FINAL
WORK PLAN

Evaluation, Identification, and Management of Potential Solid Waste Disposal Sites

Former Ravenna Army Ammunition Plant/ Camp Ravenna Joint Military Training Center, Portage and Trumbull Counties, Ohio

May 6, 2016

Contract No. W9133L-14-D-0001
Delivery Order No. 0004

Prepared for:

Army National Guard
NGB-ZC-AQ-W9133L
111 South George Mason Drive
Building 2, 4th Floor
Arlington, VA 22204-1373

Prepared by:

AECOM Technical Services, Inc.
12420 Milestone Center Drive, Suite 150
Germantown, MD 20876

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Former Ravenna Army Ammunition Plant/Camp Ravenna Joint Military Training Center, Portage and Trumbull Counties, Ohio

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This Work Plan presents the objectives, methods, procedures, and personnel for activities to be completed under Contract W9133L-14-D-0001, Deliver Order 0004.

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Ohio Environmental Protection Agency

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Craig W. Butler, Director

May 23, 2016

Mr. Mark Leeper
Army National Guard Directorate
ARNGD-ILE Clean Up
111 South George Mason Drive
Arlington, VA 22204

Re: US Army Ammunition Plt RVAAP
Remediation Response
Project Records
Remedial Response
Portage
267000859230

Subject: **Ravenna Army Ammunition Plant, Portage/Trumbull Counties. Approval of the Final Work Plan for Evaluation, Identification, and Management of Potential Solid Waste Disposal Sites, former Ravenna Army Ammunition Plant / Camp Ravenna Joint Military Training Center, Dated May 6, 2016.**
Ohio EPA ID # 267-000859-230

Dear Mr. Leeper:

The Ohio Environmental Protection Agency (Ohio EPA) has received the "Final Work Plan for Evaluation, Identification, and Management of Potential Solid Waste Disposal Sites, former Ravenna Army Ammunition Plant/Camp Ravenna Joint Military Training Center." This document was received at Ohio EPA's Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR), on May 9, 2016. The report was prepared for the Army National Guard by AECOM Technical Services, Inc. under Contract Number W9133L-14-D-0001.

This document was submitted as "Final" prior to concurrence from Ohio EPA on the Army's response to comments. To avoid resubmittal of entire documents when Ohio EPA does not concur, it would be easier for Ohio EPA to review and approve a "response to comment" letter prior to the Army's submittal of a complete "Final" document.

This document was reviewed by personnel from Ohio EPA's DERR, pursuant to the Director's Findings and Orders paragraph 39 (b), and based on Ohio EPA's review of

the response to comment letter found in Appendix G, concurs with your responses and considers the document final and approved.

If you have any questions, please call me at (330) 963-1292.

Sincerely,

Kevin M. Palombo
Environmental Specialist
Division of Environmental Response and Revitalization

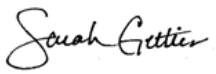
KP/nvr

cc: Katie Tait, OHARNG RTLS
Kevin Sedlak, ARNG
Rebecca Sheffler/Gail Harris, VISTA Sciences Corp.

ec: Rodney Beals, Ohio EPA NEDO DERR
Bob Princic, Ohio EPA NEDO DERR
Justin Burke, Ohio EPA, CO DERR

CONTRACTOR STATEMENT OF INDEPENDENT TECHNICAL REVIEW

AECOM has completed the Final Work Plan for the Evaluation, Identification, and Management of Potential Solid Waste Disposal Sites at the Former Ravenna Army Ammunition Plant/ Camp Ravenna Joint Military Training Center, Portage and Trumbull Counties, Ohio. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project. During the independent technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of technical assumptions; methods, procedures, and materials to be used; and whether the product meets the customer's needs consistent with law and existing National Guard Bureau policy.

Reviewed/Approved by:  5 May 2016

Sarah Gettier — Date
Project Manager

Reviewed/Approved by:  5 May 2016

Amibeth Salvatore — Date
Task Manager

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FINAL
WORK PLAN

Evaluation, Identification, and Management of Potential Solid Waste Disposal Sites

Former Ravenna Army Ammunition Plant/ Camp Ravenna Joint Military Training Center, Portage and Trumbull Counties, Ohio

May 6, 2016

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Katie Tait, OHARNG – Camp Ravenna	0	Email/Transmittal Letter
Kevin Palombo, Ohio EPA Project Manager	1	3
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Rod Beals, Ohio EPA – NEDO	0	Email/Transmittal Letter
Justin Burke, Ohio EPA – CO	0	Email/Transmittal Letter
Gail Harris, AR Manager – Camp Ravenna	2	2

AR = Administrative Record
ARNG = Army National Guard
ARNG-ILE-CR = Army National Guard – Installations Logistics Environmental – Cleanup Restoration
OHARNG = Ohio Army National Guard
Ohio EPA – CO = Ohio Environmental Protection Agency-Central Office
Ohio EPA – NEDO = Ohio Environmental Protection Agency-Northeast District Office

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Acronyms and Abbreviations

° F	degrees Fahrenheit
AECOM	AECOM Technical Services, Inc.
AEDB-R	Army Environmental Database-Restoration
AOC	area of concern
AR	Administrative Record
ARNG	Army National Guard
CDD	construction and demolition debris
COR	Contracting Officer's Representative
CRJMTC	Camp Ravenna Joint Military Training Center
CRM	Cultural Resources Manager
DGM	digital geophysical mapping
DLA	Defense Logistics Agency
E	Endangered
EPA	(Ohio) Environmental Protection Agency
EPP	Environmental Protection Plan
IDW	investigation-derived waste
IRP	Installation Restoration Program
ITR	Independent Technical Review
LTM	long-term management
mm	millimeter
MMRP	Military Munitions Response Program
msl	mean sea level
MSR	monthly status report
OAC	Ohio Administrative Code
OHARNG	Ohio Army National Guard
P	Potentially Threatened
PMP	Project Management Plan
POC	point-of-contact
PPE	personal protective equipment
PWS	Performance of Work Statement
QA	Quality Assurance
QC	Quality Control
QMS	Quality Management System
REIMS	Ravenna Environmental Information Management System
RVAAP	Ravenna Army Ammunition Plant
SC	Species of Concern
SI	Special Interest
SWDSER	Solid Waste Disposal Site Evaluation Report
SWMP	Solid Waste Management Plan
T	Threatened
USP&FO	United States Property and Fiscal Officer
UXO	unexploded ordnance
WP	Work Plan
X	Extirpated

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Section One: Introduction

1.1 Project Authorization and Background

AECOM Technical Services, Inc. (AECOM) developed this Work Plan (WP) in response to a Performance Work Statement (PWS) to evaluate and identify areas that may have been used in the past for disposal or dumping of solid waste and storage of construction and demolition debris (CDD) at the former Ravenna Army Ammunition Plant (RVAAP), now known as Camp Ravenna Joint Military Training Center (CRJMTC), in Portage and Trumbull Counties, Ohio. The PWS was created in response to an interoffice memorandum from the Ohio Environmental Protection Agency (EPA) RVAAP Team, Northeast District Office, to the Army Team, Camp Ravenna, Portage County, on 24 July 2014 (Ohio EPA, 2014), which is included as **Appendix A**.

Authorization for performance is contained in contract W9133L-14-D-0001 Delivery Order 0004. It was issued to AECOM by the National Guard Bureau, and signed on 30 September 2015.

1.2 Project Objectives and Scope

Under the Delivery Order, AECOM is responsible for executing the following environmental activities:

- Review of historical information to inventory known solid waste disposal sites and identify potential waste disposal sites
- Visual surveys to document current site conditions
- Geophysical surveys to identify subsurface solid waste and delineate disposal site boundaries
- Intrusive investigations (if needed) to classify the disposed material
- Evaluation of site information and Ohio EPA requirements to develop a management plan for each site

The work is being done on a firm fixed price basis. AECOM is responsible for furnishing all labor, materials, and equipment necessary to meet the performance objectives and standards contained in contract W9133L-14-D-0001 Delivery Order 0004.

1.3 Work Plan Organization

This WP has been prepared to outline the objectives, methods, procedures, and personnel for activities to be completed under the PWS. This WP documents the logical sequence of activities, the procedures to be used, and the applicable regulations.

1.4 Site Information

CRJMTC, formerly known as RVAAP, is in northeastern Ohio in Portage and Trumbull Counties. Administrative accountability for the entire 21,683-acre facility has been transferred to the United States Property and Fiscal Officer (USP&FO) for Ohio, and the property is licensed to the Ohio Army National Guard (OHARNG) for use as a military training site. The Former RVAAP restoration program involves the cleanup of former production/operational areas throughout the facility.

1.4.1 Location and Climate

The site lies at approximately 41° 11' 42.19" North (latitude) and 81° 05' 36.73" West (longitude) at an elevation of 1,043 feet above mean sea level (msl). It is approximately 3 miles east-northeast of the City of Ravenna and 1 mile north-northwest of the City of Newton Falls. The facility is approximately 11 miles long and 3.5 miles wide. The facility is bounded on the south by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad; on the west by Garret, McCormick, and Berry Roads; on the north by the Norfolk Southern Railroad; and on the east by State Route 534. The facility is surrounded by the communities of Windham, Garrettsville, Charlestown, and Wayland.

The site has hot humid summers and cold damp winters with a maximum yearly mean temperature of 80 degrees Fahrenheit (° F) in July, a minimum yearly mean temperature of 16° F in January, and a yearly average mean temperature of approximately 50° F. Rainfall averages 35 inches per year, and snowfall averages 25 inches per year.

1.4.2 History

Production at RVAAP began in December 1941 with the primary missions of depot storage and ammunition loading. The installation was divided into two units: the Portage Ordnance Depot and the Ravenna Ordnance Plant. The Portage Ordnance Depot was used primarily to store munitions and components, while the Ravenna Ordnance Plant was used to load and pack major caliber artillery ammunition and assemble munitions-initiating components that included fuzes, boosters, and percussion elements. The installation was renamed the Ravenna Ordnance Center in August 1943 and then Ravenna Arsenal in November 1945. In 1950, the plant was placed in standby status, and operations were reduced to renovation, demilitarization, and normal maintenance of equipment, along with the storage of ammunition and components.

The plant was reactivated during the Korean Conflict to load and pack major caliber shells and components. All production ended in August 1957. In October 1957, the installation was again placed in a standby status. In October 1960, the ammonium nitrate line was renovated for demilitarization operations. From January to July 1961, the renovated line was used for melting explosives out of bomb casings for subsequent recycling, after which the plant was again deactivated.

In November 1961, the installation was renamed RVAAP and divided into the Ravenna Ordnance Plant and an industrial section. These facilities were deactivated in August 1972. The demilitarization of the M71A1 90mm projectile occurred from June 1973 until March 1974. Demilitarization of various munitions was conducted from October 1982 through 1992.

Until 1993, RVAAP maintained the capability to load, assemble, and pack military ammunition. As part of the RVAAP mission, the inactive facilities were maintained in a standby status by keeping equipment in a condition to permit resumption of production within prescribed limitations. In September 1993, the RVAAP was placed in inactive caretaker status and subsequently changed to modified caretaker status. The Army determined that the load lines and associated real estate were excess.

As of September 2013, all 21,683 acres of the former RVAAP had been transferred to the USP&FO for Ohio for use by OHARNG as a military training site, now called CRJMTC.

1.4.3 Areas of Concern

Areas of concern (AOCs) that have already been established at CRJMTC under existing remediation programs are displayed on **Figure 1-1**. Known sites are divided between Compliance Restoration sites, Military Munitions Response Program (MMRP) sites, Installation Restoration Program (IRP) sites, and sites that are managed under a combination of MMRP and IRP (MMRP/IRP sites). A list of sites and Army Environmental Database-Restoration (AEDB-R) number is presented in **Table 1-1**.

