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FINAL EXPANDED SITE INVESTIGATION REPORT MILITARY MUNITIONS RESPONSE PROGRAM SITE UXO-26 FORMER B-3 GAS CHAMBER MCB CAMP LEJEUNE NC
10/1/2012
CH2M HILL

Final

Expanded Site Investigation Report
Military Munitions Response Program Site UXO-26
(ASR #2.79) - Former B-3 Gas Chamber

Marine Corps Installations East-Marine Corps Base Camp Lejeune
Jacksonville, North Carolina

Contract Task Order WE41

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Executive Summary

This report documents the findings of the Expanded Site Investigation (ESI) at United States Marine Corps Military Munitions Response Program (MMRP) Site Unexploded Ordnance (UXO) -26 (Archive Search Report [ASR] #2.79) – Former B-3 Gas Chamber at Marine Corps Base Camp Lejeune (MCIEAST-MCB CAMLEJ) in Jacksonville, North Carolina. The ESI was conducted by CH2M HILL under the Naval Facilities Engineering Command Comprehensive Long-Term Environmental Action—Navy (CLEAN) Contract N62470-08-D-1000, Contract Task Order (CTO) WE41.

Site UXO-26, the Former B-3 Gas Chamber, was formerly part of Site UXO-01 and was investigated, along with Site UXO-05, during a Preliminary Inspection/Site Assessment (CH2M HILL, 2009). Based upon the PA/SI findings, Site UXO-05 received a determination of No further Action (NFA) and geophysical anomalies identified in the northern area of Site UXO-05 (ASR Area 2.7c) were attributed to Site UXO-26 and are addressed as part of the Site UXO-26 ESI (MCIEAST-MCB CAMLEJ, 2009).

Site UXO-26 consists of three areas designated as ASR #2.79a, ASR #2.79b, and ASR #2.79c. ASR #2.79a is located west of Church Street and between Sixth Street and Seventh Street, covers an area of approximately 2.5 acres, and is sparsely to heavily wooded. The ASR #2.79b area is located southwest of the traffic circle, covers an area of approximately 9.88 acres, contains a cleared recreational area, and is sparsely to heavily wooded outside of the recreational area. ASR #2.79c is located south of 7th Street and west of Church Street, covers an area of approximately 2 acres, is undeveloped, and consists primarily of jurisdictional wetlands.

Site UXO-26 and Site UXO-05 were both used for military troop training. The sites are not associated with an active impact area, range, range fan, surface danger zone (SDZ), or the disposal of military munitions. Site UXO-05 does have a World War II history of military troop maneuvering and reports of small arms ammunition use in the area. Disposal or burial of munitions is not reported or suspected. The area is undeveloped with access restricted to military personnel. The general public is precluded from entry to the area.

The purpose of the Site UXO-26 ESI was to address the Preliminary Assessment/Site Inspection (PA/SI) Report (CH2M HILL, 2009) recommendation to intrusively investigate the sources of geophysical anomalies identified as representing potential subsurface munitions and explosives of concern (MEC). The PA/SI risk screening found no unacceptable risks to human or ecological receptors from exposure to site media; therefore, other than post-detonation surface soil sampling, no additional environmental characterization was conducted during the ESI.

In addition, a separate military construction (MILCON) project in support of a planned utility construction and an equipment staging area was conducted in a portion of Site UXO-26 ASR #2.79b. This work consisted of a 100 percent geophysical survey and MEC/MPPEH clearance to a depth of 4 feet bgs.

MEC Intrusive Investigation Results

No material potentially presenting an explosive hazard (MPPEH) or ordnance-related debris was found during the intrusive investigation of areas ASR #2.79a or ASR #2.79c. However, M6A3 2.36-inch rockets, rocket motors, and pieces of rockets were found in the area designated as ASR #2.79b, including the MILCON utility corridor and staging area. These MEC and MPPEH items are not consistent with the documented historical usage of this site as a former gas chamber. Due to the presence of standing water in the southeastern portion of the ASR #2.79b and the northern portion of ASR #2.79c during the PA/SI, DGM was not performed in those areas; consequently, intrusive investigation was not performed in those areas during the ESI.

Post-Detonation Sampling Results

Post-detonation surface soil samples were collected inside and outside of the detonation crater. A Human Health Risk Screening (HHRS) and an Ecological Risk Screening (ERS) were conducted on the validated analytical results and identified no unacceptable human health and ecological risks from exposure to surface soil in the vicinity of the detonation site.

Recommendations

No unacceptable risks associated with MC have been identified; therefore, no further investigation of environmental media at Site UXO-26 is recommended. No additional MR investigation of UXO-26 areas ASR #2.79a and ASR #2.79c is recommended because no MEC, MPPEH, or other ordnance-related debris was discovered in those areas.

Since completion of the ESI activities, Base Range Control identified the area encompassing ASR #2.79b to be re-opened (**Figure 7-1**). As discussed during the September 2012 Partnering Meeting, recommendations for future actions at ASR #2.79b are presented below for two potential scenarios:

- If the area is re-opened, it will fall under the responsibility and management of Range Control. However, MEC clearance activities are recommended to minimize explosive risks.
- If the area is not re-opened, additional actions are recommended under the MMRP. Existing warning signs should be maintained and a surface sweep for MEC/MPPEH should be considered to minimize explosive risks. A Remedial Investigation is also recommended to further define the nature and extent of MEC/MPPEH. Based on the MEC/MPPEH discovered and the presumed target areas identified, the area recommended for further investigation extends approximately 500 ft south and 100 ft east of the current boundary to account for potential overshoot (Figure 7-1).

Contents

Executive Summary ..... **iii**

Acronyms and Abbreviations ..... **vii**

Introduction **1-1**
1.1 Purpose 1-1
1.2 Objectives and Approach 1-1
1.3 Report Organization 1-1

Site Background **2-1**
2.1 MCIEAST-MCB CAMLEJ Location and Description 2-1
2.2 Site Setting 2-1
2.3 Site History 2-1
2.4 Regional Climate 2-1
2.5 Regional Geology and Hydrogeology 2-2
2.6 Site Geology and Hydrogeology 2-2
2.7 PA/SI Investigation Summary 2-2
2.7.1 Summary of Environmental Field Activities and Results 2-2
2.7.2 Human Health Risk Screening Summary 2-5
2.7.3 Ecological Risk Screening Summary 2-5
2.7.4 Summary of Digital Geophysical Mapping Survey and Results 2-6

Field Investigation Activities **3-1**
3.1 Site Preparation and Support 3-1
3.1.1 MEC Avoidance 3-1
3.1.2 Surveying 3-1
3.1.3 Vegetation Clearing 3-1
3.2 MEC Intrusive Investigation Activities 3-1
3.2.1 Field Activities 3-1
3.2.2 Quality Assurance and Quality Control 3-2
3.3 MILCON Utility Corridor and Staging Area Munitions Response (MR) Clearance 3-2

Intrusive Investigation Results **4-1**
4.1 MEC Intrusive Investigation Activities 4-1
4.2 Post-Detonation Sampling and Analytical Results 4-1

Human Health Risk Screening **5-1**

Ecological Risk Screening **6-1**

Conclusions and Recommendations **7-1**
7.1 Conclusions 7-1
7.1.1 Environmental Investigation and Preliminary Risk Screening 7-1
7.1.2 MEC Intrusive Investigation 7-1
7.1.3 Post-Detonation Sampling 7-1
7.2 Recommendations 7-1

References **8-1**

Appendixes

A PA/SI Analytical Results
B Munitions Debris Disposal Documents
C MEC Intrusive Investigation Documents
D Post-Detonation Sampling Analytical Results
E Human Health Risk Screening Tables
F Ecological Risk Screening Tables

Tables

2-1 Surface Soil Criteria Exceedance Summary
2-2 Subsurface Soil Criteria Exceedance Summary
2-3 Groundwater Criteria Exceedance Summary
2-4 Surface Water Criteria Exceedance Summary
2-5 Sediment Criteria Exceedance Summary

4-1 Post-Detonation Surface Soil Detection Analytical Results

Figures

1-1 Base Location

2-1 Site Location
2-2 PA/SI Multi-Increment and Discrete Surface Soil Exceedances
2-3 PA/SI Shallow Groundwater Exceedances
2-4 PA/SI Surface Water/Sediment Exceedances
2-5 Digital Geophysical Mapping Results

3-1 Intrusive Investigation Locations Identified in the PA/SI
3-2 Intrusive Investigation Locations Identified in the MILCON Utility Corridor and Staging Area

4-1 Locations of MEC and MPPEH Found During the ESI Intrusive Investigation
4-2 Locations of MEC and MPPEH Found in the MILCON Utility Corridor and Staging Area

7-1 Potential Remedial Investigation and Range and Training Areas

Acronyms and Abbreviations

ASR	Archive Search Report
Baker	Baker Environmental, Inc.
BBG	base background
bgs	below ground surface
BTV	background threshold value
CA	chemical agent
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action—Navy
CN	chloroacetophenone
COPC	constituent of potential concern
CS	o-chlorobenzylidenemalonitrile
CTO	Contract Task Order
CWM	chemical warfare materiel
DDESB	Department of Defense Explosives Safety Board
DGM	digital geophysical mapping
DPT	direct push technology
EcoSSL	ecological soil screening level
EM61	EM61-MK2 electromagnetic system
ERS	Ecological Risk Screening
ESI	Expanded Site Investigation
ESS	Explosives Safety Submission
ESV	Ecological Screening Value
°F	degrees Fahrenheit
HHRS	human health risk screening
HQ	hazard quotient
IEUBK	Integrated Exposure Update Biokinetic
IS	incremental sampling
lb	pounds
MC	munitions constituents
MCIEAST-MCB CAMLEJ	Marine Corps Installations East-Marine Corps Base Camp Lejeune
MCLs	Maximum Contaminant Levels
MDAS	material documented as safe
MEC	munitions and explosives of concern
mg/kg	milligrams per kilogram
MILCON	military construction
MMRP	Military Munitions Response Program
MPPEH	material potentially presenting an explosive hazard
MR	munitions response
MRP	Munitions Response Program
mV	millivolts
NC 2B	North Carolina Administrative Code 02B Surface Water Standards
NCDENR	North Carolina Department of Environment and Natural Resources
NCGWQS	North Carolina Groundwater Quality Standards

NC SSL	North Carolina Soil Screening Level
NFA	No Further Action
NRWQC	National Recommended Water Quality Criteria
PA/SI	Preliminary Assessment/Site Inspection
PETN	pentaerythritol tetranitrate
QC	quality control
RSL	Regional Screening Level
SDZ	surface danger zone
SOP	Standard Operating Procedure
SVOCs	semivolatile organic compounds
TAL	target analyte list
ug/kg	micrograms per kilogram
USACE	United States Army Corps of Engineers
USAE	USA Environmental, Inc.
USEPA	United States Environmental Protection Agency
UTL	upper tolerance limit
UXO	unexploded ordnance
UXOQCS	UXO Quality Control Specialist

SECTION 1

Introduction

This report documents the findings of the Expanded Site Investigation (ESI) conducted at United States Marine Corps Military Munitions Response Program (MMRP) Site Unexploded Ordnance (UXO)-26 – Former Gas Chamber (Archive Search Reports [ASR] Area #2.79) at Marine Corps Installations East-Marine Corps Base Camp Lejeune (MCIEAST-MCB CAMLEJ, the Base) in Jacksonville, North Carolina, (**Figure 1-1**). The ESI was conducted in January and February 2012 by CH2M HILL under the Naval Facilities Engineering Command Comprehensive Long-Term Environmental Action—Navy (CLEAN) Contract N62470-08-D-1000, Contract Task Order (CTO) WE41.

1.1 Purpose

The purpose of this ESI is to address the recommendations of the Site UXO-05 (ASR #2.7) and Site UXO-01 (ASR #2.79) Preliminary Assessment/Site Inspection (PA/SI) Report (CH2M HILL, 2009). The PA/SI was conducted in 2008 and 2009 following the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) investigation process. The PA/SI recommended intrusive investigation of the sources of geophysical anomalies identified during the digital geophysical mapping (DGM) survey of UXO-26 (formerly named UXO-01 ASR #2.79) and re-evaluation of the need for additional munitions constituents (MC) sampling after the intrusive investigation.

1.2 Objectives and Approach

The objective of this ESI is to assess, through intrusive investigation, the nature of 353 geophysical anomalies identified during the PA/SI as representing potential subsurface munitions and explosives of concern (MEC) at UXO-26. The ESI was conducted in accordance with the ESI Work Plan (CH2M HILL, 2011a), Explosives Safety Submission (ESS)-123 (CH2M HILL, 2011b), and the Munitions Response Program (MRP) Master Project Plan (CH2M HILL, 2008).

1.3 Report Organization

This ESI report is organized as follows:

- Section 1- Introduction – provides the project objectives of the ESI and tasks performed
- Section 2 - Site Background – provides a summary of the site description, history, and physical setting
- Section 3 - Field Investigation Activities – provides a summary of the field activities conducted to evaluate potential MEC
- Section 4 - Intrusive Investigation Results – provides a summary of the field investigation results
- Section 5 - Conclusions and Recommendations - presents the project conclusions and recommendations
- Section 6 - References - presents the documents cited in the report

Figures and tables are provided at the end of their respective sections. Historical data and field documentation of the intrusive investigation are contained in the appendices.

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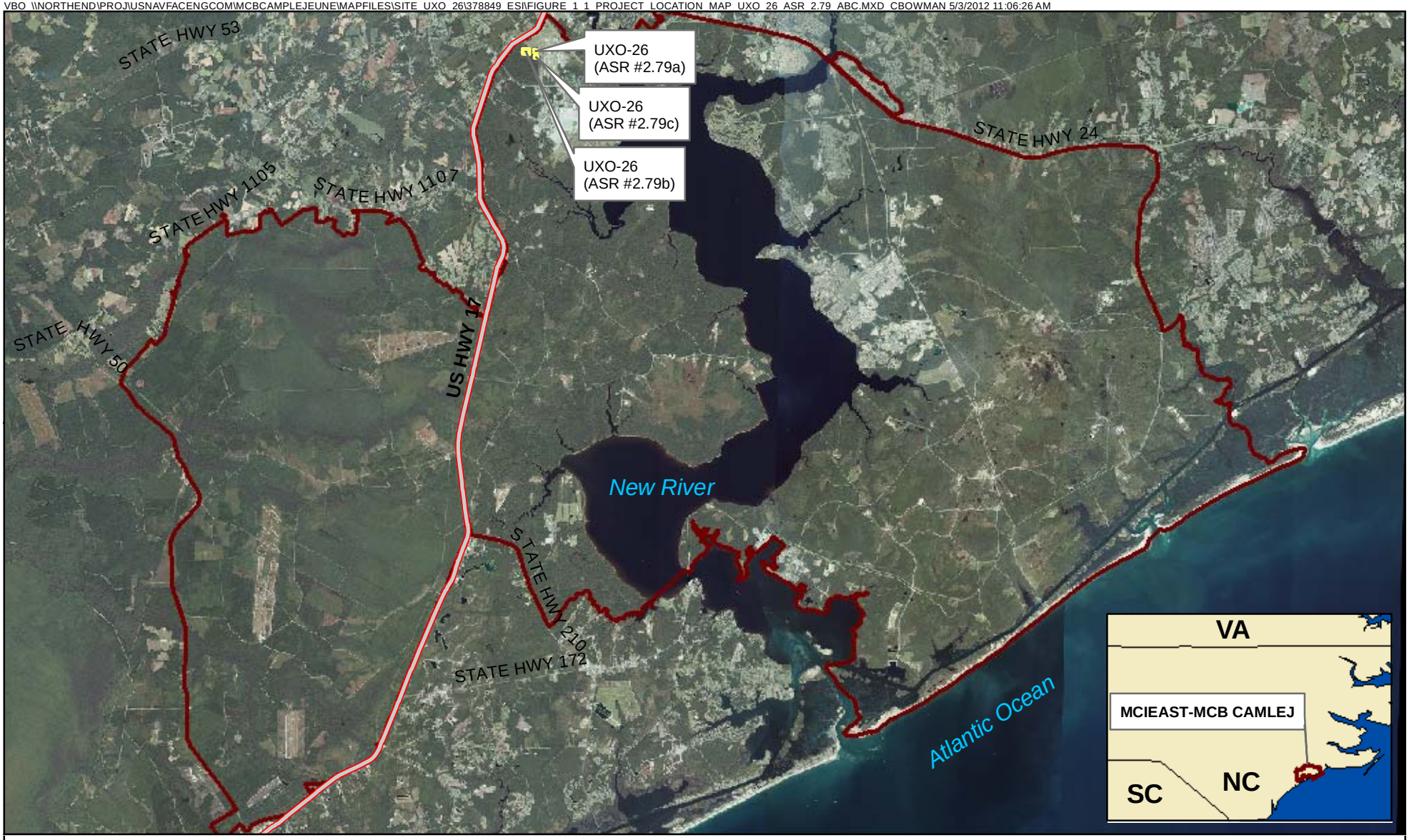


Legend

- Highways
- Munitions Response Site Boundaries
- Installation Boundary

N

0 7,500 15,000 30,000 Feet

1 inch = 15,000 feet

Figure 1-1
Base Location
Site UXO-26 (ASR#2.79 a, b, and c) ESI Report
MCIEAST-MCB CAMLEJ
North Carolina

CH2MHILL

SECTION 2

Site Background

This section summarizes regional and site-specific information, including location, site setting, physical characteristics, and history.

2.1 MCIEAST-MCB CAMLEJ Location and Description

MCIEAST-MCB CAMLEJ covers approximately 236 square miles in Onslow County, North Carolina, and is bisected by the New River, which flows in a southeasterly direction toward the Atlantic Ocean (**Figure 2-1**). Construction of The Base began in 1941 with the objective of developing the world's most complete amphibious training base. The mission of MCIEAST-MCB CAMLEJ is to maintain combat-ready units for expeditionary deployment. The Base provides housing, training facilities, logistical support, and administrative supplies for Fleet Marine Force units and other assigned units. MCIEAST-MCB CAMLEJ and the surrounding community are home to an active-duty, dependent, retiree, and civilian population of approximately 180,000 people. Land use surrounding the Base is varied, with mainly commercial properties along the northern boundary and a mix of agricultural lands and residential areas along the eastern and western boundaries. The southern boundary of MCIEAST-MCB CAMLEJ extends to the New River and Atlantic Ocean.

2.2 Site Setting

Site UXO-26, the Former B-3 Gas Chamber, was formerly part of Site UXO-01 and was investigated, along with Site UXO-05, during a PA/SI (CH2M HILL, 2009). Based upon the PA/SI findings, Site UXO-05 received a determination of No further Action (NFA) and geophysical anomalies identified in the northern area of Site UXO-05 (ASR Area 2.7c) were attributed to Site UXO-26 and were to be addressed as part of Site UXO-26 (MCIEAST-MCB CAMLEJ, 2009).

Site UXO-26, the Former B-3 Gas Chamber, consists of three areas defined as ASR #2.79a, ASR #2.79b, and ASR #2.79c (**Figure 2-1**). ASR #2.79a is located west of Church Street and between Sixth Street and Seventh Street, covers an area of approximately 2.5 acres, and is sparsely to heavily forested. ASR #2.79b encompasses approximately 9.88 sparsely to heavily forested acres located southwest of the traffic circle and contains a cleared recreational area. Area 2.79c is located south of 7th Street and west of Church Street, covers an undeveloped area of approximately 2 acres, and consists primarily of jurisdictional wetlands. Site UXO-26 and Site UXO-05 were identified as MMRP sites based on historical information contained in the *Final Range Identification and Preliminary Range Assessment* (United States Army Corps of Engineers [USACE], 2001). This information was used as a basis for determining the locations and boundaries of Site UXO-26 (ASR #2.79a, b, and c) and Site UXO-05 (ASR #2.7).

2.3 Site History

The Former B-3 Gas Chamber was operated between 1953 and 1958 (USACE, 2001), and involved the use of chemical warfare training agents, such as tear gas. There is no evidence that chemical warfare materiel (CWM) was used during training activities; however, the area surrounding the gas chambers was often used for other chemical training. Therefore, chemical agent (CA) identification sets and riot-control hand grenades may have been used at Site UXO-26 (USACE, 2001). Materials potentially present in the surface soils may include tear gas canisters and o-chlorobenzylidenemalonitrile (CS), chloroacetophenone (CN), and degradation products.

Site UXO-26 was used for military troop training and the site does not overlap with an active impact area, range, range fan, or surface danger zone (SDZ). Disposal or burial of munitions is not reported or suspected.

2.4 Regional Climate

The climate in the Onslow County area is characterized by short, mild winters and long, hot, and humid summers. Average annual net precipitation is approximately 50 inches. Ambient air temperatures generally range from 33 to

53 degrees Fahrenheit (°F) in the winter months and from 71 to 98°F during the summer months. Winds are generally south-southwesterly in the summer and north-northwesterly in the winter (Water and Air Research, 1983). The hurricane season begins on June 1 and continues through November 30. Storms of non-tropical origin, such as frontal passages, local thunderstorms, and tornadoes, are more frequent and can occur at any time during the year.

2.5 Regional Geology and Hydrogeology

Regional geology at MCIEAST-MCB CAMLEJ is discussed in the MRP Master Project Plans (CH2M HILL, 2008).

2.6 Site Geology and Hydrogeology

Site-specific information was obtained from soil cores collected from depths of up to 8 feet bgs during the PA/SI for Site UXO-26. Soil boring logs indicated that the soils range from clay and silt to medium coarse sand in laterally discontinuous layers (CH2M HILL, 2009). These shallow soils are consistent with those described in Cardinell et al. (1993) as the undifferentiated formation.

The potentiometric surface of the surficial aquifer occurs in the undifferentiated formation at this site, at a depth of approximately 5 feet bgs. Site-specific hydrogeologic information derived during the PA/SI was collected from the four temporary monitoring wells that were screened in the surficial aquifer. Based upon the PA/SI August 2008 potentiometric surface map of the water table, shallow groundwater flowed south, south-east toward Brinson Creek and the New River with a horizontal hydraulic gradient of 0.0033 foot per foot (CH2M HILL, 2009).

2.7 PA/SI Investigation Summary

The PA/SI was conducted at Site to evaluate potential contamination of environmental media and to evaluate the potential presence and nature of impacts from subsurface MEC that may have resulted from activities associated with the former gas chamber.

This section presents the investigative activities conducted at Site UXO-26 and the findings of the PA/SI investigation. The technical approach employed to meet the site objectives included:

- Evaluation of the potential presence and nature of impacts on environmental media resulting from historical munitions use at the site
- Evaluation of whether additional investigation and/or remediation activities are necessary
- Identification of geophysical anomalies that may represent subsurface MEC

2.7.1 Summary of Environmental Field Activities and Results

Five soil borings were drilled and four temporary monitoring wells were installed to characterize the shallow lithology and hydrogeology at Site UXO-26. The soil borings were advanced to depths of up to 8 feet below ground surface (bgs), and continuous soil cores retrieved from these borings were examined and the lithology described by the CH2M HILL geologist. The four temporary groundwater monitoring wells were installed to a depth 12 feet bgs, and static water levels were gauged to support the interpretation of the surficial aquifer flow direction and the hydraulic gradient. The site geology and hydrogeology are presented in Section 2.8.

Composite sampling using the incremental sampling (IS) approach and discrete sampling were used to collect representative surface soil samples (0-2 inches bgs) at UXO-26. The IS procedure is described in the Standard Operating Procedure (SOP) entitled "Systematic Random Multi-Increment Sampling" in Appendix C of the *Munitions Response Program (MRP) Master Project Plans* (CH2M HILL, 2008).

The environmental media sampling included:

- Ten discrete surface soil samples collected from areas 2.79a (two samples), 2.79b (six samples), and 2.79c (two samples)

- Nine IS composite soil samples in total, three from each of two decision units in area 2.79a and three IS composite samples from one decision unit in area 2.79b
- One unsaturated subsurface soil sample (from just above the estimated water table) collected from each of five soil cores, retrieved using a direct push technology (DPT) rig
- Four groundwater samples from temporary groundwater monitoring wells
- Two co-located surface water and sediment samples

Soil, groundwater, surface water, and sediment samples were submitted to an analytical laboratory for the following analysis:

- Explosives residues (SW-846 United States Environmental Protection Agency [USEPA] Method 8330)
- Perchlorate (USEPA Method 6850)
- Total metals (ILM05), and additional dissolved metals for groundwater samples
- Semivolatile organic compounds (SVOCs) including tear gas constituents (CN, CS, and degradation products) (SW-846 USEPA Method 8270C)

Soil and groundwater analytical data for detected analytes are provided in **Appendix A**.

The following subsections present and summarize the laboratory data from analyses of soil, groundwater, surface water, and sediment samples collected at Site UXO-26. Laboratory analytical data can be found in **Appendix A**.

