FINAL

Site-Specific Work Plan for the Site Inspection of the Seal Island Gunnery Range

Prepared Under: **Contract No. W912DY-04-D-0017**
Delivery Order # 00170001

Project Number: **D01ME003200**

Prepared for:

U.S. Army Engineering and Support Center, Huntsville
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Huntsville, AL 35807

and

U.S. Army Corps of Engineers, Baltimore District
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This Site-Specific Work Plan has been prepared to document the Site Inspection activities to be conducted at the Seal Island Gunnery Range DERP FUDS Project No. DO1ME003200. This Site-Specific Work Plan follows the format of the Programmatic Work Plan for Formerly Used Defense Sites (FUDS) Military Munitions Response Program (MMRP) Site Inspections at Multiple Sites in the Northeast Region approved by USACE and dated October 2005. This Site-Specific Work Plan is organized in accordance with Data Item Description (DID) Munitions Response (MR)-001, and those sections that did not change from the programmatic work plan have been noted as such.

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April 2006

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LIST OF ACRONYMS AND ABBREVIATIONS

APP	Accident Prevention Plan
ARAR	Applicable or Relevant and Appropriate Requirement
ASR	Archive Search Report
CENAB	U.S. Army Corps of Engineers North Atlantic–Baltimore
CENAE	U.S. Army Corps of Engineers New England District
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CHE	Chemical Warfare Material Hazard Evaluation
CIH	Certified Industrial Hygienist
CONUS	Continental United States
CSM	Conceptual Site Model
DERP	Defense Environmental Restoration Program
DID	Data Item Description
DoD	Department of Defense
DoI	Department of Interior
DQO	Data Quality Objective
EA	EA Engineering, Science, and Technology, Inc.
EHE	Explosive Hazard Evaluation
EOD	Explosive Ordnance Disposal
EPA	U.S. Environmental Protection Agency
EPP	Environmental Protection Plan
ER	Engineering Regulation
ERA	Ecological Risk Assesment
°F	Degrees Fahrenheit
FDE	Findings and Determination of Eligibility
FSP	Field Sampling Plan
ft	Foot/Feet
FUDS	Formerly Used Defense Site(s)
FWS	U.S. Fish and Wildlife Services

LIST OF ACRONYMS AND ABBREVIATIONS (CONTINUED)

GIS	Geographical Information Systems
GP	General Purpose
GPL	GPL Laboratories, LLLP
GPS	Global Positioning System
HASP	Health and Safety Plan
HFA	Human Factors Applications, Inc.
HE	High Explosive
HHE	Health Hazard Evaluation
HHRA	Human Health Risk Assessment
HRS	Hazard Ranking System
IC	Institutional Control
IDW	Investigative Derived Waste
in.	Inch(es)
INPR	Inventory Project Report
lb	Pound
MC	Munitions Constituents
MEC	Munitions and Explosives of Concern
ME DEP	Maine Department of Environmental Protection
MFR	Memorandum for Record
MHPC	Maine's Historic Preservation Commission
MMR	Military Munitions Response
MMRP	Military Munitions Response Program
mph	Mile(s) Per Hour
MR	Munitions Response
MRA	Munitions Response Area
MRS	Munitions Response Site
MRSPP	Munitions Response Site Prioritization Protocol
MSD	Minimum Separation Distance
NAD	North American Datum

LIST OF ACRONYMS AND ABBREVIATIONS (CONTINUED)

NAS	Brunswick Naval Air Station
NDAI	No Department of Defense Action Indicated
NPL	National Priorities List
OSHA	Occupational Safety and Health Administration
PA	Preliminary Assessment
PAE	Preliminary Assessment of Eligibility
PFW	Partners for Fish and Wildlife
PGM	Program Manager
PM	Project Manager
PPE	Personal Protective Equipment
PRG	Preliminary Remediation Goals
PWS	Performance Work Statement
PWP	*Programmatic Work Plan for Formerly Used Defense Sites FUDS) Military Munitions Response Program (MMRP) Site Inspections at Multiple Sites in the Northeast Region*
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAC	Risk Assessment Code
RCWM	Recovered Chemical Warfare Material
RI/FS	Remedial Investigation and Feasibility Study
SAP	Sampling and Analysis Plan
SI	Site Inspection
SS	Site Specific
SSHO	Site Safety and Health Officer
T&E	Threatened and Endangered
TCRA	Time Critical Removal Action
TL	Team Leader
TPP	Technical Project Planning

LIST OF ACRONYMS AND ABBREVIATIONS (CONTINUED)

TQM	Total Quality Management
U.S.	United States
USACE	U.S. Army Corps of Engineers
USAESCH	U.S. Army Engineering and Support Center, Huntsville
UTM	Universal Transverse Mercator
UXO	Unexploded Ordnance
VDS	Validation of Detection Systems

GLOSSARY OF TERMS

Discarded Military Munitions (DMM)—Military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term does not include unexploded ordnance, military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed consistent with applicable environmental laws and regulations (USACE 2004a).

Explosive Ordnance Disposal (EOD)—The detection, identification, on-site evaluation, rendering safe, recovery, and final disposal of unexploded explosive ordnance. It may also include explosive ordnance that has become hazardous by damage or deterioration (USACE 2003a).

Explosives Safety—A condition where operational capability and readiness, personnel, property, and the environment are protected from the unacceptable effects of an ammunition or explosives mishap (USACE 2000a).

Formerly Used Defense Site (FUDS)—Locations that were owned by, leased to, or otherwise possessed by the (Department of Defense) DoD are considered FUDS. A FUDS is eligible for the Military Munitions Response Program if the release occurred prior to October 17, 1986; the property was transferred from DoD control prior to October 17, 1986; and the property or project meets other FUDS eligibility criteria. The FUDS Program focuses on compliance and cleanup efforts at FUDS (USACE 2004a).

Munitions Constituents (MC)—Materials originating from unexploded ordnance, discarded military munitions or other military munitions, including explosive and nonexplosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions (USACE 2004a).

Munitions Debris—Remnants of military munitions (e.g., fragments, penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization, or disposal (Department of the Army 2005).

Munitions and Explosives of Concern (MEC)—This term, which distinguishes specific categories of military munitions that may pose unique explosives safety risks, means unexploded ordnance, discarded military munitions or munitions constituents (e.g., trinitrotoluene and cyclotrimethylenetrinitramine) present in high enough concentrations to pose an explosive hazard (USACE 2004a).

GLOSSARY OF TERMS (CONTINUED)

Military Munitions—Ammunition products and components produced for or used by the armed forces for national defense and security, including ammunition products or components under the control of the DoD, the U.S. Coast Guard, the U.S. Department of Energy (DOE), and the National Guard. The term includes confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries, including bulk explosives, and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunitions, small arms ammunition, grenades, min., torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components of the above (USACE 2004a).

Range—A designated land or water area set aside, managed, and used for range activities of the DoD. Ranges include firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, impact areas, electronic scoring sites, buffer zones with restricted access and exclusionary areas, and airspace areas designated for military use in accordance with regulations and procedures prescribed by the Administrator of the Federal Aviation Administration (DoD 2005).

Unexploded Ordnance (UXO)—Military munitions that have been primed, fused, armed, or otherwise prepared for action; have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and remain unexploded either by malfunction, design, or other cause (USACE 2004a).

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This Site-Specific Work Plan (SS-WP) has been prepared to document the Site Inspection (SI) activities to be conducted at the Seal Island Gunnery Range DERP FUDS Project No. DO1ME003200. This SS-WP follows the format of the Programmatic Work Plan for Formerly Used Defense Sites (FUDS) Military Munitions Response Program (MMRP) Site Inspections at Multiple Sites in the Northeast Region (PWP) approved by the U.S. Army Corps of Engineers (USACE) and dated October 2005 (Alion 2005). This SS-WP is organized in accordance with Data Item Description (DID) Munitions Response (MR)-001, and those sections that did not change from the PWP have been noted as such.

1. INTRODUCTION

1.1 Project Authorization

1.1.1 Alion Science and Technology, Corporation (Alion) has been contracted by the U. S. Army Engineering and Support Center, Huntsville (USAESCH) to perform Site Inspections (SIs) at Military Munitions Response Program (MMRP) sites located in the northeast region of the continental United States (CONUS). The former Seal Island Gunnery Range Site No. D01ME0032, is one of these sites being addressed under this program. This work is being performed under Contract W912DY-04-D-0017, Delivery Order 00170001, in accordance with the Defense Environmental Restoration Program (DERP) for Formerly Used Defense Sites (FUDS). USAESCH has transferred management of the contract to the U.S. Army Corps of Engineers North Atlantic–Baltimore (CENAB). CENAB will be working with USAESCH on the completion of this project.

1.1.2 The work under this delivery order is being completed by Alion and Human Factors Applications, Inc. (HFA), a wholly owned subsidiary of Alion Science and Technology, Corporation, along with Alion's subcontractors EA Engineering, Science, and Technology Inc., (EA) and NAEVA, together known as the Alion Team. Additional subcontractors involved in the completion of the work are discussed in Section 2.

1.2 Purpose and Scope

1.2.1 The purpose of this Site-Specific Work Plan is to document the objectives, plans and procedures for conducting the SI at the former Seal Island Gunnery Range.

1.2.2 The scope of the SI is to determine whether the former Seal Island Gunnery Range warrants further response action or no Department of Defense action indicated (NDAI). To make this determination, investigations for munitions and explosives of concern (MEC) and munitions constituents (MC) will be performed in accordance with Engineer Regulation (ER) 200-3-1 (USACE 2004a), the Department of Defense (DoD) Management Guidance for DERP (USACE 1998a), the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and the National Oil and Hazardous Substances Contingency Plan (NCP). Further project response actions, if required, will be conducted as a CERCLA response action that is exempted by law from the requirements to obtain Federal, State or local permits related to any activities conducted completely on-site.

1.3 Work Plan Organization

Chapter 1 Includes discussion of the project authorization, purpose and scope, work plan organization, project location, site description, site history, current and projected land use, previous investigations, and initial summary of risk from MEC.

Chapter 2 Presents the Technical Management Plan including project objectives, project organization, project personnel, project communication and reporting, project deliverables, project schedule, periodic reporting, costing and billing, project public relations support, subcontractor management, and management of field operations (this section incorporates the requirements of the Work, Data, and Cost Management Plan DID-MR-005-08 {U.S. Army Engineering and Support Center 2003l). just wondering why there was a 1 next to 2003

Chapter 3 Presents the Field Investigation Plan including an overall approach to munitions response activities, identification of areas of concern, Geophysical Prove Out Plan and Report, Geophysical Investigation Plan, geospatial information and electronic submittals, intrusive investigation, Investigative Derived Waste (IDW) Plan, risk characterization and analysis, and discussion on the analysis of institutional controls, and discussion on the preparation of the Recurring Review Plan.

Chapter 4 Presents the Quality Control Plan.

Chapter 5 Presents the Explosives Management Plan.

Chapter 6 Presents the Explosives Siting Plan.

Chapter 7 Presents the Environmental Protection Plan.

Chapter 8 Presents the Property Management Plan.
Chapter 9 Presents the Interim Holding Facility Siting Plan.
Chapter 10 Presents the Physical Security Plan for Recovered Chemical Warfare Material (RCWM) Projects.
Chapter 11 Presents the references used in the preparation of this site-specific work plan.
Appendix A Provides the Task Order Statement of Work
Appendix B Provides site-specific figures, maps, and schedule.
Appendix C Provides local points of contact for conducting the SIs.
Appendix D Presents the Site-Specific Accident Prevention Plan (APP) to be used for conducting the SI.
Appendix E Provides the Site-Specific (SS) Sampling and Analysis Plan (SAP).
Appendix F Provides logs and forms used during the site investigations.
Appendix G Presents Minimum Separation Distance (MSD) calculation sheets.
Appendix H Provides resumes of key project personnel.
Appendix I Presents Conceptual Site Model (CSM) and Technical Project Planning (TPP) Worksheets.

1.4 Project Location

Seal Island is located within Knox County, Maine. The former Gunnery Range is located on Seal Island in the Atlantic Ocean approximately 23 miles east of Rockland, Maine (Figure B-1). The North American Datum (NAD83) Universal Transverse Mercator (UTM) X and Y coordinates for the island center are 520839.00 and 4859374.00 respectively. The nearest inhabited area is Matinicus Island, approximately seven miles west of Seal Island. The Seal Island site falls under the geographical jurisdiction of USACE's New England District (CENAE).

1.5 Site Description

The former Seal Island Gunnery Range consists of approximately 65 acres and the island is approximately 1 mile long and ranges from 100 to 300 yards in width. The island was used as a bombing target and rocket gunnery range by the Brunswick Naval Air Station (NAS) and the Operational Development Force, U.S. Fleet (USACE 2003b). The land was excessed in 1966 and the island is now part of the Maine Coastal Islands National Wildlife Refuge owned by the United States Department of Interior (DoI), Fish and Wildlife Service (FWS).

1.5.1 Topography

Elevations on the island range from sea level to 77 feet (ft). The highest elevation on Seal Island, referred to as Shag Roost, is located near the center of the island. Past operations identified two sites suitable for landing small watercraft; one site was located on the northwest shore of the island, while the other site is located on the northeastern shore. The shoreline around Seal Island generally is very steep and cliff-like in nature. A diverse coastline shapes Seal Island with southern shores made up of generally steep vertical cliffs and more gently sloping northern shores that include two boulder beaches (USACE 2003b).

1.5.2 Climate and Vegetation

The climate on Seal Island is characterized by cold winters and warm summers with occasional hot spells. The start and end of the warmer months are somewhat delayed by the moderating influences of the Atlantic Ocean. The average winter and summer temperatures are 25 degrees Fahrenheit (°F) and 65°F, respectively. The total annual precipitation is approximately 50 inches (in.) and an estimated 22 in. of this rainfall occurs between April and September. The average seasonal snowfall is 66 in., while the greatest snow depth at any one time is approximately 41 in. On average, 43 days of the year have at least one in. of snow on the ground. The average relative humidity ranges from 60 to 80 percent depending on the time of day. The prevailing wind is from the south and the highest average, 10 miles per hour (mph), occurs in March (USACE 2003b). Amongst the rocky shoreline there is minimal vegetation. The central part of the island contains up to several feet of soil that sustains grass, raspberry thickets, soft peat, and arctic plants.

1.5.3 Geology and Soils

The island is composed of granite bedrock intruded by basalt dikes. About one-third of the interior is overlain by approximately 10 ft of glacial till and humus. Soils on Seal Island are composed of three basic types which include the Rock Outcrop, the Rock Outcrop – Lyman Complex, and the Lyman – Rock Outcrop- Tunbridge Complex. The most prevalent soil map unit on Seal Island is Rock Outcrop. It consists of areas that are at least 90 percent exposed bedrock that is generally mica schist, with trace amounts of granite, gneiss, phyllite, rhyolite or slate. Most of these areas are on the tops of hills. The Rock Outcrop – Lyman Complex is the next most common soil map unit that is considered to be 60 percent Rock Outcrop, 20 percent Lyman, and 20 percent other soils.

The least prevalent soil map unit is the Lyman – Rock Outcrop – Tunbridge Complex and is comprised of 40 percent Lyman soil, 20 percent Rock Outcrop, 20 percent Tunbridge soil, and 20 percent other soils. Of these last two units Lyman soil is shallow and excessively drained, while Tunbridge soil is moderately deep and well drained. The permeability in both soil types is moderately rapid and the surface runoff is medium. In Lyman soil available water capacity is low and in Tunbridge soil it is moderate (USACE 2003b).

1.5.4 Hydrology

There is a limited amount of fresh water on Seal Island. A watering hole, referred to as a small "kettle hole", is located in the interior of Seal Island. This watering hole is considered to be the island's only source of freshwater, although freshwater occasionally accumulates in the form of small ponds and water-filled craters. The only source of fresh water that surcharges the "Kettle hole" is runoff from rainfall. According to the FWS there are no wells on the island. It is unlikely fresh groundwater is present in significant amounts since the island is relatively small, surrounded by salt water, and consist mostly of rock outcrop (USACE 2003b).

1.6 Site History

1.6.1 During the late 1930s or early 1940s the United States Navy began using Seal Island. No acquisition documentation was identified during the historical records search; however, the Navy is likely to have held a leasehold interest in the island during the early to mid 1940s. A memorandum dated 21 March 1944 from the Commander of Brunswick NAS to the Interdepartmental Air Traffic Control Board requests an air caution area around a proposed glide and dive bombing target on Seal Island. The same memorandum indicates Seal Island had been used for target purposes prior to 1944. Another memorandum dated 26 September 1945 from the Commander of the Operational Development Force, U.S. Fleet, discusses the use of Seal Island by the Operational Development Force for bombing and bombardment exercises. In 1947, the Navy terminated its lease and returned the island to its owner Charles Hill (USACE 2003b).

1.6.2 In 1956, the NAS began planning the development of a bombing target and a helicopter landing pad on the western end of Seal Island. The bomb target was proposed as a wooden pyramidal target with target rings 100 and 200 ft in diameter from the target (see Figure B-2). It is unclear if the target and associated helicopter pad were constructed since construction documents have not been located and remnants of the target and/or

helicopter pad were not observed during previous site visits. On 8 August 1958, the Navy reacquired Seal Island through condemnation proceedings. The island was acquired from Thomas and Virginia Watkinson. Subsequently, the Navy used Seal Island as a bomb target and rocket gunnery range until approximately 1966. When these operations ceased, the Navy conducted a final inspection and disposal operation (inspection operations are further discussed in Section 1.8 Previous Investigations). On 18 October 1967, the Navy released Seal Island for public purchase (USACE 2003b).

1.6.3 Seal Island was transferred in its entirety from the Navy to the DoI in July 1972. Several transfer documents confirmed the existence of MEC on Seal Island and in the surrounding waters. Subsequently, Seal Island was designated a wildlife refuge. Seal Island is currently being managed by the DoI's, FWS (USACE 2003b).

1.6.4 In July 1978, several years following Seal Island's change in ownership, a fire lasting for several days burned the underbrush on Seal Island, in the vegetated area where soil is present. During the fire, MEC was reported to have exploded, resulting in the evacuation of the volunteer firefighters from the island. Personnel familiar with the site speculated that the explosions were caused by MEC buried in the soil and not from MEC potentially located in the rocky portions of the island (USACE 2003b). Ensuing surveys of Seal Island were conducted to determine the extent of MEC present. These investigations are discussed further in section 1.8.

1.7 Current Use and Projected Land Use

1.7.1 As part of the Maine Coastal Islands National Wildlife Refuge, Seal Island supports endangered avian wildlife. The FWS entered into an agreement with the Audubon Society in 1984 to reintroduce endangered sea birds such as puffins and terns to the island (USACE 2003b). Although there are no permanent human inhabitants of the island several researchers live on the island during summer months to conduct avian research. In addition, researchers and rangers occasionally visit the island throughout the year. Some fishermen and lobstermen also may visit the island, although these visits are not necessarily authorized by the FWS.

1.7.2 Considering the ecological contributions Seal Island has made in the past few years as a wildlife refuge, its status is unlikely to change in the years to come. The FWS has not indicated any intention to release this property into the public or private sectors. The

State of Maine has designated Seal Island as Partners for Fish and Wildlife (PFW) zone, a classification that is anticipated to remain in the future.

1.8 Previous Investigations of the Site

1.8.1 The first documented site reconnaissance and disposal effort was conducted in June of 1966. In preparation for leasing Seal Island to a civilian firm, a three day disposal operation was conducted by the explosive ordinance disposal (EOD) team from NAS. Available historical documentation indicates that despite this operation Seal Island was not fully cleared of MEC due to limited funding (USACE 2003b).

1.8.2 On 27 February 1983, NAS EOD conducted another site visit determine the extent of MEC remaining on Seal Island. At the request from Seal Island's Refuge Manager, members of the EOD team at NAS conducted a visual ordnance survey during which only 55 percent of the island was surveyed. Survey activities were limited because of the presence of high grass in the central part of the island. One intact 8 in. round was found and subsequently neutralized. Fragments of bombs, projectiles, rockets and pyrotechnics also were found throughout the site, but the majority of the fragments were concentrated near the center of the island. The EOD reported that the ordnance observed had deteriorated significantly, making a complete clearing of the island impossible short of removing all existing soils. Also, given the amount of fragmentation, an ordnance locator search was projected to be time consuming and costly. Instead, the EOD recommended burning off the island's grass in order to detonate or burn approximately 75 percent of the items on the surface. The burned off area could then be inspected visually and any holes of entry checked with an ordnance locator. The EOD also recommended a limited visual underwater search be conducted for the areas where small water crafts could be landed (USACE 2003b).

1.8.3 As a follow up to the visual ordnance survey the EOD team at NAS returned to Seal Island on 27 April 1984 to perform a range clearance for the eastern portion of the island. Pathways from the boat landing site to the researcher cabin were cleared and an underwater survey was conducted at the boat landing site, 50 ft out from the shore. Only small MEC fragments were discovered. The EOD concluded that only bare rocky areas of Seal Island could be considered safe. The following recommendations were made at the conclusion of this site clearance: boats should land in the cobble field cove area at high tide, researchers should confine travel to rocky areas and marked paths, sited metal objects should be left undisturbed, fires of any kind should be restricted to the cabin area,

and written releases should be secured from all personnel traveling to Seal Island (USACE 2003b).

1.8.4 The U.S. Environmental Protection Agency (EPA) requested that NUS Corporation perform a Preliminary Assessment (PA) of Seal Island in 1987. The NUS Corporation concluded that the primary hazards associated with Seal Island were MEC on the island and in surrounding waters. The assessment indicated that chemicals associated with explosives could pose a threat to surface water and groundwater quality on the island and recommended further action be taken to mitigate the explosive hazards. No recommendations were made by the NUS Corporation to address potential chemical threats to surface or groundwater (USACE 2003b).

1.8.5 In 1988, CENAE completed a Preliminary Assessment of Eligibility (PAE) of the Seal Island Gunnery Range under DERP-FUDS. The product of the PAE, an Inventory Project Report (INPR), concluded that the site was formerly used by the U.S. Navy as a practice bombing and rocket gunnery range. The signed Findings and Determination of Eligibility (FDE), dated 8 April 1988, concluded that the site was eligible for restoration under the purview of DERP-FUDS. Due to access issues, a site visit was not conducted as part of the PAE. The INPR recommended a site inspection to define the extent of MEC present on Seal Island (USACE 2003b).

1.8.6 In June 2001, members of the FWS, Maine Department of Environmental Protection (ME DEP), and the Maine State Police Bomb Squad went to Seal Island to sweep the island and determine the extent of MEC present. The team discovered several pieces of MEC that appeared to be MK 15 100-lb practice bomb debris and 5 in. rocket debris. The MEC was determined to be concentrated towards the Western end of the island. Mr. Brian Benedict, Deputy Refuge Manager of Maine Coastal Islands National Wildlife Refuge, participated in this inspection. In an interview Mr. Benedict stated that during the inspection, a bomb squad member tossed some 5-in. rocket warheads off a cliff into the ocean. According to Mr. Benedict one of the warheads hit a rock, broke open, and created a yellow plume in the water. Pictures obtained on the island by Mr. Benedict suggested the presence of debris from 100 lb general purpose (GP) bombs and 5-in. high explosive (HE) rockets (USACE 2003b).

1.8.7 USACE, Rock Island District, completed an Achieve Search Report (ASR) for the Former Seal Island Gunnery Range in March 2003. A site visit was not conducted because of inclement weather. USACE collected information from interviews and

photographs from the June 2001 site inspection. Based on the information reviewed, the ASR assigned a risk assessment code (RAC) of 5 (no further action) to Seal Island. The ASR recommended a supplemental ASR be completed. A Supplemental ASR, prepared in November 2004, provides a military munitions response (MMR) area summary of the ranges at the former Seal Island Gunnery Range including the munitions type and the identification of munitions used at the site, and the dates that the munitions were used. The Supplemental ASR assigned the site a RAC score of 3.

1.9 Initial Summary of Risk from Munitions and Explosives of Concern (MEC)

1.9.1 Conventional munitions were used at the former Seal Island Gunnery Range from the early 1940's through 1966. RAC scoring was as part of the PA and ASR process for the former Seal Island Gunnery Range to evaluate hazard severity and probability from MEC. The scoring was based on the best available information resulting from record searches, reports of EOD actions, field observations, site visits, and interviews. A Supplemental ASR, which included a re-evaluation of the historical data, also was completed and these scores are reported in Table 1-1

Table 1-1. Risk From Munitions and Explosives of Concern (MEC) (USACE 2004b)

SITE NAME	RANGE NAME	SUBRANGE NAME	ACREAGE[1]	RAC SCORE[2]	TYPE OF MUNITIONS	MUNITIONS ID
Seal Island Gunnery Range	Range Complex No. 1	Bombing Range	649	3	Conventional	Practice Bombs; Practice Aerial Rockets
		Rocket Range	12,424	3	Conventional	Practice Bombs; Practice Aerial Rockets, HE Rockets

[1] Acreage includes surrounding water, the Bombing Range was within the Rocket Range and Seal Island is 65 acres.
[2] RAC Scores were obtained from the Supplemental ASR (USACE 2004b)

1.9.2 The initial ASR for Seal Island had an overall a RAC score of 5 indicating that there is no hazard severity on the island. Conventional MEC debris from practice bombs, practice rockets, and HE rockets has been found on site. The island has been surface cleared three times by the NAS EOD. In addition, the 1978 fire "cleared" a significant amount of MEC from the grassy interior. Although a barrier has not been put around the island, its locale is a barrier in itself, situated 23 miles off Maine's coastland. Signs have been posted restricting access, and warning of the hazards associated with the area. The

main justification for this initial RAC score is the fact that the island is extremely isolated. However the ASR also stipulated an engineering evaluation and/or cost analysis should be considered because civilians visit the island and this presents a danger (USACE 2003b).

1.9.3 The RAC score in the Supplemental ASR was revised to 3. The score was revised based on the presence of ordnance on the island and possible associated danger to anyone that might visit the site (USACE 2004a). The current owner of Seal Island, the FWS, allows researchers and scientists to visit the site, which renders the "isolation" of the island inconsequential.