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CLIENT National Guard Bureau

PROJECT Camp Ravenna - Solid Waste

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Existing Areas of Concern

Environmental Program

- Compliance Restoration Sites
- Installation Restoration Program Sites
- IRP/MMRP
- Military Munitions Response Program Sites

- Rail
- Roads
- Fence Line
- Buildings
- Lakes/Streams

TITLE **Known Areas of Concern**

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Portage County & Trumbull County Ohio

FIGURE 1-1

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Table 1-1: Known Areas of Concern at CRJMTC

Army Environmental Database-Restoration (AEDB-R) Number	Site Name
RVAAP-001-R-01	Ramsdell Quarry Landfill MRS Area 2 (South)
RVAAP-001-R-02	Ramsdell Quarry Landfill MRS Area 1 (North)
RVAAP-002-R-01	Erie Burning Grounds MRS
RVAAP-004-R-01	Open Demolition Area #2 MRS
RVAAP-008-R-01	Load Line #1 MRS
RVAAP-012-R-01	Load Line 12 MRS
RVAAP-016-R-01	Fuze and Booster Quarry MRS
RVAAP-019-R-01	Landfill North of Winklepeck MRS
RVAAP-032-R-01	40mm Firing Range MRS
RVAAP-033-R-01	Firestone Test Facility MRS
RVAAP-034-R-01	Sand Creek Dump MRS
RVAAP-046-R-01	Building #F-15 and F-16 MRS
RVAAP-048-R-01	Anchor Test Area MRS
RVAAP-050-R-01	Atlas Scrap Yard MRS
RVAAP-060-R-01	Block D Igloo MRS
RVAAP-061-R-01	Block D Igloo-TD MRS
RVAAP-062-R-01	Water Works #4 Dump MRS
RVAAP-063-R-01	Group 8 MRS
RVAAP- 01	Ramsdell Quarry Landfill
RVAAP- 02	Erie Burning Grounds
RVAAP- 03	Open Demolition Area #1
RVAAP- 04	Open Demolition Area #2
RVAAP- 05	Winklepeck Burning Grounds
RVAAP- 06	C Block Quarry
RVAAP- 07	Building 1601 Hazardous Waste Storage
RVAAP- 08	Load Line 1
RVAAP- 09	Load Line 2
RVAAP- 10	Load Line 3
RVAAP- 11	Load Line 4
RVAAP- 12	Load Line 12
RVAAP- 13	Building 1200-Dilution\Settling Pond
RVAAP- 14	Load Line 6 Evaporation Unit
RVAAP- 15	Load Line 6 Treatment Plant
RVAAP- 16	Fuze and Booster Quarry Landfill/Ponds
RVAAP- 17	Deactivation Furnace
RVAAP- 18	Load Line 12 Pink Waste Water Treatment
RVAAP- 19	Landfill North of Winklepeck Burning Grounds
RVAAP- 20	Sand Creek Sewage Treatment Plant
RVAAP- 21	Depot Sewage Treatment Plant
RVAAP- 22	George Road Sewage Treatment Plant

Army Environmental Database-Restoration (AEDB-R) Number	Site Name
RVAAP- 23	Unit Training Equipment Site
RVAAP- 24	Waste Oil Tank
RVAAP- 25	Building 1034 Motor Pool
RVAAP- 26	Fuze and Booster Area Settling Tanks
RVAAP- 27	Building 854-PCB Storage
RVAAP- 28	Mustard Agent Burial Site
RVAAP- 29	Upper and Lower Cobbs Ponds
RVAAP- 30	Load Line 7 Pink Waste Water Treatment
RVAAP- 31	Ore Pile Retention Pond
RVAAP- 32	40 MM Firing Range
RVAAP- 33	Load Line 6
RVAAP- 34	Sand Creek Disposal Road Landfill
RVAAP- 35	Building 1037- Laundry Waste Water Sump
RVAAP- 36	Pistol Range
RVAAP- 37	Pesticide Storage Building T-4452
RVAAP- 38	NACA Test Area
RVAAP- 39	Load Line 5
RVAAP- 40	Load Line 7
RVAAP- 41	Load Line 8
RVAAP- 42	Load Line 9
RVAAP- 43	Load Line 10
RVAAP- 44	Load Line 11
RVAAP- 45	Wet Storage Area
RVAAP- 46	Building F-15 and F-16
RVAAP- 47	Building T -5301
RVAAP- 48	Anchor Test Area
RVAAP- 49	Central Burn Pits
RVAAP- 50	Atlas Scrap Yard
RVAAP- 51	Dump Along Paris-Windham Road
RVAAP- 66	Facility-Wide Groundwater
RVAAP- 67	Facility-Wide Sewers
CC-RVAAP-68	Electric Substations (E, W, No. 3)
CC RVAAP-69	Building 1048 - Fire Station
CC RVAAP-70	East Classification Yard
CC RVAAP-71	Barn No. 5 Petroleum Release
CC RVAAP-72	Facility-Wide USTs
CC RVAAP-73	Facility-Wide Coal Storage
CC RVAAP-74	BLDG 1034 Motor Pool Hydraulic Lift
CC RVAAP-75	George Road STP Mercury Spill
CC RVAAP-76	Depot Area
CC RVAAP-77	BLDG 1037 Laundry Waste Water Sump

Army Environmental Database-Restoration (AEDB-R) Number	Site Name
CC RVAAP-78	QUARRY POND SURFACE DUMP
CC RVAAP-79	DLA ORE STORAGE SITES
CC RVAAP-80	GROUP 2 PROPELLANT CAN TOPS
CC RVAAP-83	FORMER BUILDINGS 1031 AND 1039

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Section Two: Technical Management Plan

This section presents the Technical Management Plan for the project.

2.1 Project Drivers and Deliverables

The project is driven by the interoffice memorandum from the Ohio EPA RVAAP Team, Northeast District Office, to the Army Team, Camp Ravenna, Portage County, on 24 July 2014 (Ohio EPA, 2014), included as **Appendix A**. The focus of the memorandum was to provide clarification on Ohio EPA regulations and guidance on addressing solid wastes at IRP and MMRP sites. Further details about the memorandum as it applies to this project are included in **Section 4**.

A Solid Waste Disposal Site Evaluation Report (SWDSER) will be prepared and will contain a comprehensive list of solid waste disposal sites based on historical records, personnel interviews, and preliminary visual inspections. Based on the contract, it is anticipated that up to 35 known and unknown sites could be identified. The SWDSER will also categorize the sites as having sufficient or insufficient historical information to manage waste under the applicable Ohio Administrative Codes (OACs). Sites without sufficient information will undergo further field investigation, as described in **Section 3**.

To meet the overall objective of this project, a Solid Waste Management Plan (SWMP) will be prepared as the final deliverable. The SWMP will catalog all solid waste disposal sites and will include the following information about each site:

- Identification of and justification for the classification of the solid waste
- Site boundaries
- Long-term management (LTM) requirements
- Land use controls
- Recommendations for additional environmental investigation and remedial or removal actions required to manage the site in accordance with Ohio EPA requirements

The SWMP may be used to update the *CRJMTC Property Management Plan* (USACE, 2012).

Further details about these project deliverables is provided in **Section 4**.

2.2 Project Personnel

The AECOM project team organization chart showing the lines of communication is presented in **Figure 2-1**. **Table 2-1** presents the responsibilities of the key personnel. Contact information for the project team is provided in **Appendix B**.

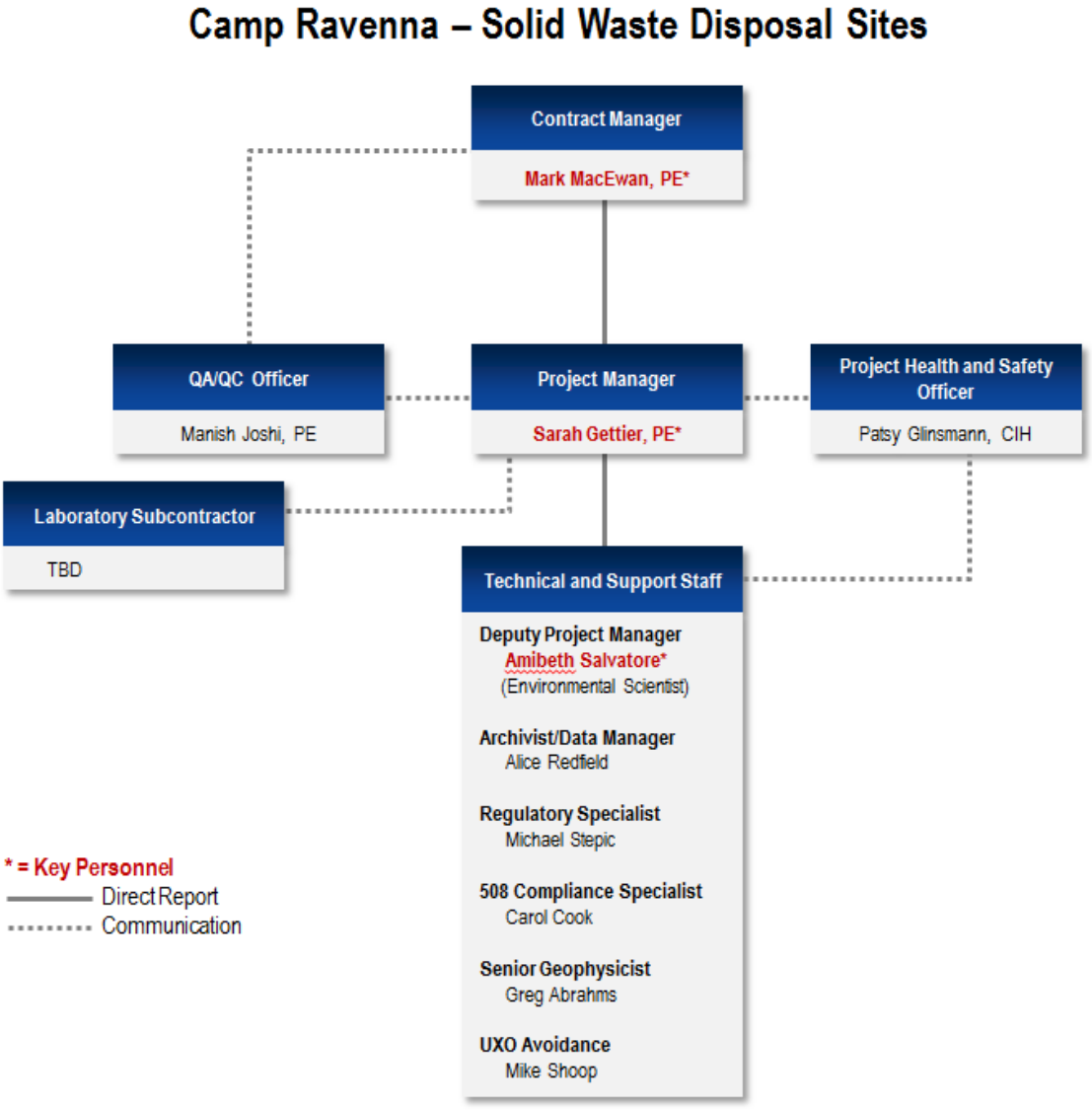

Figure 2-1: Project team organization

Table 2-1: Project Team Personnel

Key Personnel and Project Role	Responsibility
Mark MacEwan Program Manager	• Provide program leadership, management, direction, and coordination • Act as single point-of-contact (POC) for ARNG Contracting Officer • Assign Project Manager and key staff • Assure conformance to program scope, budget, and schedule • Assure programmatic consistency through programmatic safety and quality personnel • Assure compliance with the contract's small business participation goals • Stop, amend, or curtail work for quality, health and safety, regulatory, or operational deficiencies
Sarah Gettier Project Manager	• Serve as primary POC for the ARNG Project Manager • Execute work at the site in accordance with PWS and all applicable regulations • Assign task responsibilities to technical staff and subcontractors • Direct day-to-day project operations and preparation of all deliverables • Organize planning meetings and prepare briefing materials • Review and approve all project deliverables • Interface with regulators as approved by ARNG • Coordinate oversight of activities with safety and health and quality control (QC) personnel • Monitor and control costs and schedule on a milestone basis • Stop, amend, or curtail work for quality, health and safety, regulatory, or operational deficiencies
Amibeth Salvatore Task Manager	• Serve as technical lead on all tasks and report deliverables in the PWS • Manage the preparation of all deliverables, including quality reviews • Prepare written responses to comments from ARNG and regulators for incorporation into project deliverables • Manage on a daily basis the tasks that are required to meet scope, schedule, and budget of all field tasks • Ensure concurrence with comments prior to incorporation into deliverables • Coordinate daily work to ensure quality of all activities • Coordinate 508 compliance of all deliverables • Stop, amend, or curtail work for quality, regulatory, or operational deficiencies
Greg Abrahms Senior Geophysicist	• Participate in project planning and the design of geophysical approaches • Provide input into the applicable sections of WP documents and project reports • Coordinate field survey team activities • Review and approve raw and post-process data • Review and approve QC data and survey results and deliverables • Stop, amend, or curtail work for health and safety or operational deficiencies
Manish Joshi QA/QC Officer	• Enforce AECOM Quality Management System (QMS) • Conduct and document Quality Assurance (QA) audits as necessary • Identify, document, report, and ensure completion of all corrective actions to ensure compliance with QMS requirements • Stop, amend, or curtail work for quality, regulatory, or operational deficiencies

Key Personnel and Project Role	Responsibility
Mike Shoop UXO Technician	• Participate in all field activities to provide unexploded ordnance (UXO) avoidance support • Flag and report any UXO items that are encountered • Stop, amend, or curtail work for health and safety or operational deficiencies

2.3 Project Schedule

A detailed project schedule is presented in **Appendix C**. The schedule is based on the Contract Order award of 30 September 2015.

