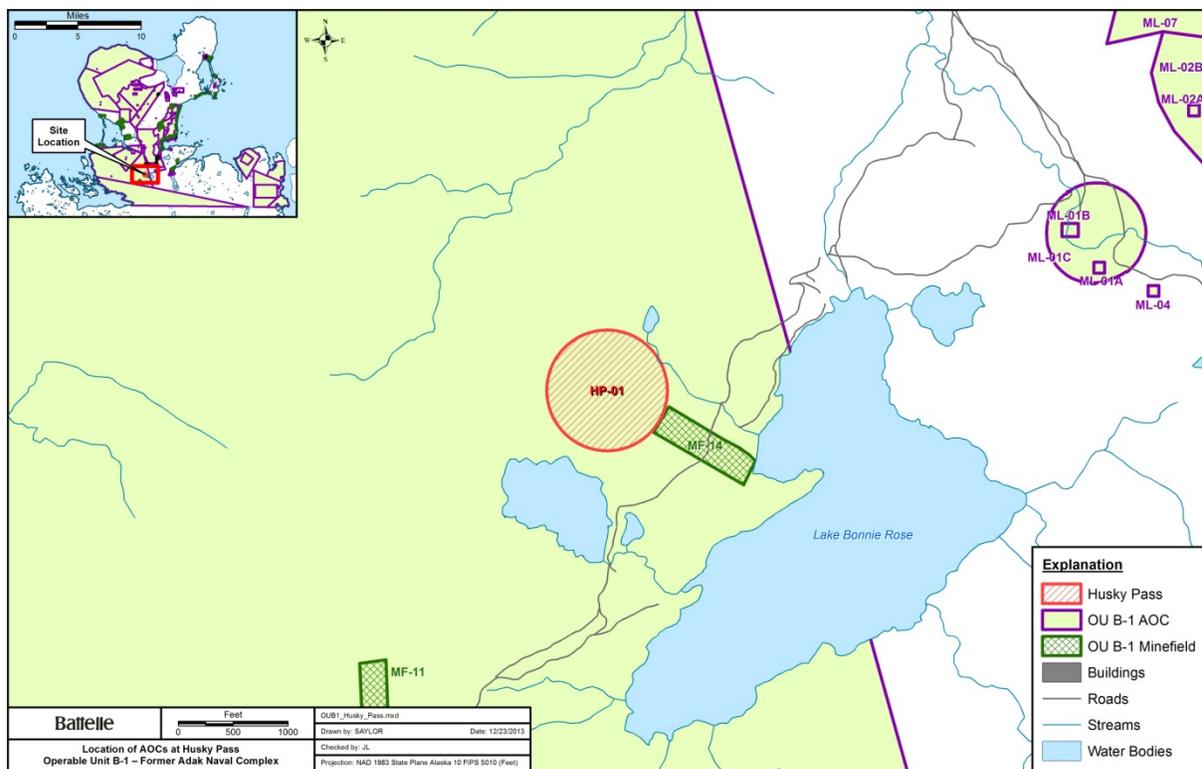


Figure 5-11. Husky Pass OU B-1 AOC Locations

HP-01

This area consisted of two 81-mm firing points and three impact areas, all in the vicinity of Lake Bonnie Rose and Husky Pass. Although bounded by some of the most rugged terrain on Adak, the terrain in these areas is relatively flat near the lake, rising to steep hills and ravines. The firing points are northwest of Husky Pass and west of Lake Bonnie Rose. The impact areas are located on top of the Mt. Reed peaks. Due to the terrain (slopes > 30 degrees), these areas are functionally inaccessible and were not investigated. This site was not investigated in the PA or RI because this site was identified through an archive search after these activities occurred.

The site was selected for observational approach and presumptive clearance. The reconnaissance survey included visual inspection and using hand-held geophysical detectors to define the areas requiring final characterization. The goal was to determine whether any unauthorized burial or abandonment of munitions occurred at this site. Data collected in 2001 revealed the presence of small arms ammunition casings (.30 and .308 caliber), one unfired .308 round, and what appeared to be the tail boom of an 81-mm mortar. Further investigation was deemed not warranted, and the ROD remedy was completed in 2001.

5.12 Lake DeMarie Impact Area

The Lake DeMarie Impact Area is located west/southwest of downtown Adak near Shagak Bay. It is approximately 1,314 acres and is located within the boundaries of Combat Range #3, but was investigated separately. The majority of the topography consists of rolling hills, lakes, and valleys all sloping down to the north from Mt. Reed. The southern portion borders the mountain range and becomes extremely steep and impassible. The area includes two firing points, one near the southern tip of Andrew Lake (DM-03) and one near the north end of the airport facility (DM-05). There were originally six AOCs within this area. DM-06 was divided into two areas during the RI process (DM-06A and DM-06B), resulting in seven AOCs in the Lake DeMarie Impact Area. Six AOCs (DM-01, DM-02, DM-03, DM-04, DM-05, and DM-06B) were recommended for NOFA and one AOC (DM-06A) was recommended for remedial action in the OU B-1 ROD (Figure 5-12). Remedial actions were completed at DM-06A in 2004.

DM-06A

DM-06A area is a 30-meter by 30-meter square encompassing 0.2 acre. The terrain is relatively flat compared with other outback areas of Adak.

DM-06A was submitted to the ESHA process; however, insufficient data were available to adequately score the site according to the ESHA process. The site was selected for observational approach and presumptive clearance. The remedial action technique used was 100% geophysical mapping of a 30-meter square grid. Four anomalies were identified during the 2001 field season. Three of the four anomalies were no finds and the remaining anomaly was found to be MD (a 30-caliber casing). The remedy was completed in 2001. The site was reinvestigated in 2004 to verify as NOFA. In 2008, ADEC designated conditional closure with ICs for this site (ADEC, 2008).

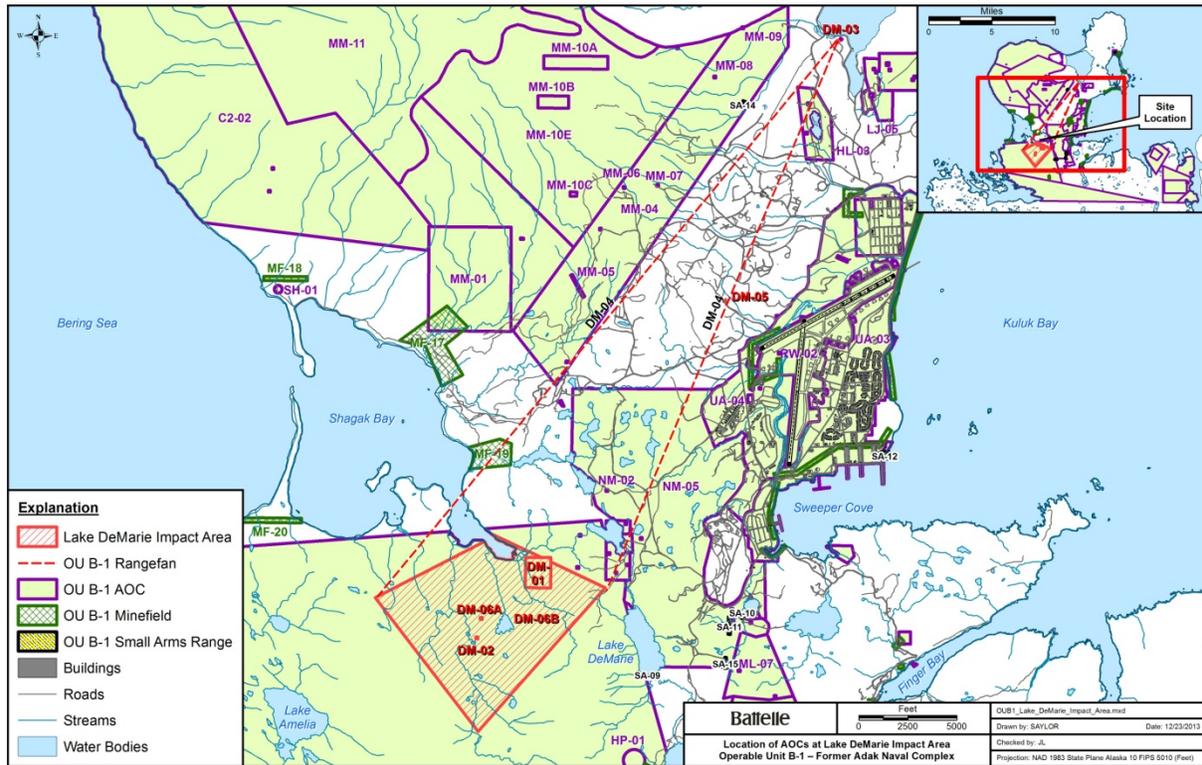


Figure 5-12. Lake DeMarie Impact Area OU B-1 AOC Locations

5.13 Lake Jean Ammunition Complex

The Lake Jean Ammunition Complex is located just west of Combat Range #8, between the range and the south end of Andrew Lake. This sector is approximately 60 acres and has a variety of terrain and relatively consistent vegetation. The area is roughly rectangular and consists of three closely spaced areas used for the storage, handling, and distribution of munitions. Five AOCs are in the Lake Jean Ammunition Complex. Four AOCs (LJ-02, LJ-03, LJ-04, and LJ-05) were recommended for NOFA and one AOC (LJ-01) was recommended for remedial action in the OU B-1 ROD (Figure 5-13). Remedial action was completed at LJ-01 in 2008.

LJ-01

LJ-01 is approximately 3 acres located south of Andrew Lake and adjacent to the southeast portion of Lake Jean. There are several inaccessible areas in this AOC due to slopes greater than 30 degrees. The accessible area investigated in 2008 was 1.33 acres. The terrain is a north-south valley with steep walls on each side and standing water on the valley floor.