2. TECHNICAL MANAGEMENT PLAN

This section incorporates the requirements of the Work, Data, and Cost Management Plan (which follows Data Item Description [DID] MR-005-08) [U.S. Army Engineering and Support Center 2003]. Project Management approach (Section 1.1 of the Work, Data, and Cost Management Plan) is discussed below in Sections 2.3, 2.4, 2.10, and 2.11; project schedule (Section 1.2 of the Work, Data, and Cost Management Plan) is discussed below in Section 2.6; cost control and tracking (Section 1.3 of the Work, Data, and Cost Management Plan) discussed below in Section 2.8; and deliverables (Section 1.4 of the Work, Data, and Cost Management Plan) discussed below in Sections 2.5 and 2.7.

2.1 Project Objectives

2.1.1 The primary project objective to be completed during the SI process is to determine whether Seal Island warrants further response action for MMRP under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or NDAI. The SI report outline, Appendix A to the Performance Work Statement (PWS) found in Appendix A of the Programmatic Work Plan (PWP), [Alion 2005], will be used as a guide during the SI process and will be followed when writing the SI Report. The Alion Team will collect the information necessary to meet the objective and will:

- Eliminate from further consideration those releases that pose no significant threat to public health or the environment by collecting adequate samples to assess the presence or absence of MC at the site, using data collected by others, and employing field screening techniques to the extent possible, to reduce the cost to the government.

- Determine the potential need for further response action (including Emergency Removal, Time Critical Removal Action (TCRA), or NDAI) by collecting data from previous investigations/reports and site visits.

- Collect data, as appropriate, solely to determine if a release has occurred to confirm the need to transition the project into a Remedial Investigation and Feasibility Study (RI/FS).

2.1.2 Two additional objectives of the MMRP SI Program are to:

- Collect additional data, as appropriate, for Hazard Ranking System (HRS) scoring that will be performed by the U.S. Environmental Protection Agency (EPA).

- Collect the additional data necessary to complete the Munitions Response Site Prioritization Protocol (MRSPP).

2.1.3 Project objectives will be accomplished using a programmatic approach that will complete a Screening-Level Risk Assessment that includes a human health risk assessment (HHRA) and ecological risk assessment (ERA) as part of the MRSPP and HRS data collection. The following site-specific activities will be performed:

- Review existing reports/data, identifying pathways and receptors, and identifying data gaps.

- Visit the site, as necessary, as a part of the historical information gathering process to locate site-specific data (associated reports and documents) as well as individual's familiar with operations at the site to augment knowledge of the site.

- Develop a conservative screening-level assessment of potential site risks (using the highest detected concentrations and comparing them with health-based screening levels) where exceedance is an indication that further study may be required. This is not intended to indicate that risks are significant or that they even exist.

- Initiate the TPP process to involve site owners and regulators (stakeholders) in a series of meetings to establish/confirm project objectives and data needs required to:
  - Screen the property for releases that, if present, would trigger the RI phase of the CERCLA process. If releases are not present, the objective would be to determine the data needs required to reach project closeout.
  - Develop Data Quality Objectives (DQOs) (Section 2.0 Data Quality Objective Process in the Site-Specific QAPP, Appendix E.1).
  - Formulate a preliminary Conceptual Site Model (CSM) and finalize the preliminary CSM during the TPP (Appendix I). This preliminary CSM will be used to identify the various MC and MEC pathways and potential receptors, and prioritize those of highest interest. The CSM will be used to

support plans for limited surface mapping for MEC, and in particular, the MC sampling areas where impacts are expected.
- Obtain stakeholder consensus on planned field activities. The TPP Memorandum documents the results of the meeting (Alion 2005).

- Prepare a site-specific work plan (this document) that incorporates a review of existing information and any additionally obtained information. This includes development of the site-specific refinements to the MC Sampling and Analysis Plan (SS-SAP).

- Conduct site reconnaissance, anomaly avoidance, and sampling activities to assess the presence or absence of MEC and MC.

- Complete a comprehensive SI Report to document findings and provide recommendations. The SI Report will follow the Site Inspection Report Outline found in Appendix A of the PWS (Appendix A of the PWP.). The narrative portion of the SI Report will provide, at a minimum, an executive summary, an introduction, a site description and regulatory history, the operational history and MEC/MC characteristics, and information pertaining to groundwater use, surface water, and terrestrial exposure, as well as provide a risk analysis, summary and conclusions, and references.

The TPP meeting for Seal Island was held on 9 February 2006. The draft TPP Memorandum documenting the meeting was issued in February 2006 (Alion 2006).

2.2 Project Organization

Project Organization will be completed in accordance with the procedures outlined in the PWP (Alion 2005).

2.3 Alion Project Team

Personnel required to fill key and supporting positions will be supplied by members of the Alion Team. Key positions include the Program Manager (PGM), Site-Specific Project Manager (PM), Team Leaders (TL), Chemical Quality Control (QC) Officer, Certified Industrial Hygienist (CIH), Unexploded Ordnance (UXO) Technician II/Technician III, and Geographic Information Systems (GIS) Manager. The roles and responsibilities of the key positions are described below. The individuals selected to fill

various positions from each Contractor along with their qualifications are listed in Appendix H. Additional subcontractors (including laboratory), along with management procedures for management of subcontractors under the Alion Team, are further discussed in Section 2.10.

2.3.1 Program Manager

The PGM, Mr. Roger Azar will be the primary point of contact for the project. Mr. Azar will communicate directly with the CENAB Design Team Leader as well as the subcontractors.

2.3.2 Site-Specific Project Manager

Mr. Tim Reese will have overall budget, schedule, and technical responsibility for Seal Island.

2.3.3 Technical Lead

Ms. Ivy Able will have technical lead for the execution of SI activities at the site and in particular the execution of MC sampling, as required during the conduct of the work.

2.3.4 Chemical Quality Control (QC) Officer

The Chemical QC Officer, Mr. Daniel Hinckley, will be responsible for reviewing and approving Quality Assurance Project Plans (QAPPs), verifying the sample numbers in the work plan development, and working closely with the data validation contractors, and will review validation reports.

2.3.5 Certified Industrial Hygienist

The CIH, Kris Hoiem, will serve as program safety and health manager for this contract.

2.3.6 Unexploded Ordnance (UXO) Technician II/Technician III

Alion intends to use a Technician II or Technician III to conduct field escort activities.

2.3.7 Geographical Information Systems Manager

The GIS Manager, Bill Merrey, will serve as the coordinator of the GIS information obtained and used for each site.

2.4 Project Communication and Reporting

Project communication and reporting will be performed in accordance with the procedures outlined in the PWP (Alion 2005).

2.5 Project Deliverables

Project deliverables will be completed in accordance with the procedures outlined in the PWP (Alion 2005).

2.6 Project Schedule

2.6.1 Programmatic Project Schedule

The programmatic project schedule will be completed in accordance with the procedures outlined in the PWP (Alion 2005).

2.6.2 Site-Specific Project Schedule

During the Seal Island TPP meeting the schedule was reevaluated in order to fit the needs of the stakeholders. An updated project schedule has been provided for the SI to be conducted at Seal Island (Figure B-3).

2.7 Periodic Reporting

Periodic reporting will be completed in accordance with the procedures outlined in the PWP (Alion 2005).

2.8 Costing and Billing

Costing and billing will be completed in accordance with the procedures outlined in the PWP (Alion 2005).

2.9 Project Public Relations Support

No formal public participation is required at the SI in accordance with USACE guidance (USACE 2004a).

2.10 Subcontractor Management

Subcontractor management will be performed in accordance with the procedures outlined in the PWP (Alion 2005).

2.10.1 Laboratory Services (GPL Laboratories LLLP)

Laboratory services will be provided by GPL Laboratories, LLLP (GPL) and will be performed in accordance with the procedures outlined in the PWP (Alion 2005). ME DEP has certified that GPL has met the requirements of the regulations governing the certification of laboratories and environmental measurements and has been found compliant with the standards approved by the National Environmental Laboratory Accreditation Conference. The Laboratory Certification ID has been requested of GPL Laboratories and will be included in the final version of this SS-QAPP.

2.10.2 Well Drilling or Geoprobe Services

Well drilling and geoprobe services are not anticipated at the Seal Island Gunnery Range.

2.11 Management of Field Operations

Management of field operations will be performed in accordance with the procedures outlined in the PWP (Alion 2005).

3. FIELD INVESTIGATION PLAN

3.1 Overall Approach to Munitions Response Activities

The overall approach to the munitions response activities at Seal Island will be performed in accordance with the PWP (Alion 2005).

3.1.1 Site Characterization Goals

The site characterization goal mirror the project objectives defined in Section 2.1. Specifically, the goal of site characterization is to collect sufficient data to support (1) USACE's decision on subsequent plans of action for this site and (2) EPA's completion of HRS scoring for the site.

3.1.2 Data Quality Objectives

DQOs have been developed for the Seal Island Gunnery Range in accordance with the process presented in Section 3 Data Quality Objectives of the Programmatic QAPP (Appendix E.1) [Alion 2005]. The site-specific DQOs, including the chemical-specific DQOs, are defined in Section 2 of the Site-Specific QAPP located in Appendix E of this SS-WP.

3.1.3 Data Incorporation into Site Inspection Report

The data obtained during the site investigation on Seal Island will be incorporated into the SI Report as outlined in the PWP (Alion 2005).

3.1.4 MEC Exposure Analysis

The types of MEC historically used at the site are presented in Table 3-1 (see Section 3.2.4). The anticipated MC associated with the MEC (also listed in Table 3-1) are likely to include metals and explosives. MC/MEC exposure information involving demographics, site accessibility, and future land use as it relates to MC/MEC exposure is discussed below. Additional discussions regarding MC exposure are presented in Appendix E.1.

3.1.4.01 Demographics

Seal Island is a designated wildlife refuge that is situated approximately 23 miles east of Rockland, Maine. As a wildlife refuge the island is uninhabited for most of the year.

FWS personnel do conduct regular site visits to the island and during the summer months researchers temporarily inhabit the island. The nearest year-round inhabited area is Matinicus Island which is approximately seven miles west of Seal Island (USACE 2003b). According the 2000 United States Census Bureau, there are 51 people, 26 households, and 13 families residing on Matinicus. The population density is 31.8/mi². There are 135 housing units at an average density of 84.3/mi² (U.S. Census Bureau 2000).

3.1.4.02 Site Accessibility/Future Use

Seal Island is inaccessible to the general population due to the natural barrier created by the Atlantic Ocean. FWS allows a limited number of researchers and scientists to visit the island during the summer months. These visitors are informed of the island's historical use as a FUDS and are required to sign a form acknowledging the associated risks (USACE 2003b). Fishermen and lobstermen are known to occasionally access the island as trespassers. Seal Island is expected to continue to operate under the control of the FWS in the foreseeable future and will remain a wildlife refuge. During the Technical Project Planning (TPP) meeting the FWS stated that their primary goal is to protect and maintain the wildlife and habitat currently on Seal Island (Alion 2006).

3.1.4.03 MEC and MC Release/Exposure Routes

All of Seal Island was used as a bombing and rocket target. The potential for several types of bombs and rockets exists throughout the site. Table 3-1 provides a list of MEC used and found at the site during and after its years of use by the DoD.

3.1.4.04 Conceptual Site Model

To complete a MEC and MC exposure analysis, the site-specific DQOs (in Section 2.0 Data Quality Objective Process in the Site-Specific QAPP, Appendix E.1) and CSM (Appendix I) have been defined. The DQO process provides a systematic framework for ensuring data obtained will be legally and scientifically sound and be adequate for supporting final decisions from the SI. The programmatic DQOs outlined in Section 3.1.2 of the PWP (Alion 2005) were reviewed and modified to address the specific needs of Seal Island during the TPP. This preliminary CSM, located in Appendix I, has been developed to organize visually exposure pathways and help identify potential pathways for MEC and MC. The historical and background information acquired for Seal Island

has been included in this preliminary CSM. Each data type has been identified on a mapped layer within the CSM. The layers are as follows:

- Layer 1. Aerial – This layer presents an aerial view of Seal Island.

- Layer 2. Historically Proposed Target – In 1956, the NAS documented plans to develop a bombing target and a helicopter landing pad on the western end of Seal Island. The proposed bomb target and helicopter landing pad are identified on this layer.

- Layer 3. MEC Remnants, Markings, and Events – During several site visits MEC debris was located and areas that had been deformed by rockets and/or bombs were identified. These locations are identified on this layer along with the area in which several explosions occurred during the 1978 fire.

- Layer 4. Burned Area. The area that was burned in the1978 fire is indicated on this map. During this fire several explosions were heard that caused all personnel to evacuate the island.

- Layer 5. Soil Types. The majority of Seal Island made up of rocky cliffs. Overall there are three general soil types on the island, which are indicated on this layer.

- Layer 6. Present Day Landmarks. In 1984 small cabin was built on the island to host researchers and scientists during the summers. The cabin's location is indicated on this layer, along with the two areas that are suitable to land a small water craft.

- Layer 7. Proposed Geophysical Reconnaissance Areas (2005) – This layer shows the site and provides proposed geophysical reconnaissance areas around each sample.

In addition to the site layers, a CSM diagram (Appendix I) has been prepared that indicates the potential sources, pathways, and receptors for Seal Island. Proposed MEC reconnaissance areas to coincide with MC sampling locations were selected by assessing the potential pathways and receptors and then selecting biased sample locations based on

historical information. Biasing MEC reconnaissance areas to target areas and other areas of interest will permit completion of the MRSPP and for the MEC DQOs to be achieved. MC sampling is further discussed further in Appendix E.

3.1.4.1 MEC Avoidance Design and Rationale

Based on previous investigations, there is a potential for MEC to be present at Seal Island. Therefore, an UXO Technician (II or III) will be present to perform MEC avoidance during site activities. Prior to conducting site reconnaissance or field sampling operations, the field personnel will have reviewed applicable health and safety documents and become familiar with the types of MEC used at the site. The field personnel also will receive a daily safety briefing from the site UXO Technician (II or III) to highlight the MEC and hazards associated with the MEC.

3.1.4.2 Field Procedures

Site reconnaissance and field sampling activities require the use of analog geophysical equipment to identify routes to environmental sampling locations that are free of anomalies. The UXO Technician (II or III) will identify a location where a sample will be collected. Footpaths for personnel to access and egress will be identified to a width of 2 to 4 ft and marked, with pin flags where appropriate, to retain personnel within the pathway. During the sample location activities, the UXO Technician (II or III) will document surface or subsurface anomalies, if encountered. Surface and subsurface anomaly locations will be surveyed using a GPS unit and a description of the surface anomalies (to include type, details, etc.) will be documented in the daily field notes for later inclusion into the CSM and the SI report. In the event that the UXO Technician (II or III) determines that an anomaly may present an imminent threat to human health, procedures outlined in Section 3.1.5 will be implemented. Once the UXO Technician (II or III) has identified the sampling location as anomaly-free, the MC sampling team will then collect the sample for analysis. Soil samples will be collected from areas identified by the CSM or the MEC survey to be suspect or contain high concentrations of MEC and/or MC. As discussed in Appendix E, the proposed sampling will include thirteen soil samples (including three background samples), one sediment sample, and one surface water sample. Details pertaining to QA/QC samples are provided in Appendix E.1, Table E.1-3. The number and location of samples were selected after completion of the preliminary CSM, which provided the necessary information to determine biased sample locations. During the TPP (Alion 2006), the CSM and sample selections were reviewed

and this report reflects the modifications that were made (Alion 2006). Sampling is discussed further in the SAP included as Appendix E.1 to this site-specific work plan.

3.1.4.3 Equipment

3.1.4.3.1 MEC avoidance teams will utilize hand-held analog metal detection instruments identify potential surface and subsurface MEC locations. A Schonstedt 52 CX will be used for anomaly avoidance during sampling activities on Seal Island. The Schonstedt 52 CX identifies ferrous metals. This instrument provides ample detection capabilities based on a review of the munitions, geology and potential interferences.

3.1.4.3.2 Global Positioning System (GPS) equipment will be utilized to log the locations of MEC items encountered, adjusted sampling locations, and other items of interest. The GPS equipment employed will have a minimum accuracy of ± 1 meter (Trimble Pro XRS or equivalent). Operators will receive appropriate training prior to their arrival at the site. GPS locations will be transferred from the data logger to the site logbook for future inclusion in the FUDS GIS databas.

3.1.4.4 Calibration and Method Testing

3.1.4.4.1 The UXO Technicians (II or III) will be trained in the use of the Schonstedt instrument prior to the start of field work. To demonstrate the effectiveness of each instrument and operator in achieving the project detection requirements, a small Validation of Detection Systems (VDS) plot will be established. Schonstedt metal detectors do not require calibration; they have a simple “Go/No Go” field operational check. This function test requires the instrument be used on objects that are representative of the smallest munitions item known or suspected on the site. The VDS plots for the Schonstedt will utilize actual inert items suspected of being onsite whenever possible. If inert items cannot be located for the VDS, sections of steel and aluminum pipes configured to simulate 37 mm projectiles will be used. Each inert munition or simulant will be placed on the ground in an area free of subsurface anomalies and representative of the terrain in which the sampling will be conducted. The UXO Technician (II or III) will determine the depth of detection for the test items and test the instrument (and spare) close to that limit for everyday testing. If the depth of a soil sample to be taken is deeper than the determined detection depth of the equipment being used, then the sample depth screening for UXO will be achieved in steps so that any anomalies deeper than the established detection depth can be detected. If the instrument

does not detect the object the UXO Technician (II or III) will replace the batteries and retest the instrument. If the instrument fails twice, the instrument will be replaced with a spare that has undergone the daily testing described above. The UXO Technician (II or III) will check his instrument periodically throughout the day on objects known to contain ferrous or non-ferrous metals such as boot eyelets, belt buckles, or other readily available items. Each instrument and operator will complete the VDS at the beginning of each day to document their continued acceptable performance.

3.1.4.4.2 No established survey point is available on Seal Island and therefore the continued acceptable/repeatability GPS performance will be documented through the use of a staked point. During the mobilization of the field sampling efforts a point will be established by setting a nail/flag. This point will be occupied by the GPS unit at the start and end of each field day. The GPS location will be recorded and the data will be compared to the data from the beginning and end of each day, validating the unit's repeatability. The test point will be in similar vegetation to most of the area where the GPS will be used (if wooded, test point should be in woods). The pass/fail GPS reoccupation test at Seal Island Gunnery Range will require that the GPS units register within one meter of the staked point.

3.1.5 Use of Time Critical Removal Actions during the Munitions Response Project

The task order for the inspection of MMRP sites does not require MEC intrusive/clearing activities, and no TCRAs or Emergency Response Actions are included under this task order. In the event MEC is observed which may require an Emergency Response Action (i.e., there is a complete pathway between source and receptor and the MEC constitutes an imminent threat to the local populace or site personnel), the Alion Team will immediately notify the Military Munitions Design Center Project Manager at USACE along with the site owner. The owner will be instructed to call 911 and coordinate with the Military Munitions Design Center Ordnance and Explosives Safety Lead and the local law enforcement. Additionally, the Alion Team will secure the area until directed otherwise by USACE. Specific points of contacts for Emergency Response Actions are further discussed in the Site-Specific HASP found in Appendix D.

3.1.6 Follow-On Activities

The delivery order for the inspection of MMRP sites does not require MEC intrusive/clearing activities. Furthermore, no Emergency Response Actions or follow-on

actions are planned/included. MEC debris located on the surface will be identified/certified as debris/scrap; the location will be documented and entered into GPS. MEC (either potential scrap or MEC) located in the subsurface will be documented and entered into GPS. This data will be used to verify the future plans (likely RI/FS).

3.2 Identification of Areas of Concern

3.2.1 The entirety of Seal Island was determined to be an area of concern because of the MEC found during the previous site inspections/clearing activities. The Supplemental ASR (USACE 2004b) assumed the entire island was used for bombing and target practice based on the location of MEC and MEC debris previously identified. For sampling location designation purposes, the island was divided into three regions similarly to the approach used by the NAS EOD (Regions 1, 2, and 3). As mentioned earlier, a target was potentially located on the southwestern tip of Seal Island part of Region 1 (the ASR hypothesized that the targets were dismantled after site closure, which explains why remnants of target have not been found on site). The ASR (USACE 2003b) also notes that the primary locations for MEC discovered at the site have been the central and western portions of the island, between Regions 1 and 2. Several photos, included as appendix J to the ASR, indicate Mk 15 100 lb practice bomb debris, possible 100-lb GP bomb debris, and 5 in. rocket debris which appears to be concentrated in the southern part of region two. Photos included in the ASR also depict pock marks and scarring on the northern and southern coastal areas of Region 1.

3.2.2 Information on the former Seal Island Gunnery Range is discussed in Section 1.6 and 1.9 of this work plan. The types and compositions of MEC identified during the SI process are summarized below in Table 3-3.

Table 3-1 Ammunition Type and Composition

Item	Model/Type	Filler/Weight	Fuze/Type
Bomb, practice, 100-lb	Mk 15 Mod 2	Body – sheet metal Filler – water or sand Spotting charge – none	None
	Mk 15 Mod 3	Body – sheet metal Filler – water or sand Spotting charge – signal, Mk 7	Mk 247 (intet)
	Mk 15 Mod 4	Body – sheet metal Filler – water or sand Spotting charge – signal, Mk 4 series	None
Bomb, GP, 100-lb	AN-M30	Body – steel Filler – 54 lbs 50/50 amatol, 57 lbs. TNT, or 62 lbs. Tritonal	M103 (nose) M100A2 (tail)
Signal, practice bomb	Mk 4 series	Filler – 3.2 gr. Smokeless powder	N/A
	Mk 7 Mod 0	Filler – 1 lb. black powder	N/A
Rocket, 5-in., HVAR, HE	Mk 4 Mod 0	Filler – 7.5 lbs. TNT Motor – 23.9 lbs. Mk 18 Mod 0 propellant	M403 VT (nose) Mk 164 (base)
	Mk 28 Mod 4	Filler – 7.5 lbs. TNT Motor – 23.9 lbs. Mk 18 Mod 0 propellant	Mk 149 PDSQ (nose) Mk 164 (base)
Rocket, 5-in., HVAR, practice	Mk 5 Mod 0	Filler – 7.5 lbs. plaster Motor – 23.9 lbs. Mk 18 Mod 0 propellant	N/A
Rocket, 5-in., HE	Zuni	Filler – Composition B Motor – 35.5 lbs. double-base solid propellant	M414 proximity Mk 159 PD Mk 149 PDSQ

Source: USACE 2003b.

3.3 Geophysical Prove Out Plan and Report

No digital geophysical investigations are planned at this site.

3.4 Geophysical Investigation Plan

Seal Island does not require a digital geophysical investigation plan since no digital geophysics are planned for the site.

3.5 Geospatial Information and Electronic Submittals

A GIS database will be prepared to document site conditions and sample locations for this site in accordance with DID MR 005-07 as documented in the PWP (Alion 2005).

3.6 Intrusive Investigation

3.6.1 Based on the PWS and SI plans, no intrusive activities for MEC will be performed under this delivery order. General information pertaining to MEC avoidance during MC sampling operations is discussed in Section 3.1.4.

3.6.2 Health and safety requirements associated with MC sampling at the Seal Island, ME site are discussed in the Site Specific-Accident Prevention Plan (SS-APP) contained in Appendix D. The SS-APP is an addendum to the Programmatic Accident Prevention Plan (APP), which is Appendix D of the PWP (Alion 2005). Both the SS-APP and the Programmatic APP must be reviewed as one and followed by site workers. The SS-APP augments the Programmatic APP with information specific to the Seal Island site including:

- Map and directions to the local hospital
- Site hazard analysis table
- SS-APP Review Record

3.7 Investigative Derived Waste (IDW) Plan

No IDW will be generated during MEC reconnaissance/mapping activities. IDW generation for MC sampling will be minimized by following the EPA policy guidance for IDW (EPA 1992). Specifically, the only IDW anticipated includes dedicated disposal equipment which will be disposed of as general refuse.

3.8 Risk Characterization and Analysis

3.8.1 Historical details regarding risk characterization and analysis with respect to known or suspected MEC and site conditions were included in Sections 1.9 and 3.2, respectively. RAC scores completed for the former Seal Island Gunnery Range as part of the PA/ASR process indicate that risk is present from MEC on Seal Island as indicated in Section 1.9.4.

3.8.2 Existing site information and data collected during this SI will be used to complete the MRSPP. MRSPP includes three hazard evaluation modules for each munitions

response site (MRS) within a munitions response area (MRA): Explosive Hazard Evaluation (EHE), Chemical Warfare Material Hazard Evaluation (CHE), and Health Hazard Evaluation (HHE). For the EHE and CHE modules, factors evaluated include the details of the hazard, accessibility to the MRS, and receptor information. HHE factors include an evaluation of MC and any non-munitions-related incidental contaminants present, receptor information, and details pertaining to environmental migration pathways. A MRS priority is determined based on integrating the ratings from the EHE, CHE, and HHE modules (DoD 2005).

3.8.3 The Alion Team will collect data for HRS scoring (to be performed by the EPA) by evaluating soil, sediment, and surface water on Seal Island. For these media, the likelihood of release or exposure, the characterization of the waste, and the effect on the four types of targets (nearest individual, population, resources, and sensitive environments) will be considered. Information collected for HRS scoring by EPA will include data to complete three main elements to determine site ranking. These elements include (1) site and source characterization; (2) observed releases and areas of observed contamination; and (3) levels of contamination at specific targets. For site and source characterization, analytical data are important in characterizing sites and sources, primarily to identify hazardous substances present in site sources. Analytical data also support determining hazardous waste quantity, delineating source dimensions, and investigating the degree of source containment. For observed releases and areas of observed contamination, analytical data may provide direct evidence of an observed release of hazardous substances to affected media, demonstrate significant contamination (observed contamination in the soils exposure pathway), estimate areas of contamination, and show that the contamination is attributable to the site. For an observed release (or observed contamination), significance relates only to the concentration found in a particular pathway or medium, not to the environmental or health effect of that release. For levels of contamination at specific targets, analytical data are required to document actual contamination of targets, including wells and surface water intakes supplying drinking water; residential and school properties; and fisheries, wetlands, and other sensitive environments. If data do not demonstrate that targets are exposed to actual contamination, targets are evaluated as potentially exposed. The HRS levels of contamination are Level I (concentrations that meet the criteria for actual contamination and are at or above media-specific benchmark levels), Level II (concentrations that either meet the criteria for actual contamination but are less than media-specific benchmarks, or meet the criteria for actual contamination based on direct observation), and Potential (no observed release is required but targets must be within the target distance limit). These

levels are weighted for each target (Level I carries the greatest weight) and scores of 28.5 or above are then eligible for listing on the National Priorities List (NPL).