Soil

Surface and subsurface soil samples were screened against the North Carolina Soil Screening Levels (NC SSLs) (North Carolina Department of Environment and Natural Resources [NCDENR], 2008), the adjusted USEPA Regional Screening Levels (RSLs) for Chemical Contaminant Tables (USEPA, 2009), and MCIEAST-MCB CAMLEJ background surface and subsurface soil concentrations (twice the mean base background [BBG] soil concentrations), which were available for inorganic analytes only (Baker Environmental, Inc. [Baker], 2001).

The RSLs for non-carcinogenic compounds were adjusted by dividing by 10 to conservatively account for exposure to multiple analytes. The methodology for calculating NC SSLs for contaminant migration from soil to groundwater was developed to identify chemical concentrations in soil that have the potential to impact groundwater. The NC SSLs are taken from the Federal Remediation Branch Target Screening Values.

Figure 2-2 illustrates the locations of IS and discrete surface soil samples that exceeded twice the mean base background concentration and at least one of the screening levels (the NC SSLs or the adjusted RSLs). In subsurface soil, the concentrations of some analytes exceeded the adjusted RSLs or NC SSL, but none of them were also greater than twice the mean BBG; therefore, no figure is provided for subsurface soils. The concentrations of detected target analytes in surface soil and subsurface soil exceeding at least one screening criterion are summarized in **Tables 2-1** and **2-2**, respectively**.** Individual soil sample concentrations of detected constituents are compared to the screening criteria in **Appendix A**.

General findings from surface and subsurface soil analytical results are as follows:

- One tear gas constituent (2-chlorobenzalmalononitrile) and three other SVOCs (bis[2-ethylhexyl]phthalate, benzaldehyde, and diethylphthalate) were detected in discrete surface soil samples. Screening values were not available for 2-chlorobenzalmalononitrile.
- Arsenic, manganese, and mercury concentrations in discrete surface soil samples and arsenic concentrations in IS composite surface soil samples exceeded twice the mean BBG and at least one of the other screening criteria. Barium, beryllium, copper, lead, magnesium, nickel, selenium, and zinc concentrations in discrete surface soil samples exceeded twice the mean BBG but no other screening criteria. Barium, lead, nickel, selenium, and zinc concentrations in IS composite surface soil samples exceeded twice the mean BBG but no

other screening criteria. Iron concentrations in discrete and IS composite surface soil samples were greater than the NC SSL but less than twice the mean BBG.

- Aluminum and arsenic concentrations in some subsurface soil samples exceeded the Adjusted Residential RSL, but the concentrations were less than twice the mean BBG. Iron concentrations in all subsurface soil samples exceeded the NC SSL but the concentrations were less than twice the mean BBG. The concentrations of barium, beryllium, calcium, lead, manganese, and selenium in subsurface soil samples were greater than twice the mean BBG but were less than the Adjusted Residential and Industrial RSLs and the NC SSL.

Groundwater

This section presents the results for laboratory analysis of groundwater samples collected from four shallow temporary monitoring wells and the permanent groundwater monitoring well installed adjacent to temporary well MR05-TW03. Groundwater results were compared to the North Carolina Groundwater Quality Standards (NCGWQS) (NCDENR, 2006), the Federal Drinking Water Standards Maximum Contaminant Levels (MCLs) (USEPA, 2004), the USEPA Tap Water RSLs (USEPA, 2009), and MCIEAST-MCB CAMLEJ background groundwater concentrations (twice the mean BBG concentration), which were available for inorganic analytes only (Baker, 2002). The NCGWQS are the maximum allowable concentrations resulting from any discharge of contaminants to the land or waters of the state, which may be tolerated without creating a threat to human health or otherwise render the groundwater unsuitable for its intended purpose. The RSLs for non-carcinogenic compounds were adjusted by dividing by 10 to conservatively account for exposure to multiple analytes. **Table 2-3** summarizes the groundwater results for detected analytes with concentrations greater than screening criteria or standards. Analytes with concentrations exceeding the Adjusted USEPA Tapwater RSLs, the NCGWQS, or the MCL and twice the mean BBG are shown on **Figure 2-3**. Individual results for detected compounds are presented in **Appendix A**.

General findings based upon the groundwater sample results are as follows:

- Antimony, arsenic, iron, and manganese concentrations in unfiltered groundwater samples were greater than one or more of the regulatory screening levels or standards and also twice the mean BBG. In filtered groundwater samples, only antimony and arsenic exceeded these criteria.
- Aluminum, calcium, chromium, lead, mercury, nickel, silver, vanadium, and zinc concentrations were greater than twice the mean BBG but were less than the previously described regulatory screening levels and standards.
- The maximum concentrations of aluminum, arsenic, iron, and manganese were measured in the unfiltered groundwater sample from temporary well MR05-TW03. The concentrations of these analytes in groundwater samples collected from the adjacent permanent monitoring well were approximately an order of magnitude lower.

Surface Water and Sediment

Surface water samples were screened against the North Carolina Administrative Code 02B Surface Water Standards (NC 2B) for human health and water supply (NCDENR, 2007), the USEPA Tap Water RSLs (USEPA, 2009), and the National Recommended Water Quality Criteria (NRWQC) for Human Health (organisms and water + organisms criteria) (USEPA, 2006). A summary of the analytical results is also provided below.

The sediment sampling results were compared to the May 2009 USEPA RSL Table (USEPA, 2009). The RSLs for noncarcinogenic compounds were adjusted by dividing by 10 to conservatively account for exposure to multiple analytes.

The exceedances of screening criteria and/or background for surface water and sediment are shown on **Tables 2-4** and **2-5,** respectively, and in **Figure 2-4**.

Surface Water

- Bis[2-ethylhexyl]phthalate concentrations exceeded the NRWQC concentration in two samples but did not exceed the NC 2B standard or Adjusted USEPA Tap Water RSLs.

- The concentration of 2,4-dinitrotoluene exceeded the USEPA NRWQC concentration and the Adjusted USEPA Tap Water RSL in one sample. The two sample locations at which 2,4-dinitrotoluene was detected were re-sampled in March 2009 and 2,4-dinitrotoluene was not detected.
- Iron, antimony, and manganese concentrations exceeded the NRWQC and the Adjusted USEPA Tap Water RSL concentrations in one or more surface water samples.

Sediment

- Arsenic and cobalt concentrations exceeded the USEPA Adjusted Residential Soil RSL but were less than the USEPA Adjusted Industrial Soil RSL.

2.7.2 Human Health Risk Screening Summary

A human health risk evaluation for Site UXO-05 and the Former B-3 Gas Chamber (UXO-26) was performed in two phases. No constituents of potential concern (COPCs) for soil or sediment were identified from the Phase I evaluation; therefore, exposure to soil or sediment would not be expected to result in any unacceptable human health risk and no further evaluation of soil or sediment for human health risk is necessary. The Phase I screening evaluation indicated the potential for risks associated with exposure to surface water and groundwater; therefore, these media were evaluated in Phase II.

The Phase II evaluation demonstrated that exposure to surface water by recreationalists would not result in any risks above USEPA target levels; therefore, no further evaluation of surface water for human health risk is necessary.

Potential future contact with shallow groundwater by construction workers would not result in risks and hazards above USEPA's acceptable risk range and hazard level.

Potential future contact with cobalt, antimony, arsenic, and iron in groundwater by future adult and child residents (noncarcinogenic hazard) and lifetime residents could result in hazards and/or risks above USEPA's target hazard index and risk range. While cobalt and antimony did contribute to the reasonable maximum exposure hazards and risks at MR05-TW04, all the central tendency exposure risks and hazards were associated with arsenic and/or iron. However, none of the arsenic concentrations in groundwater samples collected from UXO-26 exceeded the NCGWQS. In addition, iron is an essential human nutrient. It is unlikely that the detected concentrations of iron or arsenic in the groundwater would result in any adverse effects on human receptors.

Based on the 2008 sampling results from temporary monitoring well MR05-TW03, a permanent monitoring well was installed in 2009 and sampled for confirmation of the metals identified as risk drivers. The data from the permanent monitoring well indicated that all of the metals are less than twice the mean BBG, and that elevated metals previously detected in the temporary monitoring well were likely due to sediment in the well.

Furthermore, the shallow groundwater included in the assessment is not suitable for potable water supply use and the surficial aquifer in the MCIEAST-MCB CAMLEJ area is not used as a water supply source. Therefore, risk assessment scenarios evaluating potable use of groundwater are hypothetical and are not expected to exist in the future. It is not likely that the surficial aquifer will ever be used as a potable water supply. The risk assessment is very conservative, and the detected concentrations of iron and arsenic in the temporary monitoring well groundwater are unlikely to result in any adverse effects on human receptors. Based on this information, no further evaluation of groundwater for human health risks is necessary.

2.7.3 Ecological Risk Screening Summary

The average lead concentration in surface soil exceeded the Ecological SSL, but was lower than the USEPA Region 4 screening value. As a result, lead is not expected to pose an ecological risk. The average concentration of vanadium in subsurface soil, which is not likely to be accessed by ecological receptors, was only slightly above the screening value. The concentrations of aluminum, iron, and selenium were each relatively consistent across the site, suggesting concentrations are naturally occurring. The detected concentrations of selenium were near the screening value (non-detects biased the average high). Considering the local geology (clays and silty sands), elevated aluminum and iron concentrations were not unexpected at this site. The average concentrations of

aluminum and iron in discrete surface soil and IS surface soil samples were similar to twice the mean BBG concentration.

In groundwater, both the maximum and average concentrations of aluminum, beryllium, iron, lead, and silver were in excess of available screening values, and the maximum concentration of each analyte also exceeded twice the mean BBG concentration. In filtered samples, silver was not detected and the maximum concentrations of lead and beryllium were less than screening values. As discussed above, aluminum and iron are likely naturally occurring in the groundwater.

Bis(2-ethylhexyl)phthalate was the only surface water analyte detected at a concentration in excess of the available screening value, and the average concentration also exceeded the associated screening value. Bis(2-ethylhexyl)phthalate is a common laboratory contaminant and there was no indication of a threat of exposure in any other sample media. Therefore, no significant risks are anticipated for ecological receptors exposed to bis(2-ethylhexyl)phthalate in surface water.

There are no significant risks anticipated for ecological receptor populations exposed to site sediment.

The ecological risk screening concluded that no risks to populations of ecological receptors are expected at the site.

2.7.4 Summary of Digital Geophysical Mapping Survey and Results

A total of 3,872 linear meters of DGM data was collected in February 2008 along 3-foot-wide transects distributed across the site and covering approximately 12 percent of UXO-26. The southeastern portion of 2.79b, and the northern portion of 2.79c were not accessible due to the presence of standing water and DGM was not performed in those areas. A total of 353 anomalies with a signal greater than 2.5 millivolts (mV) was observed from the DGM data, with no apparent pattern to the distribution of the anomalies**.** The areas of the site covered by the DGM and the anomalies observed with a signal greater than 2.5 mV are shown in **Figure 2-5.**

TABLE 2-1

PA/SI Surface Soil Criteria Exceedance Summary

Analyte	Discrete Surface Soil Maximum Concentration	IS Composite Surface Soil Maximum Concentration	Adjusted Industrial Soil RSLs	Adjusted Residential Soil RSLs	NC SSL (June 2008)	CamLej 2X Mean BBG
Semivolatile Organic Compounds (µg/kg)						
2-Chlorobenzalmalononitrile	250 J	NA	--	--	--	--
Benzaldehyde	61 J	NA	1,900,000	780,000	--	--
Diethylphthalate	970	NA	49,000,000	4,900,000	28,200	--
bis(2-Ethylhexyl)phthalate	120 J	NA	120,000	35,000	6,670	--
Metals (mg/kg)						
Arsenic	1.5	1.1	1.6	0.39	30	0.626
Barium	28.9	19.2	19,000	1,500	848	14.5
Beryllium	0.19 J	0.061 J	200	16	3.38	0.103
Copper	72.8	6.7	4,100	310	704	4.83
Iron	3,220	1290	72,000	5,500	151	3,245
Lead	325	27.5	800	400	270	12.3
Magnesium	410 J	458 U	--	--	--	238
Manganese	80.6	10.8	2,300	180	65.2	13.7
Mercury	0.1	0.063	31	2.3	0.015	0.081
Nickel	2.2 J	1.4 J	2,000	150	56	1
Selenium	0.95 J	0.72 J	510	39	12	0.563
Zinc	33.3	41.6	31,000	2,300	500	10.8

Notes:

MCB CamLej – Marine Corps Base Camp Lejeune

mg/kg - milligrams per kilogram

NC SSL – North Carolina Soil Screening Level, June 2008

RSL – United States Environmental Protection Agency Regional Screening Level, May 2009

NA - Not Analyzed

J - Analyte present, value may or may not be accurate or precise

U - The constituent was analyed for, but not detected

TABLE 2-2

PA/SI Subsurface Soil Criteria Exceedance

Analyte (mg/kg)	Subsurface Soil Maximum Concentration	Adjusted Industrial Soil RSLs	Adjusted Residential Soil RSLs	NC SSL (June 2008)	CamLej 2X Mean BBG
Aluminum	10,300	99,000	7,700	--	10,369
Arsenic	1.5	1.6	0.39	30	2.12
Barium	30.2	19,000	1,500	848	16.6
Beryllium	0.44	200	16	3.38	0.165
Calcium	2,000 J	--	--	--	441
Iron	4,830 J	72,000	5,500	151	5,439
Lead	9.2	800	400	270	8.49
Manganese	10.8	2,300	180	65.2	9.25
Selenium	0.67 J	510	39	12.2	0.505

Notes:

MCB CamLej – Marine Corps Base Camp Lejeune

mg/kg - milligrams per kilogram

NC SSL – North Carolina Soil Screening Level, June 2008

RSL – United States Environmental Protection Agency Regional Screening Level, May 2009

NA - Not Analyzed

J - Analyte present, value may or may not be accurate or precise

U - The constituent was analyed for, but not detected

TABLE 2-3

PA/SI Groundwater Criteria Exceedence Summary

Analyte	Groundwater Maximum Concentration	Adjusted Tap Water RSLs	NCGWQS (December 2006)	Groundwater MCLs	CamLej 2X Mean BBG
Total Metals (µg/L)					
Aluminum	2,890	3,700	--	--	1,886
Antimony	8.3J	1.5	--	6	3.28
Arsenic	22.6	0.045	50	10	5.77
Calcium	136,000	--	--	--	69,078
Chromium	6.7 J	11	50	100	3.13
Cobalt	2.5 J	1.1	--	--	3.4
Iron	6,090	2,600	300	--	5,999
Lead	3.9 J	--	15	15	2.8
Manganese	259	88	50	--	214
Mercury	0.26 J	1.1	1.05	2	0.1
Nickel	26.5 J	73	100	--	7.97
Silver	1.3 J	18	17.5	--	0.77
Vanadium	5.2 J	18	--	--	4.72
Zinc	77.6	1,100	1050	--	42.1
Dissolved Metals (µg/L)					
Antimony	4.2 J	1.5	--	6	3.28
Arsenic	24.5	0.045	50	10	5.77
Calcium	136,000	--	--	--	69,078
Cobalt	1.9 J	1.1	--	--	3.4
Iron	5,170	2,600	300	--	5,999
Manganese	139	88	50	--	214
Mercury	0.51	1.1	1.05	2	0.1
Nickel	19.7 J	73	100	--	7.97

Notes:

MCB CamLej – Marine Corps Base Camp Lejeune

µg/L - micrograms per liter

1 - NRWQC-Human Health - Water+ Organisms and AWQC-Human Health Organisms were combined to show the most conservative criteria

2 - NC2B-SW-Human Health and NC2B-SW-Water Supply were combined to show the most conservative criteria

RSL - United States Environmental Protection Agency Regional Screening Level, May 2009

J - Analyte present, value may or may not be accurate or precise

TABLE 2-4

PA/SI Surface Water Criteria Exceedence Summary

Analyte	Surface Water Maximum Concentration	Adjusted Tap Water RSLs	NRWQC-Human Health - Water+ Organisms & Organisms[1]	NC2B-SW-Human Health & Water Supply[2]
Semivolatile Organic Compounds (µg/L)				
bis(2-Ethylhexyl)phthalate	2 J	4.8	1.2	--
Explosives (µg/L)				
2,4-Dinitrotoluene	11	7.3	0.11	--
Total Metals (µg/L)				
Antimony	7.5 J	1.5	5.6	--
Iron	21,200	2,600	300	--
Manganese	227	88	50	200
Dissolved Metals (µg/L)				
Iron	364	2600	300	--
Manganese	66	88	50	200

Notes:

MCB CamLej – Marine Corps Base Camp Lejeune

µg/L - micrograms per liter

[1] - NRWQC-Human Health - Water+ Organisms and AWQC-Human Health Organisms were combined to show the most conservative criteria

[2] - NC2B-SW-Human Health and NC2B-SW-Water Supply were combined to show the most conservative criteria

RSL - United States Environmental Protection Agency Regional Screening Level, May 2009

J - Analyte present, value may or may not be accurate or precise

TABLE 2-5

PA/SI Sediment Criteria Exceedance Summary

Analyte (mg/kg)	Sediment Maximum Concentration	Adjusted Industrial Soil RSLs	Adjusted Residential Soil RSLs
Arsenic	0.6 J	1.6	0.39
Cobalt	3.1 J	30	2.3

Notes:

MCB CamLej – Marine Corps Base Camp Lejeune

mg/kg - milligrams per kilogram

NC SSL – North Carolina Soil Screening Level, June 2008

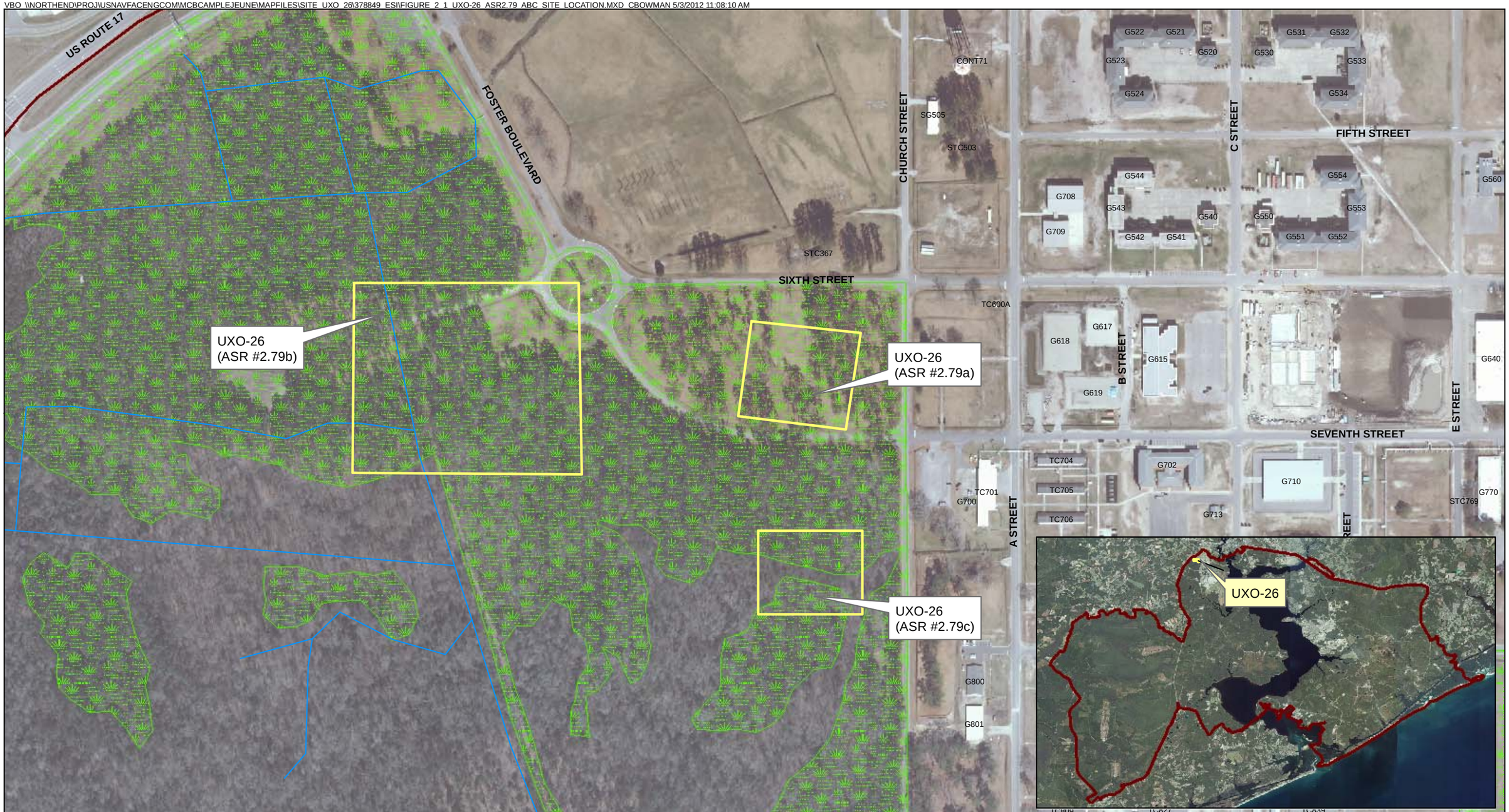
RSL – United States Environmental Protection Agency Regional Screening Level, May 2009

NA - Not Analyzed

J - Analyte present, value may or may not be accurate or precise

U - The constituent was analyed for, but not detected

VBO \\NORTHEND\PROJ\USNAVFACENGCOM\MCBCAMPLEJEUNE\MAPFILES\SITE_UXO_26\378849_ESI\FIGURE_2_1_UXO-26_ASR2.79_ABC_SITE_LOCATION.MXD CBOWMAN 5/3/2012 11:08:10 AM



Legend

- Surface Water
- Site UXO-26- Former Gas Chamber (ASR #2.79a, b, and c) boundary
- Jurisdictional Wetland Area
- Installation Boundary

N

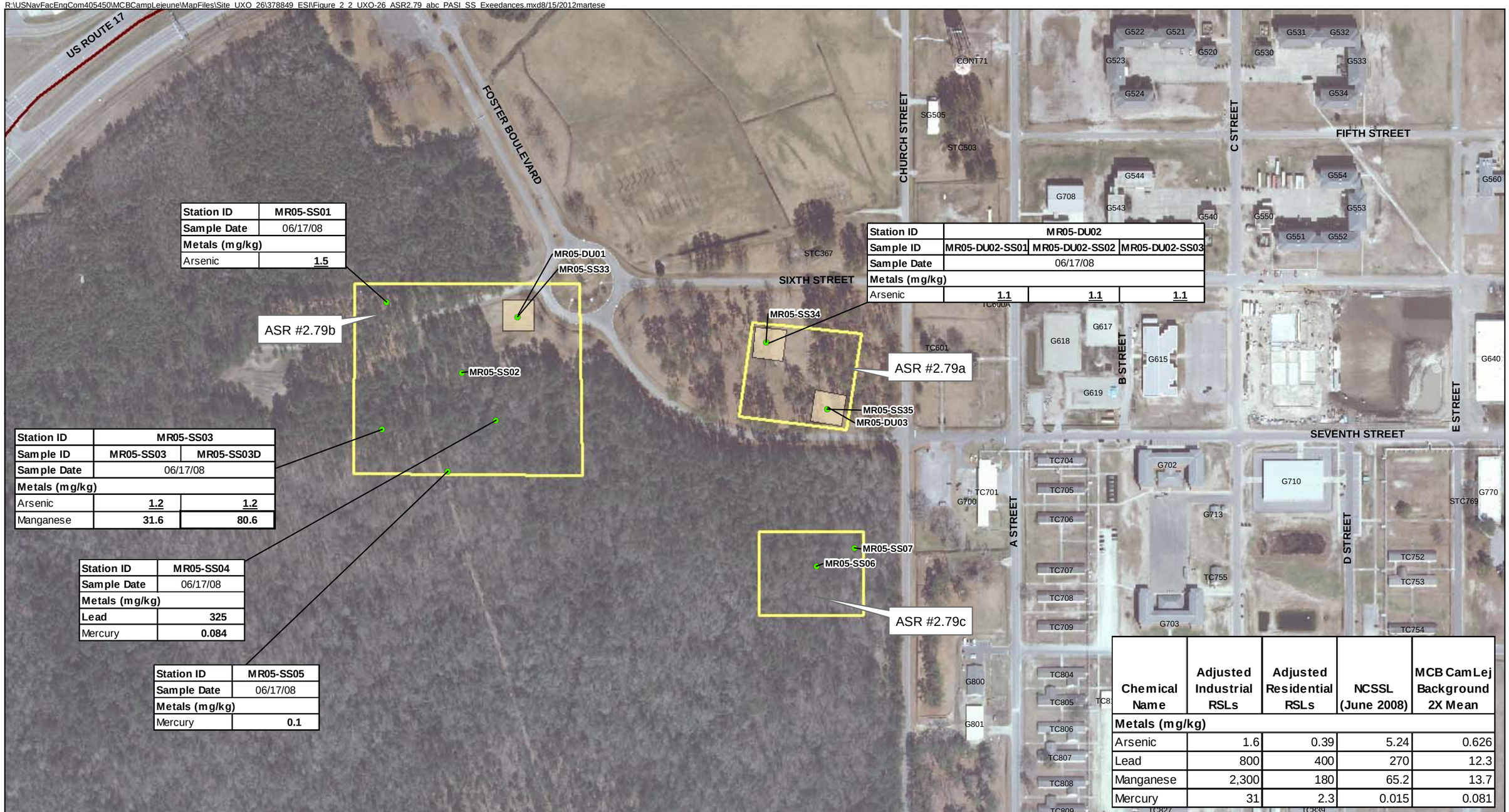
0 150 300 600 Feet

1 inch = 300 feet

Figure 2-1
Site Location
Site UXO-26 (ASR# 2.79 a, b, and c) ESI Report
MCIEAST-MCB CAMLEJ
North Carolina

