

SAMPLING AND ANALYSIS PLAN

ON-SITE CONSTRUCTION SUPPORT FOR DEBRIS REMOVAL

SWMU 1 – FORMER ARMY CREMATOR DISPOSAL SITE

Naval Activity Puerto Rico
Ceiba, Puerto Rico



**BRAC Program Management Office
Southeast**

**Contract Number N62470-08-D-1001
Contract Task Order JM29**

March 2011

SAP Worksheet #1 – Title and Approval Page

(UFP-SAP Manual Section 2.1)

SAMPLING AND ANALYSIS PLAN
ON-SITE CONSTRUCTION SUPPORT
FOR DEBRIS REMOVAL
SWMU 1 – FORMER ARMY CREMATOR DISPOSAL SITE
Naval Activity Puerto Rico, Ceiba, Puerto Rico
MARCH 2011

Prepared for:
BRAC Program Management Office Southeast
4130 Faber Place Drive, Suite 202
North Charleston, South Carolina 29405

Prepared by:
Tetra Tech NUS, Inc.
234 Mall Boulevard, Suite 260
King of Prussia, Pennsylvania 19046
Phone: 610-491-9688

Prepared under:
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Contract Task Order JM29

Review Signatures:

Linda Klink, P.E.
Project Manager
Tetra Tech NUS, Inc.

Dr. Thomas Johnston
Quality Assurance Manager
Tetra Tech NUS, Inc.

Linda Klink Date: 3/8/11

T.E. Johnston Date: 3-8-2011

Approval Signatures:

Stacin Martin
Remedial Project Manager
NAVFAC Atlantic

Michael Green
MRP Senior Technical Advisor
NAVFAC Atlantic

Stacin Martin Date: 3/8/11

Michael Green Date: 3-8-11

I certify under penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that this document and its attachments were prepared either by me personally or under my direction or supervision in a manner designed to ensure that qualified and knowledgeable personnel properly gather and present the information contained therein. I further certify, based on my personal knowledge or on my inquiry of those individuals immediately responsible for obtaining the information, that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowingly and willfully submitting a materially false statement.



Signature: _____

Name: Mark E. Davidson

Title: BRAC Envr. Coordinator

Date: 9 March 2011

ACRONYMS

APP	Accident Prevention Plan
ATF	Bureau of Alcohol, Tobacco, Firearms, and Explosives
bgs	below ground surface
BEC	BRAC Environmental Coordinator
BIP	Blow In Place
BRAC PMO SE	Base Realignment and Closure Program Management Office Southeast
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-Term Environmental Action Navy
CO	Commanding Officer
CSM	Conceptual Site Model
CTO	Contract Task Order
CWM	Chemical Warfare Material
DDESB	Department of Defense Explosives Safety Board
DERP	Defense Environmental Restoration Program
DID	Data Item Description
DMM	Discarded Military Munitions
DNER	Department of Natural and Environmental Resources
DoD	Department of Defense
DQO	Data Quality Objective
ECP	Environmental Condition of Property
EOD	Explosive Ordnance Disposal
ERP	Environmental Restoration Program
ES	Exposed Site
ESQD	Explosive Safety Quantity Distance
ESS	Explosive Safety Submission
EZ	Exclusion Zone
FSP	Field Sampling Plan
FTMR	Field Task Modification Request
GIS	Geographic Information System
GPS	Global Positioning System
GSV	Geophysical System Verification
HASP	Health and Safety Plan
HDOP	Horizontal Dilution of Precision
HFD	Hazardous Fragment Distance

HSM	Health and Safety Manager
HTRW	Hazardous, Toxic, or Radiological Waste
ICM	Interim Corrective Measure
LUC	Land Use Control
MC	Munitions Constituents
MDAS	Material Documented as Safe
MDEH	Material Documented as an Explosive Hazard
MEC	Munitions and Explosives of Concern
MGFD	Munition with the Greatest Fragmentation Distance
MMRP	Military Munitions Response Program
MPPEH	Material Potentially Presenting an Explosive Hazard
MRP	Munitions Response Program
MRS	Munitions response site
NAD	North American Datum
NAPR	Naval Activity Puerto Rico
NAVFAC	Naval Facilities Engineering Command
NAVSEA	Naval Sea Systems Command
NCP	National Contingency Plan
NEW	Net Explosive Weight
NGVD	National Geodetic Vertical Datum
NOSSA	Naval Ordnance Safety and Security Activity
NOSSAINST	NOSSA Instruction
OP	Operational Procedure
OPNAVINST	Naval Operations Instructions
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PA	Preliminary Assessment
PM	Project Manager
POC	Point of Contact
PPE	Personal protective equipment
PREQB	Puerto Rico Environmental Quality Board
QA	Quality assurance
QAM	Quality Assurance Manager
QAPP	Quality Assurance Project Plan
QC	Quality control
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation

RPM	Remedial Project Manager
SAP	Sampling and Analysis Plan
SI	Site Inspection
SOP	Standard Operating Procedure
SSO	Site Safety Officer
SUXOS	Senior UXO Supervisor
SWMU	Solid Waste Management Unit
TBD	To be determined
TP	Technical Paper
Tetra Tech	Tetra Tech NUS, Inc.
TNT	Trinitrotoluene
U.S. EPA	United States Environmental Protection Agency
UFP	Uniform Federal Policy
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
UXO	Unexploded Ordnance
UXOQCS	UXO Quality Control Specialist
UXOSO	UXO Safety Officer

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EXECUTIVE SUMMARY

Tetra Tech NUS, Inc. (Tetra Tech) has prepared this On-Site Construction Support for Debris Removal Sampling and Analysis Plan (SAP) on behalf of the Base Realignment and Closure (BRAC) Program Management Office Southeast (PMO SE) and funded by the Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic (LANT) under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract Number N62470-08-D-1001, Contract Task Order (CTO) JM29. This plan has been prepared to support on-site construction for debris removal at Solid Waste Management Unit (SWMU) 1, Former Army Cremator Disposal Site, which is located at former US Naval Station Roosevelt Roads, Ceiba, Puerto Rico, now referred to as Naval Activity Puerto Rico (NAPR).

NAPR was used as a military base from 1941 to 2004, when the base ceased all operations. The facility is located on the eastern coast of Puerto Rico and covers approximately 8,600 acres, which includes two adjacent unpopulated offshore islands. The Navy currently owns and maintains the facility in preparation for sale and/or transfer of the property and is continuing to implement cleanup obligations. SWMU 1 operated from the early 1940s until the early 1960s and was the main station landfill during this time. Waste material was disposed of by piling, burning, and compacting. An estimated 100,000 tons of waste including scrap metal, inert munitions items, batteries, tires, appliances, cars, cables, dry cleaning solvent cans, paint cans, gas cylinders, construction debris, dead animals, and residential waste was disposed of at this site, which encompasses approximately 116 acres of upland and wetland areas. No reliable information exists regarding the amounts of material present in the disposal area or material presenting a hazard from munitions.

Munitions and Explosives of Concern (MEC) may be present at SWMU 1. The term MEC includes Discarded Military Munitions (DMM), Unexploded Ordnance (UXO), and Munitions Constituents (MC) in high enough concentrations to pose an explosive hazard. MC includes any material originating from UXO, DMM, or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions. The Department of Defense (DoD) has established the Military Munitions Response Program (MMRP) to address MC and MEC at closed and other than operational ranges. The DoD is following the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) process for the investigation and remediation of MMRP sites. The Navy is responsible for implementing the MMRP at NAPR.

During February 2010, the Navy's contractor, Right Way Environmental, began a removal of metallic debris from SWMU 1 debris piles to remove the source material causing the soil contamination (metals) at the site. During this operation, a number of suspect MEC/Material Potentially Presenting an Explosive Hazard (MPPEH) items were found, and the debris removal operation was halted. Navy Explosive

Ordnance Disposal (EOD) technicians were dispatched from Naval Station Mayport, Florida (Navy EOD Mayport) to evaluate the suspect items, which included one MK76 practice bomb, one aircraft fuel tank, and several rocket pods. Mayport EOD identified the items as Material Documented as Safe (MDAS). Debris removal was restarted in March 2010 with Tetra Tech providing UXO Escort to the operation being conducted by Right Way Environmental. When numerous suspect MEC/MPPEH items were again encountered, the operation was again halted because there were too many suspect MEC/MPPEH items encountered so the debris removal could not be accomplished employing UXO avoidance alone.

The goal of this scope of work is to support Right Way Environmental's debris removal operation by conducting detector-aided visual surface surveys of all areas designated for removal, as well as equipment laydown areas and approach paths, and removal and/or treatment of all MEC/MPPEH found that would interfere with safe removal of the debris piles. Debris removal will occur within approximately 4 acres where debris piles are present within the 116 acres of the SWMU 1 boundary.

Other than general discussions among NAPR Stakeholders during phone conversations and correspondence, scoping meetings specific to SWMU 1 have not been held to date because the subject current work scope and objectives are straightforward. However, the Stakeholders concur with the scope of field work described herein to provide on-site construction support for the debris removal operation. The United States Environmental Protection Agency (U.S. EPA) and Commonwealth of Puerto Rico Environmental Quality Board (PREQB) have provided authorization to proceed to advance the project and will allow for critical information to be collected concerning characterization of surface MEC/MPPEH as part of a Phase 1 RCRA Facility Investigation (RFI). U.S. EPA and PREQB fully participated in review/approval of the subject SAP and will fully participate in planning future phases of a Phase 1 RFI for MEC and MC in both the surface and subsurface, as well as a future Full RFI.

This SAP has been prepared in accordance with DoD requirements for developing Quality Assurance Project Plans (QAPPs) for the collection, use, and management of environmental data, as described in the Uniform Federal Policy (UFP)-QAPP. The standard UFP-SAP worksheets were developed for the collection and evaluation of data on concentrations of chemical constituents in environmental media and are not designed for the collection of MEC data such as the results of detector-aided visual surface surveys. The Navy MRP Workgroup modified the UFP-SAP worksheets to be applicable to MEC investigations, and these modified worksheets have been used in the preparation of this MEC SAP. Because the content and level of detail in a specific UFP-QAPP (aka SAP) varies by program, by the work being performed, and by the intended use of the data, specific worksheets may not be applicable to all projects. Although the format of each worksheet is not mandatory, the information required on the worksheets must still be presented in the QAPP, as appropriate to the project. This SAP constitutes the planning document, encompassing Field Sampling Plan (FSP) and QAPP requirements.

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- Appendix C: MEC Field Standard Operating Procedures
- Appendix D: MEC Field Forms

SAP Worksheet #2 -- SAP Identifying Information

(UFP-SAP Manual Section 2.2.4)

Site Name/Number: **Naval Activity Puerto Rico (NAPR)
Solid Waste Management Unit (SWMU) 1 - Former Army Cremator
Disposal Site**

Operable Unit: **NA**

Contractor Name: **Tetra Tech NUS, Inc. (Tetra Tech)**

Contract Number: **N62470-08-D-1001**

Contract Title: **Comprehensive Long-Term Environmental Action Navy (CLEAN)**

Work Assignment Number: **Contract Task Order JM29**

1. This Sampling and Analysis Plan (SAP) was prepared in accordance with the requirements of the *Uniform Federal Policy for Quality Assurance Plans (UFP-QAPP)* (United States Environmental Protection Agency [U.S. EPA], 2005) and *U.S. EPA Guidance for Quality Assurance Project Plans, U.S. EPA QA/G-5, QAMS (2002)*.

2. Identify regulatory program: Department of Defense (DoD) Military Munitions Response Program (MMRP), Resource Conservation and Recovery Act (RCRA) as per the January 29, 2007, Consent Order for NAPR and consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and the processes established by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA).

3. This SAP is a project-specific SAP.

4. List dates of scoping sessions that were held:

Scoping Session	Date
Alternative Means (correspondence and phone call discussions as detailed in Worksheet #9) because of limited work scope. Scoping of project is limited to on-site construction support for debris removal.	2010, various

5. List dates and titles of any SAP documents written for previous site work that are relevant to the current investigation.

Title	Date
NA. This subject effort is the initial investigation concerning munitions.	

6. List organizational partners (stakeholders) and connection with lead organization:

U.S. USEPA Region 2 – regulatory stakeholder overseeing RCRA Ceiba Environmental Restoration Program (ERP) implemented by lead organization.
Puerto Rico Environmental Quality Board (PREQB) – regulatory stakeholder overseeing RCRA Ceiba ERP implemented by lead organization.
NAPR – property owner

7. Lead organization

Navy, Base Realignment and Closure Program Management Office Southeast (BRAC PMO SE)

8. If any required SAP elements or required information are not applicable to the project or are provided elsewhere, then note the omitted SAP elements and provide an explanation for their exclusion below:

See the crosswalk table regarding SAP worksheets that are not applicable to Munitions and Explosives of Concern (MEC) projects.

UFP-QAPP Worksheet #	Required Information	Crosswalk to Related Information
A. Project Management		
<i>Documentation</i>		
1	Title and Approval Page	NA
2	Table of Contents SAP Identifying Information	NA
3	Distribution List	NA
4	Project Personnel Sign-Off Sheet	NA
<i>Project Organization</i>		
5	Project Organizational Chart	NA
6	Communication Pathways	NA
7	Personnel Responsibilities and Qualifications Table	NA
8	Special Personnel Training Requirements Table	NA
<i>Project Planning/Problem Definition</i>		
9	Project Planning Session Documentation (including Data Needs tables) Project Scoping Session Participants Sheet	NA
10	Problem Definition, Site History, and Background Site Maps (historical and current)	NA
<i>Site-Specific Project Quality Objectives</i>		
11	Data Quality Objectives for MEC Investigation	NA
12	Measurement Performance Criteria Table	NA
13	Sources of Secondary Data and Information, Secondary Data Criteria, and Limitations Table	NA
14	Summary of Project Tasks	NA
15	Reference Limits and Evaluation Table	Not used – No samples proposed for collection/analysis during MEC survey/investigation
16	Project Schedule/Timeline Table	NA
B. Measurement Data Acquisition		
<i>Sampling Tasks</i>		
17	Project Design and Rationale	NA
18	Sampling Locations and Methods/Standard Operating Procedure (SOP) Requirements Table	NA
19	Analytical Methods/SOP Requirements Table	Not used – No samples proposed for collection/analysis during MEC survey/investigation
20	Field Quality Control (QC) Sample Summary Table	NA
21	Project SOP References Table	NA
22	Field Equipment Calibration, Maintenance, Testing, and Inspection Table	NA
<i>Analytical Tasks</i>		
23	Analytical SOPs Analytical SOP References Table	Not used – No samples proposed for collection/analysis during MEC survey/investigation
24	Analytical Instrument Calibration Table	Not used – No analytical instrument calibration data will be required to support MEC surveys/investigations

UFP-QAPP Worksheet #	Required Information	Crosswalk to Related Information
25	Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table	Not used – No analytical instrument equipment maintenance, testing, or inspections will be required to support MEC surveys/investigations
<i>Sample Collection</i>		
26	Sample Handling System, Documentation Collection, Tracking, Archiving, and Disposal Sample Handling Flow Diagram	Not used – No analytical sample handling system will be required to support MEC surveys/investigations
27	Sample Custody Requirements, Procedures/SOPs Sample Container Identification Example Chain-of-Custody Form and Seal	Not used – No samples are proposed for collection/analysis during the MEC survey/investigation
<i>QC Samples</i>		
28	Laboratory QC Samples Table, Screening/Confirmatory Analysis Decision Tree	Not used – No analytical laboratory QC sampling will be required to support MEC surveys/investigations
<i>Data Management Tasks</i>		
29	Project Documents and Records Table	NA
30	Analytical Services Table Analytical and Data Management SOPs	Not used – No analytical services will be required to support MEC surveys/investigations
C. Assessment Oversight		
31	Planned Project Assessments Table	NA
32	Assessment Findings and Corrective Action Responses	NA
33	Quality Assurance (QA) Management Reports Table	NA
D. Data Review		
34	Verification (Step I) Process Table - Preparatory and Initial Inspection	NA
35	Validation (Steps IIa and II b) Process Table	NA
36	Analytical Data Validation (Steps IIa and IIb) Summary Table	NA
37	Usability Assessment	NA

SAP Worksheet #3 -- Distribution List

(UFP-SAP Manual Section 2.3.1)

Name of SAP Recipient	Title/Role	Organization	Telephone Number (Optional)	E-Mail Address or Mailing Address	Document Control Number (Optional)
Stacin Martin	Remedial Project Manager (RPM)/ Manages project activities for the Navy	NAVFAC Atlantic	757.322.4780	stacin.martin@navy.mil	NA
Mark Davidson	Navy BRAC Environmental Coordinator (BEC)/ Coordinates environmental projects for the Navy	BRAC PMO SE	843.743.2124	mark.e.davidson@navy.mil	NA
Debra Evans-Ripley (cover letter only)	BRAC PMO SE Supervises project activities for Navy	BRAC PMO SE	843.743.2143	ripleyde@efdsouth.navfac.navy.mil	NA
Mike Green (electronic upload)	NAVFAC MRP Senior Technical Advisor/ Reviews UFP-SAP and quality assurance documentation for Navy	NAVFAC Atlantic	757.322.8108	mike.green@navy.mil	NA
Dan Kalal	Senior Civilian in Charge/ Manages site activities	NAPR	787.685.3450	kalald@napr.navy.mil	NA
Pedro Ruiz	NAPR Environmental Department Head/ Manages environmental site activities	NAVFAC Atlantic	757.534.0935	pedro.ruiz1@navy.mil	NA
Adolph Everett	U.S. EPA Region 2 Chief, RCRA Programs Branch/ Manages Region 2 RCRA Program	U.S. EPA Region 2	212.637.4109	everett.adolph@epa.gov	NA
Timothy Gordon	U.S. EPA Region 2 RPM/ Provides U.S. EPA regulatory input	U.S. EPA Region 2	212.637.4167	gordon.timothy@epa.gov	NA

Name of SAP Recipient	Title/Role	Organization	Telephone Number (Optional)	E-Mail Address or Mailing Address	Document Control Number (Optional)
Carl Soderberg (CD only)	U.S. EPA Caribbean Office Director/ Director for USEPA Caribbean Office	U.S. EPA Region 2 Caribbean Office	787.977.5814	soderberg.carl@epa.gov	NA
Wilmarie Rivera	PREQB RPM/ Provides Puerto Rico regulatory input	PREQB	787.767.8181x6129	wilmarierivera@jca.gobierno.pr	NA
Gloria Toro- Agrait	PREQB Environmental Permits Officer/ Provides Puerto Rico regulatory input	PREQB	787.767.8181x3586	gloriatoro@jca.gobierno.pr	NA
Felix Lopez	United States Fish and Wildlife Service (USFWS)/ Provides ecological project assistance for Puerto Rico	USFWS	787.851.7297 x226	P.O. Box 491 Road 301 Km 5.1 Boqueron, Puerto Rico, 00622	NA
Bonnie Capito (final cover letter only)	Administrative Record Librarian/ Manages Navy project records	NAVFAC Atlantic	757.322.4785	bonnie.capito@navy.mil	NA
Jim Pastoric (CD only)	PREQB Consultant/ Provides Unexploded Ordnance (UXO) technical expertise to PREQB	UXO PRO	703.548.5300	jim@uxopro.com	NA
Brenda Smith (CD only)	U.S. EPA Consultant/ Provides project assistance for the USEPA	TechLaw	703-818-1000	14500 Avion Parkway, Suite 300 Chantilly, VA 20151	NA
Karen Vetrano (CD only)	U.S. EPA Consultant/ Provides project assistance for the USEPA	TRC Environmental	860.298.9692	21 Griffin Road North Windsor, Connecticut 06095	NA
John Trepanowski	Program Manager/ Manages Navy CLEAN Program for Tetra Tech	Tetra Tech	610.491.9688	john.trepanowski@tetrattech.com	NA
Linda Klink	Project Manager (PM)/ Manages project activities for Tetra Tech	Tetra Tech	412.921.8650	linda.klink@tetrattech.com	NA

Name of SAP Recipient	Title/Role	Organization	Telephone Number (Optional)	E-Mail Address or Mailing Address	Document Control Number (Optional)
Ralph Brooks	UXO Manager/ Manages corporate MEC hazards and risks	Tetra Tech	770.413.0965 x231	ralph.brooks@tetrattech.com	NA
Tom Johnston	Quality Assurance Manager (QAM)/ Manages project QC	Tetra Tech	412.921.8615	tom.johnston@tetrattech.com	NA
Matt Soltis (Health and Safety Plan [HASP] only)	Tetra Tech Health and Safety Manager (HSM)/ Manages corporate Health and Safety Program	Tetra Tech	412.921.8912	matt.soltis@tetrattech.com	NA
Other Field Personnel To Be Determined (TBD)	UXO Quality Control Specialist (UXOQCS)/ Manages project UXO QA/QC	Tetra Tech	TBD	TBD	NA
Other Field Personnel (TBD)	UXO Safety Officer (UXOSO)/ Site Safety Officer (SSO)/ Manages project UXO safety	Tetra Tech	TBD	TBD	NA
Other Field Personnel (TBD)	Senior UXO Supervisor (SUXOS)/UXO Technician III/ Manages UXO activities on site	Tetra Tech	TBD	TBD	NA
Other Field Personnel (TBD)	UXO Field Crew/ Performs UXO field tasks	Tetra Tech	TBD	TBD	NA
Pedro Tejada	Vice President/ Manages debris removal effort	Right Way Environmental, Inc.	787-857-8832	rwecc@hughes.net rwecc@isla.net RWECC, INC. HC 72 Box 3744 Naranjito, PR 00719	NA

SAP Worksheet #4 -- Project Personnel Sign-Off Sheet

(UFP-QAPP Manual Section 2.3.2)

Certification that project personnel have read the text will be obtained by one of the following methods, as applicable:

1. In the case of regulatory agency personnel with oversight authority, approval letters or e-mails will constitute verification that applicable sections of the SAP have been reviewed. Copies of regulatory agency approval letters/e-mails will be retained in the project files and are listed in **Worksheet #29** as project records.
2. E-mails will be sent to Navy and Tetra Tech project personnel who will be requested to verify by e-mail that they have read the applicable SAP/sections and the date on which they were reviewed. Copies of the verification e-mails will be included in the project files and are identified in **Worksheet #29**.

A copy of signed **Worksheet #4** will be retained in the project files, and this worksheet identified as a project document in **Worksheet #29**.

Name	Organization/Title/Role	Telephone Number (optional)	Signature/E-Mail Receipt	SAP Section Reviewed	Date SAP Read
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Navy Project Team Personnel

Stacin Martin	Navy RPM/ Manages project Activities for Navy	757.322.4780	See Worksheet #1 for signature	All	
Mark Davidson	BEC/ Manages BRAC activities for the Navy	843.743.2124		All	
Michael Green	NAVFAC MRP Senior Technical Advisor/ Reviews SAP and QA documentation for Navy	757-322-8108	See Worksheet #1 for signature	All	

Tetra Tech Project Team Personnel

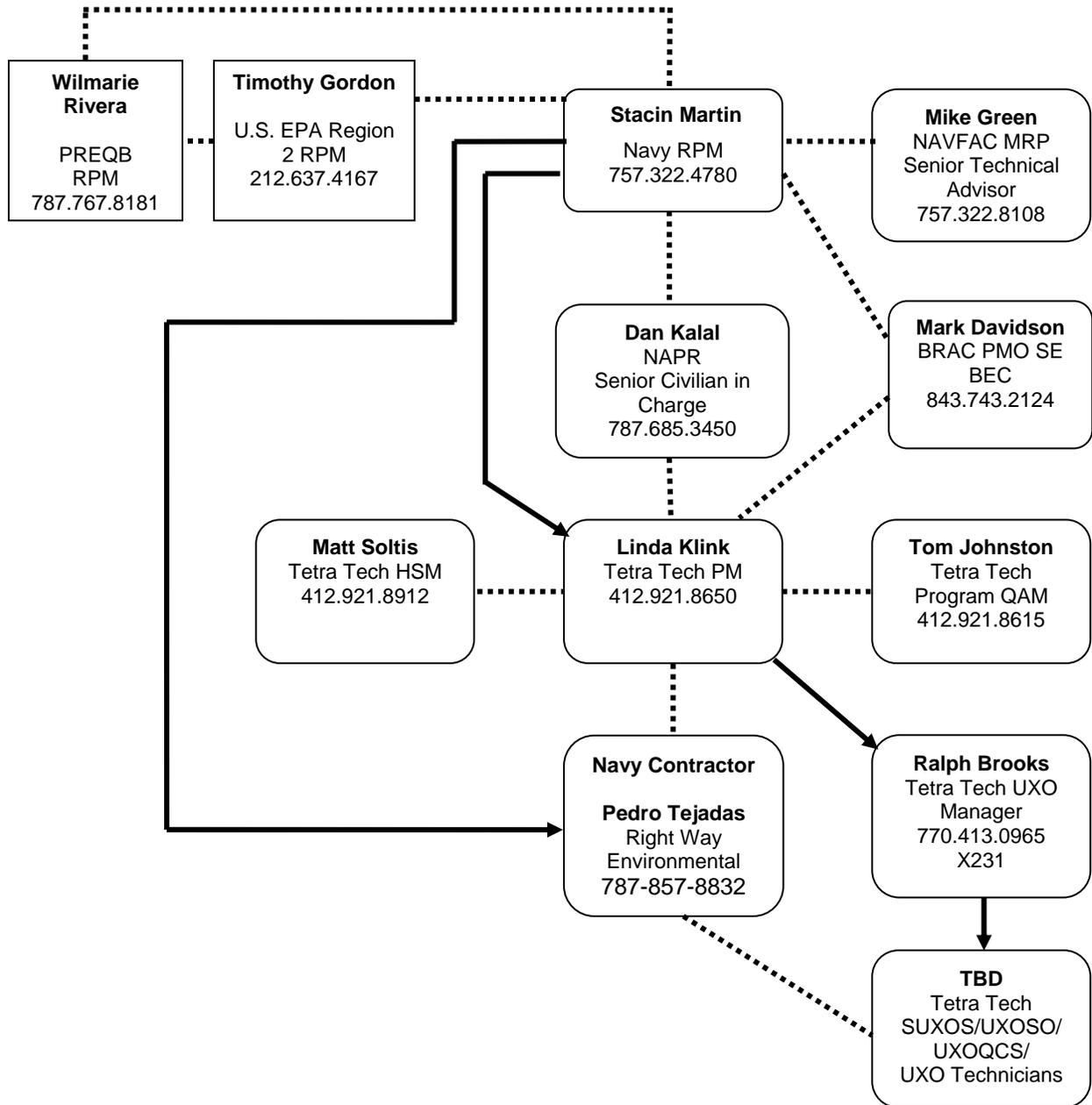
Linda Klink	Tetra Tech PM/ Manages project activities	412-921-8650	See Worksheet #1 for signature	All	
Ralph Brooks	UXO Manager/ Manages project MEC hazards and activities	770-413-0965 x231		All	
Dr. Tom Johnston	Tetra Tech QAM/ Provides QA oversight	412-921-8615	See Worksheet #1 for signature	All	

Name	Organization/Title/Role	Telephone Number (optional)	Signature/E-Mail Receipt	SAP Section Reviewed	Date SAP Read
Matt Soltis	HSM/ Manages corporate Health and Safety Program	412-921-8912	See signature on HASP	HASP and Worksheet #17	
TBD	SUXOS/ Supervises UXO field activities	TBD		All	
TBD	UXOQCS/ Provides QC during UXO field activities	TBD		All	
TBD	UXOSO/ Manages UXO safety operations	TBD		All	
Pedro Tejada	Right Way Environmental/ Debris removal contractor	787-857-8832		All	

SAP Worksheet #5 -- Project Organizational Chart

(UFP-SAP Manual Section 2.4.1)

Lines of Authority ————— Lines of Communication



SAP Worksheet #6 -- Communication Pathways

(UFP-QAPP Manual Section 2.4.2)

Communication Driver	Responsible Affiliation	Name	Phone Number and/or E-Mail	Procedure
MEC find or other reportable find (i.e., hazardous waste source/dangerous item)	Tetra Tech Field Staff Tetra Tech UXO Staff Tetra Tech UXO Manager Tetra Tech PM Navy RPM NAPR Point of Contact (POC)	TBD TBD Ralph Brooks Linda Klink Stacin Martin Dan Kalal	TBD TBD 770.413.0965 x 231 412.921.8650 757.322.4780 787.685.3450	Within 30 minutes of an MEC find, Tetra Tech UXO Technicians will notify field staff, secure area, and contact Tetra Tech UXO Manager and NAPR POC. Tetra Tech UXO Manager will verbally inform Tetra Tech PM the same day. Tetra Tech PM will notify Navy RPM on the same day. Tetra Tech UXO Manager will inform Naval Ordnance Safety and Security Activity (NOSSA) on the same day as informed.
Field issue that requires change in field tasks or scope of field work	Tetra Tech UXO Manager Tetra Tech PM Navy RPM	Ralph Brooks Linda Klink Stacin Martin	770.413.0965 x 231 412.921.8650 757.322.4780	Tetra Tech UXO Manager will inform Tetra Tech PM on the day the issue is discovered. Tetra Tech PM will inform Navy RPM within 1 business day. Navy RPM will issue scope change approval (verbally or via e-mail) if warranted. Scope change will be implemented before work is executed. Document via a Field Task Modification Request (FTMR) form within 2 work days.

Communication Driver	Responsible Affiliation	Name	Phone Number and/or E-Mail	Procedure
SAP amendment	Tetra Tech PM Navy RPM	Linda Klink Stacin Martin	412.921.8650 757.322.4780	Tetra Tech PM will notify Navy RPM via e-mail within 1 business day of recognizing a need for significant change and will also notify the Project Team. If amendment is minor (editorial or minor clarification), only notify Navy RPM and no need for SAP amendment.
Fieldwork schedule change	Tetra Tech PM Navy RPM NAPR POC	Linda Klink Stacin Martin Dan Kalal	412.921.8650 757.322.4780 787.685.3450	The Tetra Tech PM will verbally inform Navy RPM and NAPR POC on the day that schedule change is known and document in the monthly report. If report deliverable date is expected to be delayed as a result, document via schedule impact letter as soon as impact is realized.
Recommendation to stop work and initiate work upon corrective action	Tetra Tech UXO Manager Tetra Tech PM Tetra Tech HSM Tetra Tech QAM Navy RPM NAPR POC	Ralph Brooks Linda Klink Matt Soltis Dr. Tom Johnston Stacin Martin Dan Kalal	770.413.0965 x 231 412.921.8650 412.921.8912 412.921.8615 757.322.4780 787.685.3450	Within 1 hour, the UXO Manager (verbally or via e-mail) will inform subcontractors and Tetra Tech PM. Tetra Tech PM will inform (verbally or via e-mail) the listed Project Team members.
UXO survey data issue	Tetra Tech UXO Manager Tetra Tech PM Tetra Tech QAM	Ralph Brooks Linda Klink Dr. Tom Johnston	770.413.0965 x 231 412.921.8650 412.921.8615	UXO field team will notify Tetra Tech UXO Manager as soon as the impact is realized. Tetra Tech UXO Manager will notify Tetra Tech PM and QAM on the same day.

Communication Driver	Responsible Affiliation	Name	Phone Number and/or E-Mail	Procedure
Corrective action for field program	Tetra Tech QAM Tetra Tech PM Navy RPM	Dr. Tom Johnston Linda Klink Stacin Martin	412.921.8615 412.921.8650 757.322.4780	Tetra Tech QAM will notify Tetra Tech PM within 1 day that the corrective action has been completed. Tetra Tech PM will then notify the Navy RPM within 1 day. Navy RPM will then notify EPA/PREQB of any significant changes or corrective actions within 5 days.

SAP Worksheet #7 – Personnel Responsibilities and Qualifications Table

(UFP-QAPP Manual Section 2.4.3)

Name	Title/Role	Organizational Affiliation	Responsibilities	Education and/or Experience Qualifications (Optional)
Stacin Martin	Navy RPM	NAVFAC Atlantic	Functions as primary Navy interface with the Tetra Tech PM and Regulatory RPMs. <ul style="list-style-type: none"> • Oversees Tetra Tech management of project. • Provides Navy input through participation in technical meetings, review of SAP and project documents, and regular discussions with Tetra Tech PM and Regulatory RPMs. • Provide third party QA oversight of the field work based on NOSSA audit standards. 	Available upon request.
Mark Davidson	Navy BEC	BRAC PMO SE	Supports issues as identified by the Navy RPM.	Available upon request.
Wilmarie Rivera	RPM	PREQB	Participates in scoping, data review, and evaluation, and approves the UFP-SAP.	Available upon request.
Dan Kalal	Senior Civilian in Charge	NAPR	Oversees site activities and participates in scoping, data review, and evaluation.	Available upon request.
Timothy Gordon	RPM	U.S. EPA Region 2	Participates in scoping, data review, and evaluation and approves the UFP-SAP.	Available upon request.
John Trepanowski	Program Manager	Tetra Tech	Oversees NAVFAC CLEAN Program for Tetra Tech.	M.S., Mining Engineering B.S., Mining Engineering 27 years of engineering experience

Name	Title/Role	Organizational Affiliation	Responsibilities	Education and/or Experience Qualifications (Optional)
Linda Klink	PM	Tetra Tech	<p>Oversees SWMU 1 project financial, schedule, and technical day-to-day management.</p> <ul style="list-style-type: none"> • Ensures timely resolution of SWMU 1-related technical, quality, and safety questions associated with Tetra Tech operations. • Functions as the primary Tetra Tech interface with the Navy RPM and Tetra Tech field and office personnel for SWMU 1 activities. • Ensures that Tetra Tech health and safety issues related to the SWMU 1 project are communicated effectively to all on-site and off-site personnel. • Coordinates and oversees SWMU 1 work performed by Tetra Tech field and office technical staff (including data interpretation and report preparation). • Coordinates and oversees maintenance of all Tetra Tech SWMU 1 project records. • Coordinates and oversees review of Tetra Tech SWMU 1 deliverables. • Prepares and issues final Tetra Tech deliverables for SWMU 1 to the Navy. 	<p>M.S., Environmental Engineering (Water Resources) B.S., Chemical Engineering 29 years of environmental engineering experience Professional Engineer</p>
Pedro Tejada	Debris Removal Contractor	Right Way Environmental	<ul style="list-style-type: none"> • Oversees field debris removal effort • Responsible for disposal of Material Documented as Safe (MDAS) 	Available upon request.

Name	Title/Role	Organizational Affiliation	Responsibilities	Education and/or Experience Qualifications (Optional)
Ralph Brooks	UXO Manager	Tetra Tech	Oversees selection of qualified UXO personnel, establishes overall QC program for UXO activities, and addresses UXO-related issues as identified by field personnel.	B.S., General Studies Graduate, Navy Explosive Ordnance Disposal (EOD) School - Indian Head 25 years of military EOD experience 6 years of commercial UXO experience
TBD	SUXOS Technician III	Tetra Tech	Supervises the conduct of all on-site UXO-related operations. Prepares daily reports of field activities. Conducts daily site safety briefings. Escorts non-UXO personnel in suspect MEC areas. Determines location and identification of suspect MEC. Conducts detector-aided surface surveys.	Minimum of 10 years prior military EOD and/or commercial UXO experience in munitions response actions or range clearance activities (DoD Explosives Safety Board [DDESB]) Technical Paper (TP) 18].
TBD	UXOSO	Tetra Tech	Ensures that initial site-specific training is delivered to all field personnel before field activities begin and that all safety control measures have been established. Ensures that all UXO-specific certifications are filed on site and are available for Navy inspection. Enforces personnel limits and safety Exclusion Zones (EZs). Conducts, documents, and reports safety inspections.	Minimum of 8 years prior military EOD and/or commercial UXO experience in munitions response actions or range clearance activities and applicable safety standards (DDESB TP 18).

Name	Title/Role	Organizational Affiliation	Responsibilities	Education and/or Experience Qualifications (Optional)
TBD	UXOQCS	Tetra Tech	Conducts QC audits. Identifies, documents, and reports corrective actions.	Minimum of 8 years prior military EOD and/or commercial UXO experience in munitions response actions or range clearance activities and the transportation, handling, and storage of munitions and commercial explosives (DDESB TP 18).
Tom Johnston	Project QAM	Tetra Tech	<p>Reviews SAP and provides guidance in data quality review. Ensures quality aspects of the CLEAN program.</p> <ul style="list-style-type: none"> • Conducts systems and performance audits to monitor compliance with environmental regulations, contractual requirements, SAP requirements, and corporate policies and procedures. • Audits project records. • Assists in the development of corrective action plans and ensuring correction of non-conformances reported in internal or external audits. • Ensures that this SAP meets Tetra Tech, Navy, and regulatory requirements. • Prepares QA reports for management. 	Ph.D., Analytical Chemistry 31 years experience
Matt Soltis	HSM	Tetra Tech	<p>Oversees CLEAN Program Health and Safety Program</p> <ul style="list-style-type: none"> • Provides technical advice to the Tetra Tech PM on matters of health and safety. • Oversees the development and review of the HASP. • Conducts health and safety audits. • Prepares health and safety reports for management. 	B.S., Industrial Safety Sciences 24 years of environmental experience

Name	Title/Role	Organizational Affiliation	Responsibilities	Education and/or Experience Qualifications (Optional)
TBD	Site Safety Officer (SSO)	Tetra Tech	<ul style="list-style-type: none"> • Controls specific health and safety-related field operations such as personnel decontamination, monitoring of worker heat or cold stress, and distribution of safety equipment. • Conducts and documents a daily health and safety briefing each day while on site. • Ensures that field personnel comply with all procedures established in the HASP. • Identifies an assistant SSO in his/her absence. • Terminates work if an imminent safety hazard, emergency situation, or other potentially dangerous situation is encountered. • Ensures the availability and condition of health and safety monitoring equipment. • Coordinates with the UXO Manager and PM to institute and document any necessary HASP modifications. • Ensures that facility personnel and subcontractors are adequately advised and kept clear of UXO and potentially contaminated materials. 	TBD

In some cases, one person may be designated responsibilities for more than one position. For example, the UXOSO may also be responsible for SSO duties. This action will be performed only as credentials, experience, and availability permits.

SAP Worksheet #8 -- Special Personnel Training Requirements Table

(UFP-QAPP Manual Section 2.4.4)

Project Function	Specialized Training by Title or Description of Course	Training Provider/ Verifier	Training Date	Personnel/ Groups Receiving Training	Personnel Titles/ Organizational Affiliation	Location of Training Records/ Certificates
Project Operations	Site Orientation, Ethics Training, and UXO Avoidance	SUXOS	Upon arrival at SWMU 1	All personnel	Tetra Tech	Documentation of special training requirements will be maintained on site. After the field investigation is complete, special training documentation will be maintained in the permanent project file.
	Accident Prevention and First Aid	SSO				
	Overview of Project Plans	SUXOS				
QA/QC	Tetra Tech Corporate Quality Assurance Program Training	Tetra Tech Corporate	Mandatory biennial training; received prior to participation in field activities	UXOQCS		
Site Supervisor	Formal Supervisor Training	Tetra Tech	Current	SUXOS		
Safety	Formal Safety Training	Tetra Tech	Current	UXOSO		
Munitions Response	MEC Safety Training	UXOSO and SUXOS	Training will have been received prior to participation in field activities	Personnel entering EZ		
Reacquisition Layout, Surface Survey	Use of Hand-Held Global Positioning System (GPS)	SUXOS		UXO Team		
MEC Data Collection	Surface Survey and MEC Management and Accountability SOPs	SUXOS		UXO Team		

All field personnel will have appropriate training to conduct the field activities to which they are assigned. Additionally, each site worker will be required to have completed a 40-hour course (and 8-hour refresher, if applicable) in health and safety training as described under Occupational Safety and Health Administration (OSHA) 29 Code of Federal Regulations (CFR) 1910.120(b)(4). Safety requirements are addressed in greater detail in the Tetra Tech Health and Safety Plan (HASP) (provided under separate cover).

SAP Worksheet #9- Project Scoping Session Participants Sheet

(UFP-SAP Manual Section 2.5.1)

Project Name: NAPR MEC On-Site Construction Support for Debris Removal Projected Date(s): February – March 2011 Project Manager: Linda Klink		Site Name: SWMU 1 – Former Army Cremator Disposal Site Site Location: NAPR, Ceiba, Puerto Rico			
Date of Session: Not Applicable Scoping Session Purpose: Refer to the discussion under Comments/Decisions concerning relevant information and discussions on the path forward.					
Name	Title	Affiliation	Phone Number	E-Mail Address	Project Role
Not applicable (see discussion below)					

Comments/Decisions:

Concerning SWMU 1, Tetra Tech previously completed UXO Escort Support for debris removal operations at this site, which included UXO avoidance using detector-aided visual surface surveying. A large number of suspect Material Potentially Presenting an Explosive Hazard (MPPEH) items were found during this operation, necessitating UXO support operations prior to the Navy’s contractor, Right Way Environmental, resuming debris removal operations.

Other than general discussions among the Stakeholders during phone conversations and correspondence, scoping meetings specific to SWMU 1 have not been held to date. However, the Stakeholders are in concurrence with the scope of field work described herein associated with on-site construction support for debris removal operation. U.S. EPA and PREQB have provided authorization to proceed without a Data Quality Objective (DQO) meeting to advance the project and will allow for critical information to be collected concerning characterization of surface MEC/MPPEH, thus serving the function of an interim corrective measure (ICM) as part of a Phase 1 RFI. U.S. EPA and PREQB will fully participate in review/approval of the subject SAP and will fully participate in planning future phases of a Phase 1 RFI for MEC and MC in both the surface and subsurface, as well as a future Full RFI.

Action Item:

The Navy's task is to submit the subject SAP addressing the detailed plan for on-site construction support for debris removal at SWMU 1.

Consensus Decision:

There is consensus among the Navy, U.S. EPA, and PREQB on proceeding with preparation of the subject SAP to address Tetra Tech on-site MEC construction support for debris removal. There is an understanding that the draft SAP will be provided to the Stakeholders for review and approval.

The primary objective of surface MEC/MPPEH activities at SWMU 1 is to support the safe removal of non-munitions-related metallic debris piles from designated areas of the site by the Navy's contractor, Right Way Environmental. Information will also be gathered to assist in further characterizing and delineating potential MEC/MPPEH hazards present within SWMU 1.

No construction or other activities are currently planned at SWMU 1 at this time other than the proposed activities.

SAP Worksheet #10 -- Problem Definition, Site History, and Background

(UFP-QAPP Manual Section 2.5.2)

10.1 FACILITY BACKGROUND

NAPR, formerly known as Naval Station Roosevelt Roads, is located on the eastern coast of Puerto Rico in the municipality of Ceiba, approximately 33 miles southeast of San Juan ([Figure 10-1](#)). The nearest major town is Fajardo, which is 10 miles north of the station. The facility occupies approximately 8,600 acres, and except for two adjacent, unpopulated, islands (Pineros and Cabeza de Perro) off the northeastern coast of the facility, is bordered on the north, south, and east by the marine waters of the Atlantic Ocean, Caribbean Sea, and Vieques Passage. The facility was used as a military base from 1940 until 2004, and included a port facility and major airfield complex. The facility ceased operation as an active Naval Station on March 31, 2004, at which point it was designated NAPR.

The Navy currently owns and maintains the facility in preparation for sale and/or transfer of the property and is continuing to implement clean up obligations. NAPR is in closure in accordance with the Base Realignment and Closure (BRAC) process.

10.2 SITE REGULATORY STATUS

SWMU 1 is currently inactive. The Annual Land Use Control (LUC) Status Report (Baker, 2010) notes that land use control (LUC) restrictions for residential use, groundwater use, soil disturbance, and sediment disturbance. The report recognizes that the site is under investigation and that final restrictions will be determined at the conclusion of the investigation. The site will remain under the ownership and control of the Navy until response actions are complete.