3.9 Discussion on the Analysis of Institutional Controls

Institutional controls (ICs) are not addressed during CERCLA SI phase; therefore, ICs have not been identified. However, if imminent threat is identified from an MEC hazard during the SI, ICs could be implemented to reduce the risk to the public. The Alion Team will notify USACE if an imminent threat is present. The USACE will evaluate the situation to determine if ICs are necessary.

3.10 Discussion on the Preparation of the Recurring Review Plan

Recurring review plans are not a component of the CERCLA SI phase; therefore, the preparation of a recurring review plan is not required as noted in the PWP (Alion 2005).

4. QUALITY CONTROL PLAN

The quality control plan will follow the procedures outlined in the PWP (Alion 2005).

5. EXPLOSIVES MANAGEMENT PROGRAM

The task order does not require the preparation of an Explosives Management Plan as outlined in the PWP (Alion 2005).

6. EXPLOSIVES SITING PROGRAM

The task order does not require the preparation of an Explosives Siting Program as outlined in the PWP (Alion 2005).

7. ENVIRONMENTAL PROTECTION PROGRAM

This Environmental Protection Plan (EPP) has been developed in order to minimize potential adverse effects to the environment occurring as result of the planned SI activities at Seal Island. This EPP identifies sensitive natural receptors and provides methods to protect and conserve those resources.

7.1 Threatened and Endangered Species

7.1.1 Identification

Currently, as part of the Maine Coastal Islands Wildlife Reserve, Seal Island supports endangered avian wildlife. According to Maine's Department of Conservation there are no rare botanical features documented on Seal Island (Pied 2005). The site-specific ASR, dated March 2003, stated the Razorbill, Atlantic Puffin, Roseate Tern, and Artic Tern are the only known threatened and endangered (T&E) species at Seal Island (Table 7-1). The FWS website was sited as the ASR's source. The endangered and threatened species on this website have not changed, but it refers to all of Maine's Coastal Islands National Wildlife Refuge. This refuge is made up of 47 islands and three costal parcels totaling more than 7,400 acres (FWS 2006). Seal Island's Refuge Manager, Charles Blair, confirmed that of these T&E species, the Roseate Tern is the only endangered species that actually nests on Seal Island (from April to August). Mr. Blair explained occasionally Peregrine Falcons stop by, in transit, during migration periods.

Table 7.1. State and Federal Threatened and Endangered Species.

Species	Status	State	Federal
Razorbill	Threatened	X	
Atlantic Puffin	Threatened	X	
Roseate Tern	Endangered	X	X
Artic Tern	Threatened	X	

Source: USACE 2003b.

7.1.2 Mitigation

T&E species have been identified at this FUDS, and T&E species will not be disturbed. Specific procedures include ensuring field personnel stay on designated paths (where

possible); minimizing the pathway and avoiding species' habitats as field personnel traverse to and from sample areas and minimizing land disturbance during sampling. A FWS individual will accompany the sampling team to guide the group and ensure local habitat and the environment is adequately protected. The sampling is scheduled to take place during first two weeks of April, such that it should not interfere with the with the Roseate Tern breeding periods.

7.2 Wetlands

7.2.1 Identification

There are no known wetlands currently existing on Seal Island.

7.2.2 Mitigation

In the event wetlands are identified on Seal Island every effort will be made to minimize disturbances to them.

7.3 Cultural, Archaeological, and Water Resources

7.3.1 Identification

According to Maine's Historic Preservation Commission (MHPC) there is little to no potential for National Register, eligible or listed, architectural or historical archaeological resources on Seal Island, although it could potentially have prehistoric archaeological sites (Shettleworth 2005a).

7.3.2 Mitigation

The SI activities will be limited to the collection of surface soil, sediment, and surface water samples. No subsurface soil collection or excavations are required as part of this effort, therefore no historic, cultural, or archaeological impacts are anticipated. After reviewing the scope of work for the upcoming SI the MHPC concluded that there would be no historic properties, cultural or archaeological, affected by the proposed SI activities (Shettleworth 2005b).

7.4 Coastal Zone

7.4.1 Identification

Seal Island is situated within the Knox County costal zone.

7.4.2 Mitigation

The SI activities will be limited to the collection of surface soil, sediment, and surface water samples. No subsurface soil collection or excavating are required as part of this SI, therefore no impact is anticipated to the coastal zone.

7.5 Tree and Shrub Removal

Each sampling location will be evaluated individually to identify if tree and shrub removal are necessary to complete SI activities. Given the sparse vegetation associated with Seal Island and proposed sampling methods, tree and shrub removals are not anticipated on Seal Island.

7.6 Existing Waste Disposal Sites

There are no known waste disposal sites associated with Seal Island. MC sampling may be conducted in or around suspected disposal areas; however, such sampling may only occur after MEC avoidance procedures have been successfully implemented, consistent with the Field Procedures specified in Section 3.1.4.2, including the documentation requirements. In the event MEC is observed in a suspected disposal area and it is determined that there is a complete pathway between source and receptor, and the UXO Technician (II or III) determines that the MEC item(s) constitute an imminent threat to human health, the Alion Team will secure the area and implement the notification procedures specified in Section 3.1.5.

7.7 Compliance With ARARs

Applicable or Relevant and Appropriate Requirement (ARARs) are not a component of the CERCLA SI phase; therefore, no ARARs have been identified.

7.8 Mitigation Procedures

Mitigation procedures will be followed in accordance with the procedures outlined in the PWP (Alion 2005).

7.9 Post-Activity Cleanup

The Alion Team will remove SI-related IDW and litter potentially generated prior to departure from the site.

7.10 Air Monitoring

It is not anticipated that air monitoring will be necessary or required.

8. PROPERTY MANAGEMENT PLAN

The SI for Seal Island will not require use of government owned or furnished equipment; therefore, this specific site will not require a property management plan.

9. INTERIM HOLDING FACILITY SITING PLAN

The task order does not require the sitting of an interim holding facility as outlined in the PWP (Alion 2005).

10. PHYSICAL SECURITY PLAN FOR RCWM PROJECT SITES

Seal Island is not expected to contain RCWM; therefore, the task order does not require the preparation of a physical security plan for RCWM.

11. REFERENCES

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APPENDIX A—TASK ORDER STATEMENT OF WORK

The Task Order Statement of Work has not been modified. Refer to the PWP (Alion 2005).

APPENDIX B—SITE-SPECIFIC MAPS/FIGURES/SCHEDULE

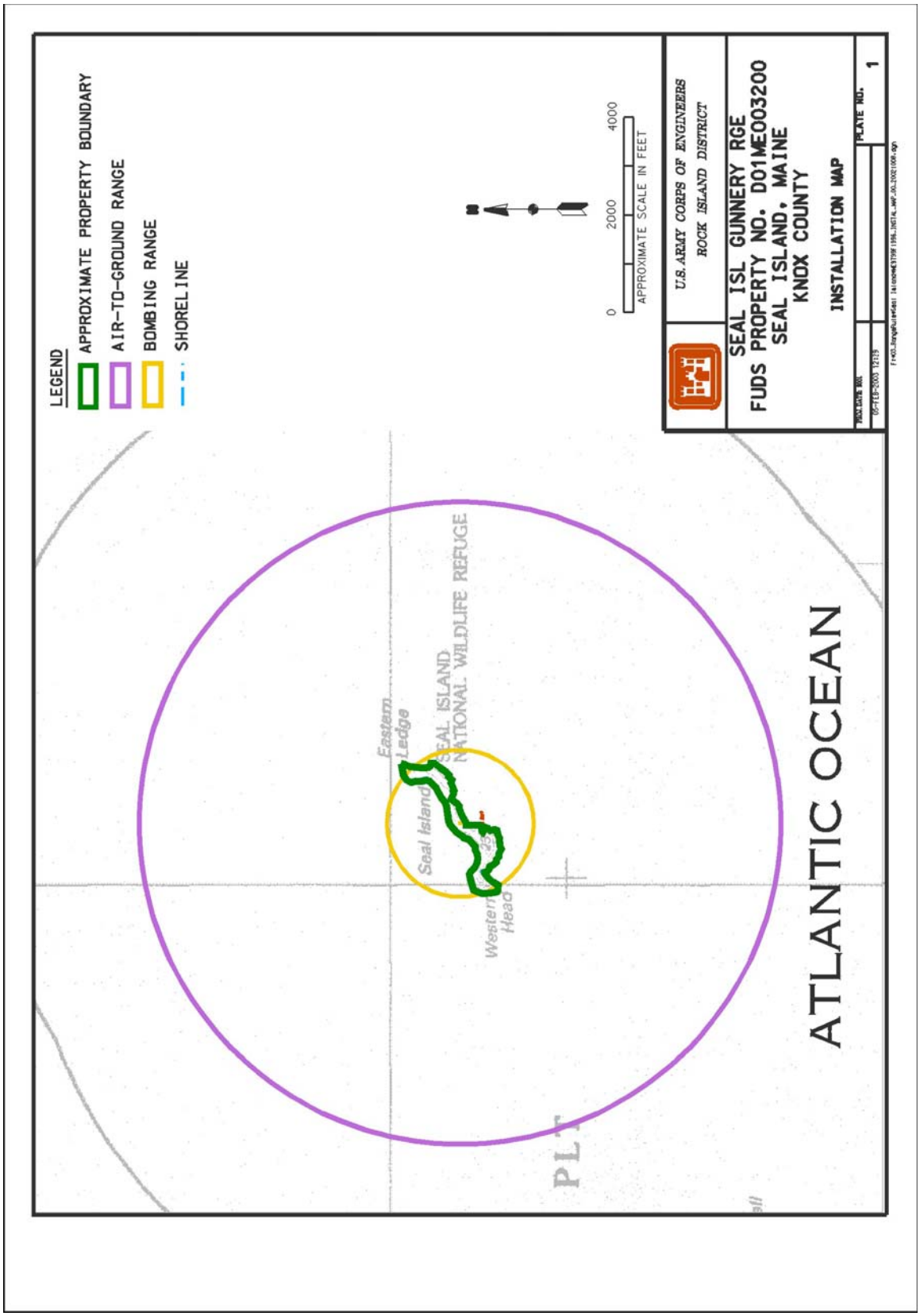


Figure B-1 Seal Island Gunnery Range Site Layout

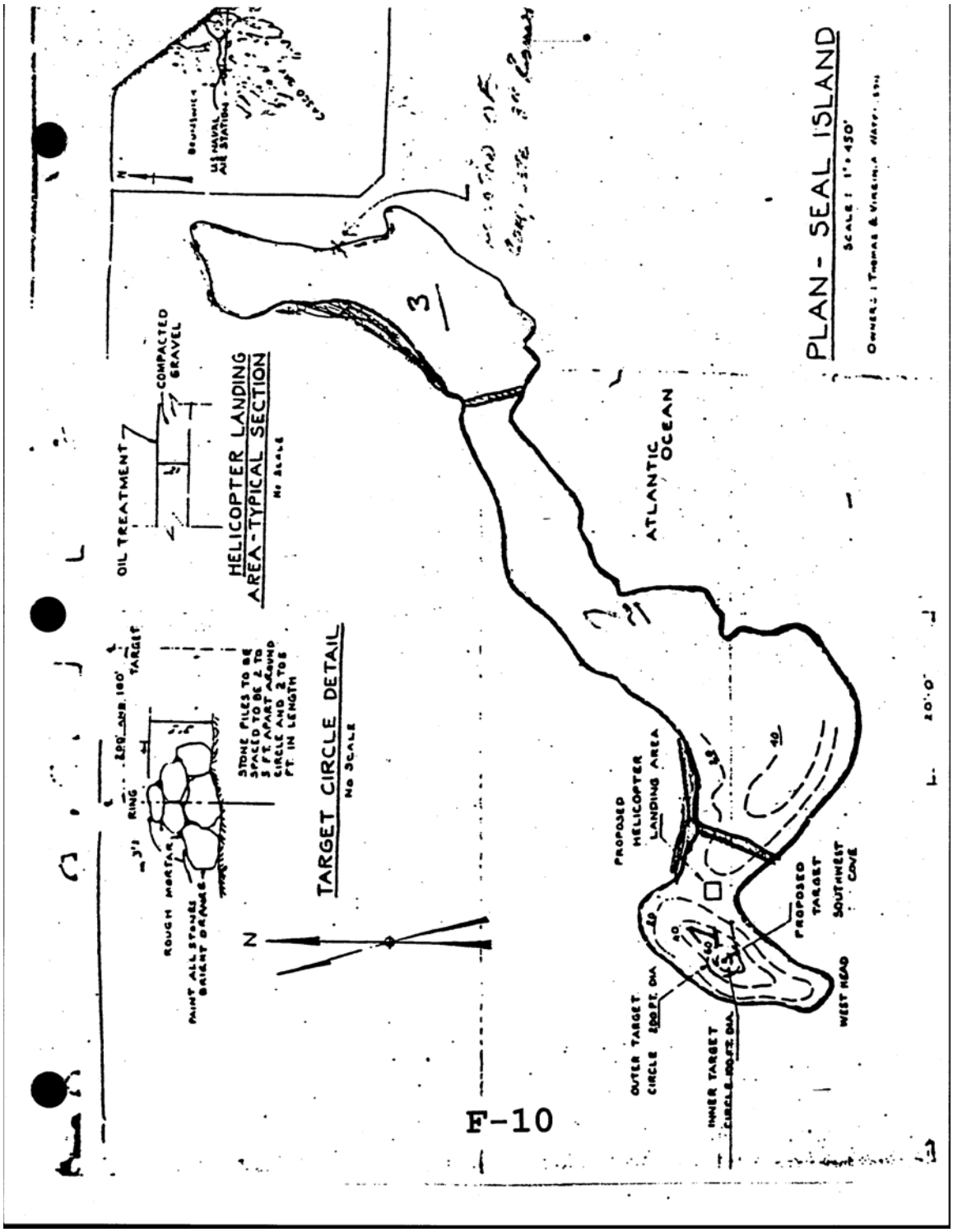
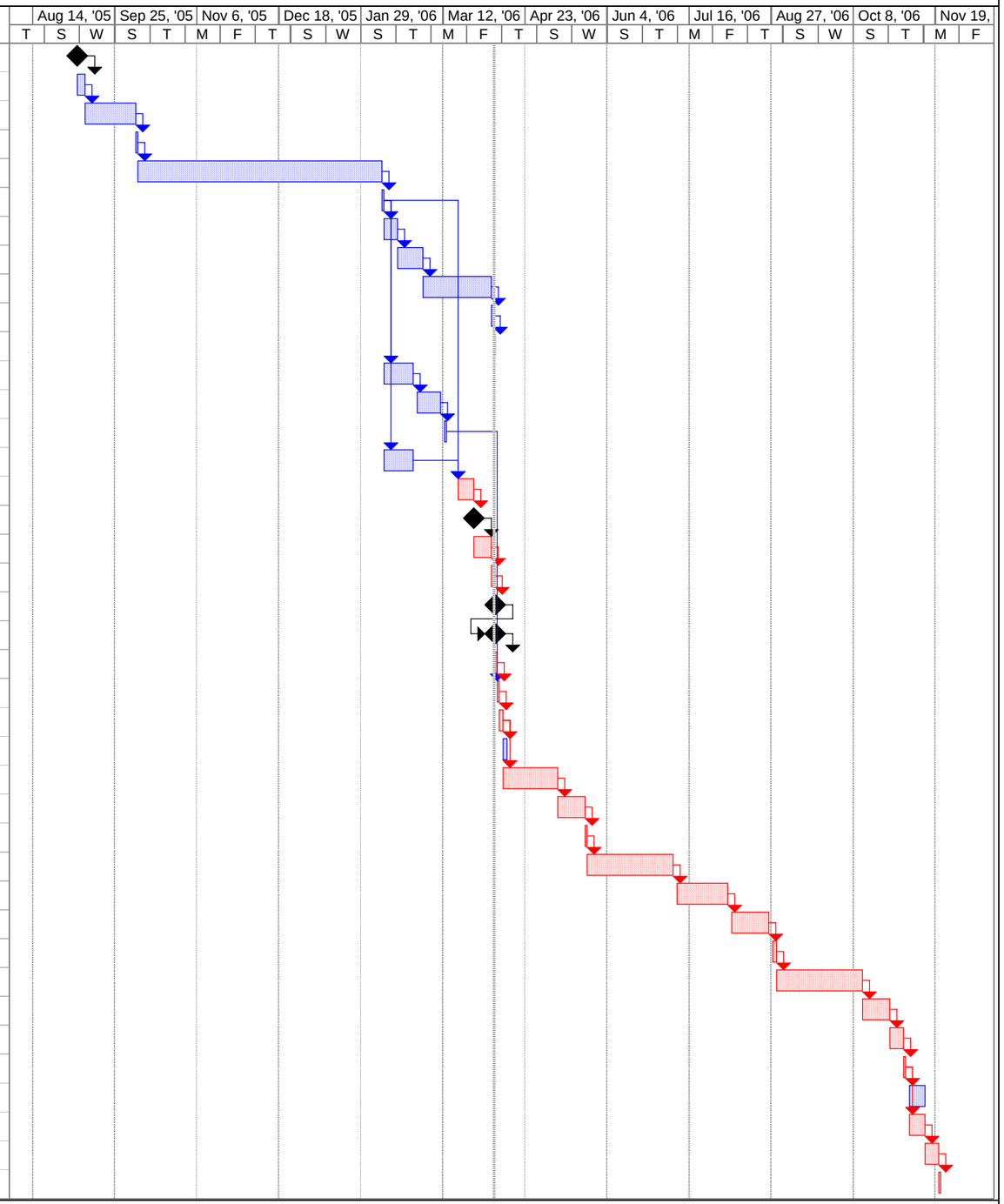


Figure B-2 Historical Sketch of Target Plans for Seal Island

SEAL ISLAND

ID	Task Name	Duration	Start	Finish	Predecessors
1	SITE AWARD	0 days	Tue 9/6/05	Tue 9/6/05	
2	ADDITIONAL HISTORICAL DATA RESEARCH	4 days	Tue 9/6/05	Fri 9/9/05	1
3	DRAFT SITE-SPECIFIC WORK PLAN, DRAFT CSM, & DRAFT TPP SLIDES	24 days	Sat 9/10/05	Wed 10/5/05	2
4	BALTIMORE USACE REVIEW DRAFT SS-WP	1 day	Thu 10/6/05	Thu 10/6/05	3
5	READ AHEAD COPY FOR STAKEHOLDERS REVIEW	84 days	Fri 10/7/05	Wed 2/8/06	4
6	TPP # 1	1 day	Thu 2/9/06	Thu 2/9/06	5
7	TPP # 1 MEMORANDUM (DRAFT) PREPARATION	5 days	Fri 2/10/06	Thu 2/16/06	6
8	TPP # 1 MEMO SUBMITTED TO USACE FOR DISTRIBUTION TO STAKEHOLDERS	8 days	Fri 2/17/06	Wed 3/1/06	7
9	TPP # 1 MEMO STAKEHOLDER & USACE REVIEW & COMMENT PERIOD	25 days	Thu 3/2/06	Wed 4/5/06	8
10	TPP # 1 MEMO ALION RESPOND TO COMMENTS & PREPARATION OF FINAL TPP	1 day	Thu 4/6/06	Thu 4/6/06	9
11	TPP # 1 RESPONSE TO COMMENTS REVIEW / MEMORANDUM CONCURRENCE	1 day	Fri 4/7/06	Fri 4/7/06	10
12	US FISH & WILDLIFE SERVICE COMMENCE SPECIAL USE PERMIT PROCESS	10 days	Fri 2/10/06	Fri 2/24/06	6
13	PUBLIC COMMENT PERIOD FOR SPECIAL USE PERMIT	10 days	Mon 2/27/06	Fri 3/10/06	12
14	OBTAIN SPECIAL USE PERMIT	1 day	Mon 3/13/06	Mon 3/13/06	13
15	COLLECTION OF ADDITIONAL DATA FROM SITE OWNERS FOLLOWING TPP #1	10 days	Fri 2/10/06	Fri 2/24/06	6
16	PREPARE DRAFT FINAL SS-WP w/ADDITIONAL SITE OWNER DATA & TPP COMMENTS	6 days	Mon 3/20/06	Mon 3/27/06	15,6
17	DRAFT FINAL SS-WP SUBMITTED TO USACE FOR DISTRIBUTION TO STAKEHOLDERS	0 days	Mon 3/27/06	Mon 3/27/06	16
18	REVIEW & COMMENT PERIOD FOR DRAFT FINAL SS-WP BY USACE & STAKEHOLDERS	7 days	Tue 3/28/06	Wed 4/5/06	17
19	RESPOND TO COMMENTS ON DRAFT FINAL SS-WP	2 days	Thu 4/6/06	Fri 4/7/06	18
20	USACE & STAKEHOLDERS REVIEW RESPONSES	0 days	Fri 4/7/06	Fri 4/7/06	19
21	CONFERENCE CALL (IF NEEDED) WITH COMMENTERS TO FINALIZE SS-WP	0 days	Fri 4/7/06	Fri 4/7/06	20
22	PRODUCE FINAL SS-WP	1 day	Sat 4/8/06	Sat 4/8/06	21
23	MOBILIZATION TO SITE	1 day	Sun 4/9/06	Sun 4/9/06	22,14
24	FIELD WORK - MEC SURVEY, GEOPHYSICS, AND MC SAMPLING	2 days	Mon 4/10/06	Tue 4/11/06	23
25	DEMOBILIZATION FROM SITE	2 days	Wed 4/12/06	Thu 4/13/06	24
26	DATA TO LABORATORY	20 days	Wed 4/12/06	Tue 5/9/06	24
27	DATA TO VALIDATOR	10 days	Wed 5/10/06	Tue 5/23/06	26
28	DATA TO ALION TEAM	1 day	Wed 5/24/06	Wed 5/24/06	27
29	DRAFT SI REPORT	30 days	Thu 5/25/06	Fri 7/7/06	28
30	REVIEW PERIOD OF DRAFT SI REPORT BY USACE	20 days	Mon 7/10/06	Fri 8/4/06	29
31	RESPOND TO USACE COMMENT & PRODUCE DRAFT FINAL SI REPORT	15 days	Mon 8/7/06	Fri 8/25/06	30
32	DRAFT FINAL REPORT SUBMITTED TO USACE FOR DISTRIBUTION TO STAKEHOLDERS	2 days	Mon 8/28/06	Tue 8/29/06	31
33	REVIEW PERIOD OF DRAFT FINAL REPORT BY USACE & STAKEHOLDERS	30 days	Wed 8/30/06	Thu 10/12/06	32
34	RESPOND TO COMMENTS ON DRAFT FINAL REPORT	10 days	Fri 10/13/06	Thu 10/26/06	33
35	USACE & STAKEHOLDER REVIEW RESPONSES	5 days	Fri 10/27/06	Thu 11/2/06	34
36	TPP # 2 (IF NEEDED) WITH STAKEHOLDERS/COMMENTERS TO FINALIZE SI REPORT	1 day	Fri 11/3/06	Fri 11/3/06	35
37	TPP # 2 MEMORANDUM PREPARATION	5 days	Mon 11/6/06	Mon 11/13/06	36
38	PRODUCE FINAL SI REPORT	5 days	Mon 11/6/06	Mon 11/13/06	36
39	USACE ACCEPTANCE OF FINAL SI REPORT	5 days	Tue 11/14/06	Mon 11/20/06	38
40	PROJECT CLOSEOUT	1 day	Tue 11/21/06	Tue 11/21/06	39



Date: Fri 4/7/06
Schedule.mpp

Task
Critical Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Critical Task
Rolled Up Milestone
Rolled Up Progress
Split
External Tasks
Project Summary
Group By Summary
Deadline

NOTES: 1) Duration is in weekdays. 2) Holidays are not counted in duration. 3) Schedule was revised following TPP #1.

FIGURE B-3 SCHEDULE FOR SITE INSPECTION OF SEAL ISLAND

APPENDIX C—LOCAL POINTS OF CONTACT

LOCAL POINTS OF CONTACT

The following points of contact are included for the Seal Island Gunnery Range.

