Final
July 2014

Naval Facilities Engineering Command

After Action Report, 2013 Field Season

Non-Time Critical Removal Action (NTCRA)
Operable Unit B-2 (OU B-2)
Various Remedial Action Areas

Former Naval Air Facility

Adak, Alaska

Department of the Navy
Naval Facilities Engineering Command Northwest
1101 Tautog Circle
Silverdale, WA 98315

FINAL After Action Report – 2013 Field Season
Non-Time Critical Removal Action at OU B-2, Adak, Alaska
July 2014

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AFTER ACTION REPORT – 2013 FIELD SEASON

NON-TIME CRITICAL REMOVAL ACTION
OPERABLE UNIT B-2 (OU B-2) VARIOUS REMEDIAL ACTION AREAS

FORMER ADAK NAVAL AIR FACILITY
ADAK, ALASKA

July 2014

Prepared For:

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EXECUTIVE SUMMARY

FIELD SEASON 1 (FS1), 2013 ACTIVITIES AT ADAK, ALASKA

BACKGROUND

Under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Federal Facilities Agreement, the U.S. Navy is required to complete all necessary removal actions for site areas within Operable Unit (OU) B-2 on Parcel 4 of the former Adak Naval Complex, located at Adak Island, Alaska. OU B-2 sites are defined as those lying within the original boundaries of Parcel 4; these sites are intended to be remitted back into the Alaska Maritime Wildlife Refuge managed by the U.S. Fish and Wildlife Service. Currently, OU B-2 is in the Feasibility Study (FS) phase of the CERCLA process (RI/FS Summary of Study Reports for OU B-2 Sites, USA Environmental, May 2012).

Based on the recommendations in the FS, the Navy combined Areas of Concern (AOC) that required remediation into five Remedial Action Areas (RAAs) and is performing the required removal activities under a Non-Time Critical Removal Action (NTCRA). The removal activities performed meet the requirements authorized through the Action Memorandum (NAVFAC NW, January 2013) and are intended to meet the Remedial Action Objectives (RAOs) presented in the Proposed Plan (NAVFAC NW, September 2012).

The Navy awarded a contract to USA Environmental, Inc. (USA) for removal actions in RAA-02, RAA-03E, RAA-03W, RAA-04, and portions of RAA-05.

2013 NTCRA ACTIVITIES

USA drafted and finalized the NTCRA plans during 2012. The plans included a Munitions and Explosives of Concern (MEC) Quality Assurance Project Plan (QAPP) with appendices and Standard Operating Procedures, a separate Accident Prevention Plan, and a separate Explosives Safety Submission. In September 2012, in order to meet an early barge schedule and early 2013 mobilization to Adak, USA, the Navy, and third party Quality Assurance (QA) personnel (Battelle) mobilized to Adak to perform initial tasks in accordance with the approved Geophysical System Verification (GSV) plan. Over a 10-day period, the USA and QA team installed three Instrument Verification Strips (IVS) and emplaced blind seed items at RAA-02, RAA-03, RAA-04 grids.

To coordinate with a scheduled Samson barge voyage and delivery to Adak, USA shipped equipment and vehicles by air freight and barge beginning in February 2013. Electronic equipment such as EM61’s and Global Positioning System (GPS) gear shipped via air freight, while the bulk of equipment and vehicles were loaded on the barge in Seward, AK, for the voyage. However, Adak experienced a late season snowfall that resulted in mobilization delays. Due to the delay, the Site Manager mobilized to Adak to meet the barge in March 2013 to inventory and store explosives in the magazine; receive and inspect vehicles and equipment; and arrange for secure storage of USA gear pending mobilization of the USA field teams.

USA and its subcontractors began mobilization to Adak on 28 March 2013 and arrived in stages in order to receive required site training and then begin operations. During site setup, equipment was inventoried and function checked. Initial operations began 9 April 2013 in RAA-03E consisting of location surveys to establish boundaries and grids; establishment or maintenance of access roads and paths to the sites; and vegetation and surface clearance. The subcontracted Digital Geophysical Mapping (DGM) crews (Parsons) were the last to arrive and, after site specific training, they began DGM surveys in RAA-03E on 10 April 2013.

Field activities started concurrently in RAA-03E and RAA-05. RAA-05 had a dedicated unexploded ordnance (UXO) team and the USA subcontractor (AGVIQ) with an armored tracked excavator to perform the excavation to the required depth. Other teams, including DGM survey, UXO clearance, reacquisition, and demolition, worked in RAA-03E, RAA-03W, RAA-02, and RAA-04. When surface clearance teams completed enough grids to maintain team separation distance, the DGM teams followed with the data collection.

Field DGM data and accompanying documentation for each grid were posted to USA’s project file transfer protocol (ftp) site. USA’s DGM subcontractor processed the DGM field data and confirmed daily Quality

Control (QC) instrument checks. The data processors provided feedback to the Site Geophysicist regarding obstacle documentation/data gaps which were then addressed by the appropriate DGM team and sent back to the data processors to close out data collection for each grid. Final processed data was delivered to USA's QC Geophysicist via the project ftp site. Following QC review, the data for each grid was forwarded to the QA contractor.

With feedback from QA, the QC Geophysicist finalized the dig list for each grid, including any additional QA picks, and forwarded it to the geographical information system (GIS) database manager, who generated the DGM target maps, Real Time Kinematic – Differential Global Positioning System reacquisition files, Intrusive Investigation files, and Intrusive Results files for the field teams.

The dig lists were provided to the reacquisition and UXO dig teams for prosecution. The GIS database manager incorporated the intrusive results into the project database and the project geophysicist analyzed the intrusive results to ensure the target finds were consistent with the data.

DGM surveys of RAA-02, RAA-03E, RAA-03W, and RAA-04 were completed on 27 July 2013.

In total, USA investigated 21,853 targets in RAA-03E, 18,748 targets in RAA-03W, and 13,463 targets in RAA-04.

In 2013, the following items of MEC and/or Material Documented as an Explosive Hazard (MDEH) were recovered and disposed of:

- RAA-02: 8 plus 2 outside the RAA boundary left in place
- RAA-03E/03W: 1,999
- RAA-04: 388
- RAA-05: 263.

There were 22,084-lbs of Material Documented as Safe (MDAS) collected and shipped to a recycle facility for final processing. The MDAS consisted of Munitions Debris and other range residue. In accordance with NAVSEA OP 5 change 11, Munitions Debris and range residue are considered Material Potentially Presenting an Explosive Hazard (MPPEH) until inspected and certified as MDAS.

The original Scope of Work (SOW) for RAA-05 [Andrew Lake Disposal Area (ALDA-01)] was to excavate the entire site (4.73 acres) to a depth of 2-ft and then prosecute garbage pits and other anomalies to their depth of detection. However, based on the progressively decreasing metallic saturation across RAA-05/ALDA-01 from north to south, and the extent of environmental impact anticipated with removal of the soil and grasses covering the southern three-quarters of the RAA, the production contractor proposed and the Navy accepted an alternate approach. The alternate approach is an analog and dig clearance to 6-in. below the mineral soil surface, followed by DGM and clearance of the selected DGM targets to depth, in the southern 3.28 acres of the RAA. The high density (cobble) areas (1.45 acres) of RAA-05/ALDA-01 would be cleared using a shielded excavator.

However, on 27 June 2013, when a second 81mm High Capacity mortar was located, mechanical excavation activities were suspended for the Field Season. This was due to safety issues with the ordnance found, lack of suitable heavy equipment on Adak, and the inability to excavate with a greater separation distance (K18 Minimum Separation Distance) from the active excavation point to the operator in the cab of the onsite excavator. In total USA excavated about 0.38 acres of the cobble area.

While on site in 2013, USA performed six surface sweeps of the RAA-05 Andrew Lake Seawall (ALSW-01), recovering and disposing of 27 MEC/MDEH items.

All site activities underwent an extensive QC process in accordance with the approved MEC QAPP requirements. On completion of a grid, the documentation was assembled into a grid package which was forwarded to the Navy and QA. Once approved, this grid package was included in the RAA certification package.

2013 Field Season 1 Activities Completed / 2014 Field Season 2 Activities Planned

RAA-02 DGM surveys were completed in 2013. The RAA is scheduled for analog and dig of rocky areas plus intrusive investigations of DGM targets and grid certifications in Field Season 2 (FS2) in 2014. Step-outs are anticipated to be required in this RAA during 2014.

RAA-03E and nearly all of RAA-03W were completed; these certification packages are included in Appendix B of this report. Five grids remain in RAA-03W for completion in 2014. In addition, Step-outs are required in 2014 associated with both portions of RAA-03.

RAA-04 DGM surveys and intrusive investigations were completed in 2013 with Step-outs and QA checks and grid certifications planned in 2014.

RAA-05/ALDA-01 was excavated through an approximately 0.38 acre area and RAA-05/ALSW-01 was swept monthly during FS1 in 2013. Monthly sweeps of RAA-05/ALSW-01 are planned for FS2.

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ABBREVIATIONS AND ACRONYMS

°F	degree Fahrenheit
ADEC	Alaska Department of Environmental Conservation
AHA	Activity Hazard Analysis
ALDA	Andrew Lake Disposal Area
ALSW	Andrew Lake Sea Wall
AMNWR	Alaska Maritime National Wildlife Refuge
AOC	Area of Concern
AOPC	Area of Potential Concern
APP	Accident Prevention Plan
ARA	Adak Recreation Area
asl	above sea level
bgs	below ground surface
BIP	blow in place, blown in place
BLM	Bureau of Land Management
BRAC	Base Realignment and Closure
BSI	Blind Seed Item
CA	Corrective Action
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CRPP	Cultural Resource Protection Plan
DDESB	Department of Defense Explosives Safety Board
DFW	Definable Feature of Work
DGM	Digital Geophysical Mapping
DGPS	Differential Global Positioning System
DN	Deficiency Notice
DOD	Department of Defense
DOI	Department of the Interior
DQO	Data Quality Objective
DVD	Digital Versatile Disk
EMM	Earth Moving Machinery
EMT	Emergency Medical Technician
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
ESS	Explosives Safety Submission
EZ	Exclusion Zone
FCR	Field Change Request
FFA	Federal Facilities Agreement
FMT	Field Management Team
FS	Field Season, Feasibility Study
ft	foot, feet
ftp	file transfer protocol
GIS	Geographic Information System
GPS	Global Positioning System

GSV	Geophysical System Verification
GTI	Geologic and Terrain Induced
HALSA	High Amplitude Large Spatial Anomalies
HC	high capacity
in.	inch, inches
IP	Initial Phase
ISO	Industry Standard Object
IVS	instrument verification strip
LOE	Level of Effort
MAL	MEC Accountability Log
MC	Munitions Constituents
MD	munitions debris
MDAS	Material Documented as Safe
MDEH	Material Documented as an Explosive Hazard
MEC	Munitions and Explosives of Concern
MGFD	munition with the greatest fragmentation distance
MLLW	mean lower low water
mm	millimeter, millimeters
MPPEH	Material Potentially Presenting an Explosive Hazard
MRP	Munitions Response Program
MSD	Minimum Separation Distance
mV	millivolt
NAF	Naval Air Facility
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
NAVSEA	Naval Sea Systems Command
NCR	Non-Conformance Report
NOFA	No Further Action
NOSSA	Naval Ordnance Safety and Security Activity
NPL	National Priorities List
NTCRA	Non-Time Critical Removal Action
NTR	Navy Technical Representative
OB	Open Burn
OD	Open Detonation
OU	Operable Unit
PA	Preliminary Assessment
PDF	portable document format
PM	Project Manager
POC	Point of Contact
PP	Preparatory Phase
PSE	Preliminary Source Evaluation
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QASP	Quality Assurance Surveillance Plan

QC	Quality Control
QD	Quantity Distance
RAA	Remedial Action Area
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
RPM	Remedial Project Manager
RR-02	Rifle Range-02
RTK	Real Time Kinematic
SAERA	State Adak Environmental Restoration Agreement
SARF	Survey Area Report Form
SI	Site Investigation
SM	Site Manager
SOP	Standard Operating Procedure
SOW	Scope of Work
SSHP	Site Safety and Health Plan
SUXOS	Senior Unexploded Ordnance Supervisor
TAC	The Aleut Corporation
TFU	Thermal Flashing Unit
TL	Team Leader
TMP	Technical Management Plan
U.S. EPA	U.S. Environmental Protection Agency
UFP	Uniform Federal Policy
USA	USA Environmental, Inc.
USFWS	U.S. Fish and Wildlife Service
UXO	unexploded ordnance
UXOQCS	Unexploded Ordnance Quality Control Specialist
UXOSO	Unexploded Ordnance Safety Officer
UXOTI	UXO Technician I
UXOTII	UXO Technician II
UXOTIII	UXO Technician III
WP	Work Plan
WS	Work Sheet

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1.0 INTRODUCTION: DOCUMENT ORGANIZATION

This interim report details the activities of the 2013 Field Season 1 (FS1), Non Time Critical Removal Action (NTCRA) at Operable Unit (OU) B-2 on Adak, AK (see Figure 1-1 for location). In addition, the report describes the pre-mobilization activities in 2012, which consisted of installing the three Instrument Verification Strips (IVSs) and implementing the Quality Control (QC) Blind Seed program.

1.1 REPORT OVERVIEW

This report is composed of an Executive Summary and the following sections, which cover the required elements for FS1, 2013:

- Section 1: Introduction: Document Organization
- Section 2: NTCRA Project Objectives
- Section 3: Pre-Mobilization Operations (2012)
- Section 4: Preparatory Operations (2013)
- Section 5: Field Procedures
- Section 6: Project QA Results
- Section 7: NOSSA and ADEC Audits
- Section 8: NTCRA Field Season Summary
- Section 9: RAA Certification Summary
- Section 10: Conclusions and Recommendations
- Section 11: References

Maps and tables referenced in the text are provided in the body of the report and documentation required by the Munitions and Explosives of Concern (MEC) Quality Assurance Project Plan (QAPP) to verify completion of the NTCRA removal actions is located in the following appendices:

- Appendix A: Maps & Drawings
- Appendix B: RAA Certification Packages
- Appendix C: Definable Features of Work
- Appendix D: Site Training Records
- Appendix E: Production & QC Reports
- Appendix F: Weekly CQC Meetings
- Appendix G: Final GSV Report
- Appendix H: Team Logbooks/Journals
- Appendix I: Munitions Accountability Log
- Appendix J: Explosives & MDAS Accountability Documents
- Appendix K: Geo Data Tracking Log
- Appendix L: Grid Data Tracking Log
- Appendix M: FCR & NCR Reports
- Appendix N: NOSSA & ADEC Audit Reports
- Appendix O: OUB-2 GIS Database

These appendices are provided in an electronic portable document format (PDF) on a Digital Versatile Disk (DVD) located in the back of this binder. The appendices and files within the appendices are bookmarked for ease of navigation.

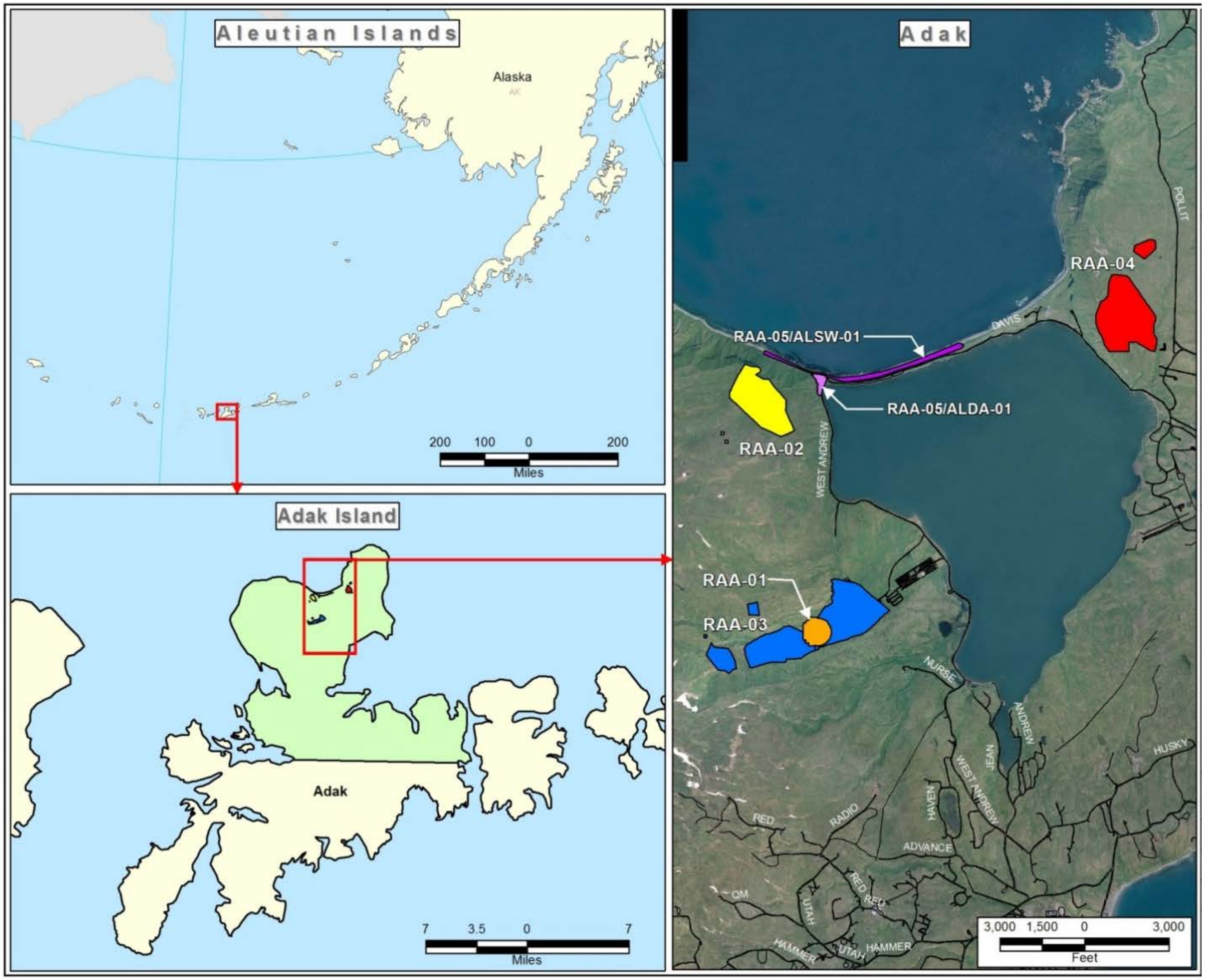

Figure 1-1: OU B-2 Sites

1.2 ADAK CHARACTERISTICS

1.2.1 CLIMATE AND WEATHER

Adak Island has a polar maritime climate characterized by persistent overcast skies, high winds, frequent and often violent storms, and a relatively narrow range of temperature fluctuation throughout the year. Adak is located in the region of the polar front, the zone of convergence between temperate westerly winds (which blow from the southwest at this latitude) and the polar easterly winds. In the area of the Aleutian Islands, this interface of air masses creates a semi-permanent low-pressure zone, which is particularly strong in the winter and generates the frequent low-pressure (cyclonic) storms characteristic of the North Pacific region.