Results from MEC/MPPEH during the SWMU 1 debris removal effort will allow for critical information to be collected concerning characterization of surface MEC/MPPEH, thus serving as an interim corrective measure (ICM) that will be encompassed in a MEC Phase 1 RFI. The Phase 1 RFI is equivalent to a Preliminary Assessment/Site Inspection (SI) typically conducted for munitions sites under CERCLA. The Phase 1 RFI is not intended to be a full-scale study of the nature and extent of contamination or explosives hazards; rather, the purpose is to generate field data efficiently to determine if further response action or remedial investigation is appropriate.

10.3 SITE DESCRIPTION AND HISTORY

As described in the Phase I/II Environmental Condition of Property (ECP) Report (NAVFAC Atlantic, 2005), SWMU 1, the Former Army Cremator Disposal Site, consists of an abandoned unlined waste

pile/landfill that was in operation from the early 1940s to the early 1960s and was the main landfill during this time for the main station and Fort Bundy. The site is bounded to the north by Kearsarge Road leading to a pier, mangroves and Ensenada Honda to the east and south, and the former Navy Lodge and Bowling Alley and Langley Drive to the west (see [Figure 10-2](#)). SWMU 1, a part of Operable Unit (OU) 3 and formerly designated as Installation Restoration Program designation as Site 5, encompasses an area of approximately 116 acres and extends into the mangrove swamps along the shoreline of the Ensenada Honda.

Waste material was disposed of at SWMU 1 by piling, burning and compacting. The trash was dumped in mounds at the site and burned every afternoon; the remains were compacted with a bulldozer. No daily cover was applied. Though no historical records of hazardous waste disposal at this site were identified, it is presumed that the landfill accepted all categories of waste including hazardous waste. An estimated 100,000 tons of waste including scrap metal, inert ordnance, batteries, tires, appliances, cars, cables, dry cleaning solvent cans, paint cans, gas cylinders, construction debris, dead animals, and residential waste were disposed of at this site.

Based on the results of the Initial Assessment Study of 1983/1984, consisting of a records search, on-site survey, and personnel interviews, a Supplemental Investigation (geophysical investigation, soil and groundwater sampling) was conducted in 1986/1987. A Phase 1 RFI (soil, groundwater, surface water, and sediment sampling only and not munitions focused) conducted in 1992/1993 found that SWMU 1 was minimally impacted by former landfilling operations and recommended LUCs. Additional ecological evaluation was conducted and presented in the Final Steps 6 and 7 of the Baseline Ecological Risk Assessment for SWMU 1 (CH2MHill et al., 2010). Risk to terrestrial invertebrates and terrestrial avian omnivores, when evaluated using a weight-of-evidence approach and taking into consideration the associated uncertainty, indicated the need for additional evaluation. Initially, it was recommended that an ICM be performed (i.e., soil removal) to eliminate potential risks to terrestrial invertebrates and terrestrial avian omnivores from exposures to pesticides (4,4'-DDD, 4,4'-DDE, and 4,4'-DDT) and metals (antimony, copper, lead, and/or tin) in surface soil. No investigations specific to munitions have been conducted at SWMU 1 to date.

During January 2010 activities to remove debris from the SWMU 1 ground surface to remove the source material causing the soil contamination (metals) at the site, suspect munitions items were encountered by the debris removal contractor, Right Way Environmental, and the debris removal stopped. Navy Explosive Ordnance Disposal at Naval Station Mayport, Florida (Navy EOD Mayport) was contacted to respond to and evaluate the items (see [Appendix A](#)); in February 2010, Navy EOD Mayport identified the munitions items as Material Documented As Safe (MDAS). When the debris removal efforts resumed in March 2010 with UXO avoidance support, numerous suspect MEC/MPPEH items were encountered that

again brought work at SWMU 1 to a halt because there were too many suspect MEC/MPPEH items encountered so the debris removal could not be accomplished employing UXO avoidance alone.

10.4 SWMU 1 CSM SUMMARY FOR MEC

This section provides the Conceptual Site Model (CSM) summary based on information available to date, including information acquired during January 2010 activities and March 2010 UXO avoidance support by Tetra Tech during the debris removal effort (see [Appendix B](#) for site photographs). As discussed in Section 10.3, chemical contamination at SWMU 1 is being addressed independently; however, although metals contamination was investigated (metals are common contaminants of potential concern at munitions sites) other munitions-related chemical constituents associated with the site may not have been addressed, and so in addition to sampling for hazardous toxic waste products, future MC sampling will be required. The subject field effort is limited in scope to on-site construction support for debris removal and so the following discussion of the CSM focuses on only MEC/MPPEH-related information.

The following subsections present the site environmental setting, potential or known sources of MEC, MEC migration pathways, and receptors, and the problem statement for SWMU 1. [Figure 10-2](#) shows an aerial view of site, and [Table 10-1](#) and [Figure 10-3](#) present the CSM. Supporting NAPR information provided in [Appendix A](#) supports the environmental setting discussion for SWMU 1.

10.4.1 Physical and Environmental Characteristics

The following section provides information presented in documents prepared to support previous site studies/investigations, including information related to climate, topography, geology, soil and vegetation types, hydrology, hydrogeology, cultural and natural resources, and threatened, endangered, and protected species. Source reference documents include the Integrated Natural Resources Management Plan (U.S. Navy 1998b), Final Steps 6 and 7 of the Baseline Ecological Risk Assessment, SWMU 1 (CH2MHill et al., 2010), and Phase I/II ECP Report (NAVFAC Atlantic, 2005).

Climate

NAPR has a tropical marine climate characterized by minimal temperature fluctuations, relatively moderate humidity, and frequent rain showers. The rainy season is typically defined as May through November. Hurricane season is from June 1 through November 30.

Topography and Hydrology

Ground surface elevations at NAPR range from 0 to 131 feet above mean sea level. At SWMU 1, the topography is relatively flat. Vegetative cover limits the amount of erosion that occurs at the site. The

site is bordered to the east by the Caribbean Sea. In the low-lying shore areas such as SWMU 1, seawater flooding results from storms, wind, and abnormally high tides. The tidal ranges in the NAPR area are rather small, with a maximum spring range of less than 3 feet. The tides are semidiurnal and have a typical range of about 1 foot in the main harbor of the station.

Geology

In the uplands area of SWMU 1 (where the debris piles are located), the soil association is the Jacana-Amelia-Fraternidad association, of which only the Jacana soils occur at NAPR. The Jacana clay consists of moderately deep soils formed from fine-textured sediments and residuum derived from basic volcanic rocks. Slopes range from 5 to 12 percent. Jacana soils are found where sediments derived from uplands (Descalabrado-Guayama soils/volcanic rock materials) have been deposited on the foot slopes. These clays have a high natural fertility. Limitations for farming, recreation, and urban land use involve a moderate rate of runoff, susceptibility to erosion, high shrink-swell potential, and shallow depth to bedrock.

In the estuarine area of SWMU 1, the soil association is the Swamps-Marshes association, which consists of deep very poorly drained soils found in level or nearly level strips of land along coastal areas. The soils in this association are sandy or clayey and contain organic materials from decaying mangrove trees; they are underlain by coral, shells, and marl at varying depths. These soils have no agricultural value and serve only as feeding and breeding areas for birds and crabs.

Hydrology/Hydrogeology

The nearby marine waters suggest that salt-water intrusion has occurred at SWMU 1. No drinking water wells have been developed at the facility.

Historical and Cultural Resources

No significant cultural resources are identified at NAPR SWMU 1 within the debris pile area.

Ecology and Natural Resources

Ecology and natural resources concerns at NAPR are discussed in the event that any protected species are encountered during project activities. Moreover, conservation methods in place for SWMU 1 need to be considered now and during future investigations/remediation. In particular, no trimming or cutting of trees is allowed between March 15 and August 30, except in an emergency, unless a permit is first obtained. In addition, USFWS and Department of Natural and Environmental Resources (DNER) are to be notified if a boa constrictor is found.

Terrestrial and Aquatic Habitats

Four plant communities have been identified at SWMU 1. Geology, and to a lesser extent, human disturbances, have influenced the types of plants that occur at SWMU 1. The communities include coastal upland forest, coastal scrub forest, red mangrove (*Rhizophora mangle*), and black mangrove, (*Avicennia germinans*).

The upland vegetative communities within and contiguous to SWMU 1 are classified as coastal scrub forest and upland coastal forest communities. The SWMU 1 coastal scrub forest community is limited to two strata (shrub and herbaceous); *Panicum maximum* (no common name) and lead tree (*Leucaena leucocephala*) dominate the herbaceous and shrub strata, respectively. The upland coastal forest community exhibits multiple layers of stratification (herbaceous, shrub, and tree layers). The herbaceous stratum is dominated by *Panicum maximum*, and lead tree, almácigo (*Bursera simaruba*), and Christmas tree dominate the shrub layer. Species found within the tree layer include basket wiss (*Trichostigma octandrum*), guayaba (*Psidium guajava*), and oxhorn bucida (*Bucida buceras*). Maintained grasses, including *Bothriochloa ischaemum*, *Chloris barbata*, and *Digitaria spp.*, dominate areas immediately adjacent to road corridors. One plant, Cobana negra (*Stahlia monosperma*), was classified as threatened in 1990 by the USFWS. Cobana negra is known to occur between the boundary of black mangrove communities and coastal upland forest communities and is also known to occur in coastal forests of southeastern Puerto Rico. Cobana negra was not observed at SWMU 1.

The aquatic habitats occurring within and contiguous to SWMU 1 consist of an extensive estuarine wetland system. The wetland units include both black mangrove (*Avicennia germinans*) and red mangrove (*Rhizophora mangle*) communities. The black mangrove is classified as threatened under federal law. Because the mangrove areas are considered wetlands, they are protected under federal law and are critical habitat for the yellow-shouldered blackbird (*Agelaius xanthomus*). Red mangroves occur immediately adjacent to the Ensenada Honda (open water habitat), and black mangroves occur between the red mangrove and coastal upland forest community. The red mangrove community is sparsely vegetated (approximately 25 percent), with large pools of water present. There are no freshwater wetland units within or contiguous to SWMU 1. Seagrass beds are prevalent throughout much of the Ensenada Honda, including the open water portion of SWMU 1. Seagrass meadows within the Ensenada Honda are dominated by a nearly continuous cover of turtle grass with a high abundance of calcareous green algae (*Avranvillia spp.*, *Ventricaria ventricosa*, *Caulerpa spp.*, *Valonia spp.*, and *Udotea spp.*). The turtle grass climax meadows of the Ensenada Honda represent potential grazing areas for the West Indian manatee (*Trichechus manatus*) and green sea turtle (*Chelonia mydas*), both federally threatened species in Puerto Rico. Coral reefs are not located within the open water portion of SWMU 1; the nearest reef habitat is located at the mouth of the Ensenada Honda (approximately 1.05 miles from SWMU 1).

Conservation zones have been established to preserve critical habitats at the facility. The only designated critical habitat at NAPR is the mangrove stands for the yellow-shouldered blackbird.

Wildlife: Because of its island ecosystem, abundant and diverse species of terrestrial vertebrates are not found on Puerto Rico. The major mammal population in and near NAPR consists of introduced species such as stray dogs and cats, Norway and gray-bellied rats, mice, and mongooses. The reptile population (especially snakes) has been significantly reduced because of the large mongoose population. The facility supports a variety of wildlife that have been listed by either the federal or commonwealth governments as threatened, endangered, or vulnerable (commonwealth only), including five sea turtle species (green [*Chelonia mydas*], loggerhead [*Agelaius xanthomus*], hawksbill [*Eretmochelys imbricate*], leatherback [*Dermochelys coriacea*], and olive ridley [*Lepidochelys olivacea*]), one snake (Puerto Rican boa constrictor [*Epicrates inornatus*]), 12 birds (including the yellow-shouldered blackbird and brown pelican [*Pelecanus occidentalis occidentalis*]), and one mammal (West Indian manatee [*Trichechus manatus*]). The species observed at the facility that are classified as endangered under federal law include hawksbill and leatherback sea turtles, Puerto Rican boa, yellow-shouldered blackbird, brown pelican and West Indian manatee.

Species of significance within the boundary of SWMU 1 are as follows:

- **Birds:** SWMU 1 is located within the critical habitat designation for the yellow-shouldered blackbird; the mangrove forests surrounding NAPR, including the mangrove communities at SWMU 1, should be considered the most important nesting habitat for the yellow-shouldered blackbird. Although the yellow-shouldered blackbird was not observed during the May 2000 habitat characterization, based on the arboreal feeding behavior of the yellow-shouldered blackbird, potential feeding habitat (shrub and tree layers within the coastal scrub forest and/or upland coastal forest communities) is present at SWMU 1.

Based on the habitat preferences and observations recorded at NAPR, only the brown pelican has the potential to use the open water habitat at SWMU 1 (i.e., Ensenada Honda) as a food source. The USFWS published a proposed rule to remove the brown pelican from the federal list of endangered and threatened wildlife throughout its range, including Puerto Rico and so this proposed rule indicates that special consideration of the brown pelican at NAPR is not warranted. Several bird species were observed within the upland coastal forest, coastal scrub forest, and/or mangrove communities at SWMU 1 during the May 2000 habitat characterization, including the green mango (*Anthracothrax viridis*), red-tailed hawk, Puerto Rican woodpecker, loggerhead kingbird (*Tyannus caudifasciatus*), zenaida dove, pearlyeyed thrasher (*Margarops fuscatus*), northern mockingbird (*Mimus polygottos*), greater antillen grackle (*Quiscalus niger*), gray kingbird (*Tyrannus dominicensis*), and yellow warbler.

- Reptiles and Amphibians: Based on the life history information for each turtle species and the availability of forage material (in the form of sea grass), the green sea turtle has the potential to forage within Ensenada Honda, including the open water portion of SWMU 1. Based on the absence of preferred habitat, there is low probability of the occurrence of the Puerto Rican boa at SWMU 1. The only reptiles species observed with the upland habitat at SWMU 1 during the May 2000 habitat characterization were lizards (crested anole [*Anolis cristatellus*], brown lizard [*Anolis cristatellus*], and *Anolis stratulus* [no common name]).

- Mammals: West Indian manatee sightings within the Ensenada Honda include locations within and adjacent to SWMU 1. Thirteen species of bats are known to occur on Puerto Rico. None of the bats found on Puerto Rico are exclusive to the island, nor are they listed under provisions of the Endangered Species Act of 1973. The specific bat species known to occur on Puerto Rico are as follows:
 - Fruit-eating bats: Jamaican fruit bat (*Artibeus jamaicensis*), Antillean fruit bat (*Brachyphylla cavernarum*), and red fig-eating bat (*Stenoderma rufum*).

 - Nectivorous bats: brown flower bat (*Erophylla sezekoni bombifrons*) and greater Antillean long-tongued bat (*Monophyllus redmani*).

 - Insectivorous bats: Antillean ghost-faced bat (*Mormoops blainvillii*), Parnell's mustached bat (*Pteronotus parnellii*), sooty mustached bat (*Pteronotus quadridens*), big brown bat (*Eptesicus fuscus*), red bat (*Lasiurus borealis*), velvety free-tailed bat (*Molossus molossus*), and Brazilian free-tailed bat (*Tadarida brasiliensis*).

 - Piscivorous bats: Mexican bulldog bat (*Noctilio leporinus*).

- Fish and Aquatic Invertebrates: A diverse fish and invertebrate community can be found in the marine environment surrounding NAPR. This can be attributed to the varied habitats that include marine and estuarine open water habitat, mud flats, sea grass beds, and mangrove forests. The fish community is represented by stingrays, herrings, groupers, needlefish, mullets, barracudas, jacks, snappers, grunts, snooks, lizardfishes, parrotfishes, gobies, filefishes, wrasses, damselfishes, and butterflyfish. The benthic invertebrate community includes sponges, corals, anemones, sea cucumbers, sea stars, urchins, and crabs. A list of known species residing within the estuarine wetland and open water habitats at SWMU 1 is not available; however, numerous fiddler crabs (*Uca spp.*) have been

observed within the black and red mangrove communities at and contiguous to SWMU 1 during previous field investigations.

Access/Controls Restrictions

SWMU 1 is located within NAPR, which is currently a secure Navy facility. Currently, restricted access via guard at Gate 3 is the only entry point to NAPR. NAPR security personnel monitor all access to the area, and frequent motor vehicle patrols are conducted as part of the access control program. There are no other SWMU 1 LUCs planned for the site at this time. However, the facility is in the closure process, and the site will be transferred outside Navy control after response actions are completed.

10.4.2 Potential or Known Sources of MEC

No records have been found that SWMU 1 has ever been used as a bombing target, firing or demolition range of any kind. However, as mentioned in Section 10.3, records indicate that inert ordnance was disposed of at SWMU1 during the time the site was used as a landfill. MPPEH encountered during debris removal activities in January 2010 and certified as MDAS by Navy EOD Mayport in February 2010 included 1 MK 76 Practice bomb, 1 Aircraft Drop Tank and various Rocket Pod Launchers. In March 2010, MPPEH identified included 2.25 inch Sub Caliber Aircraft Rockets (SCARs) and 5-inch High Velocity Aircraft Rocket (HVAR) motors along with 20mm and 5-inch cases (Tetra Tech UXO Escort Field reports dated March 2nd and 3rd, 2010 documented this information).

Hazardous, Toxic, or Radiological Waste (HTRW) is not anticipated at SWMU 1. No historical documentation has indicated that HTRW was stored, disposed of, or generated at this site.

10.4.3 MEC/MPPEH Migration Pathways and Receptors

Migration of exposed MEC/MPPEH may occur naturally through surface soil erosion during precipitation events such as thunderstorms and hurricanes. Migration of MEC/MPPEH is not expected to be significant because the site is heavily vegetated. Penetration depths are not applicable to this site because suspected MEC/MPPEH activities only involved disposal. It is unknown if MEC/MPPEH are present in the subsurface. If they are, MEC/MPPEH may be present to a depth of several feet below ground surface (bgs) (i.e., elevation of the shallow groundwater table). MPPEH are known to be present at the SWMU 1 ground surface, which is relevant to the surface debris removal activities currently planned for SWMU 1. Refer to [Figure 10-4](#) for the MEC exposure pathway analysis.

If MEC/MPPEH are identified in the SWMU 1 subsurface soil, potential MC may be associated with the munitions-related items. MC migration pathways for contaminated soil could potentially include transport

to subsurface soil, groundwater, surface water, and sediment and will be investigated at a later date under a separate SAP.

Although possible, current human receptors at this site are limited based on the LUCs and access restrictions in place.

10.5 PROBLEM STATEMENT

The immediate problem and the subject of this SAP is that suspect MEC/MPPEH present at SWMU 1 on the ground surface in and around debris piles present a safety hazard to workers during the planned removal of surface debris.

SAP Worksheet #11 -- Data Quality Objectives for On-Site Construction Support for SWMU 1

Debris Removal

11.1 IDENTIFY THE GOAL OF ON-SITE CONSTRUCTION SUPPORT

The primary goal of on-site construction support for SWMU 1 is to support the safe removal of debris piles identified for removal by Right Way Environmental. UXO Technicians conducting clearance operations in areas designated for debris removal will remove and/or treat MEC/MPPEH items found in debris piles and on the surface in designated debris removal approach paths and equipment laydown areas. The UXO team will also be tasked with characterizing the amount, type, location, and condition of each MEC/MPPEH item at the site. This information will be used by the project team as an ICM to aid in characterizing the site.

11.2 IDENTIFY INFORMATION INPUTS

Information will be gathered and evaluated from portions of the site designated for debris removal by Right Way Environmental, including associated approach paths and equipment laydown areas.

11.3 DEFINE THE BOUNDARIES OF DEBRIS REMOVAL

The UXO team will perform a detector-aided visual survey of all approach paths, equipment laydown areas, and the designated debris piles in the approximately 4-acre work area. The UXO team will remove or treat as necessary all MEC/MPPEH items found in the aforementioned areas. After completion of the debris removal at a given debris pile, a detector-aided survey of each debris pile footprint will be conducted to search for possible burial pits or trenches. In areas outside of the areas to be surveyed, UXO Technicians will use UXO avoidance measures unless circumstances dictate that clearance is needed to complete the debris removal in a safe manner. Only MEC/MPPEH at the surface and in the debris piles will be removed or treated; no intrusive activities are needed to accomplish the goals of this SAP.

The main focus of the SAP is on debris removal, and information collected will be limited to MEC/MPPEH encountered within the area of clearance/avoidance activities. The UXO team will make every effort to collect as much information as possible without interfering with the main goal of the SAP (i.e., debris removal).

11.4 DEVELOP THE ANALYTICAL APPROACH

The site is suspect for MEC/MPPEH based on historical data indicating that practice and inert munitions were dumped at SWMU 1 during the time it was an operational landfill and subsequent discovery of a

Mk76 practice bomb, aircraft fuel tank, rocket pods, 2.25 inch rockets, and 5 inch rockets during debris removal activities in 2010. Therefore, the decision rule is based on gaining information during MEC/MPPEH clearance/avoidance that further develops the current CSM and thus supports scoping of future Phase 1 RFI investigation efforts. Because the presence of MPPEH is known, only one decision rule is needed; proceed with Phase 1 RFI for MEC/MPPEH for the remaining surface and for the subsurface, as well as for MC in appropriate media to determine nature and extent of any munitions-related contamination.

11.5 SPECIFY PERFORMANCE OR ACCEPTANCE CRITERIA

Information will be collected on MEC/MPPEH items found during the detector-aided visual surveys. UXO Technicians will take photographs of each MEC/MPPEH item, record the GPS location, and record information on the item in the team leader's logbook. If a suspect burial pit or trench is discovered during the detector-aided survey of any of the debris pile footprints, that information will be recorded with the GPS and in the team leader's logbook. The Tetra Tech project team will use the results of the surveys to verify that all proposed data were collected, that the data meet the quality specifications of this SAP, especially adherence to method-specific quality specifications identified in [Worksheet #s 35 and 36](#).

The Tetra Tech project team will review the clearance/avoidance results and ensure that all stakeholder viewpoints are included in decision making. [Worksheet #37](#) describes the data usability assessment process, which goes beyond an evaluation of method-specific quality evaluations to include evaluations of planning assumptions and other factors.

11.6 DEVELOP THE PLAN FOR OBTAINING DATA

The proposed field data collection program for on-site construction support at SWMU 1 is described in detail in [Worksheet #17](#) of this UFP-SAP for MEC/MPPEH.

SAP Worksheet #12 -- Measurement Performance Criteria Table

(UFP-QAPP Manual Section 2.6.2)

Definable Feature of Work/ Data Type	Geophysical Anomaly Measurement/ Data Quality Indicator	QC Sample and/or Activity to Assess Measurement Performance	Measurement Performance Criteria	Frequency
Site Preparation (including mobilization)	Completeness	Verify that approved project plans are reviewed and signed Verify that equipment needed is on site Verify that communications equipment needed is on site and working Verify emergency services are available Verify site-specific training	Approved project plans reviewed and signed All equipment needed is on site Communications checked Emergency services checked Site-specific training completed	Once
Site Surveying	Accuracy	Verify that site boundaries (debris removal areas, equipment laydown areas, and access pathways) have been established	Site boundaries (debris removal areas, equipment laydown areas, and access pathways) have been established	Once
Vegetation Management	Completeness	Verify that excess vegetation has been removed from working areas of the site (debris removal areas, equipment laydown areas, and access pathways) in accordance with MRP SOP 06	Vegetation cut to between 6 to 12 inches above the ground surface	As needed

Definable Feature of Work/ Data Type	Geophysical Anomaly Measurement/ Data Quality Indicator	QC Sample and/or Activity to Assess Measurement Performance	Measurement Performance Criteria	Frequency
GPS Positional Data	Real-Time Accuracy	Horizontal Dilution of Precision (HDOP) and number of satellites	HDOP < 3, number of satellites at least six	Ongoing
	Accuracy	GPS positioning - comparison with two known locations	Sub-meter	At the beginning and end of each day
Detector-Aided Visual Survey and Manual MEC/MPPEH Operations	Precision	Resurvey all areas of the work site surveyed for the presence of MEC/MPPEH to perform a safe removal of debris piles	Visually detect all MEC/MPPEH the size of a 20mm projectile or larger on the ground surface and in debris piles; discovery of any MEC/MPPEH not previously detected would result in failure of QC. (Note that detectors will assist but cannot discriminate MEC/MPPEH items within piles of metallic items and so visual survey will be primary method).	Resurvey 25% of first four lots of work and after any failure, then 10% of remaining lots of work after four lots in a row pass QC. If any lot of work does not pass QC, UXO team will resurvey entire lot and another QC check will be performed (Note: one lot of work will be equal to an approach path, work area or laydown area that is 100- by 100-feet or less in size; areas larger than 100- by 100-foot will be divided into 100- by 100-foot sections for QC purposes. A debris pile that can be processed in 4 hours will be defined as one lot of work. Larger debris piles will be subdivided into multiple lots of work).

Definable Feature of Work/ Data Type	Geophysical Anomaly Measurement/ Data Quality Indicator	QC Sample and/or Activity to Assess Measurement Performance	Measurement Performance Criteria	Frequency
Mechanized (low-input) Operations	Precision	Observe debris removal for MEC/MPPEH	Stop mechanized operations if MEC/MPPEH 20mm or larger is observed; observation of MEC/MPPEH by UXOQCS would result in failure of QC.	Resurvey 25% of first four lots of work and after any failure, then 10% of remaining lots after four lots in a row pass QC. If any lot does not pass QC, UXO team will resurvey entire lot and another QC check will be performed (Note: a lot of work will be equal to an approach path, work area or lay down area that is 100- by 100-feet or less in size; areas larger than 100- by 100-foot will be divided into 100- by 100-foot sections for QC purposes. A debris pile that can be processed in 4 hours will be defined as one lot of work. Larger debris piles will be subdivided into multiple lots of work).
Donor Explosives Handling and Storage	Accuracy	Proper use of placards, warning signs, flagging, and firefighting equipment present and correctly posted. Receipt, usage, and inventory control completed per Operational Procedure (OP) 5/Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) requirements. Compliance with explosive handling and transportation requirements.	Explosives handling performed in compliance with OP 5 and ATF regulations	Daily/weekly/each occurrence

Definable Feature of Work/ Data Type	Geophysical Anomaly Measurement/ Data Quality Indicator	QC Sample and/or Activity to Assess Measurement Performance	Measurement Performance Criteria	Frequency
MEC Management (Treatment)	Completeness	Verify that treatment is conducted per MRP SOP 07	Treatment conducted per MRP SOP 07	Each occurrence
MPPEH Management (Inspection)	Accuracy	Verify that inspection is per MRP SOP 02 and OP 5	Each MPPEH item inspected and segregated as material documented as MDAS or Material Documented as an Explosive Hazard (MDEH)	Daily/each occurrence
MPPEH Management (Certification)	Accuracy	Verify that certification is per MRP SOP 02 and OP 5	MPPEH is certified as MDAS or MDEH	Daily/each occurrence
MPPEH Management (Disposal)	Completeness	Verify that disposal is conducted per MRP SOPs 02 and 07	Disposal is conducted per MRP SOPs 02 and 07	Daily/each occurrence
Demobilization	Completeness	Verify that work site areas have been restored and that all equipment is inspected, packaged, and shipped to appropriate locations	Temporary markers removed. All equipment is off site and has arrived at the appropriate locations	Once at the end of field operations
Site-Specific Final Report Preparation and Approval	Completeness	QC of MEC Tracking Log and Daily Field Reports	Tabulation of MEC items discovered during the investigation are included in the MEC Tracking Log Daily Field Reports are complete and accurate	Once at the end of field operations prior to demobilization

Explanations for the criteria listed above are included in [Worksheet #22](#).

SAP Worksheet #13 – Secondary Use of Data Criteria and Limitations Table

(UFP-QAPP Manual Section 2.7)

Secondary Data	Data Source (originating organization, report title and date)	Data Generator(s) (originating organization, data types, data generation / collection dates)	How Data Will Be Used	Limitations on Data Use
Covenant Deferral Request, Former Naval Station Roosevelt Roads, Puerto Rico	Covenant Deferral Request, Former Naval Station Roosevelt Roads, Ceiba, Puerto Rico, July 2007	Department of the Navy	Basis for UFP-SAP for On-Site Construction Support MEC (site description and history)	The information is qualitative and no quantitative site-specific information is available. The information was used to support site description and history information.
Explosive Safety Submission (ESS)	ESS Approval from NOSSA and DDESB, November 2010	Tetra Tech	Basis for UFP-SAP for On-Site Construction Support for SWMU 1 Debris Removal	The information is site specific for SWMU 1 and defines requirements for addressing munitions-related material that could be encountered based on available data to date.

SAP Worksheet #14 -- Summary of Project Tasks

(UFP-QAPP Manual Section 2.8.1)

The implementation of MEC/MPPEH avoidance/clearance at SWMU 1 has been divided into definable features of work, and the tasks required to complete each definable feature of work have been identified. Procedures for these tasks, including recording data, forms and checklists, data generation, QC checks, data management, and information management, are defined in the SOPs for the project indexed in [Worksheet #21](#).

Definable Feature of Work	Tasks
Site Preparation (including mobilization)	<ul style="list-style-type: none"> • Review all planning documents (subject SAP, ESS, and HASP/APP) • Verify personnel qualifications • Coordinate with local authorities and establish communication logistics • Set up Administrative Office (computer, printer, charging station, etc.) • Set up and check equipment • Remove surface non-munitions-related debris, as applicable (in equipment laydown areas and access pathways) • Conduct initial orientation and training (including Safety and Emergency Response) • Verify certification from Navy Atlantic Commanding Officer (CO) of UXO Technician to certify MDEH/MDAS • Verify rental truck vendor authorization to use vehicle for transport of explosives
Site Surveying	<ul style="list-style-type: none"> • Survey approach paths, work area, and laydown area boundaries • Conduct surface survey • Conduct UXO escort duties
Vegetation Management	<ul style="list-style-type: none"> • Inspect equipment • Set cutting height to between 6 and 12 inches above ground surface
GPS Positional Data	<ul style="list-style-type: none"> • Compare daily with two known reference locations • Monitor HDOP parameters • Collect GPS data, use alternative means if GPS is not effective due to tree canopy • Backup GPS data • Transfer GPS data to Tetra Tech geographic information system (GIS) web site

Definable Feature of Work	Tasks
Detector-Aided Visual Survey and Manual MEC/MPPEH Operations	<ul style="list-style-type: none"> • Surface survey to locate any MEC/MPPEH in work areas • Conduct UXO escort duties • Record location (GPS and photograph) of each MEC or MPPEH item discovered, then treat or remove as appropriate • Report MEC in accordance with Worksheet #6 • Inspect debris piles manually • Remote pull all debris in any pile that is too heavy to remove manually, using excavator outside K24 (see ESS) • Perform detector survey of debris pile footprint for the presence of burial trenches or pits • GPS the boundaries of suspect burial trenches or pits
Mechanized (low-input) Operations	<ul style="list-style-type: none"> • Observe removal of debris piles • Record location (GPS and photograph) of each MEC or MPPEH item discovered, then treat or remove as appropriate • Report MEC in accordance with Worksheet #6 • Conduct UXO escort duties
Donor Explosives Handling	<ul style="list-style-type: none"> • Use proper placards, warning signs, flagging, and correctly post • Ensure firefighting equipment present • Receipt, usage, and inventory control completed per OP 5/Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) requirements • Comply with explosive handling and transportation requirements
MEC Management (Treatment)	<ul style="list-style-type: none"> • Establish EZs per ESS requirements • Prepare site if item unsafe to move (i.e., blow in place) • Transport item to treatment area designated by SUXOS within 4-acre work area boundary, if item is safe to move, and prepare MEC management site • Prepare and apply donor charge • Check results of treatment

Definable Feature of Work	Tasks
MPPEH Management (Inspection)	<ul style="list-style-type: none"> • Inspect MPPEH • Segregate MPPEH into MDAS and MDEH • Secure MDAS in a secure locked container • Update MDAS Addition Form on container • Secure MDEH items and treat as MEC
MPPEH Management (Certification)	<ul style="list-style-type: none"> • Certify MDAS • Certify MDEH
MPPEH Management (Disposal)	<ul style="list-style-type: none"> • Dispose of MDAS per OP 5 • Treat MDEH with donor charge as MEC • Maintain custody of MDEH through treatment
Demobilization	<ul style="list-style-type: none"> • Remove temporary survey markers • Verify site restoration • Complete all field forms • Close out field logbooks • Return equipment • Provide all field documentation (verify requirements established in the SAP)
Site Specific Final Report Preparation and Approval	<ul style="list-style-type: none"> • Close out MEC Tracking Log • Collect all documentation from field activities • Prepare and submit site-specific final report, with copies for Stakeholders • Address Stakeholder comments • Receive approval of site-specific final report

SAP Worksheet #15 -- Reference Limits and Evaluation Table

(UFP-QAPP Manual Section 2.8.1)



Worksheet Not Applicable

This worksheet applies to chemical analysis and reporting and is not applicable to this UFP-SAP for MEC investigation.

SAP Worksheet #16 -- Project Schedule/Timeline Table

(UFP-QAPP Manual Section 2.8.2)

Activity	Organization	Dates (MM/YYYY)	
		Anticipated Date(s) of Initiation	Anticipated Date of Completion
Prepare Rough Draft On-Site Construction Support SAP	Tetra Tech	08/2010	11/2010
Submit Rough Draft On-Site Construction Support SAP	Tetra Tech	11/2010	11/2010
Navy Review	Navy	11/2010	11/2010
Receive Comments/Resolve Comments	Tetra Tech	11/2010	11/2010
Prepare Draft On-Site Construction Support SAP	Tetra Tech	11/2010	11/2010
Submit Draft On-Site Construction Support SAP	Tetra Tech	12/2010	12/2010
Regulator Review	U.S. EPA and PREQB	12/2010	01/2011
Receive Comments/Resolve Comments	Tetra Tech, Navy, U.S. EPA, and PREQB	01/2011	02/2011
Prepare Final On-Site Construction Support SAP	Tetra Tech	02/2011	02/2011
Submit Final On-Site Construction Support SAP	Tetra Tech	02/2011	02/2011
Field Investigation	Tetra Tech	03/2011	04/2011
Prepare Rough Draft On-Site Construction Support Report	Tetra Tech	04/2011	06/2011

Activity	Organization	Dates (MM/YYYY)	
		Anticipated Date(s) of Initiation	Anticipated Date of Completion
Submit Rough Draft On-Site Construction Support Report	Tetra Tech	06/2011	06/2011
Navy Review	Navy	06/2011	07/2011
Receive Comments/Resolve Comments	Tetra Tech	07/2011	07/2011
Prepare Draft On-Site Construction Support Report	Tetra Tech	07/2011	07/2011
Submit Draft On-Site Construction Support Report	Tetra Tech	07/2011	07/2011
Regulator Review	U.S. EPA and PREQB	08/2011	10/2011
Receive Comments/Resolve Comment Resolution	Tetra Tech, Navy, U.S. EPA, and PREQB	11/2011	11/2011
Prepare Final On-Site Construction Support Report	Tetra Tech	12/2011	12/2011
Submit Final On-Site Construction Support Report	Tetra Tech	12/2011	12/2011

SAP Worksheet #17 -- Project Design and Rationale

(UFP-QAPP Manual Section 3.1.1)

17.1 SAMPLING DESIGN AND RATIONALE

The subject on-site construction support for SWMU 1 debris removal is considered a clearance/avoidance effort in that the main focus is removal of MEC/MPPEH so that mechanical equipment can be used to remove debris piles from the approximate 4-acre worksite within SWMU 1. Information on MEC/MPPEH encountered will aid in planning for future investigative efforts; currently, data gaps are too significant to determine a path forward for the site.

This section documents the approach, methods, and operational procedures Tetra Tech will use to conduct detector-aided visual surveys and MEC/MPPEH support activities for debris removal activities in potential areas containing MEC/MPPEH. Specifically, this worksheet documents the site-specific application of UXO resources and technology; construction equipment; MEC/MPPEH management, accountability, and disposal procedures; navigation equipment; data analysis; data management; and associated equipment and personnel in a manner capable of meeting the site-specific project performance goals as presented in [Worksheet #11](#). The processes of MEC/MPPEH identification, handling, disposal, and safety measures are presented in the SOPs in [Appendix C](#) of this SAP; example field forms are provided in [Appendix D](#).

Definable Feature of Work	SOP	Supporting Document
Site Preparation (including mobilization)	MRP SOP 01	UFP-SAP
Site Surveying	MRP SOP 05	UFP-SAP
Vegetation Management	MRP SOP 06	UFP-SAP
Detector-Aided Visual Survey and Manual MEC/MPPEH Operations	MRP SOP 01 MRP SOP 02 MRP SOP 05	UFP-SAP
GPS Positional Data	MRP SOP 05	UFP-SAP
Mechanized (low-input) Operations	MRP SOP 01	UFP-SAP
MEC Management (Treatment and Donor Explosives Handling)	MRP SOP 02 MRP SOP 07	UFP-SAP
MPPEH Management (Inspection)	MRP SOP 02	UFP-SAP
MPPEH Management (Certification)	MRP SOP 02	UFP-SAP
MPPEH Management (Disposal)	MRP SOP 02 MRP SOP 07	UFP-SAP
Demobilization	NA	UFP-SAP

Definable Feature of Work	SOP	Supporting Document
Site-Specific Final Report Preparation and Approval	NA	UFP-SAP

17.2 SITE PREPARATION INCLUDING MOBILIZATION

17.2.1 Mobilization, Setup, and Preliminary Activities

Tetra Tech will schedule the arrival of its workforce in a manner that is most effective and designed to allow immediate productivity. All personnel mobilized to the site will meet OSHA training and medical surveillance requirements specified in the HASP. The UXO Technicians will have the appropriate level of training and experience as stated in DDESB TP-18 and Naval Sea Systems Command (NAVSEA) OP-5. As part of the mobilization process, site-specific training for all on-site personnel will be conducted, and each person receiving training will sign [Worksheet #4](#). The purpose of this training is to ensure that personnel fully understand the operational procedures and methods to be used at NAPR SWMU 1, to include individual duties and responsibilities and all safety and environmental concerns associated with these MEC operations. The training will include, but is not limited to, a review of this SAP and the Health and Safety Plan/Accident Prevention Plan (HASP/APP). Any personnel arriving at the site after this initial training session will be trained when they arrive and will then sign [Worksheet #4](#). Training will be conducted by a UXO Technician III.

Project equipment for the MEC/MPPEH clearance/avoidance will come from Tetra Tech sources and local leases/purchases, with the exception of the debris removal equipment. Debris removal equipment will be provided by Right Way Environmental, the Navy's contractor, and will be maintained and operated by that contractor. All equipment, regardless of source, will be checked to ensure its completeness and operational readiness. All instruments and equipment that require routine maintenance and/or calibration will be checked initially upon arrival and then prior to use each day. If an equipment check indicates that any piece of equipment is not operating correctly and field repair cannot be made, the equipment will be tagged and removed from service, and a request for replacement equipment will be placed immediately. Replacement equipment will meet the same specifications for accuracy and precision as the equipment removed from service.

17.2.2 UXO Escort Operations

All activities involving work in areas potentially containing MEC/MPPEH hazards will be conducted in full compliance with this UFP-SAP regarding personnel, equipment, and procedures, as follows:

1. If any MEC/MPPEH item is encountered outside of the areas designated for detector-aided visual surveying, the item will be avoided. The UXO escort will not attempt to identify the type or condition of the ordnance. MEC avoidance procedures will be practiced at all times.
2. The UXO escort will clearly mark any area with visible MEC/MPPEH, and the area will be avoided. The visible MEC/MPPEH will be noted on the field log sheets or in the field logbook. The UXO escort will report the MEC/MPPEH to the UXO team leader.
3. No MEC/MPPEH, explosives, or MEC/MPPEH-related materials will be moved, removed, or disposed of during UXO escort duties.
4. The UXO escort will conduct UXO avoidance surveys for all proposed survey stake locations using a metal detector to check for possible MEC/MPPEH. If an anomaly is encountered or if the UXO Technician suspects the presence of MEC, the proposed stake location will be relocated to an area free of concerns/anomalies.

All non-UXO personnel will be accompanied by a UXO Technician II or higher during all fieldwork. Before non-UXO personnel enter an area potentially containing MEC, the UXO Technician will conduct a detector-aided surface survey and visual survey for surface ordnance and will mark each surface MEC anomaly.

17.2.3 UXO Survey Instrumentation, Methods, and Standards

A Schonstedt GA-52Cx ferrous metal detector (or equivalent) and White's Spectrum XLT all-metals detector (or equivalent) will be used during investigation activities. Each investigation area (i.e., debris pile) will be selected by the Navy's debris removal contractor. A detector-aided visual survey of each area selected by the contractor will be conducted by the UXO team prior to removal of the non-munitions-related scrap metal by the contractor. Given the nature of the site, at which ferrous and non-ferrous ordnance may be present, this is the best combination of technologies for the operation based on industry standards.

The Geophysical System Verification (GSV) will not be used for this phase of the project because a subsurface survey and geophysical survey are not required at this time. In its place, a function test of the locator or "blanket test" will be performed at the beginning of each day and after a battery change. A blanket test is conducted by covering a surrogate item, in this case a metal object the size of a 20mm projectile, with a tarp or other non-metallic cover and running a detector or locator over the covered item to verify that the instrument can detect the target. If any instrument is not able to detect the target item,

that instrument will be removed from operation until repaired and retested. The UXOQCS will record the results of the checks in the UXOQCS logbook.

The detection capabilities of the instruments to be used by the UXO team during detector-aided surface surveys is limited by the size and orientation of each target and soil characteristics of each work area. These instruments provide an audio signal for response but do not store data. The Schonstedt GA-52Cx magnetic locator (magnetic gradiometer) does not need to be calibrated. The standard setting for the Schonstedt magnetic locator instrument is 2; setting the instrument to 3 or 4 will make it more sensitive, and setting the instrument to 1 will make it less sensitive. The Schonstedt instrument will not detect non-ferrous munitions such as those made of copper, brass, or aluminum. The White's all-metals detector requires setup to establish the sensitivity setting for UXO detection.

To ensure that each detector is operating properly, the operator turns on the instrument and slowly moves the locator towards metal. As the probe advances toward the target, the audio signal will increase. Failure to detect the object is reason to reject the instrument.

Data will be provided in the final report and will include tables reporting the survey results in North American Datum (NAD) 83 Puerto Rico Plane coordinates in US survey feet and plots of the results on plans or aerial maps. A summary of methods used and discussion of the survey results will also be included in the report. Descriptive data will be recorded in the UXO team logbook, and a copy of these data will be provided in the report.

17.2.4 Site Accessibility and Traffic Control

SWMU 1 is located aboard NAPR, which is a secure Navy facility at this time; restricted access via guard at Gate 3 is the only entry point to NAPR. NAPR security personnel monitor all access to the station, and frequent motor vehicle and boat patrols are conducted as part of the access control program.

Safety requires that an active EZ be established and maintained before any MEC/MPPEH activities occur due to the potential for encountering explosively configured/fuzed munitions. For this project, the initial EZs will be established at 428 feet, which is the Hazardous Fragment Distance (HFD) for the Munition with the Greatest Fragmentation Distance (MGFD), the 5 inch Mk 10 High Velocity Aircraft Rocket motor. If non-site personnel or non-essential non-UXO personnel enter an EZ, all MEC operations will cease until the EZ is re-established. The EZs for the various activities that may occur on this site are summarized in Table 17-1 (taken from the Explosive Safety Submission [ESS]):

Both routine and emergency response actions dictate the need for prevention of unauthorized site access and for the protection of vital records and equipment. All equipment will be brought to a designated secure location each day. Protective barriers will be placed on access roads to the site after duty hours to ensure that personnel do not interact with debris piles that may contain MEC/MPPEH.

17.2.5 Site Security

Site security will be maintained to ensure that non-essential personnel do not access the EZs during UXO operations at the site. Barricades will be positioned with Bravo flags on access routes at a minimum of 428 feet from the edge of the work area. Notification procedures will be posted on the barricades to ensure that non-essential personnel notify the team working in the area prior to entering the area during active operations. Barricades and Bravo flags will be removed when operations stop for the day.