NAME	ORGANIZATION	PHONE	ADDRESS	E-MAIL	PROJECT ROLE
Bradford McCowan	USACE, MM CX	256-895-1174	USACE Center of Expertise Attn: CEHNC-MM-CX, 4280 University Square Huntsville, AL 35807	Bradford.L.McCowan@hnd01.usace.army.mil	MMRP SI Program Manager
Leland Reeser	USACE, NAB MM Design Center	410-962-2186	USACE Baltimore District Attn: CENAB-EN City Crescent Building 10 S. Howard St. 10th floor Baltimore, MD 21201	Leland.H.Reeser@nab02.usace.army.mil	Baltimore District MMRP SI Regional Program Manager
Robert Williams	USACE, NAB MM Design Center	410-962-4006	USACE Baltimore District Attn: CENAB-EN City Crescent Building 10 S. Howard St. 10th floor Baltimore, MD 21201	Robert.j.williams@nab02.usace.army.mil	Lead USACE Project Manager
Sher Zaman	USACE, NAB MM Design Center	N/A	USACE Baltimore District Attn: CENAB-EN City Crescent Building 10 S. Howard St. 10th floor Baltimore, MD 21201	Sher.zaman@nab02.usace.army.mil	USACE District Technical Lead
Paul Greene	USACE, NAB MM Design Center	410-962-6741	USACE Baltimore District Attn: CENAB City Crescent Building 10 S. Howard St. 10th floor Baltimore, MD 21201	Paul.E.Greene @ usace.army.mil	Technical Support
Alan Warminski	USACE, NAB MM Design Center	410-962-2179	USACE Baltimore District Attn: CENAB City Crescent Building 10 S. Howard St. 10th floor Baltimore, MD 21201	Alan .S.Warminski @usace.army.mil	Technical Support

NAME	ORGANIZATION	PHONE	ADDRESS	E-MAIL	PROJECT ROLE
Sheila Holt	USACE –NAE	978-318-8174	USACE -New England District 696 Virginia Road, Concord, MA 01742-2751	sheila.d.holt@nae02.usace.army.mil	USACE Project Manager-New England District
William Holtham	USACE – NAE	978-318-8670	USACE -New England District 696 Virginia Road, Concord, MA 01742-2751	William.j.holtham@usace.army.mil	USACE FUDS Program Manager
Robert Davis	USACE – NAE	978-318-8236	USACE -New England District 696 Virginia Road, Concord, MA 01742-2751	Robert.w.davis@usace.army.mil	Environmental Resource Specialist
Bonnie Herring	Alion Science and Technology/HFA	919-406-2138 919-558-9218 (fax)	1000 Park Forty Plaza Suite 200 Durham, NC 27713	bherring@alionscience.com	Contracts Administration
Scott Hemstreet	Alion Science and Technology/HFA	301-705-5044 919-549-0611	1000 Park Forty Plaza Suite 200 Durham, NC 27713	SHemstreet@hfactors.com	Operations Manager-MEC
Roger Azar	Alion Science and Technology/HFA	301-399-7304	1000 Park Forty Plaza Suite 200 Durham, NC 27713	razar@alionscience.com	Contractor - Program Manager
Corinne Shia	Alion Science and Technology	703-259-5147	3975 Fair Ridge Drie Suite 125 South Fairfax, VA 22033	cshia@alionscience.com	Contractor – Project Manager
Curtis Mitchell	Alion Science and Technology/HFA	301-399-7152	7730 Harborview Drive, Charlotte Hall MD, 20622	Rmitchell@hfactors.com	Contractor - UXO Technician
Tim Reese	EA Engineering, Science, and Technology	410-538-8202 x101	1319 Woodbridge Station Way Edgewood, MD 21040	Treese@eaest.com	Contractor –Project Manager
Daniel Hinckley	EA Engineering, Science, and Technology	410-771-4950 x 5149	15 Loveton Circle Sparks, MD 21152	Dhinckley@eaest.com	Contractor –Chemical Quality Control Officer
Kris Hoiem	EA Engineering, Science, and Technology	410-771-4950 x 5101	15 Loveton Circle Sparks, MD 21152	Khoiem@eaest.com	Contractor – Certified Industrial Hygienist
Bill Merrey	EA Engineering, Science, and Technology	410-771-4950 x 5159	15 Loveton Circle Sparks, MD 21152	Bmerrey@eaest.com	Contractor – GIS Manager
Suzanne Boltz	EA Engineering, Science, and Technology	410-771-4950 x 5143	15 Loveton Circle Sparks, MD 21152	Sboltz@eaest.com	Contractor – Cultural Resources

NAME	ORGANIZATION	PHONE	ADDRESS	E-MAIL	PROJECT ROLE
Jane Connet	EA Engineering, Science, and Technology	508-485-2982 x206	333 Turnpike Road, Route 9 Southborough, MA 01772	Jc3@eaest.com	Contractor –Assistant Project Manager
Ivy Able	EA Engineering, Science, and Technology	410-329-5114	15 Loveton Circle Sparks, MD 51152-9201	iable@eaest.com	Task Manager
Charles Blair	FWS, Maine Costal Islands National Wildlife Refuge	207-236-6970 x12	U.S. FWS P.O. Box 279, Milbridge, ME 04658	Charles_Blair@fws.gov	Refuge Manager for Seal Island
Brian Benedict	FWS, Maine Costal Islands National Wildlife Refuge	207-236-6970	U.S. FWS P.O. Box 279 Milbridge, ME 04658	Brian_benedict@fws.gov	Deputy Manager
Ted Wolfe	ME DEP	207-287-8552	17 State House Station August, ME 04333-0017	Theodore.e.wolfe@maine.gov	Regulator, Program Manager
Iver McLeod	ME DEP	207-287-8010	17 State House Station August, ME 04333-0017	Iver.j.mcleod@maine.gov	Regulator, Project Manager
Toni Pied	Maine Natural Areas Program	207 287-8044	Maine Natural Areas Program 157 Hospital Street Augusta, ME 04333	N/A	Staff
Earle Shettleworth Jr.	Maine Historic Preservation Commission	210-287-2132	Maine Historic Preservation Commission 55 Capitol Street, 65 State House Station, Augusta, Maine, 04333	N/A	State Historic Preservation Officer

N/A, information not available.

APPENDIX D— SITE SPECIFIC - ACCIDENT PREVENTION PLAN

FINAL

Site-Specific Accident Prevention Plan For the Site Inspection of the Seal Island Gunnery Range

Prepared Under: **Contract No. W912DY-04-D-0017**
Delivery Order # 00170001

Project Number: D01ME003200

Prepared for:

U.S. Army Engineering and Support Center, Huntsville
4280 University Square
Huntsville, AL 35807

and

U.S. Army Corps of Engineers, Baltimore District
City Crescent Building
10 South Howard Street, 10th Floor
Baltimore, Maryland 21201

Prepared by:

ALION
SCIENCE AND TECHNOLOGY

April 2006

This document shall be maintained on site with the Project Work Plan and the *Accident Prevention Plan (APP).*

Client: U.S. Army Corps of Engineers

Project Name/Number: Site Inspection of the former Seal Island Gunnery Range/ D01ME003200

Site Location/Address: Seal Island, Knox County, Maine (See Site Location Figure)

Site Description: Seal Island was acquired by the U.S. DoD in the early 1940s and used until the late 1960s as a bombing/gunnery range. In 1972, the DOD transferred the island to the Dept. of Interior (DOI). Since acquiring Seal Island, the DoI has turned the island into a wildlife refuge.

Work Description: Site Inspection of this Formally Used Defense Site (FUDS) will include site reconnaissance, limited analog geophysical surveys, soil/sediment and surface water sampling (see project Work Plan for full scope).

APPROVALS:

This Addendum to the Project Work Plan and APP has been prepared under the supervision and review of a Certified Industrial Hygienist certified by the American Board of Industrial Hygiene

Program Safety and Health Officer: Kris H Hoiem — 4/7/06

Kris H Hoiem, CIH (ABIH No. 1563) — Date

Project Manager: Timothy Reese — 4/7/06

Timothy Reese, PE — Date

MEDICAL EMERGENCY:

Distance to Nearest Hospital (accepting contaminated workers): 30 miles

Hospital Name: Perobscott Bay Medical Center

Hospital Phone: 207-596-8000

Hospital Address: 6 Glen Cove Drive, Rockport, ME 04856-4240

Route to Hospital: No medical facilities exist on Seal Island. In case of emergency, transportation via helicopter to Perobscott Bay Medical Center must be made via calling 911 using a marine radio or cell phone. (See Figure 1)

EMERGENCY CONTACT INFORMATION:

Contacts	Name	Phone Number(s) work/cell
Program Manager	Roger Azar	301-399-7304 cell
Assistant Program Manager	Corinne Shia	703-217-3810 cell
Project Manager	Timothy Reese, PE	410-538-8202 x 101 410-935-3887 cell
Program Safety and Health Officer	Kris Hoiem, CIH	800-777-9750/443-463-5334 cell
Task Manager	Ivy Able	406-570-7463 cell
Site Manager	Charles Blair	207-546-2124/207-263-7280 cell
Site Safety and Health Officer	Curtis Rusty Mitchell	301-399-7152 cell
Client Contact	Robert Williams – Baltimore District Sheila Holt – NE District	410-962-4006 978-318-8174
Regulatory Contact (as applicable)	Iver McLeod–ME DEP	207-287-8010
Poison Control		800-222-1222
National Response Center		800-424-8802
Other (as applicable)	Paul Greene – USACE	410-322-2745
EA Medical Services	Health Resources	800-350-4511

Hospital Site Map

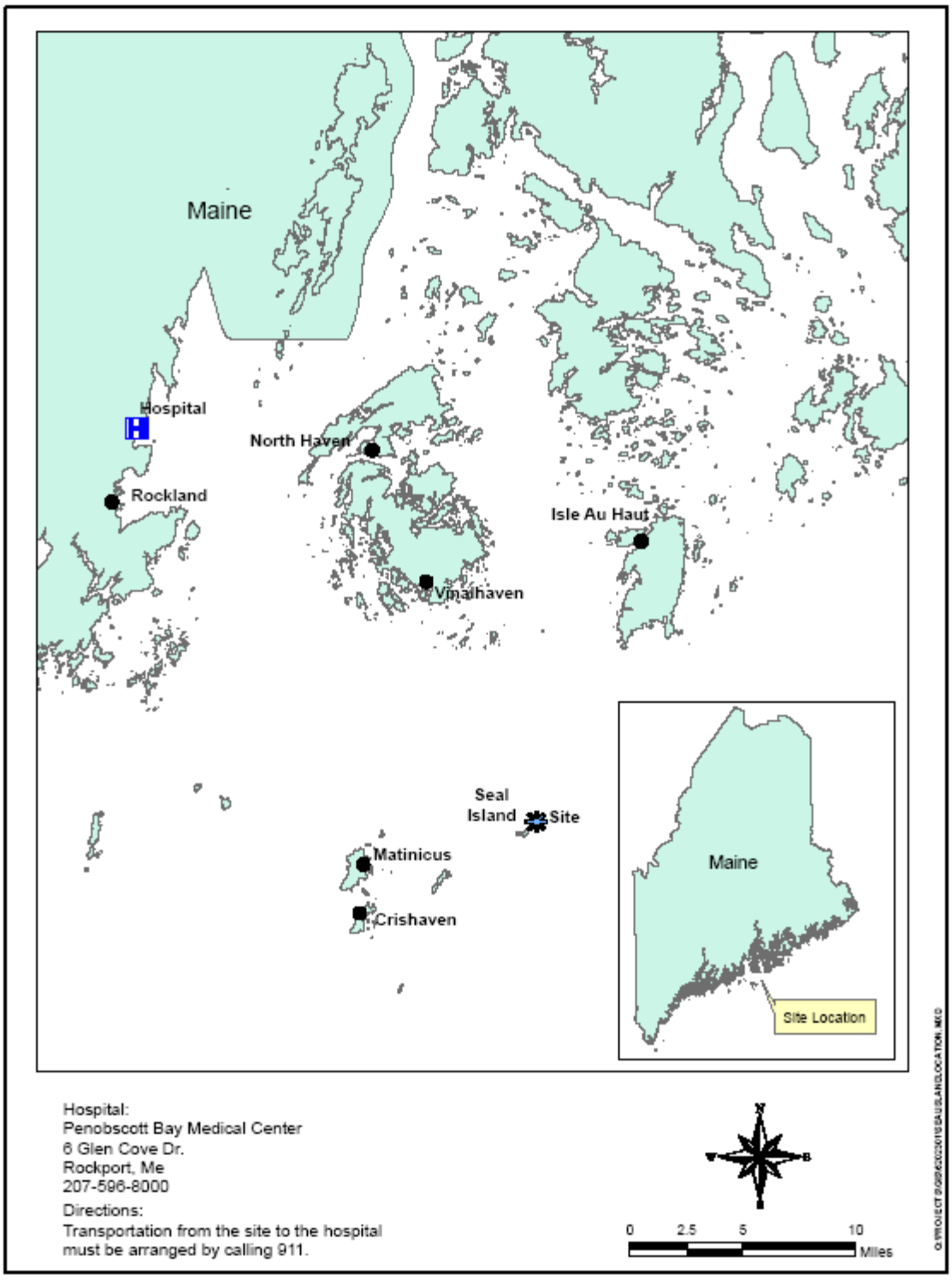


Figure 1. Route to Hospital

HAZARDS OF CONCERN: Check as many as are applicable. See Section 6 of GHASP for Chemical, Physical and Biological Hazards.

( ) Heat Stress ( ) Reactive ( ) Oxygen Deficient (X) Insect Bite
(X) Cold Stress ( ) Noise ( ) Corrosive ( ) Snake Bite
( ) Explosion/Flammable( ) Inorganic ( ) Toxic ( ) Excavations
( ) Biological ( ) Organic ( ) Inert (X) Vegetation
( ) Radiological ( ) Confined Space (see Section 9 of GHASP)
( ) Volatile (X) Other, specify: Potential MEC. Site workers will practice MEC avoidance. Any suspected MEC will be left alone. An UXO Technician will identify routes free of anomalies to a sampling area. The UXO Technician will also ascertain that sample locations are free of anomalies. Once the UXO Technician has identified that a sampling location is free of anomalies, the MC sampling team will then collect their sample for analysis. Soil samples will be collected from areas identified by CSM or the MEC survey to be suspect or contain high concentrations of MEC and/or MC.

PATHWAYS:

( ) Air (X) Dust/Soil (X) Surface Water (X) Sediment ( ) Groundwater ( ) Other

OVERALL HAZARD EVALUATION: ( ) High ( ) Medium (X) Low ( ) Unknown

JUSTIFICATION (brief narrative of how work activities may encounter hazards and their controls, include known or anticipated contaminant concentrations):

Site workers may be exposed to chemicals of concern (metals and explosives) present in site soil, sediment, and surface water during sampling activities. Site sampling will occur in wooded/overgrown areas that may contain biting insects and/or poisonous plants.

FIRE/EXPLOSION POTENTIAL: ( ) High ( ) Medium (X) Low ( ) Unknown

SURROUNDING POPULATION: ( ) Residential ( ) Industrial (X) Rural ( ) Urban

ANTICIPATED LEVEL OF CHEMICAL EXPOSURE:

Very low levels.

CONTINGENCY PLANS: Summarize below (Evacuation, assembly point, contingency leader)

During an emergency, site workers will gather at an assembly point (to be established during daily H&S meeting). The Site Safety and Health officer will take the role of contingency leader.

DEVIATIONS/VARIATIONS FROM HASP/APP:

No deviations or variation from the HASP/APP is permitted without specific written approval from the Program Safety and Health Officer and Project Manager.

Do Hazardous Waste Site Workers and/or Supervisor (s) have Documentation of Required Training and Medical Exams? (X) Yes ( ) No, Explain

Do at least two people in the field have current CPR and First Aid qualifications?

(X) Yes ( ) No, Explain

Ivy Able and Curtis Rusty Mitchell are certified in CPR and First Aid.

PROTECTIVE EQUIPMENT: Protective equipment should be specified by the type of task and site (e.g., soil boring and sampling at landfill). Indicate type and/or material, as necessary. Use additional pages as necessary.

Primary

TASKS: Site Sampling, Site Reconnaissance, and Geophysical Survey

INITIAL LEVEL: A - B - C – (D) - Modified (Circle applicable)

UPGRADE CRITERIA: None – No air monitoring equipment will be used

Respiratory: (X) Not needed
( ) SCBA, Airline: _____
( ) APR: _____
( ) Cartridge: _____
( ) Escape Mask: _____
( ) Other: _____

Head and Eye: ( ) Not needed
(X) Safety Glasses: _____
( ) Face Shield: _____
( ) Goggles: _____
( ) Hard Hat: _____
( ) Hearing Protection: _____

Protective Clothing: ( ) Not Needed
( ) Encapsulating Suit: _____
( ) Splash Suit: _____
( ) Apron: _____
( ) Tyvek Coverall
( ) Saranex Coverall
( ) Coverall: _____
(X) Other: Life vests will be worn when outside the cabin of the boat.

Gloves: ( ) Not needed
( ) Undergloves: _____
(X) Gloves: Nitrile, during sampling
( ) Overgloves: _____
( ) Other: Specify below

Boots: ( ) Not Needed
Boots: Work Boots. Non-steel toe boots required during Geophysical Surveying
Overboots: _____

Contingency

TASKS: NONE

LEVEL: A - B – (C) – D - Modified (Circle applicable)

UPGRADE CRITERIA: PPE Upgrade not permitted under this HASP

Respiratory: (X) Not needed
( ) SCBA, Airline: _____
( ) APR: _____
( ) Cartridge: _____
( ) Escape Mask: _____
( ) Other: _____

Head and Eye: (X) Not needed
( ) Safety Glasses: _____
( ) Face Shield: _____
( ) Goggles: _____
( ) Hard Hat: _____
( ) Hearing Protection: _____

Protective Clothing: (X) Not Needed
( ) Encapsulating Suit: _____
( ) Splash Suit: _____
( ) Apron: _____
( ) Tyvek Coverall
( ) Saranex Coverall
( ) Coverall: _____
( ) Other: _____

Gloves: (X) Not needed
( ) Undergloves: _____
( ) Gloves: _____
( ) Overgloves: _____
( ) Other: Specify below

Boots: (X) Not Needed
Boots: _____
Overboots: _____

MONITORING EQUIPMENT: Monitoring equipment should be specified by task and type of site. Indicate type, as necessary. Attach additional sheets, as necessary.

TASKS: NONE

See GHASP for Calibration Procedures or attach if different. Table 1 from GHASP (attached) specifies monitoring requirements and action levels

INSTRUMENT	ACTION GUIDELINES
Combustible Gas Indicator (X) Not needed	0-10% LEL Continue. 10-20% LEL Potential explosion hazard, continuous monitoring. >20% LEL Explosion hazard; interrupt task/evacuate.
Oxygen (O_2) Percentage: Type _____	20.8% - O_2 normal. <20.8% - O_2 deficient, investigate cause. <19.5% O_2 Interrupt task/evacuate.
Photoionization Detector ( ) 11.7 ev ( ) 10.2 ev ( ) 09.8 ev ( ) __ ev Type: Photovac or MiniRAE (circle applicable or list other): (X) Not needed	Specify
Flame Ionization Detector Type Photovac or OVA (circle applicable or list other): (X) Not needed	Specify:
Detector Tubes Monitor Type _____ (X) Not needed	Specify: (Chemical, Range) COMMENTS (Interferences)
Dust Monitor Type _____ (X) Not needed	Specify:
Radiation Survey Meter (X) Not needed Other	> Background Contact RSO/SSHO and PM 3 x Background Notify CIH and stop work 2.5mR/hr Interrupt task/evacuate Note: Annual Exposure not to exceed 100 mrem/yr or 50 urem/hr average Specify:

DECONTAMINATION PROCEDURES:

Summarize personnel decontamination/containment and disposal method
( ) Not needed

Gloves will be disposed of off island after sampling as general refuse

Summarize equipment decontamination/containment and disposal method
( ) Not needed

Sampling equipment will be dedicated and disposed of off island as general refuse following sample collection

Summarize heavy equipment decontamination/containment and disposal method
(X) Not needed

HEALTH AND SAFETY PLAN REVIEW RECORD

SITE: _Seal Island Gunnery Range_____ ___

Project No.____ 6202301.0003_____

I have read the Health and Safety Plan (s) and have been briefed on the nature, level, and degree of exposure likely as a result of participation of field activities. I agree to conform to all the requirements of this Plan.

Name	Signature	Affiliation	Date

SITE ENTRY AND EXIT LOG

Project/Site: Seal Island Gunnery Range/ Seal Island, ME
Project No.: 6202301.0003

Date	Name	Representing	Time In	Time Out

HEALTH AND SAFETY ACTIVITY REPORT

Site: Seal Island Gunnery Range Location: Seal Island, ME

Weather Cond.: _____ Onsite Hours: From _____ To _____

Changes in PPE Levels*	Work Operations	Reasons for Change

Site Safety and Health Plan Violations	Corrective Action Specified	Corrective Action Taken (yes/no)

Observations and Comments:

Completed by: _____ Date: _____

Site Health and Safety Supervisor

*Only SSHO may change PPE levels, using only criteria specified in GHASP.

TABLE 1 - SITE HAZARD ANALYSIS - POTENTIAL CHEMICALS OF CONCERN

Compound	PEL or TLV/STEL	IDLH	Route of Exposure	Symptoms
Metals				
Aluminum (Al)	15 mg/m^3 (total) 5 mg/m^3(resp)	ND	Inhalation, Skin/Eye Contact	Irritation eyes, skin, respiratory system
Antimony (Sb)	0.5 mg/m^3	50 mg/m^3	Inhalation and Ingestion via particulates, Skin/Eye Contact	Irritated eyes, skin, nose, throat, mouth; coughing, dizziness, headache, nausea, vomiting, diarrhea, stomach cramps, insomnia, loss of smell.
Arsenic (As)	0.002 mg/m^3	Ca 5 mg/m^3 (as As)	Inhalation and Ingestion via particulates, Skin/Eye Contact	Ulceration of nasal septum, dermatitis, gastrointestinal bleeding.
Barium (Ba)	0.5 mg/m^3	50 mg/m^3	Inhalation and Ingestion via particulates, Skin/Eye Contact	Upper resp. irritation, muscle spasm, slow pulse, irritated eyes, skin.
Beryllium (Be)	0.002 mg/m^3 C 0.005 mg/m^3	Ca 4 mg/m^3	Inhalation via particulates, Skin/Eye Contact	Berylliosis (chronic exposure): anorexia, low-weight; weakness, chest pain; cough, clubbing of fingers, cyanosis, pulmonary insufficiency; irritated eyes; dermatitis; carcinogen.
Cadmium (Cd)	0.005 mg/m^3	Ca 9 mg/m^3	Inhalation and Ingestion via particulates	Pulmonary edema, dyspnea, cough, chest tight, subs pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anos., emphysema, prot., mild anemia; carcinogen.
Chromium (Cr), 2	0.5 mg/m^3	250 mg/m^3	Inhalation and Ingestion via particulates, Skin/Eye Contact	Histologic fibrosis of lungs; irritated eyes and skin.
Cobalt (Co)	0.05 mg/m^3	20 mg/m^3	Inhalation and Ingestion via particulates, Skin/Eye Contact	Irritation of nasal membranes, pharynx, nasal perforation, eye irritation.

TABLE 1 (Continued)

Compound	PEL or TLV/STEL	IDLH	Route of Exposure	Symptoms
Copper (Cu)	1 mg/m^3	100 mg/m^3	Inhalation via particulates, Skin/Eye Contact	Irritated eyes, upper respiratory system; metal fume fever: chills, muscular ache, nausea, fever, dry throat, cough, weakness, lassitude; metallic or sweet taste; discoloration of skin, hair.
Lead (Pb)	0.050 mg/m^3	100 mg/m^3 (as Pb)	Inhalation and Ingestion via particulates, Skin/Eye Contact	Lassitude, insomnia, pallor, anoxia, weight loss, constipation, abdominal pain, colic, anemia, wrist paralysis.
Manganese (Mn)	C 5 mg/m^3	500 mg/m^3	Inhalation and Ingestion via particulates	Parkinson's; asthenia, insomnia, mental confusion; metal fume fever: dry throat, cough, chest tightness, dyspnea, rales, flu-like fever; low-back pain; vomiting; malaise; fatigue; kidney damage.
Mercury (Hg) *Skin*	0.01/0.03 mg/m^3	2 mg/m^3	Inhalation and Ingestion via particulates, Skin/Eye Contact	Dizziness, nausea, vomiting, diarrhea, constipation, skin burns, emotional distance.
Molybdenum (Mo)	15 mg/m^3	5000 mg/m^3	Inhalation, Ingestion, Skin/Eye Contact	In animals: irritation eyes, nose, throat; anorexia, diarrhea, weight loss; listlessness; liver, kidney damage
Nickel (Ni) (insoluble/soluble)	0.015 mg/m^3	Ca 10 mg/m^3	Inhalation and Ingestion via particulates, Skin/Eye Contact	Sensitive skin, asthma, nasal cavity irritation, pneumonitis, carcinogen.
Selenium (Se)	0.2 mg/m^3	1 mg/m^3	Inhalation and Ingestion via particulates, Skin/Eye Contact	Irritation eyes, skin, nose, and throat; headache, chills, dyspnea, bronchitis, metallic taste, garlic breath, liver/spleen damage.
Silver (Ag)	0.01 mg/m^3	10 mg/m^3	Inhalation and Ingestion via particulates, Skin/Eye Contact	Blue-gray eyes, nasal septum, throat, skin; irritability, ulceration of skin; GI disturbance.

TABLE 1 (Continued)

Compound	PEL or TLV/STEL	IDLH	Route of Exposure	Symptoms
Strontium (Sr)	N.D.	N.D.	Inhalation, Ingestion. Skin/Eye Contact.	Weakening of bone during development.
Thallium (Tl) *Skin*	0.1 mg/m^3	15 mg/m^3	Inhalation and Ingestion via particulates, Skin/Eye Contact, Absorption	Nausea, diarrhea, abdominal pain, vomiting, tremor, chest pain, pulmonary edema.
Tin (Sn)	2 mg/m^3	100 mg/m^3	Inhalation, Skin/Eye Contact.	Irritation eyes, skin, and respiratory system; in animals: vomiting, diarrhea, paralysis with muscle twitching.
Vanadium (V)	C 0.05 mg/m^3	35 mg/m^3	Inhalation and Ingestion via particulates, Skin/Eye Contact	Irritated eyes, skin, throat; green tongue, metallic taste, eczema, cough, wheezing, bronchitis.
Zirconium (Zr)	5 mg/m^3	50 mg/m^3	Inhalation, skin/eye contact.	Skin, lung granulomas; In animals: irritation skin, mucous membrane; x-ray evidence of retention in lungs.
Explosive Compounds				
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) *Skin*	1.5 mg/m^3	ND	Inhalation, Ingestion, Absorption, Skin/Eye Contact	Irritated eyes, skin; headache, irritability, fatigue, weakness, tremors, nausea, dizziness, vomiting, insomnia, convulsions.
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	N.D	N.D	N/A	N/A
2,4-Dinitrotoluene (DNT) *Skin*	1.5 mg/m^3	Ca 50 mg/m^3	Inhalation, Ingestion, Absorption, Skin/Eye Contact	Anoxia, cyanosis; anemia, jaundice; reproductive effects; carcinogen.