Weather on the island can be very localized, and fog, low ceilings, precipitation, and clear weather can occur simultaneously within a range of a few miles. Storms occur during all seasons, with the most frequent and severe storms during winter. The average total annual precipitation for Adak Island (measured at the airport) is about 60-inches, most of which falls as rain in the lower elevations. Average monthly precipitation varies from a low of about 3-inches during June and July to a high of 7 to 8-inches during November and December.

Snowfall averages over 100-inches a year at sea level, but because of the relatively warm temperatures, snow depth rarely exceeds 1 to 2-ft (see Figure 1-2). The snow level (the elevation at which precipitation falls as snow instead of rain) varies with the temperature. Typically, snow occurs on Adak Island between November and April, but it melts fairly quickly at elevations less than 1,000-ft above mean lower low water (MLLW). At elevations greater than 1,000-ft above MLLW, snow that falls between November and April will generally remain as snowpack throughout the winter. Between May and October, snow rarely falls at sea level. From June through September, snow melts in the higher elevations, augmenting streamflow, and most precipitation falls as rain over the entire island. Permanent snowpack is not typical in the OU B-2 sites because most of the sites are at lower elevations.

Figure 1-2: 2012-2013 Snowfall in RAA-03

Wind conditions are typified by local directional shifts and rapid changes in velocity. Average wind velocity is 12 knots, with gusts in excess of 100 knots recorded during winter storms. High winds, with gusts over 50 knots, are frequent during the summer months.

The monthly temperatures range from a low of 32.9 degrees Fahrenheit (°F) in February to a high of 51.3 °F in August. The highest recorded temperature for Adak Island is 75 °F (recorded in August 1956), and the lowest recorded temperature is 3 °F (recorded in January 1963 and again in February 1964).

1.2.2 SURFACE FEATURES AND TOPOGRAPHY

The topography of northern Adak Island is directly related to its volcanic origin, with few areas of flat land. The western portion of the Range Complex at Andrew Lake is a valley surrounded on three sides (north, west, and south) by steep slopes leading upward to Mount Moffett. The valley is drained by Moffett Creek, which forms a small alluvial plain adjacent to Andrew Lake (see Figure 1-3). A number of small ponds and wetland areas are distributed around the eastern portion of the range complex.

Adak Island is lushly vegetated from sea level to about 1,000-ft in elevation. Upland vegetation varies with environmental factors, including the presence of wetlands, altitude, and shelter from wind. The native vegetation is that of a terrestrial-maritime tundra ecosystem. Creek beds are covered with sedge-dominated plants intermixed with wet area plants such as red fescue and hairgrass. There are essentially no trees of value to wildlife in either the developed or undeveloped areas.

Figure 1-3: Adak Topography

Where present, vegetation consists of hummocky tundra, and ranges from several inches to up to four feet thick. Longer grassy tundra is prevalent in the lower areas and cut drainages. Typically, the tundra growth becomes shorter as elevation increases. The tundra, vegetation, and then soil dissipate as elevation increases and are replaced with exposed rock, then bedrock.

Because of its harsh climate conditions and relative lack of vegetative structure, the diversity of wildlife inhabiting Adak Island is relatively low. However, there are several species on-island. The Aleutian Canada goose does not nest on Adak Island but is an occasional visitor. The Aleutian Canada goose was recently de-listed from the list of threatened and endangered species. The U.S. Fish and Wildlife Service (USFWS) is monitoring both the Marbled and Kittlitz's Murrelet. The federally endangered Shorttailed Albatross may be found offshore of Adak occasionally, but is unlikely to be found in near shore waters.

1.3 ADAK ISLAND HISTORY

Adak Island was reserved as part of the Aleutian Island National Wildlife Refuge by Executive Order in 1913. Adak remained largely unoccupied until August 1942, when U.S. forces (U.S. Air Force and U.S. Navy) established an air base and staging area to support operations against Japanese installations on nearby Kiska and Attu Islands.

After World War II, the U.S. Air Force used these facilities until 1951, when they became Naval Air Station (NAS) Adak under control of the U.S. Navy. The NAS Adak was re-designated as the Naval Air Facility (NAF) by the 1993 Base Realignment and Closure (BRAC) Commission, and was later selected for closure by the 1995 BRAC Commission. The military mission on Adak Island ended in March 1997. Since then, the Adak Island population has fluctuated between 50 and 300 persons. Currently, approximately 60 to 150 people reside on Adak Island, depending on the time of the year.

OU B-2 is located on the Former Adak Naval Air Facility Parcel 4, Adak Island, Alaska. Adak Island is located approximately 1,200 air miles southwest of Anchorage, Alaska, in the Aleutian Island chain. Its geographic position is longitude 176°45' West and latitude 51°45' North.

The majority of ordnance contamination at the RAAs is believed to have been associated with World War II-era training exercises when as many as 100,000 military and civilian personnel were stationed on the island. During this time, Adak was used as a training and staging area for planned invasions of Attu and Kiska Islands, which were then occupied by the Japanese. Among the personnel stationed on Adak were soldiers who conducted combat and proficiency training on the island. Ordnance activities throughout Adak's 50-year military history included training in small arms and the use of mortars, artillery, rockets, hand grenades, as well as other ordnance. Activities also included ordnance storage and disposal by open burning and/or open detonation.

The developed portion of the island is limited to the northern half, which was historically designated as the military reservation. US Fish and Wildlife Service (USFWS) manages the southern portion (117,265 acres) of the island, which is designated wilderness area within the Alaska Maritime National Wildlife Refuge (AMNWR) system. The military reservation on Adak Island occupied approximately 76,800 acres. Most of the development on the military reservation was within the downtown core area, adjacent to the shore of Kuluk Bay and Sweeper Cove. The former Naval Base, which was situated in the developed area on Adak

Island, ceased operation and was closed in March 1997. All but approximately 5,600 acres (Parcel 4) were relinquished to the Department of the Interior (DOI) in March 2004. This land was subsequently transferred to The Aleut Corporation (TAC), the City of Adak, the State of Alaska Department of Transportation, and the USFWS. Current land uses at the former Navy base include an airfield, port operations, light industry, and administrative, commercial, recreational, and residential areas. The airfield is owned by the State of Alaska Department of Transportation. The 5,600 acre area that was not relinquished is referred to as Parcel 4, and remains under Navy control. OU B-2 sites are located in Parcel 4.

1.4 ADAK REGULATORY HISTORY

In October 1992, the former Adak Naval Complex was proposed for the National Priorities List (NPL), and officially placed on the list in May 1994. The Federal Facilities Agreement (FFA), an agreement among the Navy (as Lead Agency), the Environmental Protection Agency (EPA) (regulatory lead), and the State of Alaska that specified the scope, process, and overall schedule for environmental investigations to be completed under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) process, was signed in November 1993.

The FFA initiated a series of studies: Preliminary Source Evaluations (PSEs) of non-petroleum sites and studies of petroleum sites under the State Adak Environmental Restoration Agreement (SAERA).

1.5 PREVIOUS INVESTIGATIONS

From 1993 through 1996, four rounds, or batches, of PSEs were conducted. The PSE process included a risk-based screening evaluation of human health and ecological risk at the PSE sites. Sites identified by this process as requiring additional evaluation were included in the base-wide Remedial Investigation/Feasibility Study (RI/FS) performed by URS. Field work for the base-wide RI/FS began in the spring of 1996 and was completed in the summer of 1996. The RI/FS report was published in September 1997 (URS 1997).

Prompted by the decision to close NAF Adak and transfer the facility out of Federal ownership, additional data was collected in 1999 [Draft Site Investigation (SI) Report, Foster Wheeler Environmental 2000a], along with previously collected data and archival information, were used to prepare a Draft Preliminary Assessment (PA) Report (Foster Wheeler Environmental 2000b). The PA Report identified areas of potential concern (AOPCs) that were screened against criteria developed by a Project Team that included EPA, Alaska Department of Environmental Conservation (ADEC), the Navy, and consulting members. The screening criteria were used to evaluate the likelihood and density of contamination with an analysis of the supporting evidence. Results of the screening provided recommendations for moving some AOPCs to No Further Action (NOFA) status, and for moving other sites, now labeled Areas of Concern (AOC), forward into the RI/FS process.

Following the PA in 2000, an OU, known as OU-B, was created to manage the investigation and remediation of MEC contamination in the areas warranting further response (Foster Wheeler Environmental 2000b). An RI/FS Work Plan (WP) (Foster Wheeler Environmental 2000c) also was developed to facilitate a consistent investigation of the identified AOCs within OU-B, allowing a determination of the nature and extent of MEC contamination in each area and the collection of data needed to support hazard assessment and decision making with regard to the remediation of MEC.

The Navy began implementing this RI/FS WP in 2000. By the end of the first field season, the Navy recognized that certain areas of the military reservation (primarily those in Parcel 4 areas), would require an extended period of time for assessment and remediation due to the nature of the contamination and/or the lack of an effective technical approach for remediation. In order to expedite the assessment and cleanup of those portions of the military reservation that could be transferred in a timely manner, OU-B was divided into two parts: OU B-1 and OU B2. OU B-1 contained the AOCs that were slated for transfer to TAC as part of the land transfer agreement. These AOCs and surrounding property were contained in Land Transfer Parcels 1 through 3.

In an effort to complete cleanup of OU B-1 sites as early as possible to support residential reuse, and to support land transfer. OU B-1 sites were designed as those sites intended for relinquishment to the Bureau of Land Management (BLM) under the terms of the land transfer agreement. OU B-2 sites were defined as those lying within the original boundaries of Parcel 4 and will be remitted back into the AMNWR managed by USFWS. All remaining OU B-2 sites are located within Parcel 4, including the sites that are the subject of this NTCRA project. OU B-2 is currently in the feasibility study (FS) phase of the CERCLA process (RI/FS Summary of Study Reports for OU B-2 Sites, USA Environmental, May 2012).

OUB-2 contained the remaining AOCs that were expected to require an extended period for remediation. These AOCs and surrounding buffer areas were contained in Land Transfer Parcel 4, which is slated for ultimate transfer to the U.S. DOI for inclusion in the AMNWR. The final Land Transfer Parcel, Parcel 4, contains the RAAs within OUB-2. Remediation of ordnance contamination in this Land Transfer Parcel is not yet complete.

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2.0 NTCRA PROJECT OBJECTIVES

The scope of this project is to conduct all work required to complete a NTCRA for five OU B-2 RAAs (see Figure 2-1 for RAA locations) to include monthly seawall sweeps in RAA-05 while unexploded ordnance (UXO) crews are on-island. The work is anticipated to require three years to complete. This report summarizes the work performed during FS1 in 2013. Details for the work requirements are defined in the Final OU B-2 NTCRA MEC QAPP dated February 2013. All work was performed following applicable and appropriate Department of Defense (DOD) guidance and policy for Munitions Response Program (MRP) response actions and considers all site documentation and reports to date.

The primary activities conducted under the SOW for this site consisted of:

- Finalizing the Draft OU B-2 NTCRA MEC QAPP including obtaining Navy and regulatory concurrence
- Field investigations including mobilization, site preparation (e.g., brush removal, installation of temporary roads, removal of surface metal and MEC)
- Analog & Dig clearance at selected locations
- Digital geophysical mapping (DGM)
- Intrusive investigation of target anomalies developed from the DGM data (e.g., excavation, identification and management of the anomaly source)
- Removal of MEC and material potentially presenting an explosive hazard (MPPEH) from the excavation
- Inspection and certification of MPPEH
- Onsite treatment of MEC
- Munitions Constituents (MC) sampling and management of MC-contaminated soils
- Demobilization in accordance with the approved WPs.

Specific scopes for the RAAs are included in the tasks listed in Table 2-1. This table also shows the relationship between the RAAs and AOCs in Parcel 4. A map showing these relationships is provided on Figure 5-1.

The project must be completed to the satisfaction of Naval Facilities Engineering Command Northwest (NAVFAC NW), Naval Ordnance Safety and Security Activity (NOSSA), the ADEC, and the U.S. Environmental Protection Agency (U.S. EPA) by strict adherence and documentation to project plans, documentation on classification of all anomalies, proper waste handling and documentation of disposal or treatment of waste, and verification by a third party quality assurance (QA) contractor following an approved Quality Assurance Surveillance Plan (QASP).

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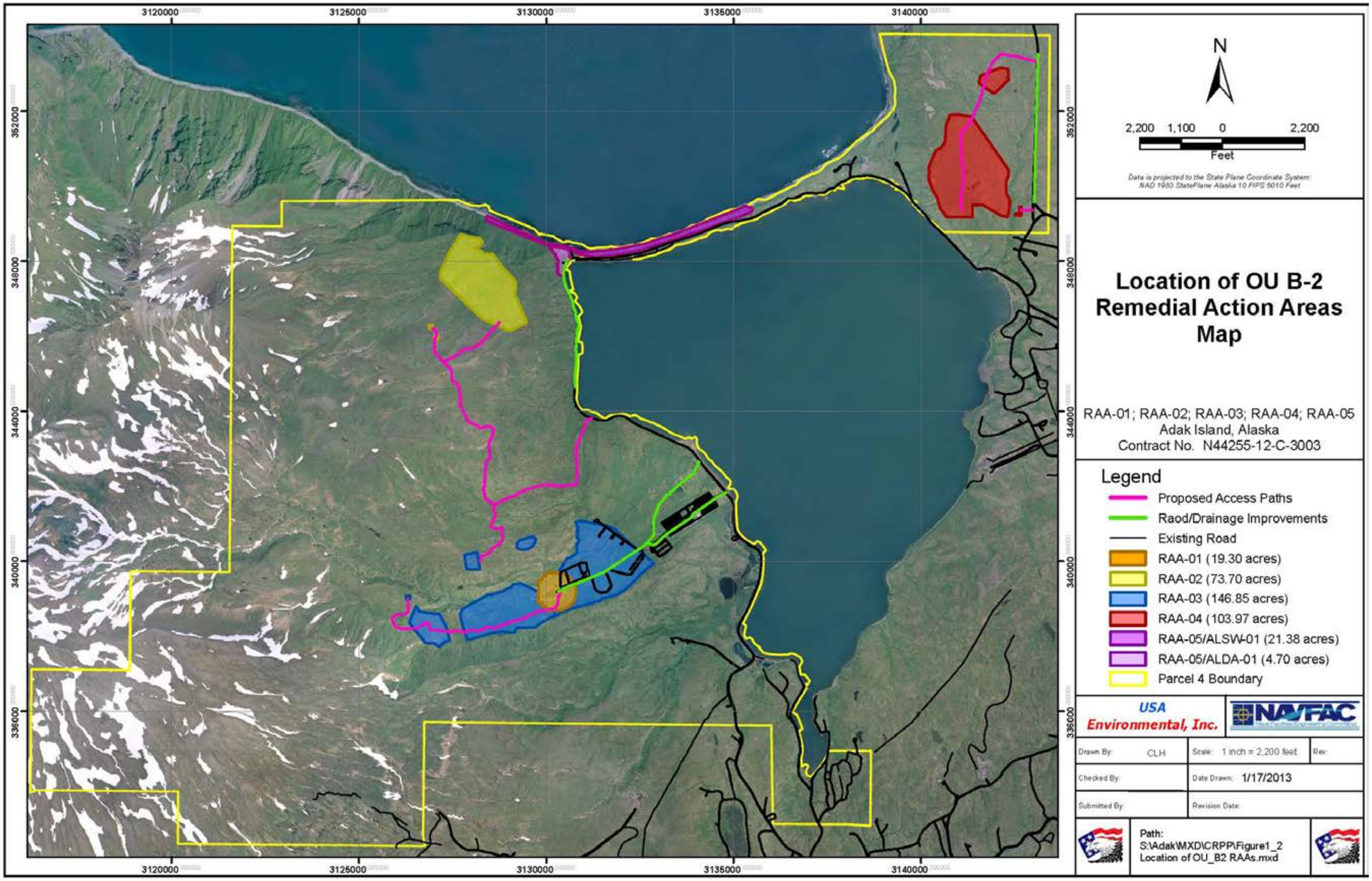

Figure 2-1: RAA Locations

Table 2-1: NTCRA Tasks

Base Contract / Modifications 1 through 11											
RAA	AOCs	Size (acres)	Removal Depth (base contract / mod'd)	Site Preparation					New DGM Surveys	Investigation and Removal of DGM or Mag & Dig Anomalies and Proper Disposal	Site Restoration
				GSV		Vegetation Removal	Surface Clearance	Temp Road and Drainage Installation/ Improvements			
				IVS Installation	Blind Seed						
-01	OB/ OD-01	19.37	2-feet / Depth of Detection	N/A (Shared)	Yes	Yes	Yes (to include mag and dig)	N/A (Shared)	Yes	7600 / 8600	Yes
-02	C1-01	73.9 (in-cludes two 30m x 30m grids)	2-feet / Depth of Detection	Yes	Yes	Yes	Yes	Yes	Yes	6641 / 6641	Yes
-03W	MI-01	70.72 (in-cludes one 30m x 30m grid)	2-feet / Depth of Detection	Yes	Yes	Yes	Yes	Yes	Yes		Yes
	MI-02		2-feet / Depth of Detection	N/A (Shared)	Yes	Yes	Yes	N/A (Shared)	Yes		Yes
	MI-03		2-feet / Depth of Detection	N/A (Shared)	Yes	Yes	Yes	N/A (Shared)	Yes	29,168 / 40,895	Yes
-03E	RR-01	74.4	2-feet / Depth of Detection	N/A (Shared)	Yes	Yes	Yes	N/A (Shared)	Yes		Yes
	HG-01	1.8	2-feet / Depth of Detection	N/A (Shared)	No	Yes	Yes	N/A (Shared)	Yes		Yes
-04	SA93-01, -02 and -03[1]	104	4-feet / Depth of Detection	Yes	Yes	Yes	No	Yes	Yes	6,565 / 19,094	Yes
-05[2]	ALDA -01	4.7	2-feet / 4-feet / Depth of Detection	No	Yes	Yes	Yes	N/A (Shared)	Yes	686 / NA	Yes

[1]SA93-03 is a stepout
[2]Plus monthly seawall sweeps of ALSW-01 within RAA-05

2.1 RAA DESCRIPTIONS AND CHARACTERISTICS

2.1.1 RAA-01

RAA-01 is 19.4 acres total (see Appendix A, Maps) with 17 acres accessible and the remainder inaccessible due to standing water and steep slopes along Moffett Creek. The site is located at the terminus of the Andrew Lake Range Complex access road. It is centered between RAA-03E and RAA-03W. The elevation in this RAA ranges from about 110 to 130-ft above sea level (asl). Portions of the area are inaccessible due to the presence of Moffett Creek and water filled craters in this area. It was used for detonation of munitions from military training activities and MEC removal operations (1940s through 1990s). The Open Burn/Open Detonation (OB/OD) area has Resource Conservation and Recovery Act (RCRA) interim status as a hazardous waste treatment unit area.