The site was selected for observational approach and presumptive clearance. One hundred and nineteen targets were investigated in 2001 yielding 42 MEC, 13 MD, 62 metal waste, one no find, and one dig abandoned. Approximately 40 targets identified in 2001 were not investigated so additional work was conducted in 2004. After targets identified in 2001 were investigated, additional stepouts were conducted around MEC items during the 2004 field season. During 2004 fieldwork, a large number of MEC items

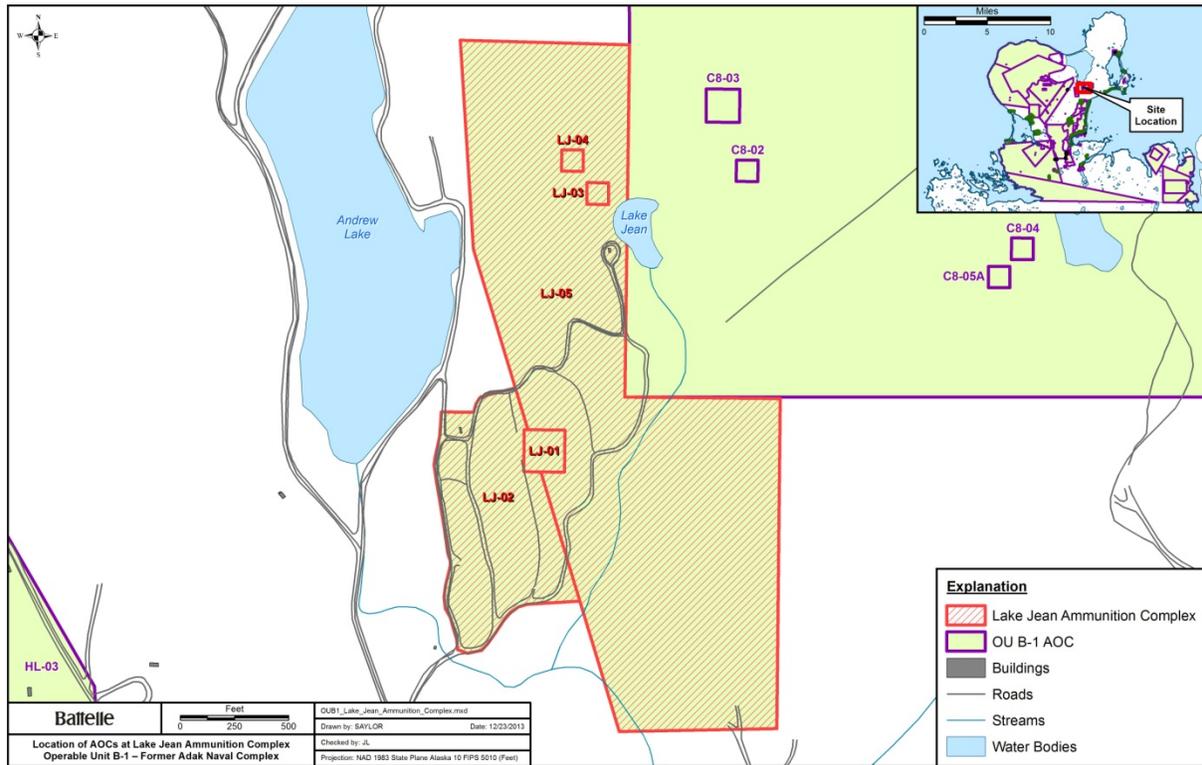


Figure 5-13. Lake Jean Ammunition Complex OU B-1 AOC Locations

were found during a QC effort in the area investigated in 2000 which caused the AOC to fail the certification process, leading to additional investigation in 2008.

In 2008, 101 targets from the 2004 geophysical mapping were intrusively investigated. After this intrusive investigation of targets remaining from 2004, a 100% geophysical survey of accessible areas at LJ-01 was performed. A total of 391 targets were identified and investigated. A total of 48 MEC items were recovered and disposed. The ROD remedy was completed in 2008 (ADEC, 2010).

5.14 Mitt Lake Impact Area

The Mitt Lake Impact Area is approximately 482 acres and is located southwest of downtown Adak adjacent to the Naval Magazine sector. This impact area originally included seven AOCs but ML-01 was divided into three AOCs (ML-01A, ML-01B, and ML-01C) during the RI, and ML-02 was divided into two AOCs (ML-02A and ML-02B) for a total of 10 AOCs in the Mitt Lake Impact Area.

Six AOCs (ML-01C, ML-03, ML-04, ML-05, ML-06, and ML-07) were recommended for NOFA and four AOCs (ML-01A, ML-01B, ML-02A, and ML-02B) were recommended for remedial action in the OU B-1 ROD (Figure 5-14). Remedial actions were completed at all four AOCs in 2001.

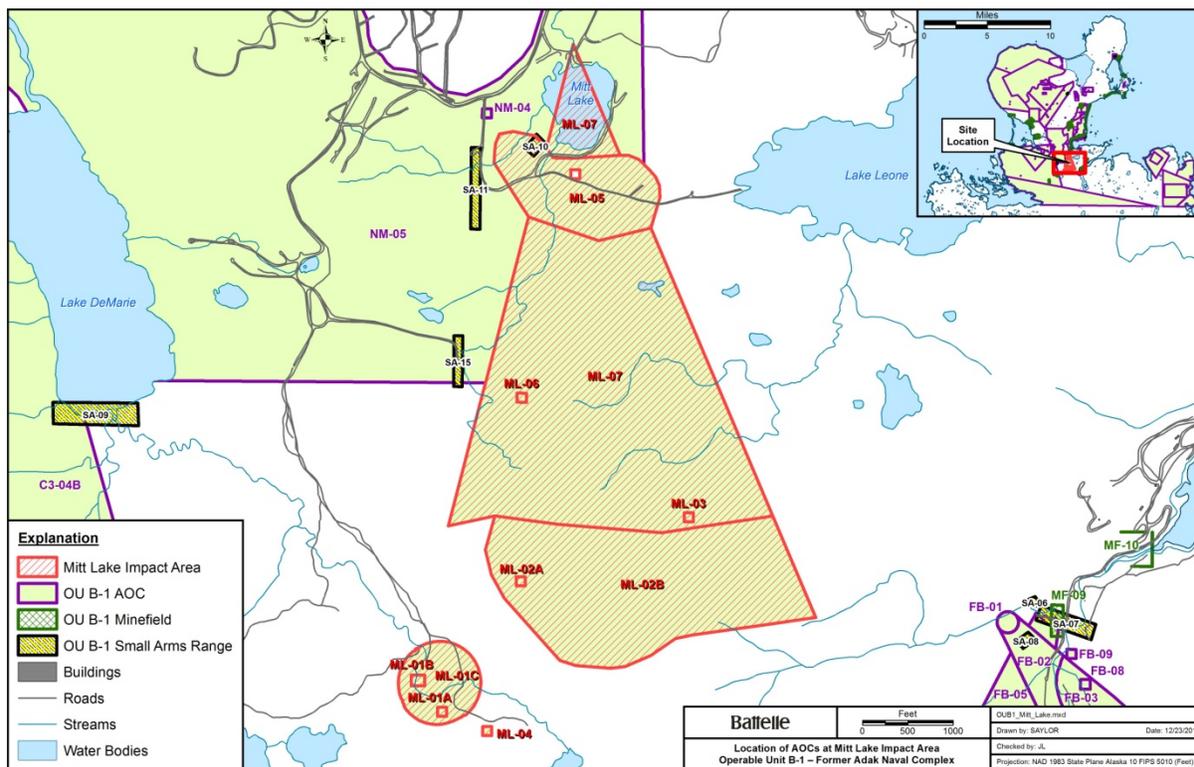


Figure 5-14. Mitt Lake Impact Area OU B-1 AOC Locations

ML-01A

The 60-mm mortar impact area (ML-01) is located in the southeast corner of the Mitt Lake Impact Area. The terrain of ML-01 is characterized by steep rolling hills with rocky outcrops on the hilltops. ML-01A is a portion of the 60-mm mortar impact area encompassing 3.5 acres.

The site was selected for MEC removal to 4 ft bgs. The number, type, and condition of MEC items previously found suggest the presence of a mortar impact area. Geophysical mapping was completed at this site in 2001. Site boundaries were expanded to maintain a 15-meter MEC-free buffer. One hundred and ninety-one targets were investigated at ML-01A, of which 18 were MEC, consisting of a single 20-mm HE projectile and the remainder were 60-mm mortars and fuzes. Soil sampling was conducted after remediation activities. No munitions-related chemicals were detected. ML-01A was certified as completed by the AOC Certification Board following the 2001 field season activities.

ML-01B

ML-01B is a portion of the 60-mm mortar impact area and encompasses 0.2 acre, with a screening area of 30-meter by-30-meter squared. The terrain is steep in this area.

Because the area was not subjected to the prescribed search methodology for a lone MEC item during the RI, insufficient data were available to adequately score the site according to the ESHA process. The site was selected for observational approach and presumptive clearance. The technique used consisted of a geophysical mapping of the 30-meter square grid with a 5-meter transect mini grid. One anomaly was detected and investigated at this site and determined to be a no find. The ROD remedy was completed in 2001.

ML-02A

ML-02A, the single 20-mm projectile site, is a portion of the 20/40-mm impact area, encompassing 0.2 acre. This area was expanded to approximately 0.3 acre after the boundary was expanded. The terrain in ML-02A is steep and vegetation is thick.

Because the area was not subjected to the prescribed search methodology for a lone MEC item during the RI, insufficient data were available to adequately score the site according to the ESHA process. The site was selected for observational approach and presumptive clearance. The technique used consisted of geophysical mapping of the 30-meter square grid with 5-meter transect spacing. Two anomalies were investigated; one was a MEC item (20-mm projectile) found on the boundary of the grid. The boundary was expanded approximately 15 ft to the north and 20 ft to the west during the 2001 field activities and 100% geophysical survey was conducted over the original grid and expansion areas. Seven additional targets were investigated, including two MEC items (20-mm HE projectiles at depths of less than 1 ft bgs) and five no finds. Because no MEC items were found near the boundaries of the investigated area, the ROD remedy was completed in 2001.

ML-02B

ML-02B is an irregularly shaped area on the lower flanks of a ridgeline facing the Mitt Lake Firing Points to the north. The area encompasses approximately 100 acres with steep to inaccessible terrain. Access to the area is via an improved roadway within 400 meters of the site.

The RI concluded that all MEC was removed from ML-02B in 2000 and no MEC remained at the site. However, chemical sampling was performed at the site. Two samples were collected in 2001 and no munitions-related compounds were detected in either sample. Therefore, no soil was removed for treatment or disposal and the ROD remedy was complete in 2001.