TABLE 1 (Continued)

Compound	PEL or TLV/STEL	IDLH	Route of Exposure	Symptoms
1,3,5-Trinitrobenzene (1,3,5-TNB)	5 mg/m^3 (for nitrobenzene)	200 ppm	Inhalation, Ingestion	Vapors may cause moderate irritation, methemoglobinemia and symptoms of anoxia, cyanosis of lips, nose, earlobes, severe headache, nausea, vomiting, dryness of throat, hypotension, confusion, visual disturbances, numbness, tremors, weakness, excitement, lethargy, unconsciousness, and coma.
1,3-Dinitrobenzene (1,3-DNB)	1.0 mg/m^3	50 mg/m^3	Inhalation, Ingestion, Absorption, Skin/Eye Contact	Anoxia, cyanosis; visual disturbance, central scotomas; bad taste, burning mouth, dry throat, thirst, yellowing hair, eyes, skin; anemia; liver damage
2,4,6-Trinitrotoluene (TNT) *Skin*	0.5 mg/m^3	500 mg/m^3	Inhalation, Ingestion, Absorption, Skin/Eye Contact	Mechanical damage possible from explosion. Orange staining on exposed skin. Irritated skin, mucous membrane; liver damage, jaundice; cyanosis; sneezing; cough, sore throat; peritoneal neuritis, muscular pain; kidney damage; cataract; sensitized dermatitis; leukocytosis; anemia, cardiac irregularity.
2,6-Dinitrotoluene (1) (2,6-DNT)	1.5 mg/m^3	Ca 50 mg/m^3	Inhalation, Skin Absorption, Ingestion, Skin/Eye Contact	Anoxia, cyanosis; anemia, jaundice; reproductive effects; [potential occupational carcinogen]
2-Amino-4,6-dinitrotoluene (2-Am-DNT)	1.5 mg/m^3 (for dinitrotoluene)	Ca 50 mg/m^3	Inhalation, Skin Absorption, Ingestion, Skin/Eye Contact	Anoxia, cyanosis; anemia, jaundice; reproductive effects; [potential occupational carcinogen]
2-Nitrotoluene (2-NT)	5 ppm	200 ppm	Inhalation, Skin Absorption, Ingestion, Skin/Eye Contact	Anoxia, cyanosis; headache, weakness, exhaustion, dizziness; ataxia; breathing difficulty; tachycardia; nausea, vomiting
3-Nitrotoluene (3-NT)	5 ppm	200 ppm	Inhalation, Skin Absorption, Ingestion, Skin/Eye Contact	Anoxia, cyanosis; headache, weakness, exhaustion, dizziness; ataxia; breathing difficulty; tachycardia; nausea, vomiting

TABLE 1 (Continued)

Compound	PEL or TLV/STEL	IDLH	Route of Exposure	Symptoms
4-Amino-2,6-dinitrotoluene (4-Am-DNT)	1.5 mg/m^3 (for dinitrotoluene)	Ca 50 mg/m^3	Inhalation, Skin Absorption, Ingestion, Skin/Eye Contact	Anoxia, cyanosis; anemia, jaundice; reproductive effects; [potential occupational carcinogen]
4-Nitrotoluene (4-NT)	5 ppm	200 ppm	Inhalation, Skin Absorption, Ingestion, Skin/Eye Contact	Anoxia, cyanosis; headache, weakness, exhaustion, dizziness; ataxia; breathing difficulty; tachycardia; nausea, vomiting
Nitrobenzene (NB)	1 ppm	200 ppm	Inhalation, Skin Absorption, Ingestion, Skin/Eye Contact	Irritation eyes, skin; dermatitis; anemia; methemoglobinemia
Nitroglycerin (NG)	0.1 mg/m^3	75 mg/m^3	Inhalation, Skin Absorption, Ingestion, Skin/Eye Contact	Throbbing headache; dizziness; nausea, vomiting, hypotension; flush; palpitations; methemglobinemia; delirium, central nervous system depression; angina; skin irritation
Methyl-2,4,6-trinitrophenylnitramine (Tetryl)	1.5 mg/m^3	750 mg/m^3	Inhalation, Skin Absorption, Ingestion, Skin/Eye Contact	Irritation of eyes, nose, throat. Skin rash. Yellow staining of skin and hair. Prolonged exposure may result in insomnia, nausea, vomiting, irritability, nosebleeds, breathing difficulty.
Pentaerythritol Tetranitrate (PETN)	5 mg/m^3 (for pentaerythritol)	N.D.	Inhalation, Ingestion, Skin/Eye Contact	Irritation of eyes and respiratory system.

TABLE 1 (Continued)

Compound	PEL or TLV/STEL	IDLH	Route of Exposure	Symptoms
IDLH PEL TLV STEL C Ca GI N.D. *Skin* [a] f/cc	Immediately Dangerous to Life and Health Permissible Exposure Limit as per OSHA, unless otherwise noted. Threshold Limit Value Short Term Exposure Limit (15 min) Ceiling Limit Carcinogen CNS Central Nervous System Gastrointestinal Not determined Skin absorption can contribute to overall body dose The PEL and IDLH are representative of coal tar pitch volatiles. Fibers per cubic centimeter of air. *OSHA also has an excursion limit of 1 f/cc for this compound meaning that no employee may be exposed above this limit as averaged over a sampling period of 30 minutes.			

APPENDIX E—SITE –SPECIFIC SAMPLING AND ANALYSIS PLAN

Included in this appendix is the Final Site-Specific Sampling and Analysis Plan-Military Munitions Response Program-Site Inspections (refer to the PWP [Alion 2005]), the Site-Specific Sampling and Analysis Plan (Appendix E-1) and the laboratory QAPP (Appendix E.2) for the main contracted lab GPL Laboratories, LLLP (refer to the PWP [Alion 2005]).

APPENDIX E.1— SITE-SPECIFIC SAMPLING AND ANALYSIS PLAN MILITARY MUNITIONS RESPONSE PROGRAM-SITE INSPECTIONS

FINAL

SITE-SPECIFIC SAMPLING AND ANALYSIS PLAN FOR THE SITE INSPECTION OF THE SEAL ISLAND GUNNERY RANGE

Prepared for:

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ALION
SCIENCE AND TECHNOLOGY

April 2006

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TABLES

ACRONYMS

ASR	Archive Search Report
CAS	Chemical Abstract Service
CENAB	Corp of Engineers, Nort Atlantic-Baltimore
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CHE	Chemical Warfare Material Hazard Evaluation
CSM	Conceptual Site Model
DHS	Department of Human Services
DNT	Dinitrotoluene
DoD	Department of Defense
DQO	Data Quality Objectives
EDS	Environmental Data Services, Inc.
EHE	Explosive Hazard Evaluation
EPA	U. S. Environmental Protection Agency
FSP	Field Sampling Plan
FUDS	Formerly Used Defense Site
FWS	U.S. Fish and Wildlife Service
GPS	Global Positioning System
HHE	Health Hazard Evaluation
IDW	Investigation Derived Waste
INPR	Inventory Project Report
MC	Munitions Constituents
MDL	Method Detection Limit
MEC	Munitions and Explosives of Concern
MEG	Maximum Exposure Guideline
MMCX	Military Munitions Center of Expertise
MMRP	Military Munitions Restoration Program
MRS	Munitions Response Site
MRSPP	Munitions Response Site Prioritization Protocol
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
NAB	North American Datum
NB	Nitrobenzene
NDAI	No Department of Defense Action Indicated
NG	Nitroglycerine
NPL	National Priority List
PAG	Preliminary Assessment Goal
PETN	Pentaerythritol Tetranitrate
PFSP	Programmatic Field Sampling Plan
PRG	Preliminary Remediation Goal
PMMQL	Preferred Maximum Method Quantitation Limit
PSAP	Programmatic Sampling and Analysis Plan

PQAPP	Programmatic Quality Assurance Project Plan
PWP	Programmatic Work Plan for Formerly Used Defense Sites (FUDS) Military Munitions Response Program (MMRP) Site Inspections at Multiple Sites in the Northeast Region
PWS	Performance Work Statement
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
QL	Quantitation Limit
RDX	Hexahydro-1,3,5-trinitro-1,3,5-triazine
RI/FS	Remedial Investigation/Feasibility Study
RL	Reporting Limit
SI	Site Inspection
SS-FSP	Site-Specific Field Sampling Plan
SS-SAP	Site-Specific Sampling and Analysis Plan
SS-WP	Site-Specific Work Plan
SS-QAPP	Site-Specific Quality Assurance Project Plan
TAL	Target Analyte List
TBD	To Be Determined
TCRA	Time Critical Removal Action
TPP	Technical Project Planning
U.S.	United States
USACE	United States Army Corps of Engineers
USAESCH	US Army Engineering and Support Center, Huntsville
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
UXO	Unexploded Ordnance

INTRODUCTION

Unites States Army Engineering Support Center Huntsville (USAESCH), Military Munitions Center of Expertise (MMCX) prepared a Final Programmatic Sampling and Analysis Plan (PSAP) consisting of a Programmatic Field Sampling Plan (PFSP) and a Programmatic Quality Assurance Project Plan (PQAPP) for the Military Munitions Response Program (MMRP) Site Inspection (SI) of MMRP eligible sites at various Formerly Used Defense Sites (FUDS) across the United States. This PSAP, dated October 2005, was included as Appendix E.1 to the *Programmatic Work Plan for Formerly Used Defense Sites (FUDS) Military Munitions Response Program (MMRP) Site Inspections at Multiple Sites in the Northeast Region* (PWP) [Alion 2005]. An addendum to the PSAP (Appendix E.2 to the PWP) provides additional direction to guide sampling procedures and addresses changes to the PSAP.

This Site-Specific Sampling and Analysis Plan (SS-SAP) to the PSAP provides specific information and operating procedures applicable to sampling and analytical activities to be performed as part of the SI at the former Seal Island Gunnery Range. This SAP provides additional direction to guide sampling procedures and addresses any changes to the PSAP. The SS-SAP should not be considered a stand-alone document from the PSAP, but rather it will be used by project personnel along with the PSAP to plan site-specific activities.

FINAL

SITE-SPECIFIC FIELD SAMPLING PLAN FOR THE SITE INSPECTION OF THE SEAL ISLAND GUNNERY RANGE

APRIL 2006

1.0 INTRODUCTION

This Site-Specific Field Sampling Plan (SS-FSP) has been prepared to address specific issues associated with the site inspection (SI) of the Seal Island Gunnery Range (Figure E.1-1). The SS-FSP should not be considered a stand-alone document from the PFSP, but rather it will be used by project personnel along with the PFSP to outline site-specific activities.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

Program roles are discussed in the PWP. Roles and responsibilities for the SI activities are defined in Table E.1-1. This information includes information presented in Section 2.0 of the Site-Specific Work Plan (SS-WP).

TABLE E.1-1. Alion Team Contacts

Position	Name	Phone/e-mail
Program Manager	Mr. Roger Azar	**301-399-7304** **razar@alionscience.com**
Project Manager	Mr. Timothy Reese	**410-329-5142** **treese@eaest.com**
Health and Safety Manager	Mr. Curtis Mitchell	**301-399-7304** **RMitchell@hfactors.com**
Team Leader	Ms. Ivy Able	**410-329-5114** **Iable@eaest.com**
Team Chemist	Mr. Dan Hinckley	**410-771-4950 ext. 5149** **Dhinckley@eaest.com**
Sampling Technician	TBD	TBD

The site-specific schedule (Appendix B, Figure B-3) outlines the anticipated timeline for SI activities regarding the former Seal Island Gunnery Range. The field activities on Seal Island are expected to total two days.

3.0 PROJECT SCOPE AND OBJECTIVES

Project objectives mirror those outlined in the PWP (Alion 2005). The overall project scope is outlined below.

3.1 Munitions and Explosives of Concern

Based on previous investigations, the presence of munitions and explosives of concern (MEC) has been documented at the site. Therefore, surface inspections will be conducted to locate MEC during field activities. In addition, as outlined in the PWP and SS-WP, MEC avoidance will be utilized during site reconnaissance and sampling activities in accordance with health and safety procedures. MEC locations will be documented using GPS and if necessary, Alion will notify USACE of situations involving MEC which may require an emergency removal action. In accordance with the performance work statement (PWS) no intrusive activities are planned for MEC.

3.2 Munitions Constituents

As outlined in the PWP and SS-WP, sampling will be conducted to determine the presence/absence of munitions constituents (MC) at the site. Tables E.1-4A, E.1-4B, and E.1-4C list the samples and analysis planned for the former Seal Island Gunnery Range.

4.0 NON-MEASUREMENT DATA ACQUISITION

This section addresses to additional site-specific data that will be used to guide sampling activities as well as help determine follow-on actions at a particular FUDS. This nonmeasurement data include information pertaining to site description (to include site layout, site boundary and site security); physical characteristics of the site (to include climate, geology and soils, topography, hydrology [groundwater and surface water]), land use/exposure (to include local relevant habitats, threatened and endangered species, current and future land use, demographics) and MC/MEC release and exposure information. This information was presented in Sections 1 and 7 of the Seal Island Gunnery Range SS-WP using information obtained during previous investigations and recent historical searches.

4.1 Rationale for Non-Direct Measurement

The Alion Team will utilize existing non-direct measurement data from various sources to fulfill selected programmatic requirements of the SIs of Multiple Sites in the Northeast Region. According to Environmental Protection Agency (EPA) Guidelines (EPA 2002):

- “Non-direct measurements refer to data and other information that have been previously collected or generated under some effort outside the specific project

being addressed by the QA Project Plan. Examples include computer databases, literature files, and software processing. Frequently, using existing data rather than generating new data is sufficient to meet the needs of some phases of the modeling process."

Certain existing data will be sufficient to meet the needs of this project and include data involving site demographics, topography, climate, vegetation, geology, soils, hydrology, and history. Potential non-direct measurement sources to be used during the SIs include, but are not limited to:

- Site-specific information from the U.S. Army Corps of Engineers (USACE) documents provided to Alion [i.e. Archive Search Report (ASR), Inventory Project Report (INPR), Supplemental ASR, etc.]

- Site-specific demographic and climatic data from the U.S. Census Bureau

- Site-specific geology, hydrology, and soil information from the U.S. Geological Survey (USGS)

- Site-specific aerial maps, topography, and land use from the U.S. Department of Agriculture (USDA)

- Site-specific information on Threatened and Endangered (T&E) Species from the appropriate state and federal regulatory agencies.

4.2 Criteria for Non-Direct Measurement

All non-direct measurement data will need to meet several acceptance criteria for a given project. Non-direct measurement data acceptance criteria will include:

- The use of reputable sources

- Data comparison between multiple sources (if available)

- Senior Technical Review from an expert in the applicable field

- Independent expert evaluation (3rd party review).

4.2.1 Use of Reputable Sources

The Alion Team will ensure that all information is gathered from reputable sources by utilizing government sponsored resources as the primary/initial data source. In the case of an internet search on site-specific geology, for example, government websites such as the USGS or other state and locally sponsored websites will serve as the principal source of information. All sources will be cited in text and referenced in the reference section of the site-specific work plans and reports.

4.2.2 Multiple Data Source Comparison

The Alion Team will compare multiple sources of the same information, when available, to ensure the accuracy of the facts presented in the SI reports. For example, Alion will compare the T&E species information presented in the ASR with updated information provided by state and federal regulatory agencies.

4.2.3 Senior Technical Review

In-house experts will provide an initial Senior Technical Review on the non-direct information gathered during the SIs. For example, site-specific geologic information will be reviewed by a geologist from the Alion Team to ensure the completeness, accuracy, and reliability of the data.

4.2.4 Independent Expert Evaluation

An independent (3rd party) evaluation will be conducted by qualified persons who have not been involved in the preparation of the project specific documents and who are under a separate supervision from those involved in the preparation of the SI's. For example, a Senior Alion Team reviewer, not working directly on the SI program, will be given the opportunity to review and evaluate the SS-WPs for relevance, completeness, and accuracy.

5.0 FIELD ACTIVITIES

5.0.1 Pending approval of the SS-WP and weather conditions, the field activities for the site inspection (SI) of Seal Island are scheduled to take place during the first two weeks of April 2006. The field work portion of the SI for Seal Island will be completed using

two members of the Alion Team and personnel from the U.S. Fish and Wildlife Service (FWS). The FWS personnel will guide the team during field sampling activities to prevent unnecessary disturbances to the wildlife and their habitat. The Alion Team will arrive in Rockland, Maine on 3 April 2006 to meet with the FWS personnel in preparation for departing to Seal Island on 4 April 2006. Field sampling activities are anticipated to take one or two days. These activities will include the collection of background samples from a neighboring island (either Matinicus Rock or Little Spoon). FWS personnel will provide transportation to Seal and neighboring island.

5.0.2 Field activities will be conducted in accordance with the procedures outlined in the PSAP and Addendum (Appendix E.1 and E.2 of the PWP). Information pertaining to the specific samples that will be collected on Seal Island is further detailed below in Sections 5.1 through 5.6. GPS locations and sampling locations descriptions are found in Table E.1-2.

Table E.1-2. Sampling Location Descriptions.

Location	Sampling ID	Coordinates (NAD 83, UTM Zone 19 North)		Area of interest
		Easting (m)	Northing (m)	
Region One	SI-R1-SS-02-01	520050.1794	4859073.9426	Near proposed target, in low lying area where runoff would accumulate.
	SI-R1-SS-02-02	520021.8681	4859154.4292	Near proposed target, in low lying area where runoff would accumulate.
	SI-R1-SS-02-03	520137.2374	4859184.7308	Near proposed target, in low lying area where runoff would accumulate.
Region Two	SI-R2-SS-02-04	520237.2078	4859124.3492	Valley between region one and two where runoff would accumulate.
	SI-R2-SS-02-05	520503.1485	4859106.7222	Base of grassy slope where runoff would accumulate.
	SI-R2-SS-02-06	520585.7778	4859159.9772	Base of grassy slope where runoff would accumulate.
	SI-R2-SS-02-07	520701.7282	4859220.9161	Base of grassy slope where runoff would accumulate.
Region Three	SI-R3-SS-02-08	521317.7269	4859658.7793	Base of grassy slope where runoff would accumulate.
	SI-R3-SS-02-09	521401.2612	4859837.8197	Relatively flat, northern, grassy part of island, near the coast.
	SI-R3-SS-02-10	521371.3061	4859999.8400	Northern, grassy part of island, near the coast.
	SI-R3-SD-02-01	521399.2751	4859655.7627	From the bottom of the only pool of fresh water on the island.
	SI-R3-SW-00-01	521401.0203	4859654.3036	From the only pool of fresh water on the island.
Little Spoon Island	SI-BG-SS-02-01	TBD	TBD	Neighboring island with similar geology.
	SI-BG-SS-02-02	TBD	TBD	Neighboring island with similar geology.
	SI-BG-SS-02-03	TBD	TBD	Neighboring island with similar geology.

5.1 Background Samples

Typically background samples are collected in areas within site boundaries (or on properties neighboring the site) that are not anticipated to be impacted by constituents of potential concern. Background samples will be analyzed for TAL metals only and are necessary to establish a baseline level of metal concentrations for the area. At Seal Island, the entire area could be contaminated; therefore background samples will be collected from a nearby island with similar geological characteristics. During the TPP (USACE 2006) Little Spoon Island, which is approximately 12 miles from Seal Island, was determined to be the most appropriate location for background samples. Little Spoon Island is part of the Maine Coastal Islands National Wildlife Refuge and it is uninhabited. As an island with very little human influence it is the ideal location for background samples. In the event Little Spoon Island cannot be reached due to weather constraints Matinicus Island will be used for background samples. Matinicus Island, which is inhabited, is approximately seven miles from Seal Island and has similar geological characteristics.

5.2 Surface Soil

Ten surface soil samples taken from a depth of 2" will be collected on Seal Island during the SI. These sample locations are shown in Figure E.1-2. These are the anticipated sample locations that may require adjustments in the field due to unforeseen circumstances.

5.3 Subsurface Soil

Subsurface soil samples will not be collected during the SI.

5.4 Sediment

One sediment sample will be collected from the bottom of the pool of fresh water that exists on Seal Island. The location of this sample is shown in Figure E.1-2.

5.5 Surface Water

One surface water sample will be collected from the pool of fresh water that exists on Seal Island as shown in Figure E.1-2.

5.6 Groundwater

Groundwater samples will not be collected during the SI.

6.0 FIELD OPERATIONS DOCUMENTATION

Field operations for SI activities at the former Seal Island Gunnery Range will be documented in accordance with the PFSP. Table E.1-3 detail the location, matrix sampled, sampling ID, types of analyses, and number of samples to be collected, including those for QC purposes. Adjustments to these plans may be necessary in the field due to unforeseen circumstances. Deviations from the PFSP (or the SS-FSP) during field work will be documented in the field notebook along with an explanation for the modification.

TABLE E.1-3. Sample Identification Table

Location	Sampling ID	Matrix			MC sampled		Quality Control Samples*			
		Soil	Sediment	Surface Water	Metals	Explosive	Field Duplicate[1]	QA Split[2]	MS[3]	MSD[4]
Region 1	SI-R1-SS-02-01	X			X	X	X	X	X	X
	SI-R1-SS-02-02	X			X	X				
	SI-R1-SS-02-03	X			X	X				
Region 2	SI-R2-SS-02-01	X			X	X				
	SI-R2-SS-02-02	X			X	X				
	SI-R2-SS-02-03	X			X	X				
	SI-R2-SS-02-04	X			X	X				
Region 3	SI-R3-SS-02-01	X			X	X				
	SI-R3-SS-02-02	X			X	X				
	SI-R3-SS-02-03	X			X	X				
	SI-R3-SD-02-01		X		X	X	X	X	X	X
	SI-R3-SW-00-01			X	X	X	X	X	X	X
Little Spoon Island	SI-BG-SS-02-01	X			X		X	X		
	SI-BG-SS-02-02	X			X					
	SI-BG-SS-02-03	X			X					
Totals		13	1	1	15	12	4	4	3	3

*For each QC sample, the marked sample type will be gathered for every MC category that is being sampled. One equipment blank will be run per day per equipment type.

1 FD# will replace sample ID (the sample ID and its corresponding FD# will be indicated in the field notebook).

2 QA will be added to sample ID to indicate QA split.

3 MS will be added to sample ID to indicate MS.

4 MSD will be added to sample ID to indicate MSD.

7.0 SAMPLE HANDLING

Samples collected during the SI activities at the former Seal Island Gunnery Range will be handled as outlined in the PFSP. Tables E.1-4A, E.1-4B, and E.1-4C provide additional information regarding preservatives, sample container types, and allowable sample holding times.

TABLE E.1-4A. Analytical Parameters, Methods, Standards, and Total Number of Soil Analyses

Compound	Analytical Method	Prep Method	Preservative	Sample Container Type	Holding Times	Number of Soil Samples	Field Duplicates	QA Splits	MS[1]	MDS[1]	Equipment Blanks[2]	Total Analyses
Explosives												
RDX; HMX; 2,4,6-Trinitrotoluene; 1,3,5-Trinitrobenzene; 1,3-Dinitrobenzene; 2,4-Dinitrotoluene; 2,6-Dinitrotoluene ; 2-Amino-4,6-dinitrotoluene; 2-Nitrotoluene; 3-Nitrotoluene; 4-Amino-2,6-dinitrotoluene; 4-Nitrotoluene; Nitrobenzene	SW-846 8330	8330A	Cool to 4°C	1 4 oz wide-mouth glass jar w/ Teflon-lined cap (250 grams)	14/40 days[a]	13	2	2	1	1	0	19
Tetryl Nitroglycerin	8332											
PETN	8330M	8330A										
Metals												
Aluminum; Antimony; Arsenic; Barium; Beryllium; Cadmium; Calcium; Chromium; Cobalt; Copper; Iron; Lead; Magnesium; Manganese; Mercury; Molybdenum; Nickel; Potassium; Selenium; Silver; Sodium; Thallium; Tin; Titanium; Vanadium; Zinc; Strontium	ILM05.3 or SW-846 6010B/7471	3050B	Cool to 4°C	1 4 oz wide-mouth glass jar w/ Teflon-lined cap (25 grams)	180/28 days[b]	13	2	2	1	1	0	19
Zirconium	6020 (ICP/MS)	3050M										

[a]Number of days between sample collection and extraction/number of days between extraction and analysis
[b]Holding time applies to mercury only
[1]Indicates number of bottles
[2]Disposable sampling equipment will be used; therefore equipment blanks will not be necessary.

Field Duplicates, 1:10 (10%)
QA Splits, 1:10 (10%)
MS/MSD, 1:20 (5%)
Equipment Blank, 1/day
Temperature Blank, 1/cooler

TABLE E.1-4B. Analytical Parameters, Methods, Standards, and Total Number of Sediment Analyses

Compound	Analytical Method	Prep Method	Preservative	Sample Container Type	Holding Times	Number of Sediment Samples	Field Duplicates	QA Splits	MS [1]	MSD [1]	Equipment Blanks [2]	Total Analyses
Explosives												
RDX; HMX; 2,4,6-Trinitrotoluene; 1,3,5-Trinitrobenzene; 1,3-Dinitrobenzene; 2,4-Dinitrotoluene ; 2,6-Dinitrotoluene; 2-Amino-4,6-dinitrotoluene; 2-Nitrotoluene; 3-Nitrotoluene; 4-Amino-2,6-dinitrotoluene; 4-Nitrotoluene; Nitrobenzene	SW-846 8330	8330A	Cool to 4°C	1 4 oz wide-mouth glass jar w/ Teflon-lined cap (250 grams)	14/40 days[a]	1	1	1	1	1	0	5
Tetryl Nitroglycerin	8332											
PETN	8330M	8330A										
Metals												
Aluminum; Antimony; Arsenic; Barium; Beryllium; Cadmium; Calcium; Chromium; Cobalt; Copper; Iron; Lead; Magnesium; Manganese; Mercury; Molybdenum; Nickel; Potassium; Selenium; Silver; Sodium; Thallium; Tin; Titanium; Vanadium; Zinc; Strontium	ILM05.3 or SW-846 6010B/7471	3050B	Cool to 4°C	1 4 oz wide-mouth glass jar w/ Teflon-lined cap (25 grams)	180/28 days[b]	1	1	1	1	1	0	5
Zirconium	6020 (ICP/MS)	3050M										

[a]Number of days between sample collection and extraction/number of days between extraction and analysis
[b]Holding time applies to mercury only
[1]Indicates number of bottles
[2] Only one surface sediment sample will be collected; therefore an equipment blank is not necessary.