When the due date for an activity falls on a Federal holiday or weekend, AECOM assumed an actual due date of the next business day. AECOM assumed a Government review period of 30 calendar days for preliminary draft deliverables and an Ohio EPA review period of 45 calendar days for draft deliverables. These review periods are reflected in the schedule presented in **Appendix C**.

2.4 Technical Scope

AECOM will gather existing information in a manner similar to a Historical Records Review.

The potential solid waste disposal sites at CRJMTC fall into the following categories:

- Known solid waste sites identified through desktop data gathering
- Sites that are currently unknown

2.4.1 Known Sites

AECOM will catalog the known solid waste sites at CRJMTC that are currently being investigated or have been investigated using the desktop data collection procedure described in **Section 2.5**. These sites include those with a No Further Action status and those that are being managed under programs such as MMRP, IRP, and the Resource Conservation Recovery Act. An example of this type of site is the Atlas Scrap Yard Munitions Response Site, shown in **Figure 2-2**.

Figure 2-2 displays all known AOCs at Camp Ravenna, but not all AOCs are solid waste disposal sites. AECOM will identify the AOCs that are (or contain) known solid waste disposal sites by reviewing historical documents (see **Section 2.5.1**), reviewing aerial photographs (see **Section 2.5.2**) and interviewing personnel (see **Section 2.5.3**). Sites that have been previously identified and fully characterized will be documented in the SWDSER, and information about these sites as well as waste management recommendations will be included in the SWMP. A brief visual survey will be conducted of these sites and photographs will be take to be included in the SWMP. If it is determined that a site needs further characterization, the plan for this investigation will be detailed in the SWDSER.

2.4.2 Unknown Sites

AECOM will compile a list of previously unknown, potential solid waste disposal locations identified by reviewing aerial photographs (see **Section 2.5.2**) and interviewing personnel (see **Section 2.5.3**). AECOM will then perform visual surveys (see **Section 3.1**) at these potential sites. When the presence of a new site is verified, AECOM field personnel will delineate

Unknown: Example of a **previously unknown solid waste disposal site** encountered during the site visit that requires characterization. This type of site would be documented, including boundary delineation and waste characterization and quantification. Any sites identified will be thoroughly evaluated using visual surveys, geophysical surveys, and/or intrusive investigations. Examples of recommendations may include on-site repurposing, off-site recycling, or off-site disposal.

Known: The Atlas Scrap Yard MRS is an example of a known site, (ie. **previously identified and studied site**) that requires further evaluation and management. At this site, solid waste was encountered during intrusive site activities and reburied. For this type of site, AECOM would review all site-specific documentation focusing on known solid waste, and will make recommendations that may include managing waste in place or excavation and disposal.

CLIENT	National Guard Bureau
PROJECT	Camp Ravenna - Solid Waste
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Date:	2/11/2016
CHK BY	ABS
Date:	2/11/2016

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Example Solid Waste Disposal Sites
- Example Dunnage Site (wooden pallets)
- Atlas Scrap Yard MRS

Existing Areas of Concern
Environmental Program
- Compliance Restoration Sites
- Installation Restoration Program Sites
- IRP/MMRP
- Military Munitions Response Program Sites

- Rail
- Roads
- Fence Line
- Buildings
- Lakes/Streams

TITLE **Potential Waste Site Categories: Known & Unknown Sites**

AECOM 12420 Milestone Center Drive Germantown, MD 20876

Portage County & Trumbull County Ohio

FIGURE 2-2

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and characterize the site, document relevant information, and photograph the site. If necessary, field personnel will perform a geophysical survey and/or intrusive investigations (see **Sections 3.2**). **Section 3** details the Field Investigation Plan, and **Figure 2-3** is a decision tree that will be used to determine which field activities will occur at any newly identified potential sites.

2.5 Desktop Data Collection Procedure

Desktop data collection applies to determine both known and unknown sites. Desktop data collection activities will include reviewing historical documents and aerial photographs, and performing personnel interviews by telephone or in person. The information obtained from the reviews and interviews as well as from the preliminary visual surveys, (see **Section 3)** will be used to prepare the SWDSER (see **Section 4.2** for more information on the SWDSER). For newly identified sites, additional field investigations, geophysical surveys, and intrusive investigations may be necessary to fully characterize them (**Section 3**).

2.5.1 Review of Historical Documents

As previously mentioned, some of the solid waste disposal sites have already been identified and evaluated. In some cases, solid waste was found during other field investigations, but was kept on site and only documented, i.e., not evaluated or removed. Therefore, AECOM will review all historical documents and give particular attention to any mention of solid waste that was identified but left in place.

Historical documents will be obtained from the Ravenna Environmental Information Management System (REIMS) database, physical documents held at CRJMTC, and other document repositories. REIMS is a comprehensive digital repository of historical documents, geographic information, and data collected at CRJMTC. AECOM will work closely with Ms. Gail Harris, Administrative Record Manager/Archivist at CRJMTC, to ensure that any information not available on REIMS is identified and reviewed.

2.5.2 Review of Aerial Photographs

AECOM will obtain aerial photographs of CRJMTC from REIMS, National Archives, Earth Explorer, and Google Historical. Ms. Alice Redfield, an aerial photography specialist at AECOM, will analyze the photographs to help identify solid waste disposal sites at CRJMTC that are not recorded in historical documents or known by former or current employees.

Standard analysis will be used to interpret stereoscopic aerial photographs using a 4X pocket stereoscope. Non-stereoscopic analysis of monoscopic aerials will be performed by simple inspection of the imagery. Stereoscopic analysis is important because it allows the interpreter to differentiate actual features in the topography, such as pits and mounds, from tonal variations on the surface of the ground that may be unrelated to solid waste disposal sites.

AECOM will review historical reports and maps to become familiar with the site before analyzing the aerial photographs, which will be done in chronological order. Features identified during the analysis will be digitized and labeled on georeferenced images. The final product of the analysis will be a series of figures identifying potential areas of interest, which will be included in the SWDSER.

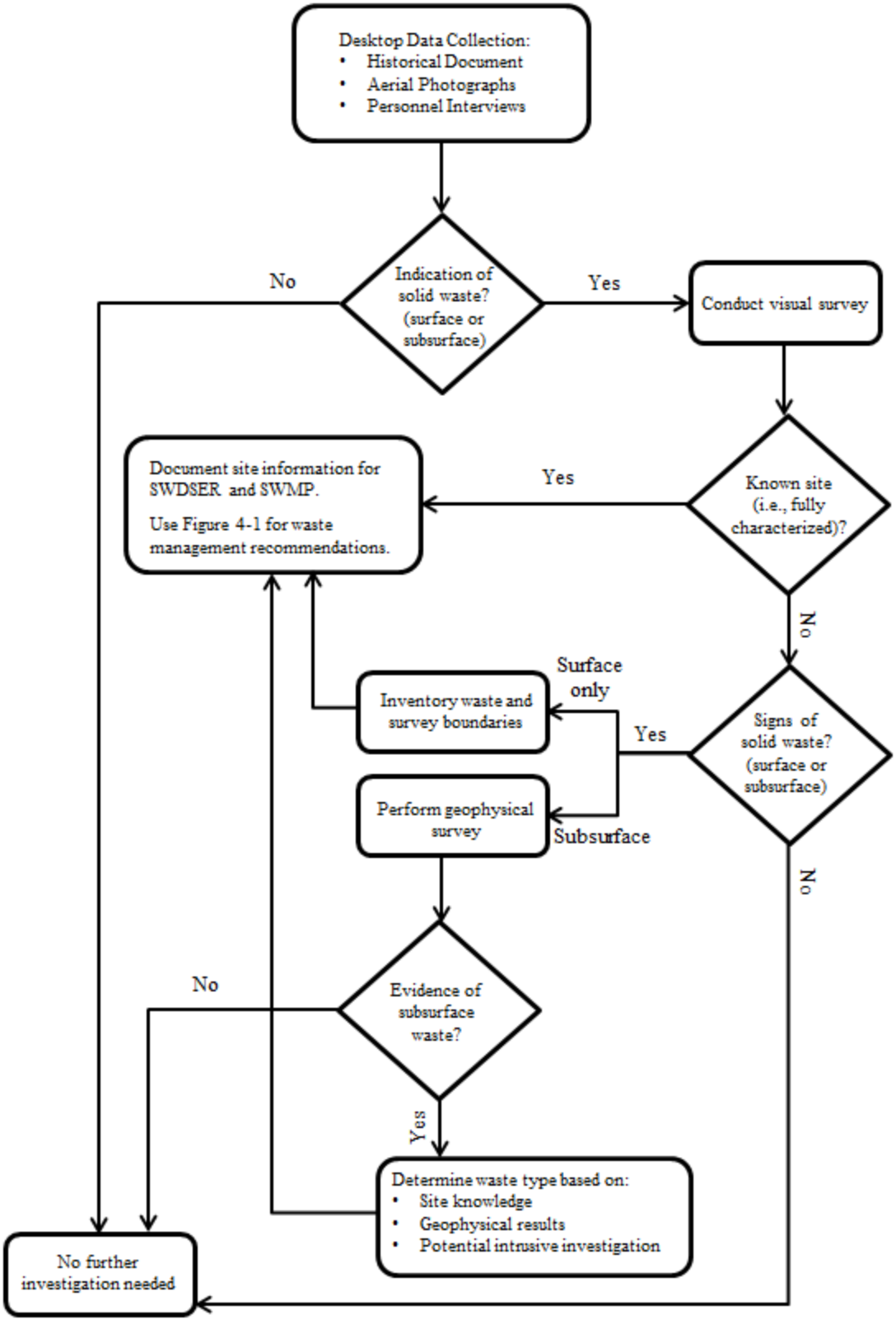

Figure 2-3: Decision Tree for Known and Unknown Sites

2.5.3 Personnel Interviews

The AECOM team will interview persons familiar with current and historic operations at CRJMTC to assist in identifying potential solid waste disposal sites. AECOM will compile a list of potential interviewees through discussions with CRJMTC project personnel and interviewees. Potential interview questions are provided in **Exhibit 1**, but the questions may be altered or additional questions may be asked based on the information provided by interviewees.

CRJMTC Potential Solid Waste Disposal Sites Interview

Interviewee's name _____

Affiliation _____

Date _____

Interviewer _____

Other attendees, if any _____

1. When did you work at CRJMTC or how long have you been working at CRJMTC? (AECOM will include relevant previous names of Camp Ravenna for clarification).

2. If you were never directly employed by CRJMTC, what affiliation did you have or do you have with the installation (for example, with a contractor)?

3. Which areas of CRJMTC are you familiar with?

4. Looking at the map that we have provided you, can you identify the locations of any historical or current solid waste disposal sites that you were or are aware of? (AECOM will provide the interviewee with Figure 1-1 to assist with this question and will conduct the interviews in person if possible to facilitate the conversation).

5. Describe any documents you are aware of that might help you identify solid waste disposal sites.

6. Describe any activities you are aware of that may have led to the disposal of solid waste at a location on CRJMTC and that may not be formally documented.

7. What additional information do you have that might be relevant?

Exhibit 1: Potential interview questions

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Section Three: Field Investigation Plan

This section presents the Field Investigation Plan for the project.

Based on the results of the review of historical records (documents and aerial photographs) and the interviews, AECOM will categorize sites and determine which ones require more information. It is anticipated that field activities will only be performed at newly identified locations, because locations that have already been categorized as solid waste disposal sites have been fully characterized. Field activities consisting of visual surveys, geophysical surveys, and/or intrusive investigations will be conducted at potential sites where the historical records and/or personnel interviews indicate that surface or subsurface solid waste may be present and additional information is needed (see **Figure 2-3**). **Section 3.1** and **Section 3.2** detail the tasks that will be performed for each step of field work. The Health and Safety Plan, which will be submitted under a separate cover, details the relevant personnel and training required for these activities, expected on-site hazards, and emergency response procedures.

Notification of field work activities will be issued to ARNG/OHARNG and Ohio EPA at least 15 days prior to the commencement of field work. AECOM will draft notification for the Ohio EPA, which will be sent from the National Guard Bureau (NGB) on NGB letterhead and signed by Mark Leeper.

3.1 Visual Surveys

On-site visual surveys will be conducted for all potential solid waste disposal sites. Prior to field mobilization, AECOM personnel performing the inspections will familiarize themselves with the results of the historical records analysis and interviews. All field personnel will have experience classifying solid waste.