NAPR Security will provide waterside security during treatment operations to prevent intrusion by persons into the MFD exclusion zone.

EZ Access Protocol

Access to the EZ will be limited to personnel essential to the operation being conducted. However, under specific conditions and on a case-by-case basis, authorized visitors may be granted access to the EZ when operations are being conducted. In addition to general Munitions Response Site (MRS) access requirements, the following procedures addressing EZ access, including authorized visitor access, will be enforced:

- a. Access to the EZ while munitions response operations are occurring is limited to essential personnel and authorized visitors.
- b. The UXOSO will conduct an Operational Risk Management (ORM) assessment in accordance with OPNAVINST 3500.39 series (Department of the Navy) prior to initiating response actions involving MEC. In addition, the UXOSO will determine the maximum number of people (essential personnel and authorized visitors) that can be in the EZ at one time. The ratio of UXO-qualified escorts to visitors will be determined by the UXOSO based on this site-specific operational risk analysis.
- c. Based on the risk posed by the munitions response operation underway, the Unexploded Ordnance Safety Officer (UXOSO) may determine that access to the EZ is unsafe for visitors. However, every effort will be made to accommodate authorized visitors' needs.

- d. With the concurrence of the NAPR POC, the UXOSO will grant EZ access to authorized visitors. Access to the site will be based on the operational risk analysis of the scheduled MEC operations and availability of escorts, as well as a demonstrated visitor need and subsequent completion of visitor safety briefings.
- e. People requiring access to the EZ must demonstrate a legitimate need for access and obtain authorization from the NAPR POC (Environmental Office) and UXOSO. At a minimum, the request for authorization will include the name of the individual requesting access, identification of emergency contacts for the individual, purpose of visit, task(s) to be performed, and rationale to support EZ access. Persons requesting access must submit their request to the NAPR POC and UXOSO prior to the proposed date of the site visit. This advanced notice will allow time for the UXOSO to support the visit request by assigning a qualified escort, conducting an operational risk analysis on the operations planned for the date of the site visit, and preparing a visitor site-specific safety briefing for the planned operations.
- f. Prior to entry, all authorized visitors must receive a site-specific safety briefing describing the specific hazards and safety procedures to be followed within the EZ for operations underway that work day. Each authorized visitor must acknowledge receipt of this briefing in writing.
- g. Authorized visitors to the EZ must be escorted at all times by a UXO-qualified person.
- h. Any authorized visitor that violates the established safety procedures will be immediately escorted out of the EZ and/or site for his/her own protection and to protect essential personnel working at the site.

17.2.6 Out-of-Box Tests

The following out-of-box tests will be conducted prior to the commencement of field work and at the start of each day of surveying:

- Inventorying and inspect all equipment to confirm that all components are present and in good condition.
- Assembly of equipment and powering up.

17.2.7 Governing Regulations/Guidance and ESS

The planned on-site construction support will be performed in accordance with the provisions and guidelines established in the NOSSA- and DDESB- approved ESS for the SWMU 1 site (Tetra Tech, 2010).

MEC activities will be performed in accordance with all local, state, and federal regulations and will include all applicable DoD requirements including those in Engineer Pamphlet EP-75-1-2 (USACE, 2004) and MMRP Data Item Description (DID) 09-005 (USACE, 2009). Activities involving work in areas potentially containing MEC hazards will be conducted in full compliance with the Department of the Navy, NOSSA, and DoD requirements regarding personnel, equipment, and procedures. Navy requirements include OP-5 and NOSSA Instruction (NOSSAINST).8020.15B.

This work is being conducted as part of the Defense Environmental Restoration Program (DERP) MMRP and will be performed in accordance with CERCLA Sections 104 and 121.

SWMU 1 may contain live munitions, and caution should always be exercised while working on the site.

17.2.8 Discovery of Chemical Warfare Materiel

Potential exposure to Chemical Warfare Material (CWM) on this site is not anticipated. In the event that CWM is located or suspected, all personnel will evacuate the area immediately in an upwind direction from the CWM, secure the site, and request assistance from the NAPR POC in the Base Environmental Office.

Upon discovery of suspect materials, the responsible UXO Technician III will:

- Ensure that all personnel are clear of the area
- Maintain security of the area until relieved

After the area is clear and secured, the responsible UXO Technician III will:

- Notify the Tetra Tech UXO Manager
- Notify the NAPR POC in the Base Environmental Office
- Stop all field operations
- Assemble the crew at a designated assembly point
- Stand by to provide assistance as required

If directed, UXO personnel will take emergency non-invasive actions such as covering the item with plastic sheeting or placing sandbags around the item. In the event that HTRW is encountered on site, the work site will be evacuated until the NAPR POC, in the Base Environmental Office, identifies and implements appropriate protective measures.

17.3 SITE SURVEY

Approximately 4 of the 116 acres of the SWMU 1 site, including approach access paths and equipment laydown areas will need to be marked for vegetation management and surveying. Each debris removal area will be designated by the debris removal contractor with UXO Escort. The secure treatment area, located within the 4-acre debris removal area, will be designated in the field by the SUXOS and included as part of the work area.

The UXO team will use easy-to-see temporary markings (e.g., plastic flagging, pin flags etc.) to mark debris removal, approach, and equipment areas for vegetation management and surveying as needed. It may be necessary to mark an area larger than the area designated for debris removal to accommodate the safe operation of the contractor's removal equipment. Approach paths will be a minimum of 4 feet wider than the equipment using the path; equipment and laydown areas will be a minimum of 10 feet wider than the length of the equipment to allow for movement and turnaround of the equipment. Personnel will not operate equipment in the area until the UXO team has clearly marked the area.

17.4 VEGETATION MANAGEMENT

Brush cutting/vegetation management will be kept to a minimum during debris removal due to the valuable ecological habitat in the area, which includes threatened and endangered species on NAPR. Ecological sensitivity must be taken into consideration during the planning and implementation of all vegetation management activities.

No trimming or cutting of trees is permitted between March 15 and August 30 except in an emergency. Prior to any vegetation management of trees, the DNER Humacao Regional Office will require a permit for vegetation clearance. A clear overview of the existing vegetation and scope of work to be performed (pertaining to trees) is required. The DNER contact information is as follows:

DNER Humacao Regional Office
(787) 852-4467 / (787) 852-4440
PO Box 8448
Humacao, PR 00791

It is anticipated that some vegetation management will be required for access to the debris removal areas and equipment laydown areas. Brush and grass can present impediments to positioning metal detectors in close proximity to the ground surface. Surface preparation will consist of clearing vegetation and trees 2 inches and smaller to within 6 inches of the ground surface, as well as removal of non-munitions

metallic debris within equipment laydown and work areas and access pathways. Brush/vegetation management will be accomplished in accordance with Tetra Tech MRP SOP 06 (Vegetation Management at MEC sites). The following are the types of equipment/techniques that may be used:

- Hand-held brush cutters (string or blade) to cut light vegetation and small grassy areas.
- Mechanized equipment to remove brush and grasses.
- Brush/vegetation debris will be left on site at the edge of the area cleared.

Vegetation management will be conducted by the Navy's debris removal contractor, Right Way Environmental. Tetra Tech UXO Technicians meeting the requirements identified in DDESB TP-18, Table 4.1 (Minimum Qualification Standards) will conduct UXO avoidance/escort during this task.

17.5 GPS POSITIONAL DATA COLLECTION

A sub-meter accuracy category GPS unit (e.g., Trimble GeoXT or GeoXH) will be used to collect positional data during on-site construction support activities. The GPS data will be used to accurately record the positions of suspect MEC/MPPEH and suspect burial trenches or pits. Tetra Tech will load work area boundaries, debris pile locations, known cultural/terrain features that may affect surveys, and background maps into the GPS prior to deployment. GPS data collected during on-site construction support will be stored in the GPS unit and downloaded to a personal computer daily, or as soon as possible. Data will also be manually entered into a field log as it is collected. Once downloaded from the GPS unit, the data will then be uploaded to the MRP Data Repository (<http://www.ttnus.com/MrpRepository/Login.aspx>), which is a Tetra Tech internal website, for processing by Tetra Tech GIS personnel.

If GPS accuracy is not sub-meter according to the post-processed accuracy estimate, data will not be collected until more satellites are available and the accuracy criteria specified in [Worksheet #12](#) are met, and/or an alternative positioning technique will be employed (e.g., compass and tape measure, fiducials, or total stationing).

GPS positional data will be collected in accordance with Tetra Tech MRP SOP 05.

17.6 DETECTOR-AIDED VISUAL SURVEY AND MANUAL MEC/MPPEH OPERATIONS

Each area to be surveyed will be designated by the debris removal contractor. The UXO team will conduct a detector-aided visual surface survey within the designated area and along the approach route to each designated area. The debris piles will undergo detector-aided visual surveying for MEC/MPPEH, using clearance measures to remove MEC/MPPEH. In debris piles and areas with significant metallic

debris that may interfere with the detector, UXO Technicians will rely largely on visual observation to identify MEC/MPPEH and not rely on the detectors. Also, debris piles should be taken apart one layer at a time to ensure that a thorough and safe inspection is completed. If a non-munitions item in the pile is too heavy to be removed manually by the UXO team, the team can use the debris removal contractor's heavy equipment to pull the non-munitions item remotely from the pile, by hooking a cable, rope, strap, or chain from the item to be moved to the heavy equipment located outside the K24 (64-foot) mark. The debris removal equipment will be shielded using the standards provided in the fragmentation data review form for the MGF. UXO technicians observing the remote pull will watch from behind a shield located at the K24 (64-foot) mark; this shield will also use the standards given in the fragmentation data review form for the MGF. Because all of the debris is in loose piles, this mechanical separation is considered a mechanized (low-input) operation. It may be necessary to clear an area larger than the area designated for debris removal to accommodate the safe operation of the contractor's removal equipment. If any suspect MEC/MPPEH items are found, the UXO team will determine the condition, identification, and classification of each item. Each item will be assigned a unique identification (ID) number, its location will be recorded using the GPS, a photograph will be taken, and all information will be recorded in the team logbook. After each debris pile has been removed, a detector survey of the debris pile footprint will be conducted to detect the presence of suspect burial pits or trenches. If a target large enough to be a suspect burial trench or pit is detected, the boundaries of the suspect area will be surveyed using the GPS, recorded in the team leader logbook, and reported to the SUXOS for inclusion in the daily report.

If a UXO team member discovers a suspect MEC/MPPEH item, he/she will: (1) call for a temporary work stoppage and (2) request that the team leader (UXO Technician III) identify and/or verify the identity of the item and the hazards associated with it. The SUXOS will have ultimate responsibility for the proper identification of the item and its condition, and only the SUXOS can declare that an item is safe to move. Suspect MEC items that are not safe to move will be secured in place, and the SUXOS will coordinate for treatment of the item with a donor charge using Blow-in-Place (BIP) procedures. Suspect MEC/MPPEH items determined by the SUXOS to be safe to move will be removed to the approved secure treatment area and treated before the end of the work day, if possible. Treatment operations may be delayed by the delivery schedule of the explosives vendor or advance notification (to NAPR Public Affairs) requirements. The secure treatment area will be designated in the field by the SUXOS and will be located within the 4-acre debris removal area. If an MEC/MPPEH item cannot be treated on the same day it is discovered, the SUXOS will maintain security of the item and report its location and other information to the Tetra Tech UXO Manager, Tetra Tech PM, and NAPR Environmental Office POC. Security of the item will be maintained until it is treated or until responsibility for its security is transferred per instructions from NAPR Environmental Office POC (e.g., the SUXOS may be directed to transfer security to NAPR Security). Donor explosives will be obtained from a local vendor on an as-needed basis; no Type 2 magazine or equivalent is available on site for storage.

Approved engineering controls detailed in DDESB TP-16, Rev. 2, for each item encountered will be employed during treatment operations as necessary. Deviations from approved engineering controls will require NOSSA approval prior to implementation.

If no MEC/MPPEH items are observed in the debris pile, or after MEC/MPPEH are removed or treated, the debris contractor will be given clearance by the UXO team to remove non-munitions-related debris from the designated location.

Under the direction of the SUXOS, MPPEH will be inspected and divided into MDAS and MDEH. MDEH that is determined to be safe to move will be treated by detonation within the 4-acre work area, as designated by the SUXOS. MDEH that is unsafe to move will be blown in place.

All scrap metal originating from MEC and MPPEH will be certified as MDAS by Tetra Tech and removed by Right Way Environmental, considered a local non-qualified recycler. Under the oversight of Tetra Tech, MDAS will be demilitarized by Right Way Environmental by crushing the item with the excavator on site, or Tetra Tech will treat the item with an explosive charge. If a given MDAS item cannot be crushed by the excavator, it will be treated with explosives in order to affect a demilitarization of the item. MDAS items that cannot be treated in this manner will be secured on site to be addressed during future operations. Any MDAS item left on site will be reported to the NAPR POC and security will be provided with the item's location and description. The SUXOS will generate certification documents for demilitarized MDAS that will travel with the material through final disposition.

17.7 MECHANIZED (LOW INPUT) DEBRIS REMOVAL

The debris piles located in the 4-acre area of SWMU 1 (see Figure 17-1) will be removed by the Navy's contractor using an excavator to remove non-munitions debris. Non-munitions debris removal will be monitored by UXO Technicians to watch for additional MEC/MPPEH that may be uncovered by debris removal operations. UXO technicians will employ UXO avoidance procedures during this phase of the debris removal process, while debris removal contractor personnel are in the debris pile area.

The debris removal operation will follow all applicable explosive-related procedural and safety requirements. Change 8 to OP 5 established separate rules for "high-input" and "low-input" mechanized MEC processing operations. In accordance with the change, the EZs for the planned debris removal operations were selected for low-input processing operations. Hence, non-essential personnel are provided protection for accidental (unintentional) detonations (greater of HFD or K40, blast overpressure). The operations are considered low input because none of the procedures employed are intended to

intentionally deform material or MEC being processed. Additionally, all removal of MEC/MPPEH will be done by hand, during the detector-aided visual survey, prior to debris removal. Methodically planned debris removal will be conducted using low-energy controlled mechanical forces.

Non-munitions debris removal activities will be conducted using a hydraulic excavator to be supplied and operated by Right Way Environmental. During non-munitions debris removal activities, a UXO Technician will observe the debris removal from a safe distance outside the swing arc of the excavator. The excavator operator will be instructed to suspend operations if a suspect munitions item is spotted and to report any suspect items to the UXO team observing the debris removal. If MEC/MPPEH are discovered during the non-munitions debris removal, the debris removal will be stopped and all debris removal contractor personnel will be escorted out of the area and not allowed back in until the MEC/MPPEH item is removed or treated. All MEC/MPPEH/scrap metal removed will be identified and recorded in the daily log. Two UXO Technicians will separate the MPPEH from the other metal debris through visual inspection. MPPEH will be separated into MDAS and MDEH. MDAS will be transported to a designated area for storage, and MDEH discovered during this process will be reported to the SUXOS for identification and disposition. Debris removal operations will continue in batches as described above until the end of the work shift or until the all non-munitions debris has been removed.

Essential personnel must be provided protection from both blast overpressure and fragments equal to that provided for an unintentional detonation. The debris removal contractor's excavator is not capable of reaching beyond the K24 distance and so will not be able to use their excavator to participate in the MEC/MPPEH clearance of the debris piles, except to perform a remote pull of non munition related items to heavy for the UXO team to move manually, using the procedure and protection described in paragraph 17.6 and Table 17-1. Therefore, all debris piles need to be inspected and cleared of MEC/MPPEH manually by the UXO team prior to allowing the debris removal contractor to remove the non-munitions debris.

The debris removal operation is not intended to remove all MEC/MPPEH items from SWMU 1, but to safely remove debris piles designated for removal. If MEC/MPPEH are observed in a debris pile, operations will temporarily stop. The UXO Technicians will investigate each MEC/MPPEH item and determine if it is safe to move. Intrusive operations are not authorized during this debris removal.

The UXO Team Leader will maintain a daily log recording, at a minimum the debris pile locations, MEC/MPPEH locations, a description of each MEC/MPPEH item removed, boundaries of suspect burial trenches or pits, and general descriptions, weights, and estimated numbers of non-munitions debris removed. If it is not feasible to determine the exact location of each item within a debris pile, the UXO Team Leader will make note with a general observation and description.

The debris removal operation at SWMU 1 will be performed by a team consisting of four Tetra Tech personnel and debris removal contractor personnel (Right Way Environmental), with responsibilities as follows:

- The SUXOS will be responsible for general oversight of the entire operation.
- The UXOSO/UXOQCS will be responsible for oversight of safety and QC.
- Two UXO Technicians (one Technician III and one Technician II or higher) will be responsible for conducting the detector-aided surface survey of the material and debris during removal of each debris pile to determine the presence of MEC/MPPEH. One Technician will be responsible for observing/checking the removal of non-munitions debris during excavator operations to ensure no MEC/MPPEH is present.
- One Navy-contracted operator plus support staff will be responsible for conducting excavator operations and aiding in demilitarization of MDAS.

17.8 MEC MANAGEMENT/TREATMENT

17.8.1 MEC Management

Initial MEC identification will be the responsibility of the UXO Team Leader. MEC will not be moved until a positive identification is made by a UXO Technician III or higher and the SUXOS concurs that the item(s) can be safely moved. Items that are not safe to move will be treated by BIP procedures. If MEC are identified and deemed safe to move, the UXO Team may transport the item(s) to the secure treatment area where it (they) will be treated by the end of the work day, if possible. This area will be under the control of the UXO Team until the item has been treated. Treatment operations will be performed on the day the MEC item is discovered, if possible, although treatment operations may be delayed due to availability from the explosives vendor, or requirements for (to Public Affairs) advance notification of the public. If an item cannot be treated on the day it is discovered, security of the item will be maintained until the item can be treated or until responsibility for its security is transferred per instructions from the NAPR Environmental Office POC (e.g., the SUXOS may be directed to transfer security to NAPR Security).

Small MEC/MPPEH items discovered at SWMU 1 site and determined to be safe to move by the SUXOS will be transported in a sand-filled wood container to the secure treatment area designated by the SUXOS at SWMU 1 for treatment by donor charge. Larger MEC/MPPEH items will be secured by sandbags for transport in a vehicle with a wooden bed liner.

The secure treatment area will be cleared of vegetation to minimize the chance of a fire during disposal operations. The secure treatment area will also be cleared of all metal debris to eliminate the chance of frag from an unknown source. Approved engineering controls detailed in DDESB TP 16, Rev. 3, for the item encountered will be employed during treatment operations as necessary. Deviations from approved engineering controls will require NOSSA approval prior to implementation.

If any MEC items are located that cannot be identified, Tetra Tech personnel will notify the NAPR POC and Navy RPM, who will notify the nearest military EOD component (EOD Det. Mayport, Florida) and will request their assistance with proper identification of the suspect item(s).

The ESQD arc created by the NEW for the secure/treatment area will not extend beyond that established for the SWMU 1 work area.

If an MEC item is determined as unsafe to move by the SUXOS, it will be flagged and its location marked, and NAPR security personnel and the NAPR POC will be informed of its location. The UXO Team will maintain security of the item until relieved by the NAPR POC. NAPR is a secure and guarded installation at this time. A MEC item unsafe to move will be treated by Tetra Tech via blow in place (BIP) procedures.

Security for treatment and BIP operations will be set outside the EZ, and the area will be checked for the presence of staff and intruders. No consolidated shots are allowed. The EZ for intentional detonation of the primary MGF is 1,874 feet.

NAPR Security personnel will patrol the area off shore from SWMU 1 during intentional detonation to prevent persons from entering the area during MEC treatment.

17.8.2 Donor Explosives Handling

General Requirements and Licensing for Explosive Acquisition

The explosives used for this project will be managed in accordance with Federal Acquisition Regulation 45.5, local and territorial laws and regulations, ATF Pamphlet 5400.7, DoD 6055.09-M, Department of Transportation regulations, OP-5, and applicable NAPR and Puerto Rico guidance documents.

Tetra Tech shall have and, upon request, make available to any local, territorial, or federal authority, a copy of the ATF license or permit authorizing the purchase, storage, transport, and use of explosives.

Explosives Acquisition

Demolition explosives (donor charges) will be obtained from a local vendor on an as-needed basis. No magazine is available at the station for storage of explosives. Transportation and delivery of explosives will be coordinated with the installation to ensure that explosive laden routes are followed and that an escort meets and guides the delivery truck along the correct route. The existing route runs from Gate 3, down Bennington Road, turn left on Langley Drive, then straight to SWMU 1. Delivery trucks will report to Gate 3 and be escorted by UXO personnel along this route.

Initial Receipt of Explosives

The SUXOS and UXOSO/UXOQCS will be responsible for receipt of explosives from the commercial vendor and will follow all applicable facility procedures. The SUXOS will coordinate all receipt and management of explosives with the NAPR POC before receipt and transportation of explosives to the site.

The NAPR POC will provide Tetra Tech with a copy and explanation of all facility explosive management requirements before the transportation of any explosives.

Explosives delivered to the site will be inspected to confirm the content and quantity of the delivery. Discrepancies will be reconciled at the time of receipt with the SUXOS, vendor, UXO Manager, and PM. Documentation will address the discrepancy and the resolution.

Explosives Storage

The NAPR magazines are decommissioned and will not be available for use. Donor explosives will be obtained from a local vendor on an as-needed basis.

Explosives Transportation

Explosives will be issued by the SUXOS and transported from the acceptance point to disposal locations at the project site in accordance with facility procedures and ATF licensing requirements. The transportation vehicle will have a wooden bed liner and will be equipped to secure the containers in the vehicle. During transportation of explosives to the demolition area, blasting caps will be stored separately from main charges.

Explosives Receipt Procedures

Each item of explosives will be receipted from initial delivery to NAPR and expended that day. Tetra Tech will maintain a list of individuals authorized to receive, issue, transport, and use explosives by position and title, and those individuals shall assume accountability by signing the receipt documents. The end user of explosives shall certify in writing that the explosives were used for their intended purpose. Receipt documents shall be reconciled at the time of delivery, issue, and disposal. Any discrepancies will be documented by the SUXOS and reported to the UXO Manager, PM, NAPR POC, and others as required by law.

Explosives Inventory

All explosives will be physically inventoried by the SUXOS and UXOSO/UXOQCS. Any discrepancies will be documented by the SUXOS and reported to the UXO Manager, PM, NAPR POC, and others as required by law.

The following procedures will be followed upon discovery of lost, stolen, or unauthorized use of explosives:

- The UXO Manager, PM, and NAPR POC will be notified immediately by telephone and with a written report within 24 hours.
- Proper authorities (ATF and territorial Fire Marshall) will be notified in writing within 24 hours of the event.

All explosives will be expended during daily demolition operations.

17.8.3 MEC Treatment

Blow-In-Place Operations

If BIP operations become necessary, the maximum fragmentation distance will be used to establish an EZ for intentional detonations. The intentional detonation EZ for this site is listed in Table 17-1 (from Table 6-2 of the ESS). The procedures to be followed should BIP become necessary are presented in SOP-07, UXO Demolition/Disposal Operations, and SOP-04, MEC Management and Accountability.

Collection Points

A secure treatment area, designated by the SUXOS, will be established to hold recovered MEC/MPPEH determined safe to move by UXO personnel and awaiting disposal. The ESQD arc created by the NEW for the secure treatment area will not extend beyond the EZ established for the 4-acre debris pile work area. These areas will be under the control of the UXO Technician Team Leader unless relieved by NAPR security.

17.9 MPPEH MANAGEMENT

17.9.1 Inspection

If MPPEH are encountered during the operation, the SUXOS and UXOQCS will independently inspect the MPPEH. MPPEH will be separated into MDEH or MDAS. Items will then be segregated into items that require demilitarization from those items ready for certification.

17.9.2 Certification

Persons certifying and verifying MDAS or MDEH will be designated in writing by NAVFAC Atlantic Commanding Officer (CO) as qualified and certified to do so. In the event that HTRW is encountered on site, the work site will be evacuated until the Tetra Tech CLEAN Health and Safety Manager, with concurrence of the Navy POC, identifies and implements appropriate protective measures.

17.9.3 Disposal

MDEH will be taken to the treatment area and treated with donor charges. MDAS will be secured in a locked/sealed container, with the key/seal number held only by the SUXOS. An MDAS Certification Form will be attached to the outside of the container in a waterproof holder and updated every time an item is added to the container (e.g., drum). The locked and sealed container will remain at the site until released to Right Way Environmental, designated as a non-qualified contractor. MDAS will be managed at all times in such a manner as to prevent it from being:

- Co-mingled with MPPEH or MDEH
- Misidentified as MPPEH or MDEH after it has been determined to be safe

A chain of custody will be maintained for MDAS, and the proper documentation must be completed and signed by the responsible personnel (SUXOS and UXOQCS) before MDAS is turned over to the non-qualified recycler (Right Way Environmental) for on-site demilitarization with oversight by Tetra Tech.

Detailed guidance on the policy and responsibilities for management and disposition of MPPEH is located in NAVSEA OP-5 Chapter 13-15.

An attempt will be made to identify all MPPEH items, and their original locations will be recorded by GPS equipment (or compass and tape measure if the GPS is ineffective, for example if interferences from tree canopy exist. This information will be added to other data collected for the site.

17.10 DEMOBILIZATION

When fieldwork is complete, the site will be restored, and temporary survey markers will be removed. All field forms and field logbooks will be completed, field documentation will be provided to recipients, and equipment will be returned to providers. Personnel will demobilize with approval of the Tetra Tech UXO Manager and PM.

17.11 SITE-SPECIFIC FINAL REPORT PREPARATION AND APPROVAL

17.11.1 Team Decision Points

No MC sampling is currently planned for the site. Information on MEC/MPPEH found during the debris removal will be evaluated to provide guidance in decisions regarding the necessity for, and the scope and extent of continued investigation of the site for MEC/MPPEH and MC (see [Worksheet #11](#)).

Any MEC, suspect MEC, or MPPEH discovered on site will be brought to the attention of the Navy RPM, NAPR POC, and Tetra Tech (UXO Manager and PM).

Any unanticipated findings that warrant modification of the UFP-SAP will be brought to the attention of those individuals stated above and the Stakeholders.

17.11.2 Report

A report will be prepared summarizing the on-site construction support and will contain summaries of site background information, personnel utilized, objectives and scope, equipment, description of survey activities, results and discussion of project data, and recommendations. The report will contain noted munitions-related discoveries, site photographs, field notes, checklists, suspect burial locations, and QC data.

SAP Worksheet #18 -- Sampling Locations and Methods/SOP Requirements Table

(UFP-QAPP Manual Section 3.1.1)

Sampling Location/ID Number	Exclusion Area	Matrix	Approximate Depth (bgs)	Survey Methodology	Degree of Investigation	SOP Name ⁽¹⁾
SWMU 1	Any area outside of designated debris removal areas and staging areas	Surface and debris piles	On the ground surface, no excavation	Magnetic Locator All-Metals Detector	Debris piles, designated debris removal areas, equipment laydown areas, and approach paths.	MRP SOP 01 MRP SOP 02 MRP SOP 05 MRP SOP 06 MRP SOP 07

1 SOPs are included in [Appendix C](#) of this UFP-SAP.

SAP Worksheet #19 -- Analytical SOP Requirements Table

(UFP-QAPP Manual Section 3.1.1)



Worksheet Not Applicable

No laboratory samples are proposed for collection/analysis during this MEC investigation.

SAP Worksheet #20 -- Field Quality Control Sample Summary Table

[\(UFP-QAPP Manual Section 3.1.1\)](#)

Matrix	Analytical Group	QC Survey Requirements	Field Duplicates/Repeat Data Collection	Sample	Quality Control
Surface Soil and debris piles	Detector-aided visual survey, manual MEC/MPPEH removal	Resurvey 25% of first four grids/lots and after any failure, then 10% of remaining grids/lots after four grids/lots in a row pass QC. If any grid/lot does not pass QC, UXO team will resurvey grid/lot and another QC check will be performed.(Note: a grid is equal to an approach path, work area, or lay down area that is 100 by 100 feet or less in size; areas larger than 100- by 100-foot will be divided into 100- by 100-foot sections for QC purposes. A lot is defined as equal to a debris pile).	Not applicable	Detect all metallic debris 20mm or larger on surface; Discovery of any MEC/MPPEH not previously detected would result in failure of QC.	Resurvey grids/lots to perform a direct comparison to field data collected during visual detector-aided survey.
Debris Piles	Debris removal observation during mechanized (low-input) operations	Ensure debris being removed is free of MEC/MPPEH	Not applicable	Detect all MEC/MPPEH in debris piles designated for removal. Discovery of any MEC/MPPEH not previously detected would result in failure of QC.	Resurvey debris piles to perform a direct comparison to field data collected during visual detector-aided survey.

SAP Worksheet #21 -- Project SOP References Table

(UFP-QAPP Manual Section 3.1.2)

Reference Number	Title	Originating Organization of SOP	Equipment Type	Modified for Project Work? (Y/N)	Comments
MRP SOP 01	UXO Detector-Aided Surface Surveys	Tetra Tech	Magnetic detector All-metals detector	N	Describes detector-aided surface surveys
MRP SOP 02	MEC Management and Accountability	Tetra Tech	GPS Digital camera	N	Describes actions to be taken if suspect MEC are encountered
MRP SOP 05	Global Positioning System	Tetra Tech	GPS	N	Describes usage of hand-held GPS units
MRP SOP 06	Vegetation Management at MEC Sites	Tetra Tech	Hand-held brush cutters, mowers, chain saws, brush hog, wood chipper	N	Describes brush cutting and vegetation clearance activities at MEC sites
MRP SOP 07	UXO Demolition Disposal Operations	Tetra Tech	Demolition and disposal materials	N	Describes UXO demolition and disposal operations

SOPs are included in [Appendix C](#).

SAP Worksheet #22 -- Field Equipment Calibration, Maintenance, Testing, and Inspection Table

(UFP-QAPP Manual Section 3.1.2.4)

Field Equipment	Activity	Frequency	Acceptance Criteria	Corrective Action	Responsible Person	SOP Reference	Comments
GPS	Positioning	Daily	Accuracy: sub-meter according to post-processed accuracy estimates. HDOP < 3, number of satellites at least six	Wait for better signal, replace unit, or choose alternate location technique	UXO Technician	MRP SOP 05	None
Magnetic Locator	Operational	Beginning and end of day and after battery change	Operating properly	Replace battery, replace instrument	UXO Technician	MRP SOP 01	None

GPS – Global Positioning System
 HDOP – Horizontal Dilution of Precision
 SOP – Standard Operating Procedure
 UXO – Unexploded Ordnance

22.1 REGULAR TESTS FOR GEOPHYSICAL SURVEYING EQUIPMENT

No geophysical survey operations are currently planned at SWMU 1 during debris removal.

22.2 DATA COLLECTION VARIABLES FOR GEOPHYSICAL SURVEYING EQUIPMENT

The same equipment and procedures will be used for the MEC detector-aided visual surveys.

22.3 GEOPHYSICAL AND POSITIONING INSTRUMENTS

The detection depths of the metal detectors to be used by the UXO team during detector-aided surveys are limited by the sizes and orientations of the targets and the characteristics of the soil in the work area. These instruments provide an audio signal for response but do not store data. The magnetic locator (magnetic gradiometer) does not need to be calibrated, but the all-metals detector requires field calibration. The operator turns on the instrument and slowly moves the locator toward metal to ensure that each detector is operating properly. The audio signal will increase as the probe advances toward the target. Failure to detect the object is reason to reject the instrument. The detector will be checked at the beginning and end of each day and after any battery change. UXO Technicians will also conduct a minimum of two checks during daily operations.

The normal setting for the Schonstedt magnetic locator instrument is 2; setting the instrument to 3 or 4 will make it more sensitive and setting the instrument to 1 will make it less sensitive. The Schonstedt instrument will not detect non-ferrous munitions such as ones made of copper, brass, or aluminum. The normal settings for the White's all-metals detector are presented in MRP SOP 01.

Tetra Tech will use a Trimble GeoXT or XH sub-meter accuracy GPS unit where possible during data collection to provide precise location coordinates for the data collected. Terrain features at SWMU 1, such as heavy jungle canopy, may hamper line-of-site positioning required for adequate satellite coverage during GPS operations in certain areas of the site. If the GPS accuracy is not sub-meter according to post-processed accuracy estimates, data will not be collected until more satellites are available and the accuracy criteria are met, or surveying with an alternate positioning technique will be employed.

22.4 QUALITY ASSURANCE/QUALITY CONTROL

Operational and test procedures will conform to manufacturer standard instructions. QC of instrument data will be achieved daily by field testing consisting of checking the detectors and navigation system against a known target to ensure that they are operating properly. All instruments and equipment used to gather and generate field data will be operated in such a manner that accuracy and reproducibility of the

results are consistent with manufacturer specifications. Repair or replacement records will be filed and maintained by the UXOQCS and may be subject to audit by the Tetra Tech QAM.

SAP Worksheet #23 -- Analytical SOP References Table

(UFP-QAPP Manual Section 3.2.1)



Worksheet Not Applicable

No project sampling is proposed for this MEC investigation (see Worksheet #21 for project SOPs).

SAP Worksheet #24 -- Analytical Instrument Calibration Table

(UFP-QAPP Manual Section 3.2.2)



Worksheet Not Applicable

No analytical instrument calibration data will be required to support this MEC investigation (see [Worksheet #22](#) for equipment calibrations).

SAP Worksheet #25 -- Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table

[\(UFP-QAPP Manual Section 3.2.3\)](#)



Worksheet Not Applicable

No analytical instrument equipment maintenance, testing, or inspections will be required to support this MEC investigation. Field instrumentation maintenance, testing, and inspection for munitions-related equipment are presented in [Worksheet #22](#).

SAP Worksheet #26 -- Sample Handling System

(UFP-QAPP Manual Appendix A)



Worksheet Not Applicable

This worksheet is not applicable because this investigation is an MEC investigation, and no samples will be handled.

SAP Worksheet #27 -- Sample Custody Requirements Table

(UFP-QAPP Manual Section 3.3.3)



Worksheet Not Applicable

No samples are proposed for collection/analysis during this MEC investigation.

SAP Worksheet #28 -- Laboratory QC Samples Table

(UFP-QAPP Manual Section 3.4)



Worksheet Not Applicable

No analytical laboratory QC sampling will be required for this MEC investigation.

SAP Worksheet #29 -- Project Documents and Records Table

[\(UFP-QAPP Manual Section 3.5.1\)](#)

Document, Report, or Form	Generator	Definable Feature of Work	Frequency of Completion	Location/Where Maintained ⁽¹⁾
Project Personnel Sign-Off Record	PM	Mobilization/Site Preparation	One time	UFP-SAP, Project File
ESS	UXO Manager	Mobilization	One time	Project File
Field Checklist	Field UXO Personnel	Detector-Aided Surface Surveys Debris Removal Operations	Field collection days	UFP-SAP, Project File
MEC Accountability Log	SUXOS	Detector-Aided Surface Surveys Debris Removal Operations, MEC Treatment	As needed	MRP SOP 01, MRP SOP 02, MRP SOP 07, Project File
MDAS Addition Form	SUXOS	MPPEH Management	Every time MDAS is added to container	Outside of container
Demolition Explosives Accountability Log	SUXOS/UXOQCS	MEC Treatment	As needed/weekly	UFP-SAP, MRP SOP 07, Project File
Daily Report	SUXOS	All	Field collection days	UFP-SAP, Project File
Medical and OSHA Clearance Letter	HSM and PM	All	As needed	HASP/Project File
Daily Safety Meeting Sign-In Sheet	SSO	All	Daily	HASP/Project File
Medical Data Sheet	SUXOS	All	As needed	HASP/Project File
Debris Pile Map	Tetra Tech GIS Personnel	Detector-Aided Surface Survey Debris Removal Operations	Field collection days	UFP-SAP, Project file

Document, Report, or Form	Generator	Definable Feature of Work	Frequency of Completion	Location/Where Maintained⁽¹⁾
Field Notes (detailing equipment and procedure)	Field UXO Personnel	All	Field collection days	SUXOS Logbook/QC Logbook, Project file
Assessment Findings and Corrective Actions	Various (see Worksheet #31)	All	As needed	UFP-SAP, Project file
QC Surveillance Report	UXOQCS	All	UXOQCS - Minimum of once for each definable feature of work	UFP-SAP/ QC Logbook, Project file
Daily Quality Control Report	UXOQCS	All	Daily	UFP-SAP/QC Logbook, Project File
Photographs (may be included in report)	Field UXO Personnel	All	As needed	MRP SOP 01, MRP SOP 02, Project File
FTMR Forms	SUXOS	All	As needed	UFP-SAP, Project file
Field Audit Checklist (if an audit is conducted)	PM	All	As needed	Project file
On-Site Construction Support Report	Tetra Tech Personnel	All	One time	UFP-SAP/Project file, Long-term third-party professional document storage firm utilized

1. The secure project documents and records will be stored and secured by Tetra Tech at a third-party professional document storage firm, Business Records Management (BRM). The BRM repository is located at 651 Mansfield Ave., Pittsburgh, PA 15220. The secure project documents and records will be stored indefinitely or until EPA/PREQAB approves of disposing of the files.

SAP Worksheet #30 -- Analytical Services Table

[\(UFP-QAPP Manual Section 3.5.2.3\)](#)



Worksheet Not Applicable

No analytical services will be required to support this MEC investigation.

SAP Worksheet #31 -- Planned Project Assessments Table

[\(UFP-QAPP Manual Section 4.1.1\)](#)

Assessment Type	Frequency	Internal or External	Organization Performing Assessment	Person(s) Responsible for Performing Assessment⁽¹⁾	Person(s) Responsible for Responding to Assessment Findings⁽¹⁾	Person(s) Responsible for Identifying and Implementing Corrective Actions⁽¹⁾	Person(s) Responsible for Monitoring Effectiveness of Corrective Actions⁽¹⁾
Personnel Qualifications	One time for all field personnel	Internal	Tetra Tech	UXOQCS	SUXOS	UXO Manager	QAM PM
Accident/Incident Reporting	Per event	Internal	Tetra Tech	SSO/UXOSO	Project Safety Officer	HSM PM	HSM
Preventive Maintenance	Daily	Internal	Tetra Tech	UXOQCS	SUXOS	UXO Manager	PM
Communications Equipment Inspection	Daily	Internal	Tetra Tech	UXO Team Leader	SUXOS	SUXOS	UXO Manager PM
Safety Inspections	Daily (inspection); Weekly (formal surveillance)	Internal	Tetra Tech	SSO/UXOSO	SUXOS	SUXOS	UXO Manager PM
Brush Cutting and Vegetation Management	As needed to support operations	Internal	Tetra Tech	SUXOS	UXO Team Leader	UXO Team Leader	PM
Blanket Test Assessment	Twice daily	Internal	Tetra Tech	SUXOS	UXO Team Leader	UXO Team Leader	PM

Assessment Type	Frequency	Internal or External	Organization Performing Assessment	Person(s) Responsible for Performing Assessment⁽¹⁾	Person(s) Responsible for Responding to Assessment Findings⁽¹⁾	Person(s) Responsible for Identifying and Implementing Corrective Actions⁽¹⁾	Person(s) Responsible for Monitoring Effectiveness of Corrective Actions⁽¹⁾
Detector-Aided Visual Survey Manual MEC/MPPEH Removal	25% of first four grids/ lots or after any failure; 10% thereafter	Internal	Tetra Tech	UXOQCS	SUXOS	SUXOS	UXO Manager PM
Mechanized (low-input) Operations	25% of lot of work designated for removal. 25% of first four batches or after any failure; 10% thereafter	Internal	Tetra Tech	UXOQCS	SUXOS	SUXOS	UXO Manager PM
Surveying and Mapping Operations	Initial, then weekly	Internal	Tetra Tech	UXOQCS	SUXOS	SUXOS	UXO Manager
UXO/MEC Accountability	Weekly	Internal	Tetra Tech	UXOQCS	SUXOS	SUXOS	UXO Manager PM
Visitor Briefing/ Operational Assessment	Initial, then as needed to support operations	Internal	Tetra Tech	UXOSO	SSO	SSO	HSM

Assessment Type	Frequency	Internal or External	Organization Performing Assessment	Person(s) Responsible for Performing Assessment⁽¹⁾	Person(s) Responsible for Responding to Assessment Findings⁽¹⁾	Person(s) Responsible for Identifying and Implementing Corrective Actions⁽¹⁾	Person(s) Responsible for Monitoring Effectiveness of Corrective Actions⁽¹⁾
Site-Specific Training	Once at start of fieldwork and at start of each definable feature of work	Internal	Tetra Tech	SUXOS UXO Manager PM	As designated by PM	As designated by PM	PM
Hazard Assessment – Risk Analysis	At start of each definable feature of work, then as needed to support operations	Internal	Tetra Tech	UXOSO	UXOSO SUXOS	UXOSO SUXOS	HSM
Field Work Systems Audit	One per contract year	Internal	Tetra Tech	QAM	UXO Manager PM	QAM UXO Manager	QAM PM

1 Tetra Tech personnel unless otherwise noted.

SAP Worksheet #32 -- Assessment Findings and Corrective Action Responses

(UFP-QAPP Manual Section 4.1)

Assessment Type	Nature of Deficiencies Documentation	Individual(s) Notified of Findings (name, title, organization)	Time Frame of Notification	Nature of Corrective Action Response Documentation	Individual(s) Receiving Corrective Action Response (name, title, organization)	Time Frame for Response
Personnel Qualifications	E-mail	Ralph Brooks - UXO Manager, Tetra Tech	Immediately upon discovery	E-mail	Linda Klink – PM, Tetra Tech	Prior to initiation of task
Accident/Incident Reporting	Accident/Incident Report Form	Matt Soltis – HSM, Tetra Tech Linda Klink – PM, Tetra Tech	Immediately	Dependant on accident/incident	Linda Klink – PM, Tetra Tech Ralph Brooks - UXO Manager, Tetra Tech Matt Soltis – HSM, Tetra Tech	Within 24 hours
Preventive Maintenance	Field forms	Ralph Brooks - UXO Manager, Tetra Tech Linda Klink – PM, Tetra Tech	Within 24 hours	Field forms	Ralph Brooks - UXO Manager, Tetra Tech Linda Klink – PM, Tetra Tech	Within 24 hours
Communications Equipment Inspection	Field forms	Ralph Brooks - UXO Manager, Tetra Tech Linda Klink – PM, Tetra Tech	Within 24 hours	Field forms	Ralph Brooks - UXO Manager, Tetra Tech Linda Klink - PM, Tetra Tech	Within 24 hours

Assessment Type	Nature of Deficiencies Documentation	Individual(s) Notified of Findings (name, title, organization)	Time Frame of Notification	Nature of Corrective Action Response Documentation	Individual(s) Receiving Corrective Action Response (name, title, organization)	Time Frame for Response
Safety Inspections	Field forms	Ralph Brooks - UXO Manager, Tetra Tech Linda Klink – PM, Tetra Tech	Within 24 hours	Field forms	Ralph Brooks - UXO Manager, Tetra Tech Linda Klink – PM, Tetra Tech	Within 24 hours
Brush Cutting and Vegetation Management	Field forms	Ralph Brooks - UXO Manager, Tetra Tech Linda Klink – PM, Tetra Tech	Within 24 hours	E-mail	Ralph Brooks - UXO Manager, Tetra Tech Linda Klink – PM, Tetra Tech	Within 24 hours
Blanket Test Assessment	Oral	SUXOS – TBD Linda Klink – PM, Tetra Tech	Within 24 hours	E-mail	Ralph Brooks - UXO Manager, Tetra Tech Linda Klink – PM, Tetra Tech	Within 24 hours
Detector-Aided Visual Survey Manual MEC/MPPEH Removal	QC Checklist	Ralph Brooks - UXO Manager, Tetra Tech Linda Klink – PM, Tetra Tech	Within 1 business day of assessment	Updated QC checklist	Ralph Brooks - UXO Manager, Tetra Tech Linda Klink – PM, Tetra Tech	Within 24 hours
Surveying and Mapping Operations	E-mail	Ralph Brooks - UXO Manager, Tetra Tech Linda Klink – PM, Tetra Tech	Within 24 hours	Updated e-mail	Ralph Brooks - UXO Manager, Tetra Tech Linda Klink – PM, Tetra Tech	Within 24 hours
UXO/MEC Accountability	Field forms	Ralph Brooks - UXO Manager, Tetra Tech Linda Klink – PM, Tetra Tech	Within 24 hours	Updated field forms	Ralph Brooks - UXO Manager, Tetra Tech Linda Klink – PM, Tetra Tech	Within 24 hours

Assessment Type	Nature of Deficiencies Documentation	Individual(s) Notified of Findings (name, title, organization)	Time Frame of Notification	Nature of Corrective Action Response Documentation	Individual(s) Receiving Corrective Action Response (name, title, organization)	Time Frame for Response
Visitor Briefing/ Operational Risk Assessment	E-mail	SUXOS – TBD Linda Klink – PM, Tetra Tech	Within 24 hours	Updated e-mail	SUXOS – TBD Linda Klink – PM, Tetra Tech	Within 24 hours
Site-Specific Training	E-mail	Ralph Brooks - UXO Manager, Tetra Tech Linda Klink – PM, Tetra Tech	Upon completion of training	Updated e-mail	Ralph Brooks - UXO Manager, Tetra Tech Linda Klink – PM, Tetra Tech	Within 24 hours
Hazard Assessment – Risk Analysis	E-mail	Linda Klink – PM, Tetra Tech Matt Soltis – HSM, Tetra Tech	Within 24 hours	Updated e-mail	Linda Klink – PM, Tetra Tech Matt Soltis – HSM, Tetra Tech	Within 24 hours
Field Work Systems Audit	Letter Report	Linda Klink – PM, Tetra Tech Tom Johnston – QAM, Tetra Tech	Within 5 business days of assessment	Letter report	Linda Klink – PM, Tetra Tech Tom Johnston – QAM, Tetra Tech	Within 10 business days of receipt

SAP Worksheet #33 -- QA Management Reports Table

(UFP QAPP Manual Section 4.2)

Type of Report	Frequency (daily, weekly monthly, quarterly, annually, etc.)	Projected Delivery Date(s)	Person(s) Responsible for Report Preparation (title and organizational affiliation)	Report Recipient(s) (title and organizational affiliation)
Project Monthly Progress Report	Monthly (written) for duration of the project	Monthly	PM Tetra Tech	Navy RPM NAVFAC Atlantic BEC BRAC PMO SE
Field Status Report	Daily (oral or e-mail) during the course of fieldwork	TBD	SUXOS Tetra Tech	PM Tetra Tech UXO Manager Tetra Tech
Daily QC Report	Daily (e-mail)	TBD	UXOQCS Tetra Tech	PM Tetra Tech UXO Manager Tetra Tech
QC Meeting Minute	Twice per month during project performance	TBD	UXO Manager Tetra Tech	PM Tetra Tech
Rework Items List	Twice per month during project performance Daily for UXO work	TBD	UXOQCS Tetra Tech	PM Tetra Tech
Project QC Report	Internal draft, draft, and final (Appendix to report)	TBD	PM Tetra Tech	Navy RPM NAVFAC Atlantic BEC BRAC PMO SE

This worksheet will be modified to include the project delivery dates after fieldwork is scheduled.