Field Duplicates, 1:10 (10%)
QA Splits, 1:10 (10%)
MS/MSD, 1:20 (5%)
Equipment Blank, 1/day
Temperature Blank, 1/cooler

TABLE E.1-4C. Analytical Parameters, Methods, Standards, and Total Number of Surface Water Analyses

Compound	Analytical Method	Prep Method	Preservative	Sample Container Type	Holding Times	Number of Surface Water Samples	Field Duplicates	QA Splits	MS[1]	MSD[1]	Equipment Blanks[2]	Total Analyses
Explosives												
RDX; HMX; 2,4,6-Trinitrotoluene; 1,3,5-Trinitrobenzene; 1,3-Dinitrobenzene; 2,4-Dinitrotoluene ; 2,6-Dinitrotoluene ; 2-Amino-4,6-dinitrotoluene; 2-Nitrotoluene; 3-Nitrotoluene; 4-Amino-2,6-dinitrotoluene; 4-Nitrotoluene; Nitrobenzene; Tetryl Nitroglycerin	SW-846 8330	8330A	Cool to 4°C	2 1-L amber bottle	7/40 days[a]	1	1	1	1	1	0	5
PETN	8330M											
Metals												
Aluminum; Antimony; Arsenic; Barium; Beryllium; Cadmium; Calcium; Chromium; Cobalt; Copper; Iron; Lead; Magnesium; Manganese; Mercury; Molybdenum; Nickel; Potassium; Selenium; Silver; Sodium; Thallium; Tin; Titanium; Vanadium; Zinc Strontium; Zirconium	ILM05.3 or SW-846 6020 (ICP/MS)/7471	3010A	PH<2, HNO_3, Cool to 4°C	1 1-L plastic bottle	180/28 days[b]	1	1	1	1	1	0	5

[a]Number of days between sample collection and extraction/number of days between extraction and analysis
[b]Holding time applies to mercury only
[1]Indicates number of bottles
[2] Only one surface water sample will be collected; therefore an equipment blank is not necessary.

Field Duplicates, 1:10 (10%)
QA Splits, 1:10 (10%)
MS/MSD, 1:20 (5%)
Equipment Blank, 1/day
Temperature Blank, 1/cool

8.0 INVESTIGATIVE DERIVED WASTE

Investigative derived waste (IDW) generation for MC sampling will be minimized by following the EPA policy guidance for IDW (EPA 1992). Specifically the only IDW anticipated, which will be from dedicated disposal equipment, will be disposed of as general refuse.

9.0 QUALITY ASSESSMENT/THREE PHASE INSPECTION PROCEDURES

Quality assessment/three phase inspection procedures will be conducted in accordance with the procedures outlined in the PFSP.

10.0 NONCONFORMANCE/CORRECTIVE ACTION

Nonconformance/corrective action issues will be addressed in accordance with the procedures outlined in the PFSP.

FINAL

SITE-SPECIFIC QUALITY ASSURANCE PROJECT PLAN FOR THE SITE INSPECTION OF THE SEAL ISLAND GUNNERY RANGE

APRIL 2006

1.0 INTRODUCTION

Sampling and analytical activities conducted as part of the SI for the Seal Island Gunnery Range will follow the procedures outlined in the programmatic quality assurance project plan (QAPP) located in Appendix E.1 of the PWP (Alion 2005). To achieve the quality of data required to meet the FUDS program site-specific goals both qualitative and quantitative statements known as Data Quality Objectives (DQOs), must be developed for every site to ensure data obtained is legally and scientifically sound and will support its intended uses to make project decisions. The DQO process for Seal Island is discussed below.

2.0 DQO PROCESS

2.1 TPP Process

The technical project planning (TPP) process (USACE 1998b) is used to identify project data quality objectives and support development of a data collection programs that ensures the requisite type, quality, and quantity of data are obtained. The resulting data from this process will allow for informed site closeout decisions. During the TPP session for Seal Island the chemical-specific DQOs were evaluated and determined appropriate, along with the programmatic DQOs. The decisions and outcome of the TPP were recorded in the TPP Memorandum (Alion 2006) and the most up to date information has been included in the SS-FSP, SS-QAPP, and the SS-WP.

The DQO process includes three stages, namely,

- Identify decision types (Stage 1)
- Identify data uses and needs (Stage 2)
- Design Data and Collection Program (Stage 3)

Each of these steps are discussed below.

2.2 Identify Decision Types – Stage 1

At Seal Island the data users are as follows:

- Data Collection – The Alion Team is responsible for data collection concerning the SI

- Sample Analysis – GPL Laboratories, LLLP, is responsible for the data analysis

- Review of Inspection Results – Environmental Data Services, Inc. (EDS) is responsible for reviewing and validating the data acquired during the SI

- Interpretation of Results – The Alion Team will interpret the results of the inspection and include the interpretation in the SI report

- Final Data – USACE, the regulatory community, and the stakeholders will determine further action based on the site data, assessment results, and associated recommendations.

The existing data for Seal Island are provided in Section 1 of the SS-WP. Information regarding previous investigations and the resulting data is included in Section 1.8. These data are limited in that there is no documentation indicating whether the soil, sediment, or water was sampled for MC during previous investigations. The MEC debris reported throughout the island confirms that there is potential for residual MC to exist in the soil and surface water. Additional data are necessary to determine and validate the future course of action at this site.

2.3 Identify Data Uses and Needs – Stage 2

The TPP and conceptual site module (CSM) are the basis for determining data uses and data needs. A preliminary CSM included in Appendix I of the SS-WP identifies the potential pathways and receptors present on Seal Island. This preliminary CSM, along with the DQOs, were reviewed and no changes were identified during the TPP.

The specific data needs for Seal Island, which include soil samples, sediment samples, and surface water samples, were identified using the preliminary CSM. During the SI ten soil samples, one sediment sample, and one surface water sample will be collected and analyzed for TAL metals and explosives (refer to Tables E.1-5A and E.1-5B). Additional samples are proposed for quality assurance purposes. The proposed sampling locations, shown in Figure E.1-2 of the FSP, were positioned in areas that are most likely to have MC present. Data will be generated using methods and procedures documented in this

SS-WP to accurately depict MC hazards that may or may not exist on Seal Island, and provide a basis for validating or revising pathways that were identified in the preliminary CSM (refer to Tables E.1-4A, E.1-4B, and E.1-4C).

Given that the MEC that was used historically on Seal Island, the chemical-specific DQOs have been modified to include only TAL metals and explosives. These analytes are presented in Tables E.1-5A and E.1-5B. Note that not all the explosives that are on the SW 8330 method were used historically at the site; however, the entire suite of explosive analytes will be documented. ME DEP human health and ecological screening values have been identified for residential soil, sediment, surface water, and groundwater at the former Seal Island Gunnery Range. These values have been included in Tables E.1-5A through E.1-5B. While this site is located in EPA Region I, this region does not have preliminary remediation goals (PRGs). Therefore, when a state value was unavailable, EPA Region IX PRG's for soil were identified as potential screening criteria. The values in Tables E.1-5A through E.1-5B will be used for comparison of sampling results during the SI. In addition, the Preferred Method Maximum Quantitation Limits (half of the most stringent criteria) were identified to verify laboratory detection levels will achieve the project goals.

ME DEP has certified that GPL Laboratories LLLP has met the requirements of the regulations governing the certification of laboratories and environmental measurements and has been found compliant with the standards approved by the National Environmental Laboratory Accreditation Conference. The Laboratory Certification ID is available upon request.

QA split samples will be collected and submitted to a U.S. Army Corps of Engineers, North Atlantic-Baltimore (CENAB) approved laboratory for analysis. CENAB will identify the laboratory and provide this information to Alion prior to commencing field activities.

2.4 Design Data and Collection Program – Stage 3

Sampling methods for each media are described in detail in Section 5 Field Activities in the PFSP (Appendix E.1).

Tables E.1-4A through E.1-4C identify the analytical methods for each media for which samples are planned. The tables also provide details on preserving samples, sample containers, hold times, and numbers of quality control samples that will be collected.

2.5 Data Quality Objective Worksheets

The following site-specific programmatic DQOs have been developed for the Seal Island Gunnery Range and are presented in Worksheets 1-6:

- Determine the presence or absence of MEC
- Eliminate from further consideration those releases that pose no significant threat to public health or the environment by collecting adequate samples to assess the presence or absence of MC at the site
- Determine the potential need for a TCRA by collecting data from previous investigations/reports, site visits, and geophysics
- Collect, or develop, additional data, as appropriate, for Hazard Ranking System (HRS) scoring by the EPA
- Collect data, as appropriate, to characterize the release for effective and rapid initiation of the Remedial Investigation and Feasibility Study (RI/FS)
- Collect the additional data necessary to the complete the Munitions Response Site Prioritization Protocol (MRSPP)

The following DQO worksheets were developed based on the TPP process guidelines (USACE 1998b). The DQO process in this document is consistent with the 7 Step EPA DQO process (EPA 1996). The EPA 1996 7 Step DQO Process is consistent with the EPA 2000 and EPA 2006 process. A comparison of the EPA and USACE process is provided in USACE 1998b, Appendix E. The DQO worksheets have been developed in order to define the performance criteria that limit the probabilities of making decision errors by considering the intended data uses, defining the appropriate type of data needed, and specifying the appropriate sampling and analysis methods. These site-specific DQOs will be evaluated throughout the SI Process to determine if DQOs are achieved during the

SI. A DQO attainment verification worksheet will be included in the SI Report. Chemical-specific DQOs for the Seal Island Gunnery Range are presented in Tables E.1-5A through E.1-5B.

Data Quality Objective Worksheet

Site: **Seal Island Gunnery Range**
Project: FUDS MMRP SI Project Number **D01ME003200**
DQO Statement Number: **1 of 6**

DQO Element Description	Site-Specific DQO Statement
Intended Data Use(s):	
Project Objective(s) Satisfied	Determine the presence or absence of MEC
Data Needs Requirements:	
Data User Perspective(s)	Risk-MEC, Compliance
Contaminant or Characteristic of Interest	Conduct a site reconnaissance and visual search as depicted on CSM Layer 7 located in Appendix I of the SS-WP using a trained Unexploded Ordnance (UXO) Technician with a handheld analog magnetometer searching for physical evidence to indicate the presence of MEC (i.e. MEC on surface, munitions debris, soil discoloration etc.).
Media of Interest	Surface Soil, Sediment, and Surface Water
Required Sampling Locations or Areas	Historical targets and areas where MEC has been identified historically (Refer to Table 3-1 of the SS-WP)
Number of Samples Required	Not Applicable (N/A)
Reference Concentration of Interest or Other Performance Criteria	If one piece of MEC is found with the magnetometer or if physical evidence indicating the presence of MEC is found during the visual inspection, then a RI/FS may be recommended. If no anomalies are found, or if the UXO Technician indicates that there is no potential hazard from MEC, then MEC found previously may be considered an anomaly and No Department of Defense Action Indicated (NDAI) will be recommended.
Appropriate Sampling and Analysis Methods:	
Sampling Method and Depths	Geophysics with a handheld analog magnetometer.
Analytical Method	N/A

Data Quality Objective Worksheet

Site: **Seal Island Gunnery Range**
Project: FUDS MMRP SI Project Number **D01ME003200**
DQO Statement Number: **2 of 6**

DQO Element Description	Site-Specific DQO Statement
Intended Data Use(s):	
Project Objective(s) Satisfied	Eliminate from further consideration those releases that pose no significant threat to public health or the environment by collecting adequate samples to assess the presence or absence of MC at the site.
Data Needs Requirements:	
Data User Perspective(s)	Risk-MC, Compliance
Contaminant or Characteristic of Interest	Metals and explosives are tabulated in the chemical-specific DQO Tables E.1-5A-E.1-5B of this SS-SAP.
Media of Interest	Surface Soil, Sediment, and Surface Water
Required Sampling Locations or Areas	Historical targets and areas where MEC has been identified historically (Refer to Table 3-1 of the SS-WP)
Number of Samples Required	13 soil samples (including 3 background samples), 1 sediment sample, and 1 surface water sample are detailed in Table E.1-3 of this SS-SAP (May be subject to change due to anomalies identified during meandering geophysical activities)
Reference Concentration of Interest or Other Performance Criteria	Preferred Maximum Method Quantitation Limits (PMMQL) are specified in the chemical-specific DQO Tables E.1-5A-E.1-5B of this SS-SAP. If sample results for all analytes are below PMMQL (action levels), NDAI will be recommended. If any samples exceed the PMMQL (action levels) and are greater than background levels (for metals), RI/FS may be recommended.
Appropriate Sampling and Analysis Methods:	
Sampling Method and Depths	Sampling methods for each media are described in detail in Section 5 Field

Data Quality Objective Worksheet	
Site: **Seal Island Gunnery Range** Project: FUDS MMRP SI Project Number **D01ME003200** DQO Statement Number: **2 of 6**	
DQO Element Description	**Site-Specific DQO Statement**
	Activities in the PFSP (Appendix E.1).
Analytical Method	The following analytical methods are detailed in Table E.1-4A-E.1-4C of this SS-SAP. Explosives Method - SW8330, SW8330M, SW8332; Metals Method - SW6010, SW7471. Explosives Prep Method – 8330A; Metals Prep Method – 3050B/3050M.

Data Quality Objective Worksheet

Site: **Seal Island Gunnery Range**
Project: FUDS MMRP SI Project Number D01ME003200
DQO Statement Number: **3 of 6**

DQO Element Description	Site-Specific DQO Statement
Intended Data Use(s):	
Project Objective(s) Satisfied	Determine the potential need for a TCRA by collecting data from previous investigations/reports, site visits, and geophysics.
Data Needs Requirements:	
Data User Perspective(s)	Risk-MEC, Compliance
Contaminant or Characteristic of Interest	Conduct a site reconnaissance and visual search as depicted on CSM Layer 7 located in Appendix I of the SS-WP using a trained UXO Technician with a handheld analog magnetometer searching for physical evidence to indicate the presence of MEC requiring TCRA
Media of Interest	Surface Soil, Sediment, Surface Water
Required Sampling Locations or Areas	Historical targets and areas where MEC has been identified historically (Refer to Table 3-1 of the SS-WP)
Number of Samples Required	N/A
Reference Concentration of Interest or Other Performance Criteria	If there is a complete pathway between source and receptor and the MEC constitutes an imminent threat to the local populace or site personnel, the Alion Team will immediately notify the Military Munitions Design Center Project Manager at USACE and the property owner. The Military Munitions Design Center Project Manager will then coordinate with the Military Munitions Design Center Ordnance and Explosives Safety Lead and the property owner. The local law enforcement will be contacted by the property owner. Additionally, the Alion Team will secure the area until directed otherwise by USACE.

Data Quality Objective Worksheet	
Site: **Seal Island Gunnery Range** Project: FUDS MMRP SI Project Number D01ME003200 DQO Statement Number: **3 of 6**	
DQO Element Description	**Site-Specific DQO Statement**
Appropriate Sampling and Analysis Methods:	
Sampling Method and Depths	Geophysics with a handheld analog magnetometer.
Analytical Method	N/A

Data Quality Objective Worksheet	
Site: **Seal Island Gunnery Range**	
Project: FUDS MMRP SI Project Number **D01ME003200**	
DQO Statement Number: **4 of 6**	
DQO Element Description	**Site-Specific DQO Statement**
Intended Data Use(s):	
Project Objective(s) Satisfied	Collect, or develop, additional data, as appropriate, for Hazard Ranking System (HRS) scoring by Environmental Protection Agency (EPA).
Data Needs Requirements:	
Data User Perspective(s)	Risk-MEC and MC, Compliance
Contaminant or Characteristic of Interest	Data for HRS worksheet parameters will be compiled by gathering basic identifying information, general site description, site type, waste description, demographics, water use, sensitive environments, and response actions.
Media of Interest	Surface Soil, Sediment, and Surface Water.
Required Sampling Locations or Areas	Historical targets and areas where MEC has been identified historically (Refer to Table 3-1 of the SS-WP)
Number of Samples Required	N/A
Reference Concentration of Interest or Other Performance Criteria	The HRS levels of contamination are Level I (concentrations that meet the criteria for actual contamination and are at or above media-specific benchmark levels), Level II (concentrations that either meet the criteria for actual contamination but are less than media-specific benchmarks, or meet the criteria for actual contamination based on direct observation), and Potential (no observed release is required but targets must be within the target distance limit). These levels are weighted for each target by EPA (Level I carries the greatest weight) and scores of 28.5 or above are then eligible for listing on the National

Data Quality Objective Worksheet	
Site: **Seal Island Gunnery Range**	
Project: FUDS MMRP SI Project Number **D01ME003200**	
DQO Statement Number: **4 of 6**	
DQO Element Description	**Site-Specific DQO Statement**
	Priorities List (NPL).
Appropriate Sampling and Analysis Methods:	
Sampling Method and Depths	Data gathering prior to field activities as well as additional data gathered during field reconnaissance and sampling. Refer to NPL Characteristics Data Collection Form, version 3.0, December 2001.
Analytical Method	N/A

Data Quality Objective Worksheet

Site: **Seal Island Gunnery Range**
Project: FUDS MMRP SI Project Number **D01ME003200**
DQO Statement Number: **5 of 6**

DQO Element Description	Site-Specific DQO Statement
Intended Data Use(s):	
Project Objective(s) Satisfied	Collect data, as appropriate, to characterize the release for effective and rapid initiation of the Remedial Investigation and Feasibility Study (RI/FS).
Data Needs Requirements:	
Data User Perspective(s)	Risk-MEC and MC, Compliance
Contaminant or Characteristic of Interest	MEC and MC
Media of Interest	Surface Soil, Sediment, and Surface Water
Required Sampling Locations or Areas	Historical targets and areas where MEC has been identified historically (Refer to Table 3-1 of the SS-WP)
Number of Samples Required	N/A
Reference Concentration of Interest or Other Performance Criteria	If one piece of MEC is found with the magnetometer or if physical evidence indicating the presence of MEC is found during the visual inspection, then RI/FS may be recommended. If any samples exceed the PMMQL (action levels) and are greater than background levels (for metals), RI/FS will be recommended.
Appropriate Sampling and Analysis Methods:	
Sampling Method and Depths	For MEC, geophysics with a handheld analog magnetometer; For MC, Sampling methods for each media are described in detail in Section 5 Field Activities in the PFSP (Appendix E.1).
Analytical Method	N/A

Data Quality Objective Worksheet

Site: **Seal Island Gunnery Range**
Project: FUDS MMRP SI Project Number D01ME003200
DQO Statement Number: **6 of 6**

DQO Element Description	Site-Specific DQO Statement
Intended Data Use(s):	
Project Objective(s) Satisfied	Collect the additional data necessary to the complete the Munitions Response Site Prioritization Protocol (MRSPP).
Data Needs Requirements:	
Data User Perspective(s)	Risk-MEC and MC, Compliance
Contaminant or Characteristic of Interest	Explosive Hazard Evaluation (EHE), Chemical Warfare Material Hazard Evaluation (CHE), and Health Hazard Evaluation (HHE). For the EHE and CHE modules, factors evaluated include the details of the hazard, accessibility to the Munitions Response Site (MRS), and receptor information. HHE factors include an evaluation of MC and any non-munitions-related incidental contaminants present, receptor information, and details pertaining to environmental migration pathways. Typical information compiled includes details pertaining to historical use, current/future use and ownership, cultural/ecological resources, and structures.
Media of Interest	Surface Soil, Sediment, and Surface Water.
Required Sampling Locations or Areas	Historical targets and areas where MEC has been identified historically (Refer to Table 3-1 of the SS-WP)
Number of Samples Required	N/A
Reference Concentration of Interest or Other Performance Criteria	A MRS priority is determined by USACE based on integrating the ratings from the EHE, CHE, and HHE modules. Refer to Federal Register/Vol. 70, No. 192/Wednesday, October 5, 2005/Rules and Regulations.

Data Quality Objective Worksheet	
Site: **Seal Island Gunnery Range** Project: FUDS MMRP SI Project Number D01ME003200 DQO Statement Number: **6 of 6**	
DQO Element Description	**Site-Specific DQO Statement**
Appropriate Sampling and Analysis Methods:	
Sampling Method and Depths	Data gathering prior to field activities as well as additional data gathered during field reconnaissance and sampling. Refer to Federal Register/Vol. 70, No. 192/Wednesday, October 5, 2005/Rules and Regulations.
Analytical Method	N/A

Table E.1-5A Potential Chemical-Specific Data Quality Objectives and Preferred Maximum Method Quantitation Limits for Soil / Sediment

Analyte	Abbreviation	CAS #	Human Health Screening Values				Most Stringent Human Health Criteria	Ecological Screening Values (Terrestrial) (mg/kg)	Ecological Screening Value Source	Preferred Maximum Method Quantitation Limit Soil (mg/kg)*	Lab MDL (mg/kg)	Lab Reporting Limit (mg/kg)
			Residential Soil (mg/kg)		Industrial Soil (mg/kg)							
			ME-DHS MEG	Region IX PRG	ME-DHS MEG	Region IX PRG						
Hexahydro-1,3,5-trinitro-1,3,5-triazine	RDX	121-82-4	-	4.4	-	16	4.4	5.8	A	2.2	0.021	0.063
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	HMX	2691-41-0	-	3100	-	31000	3100	43	H	22	0.00653	0.0532
2,4,6-Trinitrotoluene (4)	2,4,6-TNT	118-96-7	-	16	-	57	16	8	B	4.0	0.00673	0.0392
1,3,5-Trinitrobenzene	1,3,5-TNB	99-35-4	-	1800	-	18000	1800	0.38	F	0.19	0.00500	0.0200
1,3-Dinitrobenzene	1,3-DNB	99-65-0	-	6.1	-	62	6.1	0.66	F	0.33	0.00459	0.0200
2,4-Dinitrotoluene (1)	2,4-DNT	121-14-2	-	0.72	4	2.5	0.72	1.28	F	0.36	0.00407	0.0200
2,6-Dinitrotoluene (1)	2,6-DNT	606-20-2	-	0.72	4	2.5	0.72	0.033	F	0.017	0.00777	0.0399
2-Amino-4,6-dinitrotoluene	2-Am-DNT	35572-78-2	-	12	-	120	12	5.3	H	2.7	0.00926	0.0278
2-Nitrotoluene	2-NT	88-72-2	-	0.88	-	2.2	0.88	4.1	H	0.44	0.0234	0.0701
3-Nitrotoluene	3-NT	99-08-1	-	730	-	1000	730	5.3	H	2.7	0.0133	0.040
4-Amino-2,6-dinitrotoluene	4-Am-DNT	19406-51-0	-	12	-	120	12	-	-	6.0	0.0131	0.0395
4-Nitrotoluene	4-NT	99-99-0	-	12	-	30	12	9.4	H	4.7	0.0117	0.0400
Nitrobenzene	NB	98-95-3	-	20	520	100	20	40	C	10	0.00572	0.20
Nitroglycerin	NG	55-63-0	-	35	-	120	35	150	H	18	0.43	5.0
Methyl-2,4,6-trinitrophenylnitramine	Tetryl	479-45-8	-	610	-	6200	610	2	H	1.0	0.00832	0.0651
Pentaerythritol Tetranitrate	PETN	78-11-5	-	-	-	-	-	21000	H	10500	0.03943	0.500
Aluminum	Al	7429-90-5	-	76000	-	100000	76000	50	C	25	2.67	20.0
Antimony	**Sb**	**7440-36-0**	**-**	**31**	**-**	**410**	**31**	**0.30**	**A**	**0.15**	**3.40**	**20.0**
Arsenic	**As**	**7440-38-2**	**10**	**0.39**	**30**	**1.6**	**0.39**	**10**	**C**	**0.20**	**0.42**	**2.0**
Barium	Ba	7440-38-2	10000	5400	10000	67000	5400	330	A	165	0.16	2.0
Beryllium	Be	7440-41-7	4	150	10	1900	4	1.1	C	0.55	0.04	0.2
Cadmium	Cd	7440-43-9	27	37	23	450	23	1.6	C	0.80	0.02	0.6
Calcium	Ca	7440-70-2	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	3.57	100.0
Chromium (2)	Cr	7440-47-3	-	210	-	450	210	7.9	A	4.0	0.16	0.5
Cobalt	Co	7440-48-4	-	900	-	1900	900	13	A	6.5	0.07	0.5
Copper	Cu	7440-50-8	650	3100	600	41000	600	40	C	20	0.14	1.0
Iron	Fe	7439-89-6	-	23000	-	100000	23000	N/A	-	11500	9.69	15.0
Lead	Pb	7439-92-1	375	400	700	800	375	16	A	8.0	0.15	1.0
Magnesium	Mg	7439-95-4	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	1.15	25.0
Manganese	Mn	7439-96-5	-	1800	-	19000	1800	152	A	76	0.03	0.5
Mercury	Hg	7439-97-6	60	23	610	310	23	0.10	C	0.05	0.010	0.033
Molybdenum	Mo	7439-98-7	950	390	10000	5100	390	-	-	195	0.06	0.5

Table E.1-5A Potential Chemical-Specific Data Quality Objectives and Preferred Maximum Method Quantitation Limits for Soil / Sediment

Analyte	Abbreviation	CAS #	Human Health Screening Values				Most Stringent Human Health Criteria	Ecological Screening Values (Terrestrial) (mg/kg)	Ecological Screening Value Source	Preferred Maximum Method Quantitation Limit Soil (mg/kg)*	Lab MDL (mg/kg)	Lab Reporting Limit (mg/kg)
			Residential Soil (mg/kg)		Industrial Soil (mg/kg)							
			ME-DHS MEG	Region IX PRG	ME-DHS MEG	Region IX PRG						
Nickel	Ni	7440-02-0	3800	1600	10000	20000	1600	38	A	19	0.38	1.0
Potassium	K	7440-09-7	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	2.60	25.0
Selenium	Se	7782-49-2	950	390	10000	5100	390	0.50	A	0.25	0.22	2.0
Silver	Ag	7440-22-4	950	390	10000	5100	390	2.0	C	1.0	0.05	0.5
Sodium	Na	7440-23-5	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	41.00	250.0
Strontium	Sr	7440-24-6	-	47000	-	100000	47000	-	-	23500	0.03	0.5
Thallium	Tl	7440-28-0	-	5.2	-	67	5.2	1.0	C	0.50	0.33	3.0
Titanium	Ti	7440-32-6	-	100000	-	100000	100000	-	-	50000	2.50	2.5
Vanadium	V	7440-62-2	-	78	-	1000	78	2.0	C	1.0	0.13	1.0
Zinc	Zn	7440-66-6	1500	23000	1500	100000	1500	50	C	25	0.29	2.0
Zirconium	Zr	7440-67-7	-	-	-	-	-	-	-	-	TBD	10