Figure 2-2: Gate Access to RAA-03

Access is indirect via the gravel range entry road, which branches from the main access road along the west side of Andrew Lake. This main road is gated (locked steel gate, see Figure 2-2) near the south end of the lake to deter general access. A locked cable barrier also deters access to the range entry road. It is relatively flat, but hummocky in some locations and marshy in others. Previous disposal events have resulted in several craters. It is generally covered in knee-high, grassy tundra; however, relatively barren areas surround some of the disposal craters. Moffett Creek runs from west to northeast through the northwestern portion. The center and southern portions of RAA-01 are occupied by wetlands.

2.1.2 RAA-02

RAA-02 is located north of the historical Andrew Lake Range Complex (see Appendix A). It is roughly oval in shape and is situated on a sloping plateau above and west of the Andrew Lake Disposal Area-01 (ALDA-01) on the flanks of Mount Moffett at elevations ranging from about 500 to 1,300-ft asl. This RAA is predominantly covered with large loose sharp edge rocks and deep washes. The RAA boundary encompasses 73.9 acres with approximately 20.9 acres mapped as boulder fields and the remainder dense short grass and tundra (see Figure 2-3). Though some MEC contamination RAA-wide is believed to originate from use as an apparent target/impact area, the primary source of MEC contamination at the RAA is believed to be kick-outs from demolition shots at RAA-05/ALDA-01. Access to RAA-02 is either by vehicle path beginning in a stream valley between RAA-03 and RAA-05, climbing to elevation, and traversing northerly along the slope to the southern portion of RAA-02 (see Section 5, Figure 5-1), or up the slope from RAA-05 (see Section 5, Figure 5-4).

Figure 2-3: On Top of RAA-02

2.1.3 RAA-03 East (RAA-03E) and RAA-03 West (RAA-03W)

RAA-03, which lies in a valley west of Andrew Lake, served as a target/impact area and small arms ranges. OB/OD operations may have also occurred within RAA-03W near the RAA-01 boundary, based on craters in the area and the degree of metallic saturation in the overburden. Soils in the lower elevations of the RAA are saturated within a few inches of the surface. The RAA encompasses about 144 acres including RAA-03E and RAA-03W. It is separated by the RAA-01 (OB/OD) in the middle. Access is via gravel range entry road that terminates at OB/OD, which branches from the main access road along the western side of Andrew Lake. This main road is gated (locked steel gate) near the south end of the lake to deter general access. A locked barrier also deters access to the range entry road (see Figure 2-2 and Figure 2-4).

Figure 2-4: RAA-03 Entry Road

RAA-03E is in the south central portion of the Range Complex at Andrew Lake. It is bordered by AOC RR-02; OU B-1 to the south; AOC RR-04 to the east; and AOC OB/OD-01, AOC RG-01, and AOC MI-03 to the west. AOC HG-01 is located wholly within AOC RR-01 (see Section 5, Figure 5-1 for the relationship of these AOCs to RAA locations.). Elevations range from about 50 to 500-ft asl. Moffett Creek runs from west to northeast through the northern portion of this RAA. Lowland areas bordering this creek are often saturated with pooled water at certain times of the year. Wetland vegetation and soils are present through much of the RAA. Groundwater is in hydraulic communication with the creek.

RAA-03W is in the western portion of the former Andrew Lake Range Complex, occupying the western part of the Moffett Creek drainage basin. Elevations range from 130-ft asl on the valley floor to 920-ft asl along the flanks of Mount Moffett. RAA-03W ranges from being relatively low and flat in the eastern portion nearest the RAA-01 area, to steep and inaccessible at the western end and along the southern border. A steep ridgeline with a relatively flat top extends near the northern side of the RAA.

2.1.4 RAA-04

RAA-04 is located to the northeast of Andrew Lake. Most of the site is on a plateau some 300 to 400-ft above the lake. The RAA is bordered by AOC SA93-02 to the east, areas lying outside Parcel 4 to the north and south, and Andrew Lake to the southwest (see Figure 5-1). Elevations in the central portion range from about 220 to 320-ft asl. Steep ridges rising to just over 500-ft are located west and north of the RAA. RAA-04 encompasses 104 acres total. Access to RAA-04 is from the southern side of Clam Lagoon, through -rutted and rocky roads.

Figure 2-5: RAA-04 Tundra Grass

The existing access road runs north to south along a large canyon that prevents access to the site from the eastern end. The only access is one-half mile up the road to the west, through the locked gate to RAA-04. RAA-04 is predominantly covered with spongy tundra to the east and dense knee-high grass to the west (see Figure 2-5). The site, which is generally dry on the western end and wet/marshy to the east, is bounded by the steep cliffs that drop into Andrew Lake to the south and by a 150-ft deep canyon to the north. A couple of shallower canyons run up the center of RAA-04, gradually becoming a small, passable creek/stream toward the western end of the site where the terrain is relatively flat. A small, “L” shaped partial grid is located near the access road on the eastern side.

2.1.5 RAA-05

Figure 2-6: ALDA-01 (RAA-05)

RAA-05 consists of the northern portion of OU B-2 that borders Andrew Bay. Two AOCs are located within the RAA: the Andrew Lake Disposal Area (ALDA-01) and the Andrew Lake Seawall (ALSW-01). RAA-05 consists of the portion of ALDA-01 where a 1999 DGM survey found extensive geophysical anomalies (4.7 acres). ALDA-01 is located at the northwest corner of Andrew Lake. The AOC boundary is dog-legged and is wider at the north end of the site near Andrew Bay (see Figure 2-6). Most of the AOC lies at elevations ranging from about 20 to 40-ft asl; however, a cliff on the western side of the AOC rises to heights of over 200-ft asl. Wetland vegetation and soil are present in the southern portion of ALDA-01. Access to RAA-05 is through the Andrew Lake main gate and follows the existing dirt/gravel road north until the road ends (see Adak RAA Activities Map in Appendix A).

Figure 2-7: ALSW Seawall Spillway

There is a man-made main drainage (spillway) (see Figure 2-7) from Andrew Lake to the bay located near the southern end of the seawall at the end of the main access road. The main drainage is improved by Navy Explosive Ordnance Disposal (EOD) one to two times per year. The portion of ALSW-01 where MEC is deposited along the shoreline and seawall is approximately 21 acres.

2.2 PROJECT PLANS

The Navy provided the draft version of the MEC QAPP for USA to finalize and include the required sub-plans [Standard Operating Procedures (SOPs), an MC QAPP, Construction WP, Project Forms, etc.]. In December 2012, USA submitted the draft final version for the Navy and regulatory agency review. USA incorporated the Navy and regulator comments and finalized the MEC QAPP in February 2013. The QAPP was revised in March 2014 to accommodate changes for the 2014 field season, including incorporation of the Field Change Requests (FCRs) as well as other changes and process improvements as captured in FCR-34.

The MEC QAPP is the primary operations document for the NTCRA of the five RAAs at OU B-2. The MEC QAPP was prepared in accordance with the requirements of the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP) (U.S. EPA 2005), and the NAVFAC MEC QAPP Template dated May 2009. The MEC QAPP consists of 37 worksheets that contain both general and specific information pertaining to the NTCRA at OU B-2. Of the 37 worksheets, 10 worksheets are not applicable to the MEC QAPP and were presented under the MC QAPP (Appendix B to the MEC QAPP). These 10 non-applicable worksheets include:

- MEC QAPP Worksheet #15 – Reference Limits and Evaluation Table
- MEC QAPP Worksheet #19 – Analytical SOP Requirements
- MEC QAPP Worksheet #23 – Analytical SOP References
- MEC QAPP Worksheet #24 – Analytical Instrument Calibration
- MEC QAPP Worksheet #25 – Analytical Instrument and Equipment Maintenance, Testing, and Inspection
- MEC QAPP Worksheet #26 – Sample Handling
- MEC QAPP Worksheet #27 – Sample Custody Information

- MEC QAPP Worksheet #28 – Quality Control Samples
- MEC QAPP Worksheet #30 – Analytical Services
- MEC QAPP Worksheet #36 – Analytical Data Validation Summary (Steps IIa and IIb).

The purpose and contents of the remaining 27 worksheets are summarized below.

- MEC QAPP Worksheet #1 – Title and Approval Page. This worksheet provides the title page for the NTCRA at OU B-2.
- MEC QAPP Worksheet #2 – MEC QAPP Identification Information. This worksheet provides general information on the NTCRA at OU B-2 which includes a table of contents and MEC QAPP identifying information.
- MEC QAPP Worksheet #3 – Distribution List. This worksheet lists those entities who receive copies of the QAPP, subsequent revisions, addenda, and amendments.
- MEC QAPP Worksheet #4 – Project Personnel Sign-Off Sheet. This worksheet lists project personnel who will be performing the work under the NTCRA at OU B-2. These personnel have read the applicable sections of the MEC QAPP and will perform the tasks as described in the MEC QAPP and associated subsidiary documents.
- MEC QAPP Worksheet #5 – Project Organizational Chart. This worksheet presents USA's organization chart for the NTCRA at OU B-2.
- MEC QAPP Worksheet #6 – Communication Pathways. This worksheet lists the communication pathways for many key administrative and field communication drivers to include responsibility, affiliation, name of person responsible, contact number, and procedure.
- MEC QAPP Worksheet #7 – Personnel Responsibilities and Qualifications. This worksheet lists the names of team members, their role, their responsibility, and qualification for the NTCRA at OU B-2.
- MEC QAPP Worksheet #8 – Special Personnel Training Requirements. This worksheet lists all special project personnel, their qualification, and specific training requirements.
- MEC QAPP Worksheet #9 – Project Scoping Session Participants Sheet. This worksheet provides information on the project scoping meeting with regards to the MEC removal action at the NTCRA at OU B-2. The information includes name/information on the participants, comments/decisions, action items, and consensus decisions made.
- MEC QAPP Worksheet #10 – Problem Definition. This worksheet describes the U.S. Environmental Protection Agency (U.S. EPA) Seven-Step Data Quality Objective (DQO) Process used to define the problem statement and RAOs for the NTCRA at OU B-2.
- MEC QAPP Worksheet #11 – Project Quality Objectives. This worksheet details the project quality objectives and systematic planning process statements for the NTCRA at OU B-2.
- MEC QAPP Worksheet #12 – Measurement Performance Criteria (MEC/MPPEH). This worksheet lists and describes the measurement performance criteria [e.g., project performance metrics along with the quality control (QC) sample or activity used to assess the performance]. It also describes the auditing procedures for the definable features of work (DFWs) and actions taken if a failure occurs for the NTCRA at OU B-2.
- MEC QAPP Worksheet #13 – Secondary Use of Data Criteria and Limitations. This worksheet lists the secondary data used to support the NTCRA at OU B-2. It also provides the source of the data, how data will be used to support this project and the data limitations.
- MEC QAPP Worksheet #14 – Summary of Project Tasks. This worksheet presents a list of the DFWs and all supporting subtasks for the NTCRA at OU B-2.
- MEC QAPP Worksheet #16 – Project Schedule/Timeline. This worksheet provides the project schedule for the NTCRA at OU B-2.
- MEC QAPP Worksheet #17 – Sampling Design and Rationale. This worksheet provides details on the project DFWs and related tasks that will be performed to meet the requirements and objectives of the NTCRA at OU B-2. This worksheet will serve as the Technical Management Plan (TMP).

- MEC QAPP Worksheet #18 – Sampling Locations and Methods/SOP Requirements (MEC/MPPEH). This worksheet lists the RAAs and the general MEC/MPPEH removal requirements for each location.
- MEC QAPP Worksheet #20 – Field Quality Control Sample Summary. This worksheet provides a summary of the field quality control for the NTCRA at OU B-2.
- MEC QAPP Worksheet #21 – Project Sampling SOP References. This worksheet lists the SOPs for the NTCRA at OU B-2. Actual SOPs were provided as Appendix A to the MEC QAPP.
- MEC QAPP Worksheet #22 – Field Equipment Calibration, Maintenance, Testing, and Inspection. This worksheet identifies all field equipment and instruments (other than analytical instrumentation) that require calibration, maintenance, testing, or inspection and provide the SOP reference number for each type of equipment that will be used for the NTCRA at OU B-2.
- MEC QAPP Worksheet #29 – Project Documents and Records. This worksheet identifies the documents and records that will be generated for all aspects of the NTCRA at OU B-2.
- MEC QAPP Worksheet #31 – Planned Project Assessments. This worksheet discusses the different type of assessments for evaluating the project activities.
- MEC QAPP Worksheet #32 – Assessment Findings and Corrective Action (CA) Responses. This worksheet describes the activities for identifying and correcting any problems encountered during the NTCRA at OU B-2 that have the potential to impact data quality.
- MEC QAPP Worksheet #33 – QC Management Reports. This worksheet describes the content of each QC management report that will be generated for the NTCRA at OU B-2, including an evaluation of measurement error as determined from the assessments.
- MEC QAPP Worksheet #34 – Verification Process (Step I). This worksheet describes the processes that will be followed to verify project data. It describes how each item will be verified, when the activity will occur, and what documentation is necessary, and identifies the person responsible.
- MEC QAPP Worksheet #35 – Validation Process (Steps IIa and IIb). This worksheet discusses the process for documenting and establishing the validation procedures and criteria for the NTCRA at OU B-2.
- MEC QAPP Worksheet #37 – Usability Assessment. This worksheet provides the final usability assessment criteria that will be used to verify that the work has been completed and is acceptable.

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2.3 PROJECT PLAN DEVIATIONS/REVISIONS

2.3.1 FIELD CHANGE REQUESTS

FCRs were used to request and document changes identified as a result of unanticipated field conditions and to facilitate changes in the MEC QAPP. Changes to plans or procedures were documented using the FCR Form. The UXO QC Manager maintained an FCR Log to track FCRs through the submittal and approval process. The RPM and QA contractor reviewed the FCRs for acceptance and approval. The table below lists the FCRs generated and approved during FS1. Copies of the FCRs and the FCR Log are located in Appendix M.

FCR Number	Description of Change	Documents Changed
1	Added Schonstedts to augment the all-metals analog instruments for pinpointing subsurface ferrous objects	MEC QAPP
2	Added new control points	MEC QAPP
3	Revised the QC audit frequency of DGM teams	MEC QAPP
4	Removed MEC guard requirement from the Accident Prevention Plan/ Site Safety and Health Plan (APP/SSHP)	APP/SSHP
5	Added Function Check Areas	MEC QAPP
6	Allowed UXO Technician II to conduct Tailgate Safety briefings	MEC QAPP
7	Allowed Target Reacquisition teams to record inaccessible areas	The FCR was voided
8	Revised wind safety determination procedures	APP
9	Removed anomaly avoidance requirement during target reacquisition	MEC QAPP
10	Documented IVS procedural changes from the CAs in NCR-01	MEC QAPP
11	Changed the storage and flashing procedures for large non-munitions related Material Documented as Safe (MDAS)	MEC QAPP
12	Revised to allow UXO Technician II to perform as spotter for the Earth-Moving Machinery (EMM) operator	MEC QAPP
13	Revised the MDAS procedures in SOP-10	MEC QAPP
14	Documented the procedural changes from the CAs in NCR-03	MEC QAPP
15	Revised fire extinguisher size requirements	MEC QAPP
16	Revised obstacle documentation requirements on the basis of the CAs in NCR-05	MEC QAPP
17	Revised MEC checklist in SOP-08	MEC QAPP
18	Analog and Dig Methodology	The FCR was put on hold until field season 2
19	Correction of sensor footprint for grid coverage	MEC QAPP
20	Documented the procedural changes for High Amplitude Large Spatial Anomalies (HALSAs) from the CAs in NCR-07	MEC QAPP
21	Added the small Vallon coil head for use by QC staff	MEC QAPP
22	Added an Activity Hazard Analysis (AHA) for operation of the Thermal Flashing Unit (TFU)	MEC QAPP
23	Added of DGM static tests for system changes	MEC QAPP
24	Revised Explosive Disposal Log	MEC QAPP

FCR Number	Description of Change	Documents Changed
25	Corrected de-watering assessment process	MEC QAPP
26	Defined mini-grid placement procedures	MEC QAPP
27	Added Safe to Transport Form to SOP	MEC QAPP
28	Clarified the use of the Vehicle Inspection Forms	MEC QAPP
29	Revised QC Daily Report	MEC QAPP
30	Changed the RAA-02 target selection threshold from 3 to 5 mV	MEC QAPP
31	Added QC audit checks to verify HALSA procedures	MEC QAPP
32	Allowed team leaders to use the Vallon detector	MEC QAPP
33	Outlined procedures for sub-sampling of geological and terrain induced DGM features	MEC QAPP
34	Summary of non-FCR changes to the QAPP, such as process improvements, for the 2014 field season	MEC QAPP

2.3.2 NON-CONFORMANCE REPORTS

Non-Conformance Reports (NCRs) were used to address nonconforming conditions that impacted the final product, discovered during QC/QA inspections or other functions. NCRs prepared by QC were submitted to QA for a root cause analysis and recommended CAs. NCRs generated by QA were sent to USA with recommended CAs and USA had 72 hours to either accept the CAs and begin implementing them, or propose alternative CAs to QA and the Navy for consideration. The table below lists the NCRs that were generated by QC and QA and then closed out during FS1. The NCRs and NCR Log are located in Appendix M. The UXO QC Manager maintained an NCR Log to track NCRs through the system, including submittal, implementation of the CAs, and closeout.

NCR Number	Description Of Non-Conformance	Initiator
1	IVS Test Exceedance	UXO QC Manager
2	Preparatory Inspection for intrusive investigation in RAA-05	QA Supervisor
3	Blind Seed Item (BSI) not selected as a DGM target	UXO QC Manager
4	QC Surveillance report audit by QA	QA Supervisor
5	Documentation of obstacle/inaccessible areas	QA Supervisor
6	QC failure to follow-up on non-conforming conditions	QA Supervisor
7	DFW failure	QA Supervisor
8	Failure to detect item in grid	UXO QC Manager
9	Failure to detect BSIs in two grids	QC Geophysicist
10	Failure to detect item in grid	QC Geophysicist
11	Grid failures	QA Supervisor
12	Incomplete grid restoration and grid failures	QA Supervisor
13	Grid failure and missed QA BSI	QA Supervisor
14	Grid failure and missed BSI	QA Supervisor
15	Grid failures	UXOQCS
16	Grid failure in RAA-04	UXOQCS
17	Grid failure in RAA-04	UXO QC Manager
18	Grid failures	QA Supervisor
19	Grid failures	QA Supervisor

3.0 PRE-MOBILIZATION OPERATIONS (2012)

To expedite an early start of the DGM effort in spring of 2013, USA deployed personnel in September 2012 to complete the IVS/Geophysical System Verification (GSV), and the BSI tasks. In conjunction with these two tasks, personnel completed a full site assessment of all three RAAs and coordinated with local resources to facilitate the planning of the actual field work during normal seasons. USA assembled three independent teams to execute the three tasks during the September 2012 effort: an IVS/GSV Team, a BSI Team, and a Site Assessment Team.