SAP Worksheet #34 -- Verification (Step I) Process Table - Preparatory and Initial Inspection

[\(UFP-QAPP Manual Section 5.2.1\)](#)

A preparatory-phase inspection will be performed prior to beginning each definable feature of work. The purpose of these inspections is to review applicable specifications and verify that the necessary resources, conditions, and controls are in place and compliant with the SAP before the start of work activities. An initial-phase inspection will be performed at the beginning of each definable feature of work. The purpose of these inspections is to observe/review the application of procedures to ensure their adequacy and to ensure that adequate resources are applied to the activity and that a clear understanding exists as to the QC requirements of the definable feature of work. The responsible person will inspect the relevant items from the checklist in the appropriate SOP.

Definable Feature of Work	Description	Responsible for Verification (name, organization)
Site Preparation (including mobilization)	Project readiness review to be performed by Tetra Tech PM and Navy RPM, including UFP-SAP review.	Linda Klink – PM, Tetra Tech Stacin Martin – Navy RPM, NAVFAC Atlantic Mark Davidson – BEC, BRAC PMO SE
	Prior to field crew(s) mobilizing to the field for on-site data collection, the Tetra Tech UXO Manager will review resumes and training records, including those for UXO field personnel, to ensure that all required training and experience requirements identified in Worksheet #7 have been completed for each crew member. Certifications will also be obtained prior to conducting the task requiring certification.	Ralph Brooks – UXO Manager, Tetra Tech
	Review of mobilization and site preparation activities such as equipment setup and checkout.	Linda Klink – PM, Tetra Tech Ralph Brooks – UXO Manager, Tetra Tech

Definable Feature of Work	Description	Responsible for Verification (name, organization)
	Review of MRP SOP 01 (UXO Detector-Aided Surface Surveys) and MRP SOP 02 (MEC Management and Accountability), which document methodology to be used during surveys and QC procedures.	Ralph Brooks – UXO Manager, Tetra Tech TBD – SUXOS, Tetra Tech TBD – UXOQCS, Tetra Tech
Site Preparation (including mobilization) (continued)	Prior to surface survey crews initiating on-site investigations, the UXO Manager will review the results of the blanket tests to verify that performance criteria have been satisfactorily attained per Worksheet #12 . The Tetra Tech PM will review recommendations of the UXO Manager and provide final approval.	Linda Klink – PM, Tetra Tech Ralph Brooks – UXO Manager, Tetra Tech
Site Surveying	Prior to the start of field work, the site boundaries (including work areas, equipment laydown areas, and access ways) will be established.	TBD – SUXOS, Tetra Tech
Vegetation Management	Brush clearing and vegetation management (including work areas, equipment laydown areas and access ways) will be conducted in accordance with MRP SOP 06.	Preparatory Inspections: Ralph Brooks – UXO Manager, Tetra Tech Initial Inspections: TBD – UXOQCS, Tetra Tech
GPS Positional Data Collection	Review of MRP SOP 05 (Global Positioning System) which documents procedures to be utilized in the collection of GPS positional data. Ensure that real-time accuracy is being achieved by confirming that data are only collected when Horizontal Dilution of Precision (HDOP) is < 3 and when at least six satellites are available. Ensure that sub-meter post processes accuracy estimate is being achieved by checking that GPS positioning is compared to two known locations at least twice daily.	TBD – SUXOS, Tetra Tech

Definable Feature of Work	Description	Responsible for Verification (name, organization)
UXO Visual Detector-Aided Surveying Manual MEC/MPPEH Removal	<p>Review of MRP SOP 01 (UXO Detector-Aided Surface Surveys) and MRP SOP 02 (MEC Management and Accountability), which include procedures for data collection and transcription.</p> <p>The SUXOS will verify that the data collected during the first lot of field work contain all the elements required by the scope of work and do not contain questionable data or error points.</p>	<p>Ralph Brooks – UXO Manager, Tetra Tech</p> <p>TBD – SUXOS, Tetra Tech</p>
	<p>Review of MRP SOP 05 (Global Positioning System), which documents procedures to be used in the collection of GPS positional data.</p> <p>The SUXOS will verify that the UXO detector-aided data collected during the first lot of field work contain all the elements required by the scope of work and do not contain questionable data or error points.</p>	<p>Ralph Brooks – UXO Manager, Tetra Tech</p>
Mechanized (low-input) Operations	<p>Review MRP SOP 01 (UXO Detector-Aided Surface Surveys) and MRP SOP 02 (MEC Management and Accountability), which document methodology to be used during surveys and QC procedures.</p> <p>The SUXOS will verify that the data collected during the first lot of field work contain all the elements required by the scope of work and do not contain questionable data or error points.</p>	<p>Ralph Brooks – UXO Manager, Tetra Tech</p> <p>TBD – SUXOS, Tetra Tech</p>
MEC Management (Donor Explosives Handling and Storage)	<p>Review MRP SOP 07 (UXO Demolition/Disposal Operations), which documents procedures to be used during UXO demolition operation and includes checklists and field forms.</p>	<p>Ralph Brooks – UXO Manager, Tetra Tech</p> <p>TBD – SUXOS, Tetra Tech</p>
MEC Management (Treatment)	<p>Review MRP SOP 07 (UXO Demolition/Disposal Operations), which documents procedures to be used during UXO demolition operation and includes checklists and field forms.</p>	<p>Ralph Brooks – UXO Manager, Tetra Tech</p> <p>TBD – SUXOS, Tetra Tech</p>
MPPEH Management (Inspection)	<p>Review MRP SOP 02 (MEC Management and Accounting), which documents procedures to be used during MPPEH management operations and includes checklists and field forms.</p>	<p>Ralph Brooks – UXO Manager, Tetra Tech</p> <p>TBD – SUXOS, Tetra Tech</p>
MPPEH Management (Certification)	<p>Review MRP SOP 02 (MEC Management and Accounting), which documents procedures to be used during MPPEH certification operations and includes checklists and field forms.</p>	<p>Ralph Brooks – UXO Manager, Tetra Tech</p> <p>TBD – SUXOS, Tetra Tech</p>

Definable Feature of Work	Description	Responsible for Verification (name, organization)
MPPEH Management (Disposal)	Review MRP SOP 02 (MEC Management and Accounting), which documents procedures to be used during MPPEH disposal operations and includes checklists and field forms.	Linda Klink – PM, Tetra Tech Ralph Brooks – UXO Manager, Tetra Tech
Demobilization	Review of demobilization activities such as completion of field forms, return of equipment and forwarding of all field documentation to PM.	Linda Klink – PM, Tetra Tech Ralph Brooks – UXO Manager, Tetra Tech
Site-Specific Final Report Preparation and Approval	Verify that all data and documentation have been acquired for report preparation.	Linda Klink – PM, Tetra Tech Ralph Brooks – UXO Manager, Tetra Tech Stacin Martin – RPM, Navy

SAP Worksheet #35 -- Validation (Steps II) Process Table

[\(UFP-QAPP Manual Section 5.2.2\)](#) [\(Figure 37 UFP-QAPP Manual\)](#) [\(Table 9 UFP-QAPP Manual\)](#)

Follow-up QC inspections are conducted to ensure that procedures are being correctly performed, no changed conditions exist that may affect the quality of work, and lessons learned are being applied as identified. The responsible individual will inspect the relevant follow-up items from the checklist in the appropriate SOP at least as often as specified in this worksheet. [Worksheet #32](#) describes actions to be taken in the event that non-conforming conditions are observed during the QC inspections.

Definable Feature of Work	Frequency of Inspection	Supporting QC Document(s)	Responsible for Validation (name, organization)
Site Preparation (including mobilization)	Once	No follow-up required for project readiness. Verify that the UFP-SAP can be implemented and carried out as written and that any deviations are documented.	Linda Klink – PM, Tetra Tech Stacin Martin – Navy RPM, NAVFAC Atlantic Mark Davidson – BEC, BRAC PMO SE
Site Surveying	Daily	Checklist and field logbooks, which document equipment utilization and progress.	TBD – SUXOS, Tetra Tech
Vegetation Management	Daily	Checklists and field logbooks, which document equipment utilized and progress.	TBD – SUXOS, Tetra Tech Ralph Brooks – UXO Manager, Tetra Tech
GPS Positional Data Collection	Daily	See MRP SOP 05 (GPS) and QC Follow-Up Report.	Ralph Brooks – UXO Manager, Tetra Tech TBD – SUXOS, Tetra Tech

Definable Feature of Work	Frequency of Inspection	Supporting QC Document(s)	Responsible for Validation (name, organization)
UXO Visual Detector-Aided Surveying Manual MEC/MPPEH Removal	Once per week activity is conducted	Checklists and field logbooks, which document equipment utilized and progress.	Linda Klink – PM, Tetra Tech
	Minimum of once per day surveys are conducted or more frequently as necessary	Checklists and field forms, which document equipment utilized, grids/transects surveys, and grids/transects checked for QC purposes.	Ralph Brooks – UXO Manager, Tetra Tech TBD – SUXOS, Tetra Tech TBD – UXOQCS, Tetra Tech
	As needed, prior to data entry	Prior to entering data (field forms and electronic data) from the detector-aided surface surveys into the permanent project database, the UXO Manager or designated representative will review the field forms to ensure that all required information is provided as required by MRP SOP 01 (Detector-Aided Surface Survey) and MRP SOP 02 (MEC Management and Accountability). Verify that all data have been transferred correctly and completely during collection. Ensure that data are downloaded and backed up at least once per day to prevent accidental loss of data/field efforts.	Ralph Brooks – UXO Manager, Tetra Tech TBD – SUXOS, Tetra Tech
Mechanized (low-input) Operations	Daily	See MRP SOP 01 (UXO Detector-Aided Surface Surveys), MRP SOP 02 (MEC Management and Accountability), and QC Follow-Up Report	Ralph Brooks – UXO Manager, Tetra Tech TBD – SUXOS, Tetra Tech TBD – UXOQCS, Tetra Tech
MEC Management (Donor Explosives Handling and Storage)	Before first event and any time a new procedure is introduced	See MRP SOP 07 (UXO Demolition/Disposal Operations) and QC Follow-Up Report	Ralph Brooks – UXO Manager, Tetra Tech TBD – SUXOS, Tetra Tech TBD – UXOQCS, Tetra Tech

Definable Feature of Work	Frequency of Inspection	Supporting QC Document(s)	Responsible for Validation (name, organization)
MEC Management (Treatment)	Before first event and any time a new procedure is introduced	See MRP SOP 07 (UXO Demolition/Disposal Operations) and QC Follow-Up Report	Ralph Brooks – UXO Manager, Tetra Tech TBD – SUXOS, Tetra Tech TBD – UXOQCS, Tetra Tech
MPPEH Management (Inspection)	Daily	See MRP SOP 02 (MEC Management and Accounting) and QC Follow-Up Report	Ralph Brooks – UXO Manager, Tetra Tech TBD – SUXOS, Tetra Tech TBD – UXOQCS, Tetra Tech
MPPEH Management (Certification)	Daily	See MRP SOP 02 (MEC Management and Accounting) and QC Follow-Up Report	Ralph Brooks - UXO Manager, Tetra Tech TBD – SUXOS, Tetra Tech TBD – UXOQCS, Tetra Tech
MPPEH Management (Disposal)	Daily	See MRP SOP 02 (MEC Management and Accounting) and QC Follow-Up report	Ralph Brooks – UXO Manager, Tetra Tech TBD – SUXOS, Tetra Tech TBD – UXOQCS, Tetra Tech
Demobilization	Once upon completion	Verify that all demobilization activities have been completed.	Linda Klink – PM, Tetra Tech Ralph Brooks – UXO Manager, Tetra Tech
Site-Specific Final Report Preparation and Approval	Once upon completion of project activities	Verify that all activities have been documented and reported and have been included in the report.	Linda Klink – PM, Tetra Tech Stacin Martin – Navy RPM, NAVFAC Atlantic Mark Davidson – BEC, BRAC PMO SE

SAP Worksheet #36 -- Analytical Data Validation (Steps IIa) Summary Table

(UFP-QAPP Manual Section 5.2.2.1)

Step IIa ⁽¹⁾	Matrix	Analytical Group	Validation Criteria	Data Validator (Title and organization)
IIa	Approach paths, equipment laydown areas, areas designated for debris removal, and debris piles	Detector-Aided Visual Survey Manual MEC/MPPEH Removal	a) Satisfactory rechecks of 25% of first four lots ⁽²⁾ by the UXOQCS, or SUXOS if no UXOQCS available. b) Satisfactory rechecks of 10% of the lots ⁽²⁾ by the UXOQCS, or SUXOS if no UXOQCS available, after achievement of satisfactory rechecks on four lots in a row.	TBD UXOQCS Tetra Tech TBD UXOQCS Tetra Tech

- 1 IIa = compliance with methods, procedures, and contracts (see Table 10, page 117, UFP-QAPP manual, V.1 March 2005).
- 2 One lot of work is equal to an approach path, work area, or laydown area that is 100 by 100 feet or less in size; areas larger than 100 by 100 feet will be divided into 100- by 100-foot sections for QC purposes. A debris pile that can be processed in 4 hours will be defined as one lot of work. Larger debris piles will be subdivided into multiple lots of work.

SAP Worksheet #37 -- Usability Assessment

(UFP-QAPP Manual Section 5.2.3)

Data Usability Assessment

The objective of the operation is the safe removal of debris piles in the 4-acre work area of SWMU 1. The UXO team is required to collect information on MEC/MPPEH including suspect burial locations, and this section applies to the collection of information during the detector-aided visual surveys and items found during avoidance operations. The usability of the data directly affects whether project objectives can be achieved. The following characteristics will be evaluated at a minimum. The results of these evaluations will be included in the project report. To the extent required by the type of data being reviewed, the assessors will consult with other technically competent individuals to render sound technical assessments of these data characteristics.

Certification and Proper Operation of Detection and Positioning Systems

The Tetra Tech UXO Manager, or designee, acting on behalf of the Tetra Tech Project Team, will prepare a table listing planned calibration and QC checks, their occurrence, and the results (acceptable or not acceptable) for each type of metal detector and positioning system equipment to be used on the project. Data collected by any improperly operating equipment will be identified. A determination will be made as to whether the affected data adversely impacted the ability to meet project objectives. If the project objectives have been adversely impacted, the Tetra Tech PM will consult with the Navy RPM and other Project Team members, as necessary (determined by the Navy RPM), to develop appropriate corrective actions.

Qualification/Certification of Survey Team

The Tetra Tech UXO Manager, acting on behalf of the Project Team, will prepare a table listing each member of the on-site construction support UXO team and required certifications, training, and required demonstrations of competency. Any deviations from this SAP will be identified. Data collected by team members not meeting the required training and demonstrations of competency will be identified. A determination will be made as to whether affected data impacted the ability to meet project objectives. If the project objectives have been adversely impacted, the Tetra Tech PM will consult with the Navy RPM and other Project Team members, as necessary (determined by the Navy RPM), to develop appropriate corrective actions.

Coverage of Areas to be Investigated

The UXO Manager, or designee, acting on behalf of the Tetra Tech PM and Project Team, will determine whether enough data were collected about all MEC/MPPEH and suspect burial location discovered during debris removal operations. Data gaps will be identified. The Tetra Tech PM will consult with the Project Team to determine the extent to which it is necessary to fill these data gaps during future investigations.

Identify the personnel responsible for performing the usability assessment

The Tetra Tech PM will oversee the listed data usability assessments, which will be conducted by a technical specialist who is independent of field data collection. The data usability assessments will be reviewed with the Navy RPM, PREQB, and U.S. EPA. The review will take place either in a face-to-face meeting or teleconference depending on the extent of identified deficiencies. If no significant deficiencies are identified, the data usability assessment will simply be documented in the project report and reviewed during the normal document review cycle.

Describe the documentation that will be generated during usability assessment and how usability assessment results will be presented

Written documentation will support non-compliance with this UFP-SAP. The project report will identify and describe the data usability limitations and suggest corrective actions, if necessary.

Usability Checklist Table			
Phase of Work	Item to be Checked/Verified	Verified (Yes or No)	Comments or Deviations
Pre-Survey	Qualification of survey team evaluated		
	Personnel reviewed and signed relevant SAP section(s)		
MDAS Inventory	MDAS recorded on MDAS Addition Form		
	MDAS reported in daily report		
GPS Data	Prepare a table listing planned calibration and QC checks, their occurrence, and the results (acceptable or not acceptable) for positioning system equipment to be used on the project Verify upload of GPS data		
MEC Tracking Log	Conformance with SAP requirements and procedures for recording MEC items discovered Report MEC/MPPEH and related items on Daily Reports		
Survey	QC evaluation of survey equipment (tests and checklists satisfactorily completed)		
	Conformance with SAP requirements and procedures for all survey work and rework (including documentation requirements), and all deficiencies documented		
	Coverage of areas to be cleared of debris and located within accuracy levels required for MEC clearance/avoidance		
	Interpretation and summary of data satisfy SAP requirements and conform with Worksheet #17		

TABLE 10-1

**CONCEPTUAL SITE MODEL INFORMATION PROFILE
 SWMU 1 – FORMER ARMY CREMATOR DISPOSAL SITE
 NAVAL ACTIVITY PUERTO RICO
 CEIBA, PUERTO RICO
 PAGE 1 OF 5**

Profile Type	Information Need	Findings
Range/Site Profile	Installation Name	Navy Activity Puerto Rico (NAPR)
	Installation Location	Ceiba, Puerto Rico
	Range/Site Name	SWMU 1 – Former Army Cremator Disposal Site
	Range/Site Location	SWMU 1, a part of Operable Unit (OU) 3 and former Installation Restoration Program designation as Site 5, encompasses an area of roughly 117 acres and encroaches into the mangrove swamps along the shoreline of the Ensenada Honda.
	Range/Site History	<p>SWMU 1 consists of an abandoned, unlined waste pile/landfill that was in operation from the early 1940s to the early 1960s and was the main landfill during this time for the main station and Fort Bundy. An estimated 100,000 tons of waste including scrap metal, inert ordnance, batteries, tires, appliances, cars, cables, dry cleaning solvent cans, paint cans, gas cylinders, construction debris, dead animals, and residential waste was disposed of at this site. Waste material was disposed of by piling, burning, and compacting. The trash was dumped in mounds at the site and burned every afternoon; the remains were compacted with a bulldozer. No daily cover was applied.</p> <p>No records have been found that SWMU 1 has ever been used as a bombing target, firing, or demolition range of any kind. Also, no investigations specific to munitions have been conducted to date. However, during an event in January 2010 to remove debris from the ground surface to remove the source material causing the soil contamination (metals) at the site, suspect munitions items were encountered by the debris removal contractor and the debris removal stopped. Navy Explosive Ordnance Disposal (EOD) at Naval Station Mayport, Florida (Navy EOD Mayport) was contacted to respond to and evaluate the items, which were certified as Material Documented As Safe (MDAS) by Navy EOD Mayport in February 2010. When the debris removal efforts resumed in March 2010, with unexploded ordnance (UXO) avoidance support, numerous suspect MEC/MPPEH items were encountered that again brought work at SWMU 1 to a halt.</p>
	Range/Site Area and Layout	SWMU 1 encompasses 116 acres of upland and wetland areas, of which the debris piles cover approximately 4 acres of the upland area. The wetland areas encroach into the mangrove swamps along the shoreline of the Ensenada Honda.
Range/Site Structures	There are no structures located within SWMU 1.	

TABLE 10-1

**CONCEPTUAL SITE MODEL INFORMATION PROFILE
 SWMU 1 – FORMER ARMY CREMATOR DISPOSAL SITE
 NAVAL ACTIVITY PUERTO RICO
 CEIBA, PUERTO RICO
 PAGE 2 OF 5**

Profile Type	Information Need	Findings
	Range/Site Boundaries	N: Kearsarge Road, leading to a pier S: Ensenada Honda mangrove swamp E: Ensenada Honea/Caribbean Sea/Atlantic Ocean W: Former Navy Lodge and Bowling Alley and Langley Drive
	Range/Site Security	SWMU 1 is located within NAPR, which is currently a secure Navy facility. Currently, restricted access via guard at Gate 3 is the only entry point to NAPR. NAPR security personnel monitor all access to NAPR, and frequent motor vehicle and boat patrols are conducted as part of the access control program.
Munitions/ Release Profile	Munitions Types	Inert ordnance was disposed of at SWMU1 during the time the site was used as a landfill. MPPEH encountered during debris removal activities in January 2010 and certified as MDAS by Navy EOD Mayport in February 2010 included 1 MK 76 Practice bomb, 1 Aircraft Drop Tank and various Rocket Pod Launchers. In March 2010, MPPEH identified included 2.25 inch Sub Caliber Aircraft Rockets (SCARs) and 5-inch High Velocity Aircraft Rocket (HVAR) motors along with 20mm and 5-inch cases identified by the Tetra Tech UXO Escort.
	Maximum Probability Penetration Depth	Penetration depths are not applicable to this site because suspected MEC/MPPEH activities only involved disposal. It is unknown if MEC/MPPEH is present in the subsurface, if so, MEC/MPPEH may be present to a depth of several feet below ground surface.
	MEC Density	Several MEC/MPPEH were encountered on the surface during the debris removal operations in January and March 2010. Density is unknown at this time.
	Munitions Debris	MDAS is known to be present at the site.
	Associated MC	Potential associated munitions constituents (MC) are metals, explosives, propellants, and perchlorate. Of these, only metals have been investigated in site media to date. As necessary, MC will be investigated at a later date under a separate SAP. Non-munitions-related contamination has been investigated and analysis included metals.
	Migration Routes/Release Mechanisms	Potential MEC migration routes surface soil erosion during precipitation events, such as thunderstorms and hurricanes. Potential MC migration routes include groundwater, surface water, subsurface soil, and sediment.

TABLE 10-1

**CONCEPTUAL SITE MODEL INFORMATION PROFILE
SWMU 1 – FORMER ARMY CREMATOR DISPOSAL SITE
NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO
PAGE 3 OF 5**

Profile Type	Information Need	Findings
Physical Profile	Climate	Puerto Rico has a tropical marine climate characterized by minimal temperature fluctuations, relatively moderate humidity, and frequent rain showers. The rainy season is typically defined as May through November. Hurricane season is from June 1 through November 30.
	Topography	The area of the site is relatively level.
	Geology	<p>In the uplands area of SWMU 1 (where the debris piles are located), the soil is Jacana clays. These clays have a high natural fertility, moderate rate of runoff, susceptibility to erosion, high shrink-swell potential, and shallow depth to bedrock.</p> <p>In the estuarine area of SWMU 1, the soil association is the Swamps-Marshes association. The soils in this association are sandy or clayey and contain organic materials from decaying mangrove trees, are very poorly drained, and underlain by coral, shells, and marl at varying depths. These soils have no agricultural value and serve only as feeding and breeding areas for birds and crabs.</p>
	Soil	The soil in the area of SWMU 1 has been classified as Wet Alluvial Land. This type of land typically consists of lagoon-like areas or depressions on a floodplain where the water table is at or near the surface most of the time. Soils/ sediments range in texture from clay to loam and are submerged during rainy periods. A high water table and lack of drainage outlets make this type of land suitable only for wildlife habitat, wetlands, mangroves, and other natural resources.
	Hydrogeology	The nearby marine waters suggest that salt-water intrusion has occurred at SWMU 1. No drinking water wells have been developed at the facility.
	Hydrology	Several small pools of standing water are present in the central portion of the site. Surface runoff is channeled into the Caribbean Sea.
	Vegetation	The communities included red mangrove, black mangrove, coastal upland forest, and coastal scrub forest.

TABLE 10-1

**CONCEPTUAL SITE MODEL INFORMATION PROFILE
 SWMU 1 – FORMER ARMY CREMATOR DISPOSAL SITE
 NAVAL ACTIVITY PUERTO RICO
 CEIBA, PUERTO RICO
 PAGE 4 OF 5**

Profile Type	Information Need	Findings
Land Use and Exposure Profile	Current Land Use	SWMU 1 is currently inactive. Results from the SWMU 1 debris removal effort will allow for critical information to be collected concerning characterization of surface MEC/MPPEH, thus serving as in interim corrective measure (ICM) and results will be incorporated into a Phase 1 RFI for MEC. The Phase 1 RFI is equivalent to a Preliminary Assessment/Site Inspection (SI) typically conducted for munitions sites under CERCLA. The Phase 1 RFI is not intended to be a full-scale study of the nature and extent of contamination or explosives hazards. Rather, the purpose of the Phase 1 RFI is to generate field data efficiently to determine if further response action or remedial investigation is appropriate.
	Current Human Receptors	Potential receptors include Navy, contractors/visitors, and trespassers.
	Current Activities	Currently, no activities take place on this site.
	Potential Future Land Use	SWMU 1 is under investigation and restricted media and land uses will be determined at the conclusion of the investigation. The site will remain under the ownership and control of the Navy until response actions are complete.
	Potential Future Human Receptors	Unknown (see above).
	Potential Future Land Use Related Activities	Unknown (see above).
	Zoning/Land Use Restrictions	Land use control restrictions for residential use, groundwater use, soil disturbance, and sediment disturbance are currently in place.
	Demographics/Zoning	Ceiba's population density is approximately 230 people per square mile. Because of NAPR closure, only a skeleton crew remains at the station.
	Beneficial Resources	There are no SWMU 1-specific beneficial resources.
Ecological Profile	Habitat Type	The habitat of SWMU 1 mainly consists of mangroves, which are considered wetland areas and are protected under Federal law. The debris piles are largely located in the upland area of SWMU 1.
	Degree of Disturbance	Low – SWMU 1 is currently unused. The habitat and ecological receptors present will remain the same.

TABLE 10-1

CONCEPTUAL SITE MODEL INFORMATION PROFILE
SWMU 1 – FORMER ARMY CREMATOR DISPOSAL SITE
NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO
PAGE 5 OF 5

Profile Type	Information Need	Findings
	Ecological Receptors and Species of Special Concern	<p>The major mammal population in and near NAPR consists of introduced species such as stray dogs and cats, Norway and gray-bellied rats, mice, and mongooses. More than 200 species of birds inhabit the island of Puerto Rico.</p> <p>Species of particular significance potentially within the boundary of SWMU 1 include the yellow-shouldered blackbird, brown pelican, green sea turtle, West Indian Manatee and various species of bats.</p>
	Relationship of MEC/MC Sources to Habitat and Potential Receptors	<p>Human and ecological receptors may come into direct contact with MEC/MC in soil. Receptors may come into contact with MC that have been incorporated into the food chain (bioaccumulated in plants and animals). Ecological receptors could come into contact with potential MC in the subsurface while digging for food or constructing burrows. As necessary, MC will be investigated at a later date under a separate SAP.</p>

TABLE 17-1

**CONTROLLING EZs FOR PRIMARY MGFD
(TABLE 6-2 FROM ESS)
SWMU 1 – FORMER ARMY CREMATOR DISPOSAL SITE
NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO**

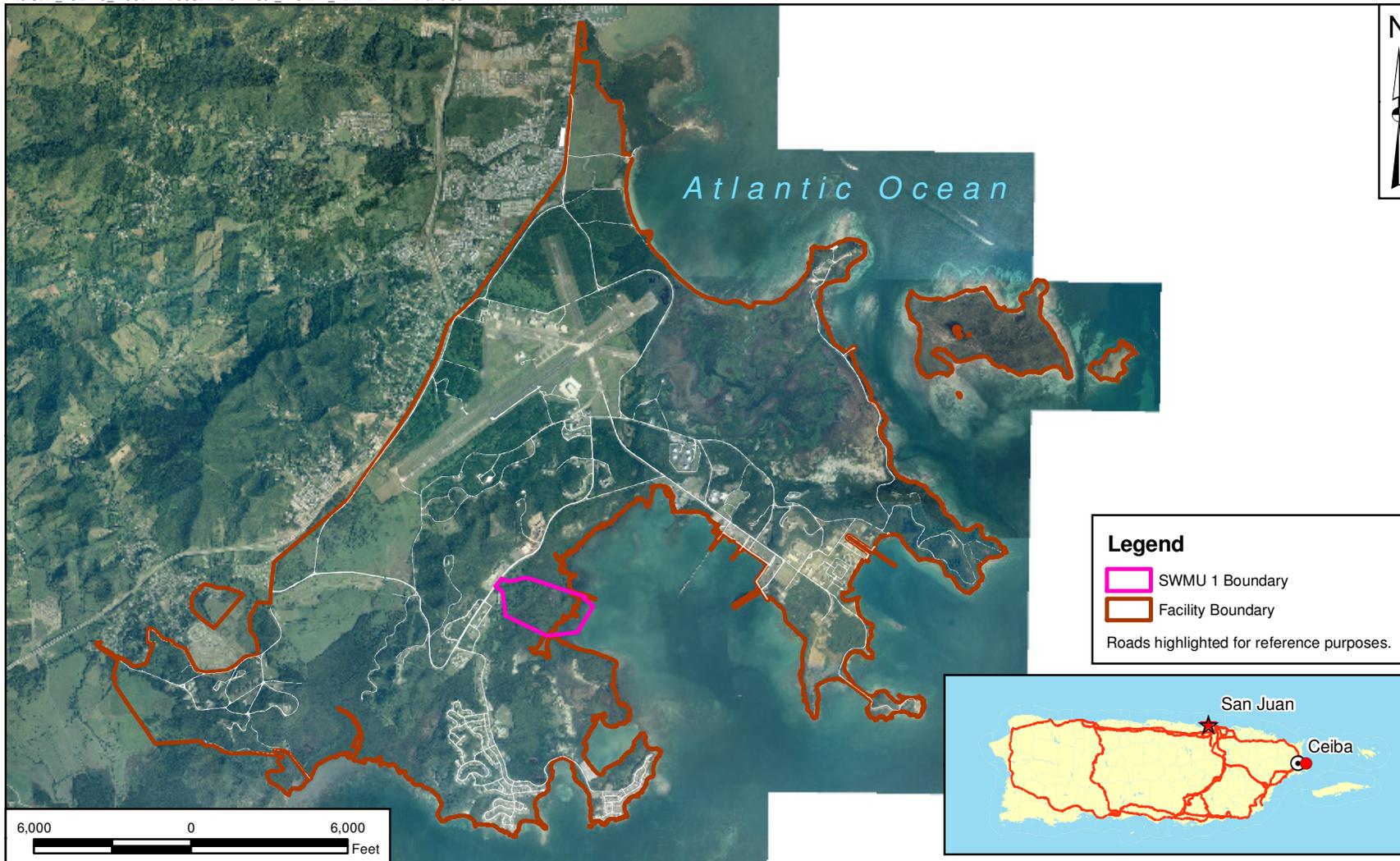
Operation	Sited As	ES	Basis⁽¹⁾	ESQD (ft)
Manual Operations ⁽²⁾	Unintentional detonation	UXO Teams	K40 of the MGFD	107 ⁽³⁾
	Unintentional detonation	Public and non-essential personnel	HFD of the MGFD	428 ⁽³⁾
Mechanized (low-input) Operations	Unintentional detonation	UXO Teams	K24 of the MGFD	64 ⁽³⁾⁽⁴⁾
	Unintentional detonation	Public and non-essential personnel	HFD of the MGFD	428 ⁽³⁾
MEC Treatment	Intentional detonation	Public and all personnel	MFD of the MGFD	1,874 ⁽³⁾

1 MGFD is the 5-inch HVAR Motor Mk10 23.9 lbs Net Explosive Weight (NEW) of Ballistite propellant.

2 Manual operations involve hand removal of MEC/MPPEH.

3 Fragmentation Data Review Form for 5-inch Mk10 HVAR Rocket Motor dated 9/30/10.

4 The UXO team and equipment will have the required shielding listed in Fragmentation Data Review Form for 5-inch Mk 10 HVAR Rocket Motor dated 9/30/10.



Legend

- SWMU 1 Boundary
- Facility Boundary

Roads highlighted for reference purposes.

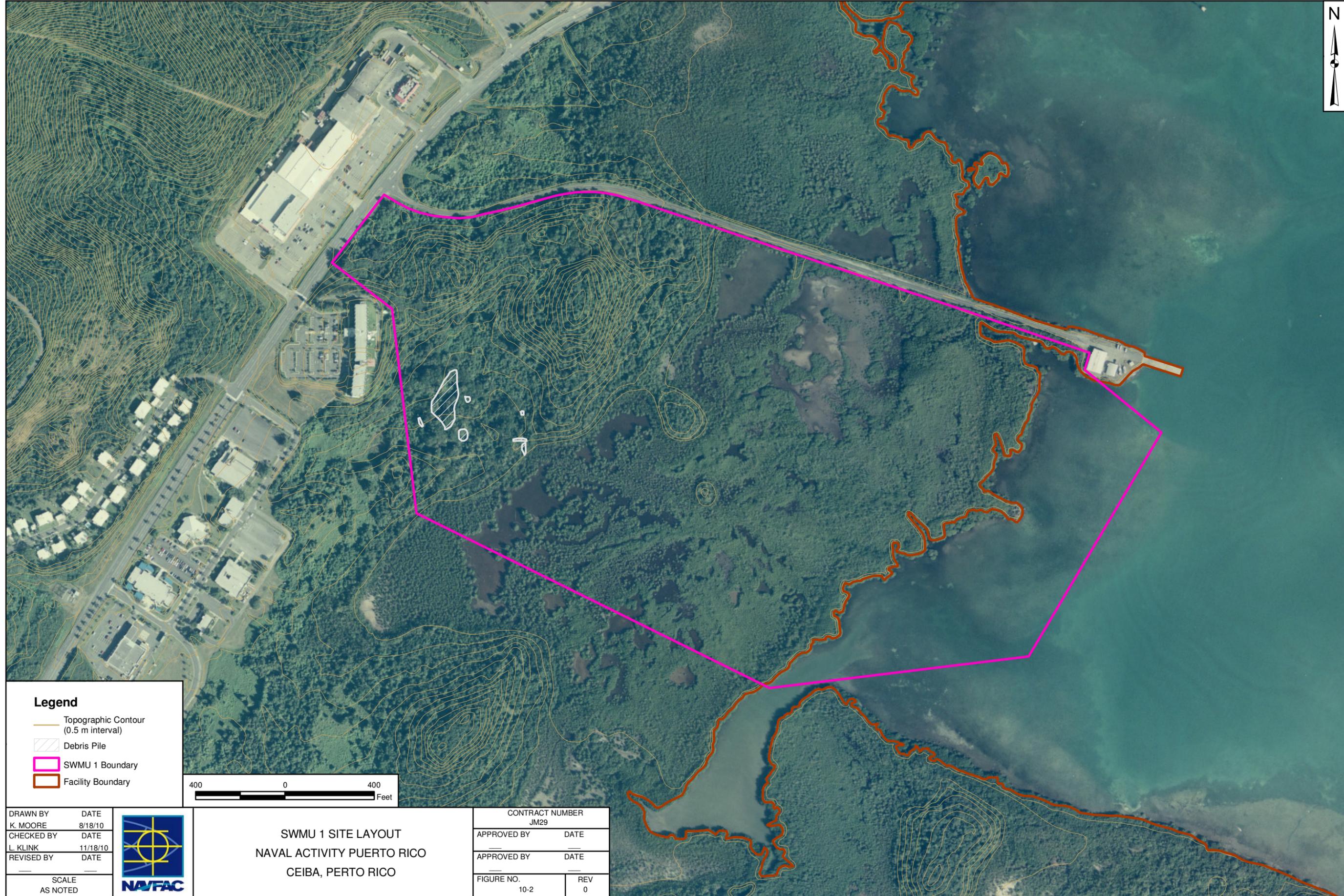


DRAWN BY	DATE
K. MOORE	8/18/10
CHECKED BY	DATE
L. KLINK	11/18/10
REVISED BY	DATE
SCALE AS NOTED	



FACILITY AND SWMU 1 MAP
NAVAL ACTIVITY PUERTO RICO
CEIBA, PERTO RICO

CONTRACT NUMBER JM29	
APPROVED BY	DATE
APPROVED BY L. KLINK	DATE
FIGURE NO. 10-1	REV 0



Legend

- Topographic Contour
(0.5 m interval)
- Debris Pile
- SWMU 1 Boundary
- Facility Boundary



DRAWN BY	DATE
K. MOORE	8/18/10
CHECKED BY	DATE
L. KLINK	11/18/10
REVISED BY	DATE
SCALE	
AS NOTED	

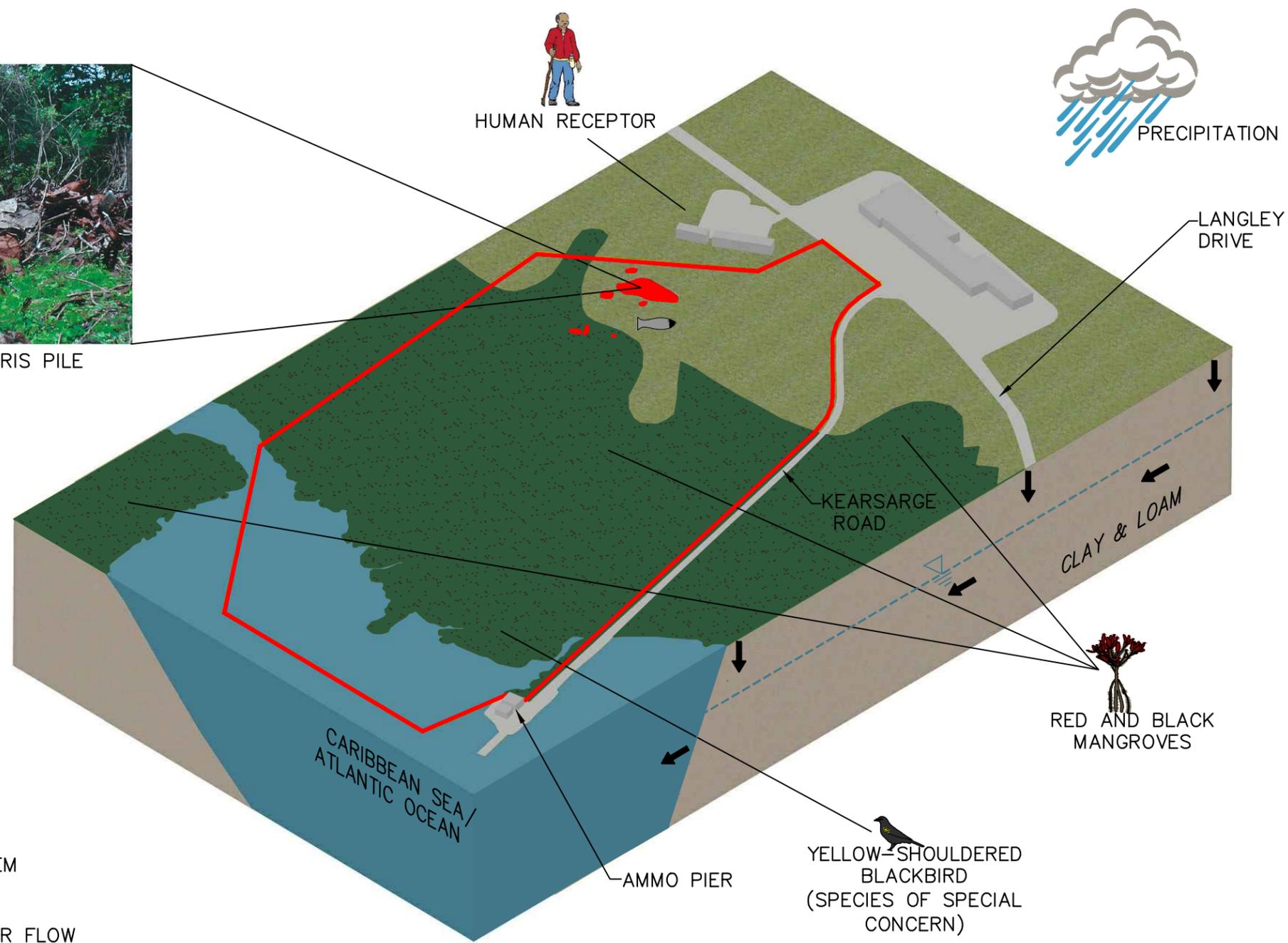


SWMU 1 SITE LAYOUT
NAVAL ACTIVITY PUERTO RICO
CEIBA, PERTO RICO

CONTRACT NUMBER	
JM29	
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO.	REV
10-2	0



VIEW OF A TYPICAL DEBRIS PILE AT SWMU 1



- HUMAN RECEPTORS:**
- CURRENT TRESPASSER
 - FUTURE RESIDENT
 - CONSTRUCTION WORKER
 - CONTRACTOR

LEGEND

- POTENTIAL MEC/MPPEH ITEM
- GROUNDWATER TABLE
- INFILTRATION/GROUNDWATER FLOW
- SWMU 1 BOUNDARY
- ENSENADA HONDA MANGROVE SWAMP
- UPLAND
- WATER
- DEBRIS PILE