Table E.1-5B Potential Chemical-Specific Data Quality Objectives and Preferred Maximum Method Quantitation Limits for Groundwater/Surface Water

Analyte	Abbreviation	CAS #	Human Health Screening Values Tap Water (ug/L)		Ecological Screening Values (ug/L)	Ecological Screening Value Source	Most Stringent Criteria (ug/L)	Preferred Maximum Method Quantitation Limit Aqueous (ug/L)*	Lab MDL (ug/L)	Lab Reporting Limit (ug/L)
			ME-DEP PAG	Region IX PRG						
Hexahydro-1,3,5-trinitro-1,3,5-triazine	RDX	121-82-4	-	0.61	360	E	0.61	0.31	0.17	0.77
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	HMX	2691-41-0	-	1800	150	E	150	75	0.090	0.40
2,4,6-Trinitrotoluene (4)	2,4,6-TNT	118-96-7	3.5	2.2	100	E	2	1	0.044	0.33
1,3,5-Trinitrobenzene	1,3,5-TNB	99-35-4	-	1100	11	G	11	5.5	0.031	0.21
1,3-Dinitrobenzene	1,3-DNB	99-65-0	-	3.6	20	G	1.0	0.50	0.042	0.20
2,4-Dinitrotoluene (1)	**2,4-DNT**	**121-14-2**	**0.5**	**0.099**	**310**	**C**	**0.099**	**0.049**	**0.066**	**1.04**
2,6-Dinitrotoluene (1)	**2,6-DNT**	**606-20-2**	**0.5**	**0.099**	**81**	**E**	**0.099**	**0.049**	**0.090**	**0.30**
2-Amino-4,6-dinitrotoluene	2-Am-DNT	35572-78-2	-	7.3	20	G	7.3	3.7	0.045	0.20
2-Nitrotoluene	**2-NT**	**88-72-2**	**-**	**0.049**	**-**	**-**	**0.049**	**0.023**	**0.051**	**0.40**
3-Nitrotoluene	3-NT	99-08-1	-	120	750	E	120	60	0.26	0.79
4-Amino-2,6-dinitrotoluene	4-Am-DNT	19406-51-0	-	7.3	-	-	7.3	3.7	0.058	0.20
4-Nitrotoluene	4-NT	99-99-0	-	0.66	1900	E	0.66	0.33	0.098	0.40
Nitrobenzene	NB	98-95-3	3.5	3.4	270	C	3.4	1.7	0.037	0.020
Nitroglycerin	NG	55-63-0	-	4.8	138	E	4.8	2.4	0.081	2.00
Methyl-2,4,6-trinitrophenylnitramine	Tetryl	479-45-8	-	360	5800	H	360	165	0.16	0.75
Pentaerythritol Tetranitrate	PETN	78-11-5	-	-	85000	E	85000	42500	0.08	1.30
Aluminum	**Al**	**7429-90-5**	**1430**	**36000**	**-**	**-**	**50**	**25**	**31.9**	**100**
Antimony	Sb	7440-36-0	3	15	6.0	D	6.0	3.0	0.17	1.0
Arsenic	**As**	**7440-38-2**	**10**	**0.045**	**0.14**	**D**	**0.045**	**0.023**	**0.55**	**5.0**
Barium	Ba	7440-38-2	2000	2600	1000	D	1000	500	0.4	5.0
Beryllium	Be	7440-41-7	-	73	2.7	D	2.7	1.4	0.024	0.2
Cadmium	Cd	7440-43-9	3.5	18	2.2	D	2.2	1.1	0.082	0.5
Calcium	Ca	7440-70-2	-	-	-	-	-	-	29.8	1000
Chromium (2)	Cr	7440-47-3	-	110	50	D	50	25	0.44	2.0
Cobalt	Co	7440-48-4	-	730	3.0	D	3.0	1.5	0.046	0.5
Copper	Cu	7440-50-8	1300	1500	9.0	D	9.0	4.5	0.44	2.0
Iron	Fe	7439-89-6	-	11000	-	-	300	150	3.5	50
Lead	Pb	7439-92-1	10	-	2.5	D	2.5	1.3	0.31	2.0
Magnesium	Mg	7439-95-4	-	-	-	-	-	-	5.2	100
Manganese	Mn	7439-96-5	500	880	-	-	50	25	0.21	2.0
Mercury	Hg	7439-97-6	2	11	0.77	D	0.77	0.39	0.062	0.2
Molybdenum	Mo	7439-98-7	35	180	-	-	40	20	0.097	5.0
Nickel	Ni	7440-02-0	140	730	52	D	52	26	0.24	1.0
Potassium	K	7440-09-7	-	-	-	-	-	-	24.6	1000
Selenium	Se	7782-49-2	35	180	5.0	D	5.0	2.5	0.9	5.0
Silver	Ag	7440-22-4	35	180	0.34	D	0.34	0.17	0.015	0.3
Sodium	Na	7440-23-5	20000	-	-	-	20000	10000	24	1000

Table E.1-5B Potential Chemical-Specific Data Quality Objectives and Preferred Maximum Method Quantitation Limits for Groundwater/Surface Water

Analyte	Abbreviation	CAS #	Human Health Screening Values Tap Water (ug/L)		Ecological Screening Values (ug/L)	Ecological Screening Value Source	Most Stringent Criteria (ug/L)	Preferred Maximum Method Quantitation Limit Aqueous (ug/L)*	Lab MDL (ug/L)	Lab Reporting Limit (ug/L)
			ME-DEP PAG	Region IX PRG						
Strontium	Sr	7440-24-6	4200	22000	-	-	4000	2000	0.6	5.0
Thallium	Tl	7440-28-0	0.5	2.4	2.0	D	2.0	1.0	0.2	2.0
Titanium	Ti	7440-32-6	-	150000	-	-	150000	75000	1.6	10.0
Vanadium	V	7440-62-2	-	36	19	D	19	9.5	3	15
Zinc	Zn	7440-66-6	2000	11000	120	D	120	60	1.9	10.0
Zirconium	Zr	7440-67-7	-	-	-	-	-	-	0.55	5.0

N/A, not available
TBD, to be determined.

DHS, Department of Human Services
MEG, Maximum Exposure Guidelines
PAG, Preliminary Assessment Goal
PRG, Preliminary Remediation Goal

Bold values indicate the method detection limit (MDL) is greater than that Preferred Maximum Method Quantitiation Limit (PMMQL).
* If laboratory cannot meet any of the preferred PMMQLs with routine SW846 methodology (as supported by MDLs that are no greater than 1/2 PMMQL), laboratory's PMMQL must be identified in Laboratory submittal as failing to meet the PMMQL. Some screening values cannot be obtained with routine methodology to the PMMQL. In those cases, the PMMQL achievable with routine SW846 methodology would be accepted.

EPA. 2004b. Region IX Preliminary Remediation Goals (PRGs).
EPA. 2004a. 2004 Edition of the Drinking Water Standards and Health Advisories. [HA are lifetime health advisories]
Maine Department of Human Services. 2000. Maximum Exposure Guidelines for Drinking Water. http://mainegov-images.informe.org/dhhs/eohp/wells/megtable.pdf, accessed on October 2005.
Maine Department of Environmental Protection.1997. Implementation of Remedial Action Guidelines. http://mainegov-images.informe.org/dep/rwm/rem/documents/fed-dod/rags.pdf, accessed on October 2005.

Ecological Screening Value Sources:
A USEPA EcoSSLs (Source: PWP)
B Los Alamos Nuclear Lab Screening Level (Source: PWP)
C USEPA Region IV Eco Screening Values (Source: PWP)
D San Francisco Regional Water Quality Control Board Surface Water Screening Values (Source: PWP)
E USEPA Region III Freshwater Screening Benchmarks (Source: PWP)
F USEPA Region V Ecological Data Quality Levels (Source: PWP)
G Talmage, et. al. 1999 (Source: PWP)
H Suter and Tsao 1996 (Source: PWP)

For Table E.1-5A through E.1-5B, the metals and explosive compounds that have Laboratory Method Detection Limits (MDL) greater than the Preferred Maximum Quantitation Limit (PMMQL) are identified in Table E.1-6. These QL are set to one-half of the most stringent of either Human Health Screening Values or Ecological Screening Values.

Table E.1-6. Laboratory Method Detection Limits (MDL) Exceedances of the Preferred Maximum Quantitation Limit (QL)

Soil/Sediment	Groundwater/Surface Water
Antimony	2,4-DNT[1]
Arsenic	2,6-DNT[1]
	2-NT
	Aluminum [1]
	Antimony
	Arsenic

[1] MDL below the most stringent Human Health and Ecological Screening Values

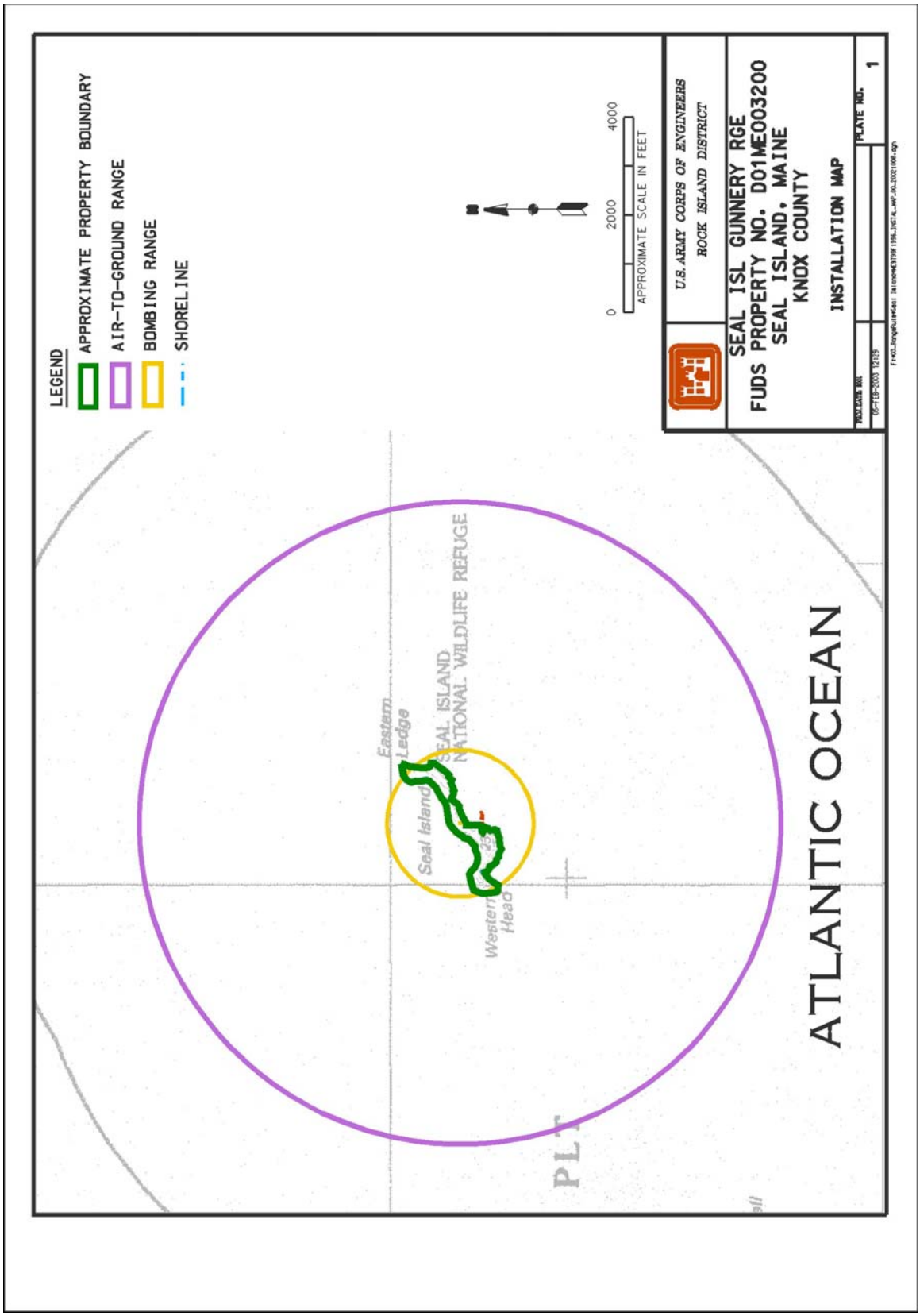

Figure E.1-1 Seal Island Gunnery Range Site Layout

Seal Island Gunnery Range
Seal Island, Maine

Legend

Sample Locations

Region 1

Region 2

Region 3

SI-R3-SS-02-10
1 Soil Sample
Analyzed For Metals
and Explosives

SI-R3-SD-02-01
1 Sediment Sample
Analyzed For Metals
and Explosives

SI-R3-SS-02-09
1 Soil Sample
Analyzed For Metals
and Explosives

SI-R3-SS-02-08
1 Soil Sample
Analyzed For Metals
and Explosives

SI-R3-SW-00-01
1 Surface Water Sample
Analyzed For Metals
and Explosives

SI-R1-SS-02-03
1 Soil Sample
Analyzed For Metals
and Explosives

SI-R2-SS-02-05
1 Soil Sample
Analyzed For Metals
and Explosives

SI-R1-SS-02-02
1 Soil Sample
Analyzed For Metals
and Explosives

SI-R2-SS-02-07
1 Soil Sample
Analyzed For Metals
and Explosives

SI-R1-SS-02-01
1 Soil Sample
Analyzed For Metals
and Explosives

SI-R2-SS-02-04
1 Soil Sample
Analyzed For Metals
and Explosives

SI-R2-SS-02-06
1 Soil Sample
Analyzed For Metals
and Explosives

Sample ID Designation
"SI-R3-SS-02-01"
Site Name-Sampling Location-Sample Type-Sample Depth-Sample #

0 110 220 440 Meters

Maine

Atlantic Ocean

Site Location

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Figure E.1-2. Proposed Sampling Locations

APPENDIX E.2—GPL LABORATORIES, LLLP QUALITY ASSURANCE PROJECT PLAN

The Quality Assurance Project Plan has not been modified. Refer to the PWP (Alion 2005).

APPENDIX F—LOGS AND FORMS

The Logs and Forms have not been modified. Refer to the PWP (Alion 2005).

APPENDIX G—MDS CALCULATION SHEETS

The MDS Calculation Sheets have not been modified. Refer to the PWP (Alion 2005).

APPENDIX H—RESUMES

The resumes have not been modified. Refer to the PWP (Alion 2005).

APPENDIX I—CONCEPTUAL SITE MODEL (CSM) AND TECHNICAL PROJECT PLANNING WORK SHEETS

APPENDIX I
TABLE OF CONTENTS

CSM Layer 1. Aerial of Seal Island (2005) – This layer shows an aerial view of Seal Island.

CSM Layer 2. Historically Proposed Target – In 1956, the NAS documented plans to develop a bombing target and a helicopter landing pad on the western end of Seal Island. The proposed bomb target and helicopter landing pad are identified on this layer.

CSM Layer 3. MEC Remnants, Markings, and Events – During several site visits MEC debris was located and areas that had been deformed by rockets and/or bombs were identified. These locations are identified on this layer along with the area in which several explosions occurred during the 1978 fire.

CSM Layer 4. Burned Area (1978) – The area that was burned in the1978 fire is indicated on this map. During this fire several explosions were heard that caused all personnel to evacuate the island.

CMS Layer 5. Soil Types – The majority of Seal Island is made up of rocky cliffs. Overall there are three general soil types on the island, which are indicated on this layer.

CSM Layer 6. Present Day Landmarks – In 1984 a small cabin was built on the island to host researchers and scientists during the summers. The cabin's location is indicated on this layer, along with the two areas that are suitable to land a small water craft.

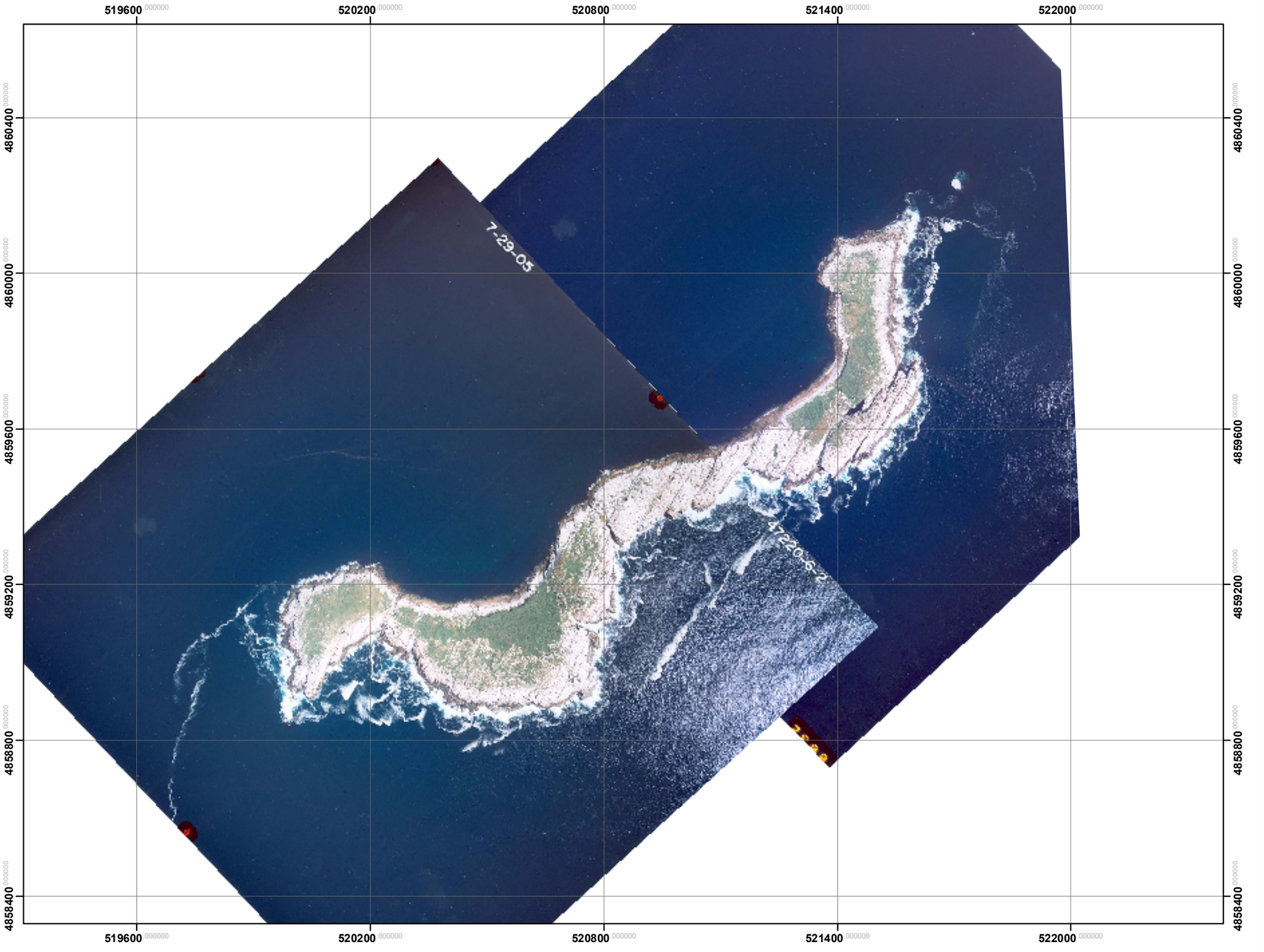
CSM Layer 7. Proposed Geophysical Reconnaissance Areas

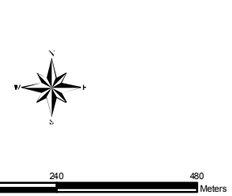
Draft Diagram of the Integrated Conceptual Site Model – This diagram indicates potential sources, pathways, and receptors for the site.

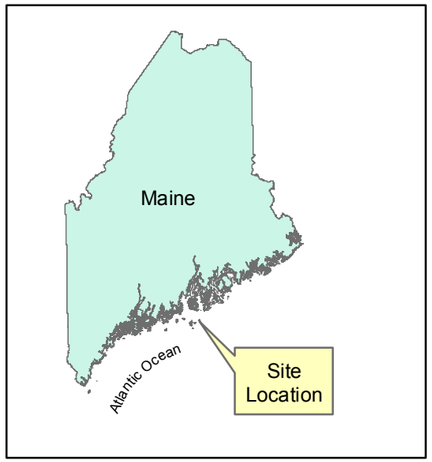
MFR Phase I worksheets

Seal Island Gunnery Range

Seal Island, Maine







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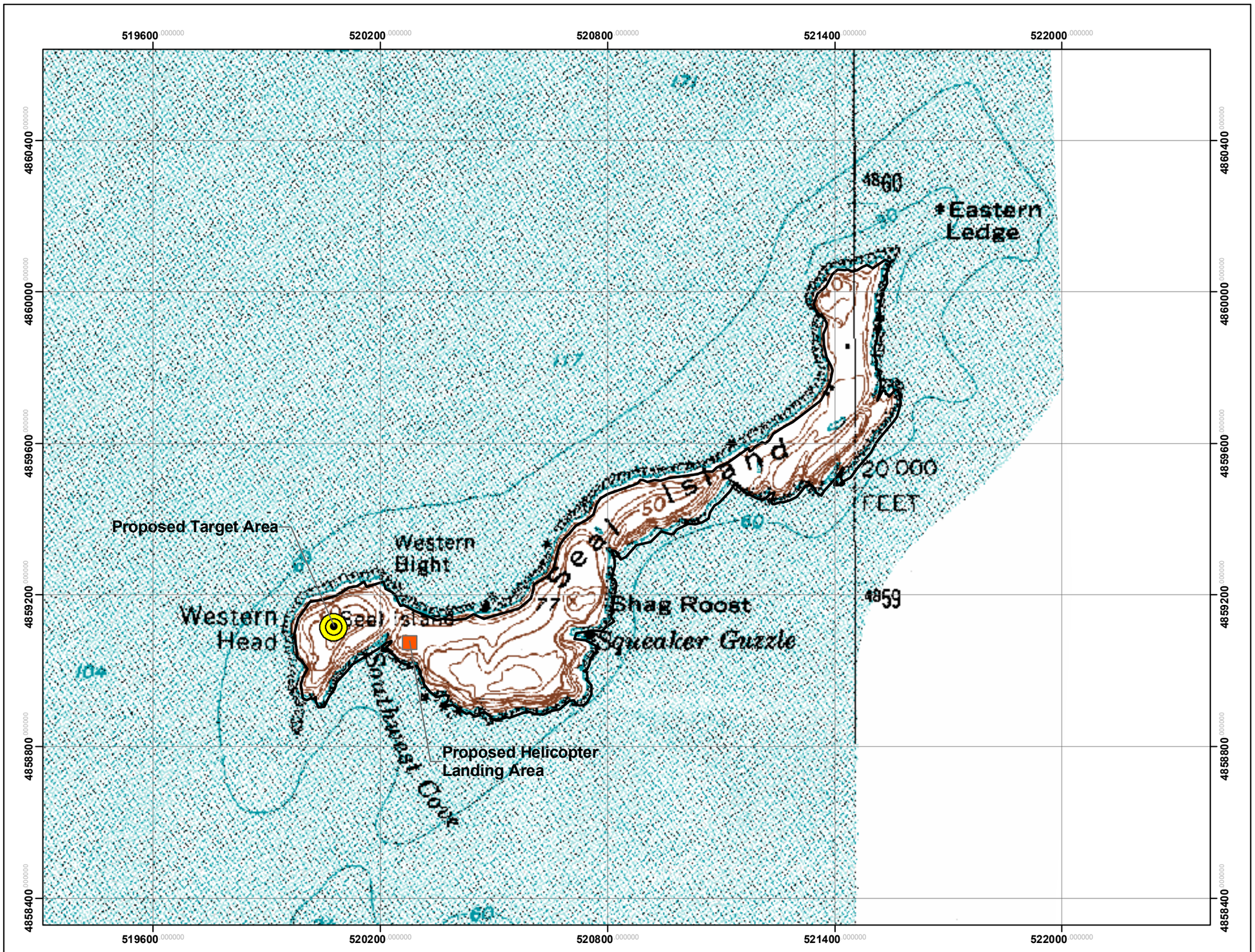
CSM Layer 1. Aerial of Seal Island (2005)



Seal Island Gunnery Range

Seal Island, Maine

Legend

- Target Area with 100ft and 200 ft Rings
- Proposed Helicopter Landing Area

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CSM Layer 2. Historically Proposed Target

Seal Island Gunnery Range
Seal Island, Maine

Legend

- MEC Debris & Markings
- Live Round Discovered

519600 520200 520800 521400 522000

4860400 4860000 4859600 4859200 4858800 4858400

Eastern Ledge

Live 8 inch round discovered (1993 visual ordnance survey)

Explosions Occurred in This General Area (1975)

Western Ledge

MEC Debris (2001)

Western Head

Seal Island

MEC Debris (2001)

Shag Roost

Squeaker Guzzle

Southwest Cove

Pock Marks (2001)

Pock Marks (2001)