5.15 Mount Moffett

The Mt. Moffett AOCs identified through the PA, SI, and RI/FS process included combat ranges, impact areas (MM-01, -02, -03, -10, and -11), potential firing points (MM-04 and -22), an isolated fuze (MM-07), MD sites (MM-05, -06, -08, -09), and a chemical mortar training site (MM-23). MM-22 and MM-23 have been included in AOC MM-04 and are no longer independent AOCs. AOC MM-10 has been divided into eight AOCs (MM-10A through H). These 17 AOCs were recommended for remedial action in the OU B-1 ROD (Figure 5-15). MM-10D is being addressed within OU B-2.

MM-01

MM-01 is 513 acres and is located near the base of Mt. Moffett just northeast of Shagak Bay. It is identified as an impact area for 155-mm projectiles fired from the Andrew Bay seawall and as a portion of a potential impact area for direct fire weapon ranges along the southeastern flanks of Mt. Moffett. The terrain is steep on both the east and west sides, descending sharply to a large stream channel centrally located at the site.

This site was not investigated or evaluated in the ESHA process during the RI and, therefore, was identified for remedial action. The site was selected for observational approach and presumptive clearance. Prior to the start of the 2004 field season, data were found which had been collected over this site in 2000 on 115-meter transects. No MEC or MD items were found during the intrusive investigation in 2000; therefore, no further investigation activities were performed in 2004 and NOFA status was recommended. In 2008, ADEC designated conditional closure with ICs for this site (ADEC, 2008).

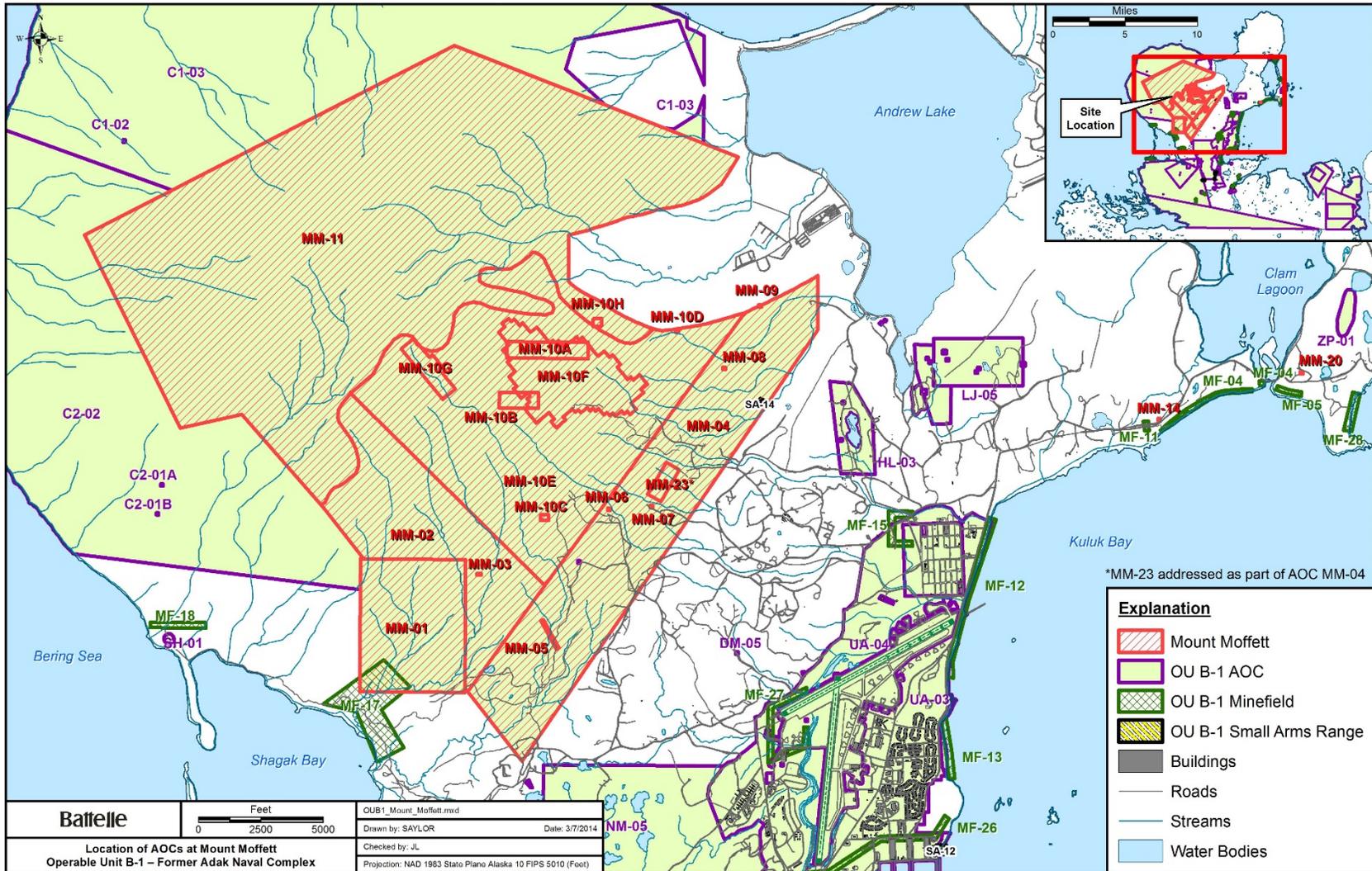


Figure 5-15. Mount Moffett OU B-1 AOC Locations

MM-02

MM-02 is 776 acres and is located southeast of the peak of the mountain adjacent to the 155-mm impact area (MM-01). The area is identified in historical firing orders as part of two impact areas; however, the area is located near the outer limits of these impact areas. The terrain is steep and there are three deep stream ravines and a small lake within the boundaries of the site.

The site was selected for observational approach and presumptive clearance. Geophysical mapping was performed using 30-meter by 30-meter mini-grids with 5-meter line spacing surrounding the burn pit and eight MD items found during the RI. Additional MD was recovered during the intrusive investigation that led to doing additional stepouts during the 2004 field season. Two hundred and twenty targets were investigated and 18 targets were MD. The remaining targets were no finds or hot geology. No MEC items were found at this site during the 2004 field season. The ROD remedy was completed in 2004. In 2008, ADEC designated conditional closure with ICs for this site (ADEC, 2008).

MM-03

MM-03 is 0.42 acre surrounding MD found in the southwestern portion of MM-02. The terrain is steep in this area.

The site was selected for observational approach and presumptive clearance. In 2004, geophysical data surrounding the two MD items located during previous field seasons were obtained. These items were close enough together that one 60-meter by 30-meter mini-grid was collected over both items with 5-meter line spacing. A small expansion was performed in 2004 to complete the 15-meter MEC-free buffer around the MD. Only one target was identified and intrusively investigated and it was a no find. No MEC or MD items were found at this site during the 2004 field season. The ROD remedy was completed in 2004. In 2008, ADEC designated conditional closure with ICs for this site (ADEC, 2008).

MM-04

MM-04 is 1,488 acres located along the southeastern flanks of Mt. Moffett and includes the firing points for five direct and indirect fire weapons ranges in this area. The terrain is characterized by gently rolling hills and ravines. AOCs MM-22 and MM-23 were combined into MM-04

The site was not investigated during the RI or evaluated in the ESHA process; therefore, the site was selected for observational approach and presumptive clearance. Prior to the 2004 field season, geophysical mapping and intrusive investigations were conducted adjacent to the location of MM-23, which is part of MM-04. During these efforts, no evidence of past use of this area as a mortar firing position was discovered. Based on this, no further investigation activities were performed in 2004 and NOFA status was recommended for MM-04. In 2008, ADEC designated conditional closure with ICs for the site (ADEC, 2008). MM-23 was investigated again in 2008 due to concerns regarding whether adequate investigation of this site had been completed. The area was swept using metal detectors and no debris related to munitions was encountered and there was no evidence that MM-23 was used as a mortar firing point. Therefore, ROD remedy was complete for MM-04 which includes MM-23.

MM-05

MM-05 is 3.42 acres surrounding two metallic fragments found in the southern portion of MM-04. The terrain slopes gently toward the crest of Mt. Moffett.

The site was not investigated during the RI or evaluated in the ESHA process; therefore, the site was selected for observational approach and presumptive clearance. In 2004, geophysical mapping was conducted surrounding the one MD item found in 1999. A 30-meter by 30-meter mini-grid with 5-meter

line spacing was conducted over the MD. A small expansion was performed in 2004 to complete the 15-meter MEC-free buffer around the MD item. Only one target was identified and intrusively investigated and it was a no find. No MEC or MD items were found at this site during the 2004 field season. The ROD remedy was completed in 2004. In 2008, ADEC designated conditional closure with ICs for this site (ADEC, 2008).

MM-06

MM-06 is 0.22 acre surrounding a single piece of MD found in the southeastern portion of MM-04. This site is located in between the general location given for the mortar and artillery firing points. The terrain slopes gently toward the crest of Mt. Moffett.

The site was not investigated during the RI or evaluated in the ESHA process; therefore, the site was selected for observational approach and presumptive clearance. In 2004, geophysical mapping was conducted surrounding the one MD item found in 1999. A 30-meter by 30-meter mini-grid with 5-meter line spacing was conducted over the MD. Eleven targets were identified and intrusively investigated, resulting in four pieces of metal waste and one no find. The other six digs were abandoned due to water and were later confirmed by QC to be related to a pipeline running through the grid. No MEC or MD items were found at this site during the 2004 field season. The ROD remedy was completed in 2004. In 2008, ADEC designated conditional closure with ICs for this site (ADEC, 2008).

MM-07

MM-07 is 0.22 acre surrounding a single find consisting of an M-46 artillery fuze in the eastern portion of MM-04. The terrain in this area slopes gently toward the crest of Mt. Moffett.

In 2000, 100% geophysical mapping was performed over the entire area; however, the area was never 100% remediated due to the amount of trash and construction debris present. Twenty-two targets were investigated including three bullet-related items (i.e., .50 cal bullet and 20-mm links) and 19 metal waste items.

The site was selected for observational approach and presumptive clearance. A detector-aided reconnaissance of the area was conducted in 2004. Twenty-seven targets were investigated, resulting in 17 metal waste items, six bullet-related anomalies (i.e., .50 cal links), and four other items (i.e., pipe and glass bottles). No MEC or MD items were found at this site during the 2004 field season. The ROD remedy was completed in 2004. In 2008, ADEC designated conditional closure with ICs for the site (ADEC, 2008).

MM-08

MM-08 is 0.22 acre surrounding a single metallic fragment found in the eastern portion of MM-04. The terrain slopes gently toward the crest of Mt. Moffett.