CH2MHILL

R:\USNavFacEngCom405450\MCBCampLejeune\MapFiles\Site_UXO_26\378849_ESI\Figure_2_2_UXO-26_ASR2.79_abc_PASI_SS_Exeedances.mxd8/15/2012martese



Station ID	MR05-SS01
Sample Date	06/17/08
Metals (mg/kg)	
Arsenic	1.5

Station ID	MR05-DU02		
Sample ID	MR05-DU02-SS01	MR05-DU02-SS02	MR05-DU02-SS03
Sample Date	06/17/08		
Metals (mg/kg)			
Arsenic	1.1	1.1	1.1

Station ID	MR05-SS03	
Sample ID	MR05-SS03	MR05-SS03D
Sample Date	06/17/08	
Metals (mg/kg)		
Arsenic	1.2	1.2
Manganese	31.6	80.6

Station ID	MR05-SS04
Sample Date	06/17/08
Metals (mg/kg)	
Lead	325
Mercury	0.084

Station ID	MR05-SS05
Sample Date	06/17/08
Metals (mg/kg)	
Mercury	0.1

Chemical Name	Adjusted Industrial RSLs	Adjusted Residential RSLs	NCSSL (June 2008)	MCB CamLej Background 2X Mean
Metals (mg/kg)				
Arsenic	1.6	0.39	5.24	0.626
Lead	800	400	270	12.3
Manganese	2,300	180	65.2	13.7
Mercury	31	2.3	0.015	0.081

Legend
- Surface Soil Sample Locations
- 30m x 30m Decision Units
- Site UXO-26- Former Gas Chamber (ASR #2.79a, b, and c) boundary
- Installation Boundary

Notes:
Data displayed for metals exceeds two times the mean base background concentration and an additional screening criteria
"D" indicator in sample ID indicates field duplicate sample
Shading indicates exceedance of Adjusted Industrial Soil RSL
Underline indicates exceedance of Adjusted Residential Soil RSL
Bold box indicates exceedance of NCSSL

N

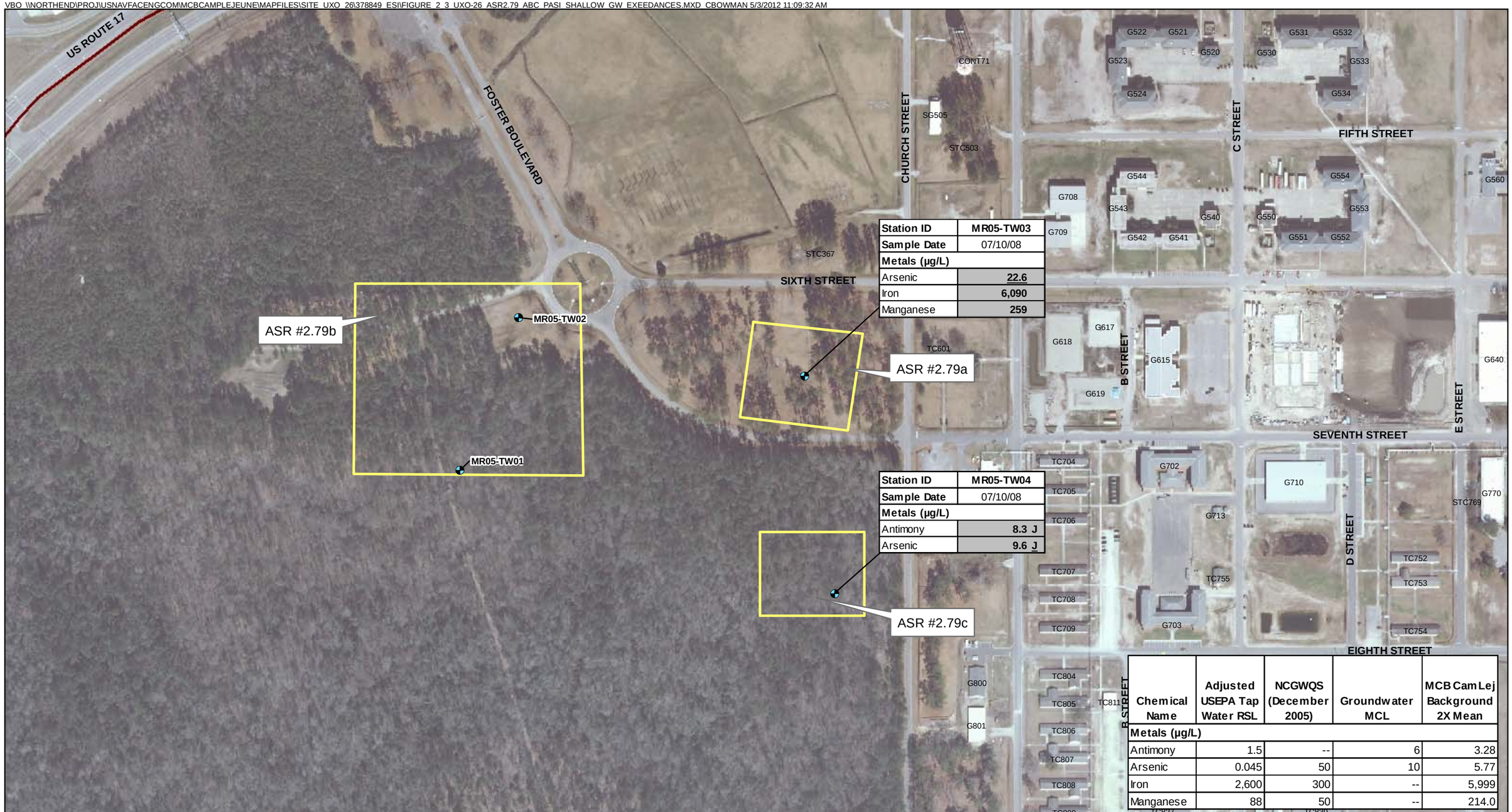
0 150 300 600 Feet

1 inch = 300 feet

Figure 2-2
PA/SI Multi-Increment and Discrete Surface Soil Exceedances
Site UXO-26 (ASR# 2.79 a, b, and c) ESI Report
MCIEAST-MCB CAMLEJ
North Carolina

CH2MHILL

VBO \\NORTHEND\PROJ\USNAVFACENGCOM\MCBCAMPLEJEUNE\MAPFILES\SITE_UXO_26\378849_ESI\FIGURE_2_3_UXO-26_ASR2.79_ABC_PASI_SHALLOW_GW_EXEEDANCES.MXD CBOWMAN 5/3/2012 11:09:32 AM



Station ID	MR05-TW03
Sample Date	07/10/08
Metals (µg/L)	
Arsenic	**22.6**
Iron	**6,090**
Manganese	**259**

Station ID	MR05-TW04
Sample Date	07/10/08
Metals (µg/L)	
Antimony	**8.3 J**
Arsenic	**9.6 J**

Chemical Name	Adjusted USEPA Tap Water RSL	NCGWQS (December 2005)	Groundwater MCL	MCB Cam Lej Background 2X Mean
Metals (µg/L)				
Antimony	1.5	--	6	3.28
Arsenic	0.045	50	10	5.77
Iron	2,600	300	--	5,999
Manganese	88	50	--	214.0

Legend

- Groundwater Sample Locations
- Site UXO-26- Former Gas Chamber (ASR #2.79a, b, and c) boundary
- Installation Boundary

Notes:

Data displayed for metals exceeds twice the mean base background concentration and an additional screening criteria
Dissolved metal exceedances are not shown
J - analyte present, value may or may not be accurate or precise
Shading indicates exceedance of Adjusted Tap Water RSL
Bold box indicates exceedance of NCGWQS
Bold text indicates exceedance of two times the mean base background concentration

N

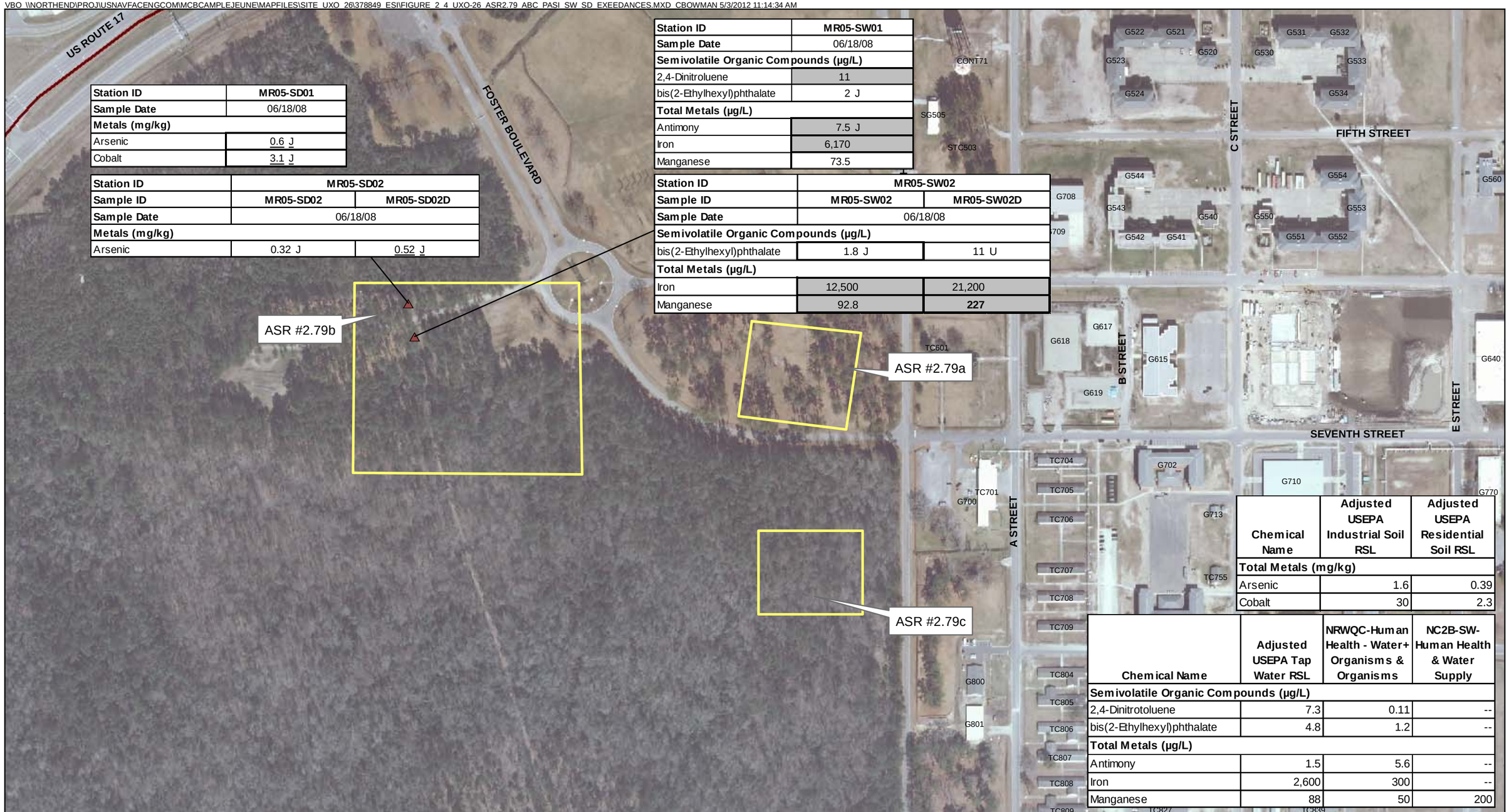
0 150 300 600 Feet

1 inch = 300 feet

Figure 2-3
PA/SI Shallow Groundwater Exceedances
Site UXO-26 (ASR# 2.79 a, b, and c) ESI Report
MCIEAST-MCB CAMLEJ
North Carolina

CH2MHILL

VBO \\NORTHEND\PROJ\USNAVFACENGCOM\MCBCAMPLEJEUNE\MAPFILES\SITE_UXO_26\378849_ESI\FIGURE_2_4_UXO-26_ASR2.79_ABC_PASI_SW_SD_EXEEDANCES.MXD CBOWMAN 5/3/2012 11:14:34 AM



Station ID	MR05-SD01
Sample Date	06/18/08
Metals (mg/kg)	
Arsenic	0.6 J
Cobalt	3.1 J

Station ID	MR05-SD02	
Sample ID	MR05-SD02	MR05-SD02D
Sample Date	06/18/08	
Metals (mg/kg)		
Arsenic	0.32 J	0.52 J

Station ID	MR05-SW01
Sample Date	06/18/08
Semivolatile Organic Compounds (µg/L)	
2,4-Dinitroluene	11
bis(2-Ethylhexyl)phthalate	2 J
Total Metals (µg/L)	
Antimony	7.5 J
Iron	6,170
Manganese	73.5

Station ID	MR05-SW02	
Sample ID	MR05-SW02	MR05-SW02D
Sample Date	06/18/08	
Semivolatile Organic Compounds (µg/L)		
bis(2-Ethylhexyl)phthalate	1.8 J	11 U
Total Metals (µg/L)		
Iron	12,500	21,200
Manganese	92.8	**227**

Chemical Name	Adjusted USEPA Industrial Soil RSL	Adjusted USEPA Residential Soil RSL
Total Metals (mg/kg)		
Arsenic	1.6	0.39
Cobalt	30	2.3

Chemical Name	Adjusted USEPA Tap Water RSL	NRWQC-Human Health - Water+ Organisms & Organisms	NC2B-SW-Human Health & Water Supply
Semivolatile Organic Compounds (µg/L)			
2,4-Dinitrotoluene	7.3	0.11	--
bis(2-Ethylhexyl)phthalate	4.8	1.2	--
Total Metals (µg/L)			
Antimony	1.5	5.6	--
Iron	2,600	300	--
Manganese	88	50	200

Legend
- SW/Sediment Sample Locations
- Site UXO-26- Former Gas Chamber (ASR #2.79a, b, and c) boundary
- Installation Boundary

Surface Water Notes:
J - Analyte present, value may or may not be accurate or precise
U - The material was analyzed for, but not detected
"D" indicator in sample ID indicates duplicate sample
Shading indicates exceedance of RSL criteria
Bold box indicates exceedance of NRWQC criteria
Bold text indicates exceedance of NC2B criteria

Sediment Notes:
J - Analyte present, value may or may not be accurate or precise
"D" indicator in sample ID indicates duplicate sample
Shading indicates exceedance of Adjusted Industrial Soil RSL
Underline indicates exceedance of Adjusted Residential Soil RSL

Figure 2-4
PA/SI Surface Water/Sediment Exceedances
Site UXO-26 (ASR# 2.79 a, b, and c) ESI Report
MCIEAST-MCB CAMLEJ
North Carolina

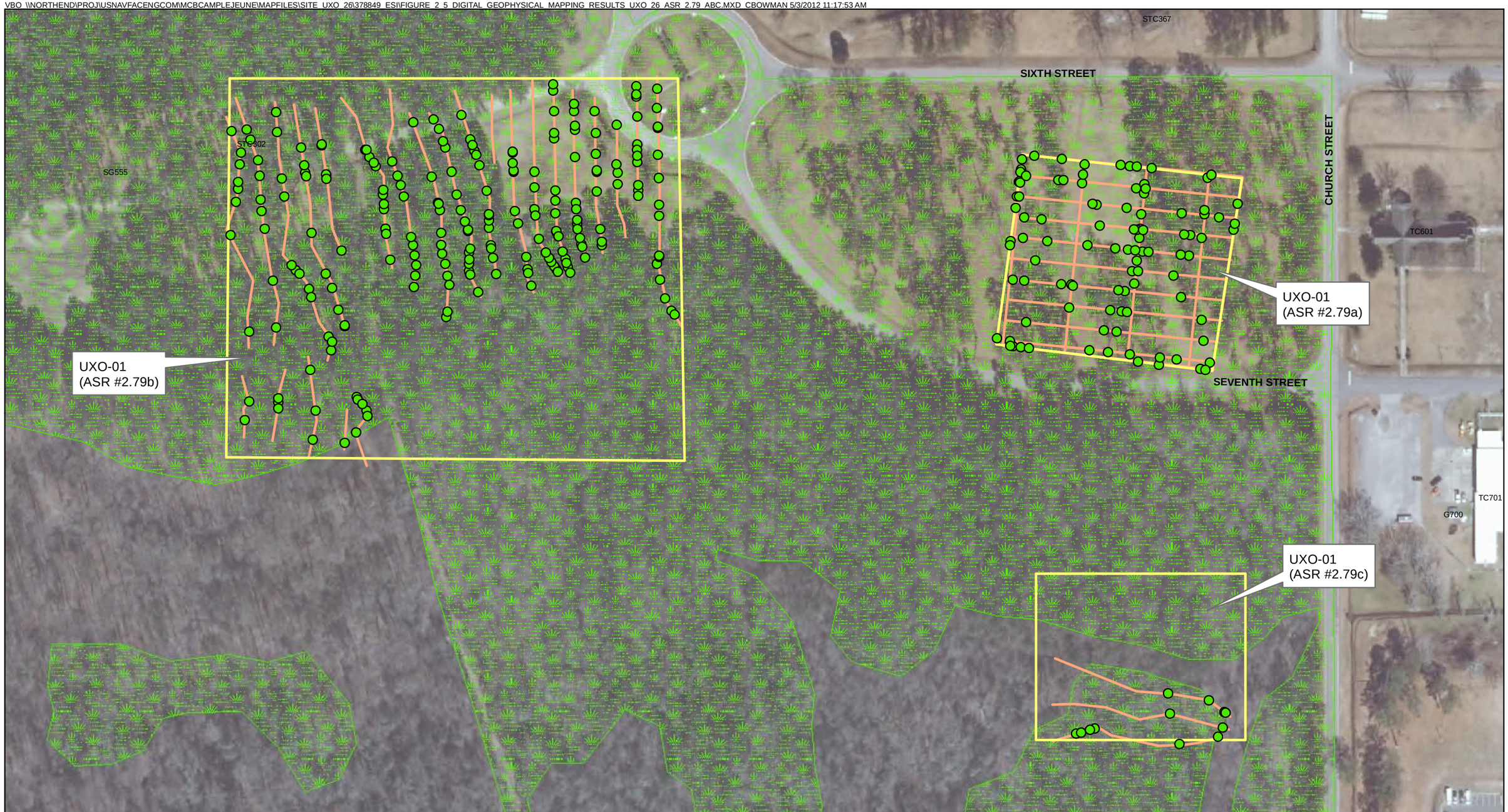
N

1 inch = 300 feet

0 150 300 600 Feet

CH2MHILL

VBO \\NORTHEND\PROJ\USNAVFACENGCOM\MCBCAMPLEJEUNE\MAPFILES\SITE_UXO_26\378849_ESI\FIGURE_2_5_DIGITAL_GEOPHYSICAL_MAPPING_RESULTS_UXO_26_ASR_2.79_ABC.MXD CBOWMAN 5/3/2012 11:17:53 AM



Legend

- Geophysical Anomaly (greater than 3 mV)(EM61-MK2)
- DGM Transect
- Site UXO-26- Former Gas Chamber (ASR #2.79a, b, and c) boundary
- Jurisdictional Wetland Area

N

0 75 150 300 Feet

1 inch = 150 feet

Figure 2-5
Digital Geophysical Mapping Results
Site UXO-26 (ASR# 2.79 a, b, and c) ESI Report
MCIEAST-MCB CAMLEJ
North Carolina

CH2MHILL

SECTION 3

Field Investigation Activities

The ESI field investigation activities at Site UXO-26 were conducted in January and February 2012. Field activities were performed in accordance with the ESI Work Plan (CH2M HILL, 2011a) and ESS-123 (CH2M HILL, 2011b). The technical approach was developed by the MCIEAST-MCB CAMLEJ Tier I Partnering Team, which consists of representatives from the Department of the Navy, MCIEAST-MCB CAMLEJ, USEPA Region 4, and NCDENR.

3.1 Site Preparation and Support

This section describes activities conducted in order to safely perform the field investigation activities and provide appropriate conditions for the reacquisition and intrusive investigation of the geophysical anomalies identified during the DGM survey.

3.1.1 MEC Avoidance

Avoidance procedures were implemented because of the potential presence of MEC. Qualified UXO technicians provided MEC escort and avoidance services to the surveying and vegetation clearance subcontractors.

3.1.2 Surveying

LDSI, Inc., of Charlotte, North Carolina, was subcontracted to place survey pin flags along the center line of the PA/SI DGM corridors in order to guide the vegetation clearing activities conducted during the ESI.

3.1.3 Vegetation Clearing

Mid-Atlantic Drilling, Inc., was subcontracted to clear areas of brush and vegetative cover where required to prevent interference with the EM61-MK2 electromagnetic system (geophysical instrument) during anomaly reacquisition. The undergrowth was cleared using a mulching-cutting machine. Vegetation less than 3 inches in diameter was cut to within 6 inches of ground surface to allow sufficient area for DGM activities. Cut vegetation was mulched and left in place.

3.2 MEC Intrusive Investigation Activities

The MEC intrusive investigation was focused on the geophysical anomalies identified during the DGM survey. The DGM survey covered approximately 12 percent of UXO-26 and identified 353 geophysical anomalies for intrusive investigation (**Figure 3-1**). Due to the presence of standing water in the southeastern portion of the ASR #2.79b and the northern portion of ASR #2.79c during the PA/SI, DGM was not performed in those areas; consequently, intrusive investigation was not performed in those areas during the ESI.

3.2.1 Field Activities

The following MEC intrusive investigation field activities were conducted in January and February 2012:

- Reacquisition of the geophysical anomalies identified during the PA/SI DGM survey as representing potential subsurface MEC
- Manual digging and identification of the sources of anomalies
- Removal verification and excavation backfilling
- Disposal of MEC and MPPEH

CH2M HILL provided project and site management, quality control (QC), and safety supervision during the intrusive investigation. USA Environmental, Inc. (USAE) was subcontracted to conduct the reacquisition and intrusive investigation of the geophysical anomalies and the disposition of MEC and MPPEH items found during the investigation.

USAE identified all 353 PA/SI subsurface geophysical anomalies for excavation using a Whites XLT metal detector or a Schonstedt GA-52Cx magnetometer, or both, and placed a flag approximately 1 foot north of each anomaly.

Excavation of all anomalies was performed to a depth of 2 feet bgs by USAE. The UXO teams were composed of at least one UXO Technician III, one UXO Technician II, and additional UXO technicians. Small hand tools, such as shovels, spades, trowels, and pry bars, were used to access the source anomaly. If the item did not appear to be ordnance-related (such as scrap metal or other debris), it was moved to the non-MPPEH collection point or left in place if the anomaly source was a utility feature, such as a culvert. Once the item was removed, the excavation area was rechecked with the EM61 to ensure all anomaly source material had been removed.

Following 100 percent inspection and 100 percent re-inspection of the MPPEH, approximately 165 pounds of material documented as safe (MDAS) were collected and placed in a 55-gallon drum. The MDAS was disposed of at a qualified smelter/recycler. A copy of the DD Form 1328-1A for this material can be found in **Appendix B**. Approximately 360 pounds of non-MPPEH metallic debris (such as scrap metal and/or cultural debris) was collected during the intrusive investigation.

3.2.2 Quality Assurance and Quality Control

QC inspections were performed by the UXO Quality Control Specialist (UXOQCS) during fieldwork. This work consisted of checking 10 percent of the intrusively investigated anomaly locations using the EM61 to determine whether all detectable metallic items had been removed. Additional quality assurance/QC removal verification requirements and analysis were followed, as described in the ESI Work Plan. Two QC seeds were buried onsite during the DGM activities and were recovered.

3.3 MILCON Utility Corridor and Staging Area Munitions Response (MR) Clearance

Within the Site UXO-26 boundary, an investigation of all potential surface and subsurface MEC within a proposed military construction (MILCON) utility corridor and equipment staging area was performed in January and February 2012. The proposed utility corridor follows an existing gravel road that transects the site and the equipment staging area is a rectangular area south of the gravel road. The project scope of work included 100 percent DGM of an area approximately one acre in size, intrusive investigation of DGM-identified anomalies and clearance, controlled detonation of the MEC items found, and post-detonation soil sampling. **Figure 3-2** shows the project area and the locations identified for intrusive investigation.