Visual surveys will include documenting the conditions of potential solid waste disposal sites as follows:

- Photographs of site features and conditions
- Documentation of any materials resulting from surface dumping
- Documentation of any issues that may affect the LTM of the site

The visual inspection field team will include an AECOM UXO technician with experience in environmental science. The technician will assist with inspections and provide UXO avoidance, following OHARNG procedures in reporting and responding in the unlikely event munitions or explosives of concern item is encountered.

Due to snowy winters and the dense vegetation that commonly grows across Camp Ravenna, visual inspections will be scheduled at a time of best possible visibility of potential solid waste. The scheduling of visual inspections will be coordinated with ARNG Environmental staff and CRJMTC Range Control to minimize disruption to base activities and daily operations. During on-site activities, AECOM staff will check in daily with CRJMTC Range Control and Environmental Division staff to ensure full awareness of the field team's location for safety and coordination.

The visual inspections will be fully documented with detailed site notes and georeferenced photographs. At sites that are confirmed as solid waste disposal sites, Global Positioning System (GPS) points will be collected to delineate the boundary of the site and any notable waste items (e.g., abandoned storage tanks). All confirmed sites will be delineated on a professional quality site map.

Field staff will be equipped with basic brush-clearing tools and will have appropriate safety training in the use of the tools in order to be able to improve the access to overgrown locations. Field work will be scheduled to minimize the need for brush removal, and field staff will be aware of vegetation cutting protocol outlined in **Section 6.3.1**. All field work will be performed in accordance with AECOM and site-specific health and safety procedures, including a Health and Safety Plan.

3.2 Geophysical Surveys and Potential Intrusive Investigation

At sites where historical information and/or visual inspections are insufficient to define the site boundaries, geophysical surveys will be conducted using digital geophysical mapping (DGM) to delineate the extent of any suspected subsurface solid waste. The SWDSER will define which sites will undergo these additional field steps and will also further refine the details of these activities.

DGM data will supplement the information obtained from the historical records review and visual survey. While the aerial imagery documentation and surface evidence gathered during the visual survey may provide a general idea of potential subsurface buried solid waste, a geophysical survey is necessary to fully delineate the vertical (up to 4 feet below ground surface) and horizontal extent of potential buried waste. Based on current historical site data, sites that may require geophysical surveys are expected to be no larger than 2 acres each.

Prior to geophysical team mobilization, AECOM will integrate information from geographic information system (GIS) maps, field-collected coordinates, and historical and current aerial maps to optimize data collection. For site delineation, AECOM will use in-house geophysical personnel and equipment led by a senior geophysicist.

Progressive geophysical tools will be used, starting with a Geonics EM-31 ground conductivity meter. An experienced operator can use this equipment to identify contrasts between debris and natural soils to depths of up to approximately 15 feet below ground surface. The Geonics EM-31 survey will be supplemented with a magnetic survey using a Geometrics G-858G magnetic gradiometer to provide confirmatory information and help delineate deeper fill material.

With the EM-31 and G-858G, a response baseline for natural soils and filled areas will be established initially by conducting preliminary surveys in both undisturbed areas and suspected waste areas identified during the visual surveys. Both geophysical tools can be carried on foot over open areas and through the vegetation characteristic of many sites at Camp Ravenna. While peak responses can be noted in the field and marked with flags, follow-on post-processing will be performed to identify the extent of buried debris.

If geophysical surveys detect subsurface anomalies but the waste type cannot be determined through the geophysical survey or based on user knowledge, AECOM will perform intrusive investigations with test pits. Test pits will be conducted in areas with geophysical anomalies and may be performed at up to 25 percent of the sites identified. A hand auger or a small backhoe will be used, and subsurface investigation will be no deeper than 4 feet deep. Decision as to which equipment will be used for intrusive investigation will be based on field characteristics and geophysical results.

These investigations will be conducted in compliance with the appropriate sections of OAC 3745-27, and will be used to determine the types of waste present. Solid waste will be classified in accordance with OAC 3745-29-01, OAC 3745-27-01, OAC 3745-400-01 (F), OAC 3745-400-01(E), OAC 3745-

52-11, and other applicable local, State, and Federal regulations. The types of OAC-defined solid waste that are expected at Camp Ravenna include CDD, clean hard fill, and industrial solid waste.

Prior to any subsurface disturbance activity, AECOM will coordinate utility clearance with the CRJMTC Department of Public Works office, which can be coordinated through the CRJMTC Environmental Office. AECOM will also coordinate with ARNG/OHARNG prior to any digging or disturbance activity to avoid adverse effects on streams or wetlands and to plan proper controls (i.e., stormwater controls).

Information obtained during the geophysical surveys will be used to determine the potential boundary of the sites. Based on this information, the excavation of test pits will start from "clean" soil and continue toward the potential site boundary. Once the edge of the solid waste site is encountered, the excavation will be stopped and the boundary will be staked and recorded. Care will be taken to remove only dirt (i.e., not debris) from the excavation. AECOM will simply uncover materials to identify and document it, but it will not be removed from the test pits. Although unlikely to encounter, any removed debris will be properly disposed in a licensed disposal facility in accordance with applicable federal, state, and local regulations. The presence or absence of trash or debris and a general classification of the debris will be documented, including photographs.

Based on field assessment of excavated soil, including visual inspection and photoionization detector readings, it will be determined if there is a reason to believe that soil should be containerized and not used as backfill. If determined that soil can be used to backfill the test pit, it will be done in the reverse order of removal (i.e., last material out, first material in). If soil must be removed and properly disposed and backfill is required, clean soil from an approved source will be used as backfill.

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Section Four: Project Deliverables

This section presents the methodologies for drafting the SWDSER and the SWMP. This includes specific information on classifying solid waste and determining a management approach for each site.

4.1 Solid Waste Disposal Site Evaluation Report

Information gathered during the desktop data collection phase and visual surveys will be presented in the SWDSER. It will contain a comprehensive list of solid waste disposal sites, which will be categorized as sites with or without sufficient historical information to manage waste under the applicable OACs.

Sites that are identified in the SWDSER as requiring further investigation will then undergo geophysical surveys and potentially intrusive investigations, as described in **Section 3**. Prior to the commencement of these investigations, AECOM will discuss the field activity plans with ARNG/OHARNG to evaluate potential impacts to wetlands, surface water, cultural resources, etc.

4.2 Solid Waste Management Plan

After any necessary geophysical surveys and intrusive investigations are complete, a SWMP will be prepared as the final deliverable. The SWMP will catalog all solid waste disposal sites and will include the following information about each site:

- Identification of and justification for the classification of the solid waste
- Site boundaries
- LTM requirements
- Land use controls
- Recommendations for additional environmental investigation and remedial or removal actions required to manage the site in accordance with Ohio EPA requirements

Site findings will be used to identify applicable OACs, which will guide management recommendations. The following sections outline the applicable waste classification definitions and waste management guidance provided in the Ohio EPA memorandum (Ohio EPA, 2014) and the applicable OACs. These definitions and regulations will be used as decision points in the evaluations of the sites and in crafting management recommendations.

Any additional solid waste disposal sites that are identified after the SWMP is completed will be added and managed according to the SWMP.

4.2.1 Waste Classification

Ohio EPA (2014) states that the type of material at each waste disposal site should first be identified. The classification will drive the regulation of the material. The OACs that define the classifications are:

- Hazardous waste (OAC 3745-52-11)
- Solid waste (OAC 3745-27-01)
- Industrial solid waste(OAC 3745-29-01)
- Construction and demolition debris (CDD) (OAC 3745-400-01(F))

- Clean hard fill (OAC 3745-400-01(E))

Generator knowledge can provide the supporting evidence for the waste classification that is selected.

4.2.2 Waste Management

Waste area boundaries should be clearly delineated to assess the effectiveness of management approaches for each disposal site, and the date of disposal should be determined in order to determine the applicable regulations and management recommendations.

Ohio EPA (2014) outlines the change in regulations based on the landfill closure date, and **Figure 4-1** is a flowchart that depicts the key decision points. Solid waste was regulated beginning in 1968, and landfill closure requirements vary from 1968 to the present depending on when the landfill closed and whether it contains solid or hazardous waste. The landfill areas at CRJMTC operated before 1968 (Ohio EPA, 2014), and if anything more recent is discovered, it will be classified "open dumping" as defined by OAC 3745-27-01.

Regulation of CDD for closure obligations began on 30 September 1996. If CDD materials, as defined by OAC 3745-400-01(F), were placed after 30 September 1996, the area will be subject to closure under OAC 3745-400-07, or removal of the materials will be required.

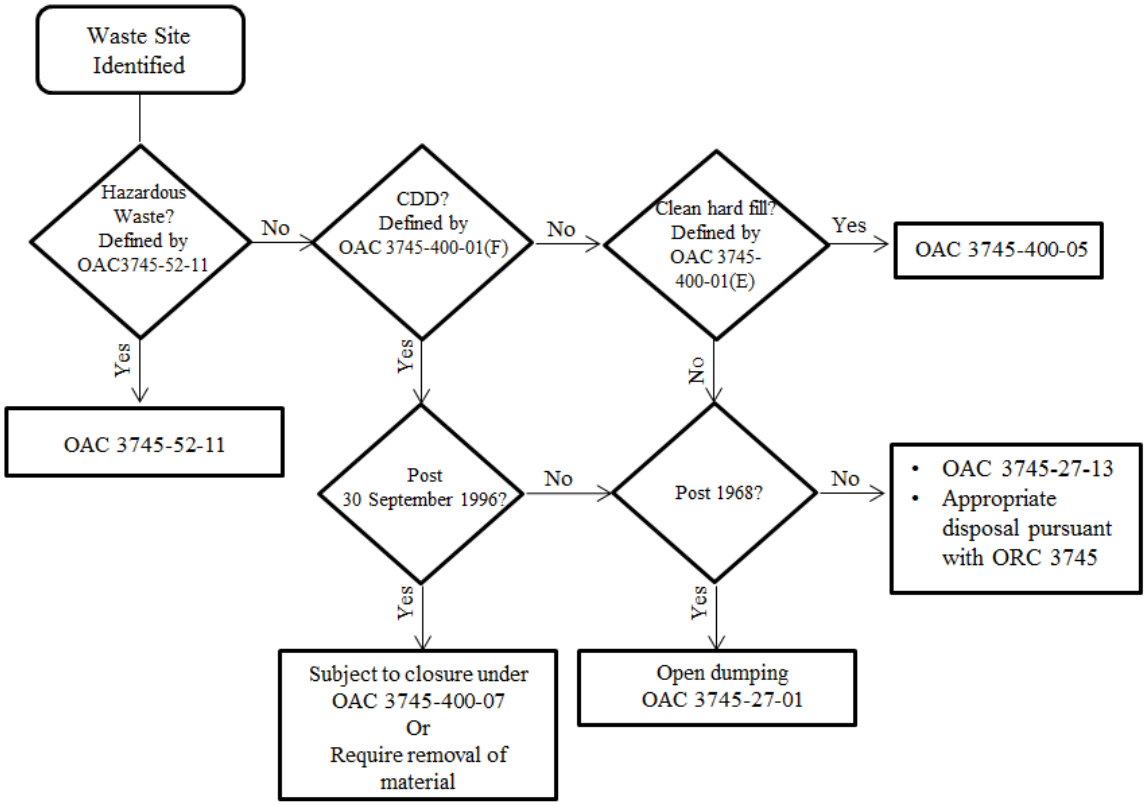

Figure 4-1: Solid waste regulatory flowchart

4.2.3 Disposal

All solid and hazardous waste identified during the project is subject to the Director's Final Findings and Orders Paragraph 12 – "Compliance with Law," sub-paragraph a *iii*, which states that disposal is to

be conducted pursuant to Ohio Revised Code (ORC) 3745 (Ohio EPA, 2014). If solid and/or hazardous waste is removed from the site, appropriate handling, containerizing, and disposal shall occur at an approved facility.

4.2.4 On-Site Waste Management

Solid and hazardous waste sites at CRJMTC are subject to OAC 3745-27-13 requirements. If materials are defined as clean hard fill (OAC 3745-400-01(E)), they may be reused on site with no further obligation. If clean hard fill is removed from the site and reused on the property, notification of the local health department is required.

Reconsolidation of solid or hazardous waste is allowed within the footprint of the waste management unit of the "area of waste" while conducting activities under an Order, permit, or authorization (Ohio EPA, 2014). In addition, the waste site footprint must be clearly defined to allow for proper reconsolidation within site boundaries.

4.3 Project Data

All data collected as part of this task order will be submitted to the Ravenna REIMS database. Geographic data will be uploaded to the Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE) and Environmental Risk Information Services (ERIS) databases.