The site was not investigated during the RI or evaluated in the ESHA process; therefore, the site was selected for observational approach and presumptive clearance. Geophysical mapping surrounding the one MD item found in 1999 was conducted using a 30-meter by 30-meter mini-grid with 5-meter line spacing over the MD. No anomalies were identified and, as a result, no intrusive investigation was performed. The ROD remedy was completed in 2004. In 2008, ADEC designated conditional closure with ICs for the site (ADEC, 2008).

MM-09

MM-09 is 0.85 acre surrounding a single MD found in the eastern portion of MM-04. Historical documents and photos identified this site as part of the direct and indirect fire weapons ranges on Mt. Moffett, or the buffer area between ranges. The terrain is steep, sloping up to a ridgeline separating the Andrew Lake Complex from MM-04.

The site was selected for observational approach and presumptive clearance. Geophysical mapping surrounding the one MD item located during the SI was conducted using a 30-meter by 30-meter mini-grid with 5-meter line spacing over the MD. Two buffer zone expansion areas were also surveyed with 5-meter line spacing in 2004. Seven targets were identified and intrusively investigated, resulting in three pieces of MD, one piece of metal waste, and three no finds. No MEC or MD items were found at this site during the 2004 field season. The ROD remedy was completed in 2004. In 2008, ADEC designated conditional closure with ICs for the site (ADEC, 2008).

MM-10A

MM-10A is a small area within MM-10E, with steep terrain descending sharply to rolling hills along the southeastern flanks of Mt. Moffett.

The site was selected for observational approach and presumptive clearance. The remedy for this site was implemented in conjunction with MM-10E in 2001 and 2002. A new AOC (MM-10F) was created within MM-10E which also encompassed the entire MM-10A AOC. Therefore, MM-10A was further investigated in 2004, and 2008 through 2010. Refer to the description for MM-10E and MM-10F for details of remedial actions implemented at this site. The ROD remedy was completed in 2010. ADEC and EPA have concurred with the remedial actions (ADEC, 2013). Three soil samples were collected in 2001. No results exceeded cleanup levels for munitions-related chemicals; therefore, no soil was removed from the site for treatment and/or disposal.

MM-10B

MM-10B is 22.5 acres within MM-10E, with steep terrain descending sharply to rolling hills along the southeastern flanks of Mt. Moffett.

The site was selected for observational approach and presumptive clearance. The remedy for this site was implemented in conjunction with MM-10E in 2002 and with MM-10F in 2004 and 2008. Refer to the description for MM-10E for details of remedial actions implemented at this site. The ROD remedy was completed in 2008. ADEC has concurred with the remedial actions (ADEC, 2013).

MM-10C

MM-10C is 1.7 acres within MM-10E with rolling, moderately steep terrain.

The site was selected for observational approach and presumptive clearance. Geophysical mapping at 15-meter spacing was performed. The results of the transect survey led to footprint reduction and 100% geophysical mapping of the resulting area. Two thousand and twenty-two anomalies were identified and intrusively investigated. Two MEC items (37-mm projectiles), 1,348 MD items, and 201 metal waste items were recovered. In addition, 444 anomalies were classified as no finds, two anomalies were classified as no dig, and two excavations were abandoned. No-find verification sampling was performed on 35 (7.8%) of the no finds by the QC team. The ROD remedy was completed in 2002.

MM-10E

MM-10E was originally approximately 2,127 acres with steep terrain descending sharply to rolling hills along the southeastern flanks of Mt. Moffett. During the 2004 field season, the MM-10E area was reduced to 1,761 acres by establishing three new sites: MM-10F, MM-10G, and MM-10H.

The site was selected for observational approach and presumptive clearance. In 2001, geophysical mapping identified 723 targets which were investigated. Nine were classified as MEC and included 20-mm, 37-mm, 40-mm, 75-mm, and 90-mm projectiles, a 3-in. HE projectile, and several MK2 fragmentation grenades. Further remedial action was required at this site due to the presence of MEC items at the boundaries.

During the 2002 field activities, transect survey data were collected in probable and possible anomaly areas, and mini-grid data were collected in the outlying MD areas. Surveys in MM-10A and MM-10B were not differentiated from those in MM-10E and the data for all three areas were combined. Seventy-seven grids, two 100% surveys, and 75 mini-grids with 5-meter lane spacing were performed at various locations in the outlying MD areas. Of the 1,271 targets investigated, 28 MEC, 774 MD, 140 metal waste, and six other items were recovered. In addition, 315 anomalies were classified as no finds, five anomalies were classified as no dig, and three excavations were abandoned. Eight soil samples were collected in 2001 and 2002. None of the samples had detectable concentrations of munitions-related chemicals; therefore, no soil was removed from the site for treatment and/or disposal. Remedial action was not completed in MM-10E during the 2002 field season.

Work in MM-10E during the 2004 field season began by investigating anomalies remaining from the 2002 field season. Additional grids and expansion areas were investigated in 2004. A total of 1,107 targets were investigated within MM-10E, including 33 MEC items. Additional anomalies included 361 MD and 21 metal waste items. Seventy-one anomalies were attributed to hot geology, 10 were listed as other, and there were 610 no finds (182 of which were related to QC verification operations). The majority of the remaining no finds can be attributed to the northwest part of MM-10E, where the terrain caused elevated EM61-MK2 noise.

Once the high anomaly density areas (MM-10F, MM-10G, and MM-10H) were separated out of MM-10E, remedial actions were considered complete at MM-10E following the 2004 field activities. However, during installation of the geophysical prove out area for MM-10F, MM-10G, and MM-10H in 2008, munitions items (i.e., two 37-mm projectiles and an 81-mm mortar fin) were found in MM-10E. As a result, additional geophysical and remediation work was performed during 2009 on 0.41 acre of MM-10E immediately adjacent to the geophysical prove out area. Seventy-eight anomalies were investigated resulting in 53 survey nails, 24 MD, and 1 MEC. The total includes those from a mini-grid investigated around the MEC item. No additional MEC items were identified during the 2009 field activities.

Finally, two MEC items, including a 75-mm unfuzed projectile and a 37-mm unfuzed projectile, were discovered during site restoration activities performed at MM-10E in 2010. These items were disposed of in 2010. The ROD remedy was completed in 2010. ADEC has concurred with the remedial actions (ADEC, 2013).

MM-10F

MM-10F is approximately 320 acres, with elevations ranging from 900 to 2,200 ft above sea level. This site is located centrally in a bowl-shaped area near the upper flanks of Mt. Moffett on the southeast side. The terrain is steep and a small portion is characterized as inaccessible due to slopes that are greater than 30 degrees. During 2004 field activities in MM-10E, excessive MD identified in one area was separated

out of MM-10E, resulting in a new AOC called MM-10F. MM-10F was identified as a target area within MM-10E and also encompassed the entire MM-10A AOC and a portion of MM-10B.

During the 2004 field season, a surface clearance was conducted once MM-10F was delineated to reduce hazard and prepare the site for follow-on work. A total of 1,513 items were removed from the surface. In addition to the surface clearance, some intrusive investigation was performed in MM-10F in 2004. Of the 3,471 targets investigated, 18 MEC, 3,095 MD, and 61 metal waste items were identified. In addition, 74 were attributed to hot geology, 163 were no finds, 45 were other, and 15 excavations were abandoned.

The site was selected for observational approach and presumptive clearance. Additional geophysical mapping and intrusive investigation of identified targets were conducted in 2008 and 2009 due to items located in the 15-meter buffer zone. A geophysical survey was conducted on 411 grids in 2008. Intrusive investigation of anomalies carried over from 2008 to 2009. Of the 36,796 targets investigated, 32 MEC and 29,747 MD items were recovered during the removal action. The remaining targets included 140 metal waste, 643 other, 491 hot geology, 3,476 no finds, four digs abandoned, one no dig, 255 QA seeds, 417 QC seeds, and 1,590 survey nails.

A breached 75-mm projectile was excavated in 2008 that met the requirements for MC sampling which was performed in September 2009. MC constituents were not detected over action levels.

Site restoration activities were completed in 2010. The ROD remedy was completed in 2010. ADEC has concurred with the remedial actions (ADEC, 2013).

MM-10G

MM-10G is approximately 43 acres with elevations ranging from 1,700 to 2,200 ft above sea level. The site is located on the southeast side of Mt. Moffett and encompasses an airplane crash site and an impact area. There are significant areas within this AOC that are inaccessible due to slopes greater than 30 degrees. During the 2004 field season, this site was divided out of MM-10E due to significantly higher concentrations of MEC and MD items than other areas within MM-10E.

During the 2004 field season, targets not investigated during the 2002 field season were investigated. The AOC was expanded and geophysically investigated. In 2004, 876 targets were investigated including three MEC, 343 MD, and 75 metal waste items. In addition, 13 were attributed to hot geology, 440 were no finds, and two were classified as other.

The site was selected for observational approach and presumptive clearance. Surface clearance was conducted in 2008 in the AOC. The majority of the debris in this AOC was from an aircraft that crashed in this area. Additional geophysical mapping and intrusive investigation of identified targets were conducted in this AOC in 2008 and 2009 due to items located in the 15-meter buffer zone during previous investigations. A geophysical survey was conducted on 61 grids in 2008 and 2009. Of the 3,743 targets investigated, eight MEC items including four 75-mm HE projectiles and four 90-mm HE projectiles and 1,891 MD were recovered during the removal action. The remaining items included 531 metal waste, 50 other, 59 hot geology, 894 no finds, one no dig, 50 QA seeds, 60 QC seeds, and 205 survey nails.

A breached 75-mm projectile was excavated in 2008 that met the requirements for MC sampling, which was performed in September 2009. Two 5-gallon containers of soil were excavated around the sampling location due to TNT concentrations that exceeded cleanup levels. The soil was transported off-island and disposed at a facility on the Lower 48. The ROD remedy was completed in 2010. ADEC has concurred with the remedial actions (ADEC, 2013).

MM-10H

MM-10H is approximately 2.6 acres with elevations ranging from 1,220 to 1,300 ft above sea level. This AOC was created due to the discovery of three 90-mm projectiles at depths of 0, 6, and 18 in. bgs during the 2004 field season.