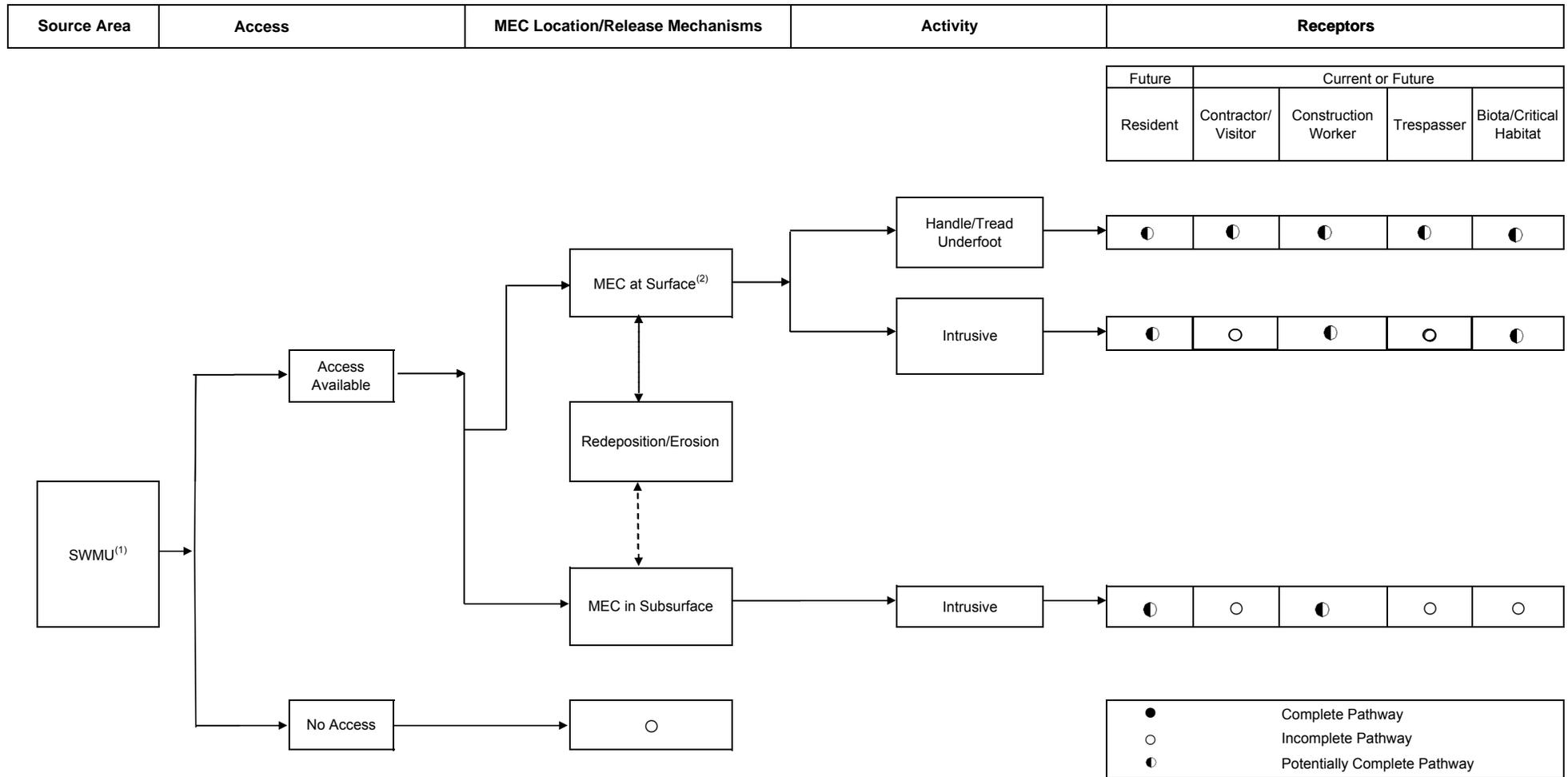
DRAWN BY	DATE
CK	9-1-10
CHECKED BY	DATE
REVISOR	DATE
SCALE	NOT TO SCALE



SWMU 1 - CONCEPTUAL SITE MODEL
NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO

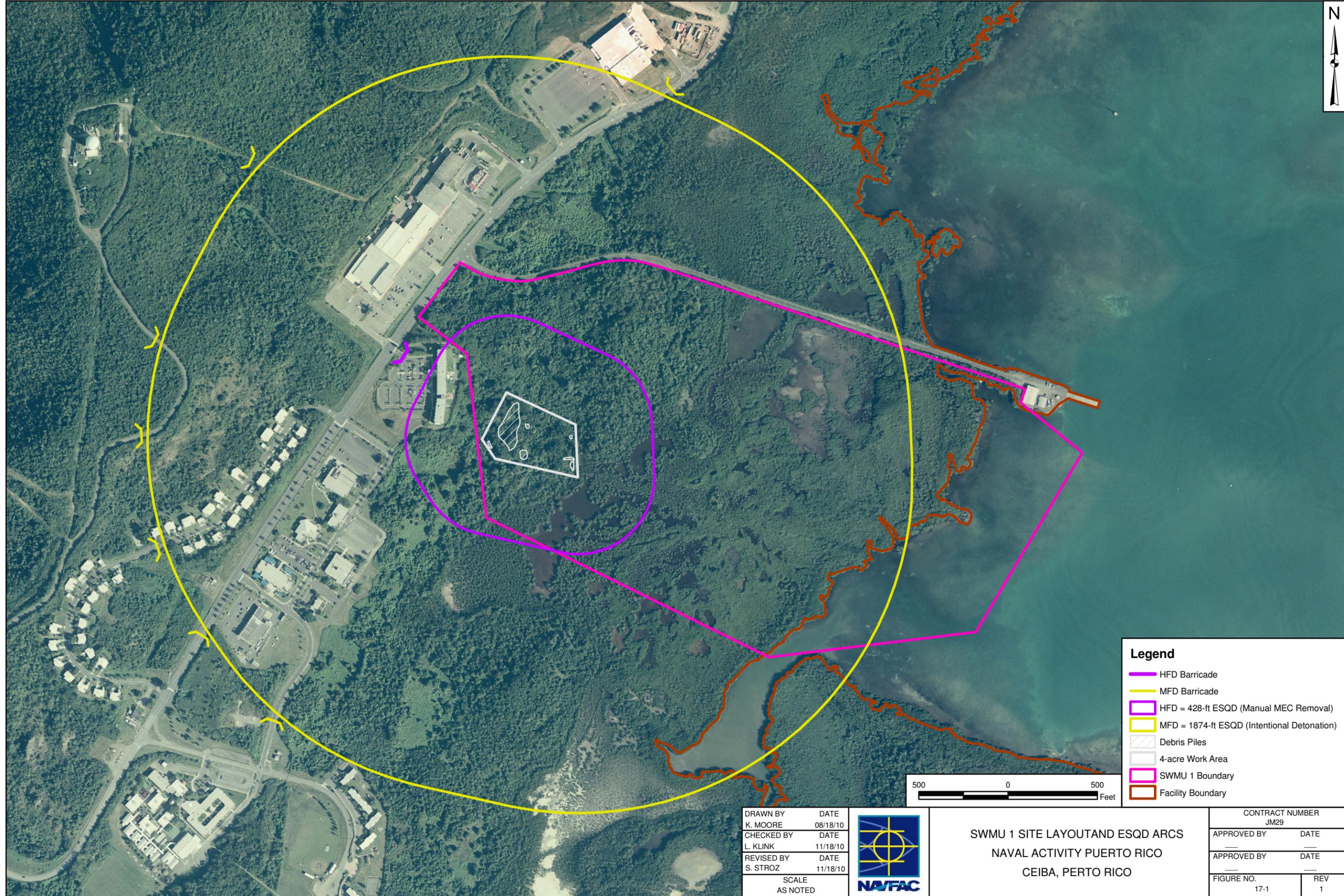
CONTRACT NO. 2761	
OWNER NO.	
APPROVED BY	DATE
DRAWING NO. FIGURE 10-3	REV. 0

**FIGURE 10-4
MEC EXPOSURE PATHWAY ANALYSIS
SWMU 1 - FORMER ARMY CREMATOR DISPOSAL SITE
NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO**



1 The subject field work is limited to on-site construction support during the surficial debris pile removal at SWMU 1.

2 MPPEH are known to be present in the outer area of several debris piles; MEC/MPPEH may be present within these debris piles and/or in other debris piles.



Legend

- HFD Barricade
- MFD Barricade
- HFD = 428-ft ESQD (Manual MEC Removal)
- MFD = 1874-ft ESQD (Intentional Detonation)
- Debris Piles
- 4-acre Work Area
- SWMU 1 Boundary
- Facility Boundary



DRAWN BY	DATE
K. MOORE	08/18/10
CHECKED BY	DATE
L. KLINK	11/18/10
REVISED BY	DATE
S. STROZ	11/18/10
SCALE AS NOTED	



SWMU 1 SITE LAYOUT AND ESQD ARCS
NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO

CONTRACT NUMBER JM29	
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO.	REV
17-1	1

APPENDIX A

PROJECT SUPPORT INFORMATION

Klink, Linda

From: Ladd, Mark
Sent: Tuesday, March 02, 2010 8:20 PM
To: Brooks, Ralph; Klink, Linda
Cc: lrios@rightwaypr.com
Subject: Daily Report for support to Right Way Environmental in Puerto Rico
Attachments: SDC10323.JPG; SDC10327.JPG; SDC10301.JPG; Tailgate safety Mar 2.pdf

We began the day at 0630 with a detailed morning safety meeting which included all aspects of explosive safety and good communications (Site Superintendent translated for me). We toured the area to be worked and set up the safety table with eye wash and water to drink. Wright Way divided up into 2 teams consisting of a excavator operator and a observer/spotter. The Site Superintendent was Luis A. Rios and he moved from one team to another observing procedure and safety. I observed each team for about 30 minutes at a time and the teams stopped work when they found a suspect item until I looked it over and gave the OK to proceed. About half way thru the shift I stopped all work and held a second team meeting to go over what we had found so far and made some adjustments to our communications to match the increased amount of items we were finding which also included a bried on observing the areas I had taped off. To put this site in perspective to those reading this report; it is a very large dump site dating back to the late 50's with a vast mix of items from automobile moters and chasis including the wheels and transmissions to childrens toys, swings, and furniture items. There are items associated with Navy ships such as boilers, cables, winches and pipes. Among these large areas of debris is parts of jet aircraft to include the engines, wings and body parts. Even a helicopter and a kitchen sink or two. This is several acers of space and everything is covered in rust and dirt. This makes spotting MD/MEC somewhat challenging (detectors are useless) and as I found out today, you may not see it until the next item or tree is pushed out of the way or the excavator has it in its teeth. I have slowed the pace on the site down to help with these obstacles. The following is a list of the items we have found today. Keep in mind that my assesment of what these items are and there hazard is based on my experience and opinion. I included the GPS coordinates to each segment for furture reference.

7 each Zuni rocket pod launchers (cannot tell if the explosive ejection bolts are in place)
1 each 5" Artillary shell case with burst tube in tact.
18*13'24.957"N 65*38'40.081"W

12 each Rockets 2.5" dia by 30" long with nomenclature of MK 16 Mod 1 (the rest is unreadable)
5 each Practice Bombs 3' long by 10" dia. (very thin skined items with a fill cap in the nose for sand or water. Can not determine if the spotting charge is in place)
2 each ZUNI rocket launch tubes (one sealed at both ends and one sealed on one end with the rocket visable inside the tube from the other) 6" dia rockets and the tube is about 4.5' long
18*13'25.000"N 65*38'39.261"W

4 each Rocket pod launchers for the 2.5" MK 16 Mod 1 rocket (cannot determine if the explosive ejection bolts are in place)
5 each Practice Bombs 3' long by 10" dia. (very thin skined items with a fill cap in the nose for sand or water. Can not determine if the spotting charge is in place)
Numerous 2.5" MK 16 Mod 1 rockets scattered over the grounds in a variety of conditions.
18*13'24.389"N 65*38'39.477"W

1 each MK 76 Practice bomb
3 each 5.5" artillary shell cases
18*13'25.425"N 65*38'39.972"W

about 200 20mm shell casings
6 each 5.5" shell cases
1 each 4" shell case with the burst tube in tact
18*13'24.957"N 65*38'40.081"W

Based on our HASP and SOP, many of these items must be considered MEC. I am observing avoidance procedures and cannot move them for a detailed look.

I have used yellow caution tape to mark off bounds these areas. The day ended well with no accidents and the team worked good together. A very safe team.

Mark A. Ladd
Senior EOD Tech U.S. Navy Ret.
UXO Tech III, Tetra Tech NUS
(918) 619-2608 Cell

Klink, Linda

From: Ladd, Mark
Sent: Wednesday, March 03, 2010 11:23 AM
To: Brooks, Ralph; Klink, Linda
Cc: Irios@rightwaypr.com; kalald@napr.navy.mil
Subject: Daily Report for support to Right Way Environmental in Puerto Rico
Attachments: SDC10368.JPG; SDC10374.JPG; SDC10377.JPG; Tailgate safety Mar 3.zip

Today we started with a detailed safety brief. I asked the team to do work outside the down range areas (daily equipment checks and equipment maintenance) until I completed research on exclusion zones and toured the areas not yet cleared to move equipment into. I researched my pubs and walked the un-entered areas the contractor was going to clear. Combined with the items already found and what I observed this morning, it was my determination that the area was too dangerous to proceed using the current work plan and equipment. I also consulted with Ralph Brooks by phone to compare notes. I had a short meeting with CDR Kalal (base commander) to inform him of my findings and recommended keeping personnel out of the work site and mentioned to him that the area will be marked with yellow caution tape with a sign to not enter. After returning from the meeting with CDR Kalal, I escorted the team into the work site entrance to retrieve the excavators. During this time I spoke with Ralph Brooks to confirm with him that the equipment was out and the area sealed off.

As to my walk thru this morning into the area not yet visited, I found that the amount of ordnance related items increased the deeper you go into the jungle. Also noted was the presence of solid rocket propellant in the small and large rockets found yesterday (pictures attached). This was also true for the ones I saw in the jungle today. NOTE: You will see in the attached pictures the solid rocket propellant along with the ignition wire in place. I was able to find a pub that matches the small rockets. It is "U.S. EXPLOSIVE ORD OP 1664". These small rockets appear to be 2.25" Rocket MK 4 and 6 (both are on site) Mod 0 with motor MK 16 Mod 1 Aircraft, Practice, Subcaliber. The difference between the MK 4 and 6 is the separation of the mounting bracket. Although the nose is solid and no explosive charge was put in these, the rocket motor is a fair size and is an explosive hazard. As to the larger rockets on site, I was unable to find a pub to match the measurements. Detailed measurements for the tube is 52" long by 5.25" dia. The tube had 4 adjustable mounting brackets. The rocket found yesterday that is visible appears to be approx. 5" in dia with 8 outer solid rocket fuel ventures and one large center ventures (see attached picture).

I received my demob orders and will be leaving the area as soon as I can get transportation out. Please call me if you have any questions or require further information. All rented equipment will be returned to Ralph Brooks today via FEDEX.

Mark A. Ladd
Senior EOD Tech U.S. Navy Ret.
UXO Tech III, Tetra Tech NUS
(918) 619-2608 Cell

AERIAL PHOTOGRAPHY ANALYSIS

1.0 INTRODUCTION

Environmental Research, Inc. undertook an analysis of aerial photography to support an ongoing Environmental Baseline Survey (EBS) being conducted at the Naval Station, Roosevelt Roads, Puerto Rico. The analysis documents activity at 25 sites of potential environmental contamination including SWMU 1. Aerial photography used in the analysis spanned the period 1936 to 1999. Section 3.0 summarizes the description of activity and features observed at SWMU 1 (Photo Identification (PI) Site 10 for aerial photography) on each date of photography analyzed.

2.0 METHODOLOGY

ERI analysts conducted this aerial photographic analysis by viewing stereo frames of film transparencies through a zoom stereoscope; the film transparencies were backlit on a light table. Stereoscopic viewing creates a three-dimensional effect, which, when combined with viewing at various magnifications, enables an analyst to identify signatures associated with various features and environmental conditions. (The term "signature" refers to a combination of visible characteristics, such as tone, shadow, texture, size, shape, pattern, and association, which enable an analyst recognize a specific object or condition on aerial photography.) At least one other senior imagery analyst reviewed the analysis to ensure completeness and consistency; this quality control step is standard practice in the field of photo interpretation. Mosaics were made from the aerial photography, and findings from the analysis were digitized and included as a data layer on the mosaics. The findings can be viewed on the accompanying compact discs or hard copy map and used in combination with this narrative report.

3.0 SWMU 1 (PI Site 10) AERIAL PHOTOGRAPHY

18 June 1958

Aerial photography from this date showed SWMU 1 extended almost to the roadway on its western side. A trench and open burning were evident within the extended area.

18, 19, and 26 October 1961

Aerial photography from this date showed that SWMU 1 extended almost to the roadway on its western side. An open trench with probable debris was in the extended area.

15 February 1962 (Partial)

Aerial photography from this date showed SWMU 1 extended almost to the roadway on its western side. An open trench with probable debris was in the extended area.

15 January 1964 (Partial)

Aerial photography from this date showed that SWMU 1 extended almost to the roadway on its western side. An open trench with probable debris was in the extended area.

3 March 1965 (Partial)

Aerial photography from this date showed SWMU 1 extended almost to the roadway on its western side. The trench seen in 1964 had been filled, but debris was visible in the extended area. Dark-toned material and staining were visible on an access road.

6 December 1976 (Partial)

Aerial photography from this date showed that SWMU 1 was not in use, and was covered by vegetation. (Area annotated on 1961 photography.)

February 1977; 18 and 20 December 1977

Aerial photography from this date showed that SWMU 1 was not in use, and was covered by vegetation. (Area annotated on 1961 photography.)

26 January, 1 February, and 8 March 1979

Aerial photography from this date showed that SWMU 1 was not in use, and was covered by vegetation. (Area annotated on 1961 photography.)

6 and 8 February 1983

Aerial photography from this date showed that SWMU 1 was not in use, and was covered by vegetation. (Area annotated on 1961 photography.)

1985

SWMU 1 was not in use, and most of it was covered by vegetation; however, a building and parking lot had been constructed on the western portion of the former landfill. An area of disturbed ground with possible rubble or debris was immediately south of the building and parking lot. (Area annotated on 1961 photography.)

October 1995

SWMU 1 was not in use, and most of it was covered by vegetation; however, a building and parking lot had been constructed on the western portion of the former landfill since 1985. The area of disturbed ground seen in 1985 may have been associated with preparations to construct another building to the south. (Area annotated on 1961 photography.)



DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE SOUTHEAST
4130 FABER PLACE DRIVE
SUITE 202
NORTH CHARLESTON, SC 29405

Ser BPMOSE med/0080
30 Mar 10

U.S. Environmental Protection Agency
Region 2
Mr. Timothy Gordon
290 Broadway – 22nd Floor
New York, NY 10007-1866

Subj: SWMU 1 MEC DISCOVERY, SUBMITTAL OF REVISED PHASE I ICM WORK PLAN AND SUBMITTAL OF SURFACE MEC INVESTIGATION/REMOVAL WORK PLAN, NAVAL ACTIVITY PUERTO RICO

Dear Mr. Gordon:

Munitions and explosives of concern (MEC) were discovered at Solid Waste Management Unit (SWMU) 1 on 21 Jan 2010 during the implementation of the Phase I Interim Corrective Measures (ICM). Site access was secured until 10 Feb 2010, at which time Explosive Ordnance Detachment (EOD) Mayport arrived and examined the MEC items found. EOD indicated all items were inert. The Navy developed, and received approval from Naval Ordnance Safety and Security Activity (NOSSA), an Explosive Safety Submission Determination and on 2 Mar 2010 the ICM work continued with the presence of an unexploded ordnance (UXO) escort. However, additional items of MEC were found throughout the day and the decision was made to stop work again due to safety concerns. The ICM contractor demobilized and site access was again secured.

Due to the discovery of this MEC at SWMU 1, the navy will revise the draft Phase I ICM Work Plan to identify that MEC is known to exist at the site. Wording to the effect that an Explosive Safety Submission (ESS) will be prepared and submitted to NOSSA for review and approval, and that a separate work plan for surface MEC investigation and removal will be prepared and submitted to the United States Environmental Protection Agency (USEPA) Region 2 and Puerto Rico Environmental Quality Board (PREQB) for review and approval, will be added to the text. Additionally, comments outlined in EPA letter dated 28 Jan 2010 will be addressed and included in this revised document. Estimated submittal date of the revised Phase I ICM Work Plan is 5 Apr 2010.

The draft Surface MEC Investigation and Removal Work Plan is planned to be submitted to USEPA and PREQB on 27 Oct 2010. This is newly identified work that is planned to be under contract by mid Jun 2010. An ESS must also be prepared before work on the MEC Investigation and Removal Work Plan can commence. This initial work plan

Ser BPMOSE med/0080
30 Mar 10

will be for the investigation and removal of surface MEC only. This will allow the ICM contractor to get back in the field to complete the ICM.

Upon completion of the surface MEC investigation and removal, an additional work plan will be developed for MEC constituent sampling and submitted to USEPA and PREQB for comment and approval.

Should you have any questions, please contact me at (843) 743-2124 or via email at mark.e.davidson@navy.mil.

Sincerely,



Mark E. Davidson
BRAC Environmental Coordinator

Copy to (via mail):

EPA Region 2 (Dale Carpenter)

USEPA Caribbean Environmental Protection Division (Carl Soderberg)

PREQB (Julio Rodriguez Colón, Wilmarie Rivera, Gloria Toro-Agrait)

Copy to (via email):

Baker Environmental (Mark Kimes)

Tetra Tech NUS (Linda Klink)

NAVFAC Atlantic (Pedro Ruiz, Stacin Martin)

PMO SE (David Criswell)

DATE/TIME: _____

FAX TO: _____

FAX COVER SHEET

EODMU SIX DET MAYPORT FL
PO BOX 280023
MAYPORT FL 32228-0023
904-270-5412 (FAX 6880) / DSN 960

**EXPLOSIVE ORDNANCE
DISPOSAL**



DET MAYPORT

From: LT CHARLES CORNELI

To: STACINS + MARK

Subject: NAPR RESPONSE

Number of pages including cover sheet: 2



DEPARTMENT OF THE NAVY
EXPLOSIVE ORDNANCE DISPOSAL MOBILE UNIT SIX
DETACHMENT MAYPORT
MAYPORT, FLORIDA 32228-0023

8000
EOD
19 Feb 10

From: Officer in Charge, Explosive Ordnance Disposal
Mobile Unit SIX Detachment, Mayport

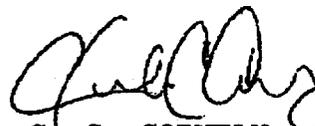
To: Mark Davidson, BRAC Environmental Coordinator

SUBJ: EODMU SIX PLATOON MAYPORT NAPR RESPONSE ON 10 FEBRUARY
2010

1. This certifies that the material potentially presenting an explosive hazard listed below has been 100 percent properly inspected and to the best of our knowledge and belief, is inert and/or free of explosives or related materials:

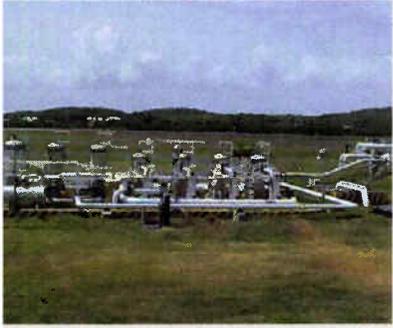
- 1x MK 76 Practice Bomb
- 1x Aircraft Drop Tank
- Various Rocket Pod Launchers


R. L. STRANEY


C. C. CORNELY



ANNUAL LAND USE CONTROL (LUC) STATUS REPORT JANUARY 2010



***For* NAVAL ACTIVITY PUERTO RICO
EPA I.D. No. PR2170027203
CEIBA, PUERTO RICO**



Prepared for:

**Department of the Navy
NAVFAC SOUTHEAST
North Charleston, South Carolina**



Prepared by:

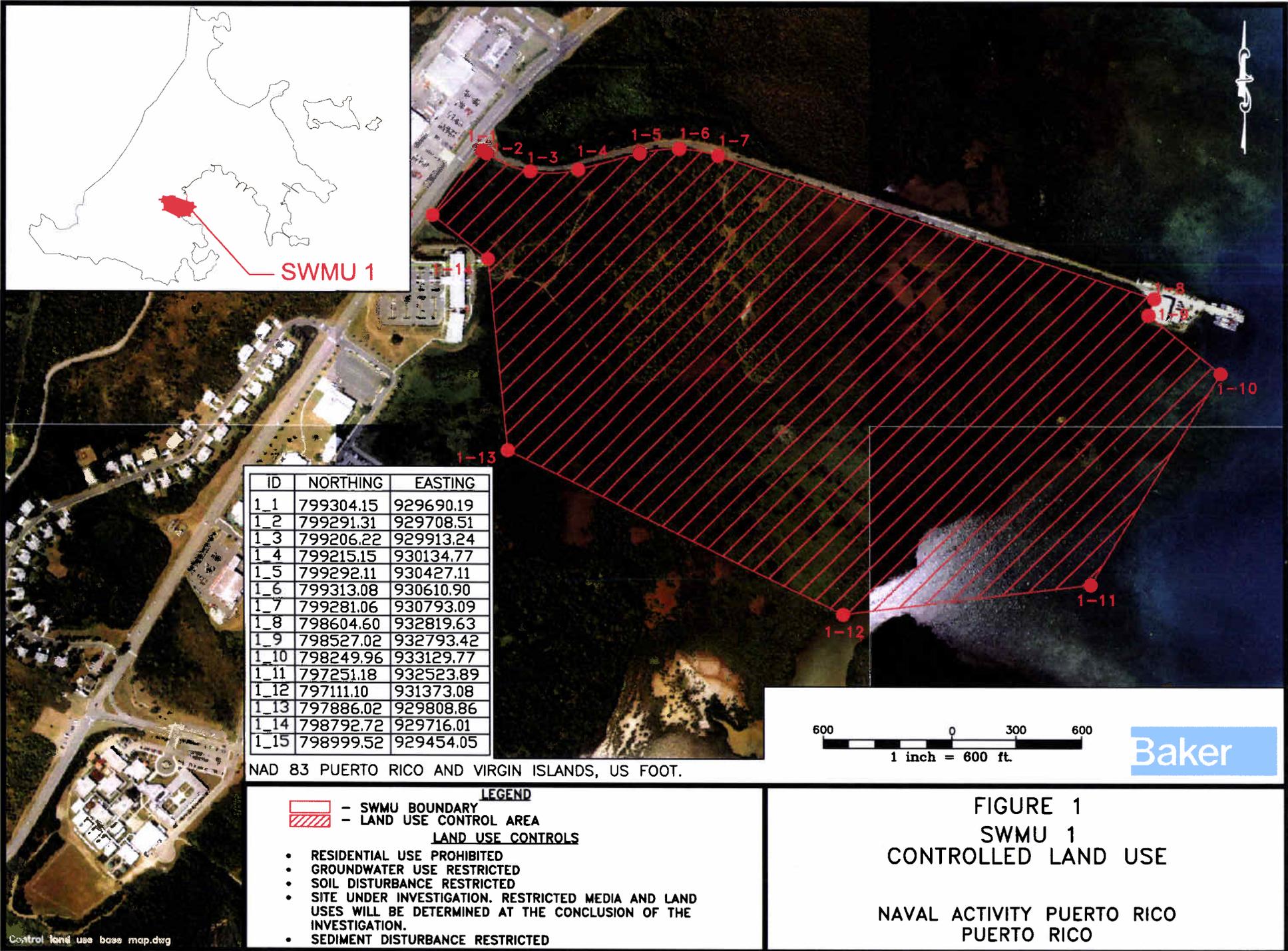
Baker

Michael Baker Jr., Inc.
Moon Township, PA

Contract No. N62470-07-D-0502
DO 0002

February 26, 2010

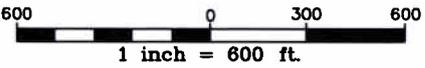
**IQC for A/E Services for Multi-Media Environmental Compliance
Engineering Support**



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1_1	799304.15	929690.19
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1_3	799206.22	929913.24
1_4	799215.15	930134.77
1_5	799292.11	930427.11
1_6	799313.08	930610.90
1_7	799281.06	930793.09
1_8	798604.60	932819.63
1_9	798527.02	932793.42
1_10	798249.96	933129.77
1_11	797251.18	932523.89
1_12	797111.10	931373.08
1_13	797886.02	929808.86
1_14	798792.72	929716.01
1_15	798999.52	929454.05

NAD 83 PUERTO RICO AND VIRGIN ISLANDS, US FOOT.

- LEGEND**
- SWMU BOUNDARY
 - LAND USE CONTROL AREA
- LAND USE CONTROLS**
- RESIDENTIAL USE PROHIBITED
 - GROUNDWATER USE RESTRICTED
 - SOIL DISTURBANCE RESTRICTED
 - SITE UNDER INVESTIGATION. RESTRICTED MEDIA AND LAND USES WILL BE DETERMINED AT THE CONCLUSION OF THE INVESTIGATION.
 - SEDIMENT DISTURBANCE RESTRICTED



Baker

FIGURE 1
SWMU 1
CONTROLLED LAND USE

NAVAL ACTIVITY PUERTO RICO
PUERTO RICO

Control land use base map.dwg

Land Use Control (LUC) Inspection Form

for Navy Owned Sites Calendar Year: 2010

SWMU/ AOC	Restricted Media				Inspection Frequency	A check mark indicates the LUC has been complied with. "N" means a LUC has not been complied with. Shading indicates LUC not required											Remarks
	Groundwater	Soil	Sediment	Building Interior		Groundwater Not Being Used Monitoring Wells Not Disturbed	Land Not Being Used for Residential Use	Sediment Not Disturbed	Surface Soils Not Disturbed	Subsurface Soils Not Disturbed	Adjacent Wetlands Not Disturbed	Landfill Cover Not Disturbed	Site Access Restrictions in Place				
SWMU 1	1	1	1		Annual	√	√	√	√	√	√	√			Site under Investigation		
SWMU 2	1	1	1		Annual	√	√	√	√	√	√	√			Site under Investigation		
SWMU 3	●	●			Annual	√	√	√		√	√		√		Groundwater Monitoring		
SWMU 4															CAC w/out controls		
SWMU 5															CAC w/out controls		
SWMU 6															CAC w/out controls		
SWMU 7/8	●	●			Annual	√	√	√		√	√				CMI Underway		
SWMU 9	1	1	1		Annual	√	√	√	√	√	√	√			Site under Investigation		
SWMU 10		●			Annual			√							CAC w controls		
SWMU 11				●	Annual			√					√		Restricted Access to Building Interior		
SWMU 12															CAC w/out controls		
SWMU 13		1			Annual		√	√		√	√				CMI for Soils Completed		
SWMU 15															CAC w/out controls		
SWMU 16															CAC w/out controls		
SWMU 17															CAC w/out controls		
SWMU 18															CAC w/out controls		
SWMU 19															CAC w/out controls		
SWMU 20															CAC w/out controls		
SWMU 21															CAC w/out controls		
SWMU 22															CAC w/out controls		
SWMU 23		●			Annual			√							CAC w controls		
SWMU 24															CAC w/out controls		
SWMU 25		●			Annual			√		√	√				CAC w controls		
SWMU 26															CAC w/out controls		
SWMU 27	1	1			Annual	√		√		√	√				Site under Investigation		

Final
Steps 6 and 7 of the Baseline Ecological Risk Assessment
SWMU 1
Naval Activity Puerto Rico
RCRA/HSWA Permit No. PR21700027203
Ceiba, Puerto Rico



Prepared for
Department of the Navy
Atlantic Division
Naval Facilities Engineering Command
Norfolk, Virginia
Under the
LANTDIV CLEAN Program
Contract No. N62470-02-D-3052
CTO-0108

April 5, 2010

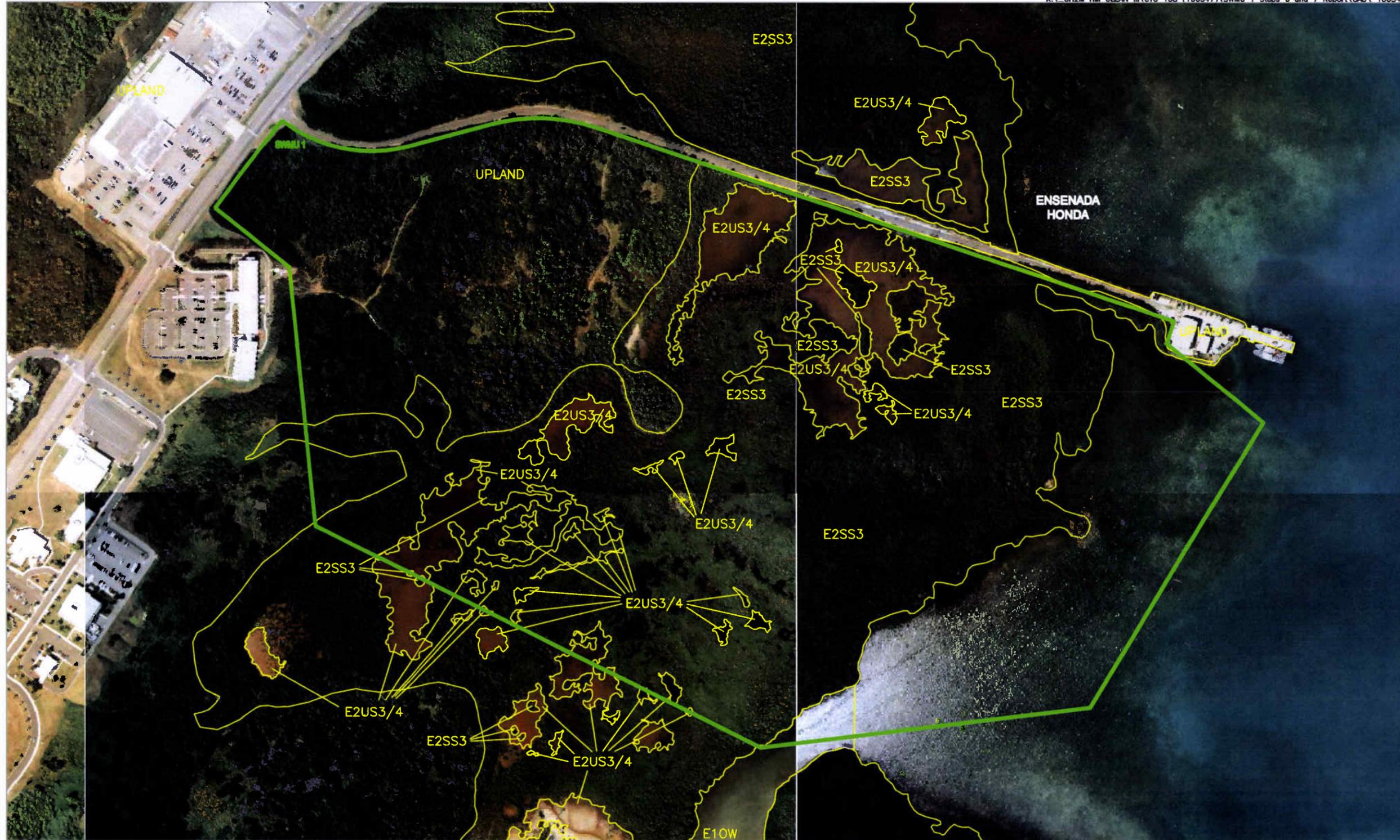
Prepared by



Federal Group, Inc.

Baker
Environmental, Inc.

CDM
Federal Programs Corp.



LEGEND

-  - SWMU
-  - E2SS3 WETLANDS BOUNDARIES (SEE FIGURE 2-6 FOR CLASSIFICATIONS)

350 0 175 350
1 inch = 350 ft.



FIGURE 2-5
WETLAND LOCATION MAP
 SWMU 1-ARMY CREMATOR DISPOSAL SITE
 STEPS 6 AND 7 OF THE BASELINE ECOLOGICAL RISK ASSESSMENT
 NAVAL ACTIVITY PUERTO RICO

FINAL

**Phase I/II Environmental Condition of Property
Report**

*Former U.S. Naval Station Roosevelt Roads
Ceiba, Puerto Rico*

Prepared For:

Commander, Navy Region Southeast (CNRSE)
U.S. Navy

Prepared By:

Naval Facilities Engineering Command Atlantic
6506 Hampton Blvd.
Norfolk, VA 23508-1278

15 July 2005

LEGEND

- BUILDINGS
- ROADS
- AIRFIELD PAVEMENT
- IMPROVED LAND
- SEMI-IMPROVED LAND
- UNIMPROVED LAND AND MANGROVE

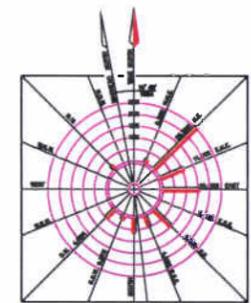
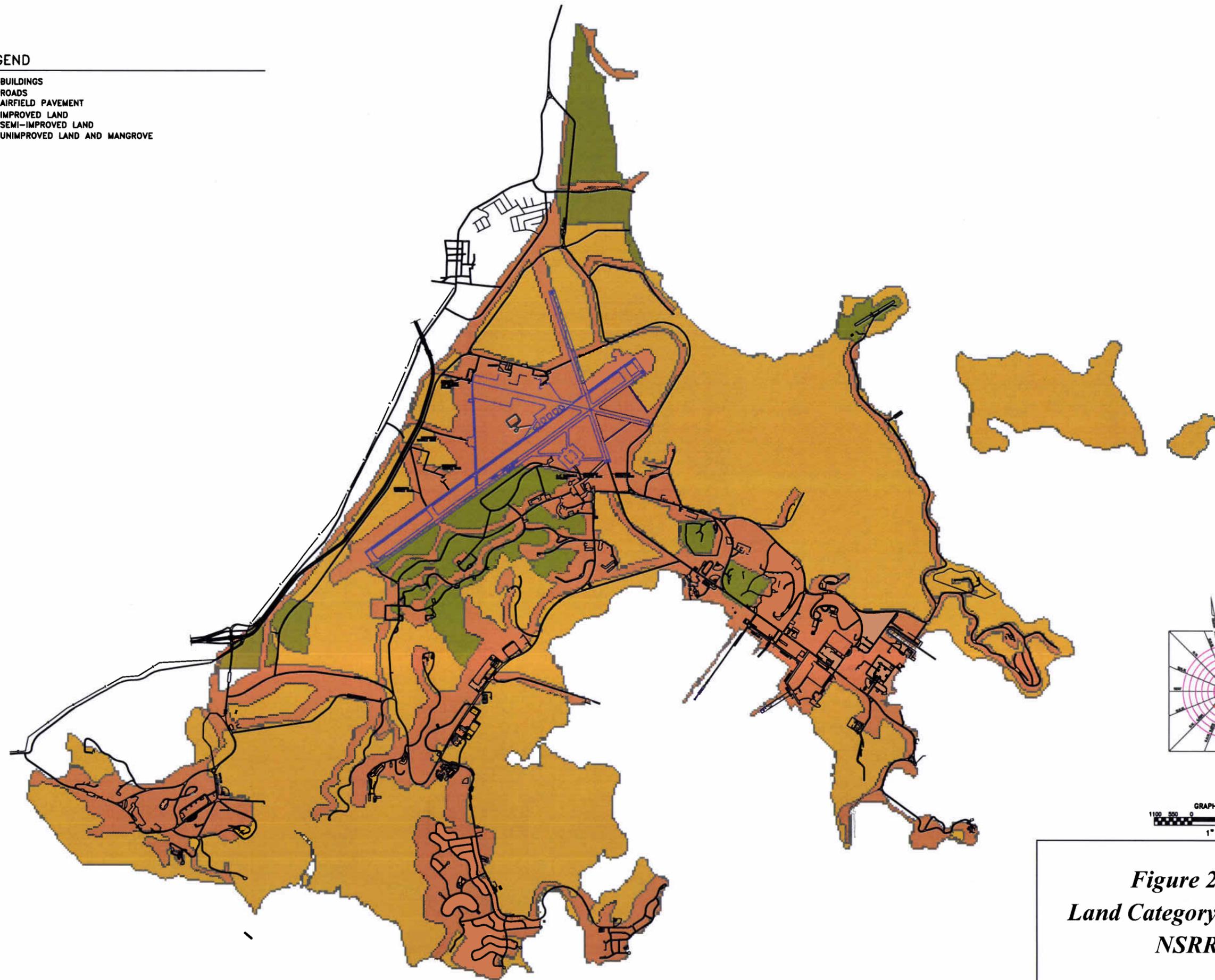
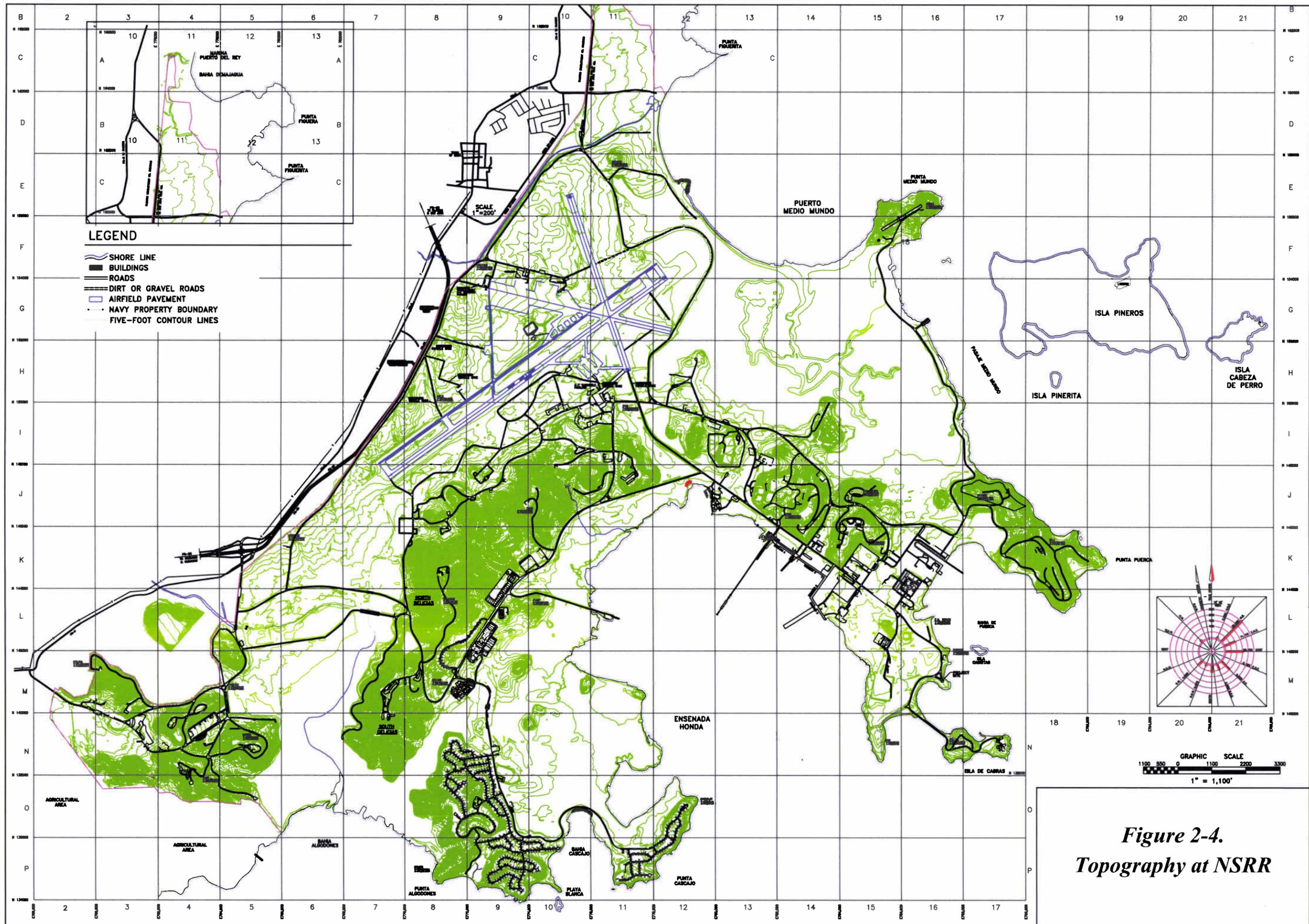
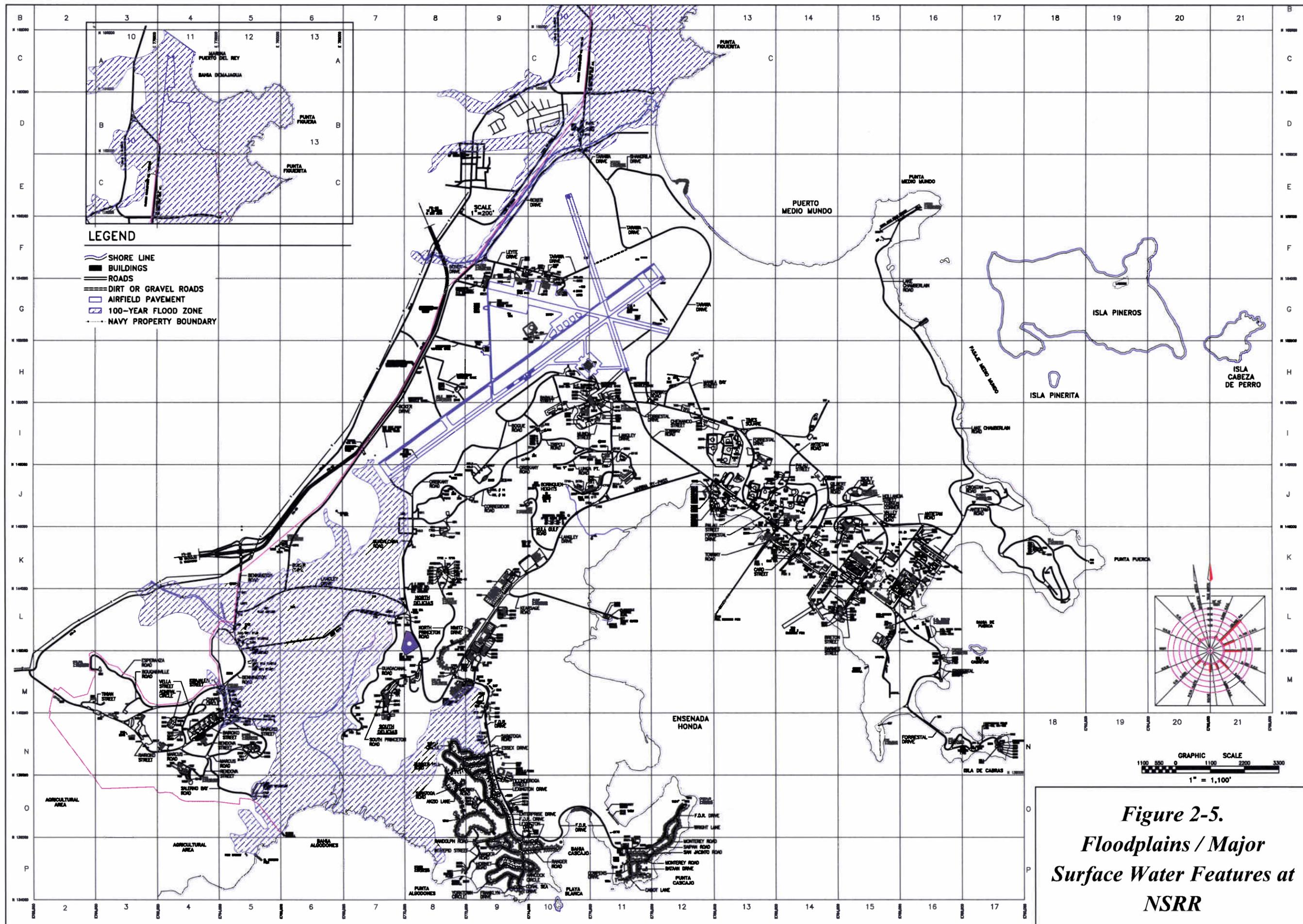