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Section Five: Quality Control Plan

This section presents the Quality Control Plan for the project. The fundamental aspects in quality are applied when we: Plan (Plan for Quality), Do (Work the Plan-Build the Quality), Check (Confirm Quality), and Act (Fix Any Problems & Improve Procedures). The key and project-required components of the AECOM's Quality Management System are Detail Checking and Independent Technical Reviews (ITRs). The following table outlines the quality measures that will be followed for each project task.

Table 5-1: Project Tasks and Quality Measures

Project Task	Quality Measures
Office	
General	• All project activities will comply with AECOM's Quality Management System, which conforms to the International Organization for Standardization (ISO) 9001 quality standard, extends to all personnel engaged in project work, and applies to all project phases from planning through completion. • All quality control activities will be documented and stored in a quality folder within the electronic project files.
Historic Documents Review	• Work closely with the Camp Ravenna Archivist, Gail Harris, to ensure AECOM has access to all pertinent electronic and hard copy documents. • Document all reviewed records (both with and without relevant information) in a spreadsheet tracker to confirm all documents have been reviewed.
Aerial Photographs Review	• Use AECOM's in-house aerial photography expert, Alice Redfield, to identify and analyze images for sites of interest. • Confirm with Gail Harris that all accessible aerial photos have been reviewed.
Personnel Interviews	• Work closely with Camp Ravenna environmental staff to identify relevant interviewees. • Use a script for all interviews to promote consistency and thoroughness of interviews.

Project Task	Quality Measures
Office	
Reporting	• Perform and document a Detail Check on every deliverable. (A detail check is a document review for correctness, completeness, and technical adequacy by a qualified member of the project team.) • Perform and document an ITR on every deliverable. (An ITR is a critical review performed by someone who has technical expertise in the subject matter but is not a member of the project team.) ITRs are performed for all project deliverables to verify completion of any necessary detail checking, and to verify or validate assumptions, plans, results, or conclusions. ITRs also serve to verify that completed work meets contractual requirements and is consistent with the professional standard of care. • AECOM's Ohio regulatory specialist, Michael Stepic, will review all regulatory language and assessments in project documents. • Use AECOM's in-house 508-Compliance Specialist to ensure each deliverable is fully accessible. • Use a standard response to comment matrix to facilitate comment integrations and assist with reviewer back-check.
General	• All field activities will be recorded in a bound daily field logbook. Additional information, including health and safety information will be recorded on various field forms. • All field information, including the logbook, forms and photographs, will be stored in a field folder within the electronic project files.
Visual Surveys	• Familiarize all field staff with existing site information (i.e., reports, maps, and photographs) before performing the surveys. • Conduct surveys when vegetation is minimal and snow is unlikely (i.e., fall or early spring) to reduce the risk of solid waste being obscured by vegetation or snow.
Geophysical Surveys	• Calibrate all surveying equipment (GPS and conductivity/magnetic meters) before each use. • Field-verify geophysical survey data via simple confirmatory hand cores.
Intrusive Investigations	• Decontaminate excavation equipment between each solid waste site.

Section Six: Environmental Protection Plan

This section presents the Environmental Protection Plan (EPP) for the project. Most of the work under this Delivery Order is desk-top data gathering. However, in the event that some intrusive work is needed, the EPP provides guidance on the best management practices relating to field activities at CRJMTC and mitigates any potential impacts on the surrounding environment and associated natural resources. Because the location of the field activities is unknown, this EPP addresses known facility-wide environmental concerns, but unforeseen circumstances may arise. If any unforeseen circumstances arise during field activities, all activities within the AOC will be halted until the potential environmental impacts are understood and an adequate solution has been agreed to by the applicable regulatory authorities and project operators.

6.1 Identification of Environmental Resources

6.1.1 Threatened and Endangered Species

AECOM will take care in performing all site activities in order to avoid or minimize adverse effects on any on-site rare or protected plant/wildlife species and resources. There are no critical habitats at CRJMTC. The northern long eared bat is listed as a federally threatened endangered species and has been identified at CRJMTC. There are also numerous species identified by Ohio as rare. **Table 6-1** is a list of rare species that inhabit the area within CRJMTC boundaries, and **Table 6-2** is a list of rare bird species observed but not known to nest at CRJMTC (OHARNG, 2014). As outlined in **Section 6.3.1**, there is a vegetation cutting restriction at CRJMTC due to the Northern long-eared bat. All field personnel will be made aware of the species listed in these tables and of the details of the vegetation cutting restriction. AECOM will comply with the cutting restriction and work closely with the CRJMTC Environmental Office.

The CRJMTC Integrated Natural Resources Management Plan (OHARNG, 2014) identifies the following types of rare species that Inhabit CRJMTC:

- Two endangered and two threatened bird species; as well as numerous species of concern and special interest bird species
- Two amphibian species of concern
- One endangered fish species and one fish species of concern
- Two endangered and one threatened insect species; as well as several species of concern and special interest insect species
- One endangered and one threatened mammal species; as well as numerous mammal species of concern
- One mussel species of concern
- Six endangered and four threatened plant species; as well as numerous potentially threatened plant species
- Two reptile species of concern

Table 6-1: Rare Species that Inhabit CRJMTC

Group	Common Name	Scientific Name	Ohio Status
Bird	American Bittern	*Botaurus lentiginosus*	E
	American Black Duck	*Anas rubripes*	SI
	Barn owl	*Tyto alba*	T
	Blackburnian warbler	*Dendroica fusca*	SI
	Black-throated blue warbler	*Dendroica caerulescens*	SI
	Bobolink	*Dolichonyx oryzivorus*	SC
	Brown creeper	*Certhia americana*	SI
	Canada warbler	*Wilsonia Canadensis*	SI
	Cerulean warbler	*Dendroica cerulea*	SC
	Common moorhen	*Gallinula chloropus*	SC
	Dark-eyed junco	*Junco hyemalis*	SI
	Gadwall	*Anas strepera*	SI
	Golden-crowned kinglet	*Regulus satrapa*	SI
	Golden-winged warbler	*Vermivora chrysoptera*	X
	Great egret	*Ardea alba*	SC
	Green-winged teal	*Anas crecca*	SI
	Henslow's sparrow	*Ammodramus henslowii*	SC
	Hermit thrush	*Catharus guttatus*	SI
	Least bittern	*Ixobrychus exilis*	T
	Least flycatcher	*Empidonax minimus*	SI
	Magnolia warbler	*Dendroica magnolia*	SI
	Marsh wren	*Cistothorus palustris*	SC
	Mourning warbler	*Oporornis philadelphia*	SI
	Northern bobwhite	*Colinus virginianus*	SC
	Northern harrier	*Circus cyaneus*	E
	Northern shoveler	*Anas clypeata*	SI
	Northern waterthrush	*Seiurus noveboracensis*	SI
	Pine siskit	*Carduelis pinus*	SI
	Prothonotary warbler	*Protonotaria citrea*	SC
	Purple finch	*Carpodacus purpureus*	SI
	Red-breasted nuthatch	*Sitta canadensis*	SI
	Redhead duck	*Aythya americana*	SI
	Ruddy duck	*Oxyura jamaicensis*	SI
	Sandhill crane	*Grus canadensis*	SE
	Sedge wren	*Cistothorus platensis*	SC
	Sharp-shinned hawk	*Accipiter striatus*	SC

Group	Common Name	Scientific Name	Ohio Status
	Sora rail	*Porzana carolina*	SC
	Trumpeter swan	*Cygnus buccinator*	ST
	Virginia rail	*Rallus limicola*	SC
	Wilson's Snipe	*Gallinago delicata*	SI
	Winter wren	*Troglodytes troglodytes*	SI
	Yellow-bellied sapsucker	*Sphyrapicus varius*	SC
Amphibians	Eastern box turtle	*Terrapene carolina*	SC
	Four-toed salamander	*Hemidactylium scutatum*	SC
Fish	Eastern sand darter	*Ammocrypta pellucida*	SC
	Mountain brook lamprey	*Ichthyomyzon greeleyi*	E
Insect	Brush-tipped emerald	*Somatochlora walshii*	E
	Caddisfly	*Psilotreta indecisa*	T
	Graceful underwing	*Catocala gracilis*	E
	Mayfly	*Stenonema ithica*	SC
	Moth	*Apamea mixta*	SC
	Moth	*Brachylomia algens*	SC
	Scurfy quaker	*Homorthodes furfurata*	SC
	Subflava sedge borer	*Capsula subflava*	SI
Mammal	Big brown bat	*Eptesicus fuscus*	SC
	Black Bear	*Ursus americanus*	E
	Bobcat	*Felis rufus*	T
	Deer mouse	*Peromyscus maniculatus*	SC
	Eastern red bat	*Lasiurus borealis*	SC
	Hoary bat	*Lasiurus cinereus*	SC
	Little brown bat	*Myotis lucifugus*	SC
	Northern long-eared bat	*Myotis septentrionalis*	T
	Pygmy shrew	*Sorex hovi*	SC
	Southern Bog Lemming	*Svnaptomys cooperi*	SC
	Star-nosed mole	*Condylura cristata*	SC
	Tri-colored bat	*Perimyotis subflavus*	SC
	Woodland jumping mouse	*Napaeozapus insignis*	SC
Mussel	Creek heelsplitter	*Lasmigona compressa*	SC
Plants (Bryophyte)	Lurking leskea	*Plagiothecium latebricola*	T
	Narrow-necked Pohl's moss	*Pohlia elongata* var. *elongata*	E
	Tufted Moisture-loving moss	*Philonotis fontana* var. *caespitosa*	E

Group	Common Name	Scientific Name	Ohio Status
Plants (vascular)	Appalachian quillwort	*Isoetes engelmannii*	E
	Arborvitae*	*Thuja occidentalis*	P
	False hop sedge	*Carex lupuliformis*	P
	Greenwhite sedge	*Carex albolutescens*	P
	Handsome sedge	*Carex formosa*	E
	Hobble-bush	*Viburnum alnifolium*	T
	Long beech fern	*Phegopteris connectilis*	P
	Pale sedge	*Carex pallescens*	P
	Philadelphia panic-grass	*Panicum philadelphicum*	E
	Sharp-glumed manna-grass	*Glyceria acutifolia*	P
	Shinning ladies-tresses	*Spiranthes lucida*	P
	Simple willow-herb	*Epilobium strictum*	T
	Straw sedge	*Carex straminea*	P
	Strict blue-eyed grass	*Sisyrinchium montanum*	T
	Variegated scouring-rush	*Equisetum variegatum*	E
	Water avens	*Geum rivale*	P
	Woodland horsetail	*Equisetum sylvaticum*	P
Reptiles	Eastern garter snake	Thamnophis sirtalis	SC
	Smooth green snake	*Opheodrys vernalis*	SC

Source of Ohio status: OHARNG (2014)
E = Endangered
P = Potentially Threatened**
SC = Species of Concern**
SI = Special Interest**
T = Threatened
X = Extirpated

* Arborvitae was planted on site and does not occur naturally within the facility
** Administrative status; not a legal designation

Table 6-2: Rare Bird Species Observed but Not Known to Nest at CRJMTC

Common Name	Scientific Name	Ohio Status
American bittern	*Botaurus lentiginosus (migrant)*	E
Dark-eyed junco	*Junco hyemalis (migrant)*	SI
Great Egret	*Ardea alba (migrant)*	SC
Hermit thrush	*Catharus guttatus (migrant)*	SI
Sandhill Crane	*Grus canadensis*	E
Trumpeter swan	*Cygnus buccinators (migrant)*	T

Source of Ohio status: OHARNG (2014) ** Administrative status; not a legal designation
E = Endangered
P = Potentially Threatened**
SC = Species of Concern**
SI = Special Interest**
T = Threatened
X = Extirpated

6.1.2 Wetlands

AECOM will work with the CRJMTC Environmental Office to obtain the most up-to-date wetland information at CRJMTC. Wetland areas will be avoided during field activities to the extent possible. Vehicle travel will not be permitted in wetland areas. If field activities are necessary within wetland areas, AECOM will coordinate with the OHARNG and Ohio EPA. The location of identified solid waste disposal sites in relation to wetlands will be noted and considered in making management recommendations.

6.1.3 Water Resources

AECOM will keep activities under surveillance, management, and control to avoid pollution of surface and groundwater. Special management techniques as described in **Section 6.3** will be implemented to control water pollution by site operations.

6.2 Cultural, Archaeological, and Historical Resources

If sites are identified for field activities, AECOM will check the National Register of Historic Places and will work closely with OHARNG and the Ohio Historic Preservation Office to determine whether cultural or archaeological surveys have been conducted at the identified sites. If cultural materials are inadvertently discovered, AECOM will stop work and will comply with the *OHARNG Procedures for Inadvertent Discovery of Cultural Materials at Camp Ravenna Joint Military Training Center (*OHARNG, 2013). This policy is included in **Appendix D** and is summarized below. If artifacts or human remains are encountered, the ground-disturbing activity should stop immediately and the following steps should be followed.