- The IVS/GSV Team consisted of the Site Geophysicist, a UXO Technician II (UXOTII) and a geophysical instrument operator (refer to Figure 3-1).
- The BSI Team consisted of a UXO Quality Control Specialist (UXOQCS), a UXOTII, and a QC Geo-scientist.
- The Site Assessment Team consisted of the Project Managers (PMs) from USA and AGVIQ (construction subcontractor) and the Site Manager (SM) acting as a UXO Safety Officer (UXOSO) for all three field tasks.

Figure 3-1: Establishing the IVS

The following Navy representatives were also on site during this preliminary effort:

- NAVFAC NW Remedial Project Manager (RPM)
- Navy QA PM and QA Technical Representative
- Navy Alaska Registered Land Surveyor.

On 21 September, QA and the Navy called an informal Administrative Meeting to discuss the GSV Plan and the schedule for the September effort. QA raised a concern about prohibiting commingling of the BSI Team vs. GSV/IVS Team, including normal field season work. The USA PM told QA and the Navy that the UXOQCS did not plan on returning and the Geoscientist was dedicated to our 2013 QC team. The team further clarified the definitions of common terms to be used with regard to walking surface, mineral soil, and tundra mat. The team agreed that the walking surface depth to BSI is defined as “tundra depth” plus “mineral depth” to the center of the BSI.

3.1 GEOPHYSICAL SYSTEM VERIFICATION

USA conducted GSV Installation activities in the vicinity of three RAAs within OU B-2 at the former NAF Adak during the period of 21 - 29 September 2012 in support of the NTCRA. This work was performed in accordance with the final GSV Installation Plan and the MEC QAPP.

Figure 3-2: Installing ISO in IVS

The GSV consisted of two main components (see Figure 3-2 and Figure 3-3):

- The installation and testing of an IVS in the vicinity of three RAAs (RAA-02, RAA-03, and RAA-04) to verify that the DGM instrumentation (sensors and positioning), instrument operators, data acquisition methodologies, and data processing and analysis procedures meet the specific DQOs established for the project. Each test strip consisted of a center line with five small industry standard objects (ISOs) and an offset background noise line. Secondary lines were installed at 2.5-ft and 1.25-ft offsets to simulate data collection and to verify half line response amplitude for blind seed verification (see Appendix G).

- The installation of BSIs in the survey areas of each RAA as a QC measure for geophysical data collection, target selection, and anomaly resolution (see Appendix G, GSV Report for procedures). The BSI effort was carried out by the two-man BSI team consisting of a UXOTII and a QC Geoscientist. The UXOQCS accompanied the BSI team. The effort took place from Friday, 21 September through Thursday, 27 September 2012, over three RAAs: (RAA-02, RAA-03, and RAA-04). On Friday, 21 September, the BSI team, in conjunction with the IVS team (led by the geophysicist), established survey control points and back-check points at RAA-03 and RAA-04. BSI installation in RAA-03 was completed over the course of five production days (21-25 September 2012), using the RAA-03 survey control point. BSI installation in RAA-04 was completed over the course of two production days (25 and 26 September 2012). BSI installation in RAA-02 was completed in one production day (27 September 2012). The RAA-04 and RAA-02 BSI effort used the Adak Recreation Area (ARA) survey control point. The locations of all BSIs were recorded and provided to the USA QC Department and the Navy QA contractor. The listing and locations are not availble to USA production personnel.

Figure 3-3: BSI Installation

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4.0 PREPARATORY OPERATIONS (2013)

Mobilization was conducted in phases beginning with the Field Management Team (FMT) followed by UXO personnel and subcontractors. The entire FMT mobilized through the Oldsmar, Florida, home office and then on to Adak to begin setting up the site infrastructure. While in Oldsmar, the team received training from corporate operations and support staff, to include:

- The MEC QAPP and APP
- Reporting requirements including: on-site and contract deliverables procedures, site forms, etc.
- Administrative procedures and USA points of contact (POCs).

4.1 PHASE 1 MOBILIZATION

USA shipped equipment and vehicles by air freight and barge beginning in February 2013 in anticipation of an early start. However, a late season snowfall (as depicted in Figure 4-1) resulted in mobilization delays. Rather than mobilize a full crew, USA mobilized the SM from 2 to 16 March 2013 to inventory and store explosives in the magazine; receive and inspect vehicles and equipment; and arrange for secure storage of USA gear.

Figure 4-1: Snow in RAA-03

4.2 PHASE 2 MOBILIZATION

The FMT participated in training at Oldsmar for 3 days and then mobilized to Adak on 28 March 2013. Starting on 29 March, they began setting up the project infrastructure including the TFU. An FMT safety briefing was provided with the following personnel present: the Navy Technical Representative (NTR), Navy QA Contractor (Battelle), the USA FMT, and the City of Adak Chief of Police.

Personnel set up and tested the Real-Time Kinematic Differential Global Positioning System (RTK-DGPS) base station and supplemental control points (see Appendix G).

4.3 PHASE 3 MOBILIZATION

On 4 April 2013, the remaining USA personnel, including USA's construction subcontractor (AGVIQ), arrived on Adak. All personnel received training as outlined below.

All personnel received operational, safety, QC, plus training on equipment used on the job. Training included, but was not limited to, the following topics:

- Project administration, including MEC QAPP required documentation of activities
- Photograph requirements
- Cultural resources
- Data management
- Field equipment and instrumentation
- Accident/incident reporting
- SOPs.

All training records for the site staff and subcontractors, regardless of their mobilization phase, are included in Appendix D.

USA's DGM subcontractor (Parsons) arrived on island on 8 April 2013; the next day, they started the required training as outlined above.

On 9 April 2013, the USA FMT and AGVIQ conducted a preliminary survey of each of the main roads into work areas RAA-02, RAA-03, and RAA-04. The goal of the survey was to assess which areas had priority to undergo initial repairs and maintenance. The overall approach for construction activities related to road maintenance and access path establishment was to provide minimal environmental impact to those areas that required vehicle access.

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5.0 FIELD PROCEDURES

The following subsections describe the RAAs and activities performed during the 2013 season. Refer to Figure 5-2 for an overview of these RAA locations and activities. Figure 5-1 shows the relationship of RAAs to OU B-1 AOCs.

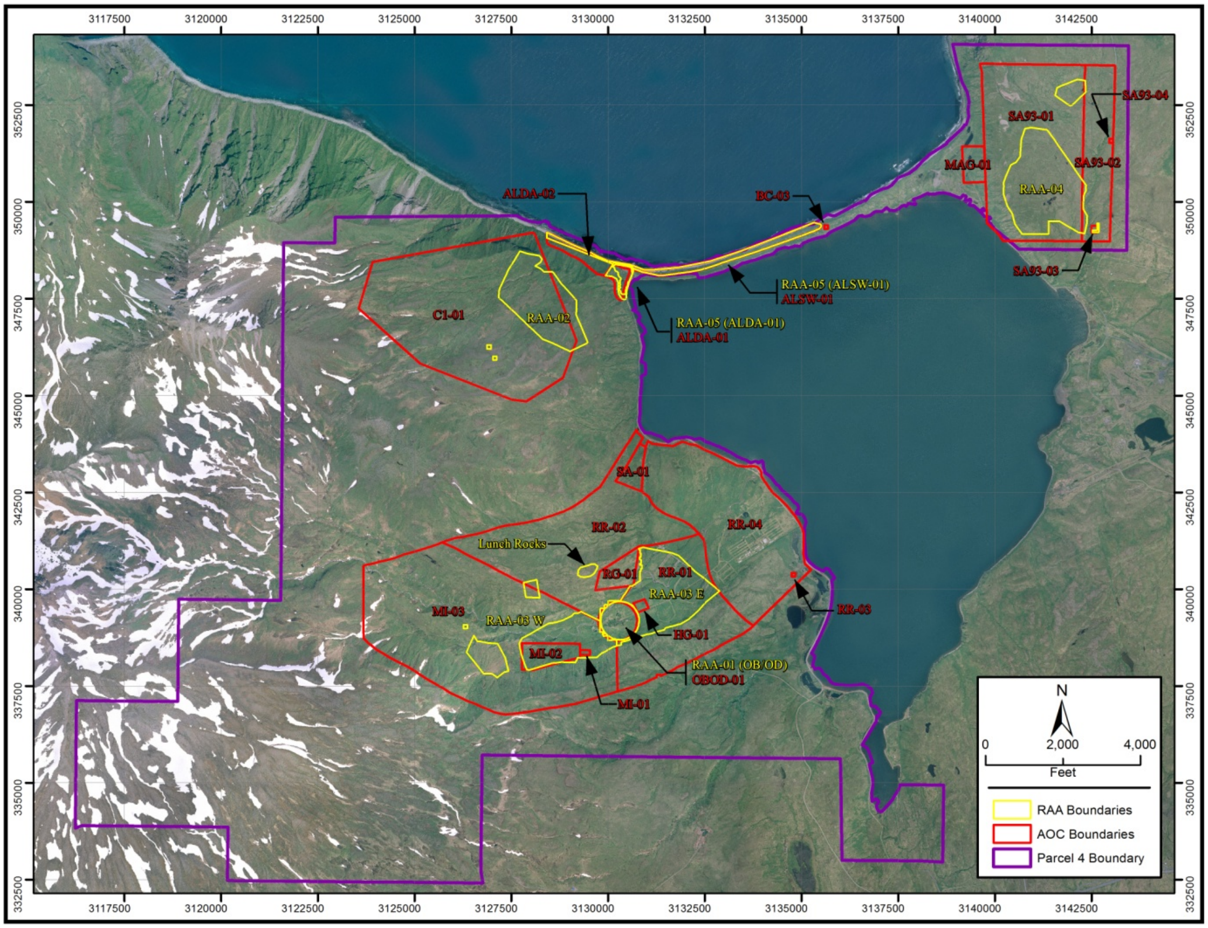

Figure 5-1: AOC Relationship to RAAs

5.1 RAA-01 (FORMERLY AOC OB/OD-01)

5.1.1 Description

RAA-01 comprises approximately 19 acres and is located centrally in Moffett Valley in the middle of RAA-03. RAA-01 is the former OB/OD range. In previous investigations, 12 MEC items were found in RAA-01 at depths less than 2-ft below ground surface (bgs). A geophysical survey of OB/OD-01 was conducted in 1999. The central, cratered area was found to be metallically saturated, with the degree of metal falling off in the outer portions of the RAA.

5.1.2 Scope of Work

The SOW includes clearance of munitions contamination consistent with the RAOs presented in the Proposed Plan. The means and schedule to accomplish clearance are under development.

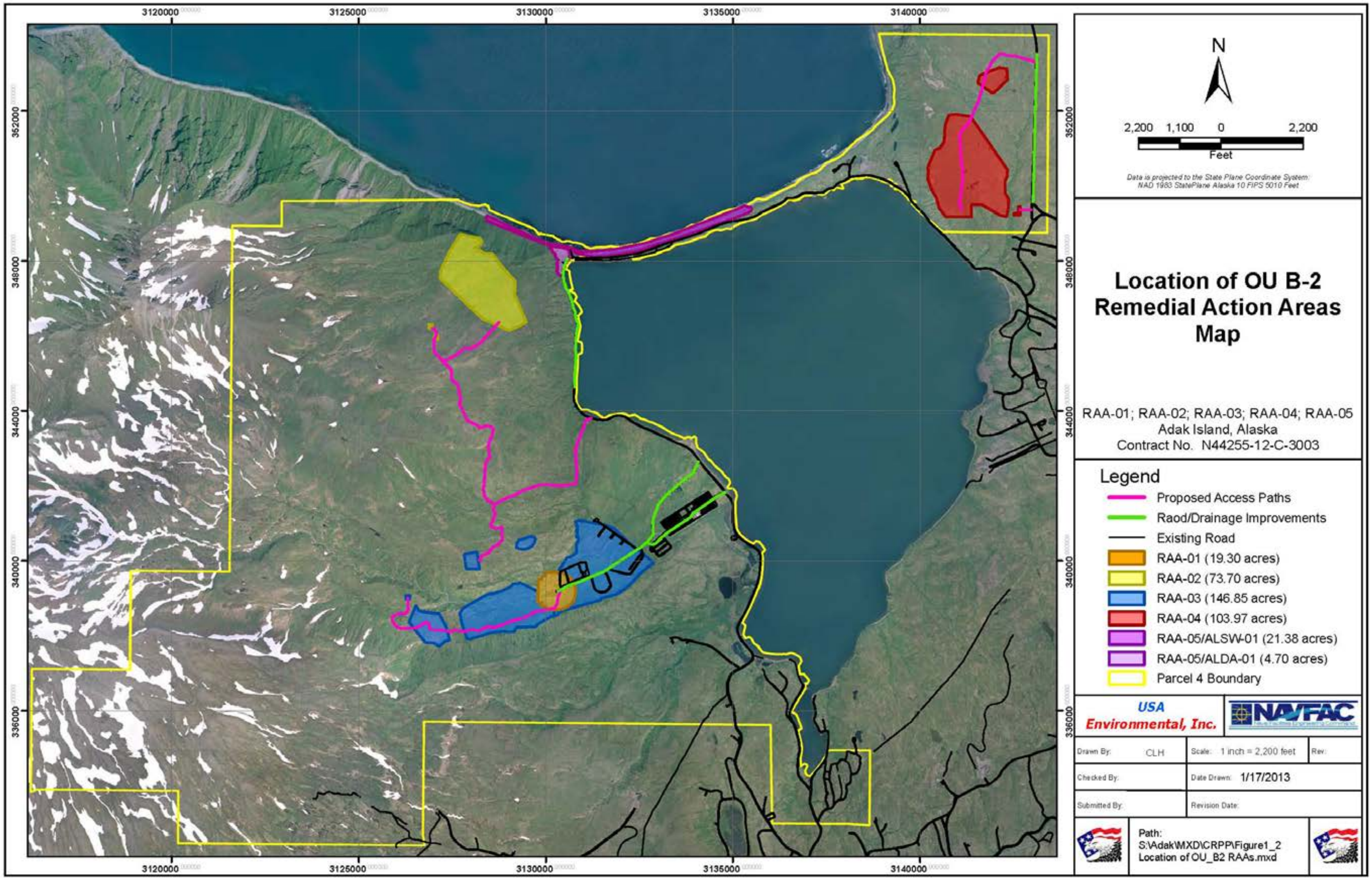

Figure 5-2: NTCRA Remedial Action Areas

5.2 RAA-02

5.2.1 Description

RAA-02 is located north of the historical Andrew Lake Range Complex (see Appendix A). It is roughly oval in shape and is situated on a sloping plateau above and west of ALDA-01 on the flanks of Mount Moffett, at elevations ranging from about 500 to 1,300-ft asl. The RAA boundary encompasses 73.9 acres and consists of the apparent target/impact area located in the eastern-central part of the AOC where MEC is present and two outlier expansion grids where MEC indicative of possible mortar impact areas were found. MEC contamination at the RAA is believed to originate from use as an apparent target/impact area. The primary source of MEC contamination at the RAA is believed to be kick-outs from demolition shots at RAA-05/ALDA-01.

5.2.2 Scope of Work

The SOW includes a location survey for grids; and vegetation and surface clearance prior to DGM survey. DGM data are to be collected over 100% of the site. The DGM data will be processed and DGM targets will be selected from the data using amplitude-based picking thresholds. DGM targets selected from the data will be reacquired and investigated to their depth of detection. MEC / Material Documented as an Explosive Hazard (MDEH) will be disposed of by detonation. MPPEH items will be further certified and verified as MEC, MDEH, or MDAS. MDAS will be managed in accordance with the MEC QAPP and shipped to an authorized demilitarization/recycle facility for final disposal.

5.2.3 Site Activities

5.2.3.1 Site preparation/grid stake out

The location survey team established and maintained radio communications with the site project office prior to departing each day to the RAAs. The team checked the handheld all-metals detector for operability each day at the RAA's IVS, ensuring that all five IVS seed items were detected, before departing. The survey team leader documented the IVS check results in their log book.

The RAA was subdivided into individual 197-ft grids. The Field Engineer, escorted by a UXOTII, used RTK-DGPS survey equipment to locate each boundary point and grid corner [set up and check within 4-inches)]. Each grid corner point was marked with 4-ft survey witness stakes and 10-in nails, following anomaly avoidance procedures. If anomaly avoidance or other field conditions resulted in an offset grid corner point, the final location of the 10-in. nail, as well as all boundary points, was measured with the rover RTK-DGPS, and the project Geographic Information System (GIS) database was updated accordingly. Each grid corner stake was marked with a dedicated point ID (the grid's SW corner), color-coded paint, and survey tape.

If, during the grid stakeout, an obstacle was encountered (e.g., flooded area, 30 degree slope), the team took the following actions:

- Documented it in their log book; and
- Photographed the obstacle.

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5.2.3.2 Access paths and restoration

Initially RAA-02 access involved traversing access paths across RAA-03 to then cross Moffett Creek and proceed to RAA-02. Eventually, it was determined the best route to the RAA was on foot from RAA-05. Although this route was strenuous and steep (see Figure 5-3), it was the one teams used to perform operations. RAA-02 primary construction activities involved access path layout along the slope that would best facilitate Argo access and avoid slopes greater than 30°. The access paths were first cleared for MEC in accordance with SOPs. Prior to laying in the access path, UXO teams performed a detector-aided surface clearance to remove any potential surface MEC, MPPEH, or other metallic debris. The path was cleared for the construction crew to follow. No access paths were constructed without being first MEC screened and cleared.

Figure 5-3: Foot Trail to RAA-02

Access paths crossed tundra, mineral surface, grasses, and marshy areas. Where access paths for Argos were most difficult was across seasonal marshy areas, which required chain link fencing to be put down to help prevent surface disturbance, assist in traction, and possibly prevent rutting in paths (Figure 5-4).

Figure 5-4: Argo Path Chain Link Fencing

5.2.3.3 Archaeological sites/environmental sensitive areas

There were no archaeological sites/environmental sensitive areas in RAA-02.

5.2.3.4 Surface clearance

Because the terrain in RAA-02 is rocky with bare soil areas and short tundra grass (see Figure 5-5), vegetation clearance was not performed.

The surface clearance operations were conducted under the direct supervision of a qualified UXO Technician III (UXOTIII). The UXOTIII assembled the UXO team members in line and directed their movement across the survey grid.

The UXO team members were spaced approximately 5-ft apart and, at the direction of the UXOTIII, moved through the grid off set from one another to eliminate interference between the metal detectors. The Whites DFX 300 all-metals detectors were used to detect any surface or near-surface items that might have been obscured by tundra grasses.

Figure 5-5: RAA-02 Terrain

When an item was encountered, the UXO Technician made a tentative identification in order to determine if the item was MPPEH or non-hazardous scrap material. Note that the identification of any items discovered by a UXO Technician I was confirmed by a fully qualified UXO

Technician (defined as a UXOTII or above). The UXOTII inspected the object to determine if it was MPPEH or scrap and marked the item with the appropriate colored pin flag, as described in Table 5-1.