Figure 2-3.
Land Category Types at
NSRR





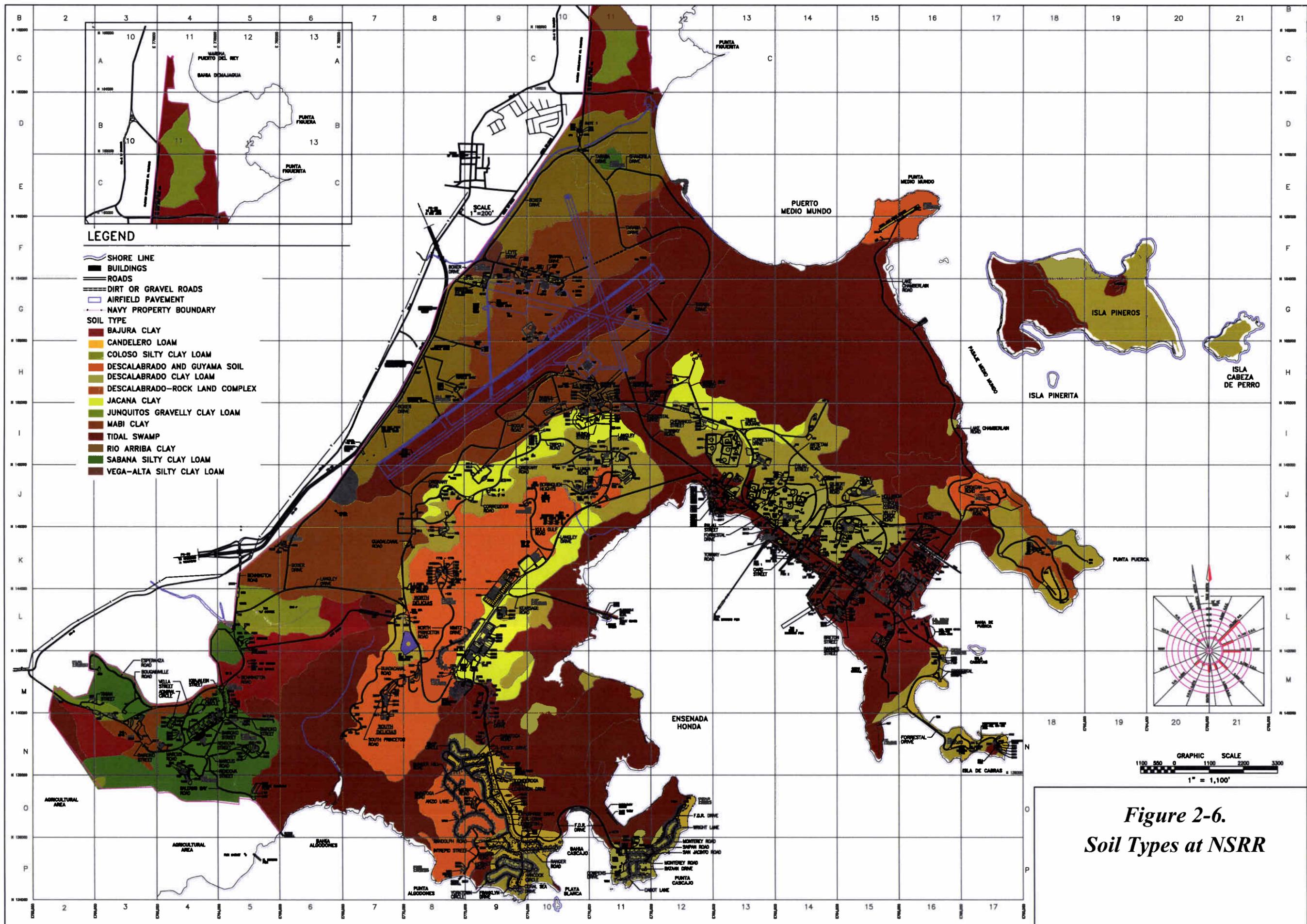
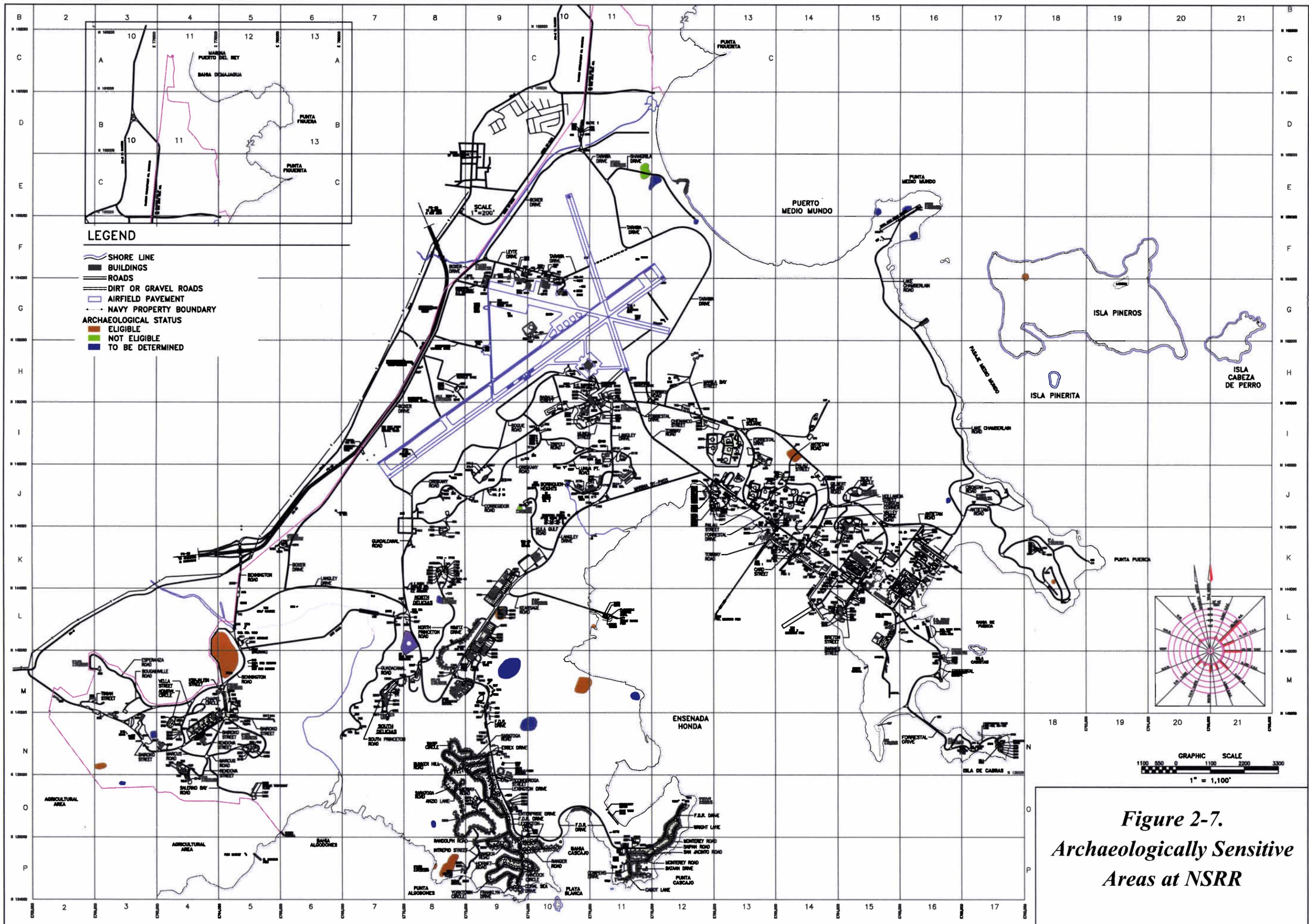


Figure 2-6.
Soil Types at NSRR



*Figure 2-7.
Archaeologically Sensitive
Areas at NSRR*

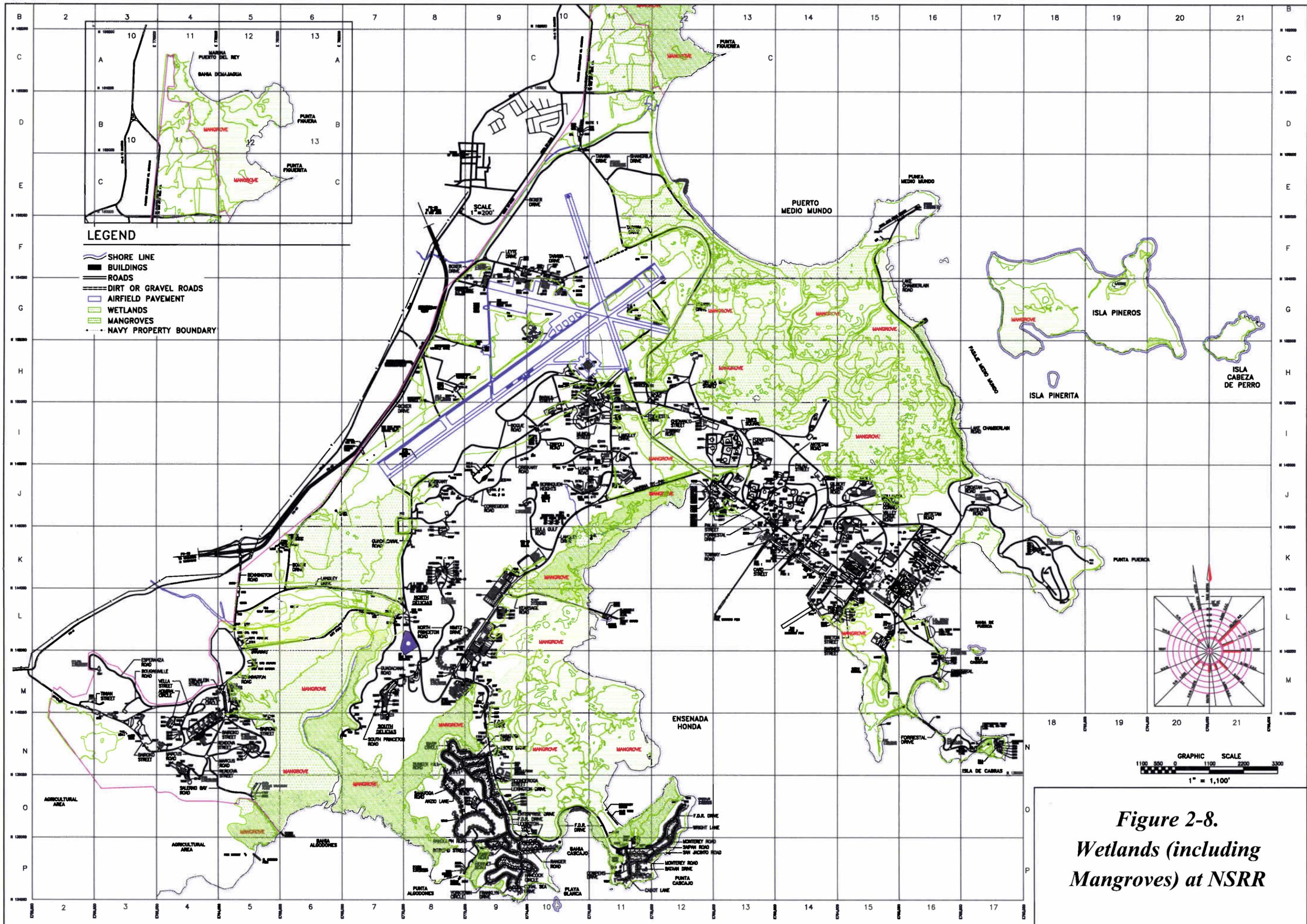


Figure 2-8.
Wetlands (including Mangroves) at NSRR

APPENDIX B

PHOTOGRAPHS

MARCH 2010 UXO AVOIDANCE SUPPORT OF DEBRIS REMOVAL ACTIVITIES



Photograph #-1: SWMU 1 access road with Debris Piles to the left side of road.



Photograph #-2: SWMU 1 access road.



Photograph #3: Ground Water Monitoring Well in SWMU 1



Photograph #4: Debris Pile with Zuni Rocket Pods in the middle.



Photograph #-5: Pile of Zuni Rocket Pods.



Photograph #-6: Entry Point of SWMU 1.



Photograph #-7: Debris Pile with Water filled Practice Bomb in center of Pile.



Photograph #-8: Close up of Debris Pile containing Auto Parts.



Photograph #9: Debris Piles created during access road construction.



Photograph #10: Debris Pile with Practice Bomb on top.



Photograph #-11: Debris Pile containing, Auto Parts, Marshall Mating, Grating, Metal Sheets, and Steel Frames.



Photograph #-12: Debris Pile containing, Steel frames, Cables, Auto Parts, and Wire Mesh.



Photograph #-13: Debris Pile containing, Trash Cans, Marshall Mating, and Auto Parts.



Photograph #-14: Debris Pile and Area Marked with Caution Tape in the background.



Photograph #-15: Aircraft Engine.



Photograph #-16: Debris pushed to the side of the road during entry into SWMU 1.



Photograph #17: Progress stopped in this area and marked with Caution Tape, after finding MPPEH



Photograph #18: Debris Pile



Photograph #-19: 1950's Puerto Rico license plate.



Photograph #-20: Area marked for no entry after finding MPPEH.



Photograph #21: Debris pile containing 5' Cartridge Cases and other metal debris.



Photograph #22: Debris pile containing Trash Cans, and Aircraft Parts.



Photograph #-23: Road cut by bulldozer into SWMU 1.



Photograph #-24: 5" Cartridge Case and what appears to be a tail shroud off a MK 76 Practice Bomb.



Photograph #25: MPPEH pile containing 20mm, 5 inch, and recoilless rifle Cartridge Cases and Practice Bomb parts.



Photograph #26: 20mm cartridge cases and recoilless cartridge case.



Photograph #-27: Debris pile containing Practice bombs and Rocket motors.



Photograph #-28: Venturi end of 5" HVAR Rocket Motor, with closure disks and ignition wire in place.



Photograph #-29: Two 5" HVAR Rocket Motors



Photograph #-30: Four 2.25" SCAR Rockets



Photograph #31: Picture of debris pile push off to side of road, containing MPPEH in the form of Cartridge cases.



Photograph #32: Wider area picture of area where SWMU 1 operations halted in March 2010



Photograph #33: Point where SWMU 1 operations stopped in March 2010



Photograph #34: 2.25" SCAR rocket with ignition wire still in place.



Photograph #-35: 2.25" rocket looking at the tail end, with ignition wire in place.



Photograph #-36: Debris pile containing 5" HVAR rocket and 2.25" SCAR rockets



Photograph #-37: Jet Assist Take Off bottle



Photograph #-38:



Photograph #39: Debris pile with aircraft parts, rocket pods, and trash cans



Photograph #40:



Photograph #-41: Crushed Practice Bomb or gas cylinder



Photograph #-42: Coke bottle



Photograph #43: Debris pile with one 5" HVAR motor



Photograph #44: Barricade at Entrance to SWMU 1



Photograph #-45: Barricade at entrance to SWMU 1

APPENDIX C

MEC FIELD STANDARD OPERATING PROCEDURES

**STANDARD OPERATING PROCEDURE
MRP SOP 01
UXO DETECTOR-AIDED SURFACE SURVEYS**

1.0 SCOPE AND APPLICABILITY

This document is designed to set a standard operating procedure (SOP) for the detector-aided surface Survey field operations during activities performed under the Munitions Response Program (MRP). This SOP is not site-specific, but rather is intended as a general guidance document for a variety of sites and conditions.

2.0 BACKGROUND

Detector-aided surface Survey activities will be performed in accordance with all local, State, and federal regulations and will include all applicable DoD requirements. The scope of the detector-aided surface Survey activities for a specific site will be defined in the project-specific work plans. Generally, all areas identified as suspect for munitions and explosives of concern (MEC) will receive an Unexploded Ordnance (UXO) detector-aided surface Survey UXO detector-aided surface Survey operations may be used as a stand-alone method for site survey and assessment or in preparation for geophysical survey operations. UXO escort operations will be required during site visits (initial site assessments, planning, and stakeholders meetings), geophysical operations, and MC sampling operations and any other time where non-UXO trained personnel are conducting work in an MEC site. This SOP does not address UXO escort operations. UXO escort operations are addressed in the Munitions and Explosives of Concern and Chemical Warfare Agents Activities SOP which will be attached to the site-specific health and safety plans (HASPs) for those activities.

3.0 PERSONNEL QUALIFICATIONS

UXO personnel conducting detector-aided surface Surveys shall be graduates of a military Explosive Ordnance Disposal (EOD) School of the United States, Canada, Great Britain, Germany, or Australia or a graduate of a formal training course of instruction or EOD assistant course as stated in DDESB TP-18.

UXO Senior UXO Supervisor (SUXOS)

The SUXOS will have a minimum of ten years experience in all aspects of munitions response actions or range clearance activities. A minimum of five years of the experience shall be in supervisory positions.

UXO Team Leader (UXO Technician III)

The UXO Team Leader will have a minimum of 8 years of EOD/UXO experience including prior military EOD and/or commercial UXO experience in munitions response actions, and/or range clearance activities. The UXO Team Leader may supervise up to six UXO technicians.

The UXO Team Leader will conduct detector-aided surface Survey activities as directed by the project manager (PM) and UXO Manager. The UXO Team Leader will be under the direct supervision of the UXO Manager.

UXO Quality Control Specialist (UXOQCS)

The UXOQCS specialist shall have a minimum of 8 years experience in all phases of munitions response actions and/or range clearance activities.

UXO Safety Officer (UXOSO)

The UXOSO shall have a minimum of 8 years experience in all phases of munitions response actions and/or range clearance activities.

UXO Technicians II

The UXO Technicians II will have prior military EOD experience or a minimum of 3 years of experience in munitions response actions and/or range clearance activities. The UXO technician will conduct detector-aided surface Survey activities as directed by the UXO Team Leader.

UXO Technician I

The UXO Technician I will have training as specified in DDESB TP-18. The UXO technician I will be directly supervised by a UXO Technician III or higher when conducting UXO activities.

4.0 DETECTOR-AIDED SURFACE SURVEY OPERATIONS

Equipment

A magnetic locator such as the Schonstedt, GA-52Cx instrument or equivalent and/or an all-metal detector such as the White's XLT or equivalent will be used for detector-aided surface Survey operations. The detection depth of the instrument is limited by size and orientation of a target and soil characteristics of the work area. The locators provide an audio signal for response, but do not store data. The magnetic locator does not need to be calibrated. The all-metal detector has field calibration. Calibration settings are specific to the make and model of the all metals detector. Table 1 lists the calibration settings for the White's spectrum XLT.

To ensure each detector is operating properly, the operator turns on the instrument and slowly moves the locator towards metal. As the probe advances toward the target, the audio signal will increase. Failure to detect the object is reason to reject the instrument.

The detector will be checked daily before starting detector-aided surface Survey activities and after any battery change. The normal daily check for detector-aided surface Survey operations is the blanket test. To conduct the blanket test, an area near the work site and free of anomalies will be identified. The senior UXO Technician or UXOQCS will position several inert munitions, or surrogate munitions items on the surface and cover the items with a tarpaulin or similar cover so the items are not visible the UXO technician. Each UXO technician will conduct a detector aided surface Survey of the blanket test area and locate the test items. The senior UXO technician or UXOQCS will compare the results of the test to the actual placement

of the items and make corrections as necessary. UXO Technicians will also conduct random checks during daily operations.

The normal setting for the Schonstedt instrument is 2; setting the instrument to 3 or 4 will make it more sensitive and setting the instrument to 1 will make it less sensitive. The instrument will not detect copper, brass, or aluminum munitions. The normal setting for the White's all-metal detector will vary according to site conditions.

UXO Detector-Aided Surface Survey

The objective of the UXO detector-aided surface Survey is to locate suspect MEC. Materials potentially presenting an explosive hazard (MPPEH) and munitions debris (MD) on the ground surface in a munitions response site, (MRS). Early in the planning for the field activities, usually during the DQO process with the regulators and the client, the level of effort is determined for each MRS within a munitions response area, (MRA). The level of effort can vary from a 100% UXO investigation where the entire foot print of the MRS receives a UXO detector-aided surface Survey, to transects where five foot wide lanes receive a UXO detector-aided surface Survey and each lane is separated by a set number of feet depending on the budget and size of the MRS, or even a meandering path where a UXO detector-aided surface Survey is conducted as the UXO technician meanders across the MRS. Each of these will be discussed in some detail below:

100% UXO Detector-aided Surface Survey

The first step in conducting a 100% UXO detector-aided surface Survey is to identify the boundaries of the MRS. This can be done with a GPS with preloaded grid coordinates, or surveyed by a land surveyor.

The next step is to remove brush and small trees within the MRS to allow access to the locations where the surface Survey is to be conducted. The degree of removal will depend on site-specific conditions. This can be accomplished with a bush cutting crew and a UXO escort, or the UXO team can conduct the brush cutting themselves depending on the size of the area and the amount of brush removal needed. Care must be taken to ensure that personnel do not disturb suspect MEC, MPPEH or munitions debris on the surface that may be obscured by vegetation

The next step is to establish a grid system across the MRS. The normal grid is 100ft X 100ft but may be larger or smaller if the MRS would be better covered with a different size. The grid is established using a GPS with preloaded grid corners, or surveyed by a land surveyor to establish the grid corners.

The next step in the set-up process is to divide each grid into search lanes. This is normally done by running a tape measure between the bottom and top east/west corner stakes. Then the UXO team will run rope lines from the 0 point on one tape to the 0 point on the other tape, from the 5ft point on one tape to the 5ft point on the next tape, and so on until the entire 100 ft grid has been divided in to lanes.

The UXO team members will now start the UXO detector-aided surface Survey of each lane. Each UXO team member will start at one of the tapes and using the metal detector, proceed toward the other tape and locate any surface MEC within their lane. If suspect MEC is

encountered, its location will be recorded and/or marked using a GPS, tape measure, or other grid coordinate location system. The UXO Team will attempt to determine its condition without moving or disturbing the item prior to proceeding with the surface Survey. Each item will be marked with engineer flagging and given a unique ID number (See MEC Management and Accountability SOP). All available information about the item will be recorded in the logbook/MEC Accountability Log, including suspect MEC location, identification, and ID number. A digital photograph will be taken of each item. The UXO Team will not move or otherwise disturb the item in an attempt to collect information. After all available information is recorded; the UXO Team will resume the detector-aided surface Survey.

When the UXO detector-aided surface Survey of a grid is complete and all items have been located with coordinates and digitally photographed, the tape measures, ropes and other equipment will be moved to the next grid and reestablished as stated above. This process will continue until the entire MRS has been investigated with as close as possible to 100% UXO detector-aided surface Survey.

Transect UXO Detector-aided Surface Survey

The first step in conducting a transect UXO detector-aided surface Survey is to identify the boundaries of the MRS. This can be done with a GPS with preloaded grid coordinates, or surveyed by a land surveyor.

The next step is to establish the end stakes of each transect across the MRS. The transect end stakes are established using a GPS with preloaded end stake locations, or surveyed by a land surveyor. The distance between transects will be established in the site-specific work plan. The direction should be either north/south, or east west although other directions may be appropriate in specific circumstances.

If necessary, each transect may require some brush cutting to aide in the surface Survey. If brush cutting is determined to be necessary, the transect should be at least 5 ft. wide. This can be accomplished with a bush cutting crew and a UXO escort, or the UXO team can conduct the brush cutting themselves depending on the size of the area and the amount of brush removal needed. Care must be taken to ensure that personnel do not disturb suspect MEC items on the surface that may be obscured by brush and tall grass.

The UXO team members will now start the UXO detector-aided surface Survey of each transect. Each UXO team member will start at one of the end stakes and using the metal detector proceed in a deliberate pattern to locate any surface MEC within their 5ft wide transect, toward the other corresponding end stake. The UXO team member will use a GPS or compass to maintain a generally straight transects during the investigation. If suspect MEC is encountered, its location will be recorded and/or marked using a GPS, tape measure, or other grid coordinate location system. The UXO Team will attempt to determine its condition without moving or disturbing the item prior to proceeding with the surface Survey. Each item will be marked with engineer flagging and given a unique ID number (See MEC Management and Accountability SOP). All available information about the item will be recorded in the logbook/MEC Accountability Log, including suspect MEC location, identification, and ID number. A digital photograph will be taken of each item. The UXO Team will not move or otherwise disturb the item in an attempt to

collect information. After all available information is recorded; the UXO Team will resume the detector-aided surface Survey.

When the UXO detector-aided surface Survey of a transect is complete and all items have been located with coordinates and digitally photographed, the UXO team member may proceed to the next transect. This process will continue until the transects have been completed over the entire MRS as planned in the WP.

Meandering Path UXO Detector-aided Surface Survey

Generally the meandering path UXO detector-aided surface Survey is very similar to the transect UXO detector-aided surface Survey. The main difference is there is very little need to cut brush as the UXO team members will meander around heavy brush and other obstacles.

The GPS will have information about the MRS preloaded so as to ensure that the path stays within the MRS. Again the meandering path will be approximately 5ft wide and proceed across the MRS until the objective, (a set amount of time, distance, or suspect MEC items) have been investigated with the UXO detector-aided surface Survey. The site-specific work plans will establish the area within the MRS to be covered with the meandering transects.

If suspect MEC is encountered, its location will be recorded and/or marked using a GPS, compass, and/or tape measure, or other grid coordinate location system. The UXO Team will attempt to determine its condition without moving or disturbing the item prior to proceeding with the surface Survey. Each item will be marked with engineer flagging and given a unique ID number (See MEC Management and Accountability SOP). All available information about the item will be recorded in the logbook/MEC Accountability Log, including suspect MEC location, identification, and ID number. A digital photograph will be taken of each item. The UXO Team will not move or otherwise disturb the item in an attempt to collect information. After all available information is recorded; the UXO Team will resume the detector-aided surface Survey.

Every effort will be made to identify each suspect MEC or MPPEH item located. Under no circumstances will any suspect MEC be moved in an attempt to make a definitive identification. The MEC item will be visually examined for markings and other external features such as shape, size, and external fittings. If unknown military munitions are encountered, the facility point of contact (POC) and Chadux Tt UXO Manager will be notified.

Only UXO-qualified personnel will perform MEC identification procedures. As an exception, a UXO Technician I may assist in the performance of MEC identification procedures when under the supervision of a UXO Technician III or higher. All personnel engaged in field operations will be thoroughly trained and capable of recognizing the specific hazards of the procedures being performed. To ensure that these procedures are performed to standards, all field personnel will be under the direct supervision of a UXO Technician III or higher. All suspect MEC items will be recorded following the requirements of this SOP, the site-specific Work Plan/QAPP, the project site-specific HASP, applicable ordnance operations procedural safety guidelines, and industry-accepted safe work practices and procedures.

All items discovered during the detector-aided surface Survey of the transects/grid will be left in place. No MEC will be moved during this part of the project. The facility POC will be notified of the presence of MEC so that arrangements may be made through the facility for proper

disposition of the item(s). If the facility initiates an emergency response or disposal action, follow-up documentation must be obtained to detail the date and method of disposition. This is also needed to ascertain the actual type and condition of the item (live or inert filled) to aid in future classification of the site.

Quality Control

During the detector aided surface Survey the UXOQCS, or Senior UXO technician if there is no UXOQCS, will recheck 25% of the first four units of work (grids or transects). If quality requirements are not met on any unit, that unit will be rejected and the UXO team will rework the entire unit. Once quality requirements are met for four units in a row, the UXOQCS, or Senior UXO technician if there is no UXOQCS may reduce the level of rechecks to 10% of each unit (grids or transects). If at any time a unit fails the quality control check, that complete unit will be reworked and the rechecks will be increased to 25% until four units in a row pass the recheck. Blind seeds should also be considered as part of the quality control for the detector aided surface survey. When blind seeds are used, 1-6 blind seeds will be placed in the daily lot of work. Failure to detect a blind seed will result in rejection of the lot of work and that lot will be reworked by the UXO Team. After rework, the UXOQCS will recheck that lot using the procedures above, with or without blind seeds.

Detector-Aided Surface Survey for Geophysical Survey

The UXO Technician will conduct a detector-aided surface Survey of the grid or area to be surveyed and record the location of any MEC items discovered. Each item will be marked and recorded as described above. UXO avoidance will be practiced during the geophysical survey.

When allowed by the conditions of the Explosive Safety Submission (ESS) determination, any non-munitions debris may be moved to facilitate a more effective geophysical survey. Non-munitions debris may be collected and stockpiled in a designated area within the boundaries of the site. The facility must agree to take possession of this non-munitions debris and arrange the proper disposition of the material before any items may be moved or disturbed.

TABLE 1

White's Spectrum XLT Settings		
Basic Adjustments:	UXO 1	
Target Volume	58	
Audio threshold	23	
Tone (audio frequency)	226	
Audio Disc.	on	
Silent Search	off	
Mixed-Mode	on	
A.C. Sensitivity	60	Adjust at a test Grid. Compare with another White's
D.C. Sensitivity	30	Adjust at a test Grid. Compare with another White's
Backlight	0	
Viewing Angle	25	
Pro Options:		
"Audio"		
Ratchet Pinpointing	on	
S.A.T. Speed	7	
Tone I.D.	on	
V.C.O.	on	
Absolute Value	off	
Modulation	on	
"G.E.B/Trac"		
Autotrac	on	
Trac View	off	
Autotrac Speed	14	
Autotrac Offset	+1	
Trac Inhibit	on	
Coarse B.E.B.	54	These numbers are variable and will change automatically.
Fine G.E.B.	160	These numbers are variable and will change automatically.
"Discrimination"		
Disc. Edit	+95 Accept	
Block Edit	+95 Accept	
Learn Accept	off	
Learn Reject	off	
Recovery Speed	20	

White's Spectrum XLT Settings

Basic Adjustments:	UXO 1	
Bottlecap Reject	20	
"Display"		
Visual Disc.	off	
Icons	on or off	
V.D.I. Sensitivity	55	
D.C. Phase	9on	
Graph Averaging	on	
Graph Accumulating	on	
Fade Rate	u	
"Signal"		
Transmit Boost	off	
Transmit Frequency	1 to 7	
Preamp Gain	4	

**STANDARD OPERATING PROCEDURE
MRP SOP 02
MEC MANAGEMENT AND ACCOUNTABILITY**

A. SCOPE AND APPLICABILITY

This document is designed to set a standard operating procedure (SOP) for the management and accountability of Munitions and Explosives of Concern (MEC) encountered during activities performed under the Munitions Response Program (MRP).

B. BACKGROUND

MEC activities will be performed in accordance with all local, State, and federal regulations and will include all applicable DoD requirements. Generally, MEC will be encountered during the performance of Unexploded Ordnance (UXO) detector-aided surface Survey operations, subsurface geophysics investigations and UXO Escort operations. UXO detector-aided surface Survey operations may be used as a stand-alone method for site survey and assessment or in preparation for geophysical survey and other operations. UXO escort operations may be required during site visits (initial site assessments, planning, and stakeholders meetings), geophysical operations, construction support during subsurface activities, and MC sampling operations.

C. PERSONNEL QUALIFICATIONS

UXO personnel shall be graduates of a military Explosive Ordnance Disposal (EOD) School of the United States, Canada, Great Britain, Germany, or Australia or a graduate of a formal training course of instruction or EOD assistant course as stated in DDESB TP-18.

D. MEC MANAGEMENT AND ACCOUNTABILITY OPERATIONS

UXO Detector-Aided Surface Survey

If suspect MEC is encountered, its location will be recorded and/or marked using a GPS, tape measure, or other grid coordinate location system. The UXO Team will attempt to determine its condition without moving or disturbing the item prior to proceeding with the surface Survey. Each item will be marked with engineer flagging and given a unique ID number. ID numbers will start with a letter(s) corresponding to the site or grid in which the item is located. This will be followed by the transect number of the site or grid specific to the location of the item. Lastly, a number will be assigned to the individual items within the transect. These numbers will start at 01 and run consecutively. For example:

*The site name is **Open Burn Pit**. The first transect within the **Open Burn Pit** is **A1**. The first item encountered in transect **A1** is item **01**. The ID number assigned to the item is **OBP-A1-01**.*

All available information about the item will be recorded in the logbook/MEC Accountability Log as presented in Attachment 1 to this SOP, including suspect MEC location, identification, and ID number. A digital photograph will be taken of each item. The UXO Team will not move or otherwise disturb the item in an attempt to collect information. After all available information is recorded; the UXO Team will resume the detector-aided surface Survey.

Every effort will be made to identify each suspect MEC item located. Under no circumstances will any suspect MEC be moved in an attempt to make a definitive identification. The MEC item will be visually examined for markings and other external features such as shape, size, and external fittings. Prior to any documentation being developed on an MEC item, all fusing will be definitively identified if it is possible to safely do so visually without disturbing the ordnance item. This identification will consist of fuse type by function and condition (armed or unarmed) and the physical state/condition of the fuse, i.e., burned, broken, parts exposed/sheared, etc.

Only UXO-qualified personnel will perform MEC identification procedures. As an exception, a UXO Technician I may assist in the performance of MEC identification procedures when under the supervision of a UXO Technician III or higher. All personnel engaged in field operations will be thoroughly trained and capable of recognizing the specific hazards of the procedures being performed. To ensure that these procedures are performed to standards, all field personnel will be under the direct supervision of a UXO Technician III or higher. All suspect MEC items will be recorded following the requirements of this SOP, the site-specific Work Plan/QAPP, the project site-specific HASP, applicable ordnance operations procedural safety guidelines, and industry-accepted safe work practices and procedures.

Detector-Aided Surface Survey for Geophysical Survey

The UXO Technician will conduct a detector-aided surface Survey of the grid or transect to be surveyed and record the location of each MEC item discovered, if any. Each item will be marked and recorded as described above. UXO avoidance will be practiced during the geophysical survey.

When allowed by the conditions of the Explosive Safety Submission (ESS) determination, any non-munitions debris may be moved to facilitate a more effective geophysical survey. Non-munitions debris may be collected and stockpiled in a designated area within the boundaries of the site. The facility must agree to take possession of this non-munitions debris and arrange the proper disposition of the material before any items may be moved or disturbed.

UXO Escort Operations

One UXO Technician, qualified as a UXO Technician II or higher, will be required to support each field team engaged in operations in areas that might contain MEC. If any MEC is encountered, the item will be avoided during this phase of the project.

The UXO Technician will not attempt to identify the type or condition of the ordnance during escort operations. Any area with visible ordnance or MEC will be clearly marked, and the area will be avoided. The location of visible ordnance or MEC will be recorded and noted in the field logs. If more senior level personnel are present on site, MEC findings will be reported to the UXO Team Leader. No ordnance, munitions, explosives, or ordnance-related materials will be moved, removed, or disposed of during UXO Escort duties.

E. NOTIFICATION IF MEC IS ENCOUNTERED

Any MEC item discovered during a detector-aided surface Survey, geophysical survey, or UXO escort operation will be left in place and will not be moved. Should MEC be encountered, the following scenarios should be addressed as follows:

(1) If a complete MEC item or ordnance related material is encountered that is believed to pose a hazard, is unexpectedly encountered at a given site, is encountered outside of the current established site boundaries, or is unknown, the UXO Team Leader, with support by UXO Technicians on site as necessary, will document the following information, as provided on Attachment 1, for notification purposes:

- Site Name
- Date/Time Encountered
- Name and UXO Category of Person Providing Notification
- Location of Item (provide coordinates)
- Type of Item (provide digital photograph)

- Apparent Fuze Condition (armed or unarmed)
- Physical Condition (burned, broken, parts exposed/sheared, etc)
- Physical Appearance (buried, staged, etc.)
- Activity in Progress

The UXO Team Leader will attempt to identify the type and/or condition of the ordnance and its location, as described above, and will immediately report this information to the client point of contact at the facility and the TtNUS UXO Manager. Prior to any documentation being performed on a suspect MEC item, all fuzing will be definitively identified only if it is possible to safely do so visually without disturbing the item. If directed by the point of contact at the facility, UXO personnel may take emergency non-invasive action such as securing the area until the appropriate exclusion and safety zones have been determined.

The Navy point of contact at the facility will be responsible for notifying appropriate EOD personnel or for designating this notification task to the TtNUS UXO Team Leader. The notification to EOD personnel should be immediate if a live MEC item is encountered which could be a hazard to personnel, or if the item is unknown so that arrangements may be made through the facility for proper disposition of the item(s). If the facility initiates an emergency response or disposal action, follow-up documentation should be obtained to detail the date and method of disposition. This information is also needed to ascertain the actual type and condition of the item (live or inert filled) to aid in future classification of the site.

(2) If the MEC item cannot be identified by type as a conventional munition, and/or if in the unlikely event that the MEC is suspected to be potential Chemical Warfare Material (CWM), personnel will withdraw upwind from the area, assemble at a pre-designated rally point, secure the site, and immediately request assistance from the point of contact at the facility and notify the TtNUS UXO Manager. If so directed, UXO personnel will take emergency non-invasive actions such as covering the item with plastic sheeting and securing the area until the appropriate exclusion and safety zones have been determined.

(3) If Hazardous, Toxic, or Radiological Waste (HTRW) is encountered on-site, the work site will be evacuated until the TtNUS Project Health and Safety Officer, with concurrence of the client point of contact at the facility, identifies and implements appropriate protective measures.

For any of the scenarios, upon receiving notification from the TtNUS UXO Team Leader, the TtNUS UXO Manager will then immediately inform the TtNUS Project Manager, who will then immediately inform the client Project Manager. TtNUS Program Management personnel will then be notified. The client Project Manager will then make all other necessary notifications within the client's organization.

The following table lists contacts information.

Position	Name	Organization	Direct Dial Phone	Cell Phone
Technical Lead	Linda Klink	TtNUS	412.921.8650	
UXO Manager	Ralph Brooks	TtNUS	770.413.0965 - 231	404.661.4916
Navy RPM	Stacin Martin	NAVFAC Atlantic	757.322-4780	

MDAS Addition Form for
Container # _____

NO.	Description/NIIN	Quantity	Type of Treatment*
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

* If applicable

“This certifies that the material potentially presenting an explosive hazard listed has been 100 percent properly inspected and to the best of our knowledge and belief, is inert and/or free of explosives or related materials”

CERTIFIER PRINTED NAME _____

SIGNATURE _____ **DATE** _____

POSITION _____

ORGANIZATION NAME _____

ORGANIZATION ADDRESS _____

ORGANIZATION PHONE NUMBER _____

VERIFIER PRINTED NAME _____

SIGNATURE _____ DATE _____

POSITION _____

ORGANIZATION NAME _____

ORGANIZATION ADDRESS _____

ORGANIZATION PHONE NUMBER _____

STANDARD OPERATING PROCEDURE
MUNITIONS RESPONSE PROGRAM (MRP) SOP 05
GPS DATA COLLECTION AND TRANSFER

1.0 OVERVIEW

The primary purpose of this Standard Operating Procedure (SOP) is to provide the Field Technicians with basic instructions for operating a handheld Global Positioning System (GPS) unit allowing them to set GPS parameters in the receiver, record GPS positions on the field device, and transfer the data for integration into existing Geographic Information System (GIS) figures.

This SOP is specific to GIS quality data collection for Trimble-specific hardware and software.