- Report any observations or discoveries of artifacts or human remains immediately to CRJMTC Range Control (614-336-6041 or MARCS radio Channel #1). Range Control will immediately notify the OHARNG Cultural Resources Manager (CRM)/CRJMTC Environmental Office.
- CRJMTC Range Control or the CRM will secure any artifacts or human remains, as appropriate. If human remains are suspected, they will not be disturbed, and CRJMTC Range Control will

immediately notify the Ohio State Highway Patrol or Federal Bureau of Investigation, as appropriate.

- The CRM and CRJMTC Range Control will take measures to protect the location from further disturbance until the appropriate parties are notified.
- If a concentration of artifacts or a burial site is identified as the source of the materials that were discovered, the CRM will make arrangements for site recordation and stabilization in consultation with the Ohio Historic Preservation Office and any interested Native American Tribes.
- Once the site has been cleared by the CRM and CRJMTC Range Control, the activity may resume. Depending on the findings, activities may be cleared to resume in 48 hours or up to 6 months.

6.3 Protection of Environmental Resources

6.3.1 Vegetation Removal and Restoration

AECOM will take all actions to avoid unnecessary damage to vegetation at CRJMTC. Vegetation will be disturbed only where necessary to support field activities. Field work will be scheduled in early spring or fall to limit the need for vegetation removal. AECOM is aware of the CRJMTC vegetation cutting restriction from 1 April through 30 September without specific authorization from the CRJMTC Environmental Office. If vegetation removal or mowing is necessary at any time, AECOM will work closely with the CRJMTC Environmental Office to follow the CRJMTC Vegetation Control Plan in OHARNG (2014).

All sites that undergo intrusive investigation will be brought back to pre-investigation condition. This includes pre-investigation grade and reseeding with a native grass seed mix as outlined in the CRJMTC INRMP.

6.3.2 Decontamination and Waste Disposal

AECOM will follow the procedures outlined in the *Camp Ravenna Waste Management Guidelines* (**Appendix E**). Hazardous waste is not expected to be generated during the project. AECOM will place non-hazardous waste, such as used personal protective equipment (PPE) (e.g., nitrile gloves), in appropriate containers and transport it off site for disposal through the local municipal waste system. If intrusive investigations are performed, there is potential that debris or soil removed from the borings will need to be containerized and transported to an off-site disposal site.

Equipment will be decontaminated prior to leaving each site to limit the transfer of materials from one site to another. Equipment will be decontaminated with phosphate-free detergent and water. Decontamination fluids will be drummed and removed from the site. Further explanation of these procedures is provided in **Section 7** and the Health and Safety Plan. The volume of water used for decontamination should not be sufficient to generate surface runoff.

6.3.3 Burning Activities

No burning activities are expected during the project.

6.3.4 Dust and Emission Control

Planned field activities will generate little or no fugitive dust emissions; therefore, a dust control plan has not been developed.

6.3.5 Noise Control and Prevention

Planned field activities will generate little or no noise to be mitigated.

6.3.6 Spill Control and Prevention

Minimal amounts of chemicals will be brought on site during field activities. Non-phosphate detergent will be brought on site for decontamination of equipment, and fire extinguishers will be in all vehicles. These will be removed from the site at the close of field activities. Vehicle refueling will mostly be completed at commercial off-site facilities. Some fuel will be brought onsite due to the use of a backhoe at potentially remote areas. Fuels will be stored in safety containers and appropriately labeled. Field procedures will focus on minimizing or preventing spills during field activities, but if a spill of hazardous chemicals (likely fuel) occurred, field personnel would contain and clean the spill to the extent possible with the spill kit. Any spills would be reported to CRJMTC Range Control, spill response will comply with the current OHARNG Integrated Contingency Plan, and the First Responder Reporting Form will be completed (**Appendix F**).

6.3.7 Water Run-on and Run-off Control

No contaminated soils, water, or waste will be generated during the project. Therefore, no run-on or run-off water controls will be necessary.

6.3.8 Minimizing Areas of Disturbance

Reasonable efforts will be made to avoid disturbing natural resources. To the extent practical, areas affected by the project will be restored to a near-natural condition (i.e., a condition that does not detract from the overall appearance of the site). In areas where earth has been moved for test pits, site restoration may be necessary. These sites will be brought back to pre-investigation condition. In some circumstances, this may include pre-investigation grade and reseeding with a native grass seed mix as outlined in the CRJMTC INRMP. AECOM will communicate with the CRJMTC Environmental Office to determine the need for and type of restoration required. Soil disturbance is anticipated to be minimal (i.e., no greater than 1 acre) and no erosion and sediment control plan or provisions are therefore necessary. The best management practices to minimize soil erosion and storm water runoff are outlined below.

- Deliberately remove detritus (i.e., organic material including leaf flitter and root matter) and set aside for reuse
- Backfill excavations with native soil that was removed, if field inspections determine they are uncontaminated. Native soil will be replaced in the reverse order of removal (i.e., last material out, first material in), tamping as necessary. As previously noted, in the unlikely event that debris is removed from the subsurface, it will be containerized and brought to an off-site disposal facility.
- Place detritus material over the exposed soil area
- Backfill excavations within the same day or as soon as practicable
- If stockpiling of soil is necessary and possible (based on terrain limitations and safety concerns), include placement on a tarp, liner, or similar protective material to prevent soil loss or damage to the surrounding vegetation

6.3.9 Access Routes and Temporary Facilities

Whenever possible, field personnel will use existing road/trail networks at CRJMTC to access work locations. Environmental impacts are not expected from the use of these road and trail networks because the networks are in use by CRJMTC personnel. Creating new access routes will not be required. Remote areas will be accessed by the field teams on foot.

If materials need to be stored at CRJMTC, AECOM will work with CRJMTC personnel to use the existing contractor storage area, Building 1036. This may include equipment or non-hazardous material (e.g., non-phosphate decontamination detergent).

Section Seven: Investigation-Derived Waste Plan

This section presents the Investigation-Derived Waste Plan for the project.

Based on the intrusive work that may be performed, investigation-derived waste (IDW) could consist of decontamination fluids from backhoe cleaning, disposable PPE, and indigenous solid IDW from intrusive activities (soil or debris). AECOM will strictly adhere to the *Camp Ravenna Waste Management Guidelines* (**Appendix E**) and guidance provided in the *Facility-Wide Sampling and Analysis Plan for Environmental Investigations* (USACE, 2011). AECOM will also coordinate all waste generation and shipments with Ms. Katie Tait, OHARNG Restoration Program POC, or designee.

AECOM will maintain a waste tracker throughout the project, which will be turned in at the end of the project. Both hazardous and non-hazardous waste must be manifested and reviewed, approved, and signed by OHARNG.

As IDW is generated, all containers will be properly labeled with date, contractor, and waste type. Weekly inspections will also be conducted, documented, and submitted to the Restoration Program POC. All IDW drums will be properly labeled and stored at the designated staging area until disposal. A container log will be maintained for all waste stored onsite, which will be kept with the waste while it is stored.

Non-contaminated solid waste (i.e., disposable PPE) will be contained in trash bags and disposed of as sanitary trash.

After proper characterization, non-hazardous, contaminated solid waste (i.e., soil or debris) will be disposed of off-site at a permitted waste facility in less than 120 days of its generation. It will be contained in a DOT-approved, open top 55-gallon drum and sealed with bung-top lids. This type of waste will be characterized with sampling techniques outlined in the *Facility-Wide Sampling and Analysis Plan for Environmental Investigations* (USACE, 2011), and will be sampled for Toxicity Characteristic Leaching Procedure (TCLP) volatile organic compounds (VOCs), TCLP semi volatile organic compounds (SVOCs), TCLP metals, TCLP herbicides, TCLP pesticides, total sulfide, total cyanide, corrosivity (pH), and flashpoint. The details of this waste characterization must be reviewed and approved by the CRJMTC Environmental Office prior to any sampling and analysis activities.

Non-contaminated or contaminated liquid waste (i.e., decontamination fluid) will be contained in either labeled, DOT-approved, 55-gallon, closed-top drum, sealed with bung top lid, or in an approved polyethylene storage container. Waste will be characterized with the composite grab sampling technique detailed in the *Facility-Wide Sampling and Analysis Plan for Environmental Investigations* (USACE, 2011), and will be sampled for TCLP VOCs, TCLP SVOCs, TCLP metals, TCLP herbicides, TCLP pesticides, total sulfide, total cyanide, corrosivity (pH), and flashpoint. The details of this waste characterization must be reviewed and approved by the CRJMTC Environmental Office prior to any sampling and analysis activities. Although not anticipated, for any IDW characterized as hazardous waste, AECOM will make arrangements with OHARNG for proper transport and disposal at a permitted off-site hazardous waste facility in less than 90 days of its generation. AECOM will coordinate with the Camp Ravenna POC or designee(s) to ensure that he or she will be available to sign the manifest on the scheduled shipment day and that the original generator's copy of the manifest signed by the treatment storage disposal facility is returned to Camp Ravenna within 30 days of the shipment date.

An IDW Report will be prepared by AECOM that will be approved by ARNG and OHARNG prior to waste shipment. The Final IDW Report will be included in the final trip report, upon completion of all field work. AECOM will submit a monthly update on IDW to the ARNG/OHARNG to be included in the monthly report to the Ohio EPA.

Section Eight: References

OHARNG (Ohio Army National Guard). 2014. *Updated Integrated Natural Resources Management Plan FY2015 at the Camp Ravenna Joint Military Training Center*.

OHARNG. 2013. *OHARNG Procedures for Inadvertent Discovery of Cultural Materials at Camp Ravenna Joint Military Training Center*.

Ohio EPA (Ohio Environmental Protection Agency). 2014. *Solid Waste Regulations Governing Materials Found During Investigations at Ravenna Army Ammunition Plant's (RVAAP) Areas of Concern*.

USACE (U.S. Army Corps of Engineers). 2012. *Property Management Plan for the Designated Areas of Concerns and Munitions Response Sites Volume One – Version 1.0 Ravenna Army Ammunition Plant Ravenna, Ohio*. Available at http://www.rvaap.org/docs/pub/F_PMP_DAOC_MRS_40_00.pdf.

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Appendix A
Ohio Environmental Protection Agency Memorandum

INTEROFFICE MEMORANDUM

TO: ARMY TEAM, CAMP RAVENNA, PORTAGE COUNTY,

FROM: OHIO EPA RVAAP REVIEW TEAM, NORTHEAST DISTRICT OFFICE

SUBJECT: SOLID WASTE REGULATIONS GOVERNING MATERIALS FOUND DURING INVESTIGATIONS AT RAVENNA ARMY AMMUNITION PLANT'S (RVAAP) AREAS OF CONCERN

IRP SITE-WIDE – 267000859059

DATE: July 24, 2014

With regards to Ohio EPA comments on solid waste materials found at MMRP sites and Group 2 Prop Can sites (see second paragraph on page 1 under the "**General**" section), Ohio EPA understands that the Army team requires some additional clarification on our regulations and needs to determine how to address solid wastes at IRP and MMRP sites. First, please note that recycling or reusing materials should be considered as the first determination before the Army considers waste disposal. Steel, metal, wood, and other items could be recycled and it may be more cost effective to do so. Any debris material reused, or processed for recycling or for production or incorporation into a product, is not regulated until it is disposed. There is a regulatory definition for recycling as follows: "*Recycling - means the process of collecting, sorting, cleansing, treating, and reconstituting solid waste that would otherwise be disposed in a solid waste disposal facility and returning reconstituted materials to commerce as commodities for use or exchange*".

The first step for the Army team would be to determine what types of materials are located within the investigation areas and how they are regulated. A waste determination of solid versus hazardous waste (OAC 3745-52-11) which could include either generator knowledge or analysis of the material, and if the placement is consistent with a current landfill - waste management unit (Limits of Waste Placement), a Facility under OAC 3745-27-13, or Opening Dumping (material placed on ground), see below for definitions with rule citations:

1. **OAC 3745-29-01** -"*Industrial solid waste" or "industrial waste" means a type of solid waste generated by manufacturing or industrial operations and includes, but is not limited to, solid waste resulting from the following manufacturing*

processes: electric power generation; fertilizer/agricultural chemicals; food and food-related products/by-products; inorganic chemicals; iron and steel manufacturing; leather and leather products; nonferrous metals manufacturing; plastics and resins manufacturing; pulp and paper industry; rubber and miscellaneous plastic products; stone, glass, clay and concrete products; textile manufacturing; and transportation equipment. "Industrial solid waste" does not include solid wastes generated by commercial, agricultural, or community operations. Industrial solid wastes may be disposed in a licensed sanitary landfill facility, a licensed industrial waste landfill facility, or in a licensed residual waste landfill facility, provided that the class number for the residual waste landfill facility is not greater than the class number necessary for that residual waste as determined by the residual waste characterization and landfill classification in accordance with rules 3745-30-03 and 3745-30-04 of the Administrative Code.