VBO \\NORTHEND\PROJ\USNAVFACENGCOM\MCBCAMPLEJEUNE\MAPFILES\SITE_UXO_26\378849_ESI\FIGURE_3_1_UXO_26_ASR_2.79_ABC_PASI_INTRUSIVE_INV_LOCS.MXD CBOWMAN 5/3/2012 11:18:39 AM

Legend
- Geophysical Anomaly (greater than 2.5 mV)
- DGM Transect
- Site UXO-26- Former Gas Chamber (ASR #2.79a, b, and c) boundary
- Jurisdictional Wetland Area

Notes:
- EM61-MK2 instrument used
- DGM survey conducted on February 2007

N

0 75 150 300 Feet

1 inch = 150 feet

Figure 3-1
Intrusive Investigation Locations Identified in the PA/SI
Site UXO-26 (ASR# 2.79 a, b, and c) ESI Report
MCIEAST-MCB CAMLEJ
North Carolina

CH2MHILL

VBO, \\NORTHEND\PROJ\USNAVFACENGCOM\MCBCAMPLEJEUNE\MAPFILES\SITE_UXO_26\378849_ES\FIGURE_3_2_UXO_26_ASR_2.79_ABC_UTILITY_CORRIDOR_PROJECT_INTRUSIVE_INV_LOCS.MXD, CBOWMAN 5/3/2012 11:19:29 AM

Legend

- Geophysical Anomaly (EM61-MK2)
- Site UXO-26- Former Gas Chamber (ASR #2.79a, b, and c) boundary
- Utility Corridor Project Area

N

0 25 50 100 Feet

1 inch = 50 feet

Figure 3-2
Intrusive Investigation Locations Identified in the MILCON Utility Corridor and Staging Area
Site UXO-26 (ASR# 2.79 a, b, and c) ESI Report
MCIEAST-MCB CAMLEJ
North Carolina

CH2MHILL

SECTION 4

Intrusive Investigation Results

4.1 MEC Intrusive Investigation Activities

During the intrusive investigation, no MEC, MPPEH, or ordnance-related debris were found in the 2.79a or 2.79c areas. In the 2.79b area, 24 M6A3 2.36-inch rockets were found and determined to be MEC. In addition, the sources of 56 geophysical anomalies in the 2.79b area were identified as rockets, rocket motors, or pieces of rockets (15 M6A3 2.36-inch rockets, 38 M6 2.36-inch rocket motors, and three rocket pieces) and were determined to be MPPEH. **Figure 4-1** presents the locations of MEC and MPPEH found during the ESI intrusive investigation of the PA/SI DGM anomalies, and the results of the intrusive investigation of individual anomalies are tabulated in **Appendix C**. During the MILCON utility corridor and staging area intrusive investigation, nine items of material potentially presenting an explosive hazard (MPPEH) (M6A3 2.36-inch anti-tank high-explosive rockets) were found and one was subsequently identified as MEC. The MILCON project area and locations of the identified MEC and MPPEH items are shown on **Figure 4-2**. Additional information pertaining to the MILCON project MR clearance may be found in the Site UXO-26 Utility Construction Support Technical Memorandum (CH2M HILL, 2012).

The M6 rocket is a fin-stabilized high-explosive antitank rocket containing 0.5 pound (lb) of pentolite as the warhead explosive and 0.135 lb of Ballistite as the rocket propellant. The M6A1 and M6A3 rockets are identical except for differences in the shape of the head and the tail assembly (ORData, 2012, and Department of Defense Explosives Safety Board [DDESB], 2012). Demolition of the MEC items was conducted at one common controlled detonation location within the ASR #2.79b area.

4.2 Post-Detonation Sampling and Analytical Results

Two post-detonation surface soil samples were collected from the ESI detonation location: one sample from inside the crater and another from the area surrounding the crater. The sample from inside the crater was collected using the TR-02-1 approach (Thiboutot, Ampleman, and Hewitt, 2002). The surface soil sample from outside the crater was collected using the IS method, in accordance with standard operating procedure in the MRP Master Project Plans (CH2M HILL, 2008, **Appendix C**). A field duplicate sample was collected from each characterization sample after homogenization.

The post-detonation samples were transferred into 4-ounce glass jars, packed into coolers with ice, and sent under chain-of-custody control to the contracted laboratories for analysis. The samples were sent to GEL Laboratories, Inc., of Charleston, South Carolina, for the analysis of explosives residues, including pentaerythritol tetranitrate (PETN), nitroglycerin (SW-846 USEPA Method 8330), and perchlorate (SW-846 USEPA Method 6850), and to ENCO Lab of Jacksonville, Florida, for the analysis of target analyte list (TAL) metals, including mercury (SW-846 USEPA Methods 6010C and 7471B).

All analytical results are available in **Appendix D.** Detected analytes are listed in **Table 4-1** and compared to the base background threshold value (BTV) for undeveloped combined surface soil (CH2M HILL, 2011c), the NC SSLs (NCDENR, 2012), and the Adjusted USEPA RSLs (USEPA, 2011a). No explosives residues were detected in any of the samples. The concentrations of antimony, iron, lead, and zinc were greater than the BTV for undeveloped combined surface soil. The antimony and lead concentrations in one or both of the inner crater samples were also greater than the NC SSL and the Adjusted Residential Soil RSL but less than the Adjusted Industrial Soil RSL.

TABLE 4-1
Post-Detonation Surface Soil Detection Analytical Results

Sample ID	MCIEAST-MCB CAMLEJ BTV	Adjusted Industrial Soil RSL	Adjusted Residential Soil RSL	NCSSL	MR26-SS16D-IC-12A		MR26-SS16-IC-12A		MR26-SS16D-OC-12A		MR26-SS16-OC-12A	
Sample Date					2/2/12		2/2/12		3/8/12		3/8/12	
Metals (MG/KG)												
Aluminum	12800	99000	7700	--	2,310	J	2,430	J	3,500		3,450	
Antimony	1.87	41	3.1	0.9	5.2	J	4.26	J	1.93	UJ	1.58	UJ
Arsenic	1.17	1.6	0.39	5.8	0.534	J	0.776	J	0.524	J	1.58	U
Barium	36.7	19000	1500	580	14		11		9.4	J	14.6	J
Beryllium	0.195	200	16	63	0.0357	J	0.0432	J	0.0527	J	0.0561	J
Cadmium	0.2	80	7	3	0.138	J	0.102	J	0.122	J	0.139	J
Calcium	8470	--	--	--	401		395		1,520		1,500	
Chromium	17.4	5.6	0.29	3.8	3.58	J	2.22	J	3.13		3.05	
Cobalt	0.414	30	2.3	0.9	0.165	J	0.135	J	0.483	U	0.396	U
Copper	17.1	4100	310	700	81.5	J	64.1	J	2.63	J	1.5	J
Iron	7210	72000	5500	150	1380		1260		1,110		1,020	
Lead	27.5	800	400	270	470	J	371	J	9.96		9.72	
Magnesium	904	--	--	--	46.4		55.3		91.2		90.1	
Manganese	37	2300	180	65	2.35		2.07		4.65		5.15	
Mercury	0.161	31	2.3	1	0.0258		0.025		0.016	J	0.0184	
Nickel	3.11	2000	150	130	0.613	J	0.56	J	0.561	J	0.561	J
Potassium	359	--	--	--	41.5	J	51.3	J	52.1	J	53.6	J
Selenium	1.59	510	39	2.1	1.68	U	1.91	U	0.79	J	0.617	J
Sodium	250	--	--	--	15.6	J	20.6	J	12.3	J	14.3	J
Vanadium	17.6	520	39	6	2.59		2.75		3.91		3.71	
Zinc	28.6	31000	2300	1200	32.6		24		84	J	92	J

Notes:

Shading indicates exceedance of the MCIEAST-MCB CAMLEJ background threshold value (BTV) for undeveloped combined surface soil

Underline indicates exceedance of Adjusted United States Environmental Protection Agency (USEPA) Industrial Soil Regional Screening Level (RSL), November 2011

Bold box indicates exceedance of North Carolina Federal Remediation Branch Soil Screening Level (NC SSL), February 2012

MG/KG - Milligrams per kilogram

J - Analyte present. Value may or may not be accurate or precise

U - The material was analyzed for, but not detected

VBO \\NORTHEND\PROJ\USNAVFACENGCOM\MCBCAMPLEJEUNE\MAPFILES\SITE_UXO_26\378849_ESI\FIGURE_4_1_MEC_MPPEH_LOCS_UXO_26_ASR_2.79_ABC.MXD MARTESE 5/3/2012 2:01:09 PM

Legend

- Geophysical Anomaly (greater than 3 mV)(EM61-MK2)

MEC

- 2.36-inch Rocket

MPPEH

- 2.36-inch Rocket

- DGM Transect
- Jurisdictional Wetland Area
- Installation Boundary
- Site UXO-26- Former Gas Chamber (ASR #2.79a, b, and c) boundary

N

0 75 150 300 Feet

1 inch = 150 feet

Figure 4-1
Locations of MEC and MPPEH Found During the ESI Intrusive Investigation
Site UXO-26 (ASR# 2.79 a, b, and c) ESI Report
MCIEAST_MCB CAMLEJ
North Carolina

CH2MHILL

R:\USNavFacEngCom405450\MCBCampLejeune\MapFiles\Site_UXO_26\378849_ESI\Figure_4_2_MEC_and_MPPEH_in_MILCON_Utility_Corridor_Staging Area.mxd8/15/2012martese

Legend

- Geophysical Anomaly (EM61-MK2)

MPPEH

- 2.36-inch Rocket

MEC

- 2.36-inch Rocket

- Site UXO-26- Former Gas Chamber (ASR #2.79a, b, and c) boundary
- Utility Corridor Project Area

N

0 25 50 100 Feet

1 inch = 41.311772 feet

Figure 4-2
Locations of MEC and MPPEH Found in the MILCON Utility Corridor and Staging Area
Site UXO-26 (ASR# 2.79 a, b, and c) ESI Report
MCIEAST-MCB CAMLEJ
North Carolina

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SECTION 5

Human Health Risk Screening

A human health risk screening (HHRS) was performed to assess the potential for unacceptable human health risks associated with exposure to the surface soil in the vicinity of the controlled detonation.

The HHRS was conducted as follows. The surface soil data were compared to residential soil RSLs (those based on non-cancer endpoints were adjusted by dividing by 10 to account for exposure to more than one constituent affecting the same target) and background concentrations, if available. If the maximum detected concentration exceeded RSL and background concentration, the constituent was identified as a COPC and a risk ratio was calculated. The risk ratio, or corresponding risk level, was calculated for the COPCs using the following equation:

$$\textit{corresponding risk level} = \frac{\textit{concentration} \times \textit{acceptable risk level}}{\textit{RSL}}$$

The concentration is the maximum detected concentration. The acceptable risk level is 1 for noncarcinogens and 10^{-6} for carcinogens. RSLs for noncarcinogenic effects were not adjusted by 10 as was done in the initial screen; they are used as presented in the RSL table. Lead is not evaluated in the same manner as the other COPCs, but is regulated by USEPA based on blood-lead uptake using a physiologically based pharmacokinetic model called the Integrated Exposure Uptake Biokinetic (IEUBK) Model. As a screening tool, lead is screened at 400 mg/kg in soil based on residential exposure. The model uses the average lead concentration, not the maximum detected lead concentration. Therefore, if the average lead concentration is greater than 400 mg/kg, it is retained as a COPC and evaluated using the IEUBK.

As seen in **Appendix E, Table E-1** (and as was shown on Table 4-1), the maximum concentrations of two metals (antimony and lead) exceeded the adjusted residential soil RSLs and background concentrations) in surface soil. These exceedences were in the inner crater sample only; there were no exceedences in the outer crater sample. Therefore, a risk ratio calculation was performed for antimony. Based on risk ratio using maximum detected concentrations (the concentration in the inner crater sample), antimony was eliminated as a COPC (**Appendix E, Table E-2**).

The average lead concentration in surface soil is 240 mg/kg, which is less than the lead screening level. Therefore, lead is not considered to be present at a concentration of potential concern, and lead was eliminated as a COPC.

The results of the human health risk screening indicated that exposure to surface soil within the Site UXO-26 detonation area would not result in unacceptable human health risks to any potential human receptors.

SECTION 6

Ecological Risk Screening

Demolition of the M6A3 2.36-inch rockets, rocket motors, and pieces of rockets found at UXO-26 was conducted through controlled detonation, as previously presented. Two post-detonation soil samples were collected: one from inside the crater (plus one duplicate) and one from outside the crater (plus one duplicate). The soil samples were analyzed for explosives residues and metals. Maximum and arithmetic mean concentrations of chemicals (i.e., exposure concentrations) were compared to Ecological Screening Values (ESVs) intended to be protective of ecological receptors. Hazard Quotients (HQs) were calculated by dividing the exposure concentrations by the ESVs. For soil, the detected concentrations were compared to the USEPA Ecological Soil Screening Levels (EcoSSL) (USEPA, 2011b). When no EcoSSL was available, concentrations were compared to the Region 4 value (USEPA, 2001).

Maximum concentrations were also compared to the BTV for undeveloped areas with combined surface soil types (CH2M HILL, 2011). The BTV represents a 95/95 upper tolerance limit (UTL), which is an upper bound (with 95 percent confidence) of the background 95th percentile. Non-detected constituents and nutrients (calcium, magnesium, potassium, and sodium) were not considered to pose a risk.

Aluminum, antimony, copper, iron, lead, selenium, and zinc had maximum-based HQs greater than one (**Appendix F, Table F-1**). However, aluminum, iron, and selenium concentrations were consistent with the BTVs, and zinc had a low magnitude of exceedance (HQ equal to 2).

Antimony, copper, and lead were either not detected in the sample collected outside the crater or concentrations in the sample collected outside the crater were consistent with the BTVs, thus indicating that the contamination is generally confined to the crater and the known MEC source. The selected ESVs are generally based on bird or mammal EcoSSLs, which are typically lower than the plant and invertebrate EcoSSLs. The maximum concentrations of the three constituents were either less than or only slightly greater than their respective plant and invertebrate EcoSSLs. In addition, because the home range for bird and mammal receptors is much larger than the impact area and the detonation crater was backfilled after sample collection, these higher trophic level receptors are not likely to be frequently exposed to the elevated concentrations in the crater. As a result, antimony, copper, and lead are not expected to cause significant impacts to ecological receptor populations given the isolated and confined extent of the contamination.

None of the constituents from the detonation of the MEC are expected to pose a significant risk to ecological receptors.

SECTION 7

Conclusions and Recommendations

Site UXO-26, the Former B-3 Gas Chamber, was formerly part of Site UXO-01 and was investigated, along with Site UXO-05, during a PA/SI (CH2M HILL, 2009). Based upon the PA/SI findings, Site UXO-05 received a determination of NFA; geophysical anomalies identified in the northern area of Site UXO-05 (ASR Area 2.7c) were attributed to Site UXO-26 and were addressed as part of the Site UXO-26 ESI (MCIEAST-MCB CAMLEJ, 2009). In addition, MR clearance of a utility construction and an equipment staging area within Site UXO-26 ASR #2.79b was conducted in support of a planned MILCON project. This work consisted of a 100 percent geophysical survey and MEC/MPPEH clearance to a depth of 4 feet bgs.

This section presents conclusions and provides recommendations based upon the PA/SI, ESI, and MILCON construction support findings.

7.1 Conclusions

7.1.1 Environmental Investigation and Preliminary Risk Screening

The PA/SI preliminary risk-based screening indicated that exposure to Site UXO-26 (ASR #2.79a, b, and c) soil, sediment, and surface water would not result in any unacceptable human health or ecological risks. Although exposure to surficial aquifer groundwater could result in unacceptable risks under the residential scenario, the surficial aquifer at MCIEAST-MCB CAMLEJ is not suitable for potable water use due to issues of high dissolved solids, hardness, and fluctuating water levels that negatively affect water yields. Therefore, risk assessment scenarios based upon potable use of groundwater are hypothetical and potable use is not expected to occur in the future.

7.1.2 MEC Intrusive Investigation

No MPPEH was found during the intrusive investigation of areas ASR #2.79a or ASR #2.79c. However, in the ASR #2.79b area, including the MILCON utility corridor and staging area, M6A3 2.36-inch rockets, rocket motors, and pieces of rockets were found during the ESI and MILCON support intrusive investigations (**Figure 7-1**). These MEC and MPPEH items are not consistent with the documented historical usage of this site as a former gas chamber. Due to the presence of standing water in the southeastern portion of the ASR #2.79b and the northern portion of ASR #2.79c during the PA/SI, the February 2008 DGM was not performed in those areas; consequently, intrusive investigation was not performed in those areas during the ESI.

7.1.3 Post-Detonation Sampling

Post-detonation surface soil samples were collected inside and outside of the ESI detonation crater. A HHRS and an ERS were conducted on the validated analytical results and identified no unacceptable human health and ecological risks from exposure to surface soil in the vicinity of the ESI detonation site.

7.2 Recommendations

No unacceptable risks associated with MC have been identified; therefore, no further investigation of environmental media at Site UXO-26 is recommended. No additional MR investigation of UXO-26 areas ASR #2.79a and ASR #2.79c is recommended because no MEC, MPPEH, or other ordnance-related debris was discovered in those areas.

Since completion of the ESI activities, Base Range Control identified the area encompassing ASR #2.79b to be re-opened (**Figure 7-1**). As discussed during the September 2012 Partnering Meeting, recommendations for future actions at ASR #2.79b are presented below for two potential scenarios:

- If the area is re-opened, it will fall under the responsibility and management of Range Control. However, MEC clearance activities are recommended to minimize explosive risks.
- If the area is not re-opened, additional actions are recommended under the MMRP. Existing warning signs should be maintained and a surface sweep for MEC/MPPEH should be considered to minimize explosive risks. A Remedial Investigation is also recommended to further define the nature and extent of MEC/MPPEH. Based on the MEC/MPPEH discovered and the presumed target areas identified, the area recommended for further investigation extends approximately 500 ft south and 100 ft east of the current boundary to account for potential overshoot (**Figure 7-1**).

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\MCBCAMPLEJEUNE\MAPFILES\SITE_UXO_26\378849_ESI\FIGURE_7_1_POTENTIAL_REMEDIAL_INVESTIGATION_AND_RANGE_AND_TRAINING_AREAS.MXD JCROCKETT 10/15/2012 10:17:06 AM

Legend

MEC

- 2.36-inch Rocket

MPPEH

- 2.36-inch Rocket

Geophysical Anomalies

- Geophysical Anomaly Identified during the Utility Corridor Project (EM61-MK2)
- Geophysical Anomaly Identified during the PA/SI (EM61-MK2, greater than 3mV)

- Approximate Boundary of the Recommended Remedial Investigation Area
- Site UXO-26- Former Gas Chamber (ASR #2.79a, b, and c) boundary
- Utility Cooridor Project Area
- DGM Transect
- Jurisdictional Wetland Area
- Planned Range and Training Area
- Installation Boundary

N

0 150 300 600 Feet

1 inch = 300 feet

Figure 7-1
Potential Remedial Investigation and Range and Training Areas
Site UXO-26 (ASR# 2.79 a, b, and c) ESI Report
MCIEAST-MCB CAMLEJ
North Carolina

CH2MHILL

SECTION 8

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Appendix A
PA/SI Analytical Results

TABLE A-1

Site UXO-26 Multi-Increment Surface Soil Analytical Results

Sites UXO-05 Former Miniature Anti-tank Range and UXO-01 Former B-3 Gas Chamber PA/SI Report

MCB Camp Lejeune, North Carolina

Area ID	**Adjusted Industrial Soil RSLs**	**Adjusted Residential Soil RSLs**	**NC HWS SSL (June 2008)**	**Camp Lejeune Background SS 2X Mean**	ASR #2.79a						ASR #2.79b			
Station ID					MR05-DU02			MR05-DU03			MR05-DU01			
Sample ID					MR05-DU02-SS02-08B	MR05-DU02-SS01-08B	MR05-DU02-SS03-08B	MR05-DU03-SS01-08B	MR05-DU03-SS02-08B	MR05-DU03-SS03-08B	MR05-DU01-SS01-08B	MR05-DU01-SS02-08B	MR05-DU01-SS02D-08B	MR05-DU01-SS03-08B
Sample Date					06/17/08	06/17/08	06/17/08	06/17/08	06/17/08	06/17/08	06/17/08	06/17/08	06/17/08	06/17/08
Chemical Name														
Explosives (µg/kg)														
No Detections														
Total Metals (mg/kg)														
Aluminum	99,000	7,700	--	5,487	3,210	2,920	2,930	1,690 J	1,980 J	1,440 J	3,780 J	3,700 J	3,730 J	3,620 J
Arsenic	1.6	0.39	30	0.626	**1.1**	**1.1**	**1.1**	0.6 J	0.35 J	0.39 J	0.51 J	0.33 J	0.38 J	0.49 J
Barium	19,000	1,500	848	14.5	17 U	18.3 U	17.3 U	**19.2**	**22.1**	**18**	16.7 U	16.3 U	15.2 U	15.3 U
Beryllium	200	16	3.38	0.103	0.055 J	0.057 J	0.049 J	0.049 J	0.057 J	0.041 J	0.056 J	0.058 J	0.057 J	0.061 J
Calcium	--	--	--	6,360	669	824	816	771	907	711	1,630	1,780	1,550	1,700
Chromium	1,400	280	27.2	6.05	3.9	3.6	3.6	2.3	2.6	1.8	4.2	4	4	4.1
Cobalt	30	2.3	--	0.294	4.3 U	4.6 U	4.3 U	4.3 U	0.1 J	3.9 U	0.12 J	4.1 U	0.1 J	3.8 U
Copper	4100	310	704	4.83	**5.4**	3.5	2.4	2.3	3.5	3.1	3.1	3.3	2.8	**6.7**
Iron	72,000	5,500	151	3,245	1,170	1,080	1,070	983	1,380	798	1,290	1,230	1,200	1,260
Lead	800	400	270	12.3	**14.3**	**18.5**	**18.5**	**16.4 J**	**18.2 J**	**15.2 J**	**27.5 J**	**17.8 J**	**17.5 J**	**20.7 J**
Magnesium	--	--	--	238	425 U	458 U	432 U	434 U	425 U	394 U	417 U	407 U	380 U	381 U
Manganese	2,300	180	65.2	13.7	5	6.2	7.8	8.5	5.8	5.8	10.8	9.2	8.4	9.5
Mercury	31	2.3	0.015	0.081	0.05	0.045	0.063	0.045 U	0.037 U	0.045 U	0.034 U	0.036 U	0.035 U	0.033 U
Nickel	2,000	150	56.4	1.21	**1.3 J**	**1.4 J**	**1.3 J**	3.5 U	3.4 U	3.2 U	3.3 U	3.3 U	3 U	3.1 U
Potassium	--	--	--	116	425 U	458 U	432 U	434 U	425 U	394 U	417 U	407 U	380 U	381 U
Selenium	510	39	12.2	0.563	**0.72 J**	**0.72 J**	**0.69 J**	3 U	0.5 J	2.8 U	2.9 U	2.9 U	2.7 U	2.7 U
Vanadium	720	55	--	8.9	5	4.6 U	4.5	4.3 U	4.2 U	3.9 U	5.3	5	4.9	5
Zinc	31,000	2,300	500	10.8	**22.8**	**26.4**	**20.8**	**27.5 J**	**32.6 J**	**41.6 J**	**16.3 J**	**14.4 J**	**13.7 J**	**17.1 J**
% Solids	--	--	--	--	84	81	82	84	83	88	90	86	89	90

Notes:

J - Analyte present, value may or may not be accurate or precise

U - The material was analyed for, but not detected

UJ - Analyte not detected, quantitation limit may be inaccurate

Underlining indicates exceedance of Adjusted Residential Soil RSL, May 2009

Shading indicates exceedance of Adjusted Industrial Soil RSL, May 2009

Bold box indicates exceedance of NC SSL

Bold text indicates exceedance of two times the mean background concentration

TABLE A-2

UXO-26 Discrete Surface Soil Analytical Results

Sites UXO-05 Former Miniature Anti-tank Range and UXO-01 Former B-3 Gas Chamber PA/SI Report