If possible, the Trimble GeoXT or XH Operators Manual should be downloaded onto the operator's personal computer for reference before or while in the field. The manual can be downloaded at the following website:

<http://trl.trimble.com/docushare/dsweb/Get/Document-311749/TerraSyncReferenceManual.pdf>

Unless the operator is proficient in the setup and operation of the GPS unit, the Project Manager (or designee) should have the GPS unit shipped to the project-specific contact listed below in the Pittsburgh, Pennsylvania office at least five working days prior to field mobilization so project-specific data files (i.e. shape files), background images, data dictionaries, and correct coordinate systems can be uploaded into the unit.

Tetra Tech NUS
Attn: Ralph Basinski
661 Anderson Drive, Bldg #7
Pittsburgh, PA 15220

The SOP also describes how field collected data is to be transferred through the use of the MRP Website. (<http://www.ttnus.com/MRPRepository/>). This website serves as a centralized portal to facilitate data exchange for field personnel, GIS staff, and project managers. The website contains a "Reference" page that will contain the latest version of this SOP and other valuable documentation.

For technical questions regarding operation of the GPS units and data collection, please contact John Wright (john.wright@tetrattech.com). For general questions about this SOP and use of the MRP website, please contact Mark Maguire (mark.maguire@tetrattech.com).

2.0 REQUIRED EQUIPMENT

The following hardware and software should be utilized for locating and establishing GPS points in the field:

2.1 GPS Hardware & Equipment

- Hand-held GPS Unit capable of sub-meter accuracy. This includes the docking cradle, a/c adapter, stylus, and USB cable for data transfer. Two models, the GeoXH and GeoXT, are acceptable for use. The XH yields higher accuracy (in both real-time and post-processed) and should always be requested when highly precise data is required.
- An external antenna will yield better satellite reception, especially in heavy tree canopy. Associated accessories include a range pole and hardware clamp, for mounting the GPS unit to the pole.
- Indelible marker.
- Non-metallic pin flags for temporary marking of positions.

2.2 GPS Software

The following software is required to transfer data from the handheld GPS unit to a personal computer:

- Trimble TerraSync version 2.6 or later (pre-loaded onto GPS unit from vendor)
- Microsoft ActiveSync version 4.5 or later. Download to personal computer from:
<http://www.microsoft.com/windowsmobile/en-us/downloads/microsoft/activesync-download.msp>

Note: Windows Vista and Windows 7 users should download Windows Mobile Device Center version 6.1 or later from the following site, if it is not already loaded on the machine:

<http://www.microsoft.com/windowsmobile/en-us/downloads/microsoft/device-center-download.msp>

- Trimble Data Transfer Utility (freeware version 2.1 or later). Download to personal computer from:
<http://www.trimble.com/datatransfer.shtml>

3.0 START-UP PROCEDURES

Prior to utilizing the GPS in the field, ensure the unit is fully charged. The unit may come charged from the vendor, but an overnight charge is recommended prior to fieldwork.

The Geo-series GPS units require a docking cradle for both charging and data transfer. The Geo-series GPS unit is docked in the cradle by first inserting the far domed end in the top of the cradled, then gently seating the contact end into the latch. The power charger is then connected to the cradle at the back end using the twist-lock connector. Attach a USB cable as needed between the cradle (B end) and the laptop/PC (A end).

It is recommended that the user also be familiar and check various Windows Mobile settings. One critical setting is the Power Options. The backlight should be set as needed to conserve power when not in use.

3.1 Initial Start Up

- 1) Power on the GPS unit by pushing the small green button located on the lower right front of the unit.
- 2) Utilizing the stylus that came with the GPS unit, launch **TerraSync** from the Windows Operating System by tapping on the start icon located in the upper left hand corner of the screen and then tap on **TerraSync** from the drop-down list.
- 3) If the unit does not default to the Setup screen, tap the Main Menu (uppermost left tab, just below the Windows icon) and select Setup.
- 4) If the unit was previously shipped to the Pittsburgh office for setup, you can skip directly to Section 4.0. However, to confirm or change settings, continue on to Section 3.1.

3.2 Confirm Setup Settings

Use the Setup section to confirm the TerraSync software settings. To open the Setup section, tap the Main Menu and select Setup. (Note that if the unit was shipped from the Pittsburgh office, these settings should have been set for your specific project. Feel free to contact Pittsburgh staff with any questions.)

- 1) Tap on the Coordinate System.
- 2) Verify the project specs are correct for your specific project by scrolling through the various settings. Edit as needed and then tap OK; otherwise, tap Cancel to return to Setup Menu. **Note:** It is always best to utilize the Cancel tab rather than the OK tab if no changes are made since configurations are easily changed by mistake.
- 3) Tap on the Units.
- 4) Verify the user preferences are correct for your specific project by scrolling through the various settings. Edit as needed and then tap OK; otherwise, tap Cancel to return to Setup Menu.
- 5) Tap Real-time Settings.

- 6) Verify the Real-time Settings are correct for your specific project by scrolling through the various settings. Edit as needed and then tap OK; otherwise, tap Cancel to return to Setup Menu.
- 7) The GPS unit is now configured correctly for your specific project.

3.3 Antenna Connection

- 1) If a connection has been properly made with the internal antenna, a satellite icon along with the number of usable satellites will appear at the top of the screen next to the battery icon. If no connection is made (e.g.: no satellite icon), tap on the GPS tab to connect antenna.
- 2) At this point the GPS unit is ready to begin collecting data.

3.4 Loading a Background file

This section provides instructions on pulling in a pre-loaded background file. These files are helpful in visualizing your current location.

- 1) From the Main Menu select Map, then tap on Layers, select the background file from drop down list.
- 2) Select the project-specific background file from the list of available files.
- 3) Once the selected background file appears, the operator can manipulate the screen utilizing the +/- and <-/-> functions at the bottom of the screen.
- 4) In operating mode, the operator's location will show up on the background file as a floating "x".

4.0 FIELD DATA COLLECTION

For MRP data collection activities, a new GPS file should be created **every day** and transferred **nightly** using the MRP website (see Section 9.0). This is to insure the timely transfer of data, file organization in the database, and allow for next-day GIS mapping. Also, individual GPS data files should be **unique to a particular site** or unit (typically a UXO number). If multiple sites are visited in a single data, multiple files should be created.

4.1 Creating a Data File

- 1) From the Main Menu select Data.
- 2) From the Sub Menu (located below the Data tab) select New which will bring up the New Data File menu.
- 3) An auto-generated filename appears and should be edited for your specific project. The following naming convention should be followed as closely as possible: **IH-UXO4-01012010-TeamA**, where "IH" is the installation abbreviation (Indian Head), "UXO04" is the site, and "01012010" is the data in MMDDYYYY format. If multiple teams are being deployed across an individual site on the same day, it is important to specify the

field team name at the end of the file name (“TeamA”). If the integral keyboard does not appear, tap the small keyboard icon at the bottom of the screen.

- 4) Select the data dictionary that will be used to collect features. The data dictionary provides predefined fields and drop-down menus to facilitate data collection as it relates to specific MRP data types. The MRP data dictionary is entitled “**MRP Data Collection**” and should appear in the data dictionary drop-down list. This should have been pre-loaded into the GPS prior to use. The data dictionary file is available on the MRP website under the “Reference” section.
- 5) After entering the file name and selecting the data dictionary, tap Create to create the new file.
- 6) Confirm antenna height if screen appears. Antenna height is the height that the GPS unit will be held from the ground surface (Typically 3 to 4 feet)
- 7) The Choose Feature screen appears.

4.2 Collecting Features

- 1) If not already open, the Collect Feature screen can be opened by tapping the Main Menu and selecting Data. The Sub Menu should default to Collect.
- 2) **Do not begin the data logging process until you are at the specific location for which you intend to log the data.**
- 3) A known reference or two should be shot at the beginning and at the end of each day in which the GPS unit is being used. This allows for greater accuracy during post-processing of the data.
- 4) Upon arriving at the specific location, select the proper feature type from the data dictionary list (MEP Object, Transect End Point, GPS QC Point, or General Point).
- 5) Tap Create to begin data logging.
- 6) As the GPS is collecting positions, enter the feature attributes, starting with the Item ID. This field is required and will not allow the user to continue or save the position without entering a value. Enter any additional notes or feature descriptions in the appropriate fields.
- 7) Data logging can be confirmed by viewing the writing pencil icon in the upper part of the screen. Also, the logging counter will begin. As a Rule of Thumb, accumulate a minimum of 20 readings on the counter, per point, as indicated by the logging counter before saving the GPS data.
- 8) Once the counter has reached a minimum number of counts (i.e. 20), tap on OK to save the data point to the GPS unit. Confirm the feature. All data points are automatically saved within the GPS unit.
- 9) Repeat steps 2 through 8, giving each data point a unique name or number.

Note: If the small satellite icon or the pencil icon is blinking, this is an indication the GPS unit is not collecting data. A possible problem may be too few satellites. While still in data collection mode, tap on Main Menu in upper left hand corner of the screen and select Status. Skyplot will display as the default showing the number of available satellites. To increase productivity (number of usable satellites) use the stylus to move the pointer on the productivity and precision line to the left. This will decrease precision, but increase productivity. The precision and productivity of the GPS unit can be adjusted as the number of usable satellites changes throughout the day. To determine if GPS is correctly

recording data, see Section 5.2. If the precision toggle is decreased, the user should frequently check the Skyplot display to restore the default values as soon as possible.

4.3 Navigation

This section provides instructions on navigating to saved data points in an existing file within the GPS unit.

- 1) From the Main Menu select Map.
- 2) Using the Select tool, pick the point on the map to where you want to navigate.
- 3) The location you select will have a box placed around the point.
- 4) From the Options menu, choose the Set Nav Target (aka set navigation target).
- 5) The location will now have double blue flags indicating this point is your navigation target.
- 6) From the Main Menu select Navigation.
- 7) The dial and data on this page will indicate what distance and direction you need to travel to reach the desired target.
- 8) Follow the navigation guide until you reach the point you select.
- 9) Repeat as needed for any map point by going back to Step 1.

4.4 Data Quality Control

Quality control checks should be performed each day of data collection and/or data navigation. QC checks are important both to understand real-time accuracy while in the field, and also to provide control data needed during post-processing.

- 1) Known survey benchmarks, surveyed monitoring wells, or other established and documented control points should be identified
- 2) GPS equipment should be placed on known control points and positions recorded
- 3) For data collection tasks - QC check data should be collected at least at the start and completion of the fieldwork for the day of data collection. Additional occupation and collection of control point data should occur as possible during the work day, and should increase in frequency as the number of data points increase and the need for accurate data collection increases
- 4) For navigation tasks such as stake placement for planned sample locations, QC data checks should be done at least at the start and completion of the fieldwork for each day. Known visible targets should be occupied and observed by the user, while the GPS satellite status and other user interface data is reviewed. The user should assess whether the real-time accuracy settings on the GPS are within the tolerance of the observed visual reference points.

4.5 Viewing Data or Entering Additional Data Points to the Current File

- 1) To view the stored data points in the current file, tap on the Main Menu and select Map. Stored data points for that particular file will appear. Use the +/- and <-/-> icons in lower left hand corner of screen to zoom in/out and to manipulate current view.
- 2) To return to data collection, tap on the Main Menu and select Data. You are now ready to continue to collect additional data points.

4.6 Viewing Data or Entering Data Points from an Existing File

- 1) To view data points from a previous file, tap on Main Menu and select Data, then select File Manager from the Sub Menu.
- 2) Highlight the file you want to view and select Map from the Main Menu.
- 3) To add data points to this file, tap on Main Menu and select Data. Continue to collect additional data points.

4.7 Shutting Down

This section provides instruction for properly shutting down the GPS unit.

- 1) When shutting down the GPS unit for the day, first click on the “X” in the upper right hand corner.
- 2) You will be prompted to ensure you want to exit TerraSync. Select Yes.
- 3) Power off the GPS unit by pushing the small green button located on the bottom face of the unit.
- 4) Place the GPS unit in its cradle to recharge the battery overnight. Ensure the green charge light is visible on the charging cradle.

5.0 DATA TRANSFER

This section describes how data should be downloaded from the GPS units and uploaded to a central website for post-processing and integration into GIS datasets. GPS data collected on a given day should be transferred **that night** for post-processing by GIS staff the next morning. Once post-processed, the GPS data will be plotted on a map and be immediately provided to the project team for review. Data upload, download, and review will be facilitated through a secure MRP website: <http://www.ttnus.com/MRPRepository/>

5.1 Load Data from the GPS Unit to Your Computer

- 1) Install the Data Transfer and ActiveSync software installed on your PC (see section 2.2)
- 2) Connect the GeoXH/XT to your PC via an A/B USB cable (blade end and square end type "HP printer" style)
- 3) ActiveSync should auto-detect the connection and recognize the data collector
- 4) Make sure the data file desired is CLOSED in TerraSync prior to transfer
- 5) Connect via ActiveSync as a guest (not a partnership)

- 6) Run the Trimble Data Transfer Utility program on your PC
- 7) Select "*GIS Datalogger on Windows CE*" or similar selection
- 8) Hit the green connect icon to the right - the far right area should say "*Connected to*" if successful
- 9) Select the "*Receive*" data tab (under device)
- 10) Select "*Data*" from file types on the right
- 11) Find the file(s) needed for data transfer. You can sort the data files by clicking on the date/time header
- 12) Select or browse to a C-drive folder you can put this file for upload
- 13) When the file appears on the list, hit the "*Transfer All*". Once complete, a packet of multiple data files will appear on your computer in the specified folder.

5.2 Gain Access to MRP Website

- 1) Confirm that your computer has internet access
- 2) Click on the following link: <http://www.ttnus.com/MRPRepository/>
- 3) To register for the website, click on the "Register here" link. Enter your information and click "Submit." NOTE: Requests for registration are sent to Ralph Basinski, Program Manager, for approval. Please contact mark.maguire@tetrattech.com if you experience any access issues.
- 4) Enter your username (Tetra Tech email address) and password to log in.

5.3 Upload GPS Data from Your Computer to the MRP Website

- 1) From the main page, select "Upload" from the menu at left.
- 2) Select the type of data you are uploading, typically "GPS Field Data"
- 3) Select the appropriate Installation and Site. Remember that GPS files should be unique for each site, even if multiple sites are visited in one day. If collected data is not associated with a site, select "Other."
- 4) Select "browse" to navigate to the appropriate *.SSF file on your computer. When you use the Trimble download utility to grab data from the GPS unit, multiple files will appear on your computer. You only need to upload the *.SSF file.
- 5) Populate the "Comments" field to describe the dataset and any other pertinent information. This information will be provided to the GIS analyst who will be integrating the dataset, so be sure to be as descriptive as possible especially if there are any issues with the data. (For example, if you were to sample 16 points and for some reason you believe only 15 were logged, it is helpful to share this information.)
- 7) Select "Upload." Users will be notified if the files were uploaded successfully.

5.4 Download Data from the MRP Website to Your Computer

The download utility on the MRP website will serve different user types. **Field staff** will use the utility to download GIS figures (in PDF format) and view the previous day(s) field data on aerial photographs, checking for any discrepancies or missing data elements. **Project Managers** will also have the ability to download and view these figures, to visualize the data and track project

progress. This utility will also allow **GIS Analysts** to download the *.SSF files posted by field staff for post-processing and map plotting.

To download GIS Figures:

- 1) From the main page, select “Download” from the menu at left.
- 2) Select an Installation and Site
- 3) Users can view Figures for a particular date or by a range of dates, by selecting the appropriate options. To search all dates, leave all of these fields as the default.
- 4) Select “Search”
- 5) A table will appear showing the files available for download. Simply click on the link to the file and you will be prompted to save it to your computer.

**STANDARD OPERATING PROCEDURE
MRP SOP 06
VEGETATION MANAGEMENT AT MEC SITES**

A. SCOPE AND APPLICABILITY

This document is designed to set a standard operating procedure (SOP) for vegetation management during activities performed at Munitions and Explosives of Concern (MEC) sites. Inherently, a strong possibility exists that MEC and material potentially presenting an explosive hazard (MPPEH) may be encountered. The procedures detailed in MRP SOP 01, UXO Detector-Aided Surface Surveys, provide specific guidance for UXO survey operations and equipment. MRP SOP 02, MEC Management and Accountability, provides instructions and procedures to be followed in the event that suspect MEC/MPPEH is encountered. Additionally, MEC activities will be performed in accordance with all local, State, and federal regulations and will include all applicable DoD requirements.

B. BACKGROUND

Vegetation management may be required in preparation for field activities at MEC sites. Trees, brush, grass, and other vegetation can impede the performance of MEC operations, geophysical surveys, and related investigation and remediation activities. The degree of vegetation removal will be site-specific and based upon the conditions encountered and activities to be conducted. Following is a general discussion of the type of equipment/techniques that will be used.

- Hand held brush cutters (string or blade) will be used to cut light vegetation and small grassy areas.
- Mechanized lawn mowers will be used to mow larger grassy areas.
- Chain saws will be used in heavier brush areas, to trim tree limbs, and to cut small trees up to 2 inches in diameter.
- Tractor-mounted brush hogs will be used in larger areas and heavier brush areas.
- Brush/vegetation cutting will be left at the site of the area cleared. If this is impractical, a wood chipper may be utilized.

Smaller brush cutting/vegetation management operation will be conducted by the Unexploded Ordnance (UXO) staff. On larger project sites, subcontractors may be utilized. If it is necessary to utilize subcontractors, an UXO escort will be provided during subcontracted brush/vegetation management operation.

C. PERSONNEL QUALIFICATIONS

UXO personnel shall meet the training requirements as stated in DDESB TP-18. Subcontractors will meet the training and medical surveillance requirements as stated in the Tetra Tech NUS

Health and Safety Guidance Manual. Where applicable, vegetation management equipment will only be operated by personnel licensed or certified on that equipment.

D. VEGETATION MANAGEMENT

Vegetation management at MEC sites may range from minor grass cutting and tree limb trimming to the total removal of all site vegetation. The extent and methods of vegetation management are driven primarily by the project specific scope of work, but will also be influenced by such factors as munition sensitivity, terrain, impacts to the environment, threatened or endangered species, current and future land use, available technology, and cost.

Prior to conducting vegetation management operations, a visual UXO surface survey will be conducted. All suspect MEC/MPPEH will be located and marked. UXO avoidance will be practiced during vegetation management operations. Vegetation management crews will not work within marked areas containing suspect MEC/MPPEH. Additionally, brush and grass will be cut no closer than 6 inches from the ground surface to avoid inadvertent contact with partially buried or shallow subsurface MEC.

Site Setup

The boundary of the work area will be established by land survey or GPS coordinates. Corner points of grids and start and end points of transects will also be located. Boundary lines of grids and transect lines will be marked using engineers flagging tape to provide visual guidance for the vegetation management crew when line of sight between stakes or markers is impeded.

UXO Escort will be provided for survey personnel and no stakes or markers will be driven into the ground until the immediate area of the stake or marker is surveyed and declared clear of surface and shallow subsurface anomalies.

Tree Cutting

Tree cutting will occur on a case-by-case basis as required to accomplish the site specific scope of work. Trees will be cut using chainsaws or hand tools. Generally, trees 2 inches in diameter and smaller will be cut as necessary to facilitate the planned site activities. Trees will be sectioned, if necessary, and removed from the immediate work area to avoid interfering with site operations.

Brush Cutting

Brush cutting will be accomplished using hand held brush cutters equipped with string or blade cutting attachments. Larger or heavier brush may require the use of chainsaws. Where appropriate, a tractor or skid-steer with a bush hog mower attachment may also be used. Brush will be cut to a height that allows clearance for UXO operations and geophysical equipment operation but no closer than 6 inches above the ground surface.

Grass Cutting

Grass cutting will be accomplished using mechanized lawn mowing equipment or hand held brush cutters equipped with string attachments. Grass will be cut to a height that allows clearance for UXO operations and geophysical equipment operation but no closer than 6 inches above the ground surface.

Alternative Methods

In rare instances, large scale vegetation clearance methods such as controlled burning or hydraulic ax deforestation may be necessary. An UXO escort will be provided during large scale vegetation clearance operations. At no time will UXO staff directly engage in controlled burning operations or in the operation of hydraulic ax deforestation equipment.

E. VEGETATION DISPOSAL

Vegetation disposal must be coordinated with the facility environmental office. Provided that site activities do not result in significant quantities of material, the preferred method of vegetation disposal will be on-site disposal. Vegetation will be removed from the immediate work area to avoid interfering with site activities, and allowed to naturally decompose.

A wood chipper may also be used to effectively dispose of vegetation without removing the vegetation from the work site. Wood chips will be disposed of away from the immediate work area to avoid interfering with site activities when possible. If necessary, wood chips will be spread over the work site to a depth of no greater than 4 inches to avoid interference with detection depth capabilities of UXO and geophysics equipment.

F. SAFETY

General safety precautions are located in the Tetra Tech NUS Health and Safety Guidance Manual. Specific guidelines are located in the site-specific Health and Safety Plan (HASP) and the Accident Prevention Plan (APP).

Personal Protective Equipment (PPE)

PPE for vegetation management operations will be level D protection with the following additions:

- Logging helmet with attached face shield
- Chainsaw chaps
- Hearing protection
- Leather work gloves

Personnel Safety

The UXO Safety Officer (UXOSO) will be on-site at all times during vegetation management operations. The primary responsibilities of the UXOSO during vegetation management activities are:

- To provide a safety brief detailing the operation, safety, and maintenance of the specific equipment being utilized;
- To insure that MEC/MPPEH hazards remain a primary concern for personnel involved in vegetation management activities;
- To insure that PPE is serviceable and worn properly during vegetation removal activities; and
- To insure that individual personnel utilizing vegetation removal equipment maintain safe working distances from other personnel within the work area.

Additionally, an UXO Escort will be provided at all times during vegetation management activities. The UXO Escort will be utilized even when UXO Staff perform vegetation management. This will provide a more focused observation of the work area for MEC/MPPEH and related hazards.

Equipment Safety

Equipment will be inspected for serviceability daily prior to the commencement of vegetation management activities. Periodic spot checks will also be conducted throughout the day to insure that chains and blades remain properly tightened and sharpened. All equipment will be operated and maintained in accordance with the manufacturer's recommendations.

**STANDARD OPERATING PROCEDURE
MRP SOP 07
UXO DEMOLITION/DISPOSAL OPERATIONS**

1.0 SCOPE AND APPLICABILITY

The purpose of this Standard Operating Procedure (SOP) is to provide the minimum procedures and safety and health requirements applicable to the conduct of demolition/disposal operations on sites contaminated with Munitions and Explosives of Concern (MEC). This SOP is not site-specific, but rather is intended as a general guidance document for a variety of sites and conditions.

2.0 BACKGROUND

This SOP applies to all site personnel, including contractor and subcontractor personnel, involved in the conduct of demolition/disposal operations on an MEC contaminated site. This SOP is not intended to contain all of the requirements needed to ensure complete compliance, and should be used in conjunction with project plans and applicable Federal, state and local regulations. Applicable sections and paragraphs in the documents listed below will be used as references for the conduct of demolition/disposal operations:

- Tetra Tech NUS, Inc. Corporate Safety and Health Program;
- EP 385-1-95a, Basic Safety Concepts and Considerations for OE Operations;
- EP 1110-1-17, Establishing a Temporary OB/OD Site for Conventional Ordnance and Explosives Projects;
- USACE EM 385-1-1, Safety and Health Requirements Manual;
- DoD 4145.26-M, Contractor's Safety Manual for Ammunition and Explosives;
- DoD 6055.9-STD, DoD Ammunition and Explosives Safety Standards;
- DA PAM 385-64, Ammunition and Explosives Safety Standards;
- TM 60A-1-1-31, EOD Disposal Procedures;
- AR 190-11, Physical Security of Arms, Ammunition and Explosives;
- ATF 5400.7, Alcohol Tobacco and Firearms Explosives Laws and Regulations; and
- Applicable sections of DOT, 49 CFR Parts 100 to 199.

3.0 PERSONNEL QUALIFICATIONS AND RESPONSIBILITIES

UXO personnel conducting explosive demolition and disposal operations shall be graduates of a military Explosive Ordnance Disposal (EOD) School of the United States, Canada, Great Britain, Germany, or Australia or a graduate of a formal training course of instruction or EOD assistant course as stated in DDESB TP-18.

3.1 UXO Project Manager

The UXO Project Manager (PM) shall be responsible for ensuring the availability of the resources needed to implement this SOP, and shall also ensure that this SOP is incorporated in plans, procedures and training for sites where this SOP is to be implemented.

3.2 Senior UXO Supervisor

The Senior UXO Supervisor (SUXOS) will be responsible for assuring that adequate safety measures and housekeeping are taken during demolition activities, and shall visit demolition locations to ensure that demolition operations are carried out in a safe, clean, efficient and economical manner.

3.3 UXO Technician III (Demolition Supervisor)

A designated UXO Tech III shall act as the Demolition Supervisor (DS). There may be more than one DS assigned to a project site due to conducting simultaneous operations and divergent sites. The demolition activities shall be conducted under the direct control of the DS, who will have the responsibility of supervising all demolition operations assigned to him. The DS shall be responsible for training all on-site UXO demolition personnel on his team regarding the nature of the materials handled, the hazards involved and the precautions necessary to conduct a safe demolition operation. The DS will also ensure that the Daily Operational Log, Demolition Shot Records and inventory records are properly filled and accurately depict the demolition events and demolition material consumption for each day's operations. The DS shall be present during all demolition operations.

3.4 UXO Safety Officer

The UXO Safety Officer (UXOSO) for the site is responsible for ensuring that all demolition operations are being conducted in a safe and compliant manner, and is required to be present during all demolition operations. The only exception to this rule is when the project site has multiple sites conducting concurrent munitions response (MR) operations, and it is impossible for the UXOSO to be present at each shot. In that event a demolition team safety officer will be designated. This individual will report to the UXOSO and assume the UXOSO's responsibilities at the designated demolition operation. In this situation, the UXOSO will conduct periodic safety audits of the demolition teams and assist the demolition team's safety officers in the performance of their duties. The UXOSO or demolition team safety officer will inspect the demolition shot(s) for hazards and then assisted by the DS and UXO Tech IIs, will inspect each demolition pit and an area of up to 250 feet in radius after each demolition shot to ensure that no kick-outs of hazardous MEC components or other hazardous items has occurred.

3.5 UXO Quality Control

The UXO Quality Control Specialist (UXOQCS) is responsible for inspecting, the Daily Operational Log, the Demolition Shot Record and the inventory of MEC and demolition material. The UXOQCS will check the pit/demolition site with a magnetometer and large metal fragments exceeding the pass/fail requirements of the SOW will be removed.

4.0

GENERAL OPERATIONAL AND SAFETY PROCEDURES

All personnel, including contractor and subcontractor personnel, involved in operations on MEC contaminated sites shall be familiar with the potential safety and health hazards associated with the conduct of demolition/disposal operations, and with the work practices and control techniques used to reduce or eliminate these hazards. During demolition operations, general safety provisions listed below will strictly followed by all demolition personnel. Non-compliance with the general safety provisions will result in disciplinary action, to include termination of employment if warranted.

- All safety regulations applicable to BIP and/or demolition range activities and the destruction of MEC materials involved shall be complied with.
- Demolition of any kind is prohibited without the express authorization from the client.
- The quantity of MEC to be destroyed will be determined by the agreed to limit, with the net explosive weight (NEW) of the demolition explosives factored into the total NEW.
- In the event of an electrical storm, or heavy snow or dust storms, immediate action will be taken to cease all demolition operations and evacuate the area.
- In the event of a fire or unplanned explosion, if possible, put out the fire. If unable to do so, notify fire and police departments and evacuate the area. If injuries are involved, remove victims from danger, administer first aid and seek medical attention.
- The DS is responsible for reporting all injuries and accidents that occur to the UXOSO.
- Demolition team personnel will not tamper with any safety devices or protective equipment.
- Any defect in demolition material or an unusual condition that is not covered by this SOP will be reported immediately to the DS and UXOSO.
- Demolition procedures shall be conducted in accordance with this SOP and applicable references in Section 2.0.
- Adequate fire protection and first aid equipment shall be provided at all times.

- All personnel engaged in the destruction of MEC shall wear under and outer garments made of close-weave natural fiber, such as cotton. Synthetic material such as nylon is not authorized unless treated with anti-static material.
- Care will be taken to minimize exposure to the smallest number of personnel, for the shortest time, to the least amount of hazard, consistent with safe and efficient operations.
- Work locations will be maintained in a neat and orderly condition.
- All demolition hand tools shall be maintained in a good state of repair.
- Each heavy equipment and/or vehicle operator will have in his possession a valid operator's permit, i.e., state driver's license, certificate of training for backhoe/excavator etc.
- Leather or leather-palmed gloves will be worn when handling wooden boxes, munitions or MEC. If bulk or binary explosives are being handled then rubber gloves, such as Nitrile, will be worn.
- Lifting and carrying require care. Improper methods cause unnecessary strains. Observe the following preliminaries before attempting to lift or carry:
 - When lifting, keep your arms and back as straight as possible, bend your knees and lift with your leg muscles; and
 - Be sure you have good footing and hold, and lift with a smooth, even motion.
- The demolition BIP location and/or range shall be provided with telephone and radio communication.
- Motor vehicles and material handling equipment (MHE) used for transporting MEC or demolition materials must meet the following requirements:
 - Exhaust systems shall be kept in good mechanical repair.
 - Lighting systems shall be an integral part of the vehicle.
 - One 20 BC rated portable fire extinguisher shall be, if possible, mounted on the vehicle outside of the driver's cab or two 10BC fire extinguishers, with one inside the cab and the other near the front portion of the vehicle bed, nearest the driver.

- Wheels of carriers must be chocked and brakes set during loading and unloading.
- No demolition material or MEC shall be loaded into or unloaded from, motor vehicles while the engine is operating.
- Motor vehicles and MHE used to transport demolition material and MEC shall be inspected prior to use to determine that:
 - Fire extinguishers are filled and in good working order.
 - Electrical wiring is in good condition and properly attached.
 - Fuel tank and piping are secure and not leaking.
 - Brakes, steering and safety equipment are in good condition.
 - The exhaust system is not exposed to accumulations of grease, oil, gasoline, or other fuels, and has ample clearance from fuel lines and other combustible materials.
- A red warning flag, such as a "Bravo Flag", a windsock, or rag will be displayed at the entrance to the demolition range and, if applicable, the entrance gate shall be locked when demolition work is in process. This is only applicable if an open detonation (OD) range has been established with demo pits for all shots.
- Unless otherwise directed, all demolition shots will be tamped with a minimum of two feet of clean earth/dirt or the appropriate thickness of sand bags as indicated on the Fragmentation Data Review Form.
- An observer will be stationed at a location where there is a good view of the air and surface approaches to the demolition range before material is detonated. It shall be the responsibility of the observer to order the DS to suspend firing if any aircraft, vehicles or personnel are sighted approaching the general demolition area.
- Two-way radios shall not be operated while the shot is primed or during the priming process. The charts shown in Attachment 1 of this SOP shall be used for determining the safe distances from transmitter antennas.

- No Demolition operation will be left unattended during the active portion of the operation (i.e., during the burn or once any explosives or MEC are brought to the BIP location or range).
- A minimum area of 200 feet in diameter shall be cleared of dry grass, leaves and other extraneous combustible materials around the demolition shot/pit area if a demolition range has been established. The area around the BIP location shall be free of any combustible material and wetted down if necessary.
- No demolition activities will be conducted if there is less than a 2,000-foot ceiling or if wind velocity is in excess of 20 mph.
- Demolition-shots must be fired during daylight hours (i.e., between 30 minutes after sunrise and 30 minutes before sunset).
- No more than two individuals shall ride in a truck transporting demolition material or MEC, and no one shall be allowed to ride in the trailer/bed.
- Vehicles shall not be refueled when carrying demolition material or MEC, and must be 100 feet from magazines or trailers containing such items before refueling.
- All vehicles used for the transport of explosives will be cleaned of visible explosive and other contamination before releasing the vehicles for other tasks.
- Prior to conducting any other task, personnel shall wash their face and hands after handling demolition material or MEC.
- At the demolition site, prior to “check-out” procedures, all blasting caps will be stored in approved containers (IME 22 or equivalent) and separated a minimum of 50 feet from all other explosives until they are needed.
- Demolition shots/pits shall be spaced at least 50 feet apart, with no more than 10 shots/pits prepared for a series of shots at any one time.

5.0 SPECIAL REQUIREMENTS FOR DEMOLITION

The following safety and operational requirements shall be followed during demolition operations. Any deviations from this procedure shall be allowed only after approval from the Tetra Tech UXO PM. Failure to adhere to the requirements and procedures listed in the paragraphs below could result in serious injury or death; therefore complete compliance with these requirements and procedures will be strictly enforced.

5.1 General Requirements

The general demolition range/shot requirements listed below shall be followed at all times:

- Attachment 1 of this SOP, "Procedures for Demolition of Multiple Rounds (Consolidated Shots) on Ordnance and Explosives (OE) Sites," will be followed when destroying multiple munitions by detonation.
- Attachment 2 of this SOP, Use of Sandbags for Mitigation of Fragmentation and Blast Effects Due to Intentional Detonation of Munitions.
- Attachment 3 of this SOP, "Use of Water for Mitigation of Fragmentation and Blast Effects Due to Intentional Detonation of Munitions" may be used when fragmentation throws and fire is a concern.
- Items awaiting explosive destruction and demolition material shall be protected against accidental ignition or explosion from fragments, grass fires, burning embers or detonating impulses originating in materials being destroyed.
- MEC or bulk explosives, acceptable to move, and destroyed by detonation can be detonated in a pit not less than three feet deep and covered with earth which protrudes not less than two feet above existing ground level or IAW the Fragmentation Data Guide for the item which is to be detonated. The components should be placed on their sides or in a position to expose the largest area to the influence of the demolition material. The demolition material should be placed in intimate contact with the item to be detonated and held in place by tape or earth packed over the demolition materials. The total NEW to be destroyed below ground at one time shall not exceed the agreed to limit.

- Prevailing weather condition information will be obtained from the U.S. Weather Service and the data logged in the Demolition Shot Log before each shot or round of shots.
- All shots shall be dual primed.
- A minimum of 30 seconds will be maintained between each detonation.
- Detonations will be counted to ensure detonation of all shots. After each series of detonations, a search shall be made of the surrounding area for hazardous items. Items such as lumps of explosives or unfuzed ammunition may be picked up and prepared for the next shot. Fuzed ammunition or items that may have internally damaged components will be detonated in place, if possible.
- After each-detonation and at the end of each day's operations, surface exposed munitions debris, shall be recovered from the demolition site and disposed of in accordance with contracted procedures, as well as all applicable environmental regulations. All collected munitions debris metal will be 100% inspected for absence of explosive materials by demolition range personnel and certified by the SUXOS and the UXOQCS.
- When operated in accordance with the conditions of this procedure the demolition shot should not present a noise problem to the surrounding community. However, if a noise complaint is received, the name, address and phone number of the complainant should be recorded and reported to the SUXOS, who in turn will report it to the UXO PM and Facility POC.
- Whenever possible, during excavation of demolition pits contour the ground so that runoff water is channeled away from the pits. If demolition operations are discontinued for more than two weeks, the pits should be back filled until operations resume.
- Upon completion of the project, all disturbed demolition areas will be thoroughly inspected for MEC. According to the SOW, the site may have to be leveled and seeded to establish a permanent vegetative cover to inhibit erosion. If necessary, this will be coordinated with the contractor representative. At a minimum, the holes/pits will be filled in and contoured.

- Prior to and after each shot, the Demolition Shot Record is to be filled out by the DS with all applicable information.

5.2 Electric Detonator Use

The following requirements are necessary when using electric detonators and blasting circuits:

- Electric detonators and electric blasting circuits may be energized to dangerous levels from outside sources such as static electricity, induced electric currents and radio transmission equipment. Safety precautions will be taken to reduce the possibility of a premature detonation of an electric detonator and explosive charges of which they form a part. Demolition Team radios will not be operated while the pit/shot is primed or during the priming process.
- Demolition team members handling detonators will first ground themselves by bending down and touching the ground, which will discharge any static electricity.
- The shunt shall not be removed from the leg wires of the detonator until the continuity check.
- When uncoiling or straightening the detonator leg wires; keep the explosive ends of the detonator pointing away from the body and away from other personnel. When straightening the leg wires, do not hold the detonator itself; rather hold the detonator leg wires approximately one inch from the detonator body. Straighten the leg wires by hand, do not throw or wave the wires through the air to loosen them.
- Prior to use, the detonators shall be tested for continuity. To conduct the test, place the detonators in a pre-bored hole in the ground or place them in a sand bag and walk facing away from the detonators and stretch the wires to their full length, or to 25 feet, whichever is less, being sure to not pull the detonators from the hole or sand bag. With the leg wires stretched to their full length, test the continuity of the detonators one at a time by un-shunting the leg wires and attaching them to the galvanometer and checking for continuity. After the test, re-shunt the wires by twisting the two ends together. Repeat this process for each detonator until all detonators have been tested. This process shall be accomplished at least 50 feet down wind from any MEC/demolition materials and out of

the personnel and vehicle flow patterns. In addition, all personnel on the demolition range/shot shall be alerted prior to the test being conducted.

NOTE: When testing the detonator, prior to connecting the detonator to the firing circuit, the leg wires of the detonator must be shunted by twisting the bare ends of the wires together immediately after testing. The wires shall remain short circuited until time to connect them to the firing line.

- At the power source end of the blasting circuit, the ends of the firing line wires shall be shorted or twisted together (shunted) at all times, except when actually testing the circuit or firing the charge. The connection between the detonator and the circuit firing wires must not be made unless the power end of the firing wires are shorted and grounded or the firing panel is off and locked.
- The firing line will be checked using pre-arranged hand signals or through the use of two-way radios if the demolition pit/shot is not visible from the firing point. If radios are used, communication shall be accomplished a minimum of 50 feet from the demolition pit/shot and detonators. The firing line will be checked for electrical continuity in both the open and closed positions, and will be closed and shunted prior to connecting the detonator leg wires.
- MEC to be detonated or vented shall be placed in the demolition pit/shot and the demolition material placed/attached in such a manner as to ensure the total detonation and/or venting of the MEC. A section of detonation cord, time fuze, or Non-El shock tube will extend from the demolition material to a point outside the tamping material. Once the MEC and demolition material are in place and the shot has been tamped, the detonators will be connected to the demolition material. Prior to handling detonators that are connected to the firing line, personnel shall ensure that they once again ground themselves. The detonators will then be carried to the demolition pit/shot with the end of the detonators pointed away from the individual. The detonators are then connected to the detonation cord, Non-El, etc., ensuring that the detonator is not covered with tamping material to allow for ease of recovery/investigation in the event of a miss-fire.

- Prior to making connections to the blasting machine, the entire firing circuit shall be tested with a galvanometer for electrical continuity and ohmic resistance to ensure the blasting machine has the capacity to initiate the shot.
- The individual assigned to make the connections at the blasting machine or panel will not complete the circuit at the blasting machine or panel and will not give the signal for detonation until satisfied that all personnel in the vicinity have been evacuated to a predetermined distance. When in use, the blasting machine or its actuating device shall be in the blaster's possession at all times. When using the panel, the switch must be locked in the open position until ready to fire, and the single key must be in the blaster's possession.
- Prior to initiating a demolition shot(s), a warning will be given, the type and duration of such will be determined by the prevailing conditions at the demolition range/shot. At a minimum, this should be an audible signal using a siren, air horn or megaphone, which is sounded for one minute duration, five minutes prior to the shot and again one minute prior to the shot.

5.3 Detonating Cord Use

The following procedures are required when using detonating cord (det cord):

- Det cord should be cut using approved crimpers and only the amount required should be removed from inventory.
- When cutting det cord, the task should be performed outside the magazine.
- For ease of inventory control, only remove det cord in one-foot increments.
- Det cord should not be placed in clothing pockets or around the neck, arm or waist, and should be transported to the demolition location in either an approved "day box" or a cloth satchel, depending upon the magazine location and proximity to the demolition area.
- When ready to "tie in" either the det cord to demolition materials, or det cord to detonator, the det cord will be connected to the demolition material and secured to the

MEC. The cord is then strung out of the hole/tamping material and secured in place with soil, being sure to leave a one-foot tail exposed outside the hole/tamping material.

- Once the hole is filled or tamping in place, make a loop in the det cord large enough to accommodate the detonator, place the detonator in the loop and secure it with tape. The detonator's explosive end will face down the det cord toward the demolition material or parallel to the main line.
- In all cases, ensure there is sufficient det cord extending out of the hole/tamping material to allow for ease of detonator attachment and detonator inspection/replacement should a misfire occur.
- If the det cord detonators are electric, they will be checked, tied in to the firing line and shunted prior to being taped to the loop as described above. If the det cord detonators are non-electric, the time/safety fuse will be prepared with the igniter in place prior to taping the detonators to the det cord loop. If the det cord detonators are Non-El, simply tape the detonators into the loop as described above.
- In the event that a time/safety fuse is used, and an igniter is not available and a field expedient initiation system must be used (i.e., matches), do not split the safety fuse until the detonator is taped into the det cord loop.

5.4 Shock Tube Splicing Procedures

The high reliability of the shock tube initiating system is due to the fact that all of the components are sealed and unlike standard non-electric priming components, cannot be easily degraded by moisture. Cutting the shock tube makes the open end vulnerable to moisture and foreign contamination, therefore care must be taken to prevent moisture and foreign matter from getting in the shock tubes exposed ends. Some general rules to follow are listed below.

- After cutting a piece of shock tube, either immediately tie a tight overhand knot in one or both cut ends or splice one exposed end and tie off the other.
- Always use a sharp knife or razor blade to cut shock tube so as to prevent the tube from being pinched or otherwise obstructed.
- Always cut shock tube squarely across and make sure the cut is clean.
- Use only the splicing tubes provided by the manufacturer to make splices

- Every splice in the shock tube reduces the reliability of the priming system; therefore keep the number of splices to a minimum.

5.4.1 Shock Tube Assembly

Step 1. If you are using a new role of shock tube cut off the sealed end, dispose of the small piece IAW local laws as they relate to flammable material and proceed to the directions listed in Step 3. If you are using a pre-assembled shock tube/detonator assembly proceed to Step 1 in paragraph 5.4.2.

Step 2. If you are using a previously cut piece of shock tube, using a sharp knife or razor blade cut approximately 18 inches from the previously cut end, whether or not it was knotted IAW the above guidance. Dispose of the 18-inch piece of shock tube IAW local regulations.

Step 3. Using a sharp knife or razor cut the sealed end off of the detonator assembly and dispose of the small piece as above.

Step 4. Loosely tie the two shock tube ends to be sliced together in a square knot, leaving at least a two-inch free end of each end of the shock tube beyond the knot. Push the shock tube lightly to tighten the knot, but not so tight as to significantly deform the shock tube.

Step 5. Push one of the shock tube ends to be spliced firmly into one of the pre-cut splicing tubes provided by the manufacturer, at least ¼ inches. Push the other shock tube end firmly into the other end of the splicing tube at least ¼ inches.

Step 6. Spool out the desired length of shock tube and cut it off with a sharp knife or razor blade.

Step 7. Immediately seal off the shock tube remaining on the spool by tying a tight overhand knot in the cut off end.

5.4.2 Firing Assembly Setup

Step 1. Lay out the required length of shock tube from demo area to firing point.

Step 2. If there are multiple items to be destroyed using bunch block(s), supplied by the manufacturer, lay out lead lines at demo site to the shot(s) and secure the bunch block with a sandbag, or some other item which will keep it from moving. Figure 1 illustrates the procedure.

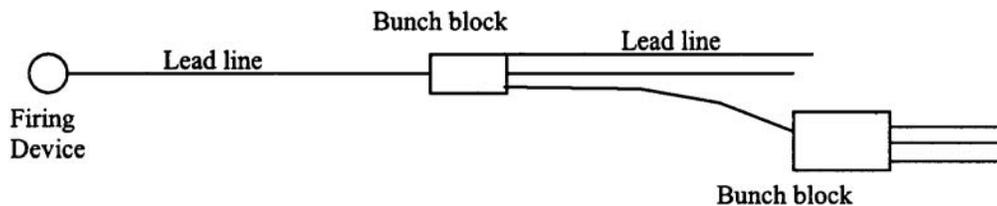


Figure 1

Note: No more than six leads may be used from any one bunch block.