2. **OAC 3745-27-01**- ""*Solid waste" means such unwanted residual solid or semisolid material, including but not limited to, garbage, scrap tires, combustible and noncombustible material, street dirt and debris, as results from industrial, commercial, agricultural, and community operations, excluding earth or material from construction, mining, or demolition operations, or other waste materials of the type that normally would be included in demolition debris, nontoxic fly ash and bottom ash, including at least ash that results from combustion of coal, biomass fuels, and ash that results from the combustion of coal in combination with scrap tires where scrap tires comprise not more than fifty per cent of heat input in any month, spent nontoxic foundry sand, and slag and other substances that are not harmful or inimical to public health, and includes, but is not limited to, garbage, scrap tires, combustible and noncombustible material, street dirt, and debris. Solid waste does not include any material that is an infectious waste or a hazardous waste*".

3. **OAC 3745-27-01** also denotes how a unit is defined: ""*Limits of waste placement" means the horizontal and vertical boundaries of a sanitary landfill facility within which the owner or operator has been authorized to dispose of solid waste*." Also, **OAC 3745-27-13** (for older solid waste units pre-1976 closed) defines a "Facility" for authorization as: "(B) "*Facility," for the purposes of this rule, means: (1) The limits of solid waste placement, solid waste handling area, or area of hazardous waste treatment, storage, or disposal. (2) Those areas within three hundred feet of the limits of solid waste placement or area of hazardous waste treatment, storage or disposal if the filling, grading, excavating, building, drilling, or mining activities in these areas are likely to impact the integrity of the waste placement or any ancillary structures*".

4. **OAC 3745-27-01** - "*Open dumping" means the following: (a) The deposition of Solid wastes, other than scrap tires, into waters of the state, and also means the final deposition of solid wastes on or into the ground at any place other than a solid waste facility operated in accordance with Chapter 3734. of the Revised Code, and Chapters 3745-27, 3745-29, 3745-30, and 3745-37 of the*

Administrative Code. (b) The deposition of solid wastes that consist of scrap tires into waters of the state, and also means the final deposition of scrap tires on or into the ground at any place other than a scrap tire collection, storage, onofill, monocell, or recovery facility licensed under section 3734.81 of the Revised Code, or at a site or in a manner not specifically identified in division (C)(2), (C)(3), (C)(4), (C)(5),(C)(7), or (C)(10) of section 3734.85 of the Revised Code, or at any licensed solid waste facility if the deposition is not in accordance with Chapters 3745-27 and 3745-37 of the Administrative Code. (c) The deposition of solid wastes that consist of scrap tires in buildings, trailers, or other vehicles at locations other than a scrap tire transporter's registered business location, a licensed scrap tire facility, or an unregistered scrap tire facility operating in accordance with rule 3745-27-61 of the Administrative Code (such as pre-positioned trailers in accordance with paragraph (C)(8) of rule 3745-27-56 of the Administrative Code) for longer than fourteen days. The scrap tires in trailers or vehicles shall be considered open dumped unless written prior notification is given to the local health department and Ohio EPA that the vehicle or trailer requires mechanical repairs which will take longer than fourteen days to complete and that the repairs are being completed in a timely manner. (d) The deposition of untreated or treated infectious wastes into waters of the state, and also means the final deposition of untreated infectious wastes on or into the ground at any place other than a licensed solid waste facility operated in accordance with Chapter 3734. of the Revised Code, and Chapters 3745-27 and 3745-37 of the Administrative Code. Also refer to OAC 3745-27-05 (C) and ORC 3734.03.

5. **OAC 3745-400-01 (F)** - "*Construction and demolition debris" or "debris" means those materials resulting from the alteration, construction, destruction, rehabilitation, or repair of any manmade physical structure, including, without limitation, houses, buildings, industrial or commercial facilities, or roadways. "Construction and demolition debris" does not include materials identified or listed as solid wastes, infectious wastes, or hazardous wastes pursuant to Chapter 3734. of the Revised Code and rules adopted under it; or materials from mining operations, nontoxic fly ash, spent nontoxic 3745-400-01 2 foundry sand, and slag; or reinforced or nonreinforced concrete, asphalt, building or paving brick, or building or paving stone that is stored for a period of less than two years for recycling into a usable construction material. For the purpose of this definition, "materials resulting from the alteration, construction, destruction, rehabilitation, or repair of any manmade physical structure," are those structural and functional materials comprising the structure and surrounding site improvements, such as brick, concrete and other masonry materials, stone, glass, wall coverings, plaster, drywall, framing and finishing lumber, roofing materials, plumbing fixtures, heating equipment, electrical wiring and components containing no hazardous fluids or refrigerants, insulation, wall-to-wall carpeting, asphaltic substances, metals incidental to any of the above, and weathered railroad ties and utility poles.*

"Materials resulting from the alteration, construction, destruction, rehabilitation, or repair" do not include materials whose removal has been required prior to demolition, and materials which are otherwise contained within or exist outside the structure such as solid wastes, yard wastes, furniture, and appliances. Also excluded in all cases are liquids including containerized or bulk liquids, fuel tanks, drums and other closed or filled containers, tires, and batteries."

6. **OAC 3745-400-01 (E)** – "*Clean hard fill" means construction and demolition debris which consists only of reinforced or nonreinforced concrete, asphalt concrete, brick, block, tile, and/or stone which can be reutilized as construction material. Brick in clean hard fill includes but is not limited to refractory brick and mortar. Clean hard fill does not include materials contaminated with hazardous wastes, solid wastes, or infectious wastes."*

Solid waste regulations began in 1968 and were phased into effective until 1972. Landfill closure obligations exist from 1968 through today with varying requirements depending on the time period the landfill closed and whether it contains solid or hazardous wastes. It is Ohio EPA's understanding that landfill areas on RVAAP are considered pre-1968 operated and anything beyond this date would fall under materials classified below or would fall under "Open Dumping". This needs to be clarified as the Army team moves forward in its investigations. Solid waste closure obligations can be extensive if a landfill is denoted as requiring closure.

If the materials are consistent with **Construction and Demolition Debris** (CDD), the regulation of this material for closure obligations began on September 30, 1996. If wastes were placed after this date, the area would be considered a CDD landfill and may be subject to closure under OAC 3745-400-07 or require removal of the materials.

If the materials fall within the category of **Clean Hard Fill**, this material may be reused on site with no further obligation. However, if the material is removed from the site and reused on another property, a notice to the local health department is required.

For all solid and hazardous wastes identified during investigation and remediation, RVAAP sites are subject to the Director's Final Findings and Orders, Paragraph 12 – 'Compliance with Law', sub-paragraph *a iii*, which states that appropriate disposal should be conducted pursuant to ORC 3745. These regulations require disposal or appropriate management pursuant to Solid and/or Hazardous Waste requirements. If the waste is removed and generated, appropriate handling, containerization, and disposal should occur pursuant to solid and hazardous waste requirements. This is interpreted to mean sent off site for disposal at an approved facility. This is also consistent with OAC 3745 – 27 -13 (27-13), which is the solid waste authorization requirement for excavation, digging, mining, or otherwise disturbing a solid waste management unit.

The 27-13 regulation provides for authorization of efforts to conduct investigation, remediation, or redevelopment on or adjacent to solid or hazardous waste facility (a 300 foot perimeter for slope stability is included in this regulation). OAC 3745-27-13 (C)(2)(c) does provide for exemption from this authorization for facilities subject to a Final Order issued by the director; as Orders Ravenna Arsenal is currently subject. However, the Director's Final Findings and Orders (DFFOs) include a paragraph as noted above which indicates the work needs to be in compliance with applicable regulations, like appropriate precautions under this rule, and will not create a nuisance or impact the environment or human health.

Additionally, both the solid and hazardous waste programs do allow reconsolidation of wastes within the footprint of the waste management unit of the "area of waste" while conducting activities under an Order, permit, or authorization. The reconsolidation does not allow for the waste to be containerized and returned to the waste management unit, but can be reconsolidated during investigation and remedial activities in a manner that is protective. No wastes should remain on the surface to be a direct contact or nuisance concern to ecological or human receptors, as this would be considered "open dumping" and subject to further regulation.

Based upon the information above, Ohio EPA- DERR recommends the following for future investigation and remediation areas under our Order where Solid Waste, CDD, or Clean Hard Fill may be identified during investigation or remedial actions.

- First, the waste should be evaluated for consideration under one of the definitions of waste (Hazardous Waste, Solid Waste, CDD, or Clean Hard Fill). To make this determination, the Army team would first identify which category the material may fall into and then may either conduct sampling and analysis for consideration of contaminant concentrations or use generator knowledge to provide supporting evidence on the type of waste and its risk. Once the type of waste is identified, the date of disposal may be needed to determine if regulatory obligations of closure are necessary. If the Army needs help, Ohio EPA is available to provide guidance on waste determinations.

- For solid or hazardous wastes, the limits of the waste area or footprint of the waste management unit should be identified, especially if the Army team would like to consider reconsolidation as a possible alternative for wastes encountered during investigation or remediation activities. CDD materials were not regulated pre-1996, however, if this material requires remove during investigation or remediation, proper handling per Solid Waste regulations should be conducted.

- If after it is determined the work will be completed in a solid waste unit, the Army should determine whether the waste needs to be disturbed. For solid waste, the workplan should identify if the area is or may be a solid waste management unit and that the area will be returned to the condition it was prior to activities and is protective of human health and the environment.

- If wastes are excavated, the materials should be removed to the extent possible and the area returned to a protective state. It is possible to reconsolidate wastes within the "footprint of the solid waste management area" with the approval of the agency. Additionally, it possible to reconsolidate wastes within existing landfills, but would require coordination and approval with Ohio EPA. Reconsolidation of waste would require appropriate capping of at least 2 feet of soil or be consistent with the on-site landfill. Please note this activity needs to be documented in a work plan and approved by Ohio EPA prior to work being completed.

- Ohio EPA recommends that waste materials on the surface be addressed for the protectiveness of the site. Recycling metal is cost effective and would address some concerns noted at the site.

The above actions would need to be defined in a workplan or in a Technical Memo similar to the risk memo for all future work considered under the DFFOs as current work plans have state "disposal of all solid waste materials".

Appendix B
Project Contact Information

Points of Contact

Name and Contact Information	Role
Mark Leeper, P.G., MBA Environmental Restoration Project Manager ARNG-ILE-C 111 S. George Mason Drive Arlington, VA 22204 703.607.7955 804.516.3529 (mobile) mark.s.leeper.civ@mail.mil	ARNG Directorate Project Manager
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Kevin Sedlak Camp Ravenna Environmental Office 1438 State Route 534 SW Newton Falls, OH 44444 614-336-6000 Ex 2053 kevin.m.sedlak.ctr@mail.mil	ARNG Restoration Project Manager
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Mark MacEwan, PE AECOM 3101 Wilson Boulevard, Suite 900 Arlington, VA 22201 703.682.9092 202.375.9353 (mobile) mark.macewan@aecom.com	AECOM Program Manager