MCB Camp Lejeune, North Carolina

Area ID	**Adjusted Industrial Soil RSLs**	**Adjusted Residential Soil RSLs**	**NC HWS SSL (June 2008)**	**Camp Lejeune Background SS 2X Mean**	Area 2.79a		ASR #2.79b							ASR #2.79c	
Station ID					MR05-SS34	MR05-SS35	MR05-SS01	MR05-SS02	MR05-SS03		MR05-SS04	MR05-SS05	MR05-SS33	MR05-SS06	MR05-SS07
Sample ID					MR05-SS34-08B	MR05-SS35-08B	MR05-SS01-08B	MR05-SS02-08B	MR05-SS03-08B	MR05-SS03D-08B	MR05-SS04-08B	MR05-SS05-08B	MR05-SS33-08B	MR05-SS06-08B	MR05-SS07-08B
Sample Date					06/17/08	06/17/08	06/17/08	06/17/08	06/17/08	06/17/08	06/17/08	06/17/08	06/17/08	06/17/08	06/17/08
Chemical Name															
Semivolatile Organic Compounds (µg/kg)															
2-Chlorobenzalmalononitrile	--	--	--	--	400 U	400 UJ	550 U	190 J	430 U	410 U	590 U	510 U	380 UJ	440 U	250 J
Benzaldehyde	1,900,000	780,000	--	--	400 U	400 U	550 U	38 J	430 U	410 U	590 U	61 J	380 U	440 U	410 U
Diethylphthalate	49,000,000	4,900,000	28,200	--	400 U	400 U	550 U	380 U	970	410 U	590 U	510 U	380 U	440 U	410 U
bis(2-Ethylhexyl)phthalate	120,000	35,000	6,670	--	120 J	400 UJ	550 U	380 U	430 U	45 J	590 UJ	510 U	380 UJ	440 U	410 U
Explosives (µg/kg)															
No Detections															
Total Metals (mg/kg)															
Aluminum	99,000	7,700	--	5,487	NA	NA	5,140	1,090	4,600	4,620	2,600	4,960	NA	1,250	632
Antimony	41	3.1	5.42	0.447	NA	NA	6.9 UJ	4.9 UJ	5.5 UJ	5.4 UJ	7.7 UJ	6.3 UJ	NA	5.7 UJ	4.9 UJ
Arsenic	1.6	0.39	30	0.626	NA	NA	**1.5**	0.82 U	**1.2**	**1.2**	1.3 U	1.1 U	NA	0.95 U	0.82 U
Barium	19,000	1,500	848	14.5	NA	NA	**28.9**	16.4 U	18.3 U	17.9 U	25.6 U	**27**	NA	19.1 U	16.4 U
Beryllium	200	16	3.38	0.103	NA	NA	**0.19 J**	0.41 U	**0.16 J**	**0.18 J**	0.64 U	**0.15 J**	NA	0.01 J	0.41 U
Calcium	--	--	--	6,360	NA	NA	3,830	522	935	947	156 J	1,780	NA	86.8 J	170 J
Chromium	1,400	280	27.2	6.05	NA	NA	5.5	1.2	5.6	5.5	2.1	3.7	NA	1.6	1.1
Cobalt	30	2.3	--	0.294	NA	NA	5.7 U	4.1 U	4.6 U	4.5 U	6.4 U	5.3 U	NA	4.8 U	4.1 U
Copper	4,100	310	704	4.83	NA	NA	4	**7.4**	2.2 J	2.2 J	**72.8**	4.1	NA	0.82 J	0.57 J
Iron	72,000	5,500	151	3,245	NA	NA	2,880	463	3,220	3,200	1,010	1,670	NA	486	382
Lead	800	400	270	12.3	NA	NA	**21.2**	**68.2**	**23.8**	**25**	**325**	**24.3**	NA	4.3	9.4
Magnesium	--	--	--	238	NA	NA	573 U	**410 J**	458 U	447 U	641 U	527 U	NA	476 U	411 U
Manganese	2,300	180	65.2	13.7	NA	NA	**40**	4.5	**31.6**	**80.6**	5.2	**15.2**	NA	1.9	5.3
Mercury	31	2.3	0.015	0.081	NA	NA	0.057	0.046	0.04	0.058	**0.084**	**0.1**	NA	0.038 U	0.043
Nickel	2,000	150	56.4	1.21	NA	NA	**2.2 J**	0.81 J	**1.7 J**	**1.8 J**	**1.8 J**	**1.8 J**	NA	0.49 J	0.62 J
Potassium	--	--	--	116	NA	NA	573 U	410 U	458 U	447 U	641 U	527 U	NA	476 U	411 U
Selenium	510	39	12.2	0.563	NA	NA	**0.59 J**	2.9 U	**0.63 J**	**0.61 J**	**0.95 J**	**0.59 J**	NA	3.3 U	2.9 U
Vanadium	720	55	--	8.9	NA	NA	7.7	4.1 U	8.7	8.6	6.4 U	5.9	NA	4.8 U	4.1 U
Zinc	31,000	2,300	500	10.8	NA	NA	**33.3**	7.1	8.8	8.8	**18**	**13.3**	NA	5.7 U	4.9 U
% Solids	--	--	--	--	83	83	61	87	77	80	56	65	87	75	82

Notes:

J - Analyte present, value may or may not be accurate or precise

NA - Not analyzed

U - The material was analyzed for, but not detected

UJ - Analyte not detected, quantitation limit may be inaccurate

Underlining indicates exceedance of Adjusted Residential Soil RSL

Shading indicates exceedance of Adjusted Industrial Soil RSL

Bold box indicates exceedance of NC HWS SSL

Bold text indicates exceedance of two times the mean background concentration

TABLE A-3

Site UXO-26 Subsurface Soil Analytical Results

Sites UXO-05 Former Miniature Anti-tank Range and UXO-01 Former B-3 Gas Chamber PA/SI Report

MCB Camp Lejeune, North Carolina

Area ID	**Adjusted Industrial Soil RSLs**	**Adjusted Residential Soil RSLs**	**NC HWS SSL (June 2008)**	**Camp Lejeune Background SB 2X Mean**	Area 2.79a	ASR #2.79b				Area 2.79c
Station ID					MR05-IS04	MR05-IS01	MR05-IS02	MR05-IS03		MR05-IS05
Sample ID					MR05-IS04-2-3-08C	MR05-IS01-2-3-08C	MR05-IS02-3-4-08C	MR05-IS03-2-3-08C	MR05-IS03D-2-3-08C	MR05-IS05-3-4-08C
Sample Date					07/09/08	07/09/08	07/09/08	07/09/08	07/09/08	07/09/08
Chemical Name										
Semivolatile Organic Compounds (µg/kg)										
No Detections										
Explosives (µg/kg)										
No Detections										
Total Metals (mg/kg)										
Aluminum	99,000	7,700	--	10,369	3,930	10,300	4,810	5,630	4,940	8,090
Antimony	41	3.1	5.42	0.36	0.14 J	5.1 UJ	4.6 UJ	4.6 UJ	4.6 UJ	4.6 UJ
Arsenic	1.6	0.39	30	2.12	0.41 J	0.91	0.88	0.3 J	0.44 J	1.5
Barium	19,000	1,500	848	16.6	14.7 U	**30.2**	**23**	15.5 U	15.3 U	15.3 U
Beryllium	200	16	3.38	0.165	0.047 J	**0.44**	**0.2 J**	0.075 J	0.076 J	0.07 J
Calcium	--	--	--	441	368 U	**2,000 J**	**848 J**	387 U	382 U	382 U
Chromium	1,400	280	27.2	14.5	2.7	8	4.5	4.7	4.2	8
Copper	4,100	310	704	2.56	1.8 U	2.1 U	1.9 U	1.9 U	1.9 U	1.9 U
Iron	72,000	5,500	151	5,439	841 J	4,830 J	2,270 J	641 J	926 J	4,410 J
Lead	800	400	270	8.49	2.4	**9**	4.9	3.7	**9.2**	3.6
Magnesium	--	--	--	363	368 U	422 U	386 U	387 U	382 U	382 U
Manganese	2,300	180	65.2	9.25	2.2	**10.8**	5.2	1.9	2.5	3.7
Mercury	31	2.3	0.015	0.071	0.034 U	0.036 U	0.034 U	0.034 U	0.035 U	0.035 U
Nickel	2,000	150	56.4	2.27	0.8 J	2 J	1.1 J	0.74 J	0.67 J	1.2 J
Potassium	--	--	--	361	368 U	422 U	386 U	387 U	382 U	382 U
Selenium	510	39	12.2	0.505	2.6 U	**0.56 J**	2.7 U	0.5 J	**0.57 J**	**0.67 J**
Vanadium	720	55	--	17.2	4.2	8.4	6.6	4.4	4.8	12.6
% Solids	--	--	--	--	91	88	91	87	88	90

Notes:

J - Analyte present, value may or may not be accurate or precise

U - The material was analyed for, but not detected

UJ - Analyte not detected, quantitation limit may be inaccurate

Shading indicates exceedance of Adjusted Industrial Soil RSL, May 2009

Underlining indicates exceedance of Adjusted Residential Soil RSL, May 2009

Bold box indicates exceedance of NC SSL

Bold text indicates exceedance of two times the mean background concentration

TABLE A-4

Groundwater Analytical Results

Sites UXO-05 Former Miniature Anti-tank Range and UXO-01 Former B-3 Gas Chamber PA/SI Report

MCB Camp Lejeune, North Carolina

Area ID	Adjusted Tap Water RSLs	NCGWQS (December 2006)	Groundwater MCLs	Camp Lejeune Background GW 2X Mean	ASR #2.79a		ASR #2.79b			ASR #2.79c
Station ID					MR05-TW03	MR05-MW01	MR05-TW01	MR05-TW02		MR05-TW04
Sample ID					MR05-TW03-08C	MR05-MW01-09B	MR05-TW01-08C	MR05-TW02-08C	MR05-TW02D-08C	MR05-TW04-08C
Sample Date					07/10/08	04/01/09	07/11/08	07/10/08	07/10/08	07/10/08
Chemical Name										
Semivolatile Organic Compounds (µg/L)										
Diethylphthalate	2,920	5,000	--	--	3.5 J	NA	10 U	10 U	10 U	10 U
Explosives (µg/L)										
2,4-Dinitrotoluene	0.22	--	--	--	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U
4-Nitrotoluene	4.2	--	--	--	0.4 U	NA	0.4 U	0.4 U	0.38 J	0.4 U
Total Metals (µg/L)										
Aluminum	3,700	--	--	1,886	**2,890**	72.5 J	200 U	597	383	712
Antimony	1.5	--	6	3.28	60 U	8 U	60 U	60 U	60 U	**8.3 J**
Arsenic	0.045	50	10	5.77	**22.6**	3.9 J	10 U	10 U	10 U	**9.6 J**
Beryllium	7.3	--	4	0.308	0.22 J	NA	5 U	0.28 J	0.22 J	0.14 J
Calcium	--	--	--	69,078	10,700	NA	**136,000**	5,000 U	5,000 U	5,000 U
Chromium	11	50	100	3.13	**6.7 J**	NA	1 J	2.5 J	2.4 J	**3.9 J**
Cobalt	1.1	--	--	3.4	2 J	0.31 J	50 U	1.5 J	1.2 J	2.5 J
Iron	2,600	300	--	5,999	**6,090**	179	5,010	5,920	5,520	5,550
Lead	--	15	15	2.8	**3.9 J**	NA	10 U	**2.9 J**	10 U	10 U
Manganese	88	50	--	214	**259**	30.9	96.1	122	99.4	50.8
Mercury	1.1	1.05	2	0.1	0.3 UJ	NA	0.2 U	0.2 UJ	0.2 UJ	**0.26 J**
Nickel	73	100	--	7.97	**26.5 J**	NA	40 U	**20 J**	**16 J**	**20.2 J**
Potassium	--	--	--	3,277	2,360 J	NA	5,000 U	913 J	818 J	965 J
Silver	18	17.5	--	0.77	10 U	NA	**1.3 J**	10 U	10 U	10 U
Sodium	--	--	--	22,508	11,500	NA	6,650	1,470 J	1,410 J	3,940 J
Vanadium	18	--	--	4.72	**5.2 J**	NA	50 U	4.4 J	3.4 J	50 U
Zinc	1,100	1,050	--	42.1	**77.6**	NA	60 U	60 U	60 U	60 U
Dissolved Metals (µg/L)										
Aluminum	3,700	--	--	1,886	680	NA	200 U	200 U	200 U	200 U
Antimony	1.5	--	6	3.28	**4.2 J**	NA	60 U	60 U	60 U	60 U
Arsenic	0.045	50	10	5.77	**24.5**	NA	10 U	10 U	10 U	**9.7 J**
Beryllium	7.3	--	4	0.308	0.059 J	NA	5 U	0.21 J	0.21 J	0.096 J
Calcium	--	--	--	69,078	11,000	NA	**136,000**	5,000 U	5,000 U	5,000 U
Chromium	11	50	100	3.13	10 U	NA	10 U	1.2 J	1.7 J	1 J
Cobalt	1.1	--	--	3.4	50 U	NA	50 U	1.4 J	1.9 J	50 U
Iron	2,600	300	--	5,999	5,160	NA	4,750	5,170	5,000	4,910
Lead	--	15	15	2.8	1.8 J	NA	10 U	10 U	10 U	10 U
Manganese	88	50	--	214	139	NA	96.6	83.8	64.1	41.9
Mercury	1.1	1.05	2	0.1	0.2 UJ	NA	**0.51**	0.2 UJ	0.2 UJ	0.2 UJ
Nickel	73	100	--	7.97	**9.9 J**	NA	1.5 J	**14.6 J**	**8.9 J**	**19.7 J**
Potassium	--	--	--	3,277	1,770 J	NA	5,000 U	823 J	813 J	875 J
Sodium	--	--	--	22,508	9,950	NA	6,480	5,000 U	1,720 J	3,810 J
Vanadium	18	--	--	4.72	50 U	NA	50 U	50 U	50 U	50 U
Zinc	1,100	1,050	--	42.1	60 U	NA	60 U	60 U	60 U	60 U

Notes:

J - Analyte present, value may or may not be accurate or precise

NA - Not analyzed

U - The material was analyed for, but not detected

UJ - Analyte not detected, quantitation limit may be inaccurate

Shading indicates exceedance of USEPA Adjusted Tap Wat

Bold box indicates exceedance of NCGWQS

Bold text indicates exceedance of two times the mean background concentration

Underline indicates exceedance of Groundwater MCLs

TABLE A-5

Surface Water Analytical Results

Sites UXO-05 Former Miniature Anti-tank Range and UXO-01 Former B-3 Gas Chamber PA/SI Report

MCB Camp Lejeune, North Carolina

Area ID	**Adjusted Tap Water RSLs**	**NRWQC-Human Health - Water+ Organisms & Organisms[1]**	**NC2B-SW-Human Health & Water Supply[2]**	ASR #2.79b					
Station ID				MR05-SW01	MR05-SW02		MR05-SW03		MR05-SW04
Sample ID				MR05-SW01-08B	MR05-SW02-08B	MR05-SW02D-08B	MR05-SW03-09B	MR05-SW03D-09B	MR05-SW04-09B
Sample Date				06/18/08	06/18/08	06/18/08	03/31/09	03/31/09	03/31/09
Chemical Name									
Semivolatile Organic Compounds (µg/L)									
bis(2-Ethylhexyl)phthalate	4.8	1.2	--	2 J	1.8 J	11 U	NA	NA	NA
Explosives (µg/L)									
2,4-Dinitrotoluene	7.3	0.11	--	11	10 U	11 UJ	10 U	11 U	11 U
Total Metals (µg/L)									
Aluminum	3,700	--	--	375	795	1,290	NA	NA	NA
Antimony	1.5	5.6	--	7.5 J	60 U	60 U	NA	NA	NA
Calcium	--	--	--	132,000	139,000	136,000	NA	NA	NA
Iron	2,600	300	--	6,170	12,500	21,200	NA	NA	NA
Manganese	88	50	200	73.5	92.8	**227**	NA	NA	NA
Sodium	--	--	--	9,970	10,100	10,100	NA	NA	NA
Dissolved Metals (µg/L)									
Calcium	--	--	--	129,000	130,000	136,000	NA	NA	NA
Iron	2,600	300	--	364	346	257	NA	NA	NA
Manganese	88	50	200	65.8	67.5	60.4	NA	NA	NA
Sodium	--	--	--	9,680	9,600	10,400	NA	NA	NA

Notes:

J - Analyte present, value may or may not be accurate or precise

U - The material was analyzed for, but not detected

NA- not analyzed

1 - NRWQC-Human Health - Water+ Organisms and AWQC-Human Health Organisms were combined to show the most conservative

2 - NC2B-SW-Human Health and NC2B-SW-Water Supply were combined to show the most conservative criteria

Shading indicates exceedance of Adjusted Tap Water RSL

Bold box indicates exceedance of NRWQC criteria

Bold text indicates exceendance of NC2B criteria

TABLE A-6

Sediment Analytical Results

Sites UXO-05 Former Miniature Anti-tank Range and UXO-01 Former B-3 Gas Chamber PA/SI Report

MCB Camp Lejeune, North Carolina

Area ID	**Adjusted Industrial Soil RSLs**	**Adjusted Residential Soil RSLs**	Area 2.79b and Area 2.7c		
Station ID			MR05-SD01	MR05-SD02	
Sample ID			MR05-SD01-08B	MR05-SD02-08B	MR05-SD02D-08B
Sample Date			06/18/08	06/18/08	06/18/08
Chemical Name					
Semivolatile Organic Compounds (µg/kg)					
No Detections					
Explosives (µg/kg)					
No Detections					
Total Metals (mg/kg)					
Aluminum	99,000	7,700	1,760 J	2,930 J	3,080 J
Arsenic	1.6	0.39	0.6 J	0.32 J	0.52 J
Beryllium	200	16	0.3 J	0.45 J	0.45 J
Calcium	--	--	8,300 J	2,250 J	2,360 J
Chromium	1,400	280	2.9 J	2.1 J	2.2 J
Cobalt	30	2.3	3.1 J	1.1 J	1 J
Iron	72,000	5,500	1,130 J	4,790 J	4,640 J
Lead	800	400	2.5	7.2	6.9
Manganese	2,300	180	9.7 J	4.7 J	6.7 J
Nickel	2,000	150	5.2 J	4.8 U	5.3 U
Vanadium	720	55	3.4 J	3.5 J	3.6 J
Zinc	31,000	2,300	20 J	15 J	14.7 J
% Solids	--	--	80	61	56

Notes:

J - Analyte present, value may or may not be accurate or precise

U - The material was analyzed for, but not detected

Shading indicates exceedance of Adjusted Industrial Soil RSL

Underlining indicates exceedance of Adjusted Residential Soil RSL

Appendix B
Munitions Debris Disposal Documents

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

1 2 3	4 5 6	7	23 24	25 26 27 28 29	45 46 47 48 49 50	51	52 53	54 55 56	57 58 59	60 61	62 63	64 65	66 67 68 69	70	71 72	73 74 75 76 77 78 79 80
DOCUMENT IDENT	RI FROM	M&S	UNIT	ISS QUANTITY	SUPPLEMENTARY ADDRESS	SIG	FUND	DISTRIBUTION	PROJECT	PRI	REQD	DELL DATE	ADV RI	O/P	COND	MGT
				LB 360												

1. TOTAL PRICE			2. SHIP FROM	3. SHIP TO
UNIT PRICE	DOLLARS	CTS	Camp Lejeune, NC	Jacskonville Scrap Company, Jacksonville, NC
DOLLARS	CTS		4. MARK FOR	

5. DOC DATE	6. NMFC	7. FRT RATE	8. TYPE CARGO	9. PS

10. QTY. REC'D	11.UP	12. UNIT WEIGHT	13. UNIT CUBE	14. UFC	15. SL
1		360 LBS			

16. FREIGHT CLASSIFICATION NOMENCLATURE

17. ITEM NOMENCLATURE
Cultural Debris-Scrap

18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE
		360 LBS	

22. RECEIVED BY	23. DATE RECEIVED
John Lott	14 Feb 12

PREVIOUS EDITION MAY BE USED

24. DOCUMENT NUMBER & SUFFIX (30-44)

25. NATIONAL STOCK NO. & ADD (8-22)

26. RIC (4-6) UI (23-24) QTY (25-29) CON CODE (71) DIST (55-56) UP (74-80)

Cultural Debris-Scrap
Camp Gieiger, MCB Camp Lejeune
Removed under WE-41, UXO-26 and WE-32, UXO-26

27. ADDITIONAL DATA

James Keesee

Certifier: James Keesee, SUXOS, USAE, 813-343-6370

Adobe Designer 8.0

OP-097 03/11

Web straight bill of lading—original—not negotiable

For shipment information, visit yrc.com or call 1-800-610-6500

The expertise of YELLOW and Roadway

SCAC: RDWY

956-014263-4

Date: 02/22/2012 B/L number: PRO Number:

Shipper number:	Trailer number:
Shipper name: AFFORDABLE SUITES	Consignee name and address: BONETTIS EXPLOSIVES
Address: 35 MCDANIEL DR	Attn: MATT BARNETT
	1618 SMITH RAU RD
City: JACKSONVILLE State: NC ZIP code: 28546	Destination City: COLUMBUS State: TX ZIP Code: 78934
Origin city *(if different than before)*: State: ZIP code:	Phone Number: (979) 739-5597
Invoicee: HELLMANN INTERNATIONAL FORWARDERS INC	Customer number: Store number: Department:
Address: 8249 PARKLINE BLVD	P.O. Number:
	Special instructions:
City: ORLANDO State: FL ZIP code: 32809	

Expedited & Guaranteed Services (select one of the services below)

Contact Name: Contact Phone:

Expedited

- ☐ Time-Critical Deliver by: ___ / ___ / ___ ☐ By noon ☐ By 5 p.m. or end of business day
- ☐ Time-Critical Hour Window Deliver on: ___ / ___ / ___ Between: ___ a.m./p.m. & ___ a.m./p.m.
- ☐ Time-Critical (fastest ground delivery – no delivery date required)

Time-Critical Any Need. Any Speed. Guaranteed.

Guaranteed

- ☐ Guaranteed Standard Standard Service ☐ By noon ☐ By 5 p.m. or end of business day
- ☐ Multiday Window Between: / / & / /

All shipments are subject to individual pricing programs as published by YRC or by written transportation contracts. Quote ID:

Cod fee: Prepaid ☐ Collect ☐ **COD amount: $** **Customer check OK for COD amount?** Yes ☐ No ☐

No. shipping units	Kind of package	No. pieces	Unit of measure	HM	Description of articles, special marks and exceptions	NMFC item number	Class	Weight (lb) *Subject to correction*	Shipment dimensions Length	Width	Height
1	SKD				SCRAP METAL		100	165	48	48	38
					Liftgate Service at Pickup:Prepaid						
1					GRAND TOTAL			165			

EMERGENCY CONTACT Phone: Name: Contract #:

Shipment charges are prepaid unless marked collect: Collect ☐ Total charges: $

NOTE (1) Where the rate depends on value, shippers must state specifically in writing the agreed or declared value of the property as follows:
The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____.

Note: (2) Liability limitation for loss or damage on this shipment may be applicable. See 49 U.S.C. §14706 (c)(1)(A) and (B).

Note (3) Products requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation with ordinary care. See Sec. 2(e) of NMFC item 360.
If this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier may decline to make delivery of this shipment without payment of freight and all other lawful charges.
Signature of consignor

Received subject to individually determined rates or written contracts that have been agreed on in writing between the carrier and shipper, if applicable, otherwise to rates, classifications and rules that have been established by the carrier and are available to the shipper on request.

The property described above is in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined, as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry its usual place of delivery of said destination, if on its route, otherwise to deliver to another carrier on the route to said destination.

It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on the back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled/placarded and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Shipper company name: AFFORDABLE SUITES	Carrier: YRC	Date: 2-22-12	Trailer loaded by: ☑ Shipper ☐ Driver Freight counted by: ☐ Driver: pallets said to contain
Shipper signature: James Kerser	YRC employee signature:	H/U received: 1	☑ Shipper ☐ Driver: Loose pieces ☐ Driver: pallets containing

Mark "X" in "HM" column for hazardous materials.

Single shipment pickup: ☐

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

1 2 3	4 5 6	7	23 24 25	26 27 28 29	45 46 47 48 49	50	51	52 53 54	55 56 57	58 59 60	61 62 63	64 65 66	67 68 69	70 71	72 73	74 75 76 77 78 79 80
DOC IDENT	RI FROM	M&S	UNIT ISS	QUANTITY	SER SUPPLEMENTARY ADDRESS	SIG	FUND	DISTRIBUTION	PROJECT	PRI	REQD DEL DATE	ADV	RI	O/P	COND	MGT
	LB 146															

1. TOTAL PRICE		2. SHIP FROM	3. SHIP TO
DOLLARS	CTS	Camp Lejeune, NC	Bonetti's Explosives Columbus, TX
UNIT PRICE DOLLARS	UNIT PRICE CTS	4. MARK FOR	

5. DOC DATE	6. NMFC	7. FRT RATE	8. TYPE CARGO	9. PS

10. QTY. REC'D	11.UP	12. UNIT WEIGHT	13. UNIT CUBE	14. UFC	15. SL
1		146LBS			

16. FREIGHT CLASSIFICATION NOMENCLATURE
55 Gal Drum

17. ITEM NOMENCLATURE
Material Documented as Safe- MDAS

18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE
		146LBS	

22. RECEIVED BY	23. DATE RECEIVED

PREVIOUS EDITION MAY BE USED

24. DOCUMENT NUMBER & SUFFIX (30-44)

25. NATIONAL STOCK NO. & ADD (8-22)

26. RIC (4-6) UI (23-24) QTY (25-29) CON CODE (71) DIST (55-56) UP (74-80)

Drum ID: 1 each Seal Number: ULINE 25402
MDAS- Material Documentd as Safe
Removed under WE-41, UXO-26 and WE-32, UXO-26

27. ADDITIONAL DATA

The material listed on this form has been inspected or processed by DDESB approved means as required by DOD policy and to the best of knowledge and beliefs does not pose an explosive hazard.