The site was selected for observational approach and presumptive clearance. Surface clearance was conducted in 2008. A geophysical survey was conducted on four grids in 2008 and 2009. Of the 854 targets investigated, one MEC (one 90-mm HE projectile), and 313 MD were recovered during the removal action. The remaining targets included four metal waste, four other, three hot geology, two digs abandoned, 502 no finds, three QC seeds, and 22 survey nails. The ROD remedy was completed in 2010. ADEC has concurred with the remedial actions (ADEC, 2013).

MM-11

The MM-11 AOC is 4,974 acres. The terrain in this area is generally very steep, rocky, and inaccessible. Deep stream ravines carry runoff down the mountainside and rocky ridgelines between the ravines. Smaller areas are flatter; however, these are generally surrounded by terrain too rugged to traverse safely. Access to the area is only by ARGO all-terrain vehicle or helicopter.

No intrusive investigation was performed during the RI; therefore, this site was selected for observational approach and presumptive clearance. The goal of the work performed in 2002 was to complete the intrusive investigation of the area. A single 20-mm projectile was found during the initial intrusive work, along with several MD items. A 100% geophysical mapping grid was completed at the 20-mm find location and five 30-meter by 30-meter mini-grids were surveyed at MD find locations. Two more MEC (20-mm projectiles) and eight MD items were recovered. In addition, 81 anomalies were classified as no finds. Remedial action was not completed in MM-11 during the 2002 field season.

During 2004, a 30-meter by 30-meter 100% geophysical survey was conducted over the location of a 90-mm projectile that was found on the surface during the 2002 field season by a hiker (off-duty UXO technician). There was also a piece of MD to the east of this MEC item that required a 30-meter by 30-meter (5-meter transect) grid to be surveyed. A total of 67 targets were identified and intrusively investigated, two of which were MD items that required additional geophysical mapping. Both pieces of MD were located at or near the surface and were likely the result of the 90-mm projectile being blown in place during the 2002 field season. Four anomalies were classified as hot geology and the remaining targets were no finds.

The ROD remedy was completed in 2004. In 2008, ADEC designated conditional closure with ICs for the site (ADEC, 2008). One soil sample collected in 2002 did not report MC levels above detection limits.

5.16 NAF Adak/Lake DeMarie Ammunition Complex

NAF Ammunition Complex is located southwest of downtown Adak. This sector is approximately 2,168 acres and has a variety of terrain and vegetation. Roberts Landfill is located in the eastern/central portion of the NAF Ammunition Complex sector, occupying about 10 to 12% of the land area in the sector. Five AOCs were located within the NAF Adak/Lake DeMarie Ammunition Complex. NM-01 has been combined with C3-01 based on a potential link, leaving four AOCs remaining within this complex. All four AOCs (NM-02, NM-03, NM-04, and NM-05) remaining in this area were recommended for NOFA in the OU B-1 ROD (Figure 5-16). NM-02, NM-03, and NM-04 were established based on identification of individual pieces of MEC during the 1999 geophysical investigation. Mini-grids were established at NM-02, NM-03, and NM-04 and additional MEC was not discovered. The remainder of the Naval

Magazine area was included in a single AOC, NM-05. Discussion of these NOFA AOCs is included in the OU B-1 RACR based on the discovery of MEC in 2012 within NM-05 and the subsequent response.

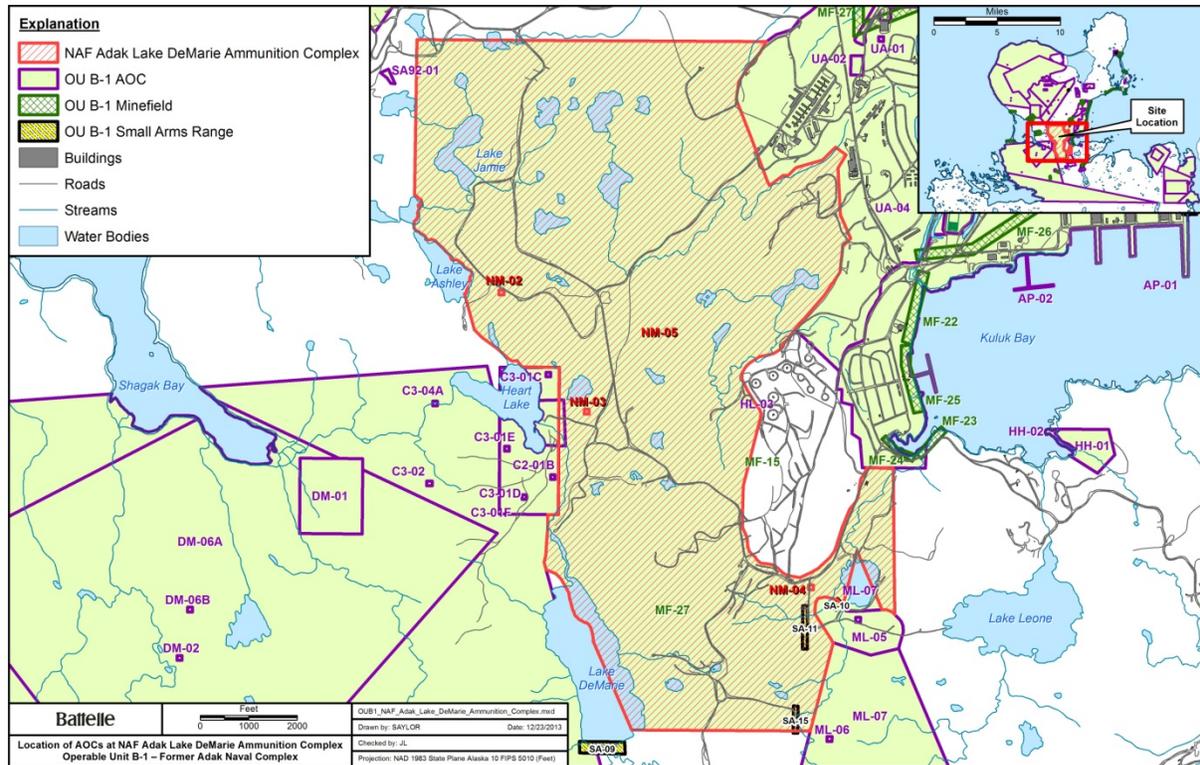


Figure 5-16. NAF Adak/Lake DeMarie Ammunition Complex OU B-1 AOC Locations

NM-05

NM-05 (Magazine Remainder) consists of the remaining areas of the NAF Adak/Lake DeMarie Ammunition Complex. The terrain of NM-05 ranges from flat and marshy in the northern portion to steep and inaccessible in the southwest where there is a full craggy peak. This AOC includes several locations used for ordnance storage (open and bunkered) during WWII and the Cold War. No evidence of ordnance disposal had been identified in NM-05 prior to the incident discussed below. No MEC items were found during the SI. The only munitions-related item found was a tail cone for a bomb (MD). The parameters used to conduct the screening evaluation in the PA resulted in a finding of NOFA.

In January 2012, three AN-M57 250-lb bombs were uncovered by erosion and were discovered along Happy Valley Road (also known as Roberts Landfill Road). One of the bombs was disposed of by Air Force EOD from Joint Base Elmendorf Richardson (JBER) on February 21, 2012. Due to inclement weather, EOD returned and the remaining two bombs were disposed of on June 12, 2012. The area was investigated further in the 2014 field season to determine if any other MEC was present. During the 2014 field season, DGM was conducted at the Roberts Landfill Road site. Seventy-six of the 87 anomalies from the DGM data were intrusively investigated, resulting in the removal of 775 items. Among the items, seven 100-lb bombs (AN-M30A1) were recovered and destroyed (six bombs were removed from one excavation and one bomb was removed from a second excavation approximately 3 feet west. The remaining items included metal debris such as culverts, vehicle parts, metal scrap, pipes, and chains.

Eleven of the 87 anomalies were not investigated because they were secondary target picks from the DGM data and the associated primary target pick was not MEC which is the trigger for investigating secondary targets.

Figure 5-17 shows the area where DGM was conducted, the location of the three bombs discovered in 2012, and the location of the seven bombs recovered in 2014. Due to the proximity of the bombs to the original grid boundary and the requirement for a 15-meter MEC-free buffer around all MEC, two stepouts were generated and investigated. No additional MEC items were identified in the stepouts. Therefore, following the decision-making process established for OU B-1, no further investigation is required at the site.

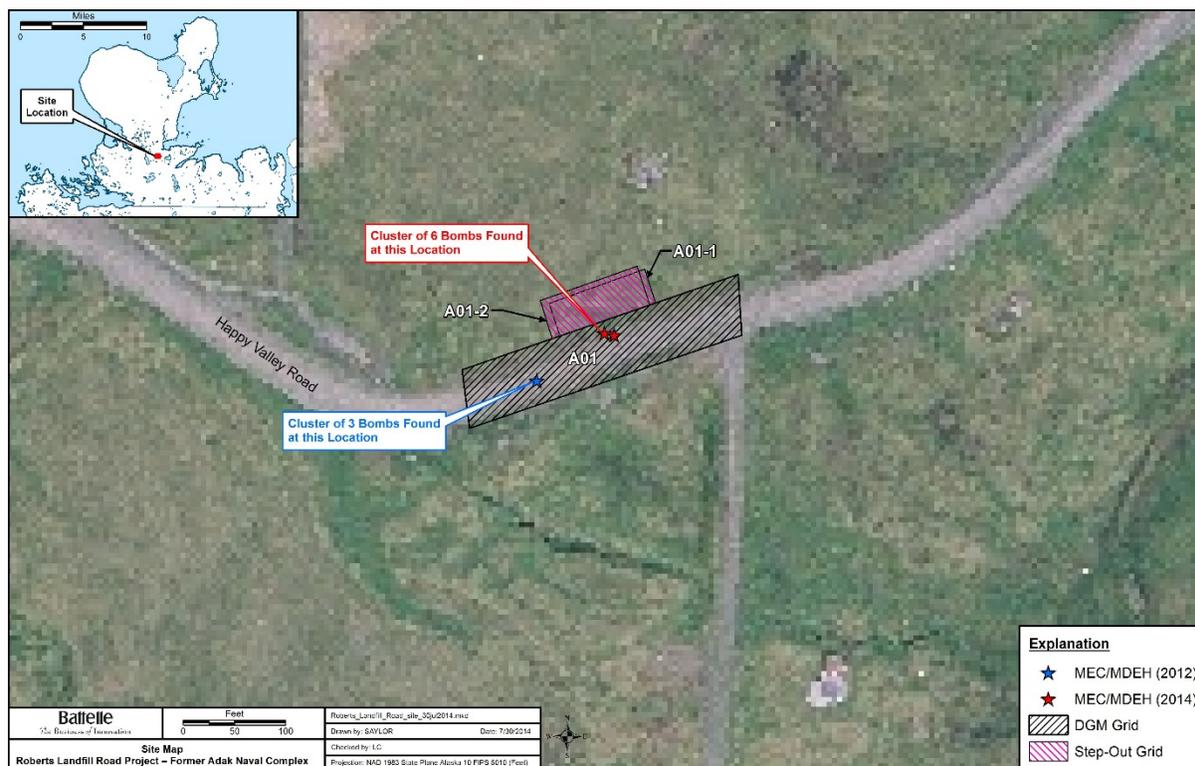


Figure 5-17. DGM Area and Locations of MEC Items at Roberts Landfill Road Site

In addition to the intrusive investigation in 2014, a review of historic photographs was conducted to determine if there were any past activities that would suggest additional MEC may be present in the area. Aerial and still photographs from 1943 to 1991 were reviewed. Aerial photographs from 1943 show an open bomb storage area to the west of the location where the subject bombs of interest were found in 2012 and 2014. This location was reportedly used for open storage of bombs, depth charges and other ordnance during WWII. In subsequent photographs, ordnance storage in NM-05 appears to primarily occur in bunkers or other enclosed storage facilities. No indications of MEC burial or disposal were observed along Happy Valley Road.