Table 5-1: Color Flagging Material

Pin Flag Color	Used to Mark
Red	MPPEH items
Blue	Non-hazardous scrap material
White	Temporary boundary line for clearance teams

As the team moved forward, the team member at the edge of the grid used the grid stakes as one clearance lane boundary; the team member on the opposite end of the line marked the limit of the cleared lane with white pin flags. These flags became the guide for the turnaround and defined the limits of the previously cleared lane. This procedure was continued until the grid was completely cleared. Six items of MEC/MDEH (four on the grids and two outside the RAA boundary), were found on the surface and disposed of by detonation.

5.2.3.5 DGM and analysis

Under the direction of the Site Geophysicist, USA deployed six teams to perform DGM operations in RAA-02. The teams used EM61-MK2A's, deployed in two-person stretcher mode, positioned with RTK-DGPS to collect data in 101 of the 102 grids in this RAA from 18 June through 27 July 2013. Several grids contain cobble/boulder outcroppings which were too dangerous for DGM teams to traverse. The footprint of these areas will be delineated and are earmarked for an analog and dig clearance in FS2. In summary, 14 full grids were fully DGM surveyed, 11 partial grids were fully DGM surveyed, 45 full grids were split between DGM and analog and dig, 29 partial grids were split between DGM and analog and dig, 1 grid is completely boulder field and will be analog and dig, and 2 mini grids were DGM surveyed.

Figure 5-6: RAA-02 IVS Checkout

Each morning and afternoon, the DGM teams demonstrated acceptable system performance at the established RAA-02 IVS (see Figure 5-6). The Site Geophysicist reviewed the IVS results for each team prior to their mobilization to their production grids. His review of the results was in accordance with the Final GSV Report and two relevant FCRs: FCR-10, dated 2 May 2013, which officially revised the daily instrument checks and the IVS performance metrics; and FCR-16, Rev. 2, dated 24 March 2013, which revised the DGM field team's documentation of grid obstacles.

Each DGM team was responsible for setting up their assigned grid and documenting any obstacles, in accordance with SOP 02 and the revised obstacle documentation in FCR-16_Rev1. Grid boundary stakes were identified and a grid photograph was taken from each grid's SW corner. The DGM team leader determined the survey line direction(s), based on terrain and obstacles. Grid obstacles were documented with the DGPS and were provided to data processors as a separate file, along with an accompanying photograph. Survey lines, spaced every 2.0 to 2.5-ft were established using traveling lines or sand bags, depending on team preference. The DGM team leader, the Site Geophysicist, and QC personnel monitored coil height above the walking surface and survey speed.

Field DGM data and accompanying documentation for each grid were posted to USA's project file transfer protocol (ftp) site. USA's subcontractor (Parsons) processed the DGM field data and confirmed daily QC instrument checks. The data processors provided feedback to the Site Geophysicist regarding obstacle documentation/data gaps which were then addressed by the appropriate DGM team and sent back to the data processors to close out data collection for each grid. Final processed data was delivered to USA's QC Geophysicist via the project ftp site.

FCR-14, dated 4 May 2013, instituted picking DGM targets in saturation (on 5-ft centers) in HALSAs using a wider 400-point demedian filter to more reliably detect smaller objects (e.g., BSIs) in the vicinity of HALSAs. A HALSA is a descriptor for an anomaly type and is a metallically saturated area where picking individual targets for investigation cannot be reasonably accomplished. FCR-20, dated 10 July 2013, introduced the HALSA sub-sampling to better manage/reduce the number of DGM targets introduced by FCR-14. FCR-30, dated 23 July 2013, revised the RAA-02 anomaly selection threshold from 3 millivolt (mV) to 5 mV. FCR-33 introduced the sub-sampling of Geologic and Terrain Induced (GTI) DGM Targets.

The final dig lists for each RAA-02 grid are being revised for (1) a consistent target selection threshold of 5 mV; (2) de-sampling DGM targets to 5-ft centers; (3) sub-sampling HALSAs; (4) sub-sampling GTI; and (5) windowing out DGM targets based on the revised Boulder/Cobble Field Polygon. The revised RAA-02 dig lists will be provided to the QA contractor prior to mobilization for FS2, well before the 2014 operations in RAA-02.

The QC Geophysicist reprocessed at least one grid per day, rotating around each of the DGM teams to ensure proper and consistent DGM data processing was being performed. In addition, the QC Geophysicist ensured that all DGM performance metrics for site coverage, sample separation, BSI detection, and grid corner detection (location) were being maintained, as well as a review of all selected DGM targets, adding any overlooked/QC targets. Following QC review, the data for each grid was forwarded to the QA contractor. During the RAA-02 DGM QC review, it was noted that several BSIs were not detected because the BSI location was in an inaccessible portion of the grid, documented as “Boulder Field” or “Cobble.” This resulted in several NCRs to document the non-detects and resulted in a contract modification to clear the cobble/boulder field areas using Analog & Dig techniques.

With feedback from QA, the QC Geophysicist finalized the preliminary dig list for each grid, including any additional QA picks, and forwarded it to the GIS database manager. Final RAA-02 dig lists will be provided for QA review prior to mobilization for FS2. DGM target reacquisition files, target maps, and intrusive files have not been delivered, as the intrusive operations in RAA-02 were delayed until FS2. DGM mini-grids will be collected following intrusive investigations in 2014.

5.2.3.6 Reacquisition

Reacquisition of DGM targets will occur during FS2 in 2014.

5.2.3.7 Intrusive investigations

No intrusive investigations were accomplished during FS1; they are planned for FS2, in 2014. The cobble/boulder areas are scheduled for an analog & dig clearance. Appendix A contains a map of the RAA showing surface sweep recovery locations and Appendix I contains a description of the recovered items, including nomenclature, Global Positioning System (GPS) coordinates, depth and photographs.

5.2.3.8 MEC/MDEH disposition

As stated previously, in surface clearance, eight items of MEC/MDEH were located and either blown in place (BIP) or destroyed at the demolition area in RAA-01. The two out-of boundary items were recovered and disposed of during the 2014 field season. Demolition operations were conducted in accordance with the MEC QAPP, Explosives Safety Submission (ESS), and SOP 9. A detailed listing and photographs of the items are provided in the MEC Accountability Log (MAL) in Appendix I, on the DVD included with this report. Maps showing the recovery locations are included in Appendix A, RAA Grid Status.

5.2.3.9 Explosives management

USA utilized two sited Government Type II portable explosives magazines on Adak. These magazines are located east of RAA-03 and were sited in the OU B-2 Department of Defense Explosives Safety Board (DDESB) approved ESS [see Appendix A, Quantity Distance (QD) maps]. One magazine was used for donor explosives and the other was used for temporary storage of safe to move MDEH waiting for consolidated demolition shots at RAA-01.

Initial explosives were shipped to Adak on the barge and a later re-supply by air. Prior to loading the explosives into the magazine USA performed minor repairs/maintenance and had the grounding of the magazines checked by a licensed electrician (see Appendix J). Access to the magazines was controlled by the Senior UXO Supervisor (SUXOS), who also maintained the explosives magazine data sheets. Copies of the magazine data sheets and explosive usage form are presented in Appendix J.

In accordance with the MEC QAPP, the Senior Unexploded Ordnance Supervisor (SUXOS) performed Preparatory Training and the demolition team leader provided the Initial Training prior to the start of demolition operations. Weekly QC performed magazine inspections using the inspection checklist. Records of the training and inspections are contained in Appendix C, 10-Dispose of MEC and MDEH.

5.2.3.10 QC program

A Three-Phase Inspection Checklist was used for each DFW. Appropriate DFW checklists were completed on each DFW activity depending on the status of the activity. The Three-Phase QC Checklist incorporated the Preparatory, Initial, and Follow-Up QC inspection phases into one combined checklist. This QC checklist documented that all the actions delineated on Worksheet (WS) #12 and WS #37 had been met and that each field team was prepared to conduct field operations. Table 5-2 presents the dates of the first Preparatory and Initial QC inspection for each of the DFWs presented in WS #12 and WS #37.

Table 5-2: Dates of Preparatory and Initial Phase Inspections

DFW	Date of Preparatory Inspection	Date of Initial Inspection
Manage the Project Data (administrative)	April 5, 2013	April 5, 2013
Mobilize and Prepare the Site	April 5, 2013	April 8, 2013
Vegetation Removal and Surface Clearance	April 5th, 8th, 27th and May 6, 2013	April 8th, 30th and May 3, 2013
Perform Incidental Road and Drainage Construction	May 6, 2013	May 6, 2013
Conduct Digital Geophysical Mapping	April 5th, 8th, 22nd, and August 31, 2013	April 10th, 12th, and 23rd
DGM Target Reacquisition	April 5th, 8th, and 29th	April 30, 2013
Conduct Intrusive Investigations of Anomalies	April 5th, 8th, 20th, 25th, 26th, May 4th, 6th, and August 10, 2013	April 8th, May 1st, 2nd, 4th, 8th, June 3rd, August 10th, 12th, and 14th
Conduct Surface Sweep of Andrew Lake Seawall	April 5, 2013	April 19, 2013
Manage and Dispose of MDAS	April 5, 2013	July 16, 2013
Dispose of MEC and MDEH	April 5 and 8, 2013	April 10, 2013
Site Restoration*	NA	NA
Demobilization*	NA	NA
*Note: No inspections were performed during Field Season 1 on Site Restoration and Demobilization DFWs.		

Appendix B contains the Final Grid Packages for all QA approved grids in RAA-03E and RAA-03W. Each grid package includes Table 37-1, Backup Validation and Documentation of QC Inspections for RAA Usability Assessment. Each Table 37-1 has links to the applicable three-phase inspections for each DFW conducted in the specific grid. The DFWs are activity-specific rather than location-specific; thus, all grids may not have had an inspection for each DFW. However all DFWs were inspected in accordance with the frequency dictated by the MEC QAPP (see Table 5-3). All inspections are documented in Appendix C, Definable Features of Work.

5.2.3.11 RAA certification

The RAA Certification process will be completed in FS2, during 2014.

Table 5-3: WS #37 Extract

Definable Feature of Work (DFW)	Surveillance Frequency	Reference	Forms Used
Manage the Project Data (administrative)	Daily	MEC QAPP, SOPs, Administrative Documents	Preparatory, Initial and Follow-up QC Checklist, QC Surveillance Form, Deficiency Notice (DN), NCR
Mobilize and Prepare the Site	Once	MEC QAPP, SOPs, Administrative Documents	Administrative Documents and SOPs, Preparatory Phase (PP) Inspection Checklists, DN
Vegetation Removal and Surface Clearance	Daily	SOP-05	Preparatory, Initial and Follow-up QC Checklist, QC Surveillance Form, DN, NCR
Perform Incidental Road, Access Path and Drainage Construction	Daily	Construction Work Plan	Preparatory, Initial and Follow-up QC Checklist, QC Surveillance Form, DN, NCR
Conduct Digital Geophysical Mapping	Daily	SOP-02, GSV Plan	Preparatory, Initial and Follow-up QC Checklist, QC Surveillance Form, DN, NCR
DGM Target Reacquisition	Daily	SOP-07	Preparatory, Initial and Follow-up QC Checklist, QC Surveillance Form, DN, NCR
Conduct Intrusive Investigations of Anomalies	Daily	SOP-08, -09, -10, -11, -12, MEC QAPP	Preparatory, Initial and Follow-up QC Checklist, QC Surveillance Form, DN, NCR
Conduct Surface Sweep of Andrew Lake Seawall	Per Event	SOP-05	Preparatory, Initial and Follow-up QC Checklist, QC Surveillance Form, DN, NCR
Manage and Dispose of MDAS	Daily, Per Event	SOP-10, -11	Preparatory, Initial and Follow-up QC Checklist, QC Surveillance Form, DN, NCR
Dispose of MEC and MDEH	Per Event	SOP-09	Preparatory, Initial and Follow-up QC Checklist, QC Surveillance Form, DN, NCR
Site Restoration	Per Event	MEC QAPP, Construction Work Plan	Preparatory, Initial and Follow-up QC Checklist, QC Surveillance Form, DN, NCR
Demobilize (administrative)	Per Event	MEC QAPP, SOPs, Administrative Documents	QC Surveillance Form, DN, NCR

5.3 RAA-03E

5.3.1 Description

RAA-03E is in the south central portion of the Range Complex at Andrew Lake. It is bordered by RR-02; OU B-1 to the south; AOCs RR-04 to the east; and OB/OD-01, RG-01, and MI-03 to the west. AOC HG-01 is located wholly within RR-01 (see Figure 5-1). Elevations range from about 50 to 500-ft asl. Moffett Creek runs from west to northeast through the northern portion of this AOC. At certain times of the year, lowland areas bordering this creek are often saturated with pooled water. Wetland vegetation and soils are present through much of the RAA. Groundwater is in hydraulic communication with the creek.

5.3.2 Scope of Work

The SOW includes location survey for grids; and vegetation and surface clearance prior to DGM survey. DGM data are to be collected over 100% of the site. The DGM data will be processed and DGM targets will be selected from the data using amplitude-based picking thresholds. DGM targets selected from the data will be reacquired and investigated to their depth of detection. MEC/MDEH will be disposed of by detonation. Munitions debris will be inspected and, if determined to be MPPEH, will be further certified and verified as MEC, MDEH or MDAS. MDAS will be managed in accordance with the MEC QAPP and shipped to an authorized demilitarization/recycle facility for final disposal.

5.3.3 Site Activities

5.3.3.1 Site preparation/grid stake out

Site preparation and grid stake out in 2013 began first in RAA-03E. The procedures were as outlined previously for RAA-02, in paragraph 5.2.3.1.

5.3.3.2 Access paths and restoration

USA's subcontractor (AGVIQ) initially started construction and road servicing activities at RAA-03 on 9 April 2013. The road off the western boundary road around Andrew Lake into RAA-03E and RAA-03W contained a number of low spots where run off from rain collected immediately adjacent to the seasonal marsh area on both sides of the access road. Initial efforts at a few low spot ditches were hand dug, allowing for the water to escape (Figure 5-7).

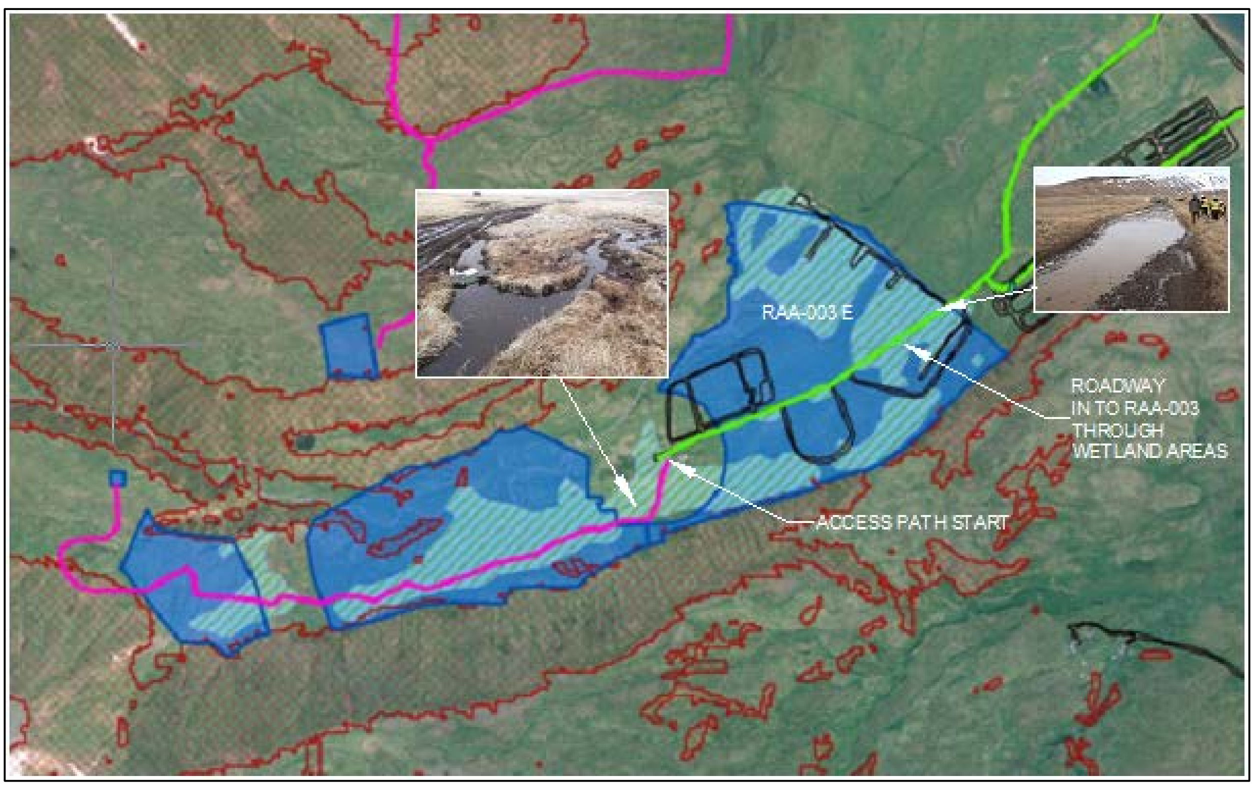

Figure 5-7: RAA-03 Roadway

RAA-03 activities for the construction crew involved draining low spots on the road leading into and adjacent to RAA-03. Gravel from excess shoulder areas along the road was collected and used to fill the depressions initially. Additional material was later placed along the main entrance into the RAA-03 area off the road along Andrew Lake to eliminate the low spots. On-going maintenance throughout FS1 was conducted on roads and access paths as the work and duration of NTCRA activities continued.

Access path construction into RAA-03 was completed from the existing road traversing west – southwesterly into the RAA. The access path followed the approximate location as indicated on Figure 5-7; however, final placement was dictated by field conditions at the time of construction. The location of the path was dictated by minimizing impact to existing surface conditions and vegetation, as well as considerations for topography and appropriate drainage.

Figure 5-8: Swamp Mats in High Impact Areas

The access paths were first cleared for MEC. Preceding the laying in of the access path, UXO teams performed a detector aided surface clearance to remove any potential surface MEC, MPPEH, or other metallic debris. The path was cleared for the construction crew to follow. No access paths were constructed without being first MEC screened and cleared. The initial access path construction required the use of some narrow swamp maps to facilitate crossing very wet areas and to minimize the impact of the pathway (Figure 5-8).

Additional pathway improvements included placing biaxial grid down to minimize rutting and assist with stabilization of the underlying material. Chain link fencing was used frequently along access paths to assist in providing stabilization and prevention of rutting. In certain areas where water traversed across paths temporary culverts were placed underneath the chain link fence to assist the conveyance of water so as not to collect in or on the access path (see Figure 5-9).

Figure 5-9: Fencing with Drainage Culverts

The construction crew also built a temporary foot bridge (see Figure 5-10) across Moffett Creek at a lower elevation than the Argo path to provide access to the northern RAA-03 grids.

RAA-03E and RAA-03W areas were serviced from the main road into RAA-03 and the access path installed at the West end of the access road. During FS1, the access paths and road required periodic maintenance and adjustment, along with some realignment of access paths to facilitate the NTCRA activities of the UXO/MEC crews. AGVIQ provided maintenance throughout the season and frequently revisited and maintained access roads once they were installed and at the direction of the SUXOS where concerns needed to be addressed.