Certifier: James Keesee, SUXOS
USA Environmental, Inc
Camp Lejeune, UXO-26
Jacksonville, NC
910-728-7794

Verifier: Michael Malko, QC
CH2M Hill, Munitions Response Services
Camp Lejeune, UXO-26
Jacksonville, NC
417-855-0256

Adobe Designer 8.0

DD FORM 1348-1A, JUL 91 (EG) ISSUE RELEASE/RECEIPT DOCUMENT

DOC	IDENT	RI FROM	M&S	UNIT	ISS	QUANTITY	SER	SUPPLEMENTARY ADDRESS	SIG	FUND	DISTRIBUTION	PROJECT	PRI	REQD	DEL DATE	ADV	RI	O/P	COND	MGT	UNIT PRICE DOLLARS	UNIT PRICE CTS	DOLLARS	CTS
		LB				146																		

1. TOTAL PRICE	2. SHIP FROM	3. SHIP TO
	Camp Lejeune, NC	Bonetti's Explosives Columbus, TX
	4. MARK FOR	

5. DOC DATE	6. NMFC	7. FRT RATE	8. TYPE CARGO	9. PS

10. QTY. REC'D	11.UP	12. UNIT WEIGHT	13. UNIT CUBE	14. UFC	15. SL
1		146LBS			

16. FREIGHT CLASSIFICATION NOMENCLATURE
55 Gal Drum

17. ITEM NOMENCLATURE
Material Documented as Safe- MDAS

18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE
		146LBS	

22. RECEIVED BY	23. DATE RECEIVED

PREVIOUS EDITION MAY BE USED

24. DOCUMENT NUMBER & SUFFIX (30-44)

Destroyed by: Matt Barnett 3/28/12
DATE: 3-28-12

25. NATIONAL STOCK NO. & ADD (8-22)

WITNESSED BY: CHM HILL
DATE: 3-28-12

26. RIC (4-6) UI (23-24) QTY (25-29) CON CODE (71) DIST (55-58) UP (74-80)

Drum ID: 1 each Seal Number: ULINE 25402
MDAS- Material Documentd as Safe
Removed under WE-41, UXO-26 and WE-32, UXO-26

27. ADDITIONAL DATA

The material listed on this form has been inspected or processed by DDESB approved means as required by DOD policy and to the best of knowledge and beliefs does not pose an explosive hazard.

Certifier: James Keesee, SUXOS
USA Environmental, Inc
Camp Lejeune, UXO-26
Jacksonville, NC
910-728-7794

Verifier: Michael Malko, QC
CH2M Hill, Munitions Response Services
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Adobe Designer 8.0

Appendix C
MEC Intrusive Investigation Documents

TABLE C-1
MEC Intrusive Investigation Results
Site UXO-26 (ASR # 2.79) Expanded SI Report
MCB CamLej, North Carolina

Anomaly Identification	Grid	Amplitude (millivolts)	Dig Date	Easting (UTM)	Northing (UTM)	Item Group	Item Class	Category	Filler	Fuze	Quantity	Depth (inch)	Weight (pound)	Action Taken	Demolition Required?	Item Comment
UXO-26-00053	UXO-26	3.6757	1/30/2012	274395	3846382.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00129	UXO-26	564.4619	1/30/2012	274395.5	3846432.5	Cultural Debris	Scrap	Concrete Pad	N/A	N/A	0	3	0	Left in Place	None	
UXO-26-00147	UXO-26	9.1336	1/30/2012	274397.5628	3846398.396	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00145	UXO-26	2.3991	1/30/2012	274398.6211	3846404.746	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00146	UXO-26	1.7219	1/30/2012	274398.727	3846408.027	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00105	UXO-26	383.4151	1/30/2012	274399.5	3846416.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	12	2	Scrap Bin	None	
UXO-26-00113	UXO-26	2.7411	1/30/2012	274400	3846422	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00160	UXO-26	2.9888	2/1/2012	274401.902	3846293.409	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00150	UXO-26	-2.6696	1/30/2012	274402.8545	3846433.215	Cultural Debris	Scrap	Concrete Pad	N/A	N/A	0	3	0	Left in Place	None	
UXO-26-00006	UXO-26	207.7458	2/1/2012	274404	3846302.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	2	Scrap Bin	None	
UXO-26-00009	UXO-26	56.2	2/1/2012	274404	3846336	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	2	Scrap Bin	None	
UXO-26-00149	UXO-26	12.3449	1/30/2012	274404.6536	3846428.241	Cultural Debris	Scrap	Concrete Pad	N/A	N/A	0	3	0	Left in Place	None	
UXO-26-00148	UXO-26	4.2685	1/30/2012	274408.252	3846418.399	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	20	Scrap Bin	None	
UXO-26-00091	UXO-26	4.4356	1/30/2012	274409	3846411	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-26-00078	UXO-26	15.5679	1/30/2012	274409.5	3846399.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00068	UXO-26	93.9368	1/30/2012	274410	3846394	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	50	Scrap Bin	None	
UXO-26-00060	UXO-26	98.7215	1/30/2012	274411.5	3846385.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.5	Scrap Bin	None	
UXO-26-00021	UXO-26	13.0747	2/1/2012	274415.5	3846360.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-26-00010	UXO-26	244.6923	2/1/2012	274417	3846338	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	2	Scrap Bin	None	
UXO-26-00136	UXO-26	6.5569	1/30/2012	274417	3846441.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00128	UXO-26	4.5974	1/30/2012	274417.5	3846432	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-26-00161	UXO-26	6.5147	2/1/2012	274417.9886	3846299.019	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-26-00005	UXO-26	139.1138	2/6/2012	274418	3846302	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.3	Scrap Bin	None	
UXO-26-00162	UXO-26	1.5729	2/1/2012	274418.0945	3846303.887	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-26-00151	UXO-26	1.7308	1/30/2012	274419.7878	3846409.72	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-26-00079	UXO-26	4.8852	1/30/2012	274421	3846401	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-26-00029	UXO-26	51.9399	2/1/2012	274424.5	3846368	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	3	Scrap Bin	None	
UXO-26-00025	UXO-26	31.4816	2/1/2012	274426.5	3846365.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	10	Scrap Bin	None	
UXO-26-00152	UXO-26	6.62	2/1/2012	274428.2545	3846363.789	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00119	UXO-26	4.7329	1/30/2012	274429	3846424.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00103	UXO-26	5.9605	1/30/2012	274430.5	3846416	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00094	UXO-26	13.6181	1/30/2012	274431	3846412.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00158	UXO-26	5.9064	1/30/2012	274431.4295	3846410.779	Cultural Debris	Scrap	Post	N/A	N/A	1	12	5	Scrap Bin	None	
UXO-26-00153	UXO-26	2.2786	2/1/2012	274432.8053	3846356.486	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-26-00007	UXO-26	275.8197	2/1/2012	274433.5	3846317.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	1	Scrap Bin	None	
UXO-26-00154	UXO-26	1.4937	2/1/2012	274433.8636	3846352.57	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-26-00054	UXO-26	3.1884	1/30/2012	274434	3846383.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00163	UXO-26	1.3522	2/1/2012	274434.6045	3846283.99	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	0.1	Scrap Bin	None	
UXO-26-00003	UXO-26	55.6377	2/1/2012	274436	3846298	Cultural Debris	Scrap	Wire	N/A	N/A	1	3	1	Scrap Bin	None	
UXO-26-00121	UXO-26	10.9284	1/30/2012	274439	3846425.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00122	UXO-26	10.6712	1/30/2012	274439	3846426	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00157	UXO-26	9.8619	2/1/2012	274440.9545	3846363.894	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.25	Scrap Bin	None	
UXO-26-00093	UXO-26	74.6254	1/30/2012	274441	3846411.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.25	Scrap Bin	None	
UXO-26-00159	UXO-26	18.185	1/30/2012	274441.272	3846409.509	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00155	UXO-26	2.1289	2/1/2012	274442.2245	3846333.52	MPPEH	Rocket	Rocket, 2.36-inch, M6A3	Empty	Unfuzed	1	2	18	Consolidation Point	Demil	
UXO-26-00008	UXO-26	9.4273	2/1/2012	274443.5	3846327	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00017	UXO-26	3.7048	2/1/2012	274444	3846357	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.2	Scrap Bin	None	
UXO-26-00156	UXO-26	10.6811	2/1/2012	274444.0236	3846331.086	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00015	UXO-26	6.8877	2/1/2012	274447	3846346.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	5	Scrap Bin	None	
UXO-26-00046	UXO-26	149.5587	2/1/2012	274448.5	3846375	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	1	Scrap Bin	None	
UXO-26-00011	UXO-26	3.2424	2/1/2012	274450	3846338.5	SHD	Shared	N/A	N/A	N/A	1	0	0	Left in Place	None	Shared with UXO-26-00012
UXO-26-00012	UXO-26	3.7148	2/1/2012	274450	3846339	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.25	Scrap Bin	None	
UXO-26-00001	UXO-26	80.5269	2/1/2012	274450	3846282.5	MPPEH	Rocket	Rocket, 2.36-inch, M6A3	Empty	Unfuzed	1	3	3	Consolidation Point	Demil	
UXO-26-00002	UXO-26	3.8096	2/1/2012	274455.5	3846287.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	1	Scrap Bin	None	
UXO-26-00164	UXO-26	471.9814	2/1/2012	274455.7711	3846304.628	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	3	Scrap Bin	None	
UXO-26-00165	UXO-26	266.7658	2/1/2012	274456.3003	3846303.358	Cultural Debris	Scrap	N/A	N/A	N/A	1	1	2	Scrap Bin	None	
UXO-26-00166	UXO-26	71.3074	2/1/2012	274458.6286	3846301.241	MPPEH	Rocket	Rocket, 2.36-inch, M6A3	Empty	Unfuzed	1	6	4	Consolidation Point	Demil	
UXO-26-00117	UXO-26	326.5727	1/30/2012	274460	3846423.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	2	Scrap Bin	None	
UXO-26-00004	UXO-26	178.2644	2/1/2012	274460.5	3846298	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.25	Scrap Bin	None	
UXO-26-00118	UXO-26	419.2661	1/30/2012	274460.5	3846423.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	2	Scrap Bin	None	
UXO-26-00167	UXO-26	25.5047	2/1/2012	274461.0628	3846295.42	Cultural Debris	Scrap	Wire	N/A	N/A	1	0	0.25	Scrap Bin	None	
UXO-26-00109	UXO-26	54.6416	2/1/2012	274462	3846420	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.5	Scrap Bin	None	
UXO-26-00168	UXO-26	17.2904	2/1/2012	274464.0261	3846417.129	Cultural Debris	Scrap	N/A	N/A	N/A	1	14	1	Scrap Bin	None	
UXO-26-00102	UXO-26	51.4482	2/1/2012	274465	3846415.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	12	0.5	Scrap Bin	None	
UXO-26-00081	UXO-26	68.6243	2/1/2012	274468.5	3846402	Cultural Debris	Scrap	Rebar	N/A	N/A	0	12	0	Left in Place	None	

TABLE C-1
MEC Intrusive Investigation Results
Site UXO-26 (ASR # 2.79) Expanded SI Report
MCB CamLej, North Carolina

Anomaly Identification	Grid	Amplitude (millivolts)	Dig Date	Easting (UTM)	Northing (UTM)	Item Group	Item Class	Category	Filler	Fuze	Quantity	Depth (inch)	Weight (pound)	Action Taken	Demolition Required?	Item Comment
UXO-26-00169	UXO-26	89.5374	2/1/2012	274468.577	3846404.217	Cultural Debris	Scrap	N/A	N/A	N/A	1	12	6	Scrap Bin	None	
UXO-26-00072	UXO-26	435.9766	2/1/2012	274469	3846395	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	100	Scrap Bin	None	
UXO-26-00170	UXO-26	120.3827	2/1/2012	274469.0003	3846397.338	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	50	Scrap Bin	None	
UXO-26-00171	UXO-26	873.0374	2/7/2012	274469.7411	3846385.484	Cultural Debris	Scrap	Concrete Pad	N/A	N/A	0	24	0	Left in Place	None	
UXO-26-00172	UXO-26	30.3289	2/1/2012	274469.9528	3846383.05	MEC	Rocket	Rocket, 2.36-inch, M6A3	HE	M400	1	3	3	Left in Place	Demo	BIP
UXO-26-00035	UXO-26	166.8188	2/1/2012	274472	3846370.5	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	6	3	Consolidation Point	Demil	
UXO-26-00174	UXO-26	7.9172	2/1/2012	274472.9161	3846417.869	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.5	Scrap Bin	None	
UXO-26-00092	UXO-26	19.1667	2/1/2012	274475.5	3846411	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.5	Scrap Bin	None	
UXO-26-00087	UXO-26	35.3725	2/1/2012	274477	3846406.5	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	6	0.2	Consolidation Point	Demil	
UXO-26-00080	UXO-26	22.9757	2/1/2012	274478.5	3846401	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	6	1	Consolidation Point	Demil	
UXO-26-00052	UXO-26	25.2284	2/1/2012	274482	3846381.5	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	3	1	Consolidation Point	Demil	
UXO-26-00047	UXO-26	68.0608	2/1/2012	274483	3846377.5	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	6	2	Consolidation Point	Demil	
UXO-26-00175	UXO-26	2.2008	2/7/2012	274483.0761	3846436.708	Cultural Debris	Scrap	N/A	N/A	N/A	1	12	0.5	Scrap Bin	None	
UXO-26-00018	UXO-26	68.0307	2/1/2012	274483.5	3846357.5	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	3	4	Consolidation Point	Demil	
UXO-26-00173	UXO-26	8.5141	2/1/2012	274483.7111	3846372.679	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	3	1.5	Consolidation Point	Demil	
UXO-26-00023	UXO-26	36.4143	2/1/2012	274484	3846363	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	6	6	Consolidation Point	Demil	
UXO-26-00030	UXO-26	56.2532	2/1/2012	274484.5	3846368	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	6	1	Consolidation Point	Demil	
UXO-26-00090	UXO-26	2.5598	2/1/2012	274492	3846410.5	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	3	2	Consolidation Point	Demil	
UXO-26-00184	UXO-26	10.4359	1/30/2012	274492.8128	3846438.084	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00075	UXO-26	18.9386	2/1/2012	274495	3846398	SHD	Shared	N/A	N/A	N/A	1	0	0	Left in Place	None	Shared with UXO-26-00176
UXO-26-00176	UXO-26	17.7089	2/1/2012	274495.3528	3846397.549	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	2	Scrap Bin	None	
UXO-26-00131	UXO-26	13.4088	1/30/2012	274495.5	3846433.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-26-00070	UXO-26	3.9401	2/1/2012	274496	3846394.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.25	Scrap Bin	None	
UXO-26-00055	UXO-26	148.3565	2/1/2012	274496.5	3846383.5	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	3	2	Consolidation Point	Demil	
UXO-26-00177	UXO-26	49.1537	2/1/2012	274496.517	3846377.653	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	3	1	Consolidation Point	Demil	
UXO-26-00042	UXO-26	13.6304	1/30/2012	274497	3846373.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	0.1	Scrap Bin	None	
UXO-26-00123	UXO-26	20.401	1/31/2012	274497.5	3846427.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-26-00031	UXO-26	7.5575	2/1/2012	274498.5	3846368.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.25	Scrap Bin	None	
UXO-26-00120	UXO-26	30.2104	1/31/2012	274498.5	3846424.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.2	Scrap Bin	None	
UXO-26-00013	UXO-26	226.7265	2/1/2012	274499	3846343	MPPEH	Rocket	Rocket, 2.36-inch, M6A3	Empty	Unfuzed	1	6	4	Consolidation Point	Demil	
UXO-26-00179	UXO-26	61.0138	2/1/2012	274499.5861	3846345.585	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	3	3	Consolidation Point	Demil	
UXO-26-00178	UXO-26	44.6325	2/1/2012	274499.5861	3846362.73	MEC	Rocket	Rocket, 2.36-inch, M6A3	HE	M400	1	3	12	Left in Place	Demo	BIP
UXO-26-00020	UXO-26	200.6844	2/1/2012	274500.5	3846358.5	MEC	Rocket	Rocket, 2.36-inch, M6A3	HE	M400	1	6	2	Left in Place	Demo	BIP
UXO-26-00096	UXO-26	8.1829	1/31/2012	274501.5	3846413	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-26-00082	UXO-26	4.8208	1/31/2012	274504	3846402	MPPEH	Rocket	Rocket, 2.36-inch, M6A3	Empty	Unfuzed	1	3	0.5	Consolidation Point	Demil	
UXO-26-00071	UXO-26	29.2821	1/31/2012	274506	3846394.5	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	6	0.5	Consolidation Point	Demil	
UXO-26-00185	UXO-26	2.0373	1/30/2012	274506.3595	3846440.2	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	3	0.1	Consolidation Point	Demil	
UXO-26-00063	UXO-26	29.6434	1/31/2012	274508	3846389	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	6	1	Consolidation Point	Demil	
UXO-26-00057	UXO-26	15.4029	1/31/2012	274509.5	3846384.5	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	3	1	Consolidation Point	Demil	
UXO-26-00059	UXO-26	17.4522	1/31/2012	274509.5	3846385	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.25	Scrap Bin	None	
UXO-26-00024	UXO-26	33.2997	1/31/2012	274510	3846365	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	2	12	Consolidation Point	Demil	
UXO-26-00032	UXO-26	221.5056	1/31/2012	274510	3846368.5	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	6	2	Consolidation Point	Demil	
UXO-26-00043	UXO-26	62.0248	1/31/2012	274510	3846374	MPPEH	Rocket	Rocket, 2.36-inch, M6A3	Empty	Unfuzed	1	6	1	Consolidation Point	Demil	
UXO-26-00182	UXO-26	22.0451	1/31/2012	274510.0636	3846370.668	MPPEH	Rocket	Rocket, 2.36-inch, M6A3	Empty	Unfuzed	1	12	2	Consolidation Point	Demil	
UXO-26-00181	UXO-26	60.1138	1/31/2012	274510.487	3846363.365	MPPEH	Rocket	Rocket, 2.36-inch, M6A3	Empty	Unfuzed	1	1.5	6	Consolidation Point	Demil	
UXO-26-00183	UXO-26	17.0431	1/31/2012	274510.487	3846375.854	MPPEH	Rocket	Rocket, 2.36-inch, M6A3	Empty	Unfuzed	1	6	1	Consolidation Point	Demil	
UXO-26-00124	UXO-26	10.2991	1/31/2012	274510.5	3846428.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	12	0.5	Scrap Bin	None	
UXO-26-00186	UXO-26	6.1444	1/31/2012	274511.6511	3846425.701	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.2	Scrap Bin	None	
UXO-26-00116	UXO-26	238.9342	1/31/2012	274512.5	3846423	QC	QC Seed	QC Seed	N/A	N/A	1	6	1	Consolidation Point	None	Seed #25
UXO-26-00187	UXO-26	8.6411	1/31/2012	274513.4503	3846421.044	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-26-00180	UXO-26	20.6439	1/31/2012	274514.4028	3846355.004	MEC	Rocket	Rocket, 2.36-inch, M6A3	HE	M400	1	6	6	Left in Place	Demo	BIP
UXO-26-00104	UXO-26	2.8662	1/31/2012	274515	3846416	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00188	UXO-26	2.1937	1/31/2012	274518.4245	3846403.794	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	3	0.2	Consolidation Point	Demil	
UXO-26-00066	UXO-26	28.2234	1/31/2012	274519.5	3846392.5	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	6	1	Consolidation Point	Demil	
UXO-26-00065	UXO-26	30.4793	1/31/2012	274519.5	3846392	Cultural Debris	Scrap	N/A	N/A	N/A	1	12	1	Scrap Bin	None	
UXO-26-00061	UXO-26	15.6443	1/31/2012	274519.5	3846386	MPPEH	Rocket	Rocket, 2.36-inch, M6A3	Empty	Unfuzed	1	12	1	Consolidation Point	Demil	
UXO-26-00064	UXO-26	43.3304	1/31/2012	274519.5	3846389.5	MPPEH	Rocket	Rocket, 2.36-inch, M6A3	Empty	Unfuzed	1	6	2	Consolidation Point	Demil	
UXO-26-00048	UXO-26	91.8244	1/31/2012	274520.5	3846377.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	12	3	Scrap Bin	None	
UXO-26-00189	UXO-26	67.6894	1/31/2012	274520.647	3846376.065	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	6	1	Consolidation Point	Demil	
UXO-26-00037	UXO-26	229.3401	1/31/2012	274521.5	3846371.5	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	1	3	Consolidation Point	Demil	
UXO-26-00190	UXO-26	103.6629	1/31/2012	274522.9753	3846363.683	MEC	Rocket	Rocket, 2.36-inch, M6A3	HE	M400	1	6	3	Left in Place	Demo	BIP
UXO-26-00107	UXO-26	22.5883	1/30/2012	274531	3846417	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00114	UXO-26	8.1735	1/30/2012	274531	3846422	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00115	UXO-26	5.818	1/30/2012	274531	3846422.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00097	UXO-26	2.692	1/30/2012	274531.5	3846413	SHD	Shared	N/A	N/A	N/A	1	0	0	Left in Place	None	Shared with UXO-26-00100

TABLE C-1
MEC Intrusive Investigation Results
Site UXO-26 (ASR # 2.79) Expanded SI Report
MCB CamLej, North Carolina