J11 J10 J9 J22 J25 J26 J19 J21 J20 J24 J14 J17 J18 J23

20 000 FEET

0 105 210 420 Meters

Maine

Atlantic Ocean

Site Location

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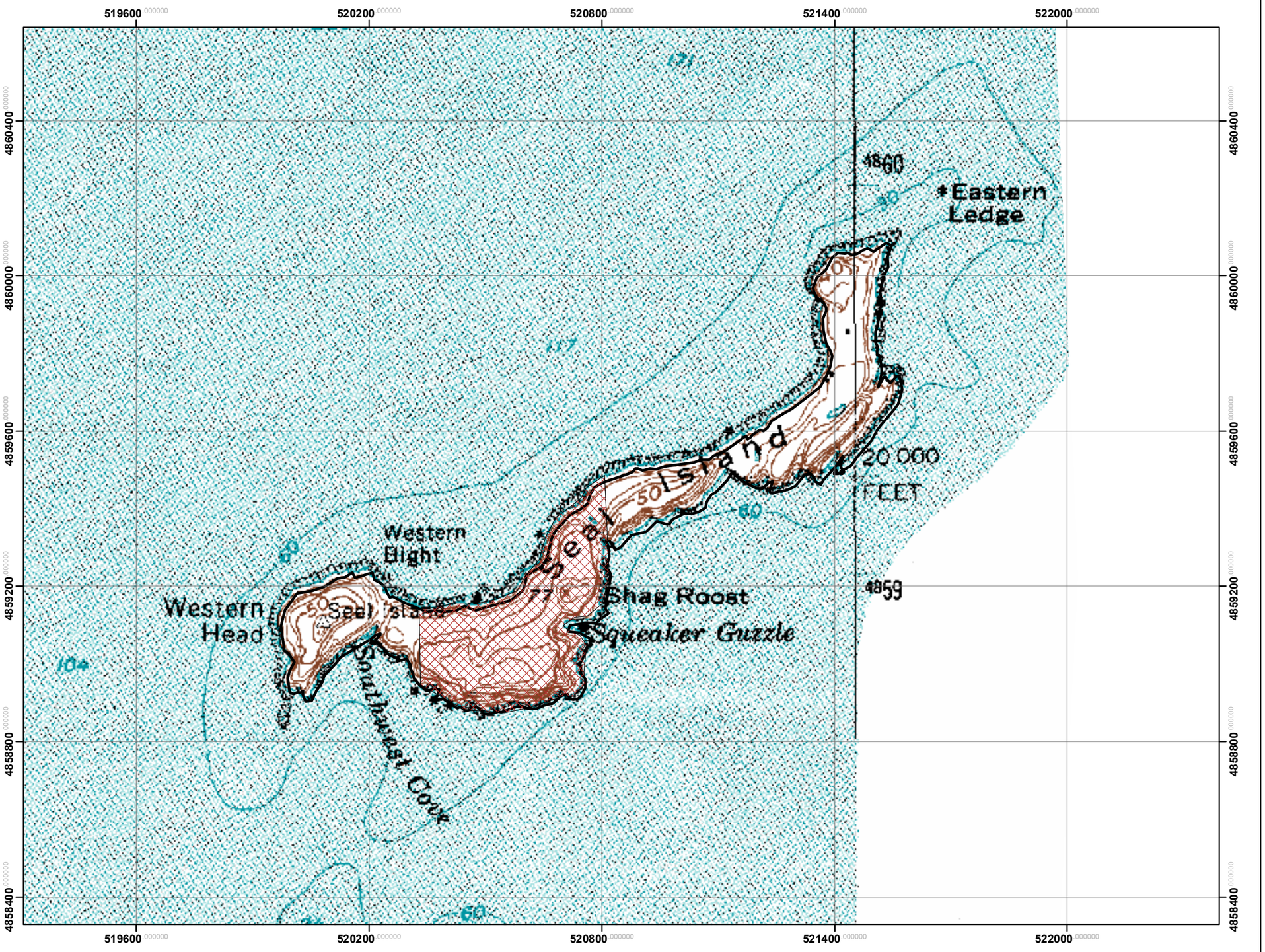
CSM Layer 3. MEC Remnants, Markings, and Events



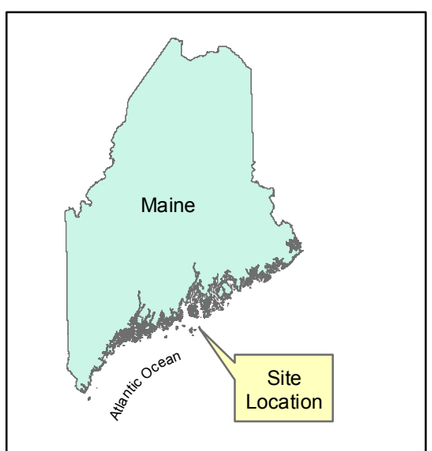
Seal Island Gunnery Range

Seal Island, Maine

Legend

Burned Area (1978)

0 110 220 440 Meters



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CSM Layer 4. Burned Area (1978)

519600 000000
520200 000000
520800 000000
521400 000000
522000 000000

4860400 000000
4860000 000000
4859600 000000
4859200 000000
4858800 000000
4858400 000000

*Eastern Ledge
20 000
FEET
Western Bight
Western Head
Shag Roost
Squeaker Guzzle
Southeast Cove
60
104

Seal Island Gunnery Range

Seal Island, Maine

Legend

- LYMAN-ROCK OUTCROP-TUNBRIDGE COMPLEX, 3 TO 8 PERCENT SL OPES
- ROCK OUTCROP
- ROCK OUTCROP-LYMAN COMPLEX, 0 TO 15 PERCENT SLOPES

N

0 105 210 420
Meters

Maine
Atlantic Ocean
Site Location

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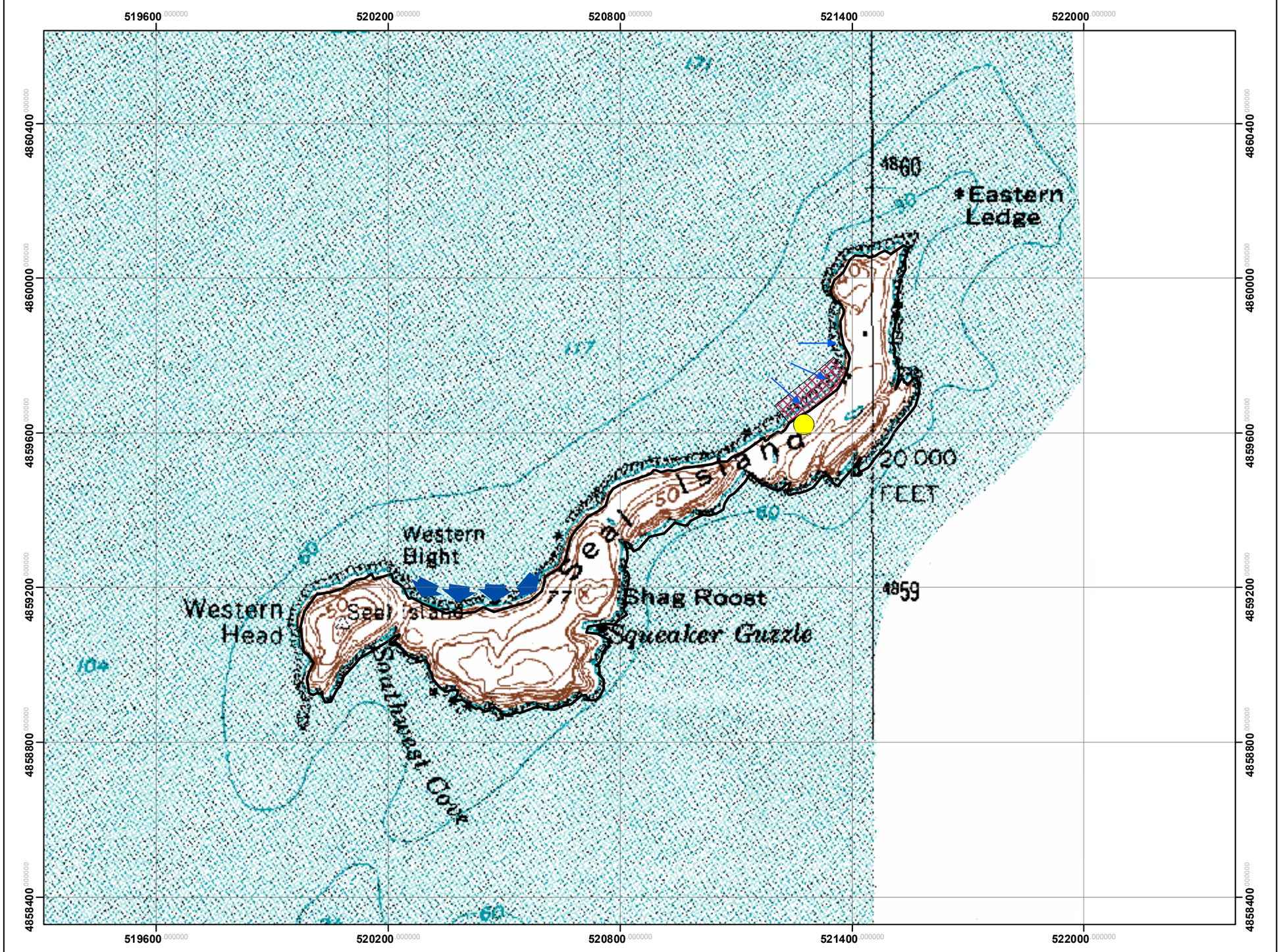
CSM Layer 5. Soil Types

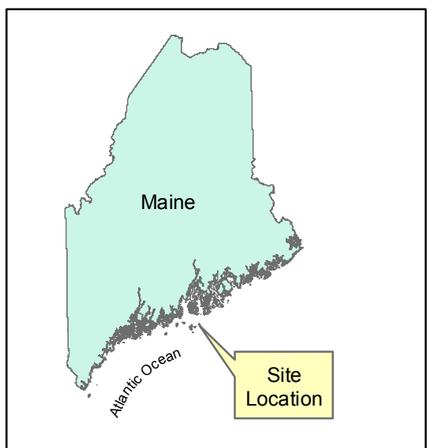


Seal Island Gunnery Range
Seal Island, Maine

Legend

- Cabin Site
- Water Craft Landing Area (1954)
- Water Craft Landing Area (2001)
- Nesting Bird Burrow Site

0 110 220 440 Meters



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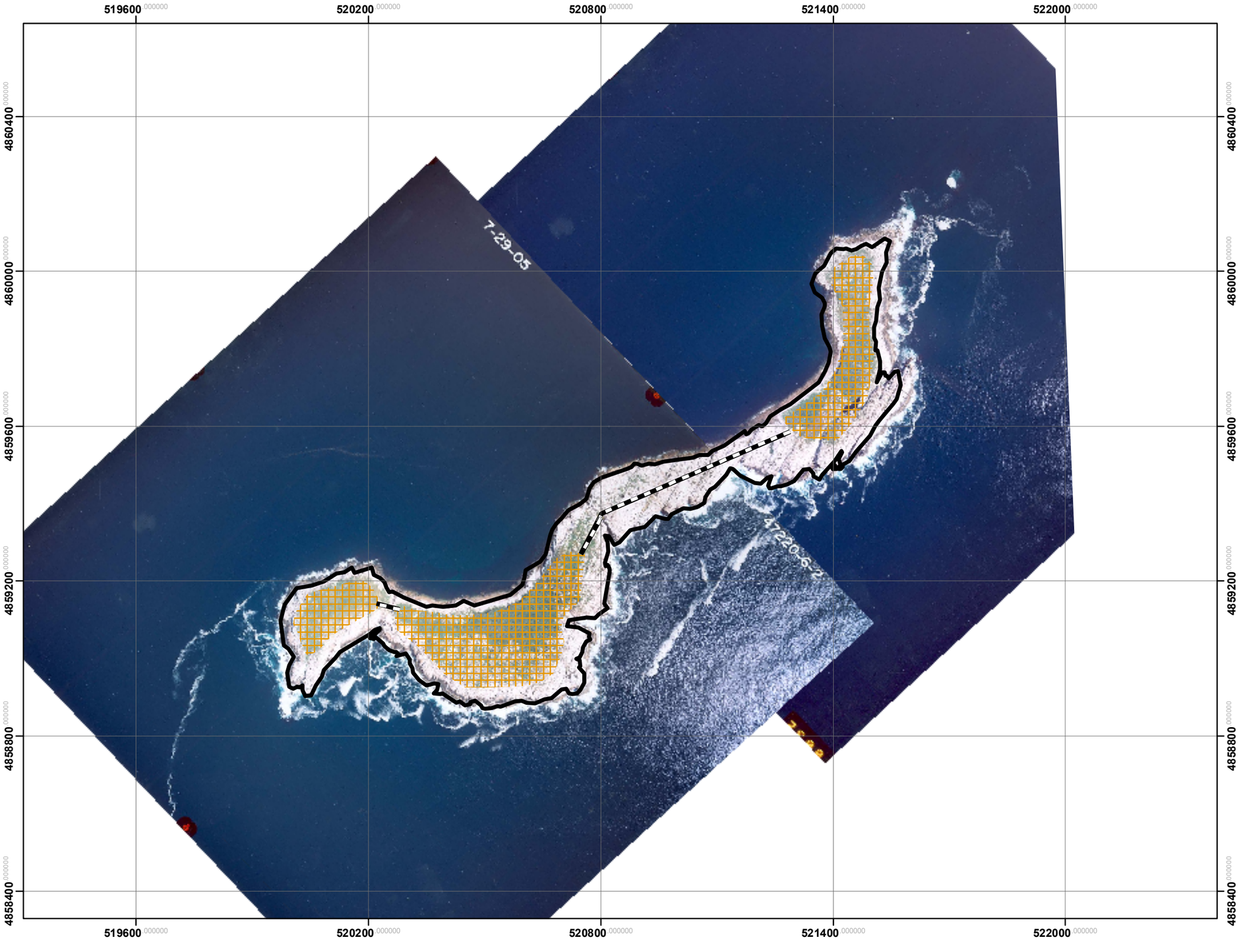
CSM Layer 6. Present Day Landmarks



Seal Island Gunnery Range

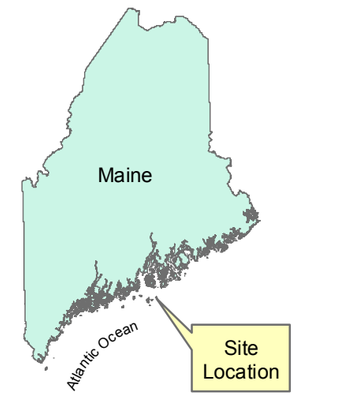
Seal Island, Maine

Legend

- Geophysical Reconnaisance Areas
- FUDS Boundary
- Geophysical Reconnaisance Access Routes

NOTE:
ACTUAL SURVEYED AREAS MAY
VERY DUE TO ACCESS ISSUES.
FINAL GEOPHYSICAL RECONNAISANCE
ROUTES WILL BE DEPICTED IN
THE FINAL SI REPORT

0 140 280 560 Meters



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CSM Layer 7. Proposed Geophysical Reconnaisance Areas

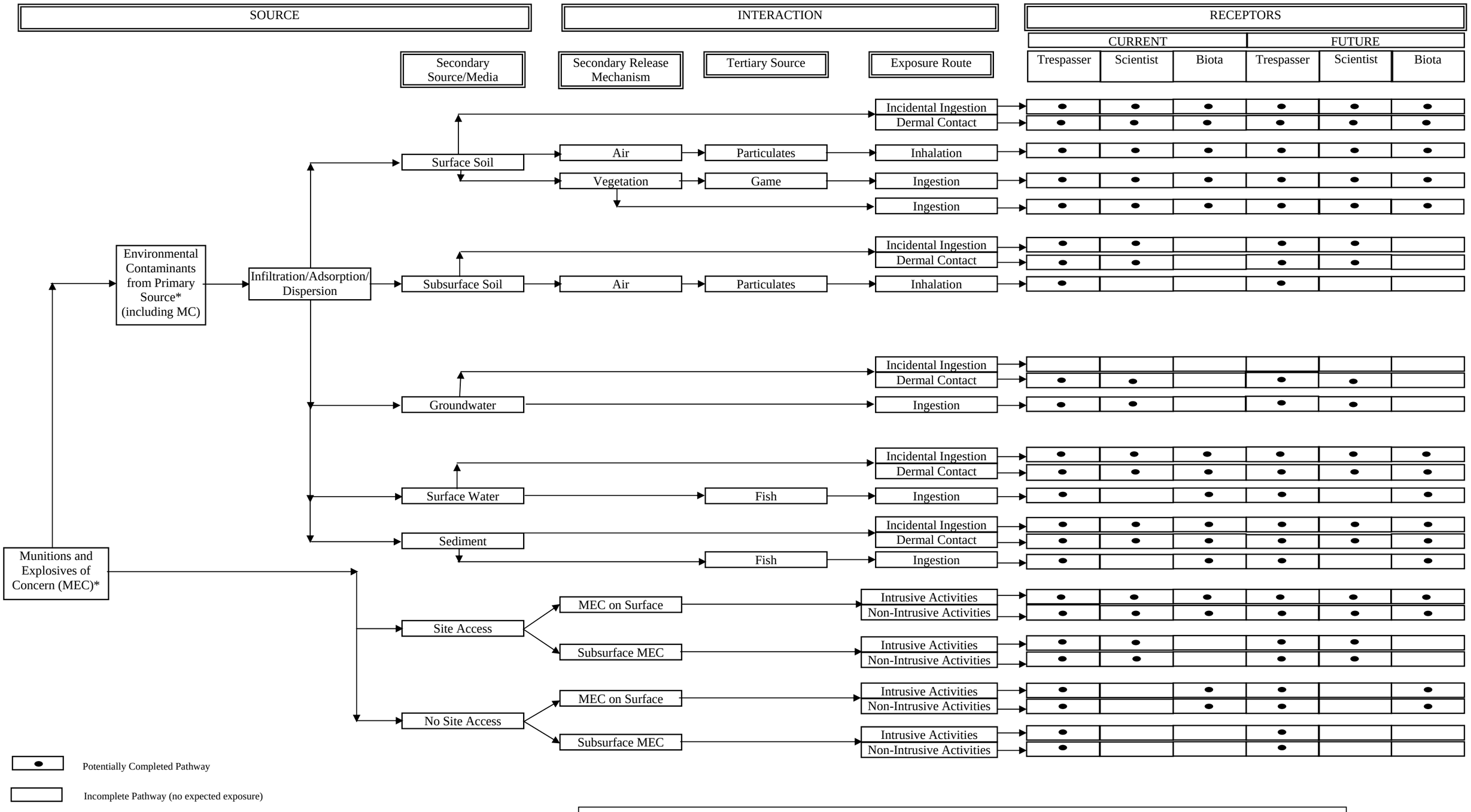

DIAGRAM OF THE INTEGRATED CONCEPTUAL SITE MODEL FOR THE SEAL ISLAND MMRP FUDS SITE (INTERIM)

Impact to sediment may also occur from surface soil via runoff of particulates.
A separate risk for surface soil and subsurface soil may be combined to represent risk from total soil for some receptors.
Impact to surface water may also occur from infiltration of groundwater.
*Primary sources will vary by site but are expected to include open burn/open detonation areas, disposal/burial areas, impact areas, and firing areas, etc.

Technical Project Planning

Phase I MFR Worksheet

Author(s): Alion Team
Latest Revision Date: February 16, 2006

Reviewer:
Review Date: February 9, 2006

Location: Portland, Maine
Site(s): Seal Island, Knox County, Maine
Project: Seal Island Gunnery Range

(Attach Phase I MFR to PMP)

TPP Team	**EM 200-1-2, Paragraph 1.1.1**	
Decision Maker		
Customer	USACE	
Project Manager	Robert Williams--USACE-Baltimore District, Sheila Holt -- USACE-New England District	
Team Leaders	Roger Azar--Program Manager, Tim Reese--Project Manager	
Regulators	Maine Department of Environmental Protection	
Stakeholders	Maine Coastal Islands National Wildlife Refuge - US Fish and Wildlife Service	
Data Types	**Data User**	**Data Gatherer**
Compliance / Regulatory (CR)	USAESCH, USACE Baltimore District, USACE New England District	Alion Team
Demographics/Land Use (LU)	USAESCH, USACE Baltimore District, USACE New England District	Alion Team
Site Conditions (SC)	USAESCH, USACE Baltimore District, USACE New England District	Alion Team
MEC	USAESCH	Alion Team

CUSTOMER'S GOALS	**EM 200-1-1, Paragraph 1.1.2**	
Future Land Use(s) @ Site	**Issues and Regulatory Compliance Status**	**Site-specific Closeout Goal (if applicable)**
National Wildlife Refuge	Potential for metals and explosives in soil as well as munitions and explosives of concern (MEC)	

CUSTOMER'S GOALS (continued)	EM 200-1-1, Paragraph 1.1.2
Site Closeout Statement	
Achieving the walk-away goal, or final condition of the site, as envisioned by the customer. The final condition of the site includes safe access following any remediation, maintenance, and monitoring for activities that are consistent with the current use of the site.	
Customer's Schedule Requirements	
No field activities from May 1 thru August 31, 2006.	
Customer's Site Budget	
N/A.	

IDENTIFY SITE APPROACH		
EXISTING SITE INFORMATION & DATA	**EM 200-1-2, Paragraph 1.1.3 and 1.2.1**	
Attachment(s) to Phase I MFR	**Located at Repository**	**Preliminary Conceptual Site Model**
2003 Archive Search Report (ASR)	USACE, Baltimore	Yes
2004 Supplemental ASR	USACE, Baltimore	Yes
1988 Inventory Project Report (INPR)	USACE, Baltimore	Yes
POTENTIAL POINTS OF COMPLIANCE	**EM 200-1-2, Paragraph 1.2.1.3**	
Maine DEP Regulations (within boundaries of areas of concern)		
Region IX USEPA (within boundaries of areas of concern)		
MEDIA OF POTENTIAL CONCERN	**EM 200-1-2, Paragraph 1.2.1.4**	
Soil		
Sediment		
Surface Water		
SITE OBJECTIVES	**EM 200-1-2, Paragraph 1.2.2**	
Determine presence of MEC/MC		
Determine NDAI or further action (see attached Project Objectives worksheet)		
REGULATOR AND STAKEHOLDER PERSPECTIVES	**EM 200-1-1, Paragraph 1.2.3**	
Regulators	Community Interests	Others
PROBABLE REMEDIES	**EM 200-1-2, Paragraph 1.2.4**	
Detonation or removal of suspect MEC found during the site investigation.		
Removal of residual MEC from the site, treatment of MC via removal, onsite treatment, and		
engineering/institutional controls as appropriate to reduce the risk to future site users.		
EXECUTABLE STAGES TO SITE CLOSEOUT	**EM 200-1-2, Paragraph 1.2.5**	
Site Inspection		
Remedial Investigation/Feasibility Study		
Proposed Plan		
ROD/Decision Document		
Remedial Design		
Remedial Action		
Removal Action (if necessary)		

IDENTIFY CURRENT PROJECT		
SITE CONSTRAINTS AND DEPENDENCIES		**EM 200-1-2, Paragraph 1.3.1**
Administrative Constraints and Dependencies		
SI needs to be completed as soon as possible to meet program needs.		
Special Use Permit need to be in place prior to sampling.		
Technical Constraints and Dependencies		
Need MEC avoidance for sampling. Need to work with FWS personnel for access.		
Need to abide by Health and Safety Plan.		
FWS will provide transport to site and guidance for sample locations.		
Legal and Regulatory Milestones and Requirements		
No agreements or permits in place between USACE or Owner and Regulatory Personnel.		
Regulatory evaluation of SI work plan and reporting of SI results and recommendations.		
CURRENT EXECUTABLE STAGE		**EM 200-1-2, Paragraph 1.3.3**
Site Inspection		

Basic (For Current Projects)	**Optimum** (For Future Projects)	**Excessive** (Objectives that do not lead to site closeout)
Sample collection effort minimal MEC analysis minimal		

Acronyms

EM-Engineer Manual (see www.usace.army.mil/inet/usace-docs/)
NDAI--No Department of Defense Action Indicated
RA--Removal Action
RAC--Risk Assessment Code type impact analysis conducted during INPR, ASR, and Supplemental ASR
TPP-Technical Project Planning
MEC - Munitions and Explosives of Concern
MC - Munitions Constituents

PROJECT OBJECTIVES WORKSHEET

SITE: **Seal Island**

PROJECT: **Former Seal Island Gunnery Range**

Site Objective [a]					Data Needs [d]	Data Collection Methods	Project Objective Classification [e]
Number	Executable Stage [b]		Description [c]	Source			
	Current	Future					
1	Yes		Presence/Absence of MEC and MC	ASR, Public	CR, LU, SC, UXO	MEC Visual inspection, MC Sampling	Basic
2	Yes		Eliminate from further consideration those releases that pose no significant threat to public health or the environment by collecting adequate samples to assess the presence or absence of MC at the site	ASR, Public	CR, LU, SC, UXO	MEC Visual inspection, MC Sampling	Basic
3	Yes		Determine the potential need for a TCRA by collecting data from previous investigations/reports, site visits, and geophysics	ASR, Public	CR, LU, SC, UXO	MEC Visual inspection, MC Sampling	Basic
4	Yes		Collect, or develop, additional data, as appropriate, for Hazard Ranking System (HRS) scoring by Environmental Protection Agency (EPA)	ASR, Public	CR, LU, SC, UXO	MEC Visual inspection, MC Sampling	Basic
5	Yes		Collect data, as appropriate, to characterize the release for effective and rapid initiation of the Remedial Investigation and Feasibility Study (RI/FS)	ASR, Public	CR, LU, SC, UXO	MEC Visual inspection, MC Sampling	Basic
6	Yes		Collect the additional data necessary to the complete the Munitions Response Site Prioritization Protocol (MRSPP)	ASR, Public	CR, LU, SC, UXO	MEC Visual inspection, MC Sampling	Basic

a Refer to EM 200-1-2, Paragraph 1.2.2

b Refer to EM 200-1-2, Pragraph 1.2.5

c For example, Meeting with Customer/stakeholder/Regulator, State Regulation____,

d Data Needs: **CR**-Compliance/Regulatory, **LU**-Land Use/Demographics, **SC**-Site Conditions, and **UXO**-OE UXO

e Classification of project objectives can only occur after the current project has been identified. Refer to EM 200-1-2, Paragraph 1.3.3.

Acronyms

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