Figure 5-10: Temporary Bridge

Restoration activities have not yet been performed at RAA-03 areas because certain activities need to be performed during FS2 in 2014. Restoration will involve removal of all access path materials, chain link fencing, biaxial grid, swamp mats, bridges, and culverts that were temporarily installed plus repair of path ruts and re-seeding.

5.3.3.3 Archaeological sites/environmental sensitive areas

There is one large archaeological site in RAA-03E. It included 26 clearance grids (see Figure 5-11) and 34 MEC/MDEH items were recovered from within the site. Prior to implementation of project activities, all site personnel received sensitivity training regarding cultural resources. This training detailed the following guidance:

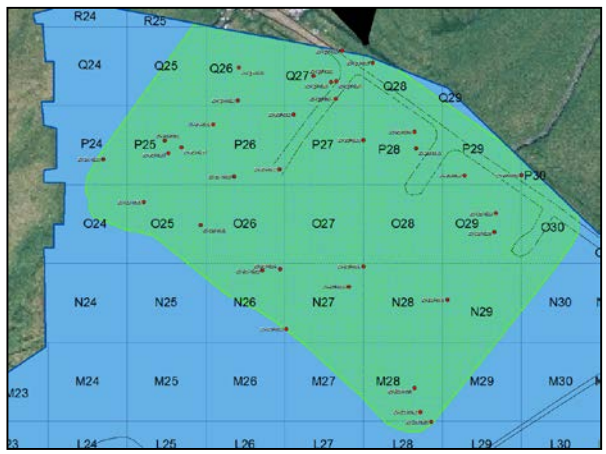

Figure 5-11: RAA-03E Archaeological Site

- No mechanical vegetation removal (using grass cutting machinery with mower deck) within 3-ft of the structural features
- Use of manual vegetation removal (a handheld weed eater) to remove any vegetation closer than 3-ft of the structural features
- No vegetation removal within 6-in. of a structural feature
- Upon completion of munitions removal, each excavation was backfilled and the grass or tundra mat was replaced and pressed down to make contact with the soil to restore the original archaeological site surface.
- If necessary to remove munitions from structural features (i.e. berms), removal was conducted using hand tools and the profiles of the berms returned to their original contour.
- Any BIP open detonation conducted within 200-ft of structural features was implemented using the minimal amount of explosives necessary to trigger the detonation to avoid excessive vibration.

5.3.3.4 Surface clearance

Minimum vegetation clearance was performed on RAA-03E, mainly around cultural areas identified in the Cultural Resource Protection Plan (CRPP). The reason for minimum vegetation clearance was due to the early mobilization when the tundra grass was mostly dormant and laying down, which facilitated an instrument-assisted surface clearance. Surface clearance was performed as previously outlined for RAA-02, Section 5.2.3.4.

5.3.3.5 DGM and analysis

USA deployed six DGM teams to perform DGM operations in RAA-03E. EM61-MK2A's, deployed in two-person stretcher mode and positioned with RTK-DGPS were used to map a total of 107 grids in this RAA from 10 April through 19 June 2013.

Each morning and afternoon, the DGM teams demonstrated acceptable system performance at the established RAA-03 IVS.

Each DGM team was responsible for setting up their assigned grid and documenting any obstacles, in accordance with SOP 02 and the revised obstacle documentation in FCR-16_Rev1. Grid boundary stakes were identified and a grid photograph was taken from each grid's SW corner. The DGM team leader determined the survey line direction(s), based on terrain and obstacles. Grid obstacles were documented with the DGPS and were provided to data processors as a separate file, along with an accompanying photograph. Survey lines, spaced every 2.0 to 2.5-ft, were established using traveling lines or sand bags, depending on team preference. The DGM team leader, the Site Geophysicist, and QC personnel monitored coil height above the walking surface and survey speed.

Field DGM data and accompanying documentation for each grid were posted to USA's project ftp site. USA's subcontractor processed the DGM field data and confirmed daily QC instrument checks. The data processors provided feedback to the Site Geophysicist regarding obstacle documentation/data gaps, which were addressed by the appropriate DGM team and sent back to the data processors to close out data collection for the grid. Final processed data was delivered to USA's QC Geophysicist via the project ftp site.

The QC Geophysicist reprocessed at least one grid per day, rotating around each of the six DGM teams to ensure proper and consistent DGM data processing was being performed. In addition, the QC Geophysicist ensured that all DGM performance metrics for site coverage, sample separation, BSI detection (amplitude and location), and grid corner detection (location) were being maintained, as well as a review of all selected DGM targets, adding any overlooked/QC targets. Following QC review, the data for each grid was forwarded to the QA contractor.

With feedback from QA, the QC Geophysicist finalized the dig list for each grid, including any additional QA picks, and forwarded it to the GIS database manager. The GIS database manager then generated the DGM target maps, RTK DGPS reacquisition files, Intrusive Investigation files, and Intrusive Results files for the field QC teams.

Following the intrusive operations, one DGM team collected QC mini-grids in RAA-03E from 29 June through 29 August 2013. The mini-grid data collection occurred under the direction of the field Geophysics QC, and followed the mini-grid guidance in FCR-26, dated 1 July 2013. Mini-grid data was processed and analyzed on-island, with all data posted to the project ftp site for access by project personnel and the QA contractor.

5.3.3.6 Reacquisition

Based on DGM data, USA reacquired 21,994 targets in RAA-03E.

Under the direction of the SUXOS, USA deployed four Reacquire teams to perform DGM Target Reacquisition operations in RAA-03E. Trimble R8 Rovers with a field computer (TSC3) running Trimble Access, deployed on a range pole, utilized an RTK-DGPS base station and repeater to obtain survey grade location accuracy. DGM Target reacquisition took place in a total of 107 grids in this RAA from 30 April through 06 July 2013.

Initially, daily equipment tests included the daily GPS check and the White's instrument test. The daily GPS check was completed by the Geo QC Technician to ensure that the RTK-DGPS base station was accurate to 4-inches, and the results were posted daily to the project SharePoint site. Based on FCR-09, anomaly avoidance procedures were removed from SOP-07, thus eliminating the use of the White's analog instrument during DGM target reacquisition.

The Reacquire teams had the most current RTK (*.csv) files loaded on their TSC3 each day by the Data Manager. Each team would be assigned a grid or grids to work for the day. The teams placed pin flags with the required information, Grid ID, Target ID, and mV value, at the designated target location (not to exceed 0.5-ft), and had an RTK position measured for each flag.

All reacquired target measurements were submitted to the Geo QC Technician on a daily basis. The measured coordinates were then compared to the designated coordinates, ensuring that each flag was placed within the established metrics of SOP-07 (0.5-ft).

5.3.3.7 Intrusive investigations

USA performed 21,853 intrusive investigations of primary DGM targets in RAA-03E. These targets differed from the reacquisition targets because HALSA targets were subsampled, in accordance with FCR-20. If MEC or MDEH were not recovered at a Primary target, then Secondary targets associated with that HALSA were not investigated.

Intrusive investigations began in the RAA on 1 May 2013. Each intrusive investigation team was composed of a maximum of seven members: one UXOTIII Team Leader (TL) and up to six UXO Technicians II/I (UXOTII/I). Intrusive investigation activities were not conducted until the required training (both general and site-specific) and proper equipment/vehicle checks had been completed. Prior to intrusive investigation operations, the Exclusion Zone (EZ) was established based upon the primary munition with the greatest fragmentation distance (MGFD), the 75mm projectile, in accordance with the approved ESS. With the location of a 5-inch rocket, the MGFD changed to the ESS contingency of the 155mm projectile. A fully supplied Emergency Medical Technician (EMT) was centrally located to provide support to all project teams; and the appropriate civilian medical personnel were notified and on-call whenever intrusive operations were conducted.

The intrusive team used the pin flags or painted markers left by the reacquisition team to locate anomalies. The all-metals detector was used to locate the boundaries of the anomaly. If possible, the boundary area was gently probed to determine the depth and location of the anomaly. Most of the excavations were performed by hand, but in accessible areas, a Mini Excavator was used to excavate a shallow trench 12-in. to one side of the DGM target to provide easier access and reduce the labor required for the intrusive investigation.

If, at any time during the excavation, water began pooling in the hole and obscured the bottom of the dig, a 20-gallon per minute pump was used to drain the hole. If the water recharge rate exceeded 0.25-in. per minute, the team contacted the UXOSO and UXOQCS to assess whether it was safe to continue the excavation. The UXOQCS contacted the Navy QA to determine whether to continue with the excavation or to abandon the dig. If abando*ned, the hole was backfilled and the condition preventing investigation (e.g., water in the hole) noted in* the Comment section of the Clearance Data & Munitions Accountability Log as an abandoned dig, and the reason(s) for the abandonment.

There were a total of 26 abandoned digs and 1,263 items left in place for RAA-03E. Items left in place were general debris such as culverts and collapsed buildings. Details are included in the Grid Certification Packages in Appendix B and the Intrusive Results in Appendix L, Grid Tracking Log, 03-NIRIS Interim Intrusive Log. A graphic of the grids with abandoned digs and items left in place is included in Appendix A.

5.3.3.8 MEC/MDEH disposition

MEC/MDEH disposition was as outlined for RAA-02, in paragraph 5.2.3.8, above.

On 6 May 2013, a grass fire started as a result of a demolition shot in Grid I24. Personnel evacuated the area and notified the Adak Fire Department and the Navy. Overnight, USA personnel periodically monitored the fire from a safe distance. The RAA was shut down for operations until no signs of smoke or fire were observed for 24 hours. Operations then resumed on 8 May.

On 16 May 2013, another fire started from a demolition shot at grid E18. Again, site personnel evacuated and monitored the fire until no fire or smoke was visible.

Figure 5-12: Burned Area in RAA-03

One consequence of the fires was that they burned off most all of the tundra mat and uncovered more metallic items not removed during the instrument-assisted surface clearance. Figure 5-12 shows the burned area in RAA-03.

In all, USA disposed of, by demolition, 1,999 MEC/MDEH items in RAA-03E and RAA-03W. Appendix A contains a map of the RAA showing recovery locations and Appendix I contains a description of the recovered items, including nomenclature, GPS coordinates, depth and photographs.

5.3.3.9 Explosives management

Explosives management was carried out in accordance with SOPs and is as detailed for RAA-02, in paragraph 5.2.3.9, above.

5.3.3.10 QC program

The QC Program was conducted in accordance with the MEC QAPP and is as detailed for RAA-02, paragraph 5.2.3.10, above.

5.3.3.11 RAA certification

RAA certification entails individual grid certifications as a package. USA, the Navy, and the QA contractor designed a grid package that includes WS #37 of the MEC QAPP and other pertinent documents needed to certify a grid as completed in accordance with the Scope of Work (SOW) and MEC QAPP.

RAA-03E certification consisted of 107 Grid Certification packages, as presented in Appendix B. All data has been reviewed and approved by the Navy and QA.

5.4 RAA-03W

5.4.1 Description

RAA-03W is in the western portion of the former Andrew Lake Range Complex, occupying the western part of the Moffett Creek drainage basin. Elevations range from 130-ft asl on the valley floor to 920-ft asl along the flanks of Mount Moffett. The terrain in RAA-03W ranges from being relatively low and flat in the eastern portion nearest the RAA-01 area, to steep and inaccessible at the western end and along the southern border. There is a steep ridgeline near the northern side of the AOC with a relatively flat top.

5.4.2 Scope of Work

The SOW includes a location survey for grids; and vegetation and surface clearance prior to performance of the DGM survey. DGM data will be collected over 100% of the site. The DGM data will be processed and DGM targets will be selected from the data using amplitude-based picking thresholds. DGM targets selected from the data will be reacquired and investigated to the depth of detection. MEC/MDEH will be disposed of by detonation. Munitions debris will be inspected and, if determined to be MPPEH, will be further certified and verified as MEC, MDEH or MDAS. MDAS will be managed in accordance with the MEC QAPP and shipped to an authorized demilitarization/recycle facility for final disposal.

5.4.3 Site Activities

5.4.3.1 Site preparation/grid stake out

Site preparation and grid stake out procedures were as outlined previously for RAA-02, paragraph 5.2.3.1.

5.4.3.2 Access paths and restoration

Because the entire RAA-03 was handled as a single construction area, access paths and restoration for RAA-03W are as detailed previously for RAA-03E.

5.4.3.3 Archaeological sites/environmental sensitive areas

There no archaeological/environmental sensitive areas in RAA-03W.

5.4.3.4 Surface clearance

Surface clearance is as outlined in RAA-03E, paragraph 5.3.3.4, above.

5.4.3.5 DGM and analysis

USA deployed six DGM teams to perform DGM operations in RAA-03W. EM61-MK2A's, deployed in two-person stretcher mode and positioned with RTK DGPS, was used to map a total of 105 grids (including five step-out grids known as the Lunch Rocks) in this RAA from 20 April through 13 July 2013.

Each morning and afternoon, the DGM teams demonstrated acceptable system performance at the established RAA-03 IVS. The Site Geophysicist reviewed the IVS results for each team prior to their mobilization to their production grids.

Each DGM team was responsible for setting up their assigned grid and documenting any obstacles, in accordance with SOP 02 and the revised obstacle documentation in FCR-16_Rev1. Grid boundary stakes were identified and a grid photograph was taken from each grid's SW corner. The DGM team leader determined the survey line direction(s), based on terrain and obstacles. Grid obstacles were documented with the DGPS and were provided to data processors as a separate file, along with an accompanying photograph. Survey lines, spaced every 2.0 to 2.5-ft, were established using traveling lines or sand bags, depending on team preference. The DGM team leader, the Site Geophysicist, and QC personnel monitored coil height above the walking surface and survey speed.

Field DGM data and accompanying documentation for each grid were posted to USA's project ftp site. USA's subcontractor processed the DGM field data and confirmed daily QC instrument checks. The data processors provided feedback to the Site Geophysicist regarding obstacle documentation/data gaps, which were addressed by the appropriate DGM team and sent back to the data processors to close out data collection for the grid. Final processed data was delivered to USA's QC Geophysicist via the project ftp site. Geologic and Terrain Induced (GTI) features were observed in several of the RAA-03W grids at higher elevations, where water runoff created terracing. FCR-33, dated 25 July 2013 was implemented as a tool to reduce the effort spent investigating these quasi-linear features detected by the EM61-MK2A.

The QC Geophysicist reprocessed at least one grid per day, rotating around each of the six DGM teams to ensure that proper and consistent DGM data processing was being performed. In addition, the QC Geophysicist ensured that all DGM performance metrics for site coverage were being maintained, and conducted a review of all selected DGM targets, adding any overlooked/QC targets. Following QC review, the data for each grid was forwarded to the QA contractor.

With feedback from QA, the QC Geophysicist finalized the dig list for each grid, including any additional QA picks, and forwarded it to the GIS database manager, who generated the DGM target maps, RTK-DGPS reacquisition files, Intrusive Investigation files, and the Intrusive Results files for the field QC teams.

Following the intrusive operations, one DGM team collected QC mini-grids in RAA-03W from 19 August through 25 September 2013. Mini-grid data was processed and analyzed on-island, with all data posted to the project ftp site for access by project personnel and the QA contractor.

5.4.3.6 Reacquisition

Based on DGM data, USA reacquired 20,007 targets in RAA-03W. DGM Target reacquisition took place in a total of 93 grids in this RAA from 4 May through 16 August 2013.

Procedures were as outlined for RAA-03E, in paragraph 5.2.3.6, above.

5.4.3.7 Intrusive investigations

USA performed 18,748 intrusive investigations of DGM targets in RAA-03W. These targets differed from the reacquisition targets because HALSA targets, as well as GTI targets, were subsampled, in accordance with FCR-20 and FCR-33 In general, if MEC or MDEH were not recovered at a Primary HALSA target, then Secondary targets, associated with that HALSA were not investigated. MPPEH discovered at a GTI Primary target location will require additional intrusive investigation of all Secondary GTI targets within a 7.5-ft radius, in FS2.

There were a total of 6 abandoned digs and 472 items left in place for RAA-03W. Items left in place were general debris such as culverts and collapsed buildings. Details are included in the Grid Certification Packages in Appendix B and the Intrusive Results in Appendix L, Grid Tracking Log, 03-NIRIS Interim Intrusive Log. A graphic of the grids with abandoned digs and items left in place is included in Appendix A.

Procedures were as outlined for RAA-03E, in paragraph 5.2.3.7, above.

5.4.3.8 MEC/MDEH disposition

MEC/MDEH disposition was as outlined for RAA-02, in paragraph 5.2.3.8, above.

USA disposed of 1,999 MEC/MDEH items in RAA-03E and RAA-03W by demolition. Appendix A contains a map of the RAA showing recovery locations and Appendix I contains a description of the recovered items, including nomenclature, GPS coordinates, depth and photographs.

5.4.3.9 Explosives management

Explosives management was carried out in accordance with SOPs and is as detailed for RAA-02, in paragraph 5.2.3.9, above.

5.4.3.10 QC program

The QC Program was conducted in accordance with the MEC QAPP and is as detailed for RAA-02, in paragraph 5.2.3.10, above.

5.4.3.11 RAA certification

RAA certification entails individual grid certifications as a package. USA, the Navy, and the QA contractor designed a grid package that includes WS #37 of the MEC QAPP and other pertinent documents needed to certify a grid as completed in accordance with the SOW and MEC QAPP.

RAA-03W certification consisted of 89 Grid Certification packages, provided in Appendix B. All data has been reviewed and approved by the Navy and QA. The Lunch Rock grids were not submitted for target selection in FS1 and five additional grids require additional work in FS2. Seven grids proximate to RAA-01 were realigned for prosecution in a subsequent field season, using the approach outlined for RAA-01 grids.

5.5 RAA-04

5.5.1 Description

RAA-04 is located to the northeast of Andrew Lake. Most of the site is on a plateau some 300 to 400-ft above the lake. The RAA is bordered by SA93-02 to the east, and Andrew Lake to the southwest. Elevations in the central portion range from about 220 to 320-ft asl. Steep ridges rising to just over 500-ft are located west and north of the RAA. RAA-04 encompasses 104 acres total. Access to RAA-04 is from the southern side of Clam Lagoon.

5.5.2 Scope of Work

The SOW includes location survey for grids; and vegetation and surface clearance prior to DGM survey. DGM data are to be collected over 100% of the site. The DGM data will be processed and DGM targets will be selected from the data using amplitude-based picking thresholds. DGM targets selected from the data will be reacquired and investigated to their depth of detection. MEC/MDEH will be disposed of by detonation. Munitions debris will be inspected and, if determined to be MPPEH, will be further certified and verified as MEC, MDEH or MDAS. MDAS will be managed in accordance with the MEC QAPP and shipped to an authorized demilitarization/recycle facility for final disposal.

5.5.3 Site Activities

5.5.3.1 Site preparation/grid stake out

Site preparation and grid stake out procedures were as outlined previously for RAA-02, in paragraph 5.2.3.1.