Step 3. If the detonator assembly has not been attached yet then using the splicing tube, splice the detonator assembly to the shock tube lead line as explained in the splicing instructions above.

Step 4. If this is a non-tamped shot place the detonator assembly into the demolition material. If the shot is to be tamped then prepare the demolition material with a detonating cord lead long enough to stick out of the tamping at least one foot.

Step 5. Tape the detonator assembly to the detonating cord lead as shown in Figure 2.

Step 6. Clear the area IAW the approved demolition plan, return to the firing position.

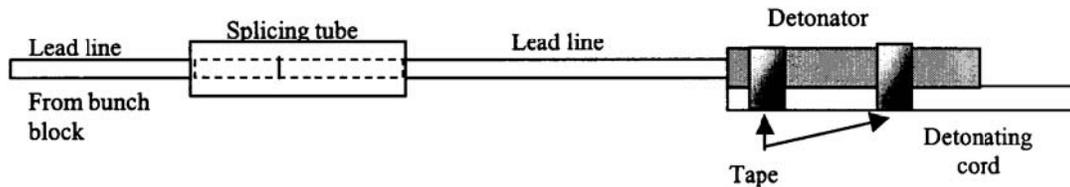


Figure 2

Step 7. Insert a primer into the firing device and connect the shock tube lead line to the firing device ensuring that the shock tube is properly seated in the firing device.

Step 8. Proceed IAW the approved demolition procedures.

5.5 Time/Safety Fuse Use

The following procedures are required when using a time/safety fuse:

- Prior to each daily use, the burn rate for the time/safety fuse must be tested to ensure the accurate determination of the length of time/safety fuse needed to achieve the minimum burn time of five minutes needed to conduct demolition operations.
- To ensure both ends of the time/safety fuse are moisture free, use approved crimpers to cut six inches off the end of the time/safety fuse roll and place the six inch piece in the time/safety fuse container.
- If quantity allows, accurately measure and cut off a six foot long piece of the time/safety fuse from the roll, and take the six-foot section out of the magazine and attach a fuse igniter.
- In a safe location, removed from demolition materials and MEC, ignite the time/safety fuse, measure the burn time from the point of initiation to the "spit" at the end, and record the burn time in the DS's Log.
- To measure the burn time, use a watch with a second hand, stop watch or chronograph.
- To calculate the burn rate in seconds per foot, divide the total burn time (in seconds) by the length (in feet) of the test fuse.
- Whenever using time/safety fuse, for demolition operations, the minimum amount of fuse to be used will be the amount needed to permit a minimum burn time of five minutes.

5.6 Perforator Use

The following procedures are required when using perforators:

- Only remove from inventory the number of perforators required to perform the task.
- Transport perforators in an approved "day box", cloth satchel or plastic container, depending upon magazine location and proximity to the demolition operations.
- When ready to use, place the det cord through the slot on the perforator and knot the det cord, ensuring the cord fits securely and has good continuity with the perforator.
- Once the det cord is secure, place the perforator in the desired location and secure it in place.
- Proceed from this point as described in paragraph 5.3.

5.7 Use of Two-Component Explosives

The following procedures are required when using two-component (binary) demolition materials:

- Only remove from inventory the amount of two-component required to perform the task.
- When transporting the solid and liquid, they need only be placed apart in the bed of a truck.
- Do not mix the solid and liquid components until certain that it will be used, since the resulting mixture is classified as a Class 1.1 explosive by Department of Transportation.
- When mixing the solid and liquids components, follow the manufacturer's instructions, while being sure to wear rubber gloves and goggles. Mix components in an area away from other demolition materials, the MEC, and if possible, sheltered from the wind.
- Once the components have been mixed, it is essential that the lid to the solid bottle be put on securely as soon as possible after mixing to prevent evaporation of the liquid.
- Attach the det cord as recommended by the manufacturer, place the assembled unit in the desired location in the hole/shot and secure the unit.

- Proceed from this point as described in paragraph 5.3.

5.8 Demolition Range/BIP Inspection Schedule

The demolition range/BIP inspection schedule outlined in Table 5-1 will be followed at all sites where demolition operations are being conducted. This inspection shall be conducted by the UXOSO and will be documented in the Site Safety Log. If any deficiencies are noted, demolition operations shall be suspended and the deficiency reported to the SUXOS and DS. Once the deficiencies are corrected, demolition operations may be resumed.

Table 5-1 - Demolition Range Inspection Schedule

Check List Item	Inspection Schedule	Check List Item	Inspection Schedule
Site and Explosive Carrier Vehicle	Weekly or Prior to Use	Personal Protective Equipment	Prior to Use
Range Access/Egress Route	Weekly or Prior to Use	Circuit Testing Device	Prior to Use
Entrance Gate/Lock	Weekly or Prior to Use	Demolition Site	Prior to Use
Storage Trailer/Magazine	Daily, Prior to Use and After Use	Operating Equipment	Prior to Use
Fire Extinguishers	Daily, Prior to Use and After Use	Hospital Route	Prior to Use

6.0 METEOROLOGICAL CONDITIONS

In order to control the effects of demolition operations and to ensure the safety of site personnel, the following meteorological limitations and requirements shall apply to demolition operations:

- Demolition operations will not be conducted during electrical storms or thunderstorms.
- No demolition operations shall be conducted if the surface wind speed is greater than 20 miles per hour.
- Demolition operations will not be conducted during periods when visibility is less than one mile caused by, but not limited to, dense fog, blowing snow, rain, sand or dust storms.

- Demolition shall not be carried out on extremely cloudy days that are defined as: overcast (more than 80% cloud cover) with a ceiling of less than 2,000 feet.
- Demolition operations will not be conducted during any atmospheric inversion condition (low or high altitude).
- Demolition operations will not be conducted during periods of local air quality advisories.
- Demolition operations will not be initiated until 30 minutes after sunrise, and will be secured at least 30 minutes prior to sunset.

7.0 PRE-DEMOLITION/DISPOSAL PROCEDURES

7.1 Pre-Demo/Disposal Operational Briefing

The DS will brief all personnel involved in range/shot operations in the following areas:

- Type of MEC being destroyed.
- Type, placement and quantity of demolition material being used.
- Method of initiation (electric, non-electric or Non-El).
- Means of transporting and packaging MEC, if applicable.
- Route to the disposal site.
- Emergency procedures.
- Equipment being used (i.e., galvanometer, blasting machine, firing wire, etc.).
- Misfire procedures.
- Post shot clean up of range.

7.2 Pre-Demo/Disposal Safety Briefing

The UXOSO and DS will conduct a safety brief for all personnel involved in range operations in the following areas:

- Care and handling of explosive materials.
- Personal hygiene.
- Two-man rule and approved exceptions.
- Potential trip/fall hazards.

- Horseplay on the range.
- Stay alert for any explosive hazards.
- Location of emergency shelter (if available).
- Vehicle parking (vehicles must be oriented out of the site for immediate departure, with keys in the ignition).
- Location of emergency vehicle (keep engine running).
- Wind direction (to assess potential toxic fumes).
- Location of first aid kit and fire extinguisher.
- Route to nearest hospital or emergency aid station.
- Type of communications in event of an emergency.
- Storage location of demolition materials and MEC awaiting disposal.

7.3 Task Assignments

Individuals with assigned tasks will report the completion of the task to the DS. The types of tasks that may be required are:

- Contact local Police, Fire department, USCG and FAA as required.
- Contact hospital/emergency response personnel if applicable.
- Secure all access roads to the range/shot area.
- Visually check range/shot area for any unauthorized personnel.
- Check firing wire for continuity and shunt.
- Prepare designated pits/shots as required.
- Check continuity of detonators.
- Check time/safety fuse and its burn rate.
- Designate a custodian of the blasting machine, fuse igniters or Non-El initiator.
- Secure detonators in a safe location.
- Place MEC in pit, if applicable, and place charge in desired location.

7.4 Preparing Explosive Charge for Initiation

To prepare the explosive charge for initiation, the procedures listed below will be followed:

- Ensure firing wire is shunted.
- Connect detonator to the firing wire.
- Isolate or insulate all connections.
- Prime the demolition charge.

- Place demolition charge on MEC.
- Depart to firing point (if using non electric firing system, obtain head count, pull igniters and depart to designated safe area).
- Obtain a head count, and test blast machine for proper operation.
- Give one-minute duration warning signal, using a bullhorn or siren, five minutes prior to detonation, and again at one minute prior to detonation.
- Check the firing circuit with a galvanometer.
- Yell "fire in the hole" three times (or an equivalent warning) and take cover.
- If using electric firing system connect firing wires to blasting machine and initiate charge.
- Remove firing wires from blasting machine and shunt.
- Remain in designated safe area until DS announces "All Clear". This will occur after a post-shot waiting period of 5-minutes and the UXOSO has and inspected the pit(s)/shot(s).

8.0 POST DEMOLITION/DISPOSAL PROCEDURES

Do not approach a smoking hole or allow personnel out of the designated safe area until cleared to do so, and follow the below listed procedures:

- After the "All Clear" signal, check pit/shot for low orders or kick outs.
- Check pit with a magnetometer and remove any large fragmentation.
- Any MEC items, failing to be properly disposed of, discovered during the post demolition procedures, will be destroyed prior to the end of the day.
- Back fill hole as necessary.
- Secure all equipment.
- Notify police, fire, etc. that the operation is complete.

9.0 MISFIRE PROCEDURES

A thorough check of all equipment, firing wire and detonators will prevent most misfires. However, if a misfire does occur, the procedures outlined below shall be followed.

9.1 Electric Misfires

To prevent electric misfires, one technician will be responsible for all electrical wiring in the circuit. If a misfire does occur, it must be cleared with extreme caution, and the responsible technician will investigate and correct the situation, using the steps outlined below:

- Check firing line and blasting machine connections and make a second initiation attempt.
- If unsuccessful, disconnect and connect to another blasting machine (if available) and attempt to initiate charge.
- If unsuccessful, commence a 60-minute wait period.
- After the maximum delay predicted for any part of the shot has passed, the UXOSO will proceed down range to inspect the firing system, and a safety observer must watch from a protected area.
- Disconnect and shunt the detonator wires from the leg wires, connect a new detonator to the firing circuit, check the replacement detonator for continuity, and prime the charge without disturbing the original detonator.
- Follow normal procedures for effecting initiation of the charge.

9.2 Non-Electric Misfires

Working on a non-electric misfire is the most hazardous of all operations. Occasionally, despite all painstaking efforts, a misfire will occur. Investigation and corrective action should be undertaken only by the technician that placed the charge, using the following procedure:

- If charge fails to detonate at the determined time, initiate a 60-minute wait period plus the time of the safety fuse, i.e., 5-minute safety fuse plus 60 minutes for a total of 65 minutes.
- After the wait period has expired, the designated technician will proceed down range to inspect the firing system. A safety observer must watch from a protected area.
- Prime the shot with a new non-electric firing system and install a new fuse igniter.
- Follow normal procedures for initiation of the charge.

9.3 Non-EL Misfire The most common cause of misfires is known as "black tube failure"

The shock tube propagates up to the detonator but the detonator fails to function, or there is a crimp in the line causing the shock wave to be interrupted. The following steps will be taken in the event of a misfire:

- If the shock tube fails to propagate and the tube remains clear, remove the shock tube from the firing device, cut off six inches of the shock tube, insert a new primer, reinsert the shock tube ensuring that it is properly seated and re-fire. If when you activate the firing device and the shock tube gets blown out of the firing device without activating,

cut off six inches of the shock tube, replace the primer and re-insert the shock tube into the firing device.

- If the primer functioned properly and the shock tube was heard or seen to fire, observe the standard one-hour waiting period prior to going downrange.
- After the one-hour waiting period has passed, proceed downrange and check the first component in the priming train i.e. splice, bunch block or detonator assembly. Repeat this process till you reach the detonator assembly. As you conduct this inspection and discover the problem, replace the firing train, which functioned (tube is no longer clear) with a new one and ensure that all the connections are correct and secure.
- After the system has been checked and repaired/replaced return to the firing point and repeat the firing process.

9.4 Detonating Cord Misfire

Det cord may be used to tie in multiple demolition shots and to ensure that electric detonators are not buried. Since det cord initiation will be either electrical or non-electrical, the procedures presented in paragraphs 9.1, 9.2, or 9.3, as appropriate to the type of detonator used, will be used to clear a det cord misfire. In addition, the following will be followed:

- If there is no problem with the initiating system, wait the prescribed amount of time and inspect the initiator to the cord connection to ensure it is properly connected. If it was a bad connection simply attach a new initiator and follow the appropriate procedures in paragraph 6.0.
- If the initiator detonated and the cord did not, inspect the cord to ensure it is det cord and not time fuze. Also, check to ensure there is PETN in the cord at the connection to the initiator.
- It may be necessary to uncover the det cord and replace it. This must be accomplished carefully to ensure that the demolition charge and the MEC item are not disturbed.

9.5 Perforator Misfire

The use of perforators is considerably safer than the use of C-4 and many other demolition materials. If the perforator is not initiated properly, it could malfunction. Since the perforator is covered with tamping material, det cord is used as the initiator. Therefore, in the event of a

misfire, the procedures presented in paragraph 9.4 will be followed, along with the items presented below:

- If everything went but the perforator, one of four things has occurred:
 1. Det cord grain size was insufficient to initiate the perforator;
 - Check to ensure the grain size of the det cord is sufficient, with 80-grain size or greater being the recommended size.
 2. The det cord was dislodged from the perforator when placing tamping materials;
 - If the det cord connection to the perforator was the problem, ensure that the next connection is secured (use duct tape if necessary).
 3. The perforator was defective;
 4. The perforator was moved during the placement of tamping materials.
 - If it is evident that the perforator was moved, ensure it is properly secured for the next shot.
 - If cord size and connection are sufficient, replace the perforator, leaving the defective one on the shot.

10.0 RECORD KEEPING REQUIREMENT

To document demolition operations and the destruction of MEC, the following record keeping requirements shall be met:

- Tetra Tech will obtain and maintain all required permits.
- The DS will ensure the accurate completion of the logs, and the SUXOS and UXOQCS will monitor the entries in the log for completeness, accuracy and compliance with meteorological conditions.
- The DS shall enter the appropriate data on the Demolition Shot Record, to reflect the MEC destroyed, and shall complete the appropriate information on the Magazine Data Card, which indicates the demolition materials used.
- The quantities of MEC recovered must also be the quantities of MEC destroyed or disposed of as munitions debris or munitions constituents.

- Tetra Tech and/or its subcontractors will retain a permanent file of all Demolition Records, including permits, Magazine Data Cards, training records, inspector reports, waste manifests if applicable, and operating logs.
- Copies of ATF License and any state or local permits must be on hand.

11.0 SAFETY AND PPE REQUIREMENTS

The following safety measures and personal protective equipment shall be used in preventing or reducing exposure to the hazards associated with MEC demolition/disposal operations. These requirements will be implemented unless superseded by site specific requirements stated in the Accident Prevention Plan (APP):

- Steel-toed safety boots will not be worn by demolition team personnel conducting demolition/disposal operations, unless a toe crush hazard exists, in which case personnel will wear boots with plastic or fiber toed safety toes;
- Unless a serious head, eye or face hazard exists, demolition team personnel will not be required to wear hard hats, safety glasses or face shields when conducting operations involving the handling of demolition explosives or MEC, except as stated previously; and
- In the event that a serious head, eye or face hazard does exist, demolition team personnel will wear the required PPE, but positive restraining means shall be required to secure the PPE to the head, face etc. and prevent it from falling and causing an accidental detonation.

12.0 AUDIT CRITERIA

The following items related to demolition/disposal operations on an MEC contaminated site will be audited to ensure compliance with this SOP:

- The Demolition Shot Record
- The Site Daily Operational and Safety Logs;
- The MEC Operations Daily/Weekly Report;
- The Safety Training Attendance Forms, for the initial site hazard training;
- The Safety Training Attendance Forms, for the Daily Tailgate Safety Briefings;
- The Daily Safety Inspection and Audit Log.

13.0 ATTACHMENTS

The following attachment to this SOP will be reviewed by all UXO-qualified personnel participating in demolition/disposal activities.

- Attachment 1 "Procedures for Demolition of Multiple Rounds Consolidated Shots on Ordnance and Explosives (OE) Sites"
- Attachment 2 Use of Sandbags for Mitigation of Fragmentation and Blasts Effects due to Intentional Detonation of Munitions (HNC-ED-CS-S-98-7)
- Attachment 3 Use of Water for Mitigation of Fragmentation and Blasts Effects due to Intentional Detonation of Munitions (HNC-ED-CS-S-00-3)



**US Army Corps
of Engineers**
Engineering and Support
Center, Huntsville

Procedures for Demolition of Multiple Rounds (Consolidated Shots) on Ordnance and Explosives (OE) Sites

AUGUST 1998 (Terminology Update March 2000)

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**US Army Corps
of Engineers**
Engineering and Support
Center, Huntsville

Use of Sandbags for Mitigation of Fragmentation and Blast Effects Due to Intentional Detonation of Munitions

HNC-ED-CS-S-98-7
AUGUST 1998



**US Army Corps
of Engineers**
Engineering and Support
Center, Huntsville

**USE OF WATER FOR MITIGATION OF
FRAGMENTATION AND BLAST EFFECTS DUE TO
INTENTIONAL DETONATION OF MUNITIONS**

**HNC-ED-CS-S-00-3
SEPTEMBER 2000**

APPENDIX D

MEC FIELD FORMS

MDAS Addition Form for
Container # _____

NO.	Description/NIIN	Quantity	Type of Treatment*
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

* If applicable

“This certifies that the material potentially presenting an explosive hazard listed has been 100 percent properly inspected and to the best of our knowledge and belief, is inert and/or free of explosives or related materials”

CERTIFIER PRINTED NAME _____

SIGNATURE _____ DATE _____

POSITION _____

ORGANIZATION NAME _____

ORGANIZATION ADDRESS _____

ORGANIZATION PHONE NUMBER _____

VERIFIER PRINTED NAME _____

SIGNATURE _____ DATE _____

POSITION _____

ORGANIZATION NAME _____

ORGANIZATION ADDRESS _____

ORGANIZATION PHONE NUMBER _____



TETRA TECH NUS, INC.

EQUIPMENT MAINTENANCE/REPAIR

MAINTENANCE/REPAIR NO. _____

NECESSARY ATTACHMENTS _____ PACKING SLIP, and/or _____ MRR, abd _____ LOGS

TYPE OF EQUIPMENT		SERIAL NO.
MAKE:		MODEL:
P O NUMBER		DELIVERY ORDER NO.
STANDARD MAINTENANCE		DATE
DESCRIPTION OF PROBLEM (if any)		

MAINTENANCE/REPAIRS TO BE PERFORMED		
IN-HOUSE REPAIRS		DATE
SENT OUT TO		COST ESTIMATE AIRBILL NO. P O NO. DATE RET'D
CORRECTIVE ACTION		

PARTS LIST		
PART DESCRIPTION	QUANTITY	COST/EA
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
TOTAL LABOR (hours)		DATE
PERFORMED BY		
RETURNED TO WHICH JOB SITE/Stone Mountain, GA		



TETRA TECH NUS, INC.

DAILY INSTRUMENT	PROVE-OUT REPORT
-------------------------	-------------------------

Project Name:	Project No:	Location:	Date:
<input type="checkbox"/> Sunday	<input type="checkbox"/> Monday	<input type="checkbox"/> Tuesday	<input type="checkbox"/> Wednesday
<input type="checkbox"/> Thursday	<input type="checkbox"/> Friday	<input type="checkbox"/>	<input type="checkbox"/>

I. Test Plot Information

Location:

Item Number	Inert Item/Surrogate Description	Depth (inches)	Azimuth/ Inclination Angle(Degrees)	Comments
1				
2				
3				
4				
5				

II. Instrument Information

Instrument Type/Manufacture	Instrument Serial Number	Test Plot Items Instrument Tested on (List Item Numbers)	Setting On Instrument Tested (As Per WP)	Test Results, <input checked="" type="checkbox"/> indicates good for operation	Personnel Testing Equipment	Comments
				<input type="checkbox"/>		
				<input type="checkbox"/>		
				<input type="checkbox"/>		
				<input type="checkbox"/>		
				<input type="checkbox"/>		
				<input type="checkbox"/>		
				<input type="checkbox"/>		
				<input type="checkbox"/>		
				<input type="checkbox"/>		
				<input type="checkbox"/>		
				<input type="checkbox"/>		

III. Problems Encountered / Corrective Actions Taken.
explain in space below:

IV. Supervisor

Name and Signature:	Title/Company:	Date:
----------------------------	-----------------------	--------------



TETRA TECH NUS, INC.

FIELD ACTIVITY DAILY REPORT

DATE	
NO.	
SHEET	1 OF 1

PROJECT NAME:		PROJECT NO:	
FIELD ACTIVITY SUBJECT:			
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:			
VISITORS ON SITE:		CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:	
WEATHER CONDITIONS:		IMPORTANT TELEPHONE CALLS:	
PERSONNEL ON SITE:			
SIGNATURE:		DATE:	



TETRA TECHNUS, INC.



DAILY QUALITY CONTROL REPORT

Project Name: _____ Report No: _____

Project No: _____ Location: _____ Date: _____

Sunday Monday Tuesday Wednesday Thursday Friday Saturday

Weather/Precipitation:	High Temperature:	Wind:	Humidity
	Low Temperature:		

I. Personnel Present (Reference/attach SUXOS's daily report if applicable)

Name	Position	Company

II. Work Performed

III. Quality Control Activities (Reference/attach inspection/surveillance reports):

IV. Problems Encountered / Corrective Actions Taken

V. Directions Given / Received:

VI. Special Notes / Lessons Learned

VII. Visitors

VIII. Approval

Name and Signature:	Title/Company:	Date:
---------------------	----------------	-------



PREPARATORY PHASE INSPECTION REPORT

Project Name: _____ Project No: _____ Report No: _____
 UXO Team: _____ Location: _____ Date: _____

I. Definable Feature of Work

- | | | |
|--|---|--|
| <input type="checkbox"/> Project Management | <input type="checkbox"/> Field Data Entry | <input type="checkbox"/> Mechanized Debris Removal |
| <input type="checkbox"/> Excavation Observation/Operations | <input type="checkbox"/> UXO Escort/ Avoidance Operations | <input type="checkbox"/> MEC Surface Sweep |
| <input type="checkbox"/> Identification of MEC/MPPEH | <input type="checkbox"/> MEC Transfer to EOD | <input type="checkbox"/> MEC Disposal/Treatment |
| <input type="checkbox"/> Safety Meetings | <input type="checkbox"/> Mobilization | <input type="checkbox"/> Demobilization |
| <input type="checkbox"/> Documentation Control | <input type="checkbox"/> Document Review | <input type="checkbox"/> Other: |

II. References (DOD Inst. , Corporate references, SOPs, etc.):

III. Personnel Present (employees performing the work) Attach supplemental sheet if necessary

Name	Position	Company

IV. Submittals Reviewed (Work Plan, EHSP, Permits, etc.)

Submittals Reviewed.	Item No.	Date	Approval Authority

Have all submittals been approved? Yes No

If No, what items have not been submitted/ approved?

Are all submittals on hand? Yes No

If No, what items are missing?

Check approved submittals against delivered material. (This should be done as material arrives.)

Comments:

V. Resources (Personnel & Equipment)

Are adequate resources on hand to effectively conduct work? Yes No

If No, what action will be taken?

VI. Procedures (Project Manger should be involved in this stage of the inspection)

Review contract specifications. (List special requirements such as location accuracy, format for deliverables, etc.)



PREPARATORY PHASE INSPECTION REPORT

Project Name: _____ Project No: _____ Report No: _____
 UXO Team: _____ Location: _____ Date: _____

Discuss procedure for accomplishing the work (Reference WP Section or SOP).

Clarify any differences (revisions needed).

VII. Resolve Differences (What did you do to resolve outstanding issues/problems)

Comments:

VIII. Testing/ Surveillance

Identify Tests/ Surveillance to be performed, frequency, and by whom.

Where will the testing to take place (in the test bed, at a selected monument, etc.)?

Is the Testing/ Surveillance Plan Adequate?

IX. Safety

Review applicable portion of the Health and Safety Plan.

Has the Activity Hazard Analysis been approved? Yes No

X. Results of Inspection

Acceptable Unacceptable NCR #:

Name: _____ Signature: _____ Date: _____

QCM Comments

QCM Review

Concur Non-Concur Signature: _____ Date: _____

XI. Distribution

PM UXO Project MGR UXOSO/QC SUXOS CLIENT REP



Revised 4/27/2005



INITIAL PHASE INSPECTION REPORT

Project Name: _____ Report No: _____
 Project No: _____ Location: _____ Date: _____

I. Definable Feature of Work

- | | | |
|--|---|--|
| <input type="checkbox"/> Project Management | <input type="checkbox"/> Field Data Entry | <input type="checkbox"/> Mechanized Debris Removal |
| <input type="checkbox"/> Excavation Observation/Operations | <input type="checkbox"/> UXO Escort/ Avoidance Operations | <input type="checkbox"/> MEC Surface Sweep |
| <input type="checkbox"/> Identification of MEC/MPPEH | <input type="checkbox"/> MEC Transfer to EOD | <input type="checkbox"/> MEC Disposal/Treatment |
| <input type="checkbox"/> Safety Meetings | <input type="checkbox"/> Mobilization | <input type="checkbox"/> Demobilization |
| <input type="checkbox"/> Documentation Control | <input type="checkbox"/> Document Review | <input type="checkbox"/> Other: _____ |

II. References (DOD Inst, Corporate references, SOPs, etc.):

--

III. Personnel Present (employees performing the work) Attach supplemental sheet if necessary

Name	Position	Company

IV. Preparatory Work (equipment set up & testing, EZ set up, logbook entries, etc.)

Is preliminary work complete and correct? Yes No

If No, what action(s) will be taken?

--

V. Task Execution

Is work being completed in accordance with plans and specifications? Yes No

If No, what corrective action(s) will be taken?

--

Is workmanship acceptable? Yes No

If No, what action(s) will be taken?

--

V. Resolve Differences



INITIAL PHASE INSPECTION REPORT

Project Name: _____ Report No: _____
Project No: _____ Location: _____ Date: _____

Comments:

VI. Safety (Review work conditions using HASP and AHAs)

Comments:

VII. Results of Inspection

Acceptable Unacceptable NCR #:

Name: _____ Signature: _____ Date: _____

QC Manager Comments

QC Manager Review

Concur Non-Concur Signature: _____ Date: _____

VIII. Distribution

PM UXO Project MGR UXOS/QC SUXOS CLIENT REP



Revised May 2006



FOLLOW-UP INSPECTION/SURVEILLANCE REPORT

Project Name: _____ Report No: _____
 Project No: _____ Location: _____ Date: _____

I. Definable Feature of Work

- | | | |
|--|---|--|
| <input type="checkbox"/> Project Management | <input type="checkbox"/> Field Data Entry | <input type="checkbox"/> Mechanized Debris Removal |
| <input type="checkbox"/> Excavation Observation/Operations | <input type="checkbox"/> UXO Escort/ Avoidance Operations | <input type="checkbox"/> MEC Surface Sweep |
| <input type="checkbox"/> Identification of MEC/MPPEH | <input type="checkbox"/> MEC Transfer to EOD | <input type="checkbox"/> MEC Disposal/Treatment |
| <input type="checkbox"/> Safety Meetings | <input type="checkbox"/> Mobilization | <input type="checkbox"/> Demobilization |
| <input type="checkbox"/> Documentation Control | <input type="checkbox"/> Document Review | <input type="checkbox"/> Other: |

II. Type of Inspection

- Follow-up Surveillance

II. References (DOD Inst, Corporate references, SOPs, etc.):

III. Activities/Conditions Observed

Conducted By: _____ Signature: _____ Date: _____

X. UXOSO/QC Review

- Acceptable Unacceptable NCR #:

Comments:

Name: _____ Signature: _____ Date: _____

XI. Distribution

- PM SUXOS UXOSO/QC UXO Program Manager Client Rep



Revised May 2006



NON-CONFORMANCE REPORT

		Report No.	
Client:		Project Number:	
Project:		Specific Process:	

Description of Process

I. Description of Nonconformance (*Items involved, specification, code or standard to which items do not comply, submit sketch if applicable*)

Name and Signature of Person Reporting Nonconformance	Title/Company	Date

II. Root Cause Analysis

Immediate Causes: What actions and conditions contributed to this event? Check all that apply:

Substandard Acts	
<input type="checkbox"/> Operating equipment without authority	<input type="checkbox"/> Inadequate inspection/peer review
<input type="checkbox"/> Failure to follow/improper execution of procedure	<input type="checkbox"/> Poor judgment
<input type="checkbox"/> Using equipment improperly	<input type="checkbox"/> Failure to communicate—written and/or verbal
<input type="checkbox"/> Improper servicing/maintenance of equipment	<input type="checkbox"/> Acceptance of defective equipment/material
<input type="checkbox"/> Under influence of alcohol/drugs	<input type="checkbox"/> Other substandard acts
<input type="checkbox"/> Horseplay	

Substandard Conditions	
<input type="checkbox"/> Personnel not properly qualified or trained	<input type="checkbox"/> Inadequate oversight
<input type="checkbox"/> Defective equipment/material	<input type="checkbox"/> Inadequate procedure/instruction

Enter brief explanation of each **immediate cause** below:

Basic Causes: What specific personal or job management system factors contributed to this event? Check all that apply:

Personal Factors	Job Factors
<input type="checkbox"/> Inadequate physical/physiological capability	<input type="checkbox"/> Inadequate leadership and/or supervision
<input type="checkbox"/> Inadequate mental/psychological capability	<input type="checkbox"/> Inadequate engineering
<input type="checkbox"/> Physical or physiological stress	<input type="checkbox"/> Inadequate purchasing
<input type="checkbox"/> Lack of knowledge	<input type="checkbox"/> Inadequate maintenance
<input type="checkbox"/> Lack of skill	<input type="checkbox"/> Inadequate tools and equipment
<input type="checkbox"/> Improper motivation	<input type="checkbox"/> Inadequate work standards
<input type="checkbox"/> Other personal factors	<input type="checkbox"/> Excessive wear and tear
	<input type="checkbox"/> Abuse and misuse
	<input type="checkbox"/> Change
	<input type="checkbox"/> Other job factors

Enter brief explanation of each **basic cause** below:



NON-CONFORMANCE REPORT

--	--	--

Name and Signature of Person Conducting RCA	Title/Company	Date

III. Recommended Disposition *(Submit sketch, if applicable)*

--	--	--

Name and Signature of Person Recommending Disposition	Title/Company	Date

IV. Evaluation of Disposition by Tetra Tech, Reason for Disposition

--	--	--

V. Corrective Action Required Not Required

--	--	--

VI. QA/QC Project Manager Client *(if applicable)* Other

Name <i>(Signature)</i>	Name <i>(Signature)</i>	Name <i>(Signature)</i>	Name <i>(Signature)</i>

Date	Date	Date	Date

<input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> Accepted with Comments	<input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> Accepted with Comments	<input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> Accepted with Comments	<input type="checkbox"/> Accepted <input type="checkbox"/> Rejected <input type="checkbox"/> Accepted with Comments
--	--	--	--

VII. Verification of Disposition Required Not Required

By	Signature	Title	Date





TETRA TECH NUS, INC.

Project:		
Tailgate Safety Briefing		
Date: _____		Location: _____
Time: _____		Team #: _____
1. Reason for Briefing:		
	Daily Safety Briefing	New Site Procedure
	Initial Safety Briefing	New Site Information
	New Task Briefing	Review of Site Information
	Periodic Safety Meeting	Other: (Specify)
2. Personnel Attending		
Name	Signature	Position
Briefing Given By:		
Name	Signature	Position



TETRA TECH NUS, INC.

3. Topics: (Check All That Apply)		
	Site Safety Personnel	Decontamination Procedures
	Site/Work Area Description	Emergency Response/Equipment
	Physical Hazards	On-Site Injuries/Illness
	Chemical/Biological Hazards	Reporting Procedures
	Heat/Cold Stress	Directions to Medical Facility
	Work/Support Zones	Drug and Alcohol Policies
	PPE	Medical Monitoring
	Safe Work Practices	Evacuation/Egress Procedures
	Air Monitoring	Communications
	Task Training	Confined Spaces
	OE Precautions	Other:
4. Remarks:		



MEC DATA AND ACCOUNTABILITY FORM

FOR UXO TEAM USE

Site Name:		Team Leader:	
Grid or Lane Number:	Work Area:	Date:	
Location: X (Lat): _____		Y (Long): _____	
Location Type (UW or UG): _____			
Other Location Information: _____			
Depth (feet): _____		Inclination (Degrees): _____	
Orientation (N-S, E-W): _____			

TARGET/ANOMALY CHARACTERISTICS

Type of Target/Find:	<input type="checkbox"/> Surface Find	<input type="checkbox"/> Mag & Dig Target	<input type="checkbox"/> Primary Geo Target	<input type="checkbox"/> Validation (QA/QC)	<input type="checkbox"/> No Dig
Type of Anomaly:	<input type="checkbox"/> UXO	<input type="checkbox"/> MEC	<input type="checkbox"/> Inert	<input type="checkbox"/> Practice	<input type="checkbox"/> MC (waste)
	<input type="checkbox"/> MD (scrap)	<input type="checkbox"/> Metal Waste	<input type="checkbox"/> No Find	<input type="checkbox"/> Rock	<input type="checkbox"/> Rust Layer
	<input type="checkbox"/> Oxidation	<input type="checkbox"/> Misc.:	_____		
Diameter/Width:	Length:	Estimated Weight:			

DIGITAL PHOTO RECORD

Was photo taken?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Camera No.:	Frame No.:	File Name:
------------------	------------------------------	-----------------------------	-------------	------------	------------

MUNITIONS NOMENCLATURE (If Known, Record Below and record fuze condition and disposition)

Munitions Mark/Mod:	Fuze Mark/Mod:	N.E.W. Total:
	<input type="checkbox"/> Nose: _____	<input type="checkbox"/> Tail: _____
	<input type="checkbox"/> Transverse: _____	<input type="checkbox"/> Casing: _____

MUNITIONS CHARACTERISTICS

Munitions Filler:	<input type="checkbox"/> Explosive	<input type="checkbox"/> Inert	<input type="checkbox"/> Propellant	<input type="checkbox"/> Pyrotechnic	<input type="checkbox"/> Unknown	<input type="checkbox"/> Other: _____
Munitions Category:	<input type="checkbox"/> Depth Charges	<input type="checkbox"/> Land Mine	<input type="checkbox"/> Projectiles	<input type="checkbox"/> Sea Mines	<input type="checkbox"/> Bombs	<input type="checkbox"/> Grenades
	<input type="checkbox"/> Misc. Explosive Devices	<input type="checkbox"/> Pyrotechnics and Flares	<input type="checkbox"/> Small Arms	<input type="checkbox"/> Clusters/Dispensers	<input type="checkbox"/> Guided Missiles	<input type="checkbox"/> Mortars
	<input type="checkbox"/> Rockets	<input type="checkbox"/> Torpedoes				

FUZE CHARACTERISTICS

Fuze Location(s) (check all that apply):	Breaks in Fuze Body?	Fuze Markings:
<input type="checkbox"/> Nose	<input type="checkbox"/> Yes	
<input type="checkbox"/> Tail	<input type="checkbox"/> No	
<input type="checkbox"/> Transverse		
<input type="checkbox"/> Casing		
Fuzing Type(s):	<input type="checkbox"/> Hydrostatic	<input type="checkbox"/> MT Long Delay
<input type="checkbox"/> All-ways Acting	<input type="checkbox"/> Impact	<input type="checkbox"/> MT Superquick
<input type="checkbox"/> Base Detonating	<input type="checkbox"/> Influence	<input type="checkbox"/> Piezo-Electric
<input type="checkbox"/> Electric	<input type="checkbox"/> Mech Time (MT)	<input type="checkbox"/> Point Detonating (PD)
	<input type="checkbox"/> Powder Train Time Fuze	<input type="checkbox"/> Nose MT/Tail Impact Inertia
	<input type="checkbox"/> Pressure	<input type="checkbox"/> Pt-initiating-Base-detonating
	<input type="checkbox"/> Proximity (VT)	
	<input type="checkbox"/> Nose MT/Tail Pressure	
Fuze Length:	Fuze Diameter:	Diameter of Fuze Well:

MEC STATUS & PHYSICAL CONDITION (Check all that apply)

<input type="checkbox"/> Armed	<input type="checkbox"/> Unarmed	<input type="checkbox"/> Fired	<input type="checkbox"/> Unfired
<input type="checkbox"/> Intact	<input type="checkbox"/> Broken Open	<input type="checkbox"/> Filler Visible	<input type="checkbox"/> Soil Staining

FOR SUXOS USE

Disposition: (Clarify Under Remarks)	Date:
<input type="checkbox"/> Transferred	<input type="checkbox"/> Transported
<input type="checkbox"/> Left In Place	<input type="checkbox"/> Destroyed
<input type="checkbox"/> BIP	<input type="checkbox"/> Other : _____
Client Notifications By:	Signature:
Transferred To:	Signature:
Destroyed By:	Signature:
Remarks:	Date:

SUXOS Signature:	Date:

Environmental Management Procedure (EMP) 4.4.6.8.1 Tab 1

Subject: DD Form 1348-1A Disposal Turn-In Document (DTID)

1. Purpose: This EMP establishes the procedures for the completing DD Form 1348-1A Disposal Turn-In Document (DTID).
2. References:
 - A. TCFE Regulation 200-6, Environmental Management
 - B. EMP Dictionary
3. Scope: This EMP applies to all Activities utilizing the HWAF for the turn-in of wastes.
4. Roles and Responsibilities:
 - A. HWAF will:
 - (1). Receives the completed 1348-1A during container pickups from TSS, SAS, or NHS.
 - (2). Receives the completed 1348-1A during deliveries of wastes to the HWAF from the Activity.
 - (3). Processes and completes the 1348-1A in preparation for waste shipments through DRMO.
 - B. Activities will:
 - (1). Complete the 1348-1A prior to scheduling an appointment with the HWAF for pickup of containers.
 - (2). The 1348-1A must be typed. Under adverse circumstances hand written documents with information clearly printed may be accepted if all copies are legible.
 - (3). If all copies are not legible, the materials will not be accepted.
5. Procedures:
 - A. **ITEMS IN BOLD PRINT ARE TO BE COMPLETED BY THE ACTIVITY PRIOR TO TURN-IN.** Specific blocks of the DD Form 1348-1A must be completed as follows:
 - (1). **Columns 23-24:** Enter the appropriate unit of issue (container);
 - (a). **“DR”** = Drum
 - (b). **“BX”** = Box
 - (c). **“CN”** = Container
 - (d). **“EA”** = Each
 - (2). **Columns 25-29:** Enter the total number of containers being turned-in. Leading zeros must be entered. Example “00005”
 - (3). **Columns 52-53:** Should always be **“21”** - standard code. (For all army units, other activities may need to use different code).
 - (4). **Column 71:** Must contain **“H”**.

- (5). **Block 2 (Ship From):** Enter “**W26R1J**”.
- (6). **Block 3 (Ship To):** Enter “**DRMO**”.
- (7). **Block 4 (Mark For):** Must contain “**HW**”.
- (8). **Block 17 (Item Nomenclature):** Enter “**Common Name of material**” (not DOT proper shipping name, hazard class, ID number, PG) or profile name and “EPA waste codes”. Example “**Paint, D001, D007, D008**”.
- (9). **Block 19 (No. Cont):** Enter total “**number of containers**”. This number should be the same as in item b above (**Columns 25-29**).
- (10). **Block 24 (Document Number & Suffix):** Enter “**W26R1J**” in the upper left hand corner of the block. Enter the “**first 4 digits of the stock number (FSC)**” of the waste in the upper left hand corner of the block. Full NSN is for serviceable products only, not for wastes. The FSC for spill debris is “**9999**”. Example:

W26R1J

8010

- (11). **Block 26 (RIC, UI, QTY):** Enter the following items with spacing as shown in the example, “**PROFILE:**” “**HIN:**” & “**ASD:**”. Example:

PROFILE:

HIN:

ASD:

- (12). **Block 27 (Additional Information):** Enter the following items with spacing as shown in the example, “**Activity Document Number**”, “**Activity Address**”, “**Hazardous Waste Coordinator Information and signature**”, “**Description of outside containers**”, “**Site Number**”, “**HWAF O/H:**” & “**Container Numbers**”.

Example:

W26J4X – 6335 - 0001	“Signature” John Q. Smith	2 - 55 gal 1A2
6th Trans Bn Fort Eustis, VA	HWC 878-1234	2 - 30 gal 1A2 1 - 5 gal 1H2
Site Number: ET97001		HWAF O/H:
Container No. E500001, E500002, E500003, E500004, E500005		

B. See Figure example of a completed DD Form 1348 - 1A below:

Example of a completed DD Form 1348 - 1A

USAPA V1 01
PREVIOUS EDITION MAY BE USED

1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1
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DD Form 1348

SEND TO				REQUISITION IS FROM												
NAS SUPPLY DIVISION CUSTOMER SERVICE				B												
				A NOMENCLATURE				DOC. IDENT	ROUTING IDENT	M&S	STOCK NUMBER			UNIT OF	QUANTITY	
C										FSC NIIN ADDIT			ISSUE			
				DOCUMENT NUMBER				DEMAND	SERV	SUPPLEMENTARY ADDRESS		SIG				
SERV	REQUISITIONER		DATE	SERIAL												
FUND	DISTRIBUTION (COG)		PROJECT	PRIORITY	RETURNED STATUS					UNIT PRICE		TOTAL PRICE				
											\$0.00					
ADVICE																
		Z	Z		A	A										
65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	

**EMERGENCY REFERENCE
NAPR, ROOSEVELT ROADS, CIEBA PUERTO RICO**

CONTACT	PHONE NUMBER
EMERGENCY (Police, Fire, Ambulance Service)	911
San Pablo Del Este Hospital Emergency Room	(787) 655-0505 Ext. 2206
Puerto Rico Poison Control Center	(800) 222-1222
Puerto Rico Utility Locating Service	(787) 792-7478
Navy RPM Stacin Martin	(757) 322.4780
Navy BRAC Environmental Coordinator Mark Davidson	(843) 743-2124
Facility Contact Commander Daniel Kalal	(787) 685-3450
TtNUS Project Manager Linda Klink	(412) 921-8650
TtNUS Field Operations Leader/ Site Safety Officer TBD	
TtNUS PHSO James K. Laffey	(412) 921-8678
TtNUS, Health and Safety Manager Matthew M. Soltis, CIH, CSP	(412) 921-8912

2.7 EMERGENCY ROUTE TO HOSPITAL

San Pablo Del Este Hospital
 404 Ave Valero
 Fajardo, PR
 17 minutes / 8.60 miles

Start at **A**: Tarawa Dr, Ceiba, PR

Start out going North on Tarawa Dr.	0.4 mi
Turn slight right.	1.2 mi
Stay straight to go onto Tarawa Dr.	1.0 mi
Turn left onto Calle Isabel Rosada.	0.1 mi
Calle Isabel Rosada becomes PR-3/Avenida Lauro Piñero.	0.1 mi
Turn right onto Avenida Lauro Piñero/PR-3. Continue to follow PR-3	2.4 mi
Take the PR-53 N ramp toward Fajardo.	0.2 mi
Merge onto PR-3 O.	2.3 mi
Turn RIGHT onto Avenida El Conquistador.	0.6 mi
Turn RIGHT onto Avenida Valero/PR-194.	0.2 mi
Avenida Valero; PR-194.	0.0 mi

Arrive at **B**: Avenida Valero; Pr-194, Fajardo, PR

FIGURE 2-1
ROUTE TO HOSPITAL