A conceptual site model was developed for the bombs discovered along the side of the road, which were apparently lost from a vehicle during transport from the storage area to the runway complexes. A deep ditch is evident alongside of the 1943 road location. It is possible the bombs were lost in deep snow

and/or mud following a transport incident. The items may have been subsequently covered by mud during the spring run-off or fill material to address the road surface. This is the most plausible explanation for their presence.

The discovery of the original 250-lb bombs and the response by the Air Force EOD unit from JBER were compliant with the Institutional Control Management Plan (ICMP) for Adak. Supplemental investigations were facilitated by on-going MEC investigation and remediation occurring on Adak Island. The response to the MEC discoveries at NM-05 (Roberts Landfill Road) indicates that the Educational Awareness Program is working. The discovery of these items reinforces the importance of continuing the IC program at OU B-1 and OU B-2. This discovery will be included in the Munitions Response Desk Guide to ensure future responders are knowledgeable about past MEC discoveries on Adak.

5.17 Shagak Bay

Shagak Bay is located west of downtown Adak. There was only one AOC (SH-01) in this area which was recommended for remedial action in the OU B-1 ROD (Figure 5-18).

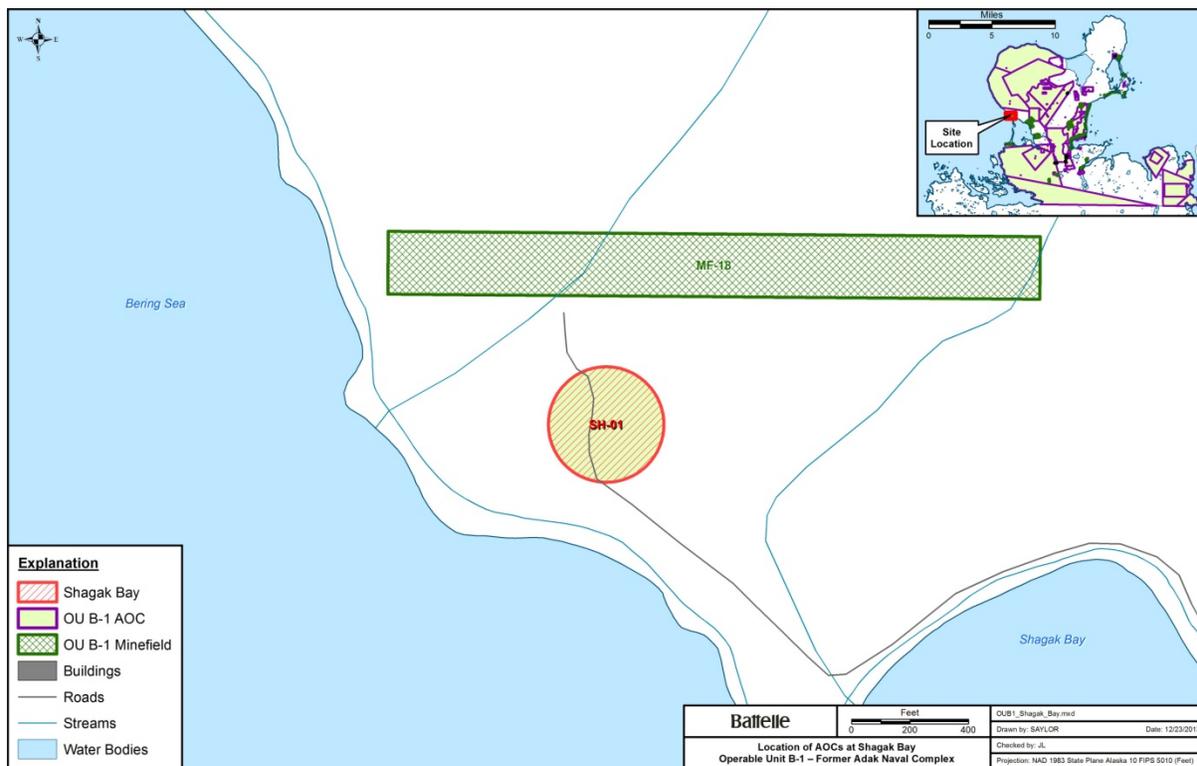


Figure 5-18. Shagak Bay OU B-1 AOC Location

SH-01

This area supported four 155-mm artillery emplacements on the far west side of the hills west of downtown Adak and northeast of Shagak Bay and is characterized by steep rolling hills.

The site was discovered after the RI; therefore, it was not investigated in the PA or the RI. The site was selected for observational approach and presumptive clearance. A reconnaissance survey was performed in 2001. The goal of the survey was to determine whether any unauthorized burial or abandonment of munitions occurred at this site. Reconnaissance data collected showed no indication of contamination with munitions-related material. Since no MEC items were identified during the reconnaissance survey, the site was designated NOFA and the ROD remedy was completed in 2001. Therefore, no work was completed at SH-01 during the 2004 field activities, although it was included in the 2004 after action report. In 2008, ADEC designated conditional closure with ICs for the site (ADEC, 2008).

5.18 WWII Ammunition Pier (Sweeper Cove)

This area was identified from historical photography and maps as the shoreline area near the former ammunition pier in Sweeper Cove. The pier itself has been demolished and is no longer considered part of this AOPC. The land area near where the pier once stood consists of a rocky embankment leading up to a relatively flat lowland area vegetated with shore grasses and low-growing mosses. The area adjacent to the former pier is mostly vacant, although several paved roads are in this area, as well as a utility infrastructure (sewer and water lines, power lines, etc.) and the USFWS Building. Historical photographs from 1973 show a large, open material-storage area adjacent to the pier area.

Two AOCs are in this area. AP-01 covers the land-based area and AP-02 covers the sediment beneath the former pier. AP-01 was recommended for NOFA and AP-02 was recommended for remedial action in the OU B-1 ROD (Figure 5-19). Remedial Action was completed at AP-02 in 2001.

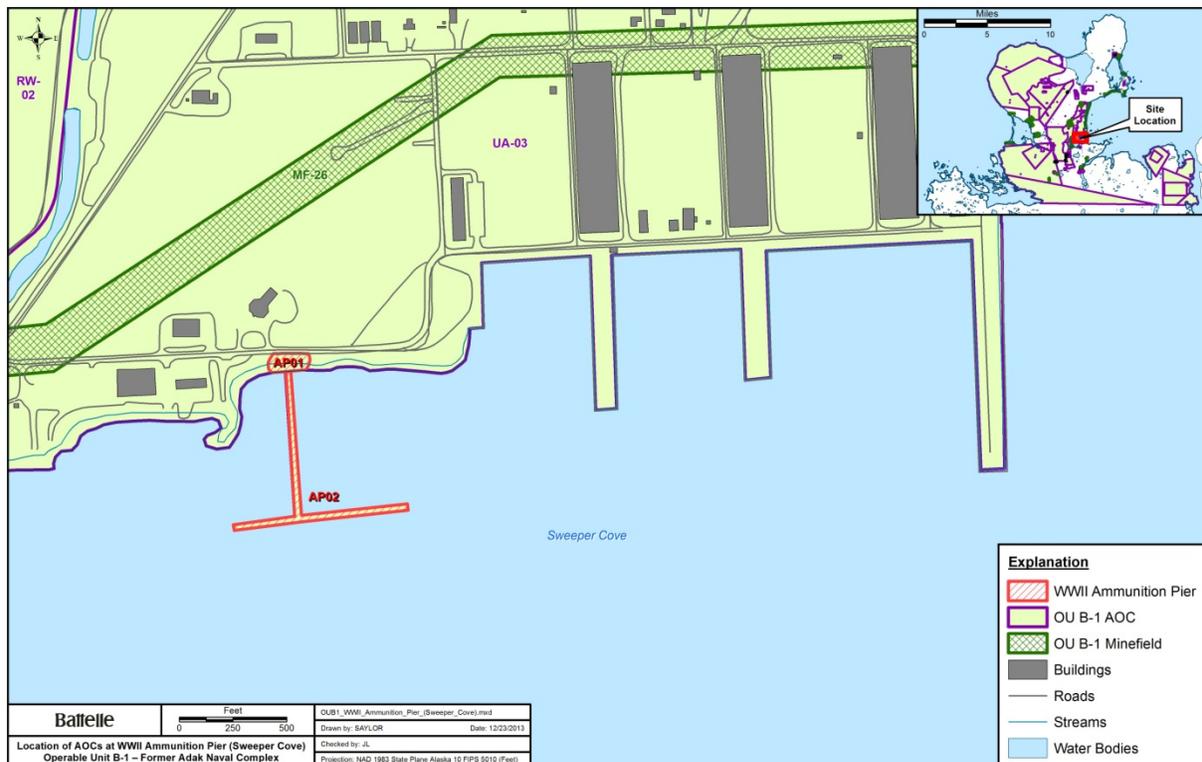


Figure 5-19. WWII Ammunition Pier OU B-1 AOC Locations

AP-02

This area has been identified as the area underlying the location of the former ammunition pier in Sweeper Cove. The area beneath the former pier is generally rocky near the shoreline. The boundary for this area is the footprint of the pier, plus a 30-ft zone outside the footprint and a 10-ft zone inside the footprint. There is no known documentation of offshore abandonment or disposal of munitions to the water from any of the pier-related military activities; however, it is possible that munitions may have dropped from the pier during off-loading or handling.