5.5.3.2 Access paths and restoration

RAA-04 field construction activities during FS1 involved repairs (see Figure 5-13) to the road leading up to RAA-04 and establishment and maintenance of access paths laid out into RAA-04 allowing for access by the Argos, personnel, and equipment while minimizing the impact to the tundra, grasslands, and mineral soils that exist across the site. RAA-04 is located on the East side of Andrew Lake (see Figure 5-2) and is accessed via unimproved gravel road along Clam Lagoon and then northwesterly up and into the RAA-04 area.

Prior to any intrusive work, the access paths were first cleared of MEC by UXO teams performing a detector-aided surface clearance to remove any potential surface MEC, MPPEH, or other metallic debris.

Figure 5-13: Access Road Prior to Repair

Similarly to the construction work performed at RAA-02 and RAA-03, the access road leading up to the gate into RAA-04 needed repair and maintenance. The road at RAA-04 had several hundred yards of wash out that required repair and re-grading. An excavator was used to re-establish grades, remove small boulders and cobbles from the wash-out areas, and reconstruct the road grade. The road was scraped and re-graded using an excavator and skidsteer (see Figure 5-14).

Figure 5-14: Re-graded Road

Access paths were laid into RAA-04 from the north end of the road through the gate and traversed west into the removal area (see Figure 5-15). Paths were extended to the south into the other areas of RAA-04 and an access path extending back out to the East was established at the south end of RAA-04.

Each path was cleared by the UXO/MEC technician prior to the construction crew proceeding with the placement of any chain link fencing for stabilization and placement of any necessary culverts.

Restoration of RAA-04 was not completed during FS1 in 2013, and will be revisited in FS2 in 2014 to remove any temporary structures, stabilization materials and culverts that were installed. During FS2, the paths will be evenly graded and seeded to aid in expediting the re-establishment of native surface plants, tundra, and grass vegetation.

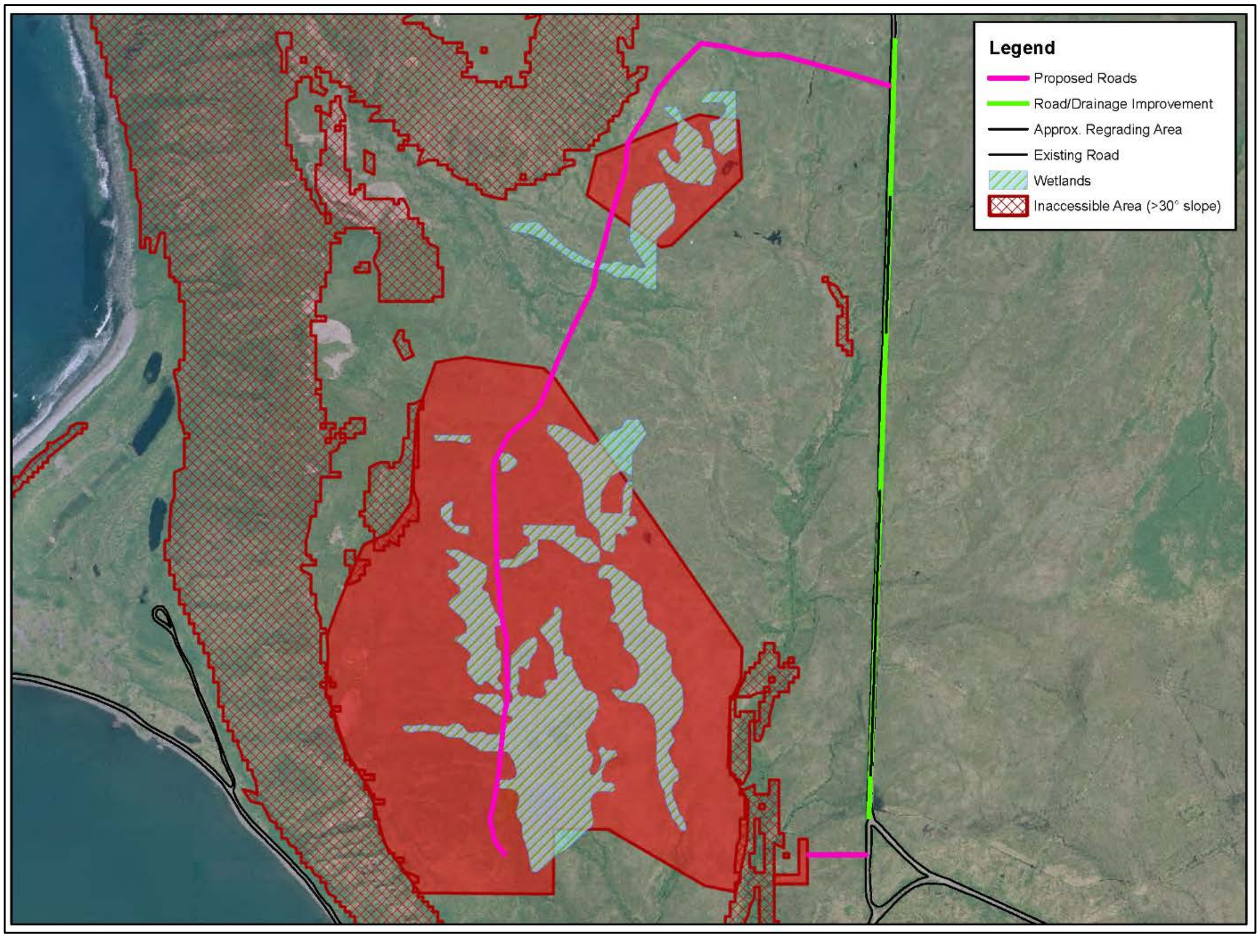

Figure 5-15: Access Paths and Road

5.5.3.3 Archaeological sites/environmental sensitive areas

There are no Archaeological sites/environmental sensitive areas in RAA-04.

5.5.3.4 Surface clearance

Surface clearance was as outlined for RAA-02, in paragraph 5.2.3.4, above.

5.5.3.5 DGM and analysis

USA deployed six DGM teams to perform DGM operations in RAA-04. EM61-MK2A's, deployed in two-person stretcher mode and positioned with RTK-DGPS, was used to map a total of 143 grids in this RAA from 7 May through 13 July 2013.

Each morning and afternoon, the DGM teams demonstrated acceptable system performance at the established RAA-04 IVS. The Site Geophysicist reviewed the IVS results for each team prior to their mobilization to their production grids.

Each DGM team was responsible for setting up their assigned grid and documenting any obstacles, in accordance with SOP 02 and the revised obstacle documentation in FCR-16_Rev1. Grid boundary stakes were identified and a grid photograph was taken from each grid's SW corner. The DGM team leader determined the survey line direction(s), based on terrain and obstacles. Grid obstacles were documented with the DGPS and were provided to data processors as a separate file, along with an accompanying photograph. Survey lines, spaced every 2.0 to 2.5-ft, were established using traveling lines or sand bags, depending on team preference. The DGM team leader, the Site Geophysicist, and QC personnel monitored coil height above the walking surface and survey speed.

Field DGM data and accompanying documentation for each grid were posted to USA's project ftp site. USA's subcontractor processed the DGM field data and confirmed daily QC instrument checks. The data processors provided feedback to the Site Geophysicist regarding obstacle documentation/data gaps which were addressed by the appropriate DGM team and sent back to the data processors to close out data collection for the grid. Final processed data was delivered to USA's QC Geophysicist via the project ftp site.

The QC Geophysicist reprocessed at least one grid per day, rotating around each of the six DGM teams to ensure that proper and consistent DGM data processing was being performed. In addition, the QC Geophysicist ensured that all DGM performance metrics for site coverage were being maintained, as well as a review of all selected DGM targets, adding any overlooked/QC targets. Following QC review, the data for each grid was forwarded to the QA contractor.

With feedback from QA, the QC Geophysicist finalized the dig list for each grid, including any additional QA picks, and forwarded it to the GIS database manager, who generated the DGM target maps, RTK-DGPS reacquisition files, Intrusive Investigation files, and the Intrusive Results files for the field QC teams.

Following the intrusive operations, one DGM team collected QC mini-grids in RAA-04 from 26 August through 25 September 2013. The mini-grid data collection took place under the direction of the field Geophysics QC and followed the mini-grid guidance. Mini-grid data was processed and analyzed on-island, with all data posted to the project ftp site for access by project personnel and the QA contractor.

5.5.3.6 Reacquisition

Based on DGM data, USA reacquired 15,402 targets in RAA-04. DGM Target reacquisition took place in a total of 143 grids in this RAA from 2 August through 4 September 2013.

Reacquisition procedures were as outlined for RAA-03E, in paragraph 5.4.3.6, above.

5.5.3.7 Intrusive investigations

In RAA-04, USA performed 13,463 intrusive investigations of DGM targets. These targets differed from the reacquisition targets because HALSA targets, as well as GTI targets, were subsampled, in accordance with FCR-20 and FCR-33. In general, if MEC or MDEH were not recovered at a Primary HALSA target, then Secondary targets, associated with that HALSA were not investigated. MPPEH discovered at a GTI Primary target location will require additional intrusive investigation of all Secondary GTI targets within a 7.5-ft radius, in FS2.

There were a total of 1 abandoned dig and 77 items left in place for RAA-04. Items left in place were general debris such as culverts and collapsed buildings. Details are included in the Grid Certification Packages in Appendix B and the Intrusive Results in Appendix L, Grid Tracking Log, 03-NIRIS Interim Intrusive Log. A graphic of the grids with abandoned digs and items left in place is included in Appendix A.

Procedures were as outlined in RAA-03E, paragraph 5.3.3.7, above.

5.5.3.8 MEC/MDEH disposition

MEC/MDEH disposition was as outlined for RAA-02, in paragraph 5.2.3.8, above.

USA disposed of 388 MEC/MDEH items in RAA-04 by demolition. Appendix A contains a map of the RAA showing recovery locations and Appendix I contains a description of the recovered items, including nomenclature, GPS coordinates, depth and photographs.

5.5.3.9 Explosives management

Explosives management was carried out in accordance with SOPs and is as detailed for RAA-02, in paragraph 5.2.3.9, above.

5.5.3.10 QC program

The QC Program was conducted in accordance with the MEC QAPP and is as detailed for RAA-02 in paragraph 5.2.3.10, above.

5.5.3.11 RAA certification

RAA-04 certification will be accomplished during FS2, 2014.

5.6 RAA-05 (FORMERLY AOC ALDA-01)

5.6.1 DESCRIPTION

RAA-05 consists of the northern portion of OU B-2 that borders Andrew Bay. Two AOCs are located within the RAA: the Andrew Lake Disposal Area [(ALDA-01, 4.7 acres), and the Andrew Lake Seawall (ALSW-01, 21 acres); see Appendix A, Location Maps)]. The RAA boundary is dog-legged and is wider at the north end of the site near Andrew Bay. Most of the RAA lies at elevations ranging from about 20 to 40-ft asl; however, a cliff on the west side of the ALDA-01 AOC rises to heights of over 200-ft asl. Wetland vegetation and soil are present in the southern portion of ALDA-01. Access to RAA-05 is through the Andrew Lake main gate and then following the existing dirt/gravel road north until the road ends. There is a man-made main drainage spillway from Andrew Lake to the bay located near the southern end of the seawall at the end of the main access road. The main drainage is improved by Navy EOD one to two times per year. The portion of ALSW-01 where MEC is deposited along the shoreline and seawall is approximately 21 acres (see Figure 5-2).

5.6.2 SCOPE OF WORK (ALDA-01)

The original SOW for the RAA was to excavate the entire site (4.73 acres) including the individual anomalies and the garbage pits to their respective depths of detection. However, based on the progressively decreasing metallic saturation across RAA-05/ALDA-01 from north to south, and the extent of environmental impact anticipated with removal of the soil and grasses covering the southern three-quarters of the RAA, the production contractor proposed and the Navy accepted an alternate approach. The alternate approach is an analog and dig clearance to 6-in. below the mineral soil surface, followed by DGM and clearance of the selected DGM targets to depth, in the southern 3.28 acres of the RAA. The high density (cobble) areas (1.45 acres) of RAA-05/ALDA-01 would be cleared using a shielded excavator.

5.6.3 Site Activities – ALDA-01

5.6.3.1 Site preparation/grid stake out

Site preparation and grid stake out procedures were as outlined for RAA-02, in paragraph 5.2.3.1.

5.6.3.2 Access paths and restoration

The access road into RAA-05 along Andrew Lake required maintenance and some pothole filling and minor grading. Holes and low spots were filled with gravel that was available from along the shoulder of the main road leading in. Along a portion of the road, silt fence (see Figure 5-16) was placed to prevent any direct siltation run-off coming off the road and work areas at the entrance to RAA-05.

Figure 5-16: Silt Fence

5.6.3.3 Archaeological sites/environmental sensitive areas

There are two Cultural Resource sites in RAA-05, one in ALDA-01 and the other in ALSW-01. The required procedures are as outlined for RAA-03E, in paragraph 5.3.3.3, above.

5.6.3.4 Surface clearance

Surface clearance for ALDA-01 was as outlined for RAA-02, in paragraph 5.2.3.4 above.

5.6.3.5 DGM and analysis

No DGM took place during FS1.

5.6.3.6 Reacquisition

No reacquisition was done in FS1.

5.6.3.7 Intrusive investigations

Excavation activities with an armored tracked excavator (see Figure 5-17) were conducted within the northern portion of ALDA-01. On 21 May 2013, excavation of timbers was performed at the entrance area into RAA-05. This removal allowed for better access and egress. On 22 May 2013, digging operations began. The excavator removed soil, rock, and debris to varying depths in the grid area being excavated. The material would be removed and laid out for the UXO technicians to then screen for metal and remove metal debris. The depth of each grid excavated varied due to the presence of metal being observed and/or detected. On 23 May 2013, an 81mm High Capacity (HC) mortar was encountered. As the Minimum Separation Distance (MSD) for the item was larger than the 81mm HE

Figure 5-17: Armored Excavator in Cobble Area

Mortar MGFD, excavations ceased for coordination with NOSSA. On 24 May 2013, after concurrence by NOSSA, excavation continued. When demolition of MEC/MDEH was required, the construction equipment was moved away 600-ft from the site.

Excavation production averaged about two grids per day. Each grid was a 20-ft by 20-ft plot area that was excavated and spoils were inspected and screened for metal debris, which was then removed. When reaching depth, QA was notified and checked the hole for metal and depth, then passed the grid. The spoils were then recast into the grid. This process of excavation, laying out of spoils, inspection & detection and removal of metal debris was a slow stop and start activity in order to facilitate safe removal of metal debris and location of any potential MEC/MDEH that could then be managed and removed appropriately.

On 30 June 2013, a second 81mm HC mortar was located; and mechanical excavation activities were suspended for the Field Season. This work suspension centered on safety issues with the ordnance found, lack of suitable equipment on Adak, and not being able to excavate with a greater separation distance (K18 MSD) from the active excavation point to the operator in the cab of the onsite excavator. In total, USA excavated about .38 acres of the cobble area (see Appendix A, ALDA-01 Grid Maps).

5.6.3.8 MEC/MDEH disposition

MEC/MDEH disposition was as previously outlined for RAA-02, in paragraph 5.2.3.8, above.

USA disposed of 236 MEC/MDEH items in ALDA-01 by demolition. Appendix A contains a map of the RAA showing recovery locations and Appendix I contains a description of the recovered items, including nomenclature, GPS coordinates, depth and photographs.

5.6.3.9 Explosives management

Explosives management was conducted in accordance with SOPs and as detailed for RAA-02, in paragraph 5.2.3.9, above.

5.6.3.10 QC program

The QC Program was conducted in accordance with the MEC QAPP and as detailed in RAA-02, paragraph 5.2.3.10, above.

5.6.3.11 RAA certification

RAA certification will occur during a subsequent field season.

5.6.4 Site Activities – (ALSW-01)

The SOW required monthly Seawall MEC/MPPEH surface sweeps (see Figure 5-2 for the location of the ALSW-01) during field operations (also see Figure 5-18). Starting on 19 April 2013 through 18 September 2013, USA performed six Seawall sweeps and recovered 33 MEC/MDEH items. The MEC/MDEH items were disposed of by demolition. Appendix A contains a map of the RAA showing recovery locations and Appendix I contains a description of the recovered items, including nomenclature, GPS coordinates, depth and photographs.

Figure 5-18: ALSW-01 looking down from RAA-02

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6.0 PROJECT QA RESULTS

6.1 GENERAL QA ACTIONS AND RESPONSIBILITIES

The QA actions taken during the 2013 field season included:

- Attendance at and oversight of all PP and Initial Phase (IP) QC inspections;
- QA of theDGM, which included:
  - oversight of the selection of locations and installation of the IVS which supported the GSV process;
  - the installation of QA BSI;
  - oversight of the installation of the QC BSI;
  - daily QA surveillances of DGM data collection;
  - reprocessing of 100% of the contractor DGM data and concurring with the contractor's target lists;
  - independent review of the production contractor's dig results for alignment with the DGM data;
  - Independent collection of DGM data along transects within each RAA, selection of targets from the transect DGM data and intrusive investigation of the transect DGM data targets.
- QA of the contractor intrusive investigations and other field activities, which included:
  - daily QA surveillances of the field-work-related DFW according to the frequency approved in the QASP;
  - independent post-intrusive investigation checks of contractor investigations to verify removal to project standards;
  - a review of the field-work-related QC documentation to verify compliance with the frequency requirements and adequacy standards in the approved QAPP and SOPs;
- Management of NCRs issued by QC or QA to include performing root cause analysis and determining appropriate corrective actions, conducting follow-up inspections of the corrective action (e.g., re-work) including verification of required re-inspections and documentation by QC and ensuring timely close-out of open NCRs.
- Additional investigations, research, process analysis and/or other quality functions which were determined necessary to support the field effort and aid in achieving the project's goals.

6.2 DGM DATA VALIDATION AND TARGET LIST CONCURRENCE

During the 2013 field season, QA reprocessed the production DGM data and provided target list concurrence for 418 grids which comprises all of the grids in RAA-02, RAA-03E, RAA-03W and RAA-04. Note that this number exceeds the number of physical grids as some required reevaluation. Included in this activity were reprocessing and validation of the twice daily IVS tests and the static-standard tests which were instituted during production data collection as an additional quality metric.

Field QA personnel conducted 191 surveillances on DGM teams. The frequency for these surveillances was once per team per day for the first week of production and then each DGM team once per week. Surveillances were scheduled so that various aspects of the DGM survey were viewed (e.g., equipment start up, IVS, DGM, etc.). The average turnaround time for QA reprocessing of production DGM data, daily IVS and static-standard tests and providing target list concurrence was less than 24 hours.

6.3 QUALITY ASSURANCE FIELD ACTIVITIES

Field QA personnel conducted 489 surveillances for field activities other than DGM during the 2013 field season for the following DFWs: vegetation clearance, reacquisition, intrusive investigations, disposal of MEC, and site restoration and seawall sweeps using the inspection criteria from the respective QC inspection checklist for the definable feature of work being inspected. QA conducted daily surveillances of each team during the first week which that DFW was being performed and on each team once per week thereafter. The QA checks of the management and disposal of the MDAS DFW were accomplished by observing the thermal treatment process at the TFU and inspecting the final product as it was being containerized. The checks were accounted for using logbook entries and the totals were tracked with dual signature turn in documents (1348-1). The surveillance total listed above does not include these checks.