Anomaly Identification	Grid	Amplitude (millivolts)	Dig Date	Easting (UTM)	Northing (UTM)	Item Group	Item Class	Category	Filler	Fuze	Quantity	Depth (inch)	Weight (pound)	Action Taken	Demolition Required?	Item Comment
UXO-26-00100	UXO-26	2.9988	1/30/2012	274531.5	3846413.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00069	UXO-26	5.6725	1/30/2012	274532	3846394	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	5	Scrap Bin	None	
UXO-26-00191	UXO-26	6.0724	1/30/2012	274533.5586	3846388.024	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00039	UXO-26	31.8288	2/6/2012	274537.5	3846372	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.4	Scrap Bin	None	
UXO-26-00192	UXO-26	20.3398	1/31/2012	274538.2153	3846366.011	MPPEH	Rocket	Rocket, 2.36-inch, M6A3	Empty	Unfuzed	1	6	0.2	Consolidation Point	Demil	
UXO-26-00193	UXO-26	18.5598	1/31/2012	274538.427	3846364.212	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	12	0.5	Consolidation Point	Demil	
UXO-26-00019	UXO-26	2581.2305	2/6/2012	274540	3846358	MEC	Rocket	Rocket, 2.36-inch, M6A3	HE	M400	6	24	50	Left in Place	Demo	BIP
UXO-26-00073	UXO-26	63.7438	1/30/2012	274541.5	3846395	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	12	0.5	Consolidation Point	Demil	
UXO-26-00086	UXO-26	31.791	1/30/2012	274541.5	3846405.5	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	6	0.5	Consolidation Point	Demil	
UXO-26-00098	UXO-26	13.7217	1/30/2012	274541.5	3846413	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.2	Scrap Bin	None	
UXO-26-00196	UXO-26	13.36	1/30/2012	274542.0253	3846391.94	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	6	2	Consolidation Point	Demil	
UXO-26-00195	UXO-26	23.5812	1/31/2012	274543.6128	3846380.616	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	3	1	Consolidation Point	Demil	
UXO-26-00044	UXO-26	38.3704	1/31/2012	274547	3846374	MPPEH	Frag	Frag, 2.36-inch Rocket	Empty	Unfuzed	1	3	1	Consolidation Point	Demil	
UXO-26-00038	UXO-26	533.2031	1/31/2012	274548.5	3846371.5	MEC	Rocket	Rocket, 2.36-inch, M6A3	HE	M400	1	6	5	Left in Place	Demo	BIP
UXO-26-00034	UXO-26	332.8261	1/31/2012	274549.5	3846369.5	MEC	Rocket	Rocket, 2.36-inch, M6A3	HE	M400	2	6	7	Left in Place	Demo	BIP
UXO-26-00142	UXO-26	2.6666	2/7/2012	274550.5	3846452	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00144	UXO-26	4.0014	1/30/2012	274550.5	3846455	MPPEH	Frag	Frag, 2.36-inch Rocket	Empty	Unfuzed	1	3	0.1	Consolidation Point	Demil	
UXO-26-00028	UXO-26	549.5047	1/31/2012	274551	3846367.5	MEC	Rocket	Rocket, 2.36-inch, M6A3	HE	M400	1	12	3	Left in Place	Demo	BIP
UXO-26-00125	UXO-26	10.3813	1/30/2012	274551	3846429	Cultural Debris	Scrap	N/A	N/A	N/A	1	12	3	Scrap Bin	None	
UXO-26-00126	UXO-26	5.7459	1/30/2012	274551	3846431.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.2	Scrap Bin	None	
UXO-26-00137	UXO-26	6.6194	1/30/2012	274551	3846442	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00084	UXO-26	168.7071	1/30/2012	274551.5	3846404	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	3	2	Consolidation Point	Demil	
UXO-26-00067	UXO-26	9.4092	1/30/2012	274551.5	3846393	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.2	Scrap Bin	None	
UXO-26-00077	UXO-26	17.7954	1/30/2012	274551.5	3846399	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.25	Scrap Bin	None	
UXO-26-00026	UXO-26	748.0693	1/31/2012	274552	3846366	MEC	Rocket	Rocket, 2.36-inch, M6A3	HE	M400	2	6	12	Left in Place	Demo	BIP
UXO-26-00056	UXO-26	188.3407	1/31/2012	274552	3846384	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	6	2	Consolidation Point	Demil	
UXO-26-00058	UXO-26	177.4582	1/31/2012	274552	3846384.5	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	6	2	Consolidation Point	Demil	
UXO-26-00194	UXO-26	70.2782	1/31/2012	274552.8203	3846364.741	MPPEH	Rocket	Rocket, 2.36-inch, M6A3	Empty	Unfuzed	1	6	6	Consolidation Point	Demil	
UXO-26-00197	UXO-26	1.3345	1/31/2012	274553.032	3846381.886	MPPEH	Rocket	Rocket, 2.36-inch, M6A3	Empty	Unfuzed	1	6	2	Consolidation Point	Demil	
UXO-26-00045	UXO-26	488.2552	1/31/2012	274555	3846374.5	MPPEH	Rocket	Rocket, 2.36-inch, M6A3	Empty	Unfuzed	1	12	12	Consolidation Point	Demil	
UXO-26-00036	UXO-26	263.1855	1/31/2012	274556.5	3846371	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	6	6	Consolidation Point	Demil	
UXO-26-00198	UXO-26	67.1875	1/31/2012	274556.842	3846368.974	SHD	Shared	N/A	N/A	N/A	1	0	0	Left in Place	None	Shared with UXO-26-00036
UXO-26-00027	UXO-26	280.4263	1/31/2012	274557.5	3846367	MEC	Rocket	Rocket, 2.36-inch, M6A3	HE	M400	2	6	12	Left in Place	Demo	BIP
UXO-26-00199	UXO-26	72.672	1/31/2012	274558.6411	3846364.318	MEC	Rocket	Rocket, 2.36-inch, M6A3	HE	M400	4	12	6	Left in Place	Demo	BIP
UXO-26-00138	UXO-26	13.7888	1/30/2012	274560.5	3846442	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00205	UXO-26	7.1033	1/30/2012	274560.5461	3846445.492	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-26-00110	UXO-26	3.1891	1/30/2012	274561	3846420	QC	QC Seed	QC Seed	N/A	N/A	1	6	1	Consolidation Point	None	Seed #28
UXO-26-00130	UXO-26	5.3877	1/30/2012	274561	3846433	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.25	Scrap Bin	None	
UXO-26-00134	UXO-26	6.062	1/30/2012	274561	3846435	Cultural Debris	Scrap	N/A	N/A	N/A	1	12	1	Scrap Bin	None	
UXO-26-00076	UXO-26	27.7302	1/30/2012	274561.5	3846398	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00204	UXO-26	5.0215	1/30/2012	274561.6045	3846394.904	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.25	Scrap Bin	None	
UXO-26-00062	UXO-26	39.8573	1/30/2012	274562	3846388	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	6	0.25	Consolidation Point	Demil	
UXO-26-00203	UXO-26	13.7774	1/30/2012	274562.0278	3846389.718	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.25	Scrap Bin	None	
UXO-26-00202	UXO-26	12.3461	1/31/2012	274562.2395	3846385.379	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	12	3	Consolidation Point	Demil	
UXO-26-00051	UXO-26	58.6092	1/31/2012	274563.5	3846381	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	12	2	Consolidation Point	Demil	
UXO-26-00050	UXO-26	39.7019	1/31/2012	274564	3846378	MEC	Rocket	Rocket, 2.36-inch, M6A3	HE	M400	1	6	3	Left in Place	Demo	BIP
UXO-26-00201	UXO-26	23.1192	1/31/2012	274564.462	3846376.806	Cultural Debris	Scrap	N/A	N/A	N/A	1	12	3	Scrap Bin	None	
UXO-26-00200	UXO-26	25.3492	1/31/2012	274565.9436	3846371.62	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.25	Scrap Bin	None	
UXO-26-00139	UXO-26	13.8765	2/1/2012	274570.5	3846442	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.5	Scrap Bin	None	
UXO-26-00112	UXO-26	3.3062	2/6/2012	274571	3846421.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.3	Scrap Bin	None	
UXO-26-00127	UXO-26	7.1574	2/1/2012	274571	3846431.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.2	Scrap Bin	None	
UXO-26-00101	UXO-26	14.9374	1/30/2012	274571.5	3846413.5	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	0	3	Consolidation Point	Demil	
UXO-26-00083	UXO-26	7.8504	1/30/2012	274571.5	3846403.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00099	UXO-26	24.915	1/30/2012	274571.5	3846413	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.25	Scrap Bin	None	
UXO-26-00206	UXO-26	7.9748	1/31/2012	274573.2461	3846385.273	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.25	Scrap Bin	None	
UXO-26-00207	UXO-26	22.2648	1/31/2012	274573.8811	3846379.24	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.75	Scrap Bin	None	
UXO-26-00049	UXO-26	43.9491	1/31/2012	274574	3846377.5	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	6	1	Consolidation Point	Demil	
UXO-26-00106	UXO-26	5.8321	2/1/2012	274581	3846416.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.25	Scrap Bin	None	
UXO-26-00208	UXO-26	5.1606	2/1/2012	274581.0778	3846435.438	Cultural Debris	Scrap	Rebar	N/A	N/A	0	12	0	Left in Place	None	
UXO-26-00089	UXO-26	7.3233	1/30/2012	274581.5	3846407	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00095	UXO-26	26.5884	2/1/2012	274581.5	3846412.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	12	0.2	Scrap Bin	None	
UXO-26-00209	UXO-26	4.1709	2/1/2012	274590.497	3846450.149	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00141	UXO-26	8.1786	2/1/2012	274590.5	3846449	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00143	UXO-26	26.9761	2/1/2012	274590.5	3846454	Cultural Debris	Scrap	N/A	N/A	N/A	1	12	2	Scrap Bin	None	
UXO-26-00211	UXO-26	41.3355	1/31/2012	274590.9203	3846423.373	Cultural Debris	Scrap	Rebar	N/A	N/A	0	24	0	Left in Place	None	

TABLE C-1
MEC Intrusive Investigation Results
Site UXO-26 (ASR # 2.79) Expanded SI Report
MCB CamLej, North Carolina

Anomaly Identification	Grid	Amplitude (millivolts)	Dig Date	Easting (UTM)	Northing (UTM)	Item Group	Item Class	Category	Filler	Fuze	Quantity	Depth (inch)	Weight (pound)	Action Taken	Demolition Required?	Item Comment
UXO-26-00108	UXO-26	4.9245	1/31/2012	274591	3846417.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.2	Scrap Bin	None	
UXO-26-00135	UXO-26	26.1383	2/1/2012	274591	3846439.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00210	UXO-26	59.5568	1/31/2012	274591.0261	3846426.019	Cultural Debris	Scrap	Rebar	N/A	N/A	0	12	0	Left in Place	None	
UXO-26-00212	UXO-26	10.6249	1/31/2012	274591.0261	3846420.515	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00213	UXO-26	1.7514	1/31/2012	274591.4495	3846401.359	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-26-00085	UXO-26	5.911	1/31/2012	274591.5	3846404	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	2	Scrap Bin	None	
UXO-26-00088	UXO-26	19.146	1/31/2012	274591.5	3846406.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00033	UXO-26	5.6998	1/31/2012	274600.5	3846368.5	MPPEH	Frag	Frag, 2.36-inch Rocket	Empty	Unfuzed	1	4	1	Consolidation Point	Demil	
UXO-26-00140	UXO-26	16.5269	2/1/2012	274600.5	3846443.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.2	Scrap Bin	None	
UXO-26-00217	UXO-26	2.2181	2/1/2012	274600.5511	3846452.794	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00111	UXO-26	7.9551	2/1/2012	274601	3846421	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00132	UXO-26	3.9141	2/1/2012	274601	3846434	SHD	Shared	N/A	N/A	N/A	1	0	0	Left in Place	None	Shared with UXO-26-00133
UXO-26-00133	UXO-26	3.6379	2/1/2012	274601	3846434.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00216	UXO-26	2.1564	1/30/2012	274601.3978	3846409.826	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00040	UXO-26	25.1063	1/31/2012	274601.5	3846372	MPPEH	Rocket	Rocket Motor, 2.36-inch, M6 Series	Empty	Unfuzed	1	24	6	Consolidation Point	Demil	
UXO-26-00041	UXO-26	28.3053	1/31/2012	274601.5	3846372.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.25	Scrap Bin	None	
UXO-26-00074	UXO-26	11.045	1/30/2012	274601.5	3846397	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	1	Scrap Bin	None	
UXO-26-00215	UXO-26	1.7476	1/30/2012	274601.6095	3846391.729	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00022	UXO-26	19.5704	1/31/2012	274602	3846361	Cultural Debris	Scrap	N/A	N/A	N/A	1	9	1	Scrap Bin	None	
UXO-26-00016	UXO-26	76.5601	1/31/2012	274604.5	3846352	Cultural Debris	Scrap	Wire	N/A	N/A	1	6	1	Scrap Bin	None	
UXO-26-00014	UXO-26	100.2007	1/31/2012	274607.5	3846346	Cultural Debris	Scrap	Wire	N/A	N/A	1	0	2	Scrap Bin	None	
UXO-26-00214	UXO-26	55.3532	1/31/2012	274609.0178	3846344.209	Cultural Debris	Scrap	Wire	N/A	N/A	1	6	1	Scrap Bin	None	
UXO-26-00262	UXO-26	2.8136	2/6/2012	274764.4467	3846332.829	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00226	UXO-26	3.9533	2/6/2012	274767	3846350.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00230	UXO-26	3.4867	2/6/2012	274768	3846360	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00232	UXO-26	3.3606	2/6/2012	274769	3846364.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.75	Scrap Bin	None	
UXO-26-00238	UXO-26	6.0704	2/6/2012	274770	3846374	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.25	Scrap Bin	None	
UXO-26-00349	UXO-26	1.1501	2/6/2012	274770.679	3846331.328	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00261	UXO-26	1.9755	2/6/2012	274770.7173	3846377.517	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00350	UXO-26	2.114	2/6/2012	274770.8576	3846329.066	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00242	UXO-26	8.1494	2/6/2012	274771	3846379.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00240	UXO-26	7.8818	2/6/2012	274772	3846377	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.5	Scrap Bin	None	
UXO-26-00293	UXO-26	3.3091	2/6/2012	274772	3846329	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00302	UXO-26	2.6512	2/6/2012	274772	3846361	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00251	UXO-26	21.3765	2/6/2012	274773.5	3846395.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.25	Scrap Bin	None	
UXO-26-00253	UXO-26	4.4198	2/6/2012	274774	3846401	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00256	UXO-26	10.301	2/2/2012	274775	3846408	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.25	Scrap Bin	None	
UXO-26-00335	UXO-26	6.6149	2/6/2012	274775.0843	3846401.098	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00257	UXO-26	11.6928	2/2/2012	274775.5	3846408.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00263	UXO-26	10.217	2/2/2012	274775.5592	3846407.759	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00260	UXO-26	2.8676	2/2/2012	274775.7973	3846412.76	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00351	UXO-26	2.3098	2/6/2012	274775.8582	3846328.47	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00259	UXO-26	4.2204	2/2/2012	274776	3846414	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00264	UXO-26	1.9505	2/2/2012	274776.5117	3846418.792	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00312	UXO-26	10.0458	2/6/2012	274777	3846381	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00301	UXO-26	15.7103	2/6/2012	274777.5	3846360.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.5	Scrap Bin	None	
UXO-26-00317	UXO-26	3.5278	2/6/2012	274777.5	3846391	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00297	UXO-26	13.9254	2/6/2012	274778.5	3846340.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.25	Scrap Bin	None	
UXO-26-00326	UXO-26	6.6649	2/2/2012	274778.5	3846411	Cultural Debris	Scrap	N/A	N/A	N/A	1	12	0.2	Scrap Bin	None	
UXO-26-00352	UXO-26	2.0153	2/6/2012	274779.8468	3846327.994	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00328	UXO-26	12.2722	2/2/2012	274782.5	3846420.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	12	0.2	Scrap Bin	None	
UXO-26-00342	UXO-26	4.4547	2/7/2012	274782.8234	3846370.202	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00316	UXO-26	4.8798	2/6/2012	274786	3846390	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.2	Scrap Bin	None	
UXO-26-00339	UXO-26	1.4939	2/6/2012	274788.717	3846379.608	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00324	UXO-26	435.4254	2/6/2012	274794	3846409	Cultural Debris	Scrap	Stake in tree	N/A	N/A	0	0	0	Left in Place	None	
UXO-26-00343	UXO-26	13.095	2/6/2012	274795.3249	3846358.772	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00329	UXO-26	5.8269	2/2/2012	274795.7416	3846419.077	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00325	UXO-26	596.8725	2/6/2012	274796.5	3846409	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	2	Scrap Bin	None	
UXO-26-00268	UXO-26	2.1627	2/6/2012	274799.1336	3846347.514	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00228	UXO-26	2.7352	2/6/2012	274800	3846352.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00267	UXO-26	43.522	2/6/2012	274800.3242	3846358.705	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	1	Scrap Bin	None	
UXO-26-00229	UXO-26	51.3985	2/6/2012	274800.5	3846359	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	1	Scrap Bin	None	
UXO-26-00300	UXO-26	2.9205	2/6/2012	274801	3846358	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00235	UXO-26	297.5898	2/6/2012	274801.5	3846370.5	SHD	Shared	N/A	N/A	N/A	1	0	0	Left in Place	None	Shared with UXO-26-00236

TABLE C-1
MEC Intrusive Investigation Results
Site UXO-26 (ASR # 2.79) Expanded SI Report
MCB CamLej, North Carolina

Anomaly Identification	Grid	Amplitude (millivolts)	Dig Date	Easting (UTM)	Northing (UTM)	Item Group	Item Class	Category	Filler	Fuze	Quantity	Depth (inch)	Weight (pound)	Action Taken	Demolition Required?	Item Comment
UXO-26-00236	UXO-26	303.4754	2/6/2012	274801.5	3846371	QC	QC Seed	QC Seed	N/A	N/A	1	6	1	Left in Place	None	Seed #22. Excavated during DGM target reacquistion setup to confirm accuracy of setup
UXO-26-00272	UXO-26	4.0347	2/7/2012	274802.5	3846142.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-26-00273	UXO-26	18.9855	2/7/2012	274805	3846143	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.2	Scrap Bin	None	
UXO-26-00255	UXO-26	5.5352	2/6/2012	274805.5	3846407.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00266	UXO-26	2.0077	2/6/2012	274805.9598	3846411.569	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-26-00265	UXO-26	4.2127	2/2/2012	274806.5948	3846416.49	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00311	UXO-26	3.0122	2/7/2012	274808	3846377.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00292	UXO-26	35.7633	2/6/2012	274809	3846327	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	2	Scrap Bin	None	
UXO-26-00279	UXO-26	44.2594	2/7/2012	274809.2544	3846144.443	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.25	Scrap Bin	None	
UXO-26-00322	UXO-26	9.2927	2/7/2012	274810.5	3846397.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.25	Scrap Bin	None	
UXO-26-00274	UXO-26	46.4073	2/7/2012	274811.5	3846145	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.25	Scrap Bin	None	
UXO-26-00321	UXO-26	5.0005	2/7/2012	274812.5	3846397	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.2	Scrap Bin	None	
UXO-26-00315	UXO-26	6.4979	2/7/2012	274814	3846387	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.5	Scrap Bin	None	
UXO-26-00296	UXO-26	3.2157	2/6/2012	274816	3846336.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00291	UXO-26	4.7666	2/6/2012	274818	3846326	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.2	Scrap Bin	None	
UXO-26-00346	UXO-26	2.94	2/7/2012	274818.9588	3846346.27	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00310	UXO-26	13.5506	2/7/2012	274821.5	3846376	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.5	Scrap Bin	None	
UXO-26-00295	UXO-26	4.9558	2/6/2012	274822	3846336	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00299	UXO-26	17.5756	2/7/2012	274823	3846356	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.5	Scrap Bin	None	
UXO-26-00330	UXO-26	37.2852	2/6/2012	274824.0785	3846416.1	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00347	UXO-26	2.2279	2/7/2012	274824.4357	3846345.734	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00298	UXO-26	7.0332	2/7/2012	274826	3846355.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.5	Scrap Bin	None	
UXO-26-00219	UXO-26	24.7971	2/6/2012	274827	3846326	Cultural Debris	Scrap	N/A	N/A	N/A	1	12	5	Scrap Bin	None	
UXO-26-00320	UXO-26	3.6549	2/7/2012	274827	3846395.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00348	UXO-26	2.451	2/7/2012	274827.1146	3846345.377	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00222	UXO-26	4.7972	2/6/2012	274827.5	3846331	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.2	Scrap Bin	None	
UXO-26-00223	UXO-26	4.5991	2/6/2012	274827.5	3846331.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00309	UXO-26	22.2973	2/7/2012	274827.5	3846375.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.5	Scrap Bin	None	
UXO-26-00290	UXO-26	72.267	2/6/2012	274828.5	3846325	Cultural Debris	Scrap	N/A	N/A	N/A	1	12	1	Scrap Bin	None	
UXO-26-00327	UXO-26	18.9747	2/2/2012	274828.5	3846415.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.2	Scrap Bin	None	
UXO-26-00227	UXO-26	3.2205	2/7/2012	274829.5	3846350.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00304	UXO-26	8.8744	2/7/2012	274829.5	3846365	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00338	UXO-26	36.2705	2/7/2012	274830.4484	3846385.263	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.5	Scrap Bin	None	
UXO-26-00269	UXO-26	6.902	2/7/2012	274830.5661	3846359.182	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.2	Scrap Bin	None	
UXO-26-00340	UXO-26	7.5383	2/7/2012	274830.9841	3846375.083	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-26-00231	UXO-26	27.4832	2/7/2012	274831	3846363.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00234	UXO-26	14.0049	2/7/2012	274831.5	3846368.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.5	Scrap Bin	None	
UXO-26-00323	UXO-26	28.221	2/6/2012	274831.5	3846405	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.2	Scrap Bin	None	
UXO-26-00270	UXO-26	2.865	2/7/2012	274831.7567	3846370.056	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00331	UXO-26	37.4768	2/2/2012	274831.7581	3846415.326	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.25	Scrap Bin	None	
UXO-26-00237	UXO-26	6.7287	2/2/2012	274832	3846372	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.75	Scrap Bin	None	
UXO-26-00314	UXO-26	59.3162	2/7/2012	274832	3846385	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.5	Scrap Bin	None	
UXO-26-00241	UXO-26	80.7473	2/7/2012	274832.5	3846377.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.75	Scrap Bin	None	
UXO-26-00287	UXO-26	43.4731	2/6/2012	274832.5	3846321.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.25	Scrap Bin	None	
UXO-26-00305	UXO-26	26.413	2/7/2012	274832.5	3846365	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.75	Scrap Bin	None	
UXO-26-00243	UXO-26	10.8975	2/7/2012	274833	3846381	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00246	UXO-26	43.4332	2/7/2012	274833.5	3846385.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00248	UXO-26	5.3221	2/7/2012	274834	3846392.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00308	UXO-26	81.9337	2/7/2012	274834.5	3846374.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.75	Scrap Bin	None	
UXO-26-00337	UXO-26	5.1521	2/7/2012	274834.9132	3846384.846	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00271	UXO-26	114.0744	2/6/2012	274835.2492	3846402.52	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.5	Scrap Bin	None	
UXO-26-00254	UXO-26	133.9041	2/6/2012	274835.5	3846407	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.5	Scrap Bin	None	
UXO-26-00334	UXO-26	13.2992	2/6/2012	274836.1038	3846404.789	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00341	UXO-26	10.4036	2/7/2012	274837.4731	3846374.428	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00332	UXO-26	7.3702	2/2/2012	274838.9018	3846414.553	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00285	UXO-26	2.6692	2/6/2012	274842.5	3846320	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.5	Scrap Bin	None	
UXO-26-00289	UXO-26	7.5678	2/6/2012	274843	3846323.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	1	Scrap Bin	None	
UXO-26-00283	UXO-26	1.5353	2/7/2012	274846.8955	3846161.879	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.1	Scrap Bin	None	
UXO-26-00280	UXO-26	12.5222	2/7/2012	274847.7935	3846152.226	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.25	Scrap Bin	None	
UXO-26-00303	UXO-26	22.6239	2/7/2012	274849.5	3846363	Cultural Debris	Scrap	N/A	N/A	N/A	1	0	0.5	Scrap Bin	None	
UXO-26-00288	UXO-26	7.1914	2/6/2012	274851	3846322.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.25	Scrap Bin	None	
UXO-26-00278	UXO-26	3.193	2/7/2012	274852.3957	3846137.521	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.25	Scrap Bin	None	
UXO-26-00307	UXO-26	15.4939	2/7/2012	274853	3846373	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.25	Scrap Bin	None	
UXO-26-00344	UXO-26	2.6482	2/7/2012	274853.1893	3846352.64	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	

TABLE C-1
MEC Intrusive Investigation Results
Site UXO-26 (ASR # 2.79) Expanded SI Report
MCB CamLej, North Carolina

Anomaly Identification	Grid	Amplitude (millivolts)	Dig Date	Easting (UTM)	Northing (UTM)	Item Group	Item Class	Category	Filler	Fuze	Quantity	Depth (inch)	Weight (pound)	Action Taken	Demolition Required?	Item Comment
UXO-26-00319	UXO-26	3.9955	2/7/2012	274853.5	3846393	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00336	UXO-26	2.1225	2/7/2012	274854.7371	3846382.703	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.2	Scrap Bin	None	
UXO-26-00306	UXO-26	5.6119	2/7/2012	274857	3846372.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00221	UXO-26	13.3131	2/7/2012	274857.5	3846329	Cultural Debris	Scrap	N/A	N/A	N/A	1	2	3	Scrap Bin	None	
UXO-26-00313	UXO-26	4.5926	2/7/2012	274857.5	3846382.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00224	UXO-26	5.6182	2/7/2012	274858.5	3846338.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00233	UXO-26	3.6879	2/7/2012	274861.5	3846366	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00239	UXO-26	15.354	2/7/2012	274862.5	3846375	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.25	Scrap Bin	None	
UXO-26-00284	UXO-26	10.5258	2/6/2012	274862.5	3846318	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.5	Scrap Bin	None	
UXO-26-00244	UXO-26	3.4116	2/7/2012	274863	3846381	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00345	UXO-26	10.3635	2/7/2012	274863.0715	3846341.567	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	1	Scrap Bin	None	
UXO-26-00294	UXO-26	7.6441	2/7/2012	274864	3846331.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00249	UXO-26	5.1079	2/7/2012	274864.5	3846392.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00250	UXO-26	6.1685	2/7/2012	274864.5	3846394.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00353	UXO-26	3.0963	2/6/2012	274864.8574	3846317.517	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00258	UXO-26	6.3342	2/2/2012	274866	3846410	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00276	UXO-26	10063.7422	2/7/2012	274866.5	3846158.5	Cultural Debris	Scrap	Pierced Steel Plank Matting	N/A	N/A	0	3	0	Left in Place	None	
UXO-26-00286	UXO-26	3.8718	2/6/2012	274867	3846321	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00333	UXO-26	2.792	2/2/2012	274867.834	3846411.457	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.1	Scrap Bin	None	
UXO-26-00218	UXO-26	3.0293	2/6/2012	274869	3846322	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	
UXO-26-00220	UXO-26	12.5257	2/7/2012	274870	3846328.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	4	0.4	Scrap Bin	None	
UXO-26-00277	UXO-26	17.6972	2/7/2012	274871.0292	3846141.075	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.5	Scrap Bin	None	
UXO-26-00318	UXO-26	10.2489	2/7/2012	274871.5	3846391	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00225	UXO-26	30.0447	2/7/2012	274872.5	3846347.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.2	Scrap Bin	None	
UXO-26-00281	UXO-26	128.8267	2/7/2012	274873.2368	3846145.416	QC	QC Seed	QC Seed	N/A	N/A	1	6	1	Consolidation Point	None	Seed #27
UXO-26-00275	UXO-26	10154.6045	2/7/2012	274874	3846153	Cultural Debris	Scrap	Pierced Steel Plank Matting	N/A	N/A	0	6	0	Left in Place	None	
UXO-26-00282	UXO-26	8538.241	2/7/2012	274874.5838	3846152.6	Cultural Debris	Scrap	Pierced Steel Plank Matting	N/A	N/A	0	6	0	Left in Place	None	
UXO-26-00245	UXO-26	7.8924	2/2/2012	274878.5	3846385	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.2	Scrap Bin	None	
UXO-26-00247	UXO-26	8.5284	2/2/2012	274879	3846388	Cultural Debris	Scrap	N/A	N/A	N/A	1	6	0.2	Scrap Bin	None	
UXO-26-00252	UXO-26	4.2533	2/2/2012	274880.5	3846397.5	Cultural Debris	Scrap	N/A	N/A	N/A	1	3	0.1	Scrap Bin	None	