This site was not investigated or evaluated in the ESHA process in the RI/FS and, therefore, was selected for observational approach and presumptive clearance. Dive operations were completed in 2001, and one piece of MD (a spent .50-caliber casing) was observed. Since no MEC items were identified during the reconnaissance survey, the site was designated NOFA and the ROD remedy was completed in 2001.

6.0 OPERATION AND MAINTENANCE PROGRAM

The OU B-1 ROD required that the Navy conduct an ongoing ordnance awareness program, described in Section 6.1.1 and the maintenance of files in conveyance documentation, described in Section 6.1.2.

6.1 Institutional Controls

The OU B-1 ROD included an educational awareness program for munitions and files (i.e., OU B-1 ROD and FOST) which will be maintained in conveyance documentation (Navy, 2001c).

6.1.1 OU B-1 Adak UXO Awareness

A Facility-Wide Ordnance Awareness Program has been implemented as an IC for all NOFA sites and sites where remedial action is complete. This program began in 1997 with the Navy developing MEC awareness training materials. The Navy has updated the information and substantially revised the materials regularly from 2001 through 2013. The Adak UXO Awareness Fact Sheet (Navy, 2004b) is available on <http://www.adakupdate.com>, which contains background information, reporting procedures, and information about the awareness materials (e.g., maps, DVDs, coloring books, and posters). The awareness materials have been available and distributed to residents and visitors since 2003. The Navy will continue to be responsible for updating and revising the materials, as necessary. The Navy also has established, as part of the educational materials, reporting procedures if suspected MEC is discovered.

6.1.2 Conveyance Documentation

Navy has provided a copy of the OU B-1 ROD and the FOST to BLM to be maintained as part of the permanent file of conveyance documentation. The FOST contains a full legal description of the properties, associated Institutional Controls, and a legal description of covenants, as appropriate based on decisions in place for the specific OU reference to these documents and their availability in the BLM permanent conveyance file has been included in the interim conveyance executed by BLM. This BLM permanent file of interim conveyance documents is available to current and future owners of the real estate seeking information about past land uses, including the potential for MEC items. This measure provides the current and future landowners with a source for information about MEC and the type of remedial actions that have been taken.

6.2 Reporting of Institutional Controls

Inspections of the ICs are required annually at the OU B-1 sites. The ICMP requires that written reports be submitted to EPA and ADEC within 60 days after the completion of the inspection (see Appendix D of CMP; Navy, 2012a).

The following reports are a selective representation documenting the IC inspections that have taken place since the signing of the OU B-1 ROD (Navy, 2001c) in 2001. The complete collection of all of the reports is available on the Adak Update Web site (<http://www.adakupdate.com>) or at the [Adak repository](#). The reports assess the need for any additions to, or reductions in, inspection requirements, as well as determine whether the ICs in place are effective. Each of these reports evaluated the selected ICs, and determined that the selected ICs and operation and maintenance plans are in place and are sufficient to maintain the protectiveness of the remedy.

- *Final Institutional Controls Primary Site Inspection Report, Adak Island, Alaska* (Navy, 2003a). The report summarized that ICs were deemed to be functioning as intended and protective of human health and the environment for OU B-1 sites. Recommendations from the SIs for OU B-1 sites are noted here. As an example from 2002, for the Adak Island Ordnance Awareness program, it was noted that the MEC video was not being viewed as required. It was recommended that the MEC program be updated to include an adult and children's video, as well as disseminating revised MEC information in packets for public officials, classroom education, a toll-free telephone number, surveys, and household items (e.g., refrigerator magnets). As a result of the 2002 inspection, the Navy completed the following tasks during the 2003 field season: more in-depth interviews were conducted to determine the best way to increase public awareness and education of MEC information. Similar recommendations have been developed and implemented in the years since.
- *Final Institutional Controls Site Inspection Report, Long-Term Monitoring and Inspections, Former Adak Naval Complex, Adak Island, Alaska* (Navy, 2004a). As an example from the 2003 inspections, the report summarized that ICs and engineering controls were deemed to be functioning as intended and protective of human health and the environment for OU B-1 sites. Recommendations from that report noted that not all visitors or temporary workers were familiar with the Adak Island Ordnance Awareness program. It was recommended that airline carriers or skippers on fishing vessels could show the video to visitors and temporary workers. For community members, it was recommended that the MEC video be mailed to people because Internet access and cable are not consistently available. As a result of the 2003 inspection, the Navy completed distribution to on-island residents of the revised MEC awareness materials during 2004.
- *Final Institutional Controls Site Inspection Report, Long-Term Monitoring and Inspections, Former Adak Naval Complex, Adak Island, Alaska* (Navy, 2005a). No OU B-1 sites were inspected in 2004. The report concluded that the educational program was functioning well for ordnance sites on Adak. There were no recommendations for OU B-1 sites.
- *Final Institutional Controls Site Inspection Report, Long-Term Monitoring and Inspections, Former Adak Naval Complex, Adak Island, Alaska* (Navy, 2006b). In addition to the inspections required by Appendix D of the revised Comprehensive Monitoring Plan, an inspection was conducted for the following four OU B-1 sites: C3-01 area, ML-01 area, HH-01 area, and FB-03 area. The four sites were inspected for erosion and subsurface soil exposure patterns and for land use verification. During the inspection in September 2005, there were no indications of surface water drainage resulting in obvious erosion at the sites. It also did not appear that sloughing, landslides, or past flood events have occurred that may have resulted in newly exposed surface soils. Additionally, the land use assumptions for the areas appear to be valid. The report concluded that the educational program was functioning well for ordnance sites on Adak. There were no recommendations for OU B-1 sites in the site inspection report.

6.3 Five-Year Review

After the completion of the remedial action, hazardous substances may remain at the site above health-based levels for unrestricted land use. Pursuant to CERCLA Section 121(c) and as provided in Office of Solid Waste and Emergency Response Directive 9355.7-03B-P (EPA, 2001), the Navy must conduct a statutory five-year review. The first five-year review report was completed in November 2001 (Navy, 2001a). Two additional five-year reviews have been completed since the initial review. The second five-

year review was completed in December 2006 (Navy, 2006a) and the third five-year review was completed in October 2011(Navy, 2011b). The forth five-year review is scheduled to be completed in 2016.

7.0 COMMUNITY RELATIONS

The Navy has sought community input for all phases of the cleanup efforts within OU B. Specific requirements pursuant to CERCLA Section 117(a), as amended, require certain reports to be released to the public and that the public be notified of proposed cleanup plans and remedial actions. All CERCLA requirements regarding communication with the public have been met.

Community relations activities have established communication among the citizens living near the site, other interested organizations, the Navy, EPA, and ADEC. The actions taken to satisfy the statutory requirements also provided a forum for citizen involvement and input to the proposed plan and the ROD. These actions included the creation of a community relations plan and periodic meetings between the public and the agencies in the form of Restoration Advisory Board (RAB) meetings. The first Community Relations Plan was prepared in 1993. A number of revisions and updates have been made over the years, the last one occurring in August 2011 (Navy, 2011a). RAB meetings have occurred throughout the investigation and cleanup process. The Adak RAB was formed in 1996 and generally meets on a biannual basis. Table 7-1 lists the dates for RAB meetings conducted between 1999 and 2014. Dates for RAB meetings conducted prior to 1999 were not available.

Table 7-1. Adak RAB Meeting Dates

April 9, 2014	April 12, 2005	November 15, 2000
October 9, 2013	September 20, 2004	September 27, 2000
April 10, 2013	April 14, 2004	August 23, 2000
October 10, 2012	November 5, 2003	June 28, 2000
April 11, 2012	May 23, 2003	April 15, 2000
October 20, 2011	March 5, 2003	March 8, 2000
April 13, 2011	January 2003	January 26, 2000
October 13, 2010	December 4, 2002	November 17, 1999
April 7, 2010	September 18, 2002	October 20, 1999
October 14, 2009	June 2, 2002	September 15, 1999
April 4, 2009	March 13, 2002	August 18, 1999
November 8, 2008	January 2002	July 14, 1999
April 15, 2008	October 17, 2001	June 9, 1999
October 10, 2007	July 18, 2001 ^(a)	May 12, 1999
April 11, 2007	May 30, 2001	March 10, 1999
October 11, 2006	April 23, 2001 ^(a)	January 13, 1999
April 19, 2006	March 21, 2001	December 9, 1998
October 19, 2005	February 21, 2001 ^(a)	

(a) indicates informal RAB meeting

*RAB dates between 1996 and 1998 are not available. Meetings were generally conducted on a monthly to quarterly schedule until 2004 when it was changed to biannually.

The purpose of the RAB is to act as a forum for the discussion and exchange of information among the Navy, regulatory agencies, and the community on environmental restoration topics. RAB meetings provide an opportunity for the stakeholders to review progress and participate in the decision-making

process by reviewing and commenting on actions and proposed actions involving releases or a threatened release at the installation.

The RAB is a public forum used by the Navy throughout the site closeout and deletion process. The public forum Web site is located at <http://www.adakupdate.com> and contains the latest information, fact sheets, and contact information on cleanup activities. This RACR will be posted on the Web site to facilitate public review. In addition, the document will be available at the Adak information repository.

8.0 CERTIFICATON STATEMENT

The remedial actions as specified in the OU B-1 ROD have been completed and no further response actions are necessary. Therefore, the OU B-1 sites are candidates for deletion from the NPL.

The RAOs specified in the RODs have been achieved, however, ongoing ICs are necessary to ensure that human health and the environment are protected. EPA (2011) allows closeout and deletion from the NPL even though ongoing operation and maintenance programs (ICs) are required. EPA does not define operation and maintenance as a “response”; therefore, a site with an operation and maintenance program can still be deleted.

The Navy, EPA, and ADEC have determined that all response actions at these sites are complete, and that no further remediation-related activity is anticipated. The ICs and associated land use restrictions were specified in the Interim Conveyance documents as an equitable servitude when the property was transferred out of federal ownership by the Department of the Interior (Navy, 2012b).