6.4 QUALITY ASSURANCE GRID APPROVAL

The QA grid inspection sequence comprised two elements. One element was a review and verification of documentation and results for all the production and QC work for the grid. The other was independent verification through inspection. The independent verification through inspection consisted of both hole checks of completed digs and QA DGM transects.

QA personnel reviewed all the production and QC data for the grid. Documentation review consisted of:

- Intrusive dig sheet results;
- mV comparison of intrusive finds to DGM data;
- QC close out documentation, targets checked, inaccessible areas (standing water, slopes, cultural features, etc.), targets below required clearance depths, no finds, etc.;
- QA documentation for the grid;
- QA-placed blind seed items identified by number;
- Disposal of all MEC and management of MPPEH from the grid.

QA personnel selected a subset of targets from the target list to go verify clearance. QA re-inspected a minimum 5 percent combined total of dig targets and no-finds selected in each grid. Selection of digs and no-finds for QA inspection was not completely random. After reviewing the grid data, QA selected targets and no-finds using a blend of biased and random sample selection techniques.

6.5 DEFICIENCIES AND NON-CONFORMANCES

There were two types of Non-Conformances issued during the 2013 field season on the OU B-2 NTCRA: process NCRs and product NCRs. Process NCRs were issued when QC/QA surveillances identified process or procedural breakdowns prior to the fieldwork being completed. There were nine process-related NCRs issued during the 2013 field season (i.e., NCR 1, 2, 3, 4, 5, 6, 7, 9, and 10). Product NCRs were issued when QC/QA inspection of completed work identified non- conforming conditions. There were ten product-related NCRs issued during the 2013 field season (i.e., NCR 8, 11, 12, 13, 14, 15, 16, 17, 18, and 19). Of the 19 non-conformances, six were related to the DGM efforts and the remaining 13 non-conformances were related to other field activities.

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7.0 NOSSA AND ADEC AUDITS

7.1 AUDIT FINDINGS

During 2013 site operations, personnel from the ADEC and NOSSA conducted site visits to audit the field procedures for compliance with the approved plans.

- ADEC conducted a site visit from 13-16 May 2013.
- NOSSA performed a site audit of the Adak NTCRA operations in OU B-2 from July 8-11, 2013. Overall, the project was found compliant with explosives safety and environmental criteria. There were 11 NOSSA findings, none of which were major deficiencies.

Detailed audit reports are presented in Appendix N.

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8.0 NTCRA FIELD SEASON SUMMARY

8.1 2013 FIELD ACTIVITIES

USA and its subcontractors began mobilization to Adak on 28 March 2013 and arrived in stages in order to receive required site training and then begin operations. During site setup, equipment was inventoried and function checked. Initial operations began in RAA-03E, consisting of location surveys to establish boundaries and grids; establishment and/or maintenance of access roads and paths to the sites; and vegetation and surface clearance. The DGM crews were the last to arrive; after site-specific training they began DGM surveys. Concurrently with other activities, work started at RAA-05 with a dedicated UXO team plus an armored excavator.

Although USA planned to complete four RAAs during the season, only two were substantially completed/certified: RAA-03E and nearly all of RAA-03W. Some activities took place in RAA-02, RAA-04, and RAA-05; however, these RAAs were not finished and are planned for completion/certification in 2014 and a subsequent field season. RAA-01 is planned for completion in a subsequent field season.

This section summarizes the status of RAA activities.

8.2 RAA-02

USA teams completed location surveys to establish boundaries and internal grids; performed surface clearance; and DGM surveyed in 101 of 102 full or partial grids. The RAA has grid DGM surveys complete; however, some of the rocky areas were determined to be unsafe to map with the DGM crews. During FS2 in 2014, these rocky areas are scheduled for analog and dig to clear them. Intrusive investigations of identified DGM targets and grid certifications are also scheduled for FS2.

Ten MEC items were located on the surface, including two encountered outside the boundary. The eight within the RAA boundary were disposed of by demolition on site (see Appendix A for an RAA map, and Appendix I for a listing of the items with a description, coordinates, and photographs). The two outside the RAA boundary were disposed of by demolition during FS2.

8.3 RAA-03E AND RAA-03W

USA teams completed location surveys to establish boundaries and internal grids; performed surface clearance; and DGM surveyed 200 grids plus 618 mini QC grids in RAA-03.

Based on DGM data, USA reacquired 21,994 targets in RAA-03E and 20,007 targets, including HALSAs, in RAA-03W, for a total of 42,001 targets.

UXO team(s) performed 21,853 intrusive investigations of DGM targets in RAA-03E, and 18,748 intrusive investigations of DGM targets in RAA-03W, for a total of 40,601 investigations. The intrusive targets differed from the reacquisition targets because HALSA targets, as well as Geologic/Terrain Induced (GTI) targets were subsampled, in accordance with FCR-20 and FCR-33. If MEC or MDEH were not recovered at a Primary HALSA target, then Secondary targets associated with that HALSA were not investigated. MPPEH discovered at a GTI Primary target location will require additional intrusive investigation of all Secondary GTI targets within a 7.5-ft radius, in FS2.

There was a total of 32 abandoned digs and 1,735 items left in place for RAA-03E and RAA-03W. Items left in place were general debris such as culverts and collapsed buildings. Details are included in the Grid Certifications Packages in Appendix B and the Intrusive Results in Appendix L, Grid Tracking Log, 03-NIRIS Interim Intrusive Log. A graphic of the grids with abandoned digs and items left in place is included in Appendix A.

During intrusive operations, 1,999 MEC/MDEH items were located. These were either BIP, treated in consolidated demolition shots at RAA-01, or further inspected and determined to be MDAS. Appendix A contains a map of the RAA showing recovery locations and Appendix I contains a description of the recovered items, including nomenclature, GPS coordinates, depth and photographs. Table 8-1 presents the distribution of the MEC/MDEH located.

Table 8-1: RAA-03 Depth Distribution

Munitions-MEC/MDEH	Total	Depth Range Below Ground Surface (bgs)					
		Surface	0- 0.5 ft	0.5-1 ft	1-1.5 ft	1.5-2 ft	2-3 ft
MEC	403	20	313	52	13	5	0
MDEH	1,596	5	1,407	143	31	9	1
Total	1,999	25	1,720	195	44	14	1

8.4 RAA-04

USA teams completed location surveys to establish boundaries and internal grids, performed surface clearance, and conducted DGM surveys of 143 grids.

Based on DGM data, USA reacquired 15,402 targets in RAA-04.

UXO team(s) performed 13,463 intrusive investigations of DGM targets in RAA-04. The intrusive targets differed from the reacquisition targets because HALSA targets, as well as GTI targets, were subsampled, in accordance with FCR-20 and FCR-33. If MEC or MDEH were not recovered at a Primary HALSA target, then Secondary targets associated with that HALSA were not investigated. MPPEH discovered at a GTI Primary target location will require additional intrusive investigation of all Secondary GTI targets within a 7.5-ft radius, in FS2.

There was a total of 1 abandoned dig and 77 items left in place for RAA-04. Items left in place were general debris such as culverts and collapsed buildings. Details are included in the Grid Certification Packages in Appendix B and the Intrusive Results in Appendix L, Grid Tracking Log, 03-NIRIS Interim Intrusive Log. A graphic of the grids with abandoned digs and items left in place is included in Appendix A.

During intrusive operations, 388 MEC/MDEH items were located. These were either BIP, treated in consolidated demolition shots at RAA-01, or further inspected and determined to be MDAS. Appendix A contains a map of the RAA showing recovery locations and Appendix I contains a description of the recovered items, including nomenclature, GPS coordinates, depth and photographs. Table 8-2 presents the distribution of the MEC/MDEH located.

Table 8-2: RAA-04 Depth Distribution

Munitions-MEC/MDEH	Total	Depth Range Below Ground Surface (bgs)					
		Surface	0- 0.5 ft	0.5-1 ft	1-1.5 ft	1.5-2 ft	2-3 ft
MEC	299	7	197	60	19	11	5
MDEH	89	0	69	17	0	3	0
Total	**388**	**7**	**266**	**77**	**19**	**14**	**5**

8.5 RAA-05 (ALDA-01 AND ALSW-01)

8.5.1 ALDA-01

USA teams completed location surveys to establish boundaries and internal grids, and performed surface clearance of eight grids in ALDA-01.

USA completed a surface clearance and excavated .38 acres of the cobble area.

During operations, 236 MEC/MDEH items were located. These were either BIP, or further inspected and determined to be MDAS. Appendix A contains a map of the RAA showing recovery locations and Appendix I contains a description of the recovered items, including nomenclature, GPS coordinates, depth and photographs. Table 8-3 presents the distribution of the MEC/MDEH located. Note that depths of discovery were established through excavation in lifts in the former landfill area of the RAA.

Table 8-3: RAA-05/ALDA-01 Depth Distribution

Munitions-MEC/MDEH	Total	Depth Range Below Ground Surface (bgs)					
		Surface	0- 0.5 ft	0.5-1 ft	1-1.5 ft	1.5-2 ft	2-3 ft
MEC	104	53	46	5	0	0	0
MDEH	132	102	24	4	2	0	0
Total	**236**	**155**	**70**	**9**	**2**	**0**	**0**

8.5.2 ALSW-01

USA performed six Seawall sweeps and recovered 36 munition items, of which 27 were MEC/MDEH. The MEC/MDEH items were disposed of by demolition. Appendix A contains a map of the RAA showing recovery locations and Appendix I contains a description of the recovered items, including nomenclature, GPS coordinates, depth and photographs. Table 8-4 presents the distribution of the MEC/MDEH located.

Table 8-4: RAA-05/ALSW-01 Depth Distribution

Munitions-MEC/MDEH	Total	Depth Range Below Ground Surface (bgs)					
		Surface	0- 0.5 ft	0.5-1 ft	1-1.5 ft	1.5-2 ft	2-3 ft
MEC	28	28	0	0	0	0	0
MDEH	5	5	0	0	0	0	0
Total	**33**	**33**	**0**	**0**	**0**	**0**	**0**

8.6 MDAS AND OTHER SCRAP METAL DISPOSAL

During site operations, USA collected, inspected, and certified 22,084-lb of MDAS. The MDAS consisted of munitions and target debris. All MDAS, other than large metal target debris, was processed on Adak by flashing in the Thermal Flashing unit and certified by the SUXOS and Navy QA (see Appendix C-09). The MDAS was shipped to a recycle facility with signed DD 1348-1A's for final disposal/processing (see Appendix J-06).

In addition, USA removed and stored approximately 80,316-lb of other metal debris. Disposition of this debris will be determined and completed in 2014 and a subsequent field season.

8.7 EXPLOSIVES USAGE AND MANAGEMENT

During 2013 operations, USA performed demolition operations on 62 days, including a cleanup shot on 23 October to dispose of the remaining explosives stock. On some of these days, demolition operations included multiple consolidated shots at RAA-01 (see Appendix J). The following donor explosives were used:

- Perforating charges 850 each
- Electric caps 425 each
- Detonating cord 4,000 feet

All explosives management records, including inventories and usage documentation, are located in Appendix J.

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9.0 RAA CERTIFICATION SUMMARY

The RAA certification packages (see Appendix B) for 200 grids in RAA-03 (107 in RAA-03E and 93 in RAA-03W) were submitted to QA and the Navy during FS1. The QA contractor reviewed all of the Final Grid Packages for completeness and accuracy, and made comments back to USA for clarification or revision of the packages. USA updated the grid packages and resubmitted them to QA for review and acceptance. QA accepted 195 of the 200 grid packages; five grids in RAA-03W (B03, L09, L10, M09 and M10) require additional work in FS2.

Each final grid certification package contains the following documents:

- Worksheet 37; the Backup Validation and Documentation of QC Inspection – provides a hyperlink to each 3-phased QC inspection (Appendix C) for each DFW audited in the grid.
- The Final Grid Package Submittal Form – lists all documents submitted in the final grid package.
- The Final Grid QC Inspection Record – documents the results of the field QC checks performed in the grid, including the mini-grid intrusive results.
- The Intrusive Results Review – the Project Geophysicist or his designee's assessment of the intrusive results.
- The Intrusive Results – a record of each target, its location, description, and final disposition.
- A Grid Map.
- A DGM Grid Results Map.
- A Survey Area Report Form (SARF) – documents the location and characteristics of obstacles within the grid, if applicable.
- QC Mini-Grid Location Map.
- Mini-Grid DGM Map.

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10.0 CONCLUSIONS AND RECOMMENDATIONS

This section details conclusions and recommendations resulting from the 2013 NTCRA at the OU B-2 sites on Adak.

10.1 CONCLUSIONS

Operations on Adak were dynamic which required flexibility to identify and adjust to site conditions and modify the existing plans and procedures. RAA-03E and RAA-03W (minus five grids) were completed including RAA certification documentation (see Appendix B).

Based on 2013 results, some conclusions include:

- The site preparation in RAA-03E and RAA-03W was inadequate for DGM surveys.
- More DGM targets were identified than anticipated for the sites.
- Production was slower than anticipated.
- More MEC/MDEH was encountered than anticipated.
- Quality control was unable to keep up with concurrent operations in all four RAAs.
- More MDAS and range-related debris required off island disposal than planned.
- Procedures in two RAAs had to be changed based on site conditions.

10.1.1 SITE PREPARATION

The vegetation/surface clearance was inadequate in that the surface clearance did not include going to the mineral soil surface. Initially, the instrument-aided surface clearance was going into the tundra; however, after digging up some BSIs, procedures changed to only pursuing items showing above the walking surface. In addition, some target residue was left in place pending a solution to containerizing and securing large MDAS items. DGM crews marked the items as obstructions which later became HALSAs.

10.1.2 DGM TARGETS

DGM Surveys identified 57,403 target anomalies in RAA-03E, RAA-03W, and RAA-04, including HALSAs. Of these 54,064 were investigated, including primary HALSA targets. Of these targets investigated 2,664 were MEC/MDEH, or 4.9%, which means considerable effort went into recovering range-related debris, both at target locations and within the RAAs.

The intrusive targets differed from the reacquisition targets because HALSA targets, as well as GTI targets were subsampled, in accordance with FCR-20 and FCR-33. If MEC or MDEH were not recovered at a Primary HALSA target, then Secondary targets associated with that HALSA were not investigated. MPPEH discovered at a GTI Primary target location will require additional intrusive investigation of all Secondary GTI targets within a 7.5-ft radius, in FS2.

There were a total of 33 abandoned digs and 1,812 items left in place for RAA-03E, RAA-03W, and RAA-04. Items left in place were general debris such as culverts and collapsed buildings. Details are included in the Grid Certification Packages in Appendix B and the Intrusive Results in Appendix L, Grid Tracking Log, 03-NIRIS Interim Intrusive Log. A graphic of the grids with abandoned digs and items left in place is included in Appendix A.

10.1.3 PRODUCTION

NTCRA production was less than anticipated. It resulted from several factors including weather, access to RAAs, (especially RAA-02's hill climb and terrain), and the excess of range-related debris both on the surface and at target locations.

10.1.4 MEC/MDEH

While the number of MEC/MDEH recovered was more than initially stated in the contract, the main impact was to the amount of explosives that could be stored in the Government magazines. USA utilized the two existing magazines sited in RAA-03 and shipped explosives on the barge. The amount of explosives shipped was driven by 1) the amount of MEC/MDEH expected, and 2) the amount of explosives that could physically be stored, due to packaging, in the donor explosives magazine. Mid-season it was apparent that there were not enough explosives to finish the season; thus, USA had to resupply by air carrier. The resupply required two flights as donor explosives and blasting caps are not compatible in air cargo on a flight.

10.1.5 Quality Control

In early July 2013 it became apparent that the number of QC personnel on site was inadequate to keep up with the concurrent activities in multiple RAAs and provide grid certification packages to QA in a timely manner. As a result of NCR #6, USA identified an additional candidate for the UXO QC staff and the USA corporate QC manager conducted training to the candidate and additional QC training to the field QC staff on island. A fourth UXOQCS was trained and added to the QC staff in August 2013.

10.1.6 MDAS/Range-Related Debris

A significant amount of munitions debris and range-related debris was accumulated during the 2013 season. In accordance with NAVSEA OP 5, range-related debris is debris other than munitions debris collected from operational ranges or former ranges and is MPPEH until inspected and certified as either MDAS or MDEH. Under this criterion, debris encountered on the RAAs such as tires, barrels, or any other material showing evidence of being shot at or used as a target, became MDAS and required shipment to a demilitarization/disposal facility. As the plans for MDAS disposal was to barrel and seal MDAS for final disposal, it was necessary to use a large lockable container to accommodate the MDAS and range-related debris. In addition, there remains range-related debris on Adak (in excess of 80,000 lbs) that is going to require additional large containers to dispose of off Adak during the 2014 season, plus any other material generated by the NTCRA.

10.1.7 RAA Procedural Changes

Two RAAs, RAA-02 and RAA-05, will require procedural changes due to site conditions.

- During DGM operations on RAA-02 there were rocky areas, although accessible, too slippery and hazardous to navigate with the EM61. These areas were determined to require an analog & dig clearance.
- At RAA-05, the SOW was to perform an excavation down to 2-ft using a shielded excavator. The Adak team decided that in the southern area, an analog clearance (3.28 acres) to 6-in, followed by DGM, was recommended rather than excavator removal of 2-ft of the soil top cover and earth. The northern, high density (cobble) areas (1.45 acres) of RAA-05/ALDA-01 would be cleared using a shielded excavator.

10.2 RECOMMENDATIONS

Based on operations, FCRs, and NCRs, many of the recommendations to address the above conclusions/issues have already been implemented or are being considered for the 2014 season.

10.2.1 Site Preparation

Recommend surface clearance first to the mineral soil surface for step-outs and other added areas then placement of BSIs prior to DGM surveys. This would not apply to areas such as RAA-01 and RAA-05 which will require an analog and dig to 6-in. bgs and the analog and dig of the rocky areas of RAA-02. These areas will require emplacement of the BSIs prior to the analog and dig. In addition, in RAAs -01 and -05 another sequence of BSI emplacement will be required prior to DGM surveys.

10.2.2 Production

The level of effort (LOE) and manning will have to be considered for possible lower production rates.

10.2.3 MEC/MDEH

Recommend increasing the number of blasting caps in the initial shipment. This way if a resupply is necessary during 2014 operations then it would only require one flight thereby reducing airfreight costs by half.

10.2.4 Quality Control

Recommend adding assistants for the QC manager and the UXOQCS to facilitate a quicker grid package turnover to QA. The QC staffing level should be monitored to ensure it is adequate to meet the QC needs during operations.

10.2.5 MDAS

Recommend planning for shipment of the existing range-related debris on site plus a minimum of additional 15 tons of MDAS.

10.2.6 RAA Procedural Changes

Recommend the SOW be modified to change the NTCRA requirements for RAA-02 and RAA-05 and update all applicable plans.

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11.0 REFERENCES

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