Appendix D
Post-Detonation Sampling Analytical Results

Table D-1
Post-Detonation Surface Soil Analytical Results
UXO-26 Expanded Site Investigation Report
MCB CamLej, NC

Sample ID	MR26-SS16D-IC-12A	MR26-SS16-IC-12A	MR26-SS16D-OC-12A	MR26-SS16-OC-12A
Sample Date	2/2/12	2/2/12	3/8/12	3/8/12
Chemical Name				
Explosives (UG/KG)				
1,3,5-Trinitrobenzene	300 U	300 U	300 U	300 U
1,3-Dinitrobenzene	300 U	300 U	300 U	300 U
2,4,6-Trinitrotoluene	300 U	300 U	300 U	300 U
2,4-Dinitrotoluene	300 U	300 U	300 U	300 U
2,6-Dinitrotoluene	300 U	300 U	300 U	300 U
2-Amino-4,6-dinitrotoluene	300 U	300 U	300 U	300 U
2-Nitrotoluene	300 U	300 U	300 U	300 U
3-Nitrotoluene	300 U	300 U	300 U	300 U
4-Amino-2,6-dinitrotoluene	300 U	300 U	300 U	300 U
4-Nitrotoluene	300 U	300 U	300 U	300 U
HMX	300 U	300 U	300 U	300 U
Nitrobenzene	300 U	300 U	300 U	300 U
Nitroglycerin	1000 U	1000 U	1000 U	1000 U
Perchlorate	1.14 U	1.17 U	1.13 U	1.15 U
PETN	500 U	500 U	500 U	500 U
RDX	300 U	300 U	300 U	300 U
Tetryl	300 U	300 U	300 U	300 U
Metals (MG/KG)				
Aluminum	2,310 J	2,430 J	3,500	3,450
Antimony	5.2 J	4.26 J	1.93 UJ	1.58 UJ
Arsenic	0.534 J	0.776 J	0.524 J	1.58 U
Barium	14	11	9.4 J	14.6 J
Beryllium	0.0357 J	0.0432 J	0.0527 J	0.0561 J
Cadmium	0.138 J	0.102 J	0.122 J	0.139 J
Calcium	401	395	1,520	1,500
Chromium	3.58 J	2.22 J	3.13	3.05
Cobalt	0.165 J	0.135 J	0.483 U	0.396 U
Copper	81.5 J	64.1 J	2.63 J	1.5 J
Iron	1,380	1,260	1,110	1,020
Lead	470 J	371 J	9.96	9.72
Magnesium	46.4	55.3	91.2	90.1
Manganese	2.35	2.07	4.65	5.15
Mercury	0.0258	0.025	0.016 J	0.0184
Nickel	0.613 J	0.56 J	0.561 J	0.561 J
Potassium	41.5 J	51.3 J	52.1 J	53.6 J
Selenium	1.68 U	1.91 U	0.79 J	0.617 J
Silver	0.42 U	0.477 U	0.483 U	0.396 U
Sodium	15.6 J	20.6 J	12.3 J	14.3 J
Thallium	0.84 U	0.953 U	0.966 U	0.792 U
Vanadium	2.59	2.75	3.91	3.71
Zinc	32.6	24	84 J	92 J

Notes:

J - Analyte present. Value may or may not be accurate or precise
MG/KG - Milligrams per kilogram
U - The material was analyzed for, but not detected
UG/KG - Micrograms per kilogram

Appendix E
Human Health Risk Screening Tables

Table E-1
Occurrence, Distribution, and Selection of Chemicals of Potential Concern
Site UXO-26 Expanded Site Investigation
MCB CamLej, North Carolina

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
Surface Soil	121-14-2	2,4-Dinitrotoluene	ND	ND	MG/KG		0/2	0.5 - 0.5	5.0E-01	N/A	1.6E+00 C	1.6E-03	NCSSL	NO	DLBSL
	606-20-2	2,6-Dinitrotoluene	ND	ND	MG/KG		0/2	0.5 - 0.5	5.0E-01	N/A	6.1E+00 N	N/A	N/A	NO	DLBSL
	98-95-3	Nitrobenzene	ND	ND	MG/KG		0/2	0.5 - 0.5	5.0E-01	N/A	4.8E+00 C	N/A	N/A	NO	DLBSL
	99-35-4	1,3,5-Trinitrobenzene	ND	ND	MG/KG		0/2	0.5 - 0.5	5.0E-01	N/A	2.2E+02 N	N/A	N/A	NO	DLBSL
	99-65-0	1,3-Dinitrobenzene	ND	ND	MG/KG		0/2	0.5 - 0.5	5.0E-01	N/A	6.1E-01 N	N/A	N/A	NO	DLBSL
	118-96-7	2,4,6-Trinitrotoluene	ND	ND	MG/KG		0/2	0.5 - 0.5	5.0E-01	N/A	3.6E+00 N	N/A	N/A	NO	DLBSL
	35572-78-2	2-Amino-4,6-dinitrotoluene	ND	ND	MG/KG		0/2	0.5 - 0.5	5.0E-01	N/A	1.5E+01 N	N/A	N/A	NO	DLBSL
	88-72-2	2-Nitrotoluene	ND	ND	MG/KG		0/2	0.5 - 0.5	5.0E-01	N/A	2.9E+00 C	N/A	N/A	NO	DLBSL
	99-08-1	3-Nitrotoluene	ND	ND	MG/KG		0/2	0.5 - 0.5	5.0E-01	N/A	6.1E-01 N	N/A	N/A	NO	DLBSL
	19406-51-0	4-Amino-2,6-dinitrotoluene	ND	ND	MG/KG		0/2	0.5 - 0.5	5.0E-01	N/A	1.5E+01 N	N/A	N/A	NO	DLBSL
	99-99-0	4-Nitrotoluene	ND	ND	MG/KG		0/2	0.5 - 0.5	5.0E-01	N/A	2.4E+01 N	N/A	N/A	NO	DLBSL
	2691-41-0	HMX	ND	ND	MG/KG		0/2	0.5 - 0.5	5.0E-01	N/A	3.8E+02 N	N/A	N/A	NO	DLBSL
	55-63-0	Nitroglycerin	ND	ND	MG/KG		0/2	2 - 2	2.0E+00	N/A	6.1E-01 N	N/A	N/A	YES	DLASL
	14797-73-0	Perchlorate	ND	ND	MG/KG		0/2	0.00227 - 0.00234	2.3E-03	N/A	5.5E+00 N	N/A	N/A	NO	DLBSL
	78-11-5	PETN	ND	ND	MG/KG		0/2	2 - 2	2.0E+00	N/A	1.2E+01 N	N/A	N/A	NO	DLBSL
	121-82-4	RDX	ND	ND	MG/KG		0/2	0.5 - 0.5	5.0E-01	N/A	5.6E+00 C	N/A	N/A	NO	DLBSL
	479-45-8	Tetryl	ND	ND	MG/KG		0/2	0.5 - 0.5	5.0E-01	N/A	2.4E+01 N	N/A	N/A	NO	DLBSL
	7429-90-5	Aluminum	2.4E+03 J	3.5E+03	MG/KG	MR26-SS16D-OC-12A	2/2	158 - 193	3.5E+03	1.3E+04	7.7E+03 N	N/A	N/A	NO	BSL
	7440-36-0	**Antimony**	**5.2E+00 J**	**5.2E+00 J**	**MG/KG**	**MR26-SS16D-IC-12A**	**1/2**	**3.17 - 3.86**	**5.2E+00**	**1.9E+00**	**3.1E+00 N**	**9.0E-01**	**NCSSL**	**YES**	**ASL**
	7440-38-2	Arsenic	5.2E-01 J	7.8E-01 J	MG/KG	MR26-SS16-IC-12A	2/2	3.17 - 3.86	7.8E-01	1.2E+00	3.9E-01 C	5.8E+00	NCSSL	NO	BBK
	7440-39-3	Barium	1.4E+01	1.5E+01 J	MG/KG	MR26-SS16-OC-12A	2/2	0.792 - 0.966	1.5E+01	3.7E+01	1.5E+03 N	5.8E+02	NCSSL	NO	BSL
	7440-41-7	Beryllium	4.3E-02 J	5.6E-02 J	MG/KG	MR26-SS16-OC-12A	2/2	0.0792 - 0.0966	5.6E-02	2.0E-01	1.6E+01 N	6.3E+01	NCSSL	NO	BSL
	7440-43-9	Cadmium	1.4E-01 J	1.4E-01 J	MG/KG	MR26-SS16-OC-12A	2/2	0.158 - 0.193	1.4E-01	2.0E-01	7.0E+00 N	3.0E+00	NCSSL	NO	BSL
	7440-70-2	Calcium	4.0E+02	1.5E+03	MG/KG	MR26-SS16D-OC-12A	2/2	42 - 483	1.5E+03	8.5E+03	N/A	N/A	N/A	NO	NUT
	7440-47-3	Chromium	3.1E+00	3.6E+00 J	MG/KG	MR26-SS16D-IC-12A	2/2	0.792 - 0.966	3.6E+00	1.7E+01	2.9E-01 C	3.8E+00	NCSSL	NO	BBK
	7440-48-4	Cobalt	1.7E-01 J	1.7E-01 J	MG/KG	MR26-SS16D-IC-12A	1/2	0.792 - 0.966	1.7E-01	4.1E-01	2.3E+00 N	9.0E-01	NCSSL	NO	BSL
	7440-50-8	Copper	2.6E+00 J	8.2E+01 J	MG/KG	MR26-SS16D-IC-12A	2/2	0.792 - 0.966	8.2E+01	1.7E+01	3.1E+02 N	7.0E+02	NCSSL	NO	BSL
	7439-89-6	Iron	1.1E+03	1.4E+03	MG/KG	MR26-SS16D-IC-12A	2/2	158 - 193	1.4E+03	7.2E+03	5.5E+03 N	1.5E+02	NCSSL	NO	BSL
	7439-92-1	**Lead**	**1.0E+01**	**4.7E+02 J**	**MG/KG**	**MR26-SS16D-IC-12A**	**2/2**	**1.58 - 19.1**	**4.7E+02**	**2.8E+01**	**4.0E+02 NL**	**2.7E+02**	**NCSSL**	**YES**	**ASL**
	7439-95-4	Magnesium	5.5E+01	9.1E+01	MG/KG	MR26-SS16D-OC-12A	2/2	39.6 - 48.3	9.1E+01	9.0E+02	N/A	N/A	N/A	NO	NUT
	7439-96-5	Manganese	2.4E+00	5.2E+00	MG/KG	MR26-SS16-OC-12A	2/2	1.58 - 1.93	5.2E+00	3.7E+01	1.8E+02 N	6.5E+01	NCSSL	NO	BSL
	7439-97-6	Mercury	1.8E-02	2.6E-02	MG/KG	MR26-SS16D-IC-12A	2/2	0.0158 - 0.0188	2.6E-02	1.6E-01	2.3E+00 N	1.0E+00	NCSSL	NO	BSL
	7440-02-0	Nickel	5.6E-01 J	6.1E-01 J	MG/KG	MR26-SS16D-IC-12A	2/2	0.792 - 0.966	6.1E-01	3.1E+00	1.5E+02 N	1.3E+02	NCSSL	NO	BSL
	7440-09-7	Potassium	5.1E+01 J	5.4E+01 J	MG/KG	MR26-SS16-OC-12A	2/2	79.2 - 96.6	5.4E+01	3.6E+02	N/A	N/A	N/A	NO	NUT

Table E-1
Occurrence, Distribution, and Selection of Chemicals of Potential Concern
Site UXO-26 Expanded Site Investigation
MCB CamLej, North Carolina

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum [1] Concentration Qualifier	Maximum [1] Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration [2] Used for Screening	Background [3] Value	Screening [4] Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for [5] Contaminant Deletion or Selection
	7782-49-2	Selenium	7.9E-01 J	7.9E-01 J	MG/KG	MR26-SS16D-OC-12A	1/2	3.17 - 3.86	7.9E-01	1.6E+00	3.9E+01 N	2.1E+00	NCSSL	NO	BSL
	7440-22-4	Silver	ND	ND	MG/KG		0/2	0.792 - 0.966	9.7E-01	3.5E-01	3.9E+01 N	3.4E+00	NCSSL	NO	DLBSL
	7440-23-5	Sodium	1.4E+01 J	2.1E+01 J	MG/KG	MR26-SS16-IC-12A	2/2	39.6 - 48.3	2.1E+01	2.5E+02	N/A	N/A	N/A	NO	NUT
	7440-28-0	Thallium	ND	ND	MG/KG		0/2	1.58 - 1.93	1.9E+00	N/A	7.8E-02 N	2.8E-01	NCSSL	YES	DLASL
	7440-62-2	Vanadium	2.8E+00	3.9E+00	MG/KG	MR26-SS16D-OC-12A	2/2	1.58 - 1.93	3.9E+00	1.8E+01	3.9E+01 N	6.0E+00	NCSSL	NO	BSL
	7440-66-6	Zinc	3.3E+01	9.2E+01 J	MG/KG	MR26-SS16-OC-12A	2/2	1.68 - 15.8	9.2E+01	2.9E+01	2.3E+03 N	1.2E+03	NCSSL	NO	BSL

[1] Minimum/Maximum detected concentrations.
[2] Maximum concentration is used for screening. If chemical was not detected, the maximum detection limit is used for screening.
[3] Background values are the background threshold values (BTVs) for surface soil data in undeveloped areas (combined soil types).
Background values are from Final Expanded Soil Background Study Report, Marine Corps Base Camp Lejeune, Jacksonville, North Carolina, CH2M HILL, August 2011.
[4] Oak Ridge National Laboratory (ORNL). November, 2011. Regional Screening Levels for Chemical Contaminants at Superfund Sites. [Online]. Available: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm
Adjusted (RSLs based on non-cancer (N) divided by 10) residential soil RSLs.
RSL value for chromium(VI) used as surrogate for chromium.
The soil value of 400 mg/kg for lead is from the Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, USEPA, July 14, 1994.
RSL value for mercury (inorganic salts) used as surrogate for mercury.
[5] Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Detection Limit Above Screening Level (DLASL), not quantitatively evaluated in HHRA
Deletion Reason: No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Detection Limit Below Screening Level (DLBSL)
Below Background Value (BBK)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
C = Carcinogenic
N = Noncarcinogenic
NCSSL = North Carolina Preliminary Soil Remediation Goal, June 2011
MG/KG = micrograms per kilogram
N = Noncarcinogenic
N/A = Not available
ND = Non-detect
NL = Noncarcinogenic lead residential soil RSL not adjusted by dividing by 10.

Table E-2

Risk Ratio Screening for Surface Soil, Maximum Detected Concentration

Site UXO-26 Expanded Site Investigation

MCB CamLej, North Carolina

Analyte	Detection Frequency	Maximum Detected Concentration (Qualifier)	Sample Location of Maximum Detected Concentration	Residential Soil RSL	Acceptable Risk Level	Corresponding Hazard Index[a]	Corresponding Cancer Risk[b]	Target Organ
Metals (mg/kg)								
Antimony	1 / 2	5.2E+00 J	MR26-SS16D-IC-12A	3.1E+01	1	0.2	N/A	Longevity, Blood
Lead	2 / 2	4.7E+02 J	MR26-SS16D-IC-12A	N/A	N/A	N/A	N/A	N/A
Cumulative Corresponding Hazard Index[c]						**0.2**		
Cumulative Corresponding Cancer Risk[d]							**N/A**	
							Total Longevity HI =	0.2
							Total Blood HI =	0.2

Notes:

[a] Corresponding Hazard Index equals maximum detected concentration divided by the RSL divided by the acceptable risk level.

[b] Corresponding Cancer Risk equals maximum detected concentration divided by the RSL divided by the acceptable risk level.

[c] Cumulative Corresponding Hazard Index equals sum of Corresponding Hazard Indices for each constituent.

[d] Cumulative Corresponding Cancer Risk equals sum of Corresponding Cancer Risks for each constituent.

Constituent selected as COPC if it contributes to an overall Hazard Index by target organ greater than 0.5 or Cumulative Corresponding Cancer Risk greater than 5E-05, otherwise, constituent not selected as COPC.

Constituents selected as COPCs are indicated by shading.

COPC = Chemical of Potential Concern

HI = Hazard Index

J = Estimated Value

mg/kg = milligrams per kilogram

N/A = Not available/not applicable

Appendix F
Ecological Risk Screening Table

Table F-1

Ecological Risk Screening - Surface Soil

Site UXO-26 Expanded Site Investigation

MCB Camp Lej, North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient	Arithmetic Mean	Mean Hazard Quotient	Background Threshold Value[2]	Retain?	Rationale
Semivolatile Organic Compounds (UG/KG)												
2,4-Dinitrotoluene	300 - 300	0 / 2	--	--	NSV	-- / --	NSV	150	NSV	--	No	Not detected
2,6-Dinitrotoluene	300 - 300	0 / 2	--	--	NSV	-- / --	NSV	150	NSV	--	No	Not detected
Nitrobenzene	300 - 300	0 / 2	--	--	40,000	-- / --	0.0075	150	0.0038	--	No	Not detected
Explosives (UG/KG)												
1,3,5-Trinitrobenzene	300 - 300	0 / 2	--	--	NSV	-- / --	NSV	150	NSV	--	No	Not detected
1,3-Dinitrobenzene	300 - 300	0 / 2	--	--	NSV	-- / --	NSV	150	NSV	--	No	Not detected
2,4,6-Trinitrotoluene	300 - 300	0 / 2	--	--	NSV	-- / --	NSV	150	NSV	--	No	Not detected
2-Amino-4,6-dinitrotoluene	300 - 300	0 / 2	--	--	NSV	-- / --	NSV	150	NSV	--	No	Not detected
2-Nitrotoluene	300 - 300	0 / 2	--	--	NSV	-- / --	NSV	150	NSV	--	No	Not detected
3-Nitrotoluene	300 - 300	0 / 2	--	--	NSV	-- / --	NSV	150	NSV	--	No	Not detected
4-Amino-2,6-dinitrotoluene	300 - 300	0 / 2	--	--	NSV	-- / --	NSV	150	NSV	--	No	Not detected
4-Nitrotoluene	300 - 300	0 / 2	--	--	NSV	-- / --	NSV	150	NSV	--	No	Not detected
HMX	300 - 300	0 / 2	--	--	NSV	-- / --	NSV	150	NSV	--	No	Not detected
Nitroglycerin	1,000 - 1,000	0 / 2	--	--	NSV	-- / --	NSV	500	NSV	--	No	Not detected
Perchlorate	1.15 - 1.17	0 / 2	--	--	NSV	-- / --	NSV	0.58	NSV	--	No	Not detected
PETN	500 - 500	0 / 2	--	--	NSV	-- / --	NSV	250	NSV	--	No	Not detected
RDX	300 - 300	0 / 2	--	--	NSV	-- / --	NSV	150	NSV	--	No	Not detected
Tetryl	300 - 300	0 / 2	--	--	NSV	-- / --	NSV	150	NSV	--	No	Not detected
Inorganics (MG/KG)												
Aluminum	-- - --	2 / 2	3,500	MR26-SS16-OC-12A	50.0	2 / 2	70.0	2,965	59.3	12800	No	Consistent with background
Antimony	1.93 - 1.93	1 / 2	5.20	MR26-SS16-IC-12A	0.27	1 / 2	19.3	3.08	11.4	1.87	No	See text for discussion
Arsenic	-- - --	2 / 2	0.78	MR26-SS16-IC-12A	18.0	0 / 2	0.043	0.65	0.036	1.17	No	Consistent with background; HQ less than one
Barium	-- - --	2 / 2	14.6	MR26-SS16-OC-12A	330	0 / 2	0.044	14.3	0.043	36.7	No	Consistent with background; HQ less than one
Beryllium	-- - --	2 / 2	0.056	MR26-SS16-OC-12A	21.0	0 / 2	0.0027	0.050	0.0024	0.195	No	Consistent with background; HQ less than one
Cadmium	-- - --	2 / 2	0.14	MR26-SS16-OC-12A	0.36	0 / 2	0.39	0.14	0.38	0.2	No	Consistent with background; HQ less than one
Calcium [3]	-- - --	2 / 2	1,520	MR26-SS16-OC-12A	NSV	-- / --	NSV	961	NSV	8470	No	Macronutrient
Chromium	-- - --	2 / 2	3.58	MR26-SS16-IC-12A	26.0	0 / 2	0.14	3.36	0.13	17.4	No	Consistent with background; HQ less than one
Cobalt	0.48 - 0.48	1 / 2	0.17	MR26-SS16-IC-12A	13.0	0 / 2	0.013	0.20	0.016	0.414	No	Consistent with background; HQ less than one
Copper	-- - --	2 / 2	81.5	MR26-SS16-IC-12A	28.0	1 / 2	2.91	42.1	1.50	17.1	No	See text for discussion
Iron	-- - --	2 / 2	1,380	MR26-SS16-IC-12A	200	2 / 2	6.90	1,245	6.23	7210	No	Consistent with background
Lead	-- - --	2 / 2	470	MR26-SS16-IC-12A	11.0	1 / 2	42.7	240	21.8	27.5	No	See text for discussion
Magnesium [3]	-- - --	2 / 2	91.2	MR26-SS16-OC-12A	NSV	-- / --	NSV	73.3	NSV	904	No	Macronutrient
Manganese	-- - --	2 / 2	5.15	MR26-SS16-OC-12A	220	0 / 2	0.023	3.75	0.017	37	No	Consistent with background; HQ less than one
Mercury	-- - --	2 / 2	0.026	MR26-SS16-IC-12A	0.10	0 / 2	0.26	0.022	0.22	0.161	No	Consistent with background; HQ less than one

Table F-1

Ecological Risk Screening - Surface Soil

Site UXO-26 Expanded Site Investigation

MCB Camp Lej, North Carolina

Chemical	Range of Non-Detect Values	Frequency of Detection	Maximum Concentration Detected	Sample ID of Maximum Detected Concentration	Screening Value	Frequency of Exceedance[1]	Maximum Hazard Quotient	Arithmetic Mean	Mean Hazard Quotient	Background Threshold Value[2]	Retain?	Rationale
Nickel	-- - --	2 / 2	0.61	MR26-SS16-IC-12A	38.0	0 / 2	0.016	0.59	0.015	3.11	No	Consistent with background; HQ less than one
Potassium [3]	-- - --	2 / 2	53.6	MR26-SS16-OC-12A	NSV	-- / --	NSV	52.5	NSV	359	No	Macronutrient
Selenium	1.91 - 1.91	1 / 2	0.79	MR26-SS16-OC-12A	0.52	1 / 2	1.52	0.87	1.68	1.59	No	Consistent with background
Silver	0.48 - 0.48	0 / 2	--	--	4.20	-- / --	0.12	0.24	0.057	0.354	No	Not detected
Sodium [3]	-- - --	2 / 2	20.6	MR26-SS16-IC-12A	NSV	-- / --	NSV	17.5	NSV	250	No	Macronutrient
Thallium	0.95 - 0.97	0 / 2	--	--	1.00	-- / --	0.97	0.48	0.48	--	No	Not detected
Vanadium	-- - --	2 / 2	3.91	MR26-SS16-OC-12A	7.80	0 / 2	0.50	3.33	0.43	17.6	No	Consistent with background; HQ less than one
Zinc	-- - --	2 / 2	92.0	MR26-SS16-OC-12A	46.0	1 / 2	2.00	62.3	1.35	28.6	No	Low magnitude of exceedance

NOTES

1 - Count of detected samples exceeding or equaling Screening Value

2 - Undeveloped, combined soil type (CH2M HILL, 2011)

3 - Macronutrient - Not considered to be a COPC

HQ - Hazard Quotient

MG/KG - Milligrams per kilogram

NSV - No Screening Value

UG/KG - Micrograms per kilogram

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