One hundred and fifty-six sites are located within OU B-1. The majority (106 out of 156) were recommended for NOFA in either the PA or ROD. Additional investigation and remedial action were recommended for 47 sites in the ROD and an additional three sites were added following the completion of the ROD making a total of 50 sites to undergo remedial actions. Investigations and remedial actions were completed between 2001 and 2010, the sites have received ROD action completed certification and are candidates for deletion.

Activities at the former Adak Naval Complex were completed in compliance with the ROD, remedial design plans, and specifications. Chemical analyses were conducted using EPA analytical methods. The QA/QC program used throughout the OU B-1 remedial actions was rigorous and conformed with EPA and State standards, and was accurate to the degree needed to ensure satisfactory execution of the remedial action.

9.0 CONTACT INFORMATION

Points of contact for OU B-1 are:

Justin Peach, PG, PE

Naval Facilities Engineering Command Northwest
1101 Tautog Circle, Suite 203
Silverdale, WA 98315
Phone: (360) 396-0082
justin.peach@navy.mil

Christopher Cora

Project Manager, Office of Environmental Cleanup
United States Environmental Protection Agency, Region 10
1200 Sixth Avenue, Suite 900, ECL-115
Seattle, WA 98101-3140
Phone: (206) 553-1478
cora.christopher@epa.gov

Guy Warren

Contaminated Sites Program, Federal Facilities
Division of Spill Prevention and Response
Alaska Department of Environmental Conservation
555 Cordova St.
Anchorage, AK 99501
Phone: (907) 269-7528
guy.warren1@alaska.gov

10.0 REFERENCES

- Alaska Department of Environmental Conservation (ADEC). 2013. *Cleanup Complete with Institutional Controls (CCIC) determination for OU B-1 Sites MM-10A, MM-10B, MM-10E, MM-10F, MM-10G, and MM-10H at former Adak Naval Complex* Concurrence Letter. February 22.
- _____. 2010. *Final After Action Report for 2008 Field Season for LJ-01 and RG-01* Concurrence Letter. September 14.
- _____. 2008. *Conditional Closure Determination for Sites within OUB1* Concurrence Letter. January 16.
- Department of Defense (DoD) and U.S. Environmental Protection Agency (EPA). 2005. *DoD/EPA Joint Guidance Recommended Streamlined Site Closeout and NPL Deletion Process for DoD Facilities*. December 2005.
- EOD Technology, Inc. (EODT). 2008. Project Plans for MEC Clearance Operations, Operable Unit B-1, AOCs MM-10F, MM-10G, MM-10H, Former Naval Air Facility, Adak Island, Alaska.
- Environmental Chemical Corporation (ECC). 2004. *Remedial Action Design Work Plan (RADWP), Adak Naval Complex, Adak, Alaska*. Prepared for Department of the Navy, Engineering Field Activity, Northwest, Naval Facilities Engineering Command, Poulsbo, Washington. 2nd revision. June 8.
- Foster Wheeler Environmental (Foster Wheeler Environmental Corporation) and ECC. 2002. *Remedial Action Design Work Plan (RADWP), Adak Naval Complex, Adak, Alaska*. Prepared for Department of the Navy, Engineering Field Activity, Northwest, Naval Facilities Engineering Command, Poulsbo, Washington. Navy Unexploded Ordnance Response Contract Number N62742-99-D-1800, CTO 0002 and RAC 3 Contract Number N44255-01-D-2000. Revised July 25, 2002.
- URS Greiner, Inc. (URSG). 1997. *Final Remedial Investigation/Feasibility Study Report, Operable Unit A, Adak Naval Complex, Adak Island, Alaska*. Prepared for U.S. Navy CLEAN Contract N62474-89-D-9295. Seattle, Washington. September 23.
- U.S. Environmental Protection Agency (EPA). 2001. *Draft Comprehensive Five-Year Review Guidance*. Office of Solid Waste and Emergency Response Directive 9355.7-03B-P. EPA 540R-98-050. June 2001.
- _____. 2011. *Close Out Procedures for National Priorities List Sites*. Office of Solid Waste and Emergency Response Directive 9320.2-22. May 2011.
- U.S. Navy. 2012a. *After Action Report Operable Unit B-1 AOCs MM-10F, MM-10G, and MM-10H Remedial Action, Former Naval Air Facility, Adak, Alaska*. Prepared for Naval Facilities Engineering Command Northwest under Contract No. N44255-08-6004. Silverdale, Washington. May 2012.
- _____. 2012b. *Final Comprehensive Monitoring Plan, Revision 5, Operable Unit A, Former Adak Naval Complex, Adak Island, Alaska*. Prepared by URS Group, Inc., for Naval Facilities Engineering Command, Engineering Field Activity, Northwest. Poulsbo, Washington.

- _____. 2011a. *Community Relations Plan, Former Adak Naval Complex, Adak, Alaska*. Prepared by URS Group, Inc. for Naval Facilities Engineering Command Northwest under Contract No. N44255-09-D-4001. Silverdale, Washington. August 15, 2011.
- _____. 2011b. *Final Third Five-Year Review, Former Adak Naval Complex, Adak, Alaska*. Prepared for Naval Facilities Engineering Command Northwest. Silverdale, Washington. October 2011.
- _____. 2010. *Final After Action Report for 2008 Field Season for Lake Jean LJ-01 and Rifle Grenade Range RG-01, Former Naval Air Facility, Adak Island, Alaska*. Prepared by USA Environmental, Inc. for Naval Facilities Engineering Command Northwest under Contract No. N62742-05-D-1868. Silverdale, Washington. April 2010.
- _____. 2006a. *Final Second Five-Year Review of Records of Decision, Former Adak Naval Complex, Adak, Alaska*. Prepared by URS Group, Inc., for Naval Facilities Engineering Command Northwest under Contract No. N44255-05-D-5100. Silverdale, Washington. December 2006.
- _____. 2006b. *Final 2005 Institutional Controls Primary Site Inspection Report, Adak Island, Alaska*. Prepared for Engineering Field Activity, Northwest, by Integrated Concepts Research Corporation under Contract No. N44255-00-D-2538, Delivery Order No. 021. Poulsbo, Washington. March 2006.
- _____. 2005a. *Final Institutional Controls Primary Site Inspection Report, Adak Island, Alaska*. Prepared by Integrated Concepts and Research Corporation for Engineering Field Activity, Northwest, Naval Facilities Engineering Command. Contract No. N44255-00-D-2538. Poulsbo, Washington. February 2005.
- _____. 2005b. *Draft After Action Report 2004 Field Season for OU B-1 Sites, Former Naval Air Facility, Adak Island, Adak Alaska*. Prepared by Environmental Chemical Corporation and Foster Wheeler Environmental Corporation for Engineering Field Activity, Northwest. Poulsbo, Washington. January 2005.
- _____. 2004a. *Final Institutional Controls Site Inspection Report, Long-Term Monitoring and Inspections, Former Adak Naval Complex, Adak, Alaska*. Prepared by URS Group, Inc., for Engineering Field Activity, Northwest, under Contract No. N44255-02-D-2008. Poulsbo, Washington. April 2004.
- _____. 2004b. *Adak UXO Awareness Fact Sheet*. Naval Facilities Engineering Command, Engineering Field Activity, Northwest. Poulsbo, Washington. June 2004.
- _____. 2003a. *Final Institutional Controls Primary Site Inspection Report, Adak Island Alaska*. Prepared by Integrated Concepts Research Corporation for Engineering Field Activity, Northwest, under Contract No. N44255-00-D-2538, Delivery Order 009. Poulsbo, Washington. March 2003.

- . 2003b. *Final After Action Report, 2002 Field Season for OU B-1 Sites, Former Naval Air Facility, Adak Island, Adak Alaska*. Prepared by Foster Wheeler Environmental Corporation for Engineering Field Activity, Northwest. Poulsbo, Washington. May 2003.
 - . 2002. *Final After Action Report, 2001 Field Season, Former Naval Air Facility, Adak Island, Adak Alaska*. Prepared by Environmental Chemical Corporation and Foster Wheeler Environmental Corporation for Engineering Field Activity, Northwest. Poulsbo, Washington. March 2002.
 - . 2001a. *Final Five-Year Review Report, Former Adak Naval Complex, Adak, Alaska*. Prepared by URS for Engineering Field Activity, Northwest, Naval Facilities Engineering Command. Contract No. N44255-00-D-2476. November 2001.
 - . 2001b. *Final Remedial Investigation/Feasibility Study Report for OU B-1 Sites, Former Naval Air Facility, Adak Island, Alaska*. Prepared by Environmental Chemical Corporation and Foster Wheeler Environmental Corporation for Engineering Field Activity, Northwest, under Contract No. N62742-99-D-1800/CTO #0002. Poulsbo, Washington. July 2001.
 - . 2001c. *Final Record of Decision, Operable Unit B-1, Former Adak Naval Complex, Adak Island, Alaska*. Prepared by URS Corporation for Engineering Field Activity, Northwest. Poulsbo, Washington. October 2001.
 - . 2000. *Draft Final Preliminary Assessment Report Volume I—Report Text, Selected Areas of Concern in Operable Unit B, Former Naval Air Facility, Adak Island, Adak Alaska, Delivery Order No. 0083*. Prepared by Foster Wheeler Environmental Corporation for Engineering Field Activity, Northwest. Poulsbo, Washington. December 2000.
 - . 1999. *Minefield Investigation Summary Report, 1998 Field Season, Unexploded Ordnance Investigation, Naval Air Facility, Adak, Alaska*. Prepared by Foster Wheeler Environmental for Engineering Field Activity, Northwest, under Contract No. N44255-93-D-4050, Delivery Order No. 0082. Poulsbo, Washington. January 1999.
 - . 1998. *Draft Report for Small Arms Ranges, Naval Air Facility Adak Island, Alaska*. Prepared by URS Greiner, Inc., for U.S. Navy CLEAN Contract N62474-89-D-9295. Poulsbo, Washington. July 1998.
 - . 1997. *Draft Preliminary Source Evaluation-1 Report for Small Arms Ranges, Naval Air Facility, Adak, Alaska*. Prepared by URS Consultants, Inc. for U.S. Navy CLEAN Contract N62474-89-D-9295. Poulsbo, Washington. May 1997.
- USA Environmental (USA). 2008. *MEC Clearance Work Plan, Lake Jean (LJ-01) and Rifle Grenade Range (RG-01), Former Naval Air Facility, Adak Island, Alaska*. May 2008, Revision 2, 11 August 2008.