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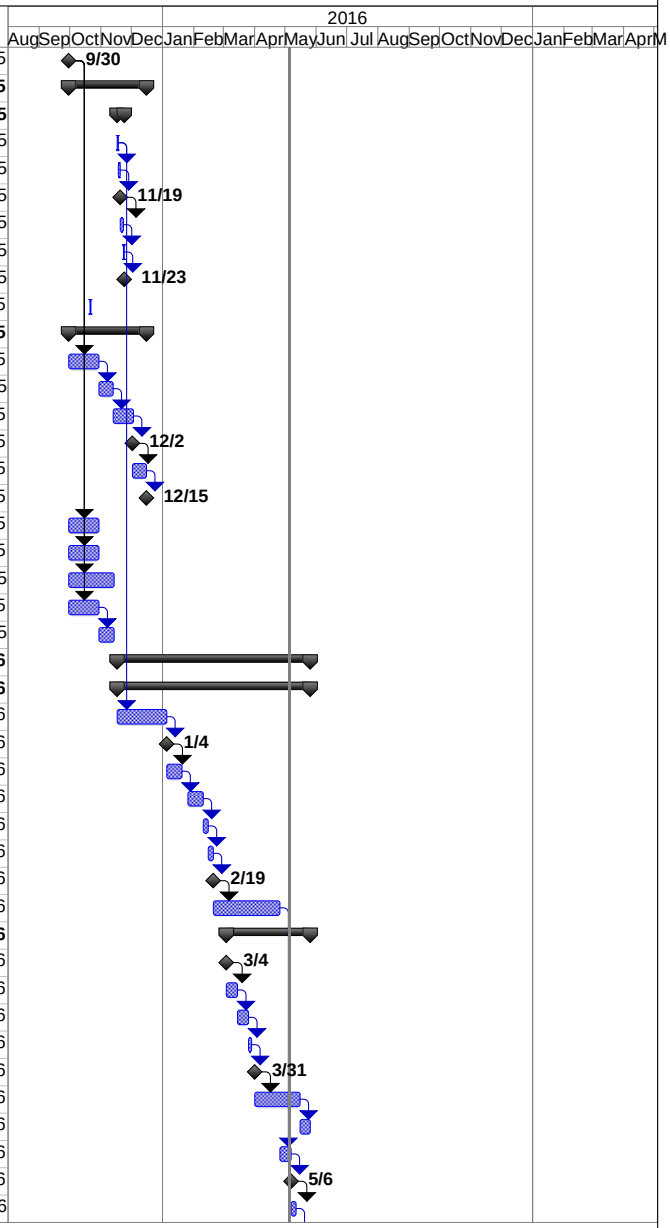
Amibeth Salvatore AECOM 12420 Milestone Center Drive, Suite 150 Germantown, MD 20876 301.820.3628 Amibeth.salvatore@aecom.com	Project Environmental Scientist
Theresa Allinger AECOM 12420 Milestone Center Drive, Suite 150 Germantown, MD 20876 301.820.3631 Theresa.allinger@aecom.com	Project Geologist

Appendix C
Project Schedule

Project Schedule & Milestones
Former Ravenna Army Ammunition Plant/Camp Ravenna Joint Military Training Center
Portage and Tumbull Counties, Ohio

ID	Task Name	Duration	Start	Finish
1	Notice to Proceed	0 days	9/30/15	9/30/15
2	**Task 1 - PMP and QCP (Prliminary Draft 30 days after contract award)**	**77 days**	**9/30/15**	**12/15/15**
3	**Kick-off Meeting ANG only**	**7 days**	**11/17/15**	**11/23/15**
4	Kickoff Meeting (Post Award Conference)	1 day	11/17/15	11/17/15
5	Prepare Draft Meeting Notes	2 days	11/18/15	11/19/15
6	Submit Meeting Notes	0 days	11/19/15	11/19/15
7	Receive comments on Meeting Notes	3 days	11/20/15	11/22/15
8	Prepare Final Meeting Notes	1 day	11/23/15	11/23/15
9	Submit Final Meeting Notes	0 days	11/23/15	11/23/15
10	Ravenna REIMS/508 Adobe Workshop Training	1 day	10/21/15	10/21/15
11	**Project Management Plan and QCP**	**77 days**	**9/30/15**	**12/15/15**
12	Prepare Preliminary Draft PMP and QCP	30 days	9/30/15	10/29/15
13	Army Review	14 days	10/30/15	11/12/15
14	Prepare Final PMP/QCP	20 days	11/13/15	12/2/15
15	Submit Final PMP/QCP	0 days	12/2/15	12/2/15
16	Army Review	14 days	12/2/15	12/15/15
17	Receive approval of PMP/QCP	0 days	12/15/15	12/15/15
18	Complete Antiterrorism (AT) Level I Training	30 days	9/30/15	10/29/15
19	Complete iWatch Training and report results	30 days	9/30/15	10/29/15
20	Report iWatch Training results	45 days	9/30/15	11/13/15
21	Complete OPSEC Level 1 Training	30 days	9/30/15	10/29/15
22	Submit certificates of completion to the COR (Level I OPSEC Training)	15 days	10/30/15	11/13/15
23	**Task 2 Work Plan and Site Safety Health Plan (SSHP)**	**191 days**	**11/17/15**	**5/25/16**
24	**Work Plan**	**191 days**	**11/17/15**	**5/25/16**
25	Prepare Preliminary Draft Work Plan	49 days	11/17/15	1/4/16
26	Submit Preliminary Draft Work Plan	0 days	1/4/16	1/4/16
27	Army Review	15 days	1/5/16	1/19/16
28	Prepare Responses to Comments	15 days	1/26/16	2/9/16
29	Army Review Responses to Comments/Back Check Tracked Changes Draft WP	5 days	2/10/16	2/14/16
30	Prepare Draft Work Plan	5 days	2/15/16	2/19/16
31	Submit Draft Work Plan	0 days	2/19/16	2/19/16
32	Regulatory Agency Review	66 days	2/20/16	4/25/16
33	**Site Safety and Health Plan (SSHP)**	**83 days**	**3/4/16**	**5/25/16**
34	Submit SSHP to Army for review	0 days	3/4/16	3/4/16
35	Army Review	11 days	3/4/16	3/14/16
36	Prepare Responses to Comments	11 days	3/15/16	3/25/16
37	Army Review Responses to Comments/Back Check	3 days	3/26/16	3/28/16
38	Submit SSHP for Regulatory Review	0 days	3/31/16	3/31/16
39	Regulatory Agency Review	45 days	4/1/16	5/15/16
40	Prepare Final SSHP	10 days	5/16/16	5/25/16
41	Prepare Final Work Plan	11 days	4/26/16	5/6/16
42	Submit Final Work Plan	0 days	5/6/16	5/6/16
43	Approval/Concurrence of Final Work Plan; Army approval of SSHP	5 days	5/7/16	5/11/16

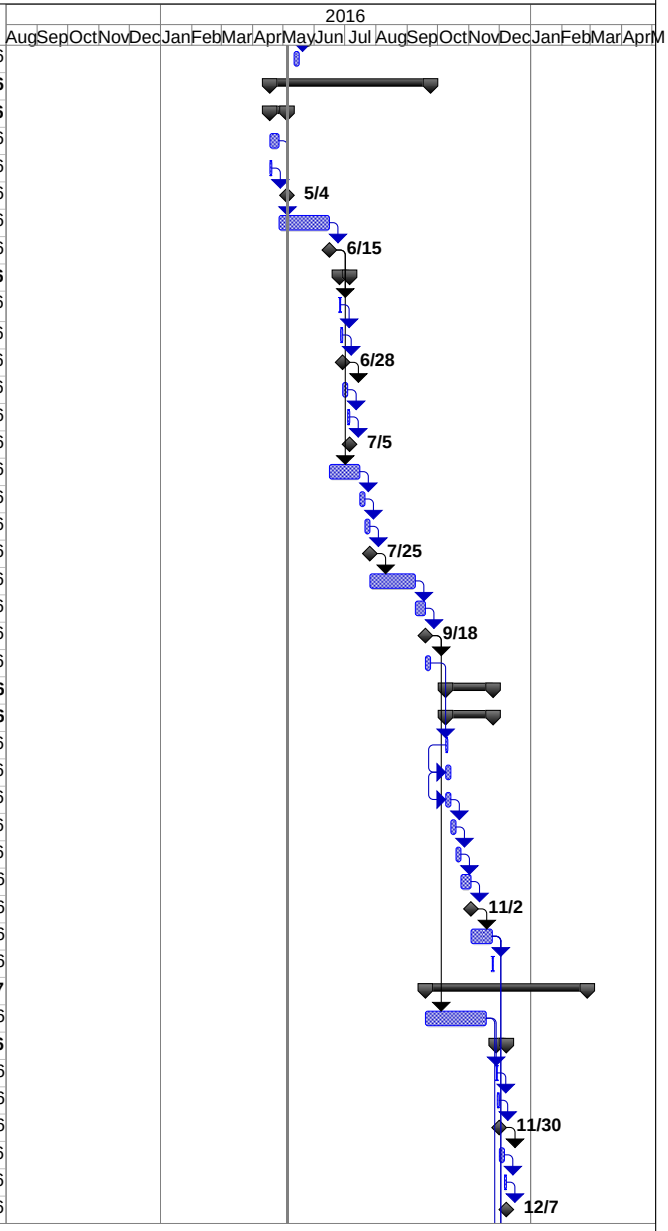


Project: Schedule_Ravenna
Date: 5/6/16

Task Milestone Summary

Project Schedule & Milestones
Former Ravenna Army Ammunition Plant/Camp Ravenna Joint Military Training Center
Portage and Tumbull Counties, Ohio

ID	Task Name	Duration	Start	Finish
44	Submit Final Copies to CRJMTC Archivist	5 days	5/12/16	5/16/16
45	**Task 3 - Solid Waste Disposal Site Evaluation Report (SWDSER)**	**159 days**	**4/18/16**	**9/23/16**
46	**Field Assessments**	**17 days**	**4/18/16**	**5/4/16**
47	Visual Survey	9 days	4/18/16	4/26/16
48	Interviews	2 days	4/18/16	4/19/16
49	Submit Vishual Survey Trip Report	0 days	5/4/16	5/4/16
50	Prepare Preliminary Draft SWDSER	50 days	4/27/16	6/15/16
51	Submit Preliminary Draft SWDSER	0 days	6/15/16	6/15/16
52	**Planning Meeting #2 including Regulators (telecon)**	**10 days**	**6/26/16**	**7/5/16**
53	Meeting #2 - move to after the Draft is submitted to regulators	1 day	6/26/16	6/26/16
54	Prepare Draft Meeting Notes	2 days	6/27/16	6/28/16
55	Submit Meeting Notes	0 days	6/28/16	6/28/16
56	Receive comments on Meeting Notes	5 days	6/29/16	7/3/16
57	Prepare Final Meeting Notes	2 days	7/4/16	7/5/16
58	Submit Final Meeting Notes	0 days	7/5/16	7/5/16
59	Army Review	30 days	6/16/16	7/15/16
60	Prepare Responses to Comments	5 days	7/16/16	7/20/16
61	Army Review Responses to Comments	5 days	7/21/16	7/25/16
62	Submit Draft SWDSER	0 days	7/25/16	7/25/16
63	Regulatory Agency Review	45 days	7/26/16	9/8/16
64	Prepare Final SWDSER	10 days	9/9/16	9/18/16
65	Submit Final SWDSER	0 days	9/18/16	9/18/16
66	Approval/Concurrence of Final SWDSER	5 days	9/19/16	9/23/16
67	**Task 4 - Field Activities**	**47 days**	**10/9/16**	**11/24/16**
68	**Field Activities**	**47 days**	**10/9/16**	**11/24/16**
69	Mark Proposed Locations	2 days	10/9/16	10/10/16
70	Contact Miss Utility, Complete Digging Permit	5 days	10/9/16	10/13/16
71	Contact private utility locator company to clear locations for utilities	5 days	10/9/16	10/13/16
72	Geophysical Survey	5 days	10/14/16	10/18/16
73	Intrusive Investigation	5 days	10/19/16	10/23/16
74	Submit Trip Report	10 days	10/24/16	11/2/16
75	Milestone: Trip Report	0 days	11/2/16	11/2/16
76	IDW Analysis for Disposal	21 days	11/3/16	11/23/16
77	IDW Disposal	1 day	11/24/16	11/24/16
78	**Task 5 - Solid Waste Management Plan (SWMP)**	**160 days**	**9/19/16**	**2/25/17**
79	Prepare Preliminary Draft SWMP	60 days	9/19/16	11/17/16
80	**Planning Meeting #4 including Regulators (telecon)**	**10 days**	**11/28/16**	**12/7/16**
81	Meeting #4	1 day	11/28/16	11/28/16
82	Prepare Draft Meeting Notes	2 days	11/29/16	11/30/16
83	Submit Meeting Notes	0 days	11/30/16	11/30/16
84	Receive comments on Meeting Notes	5 days	12/1/16	12/5/16
85	Prepare Final Meeting Notes	2 days	12/6/16	12/7/16
86	Submit Final Meeting Notes	0 days	12/7/16	12/7/16

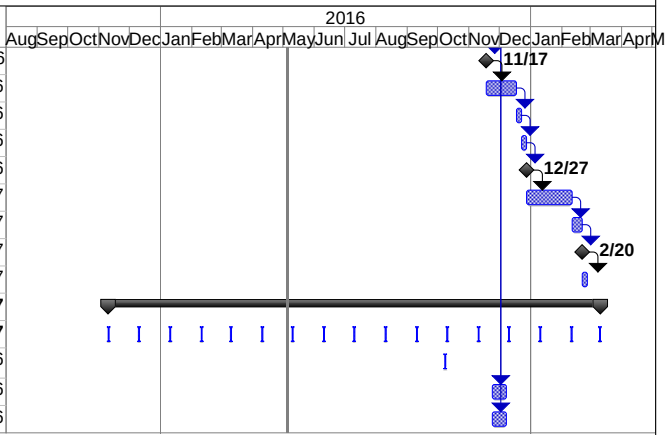


Project: Schedule_Ravenna
Date: 5/6/16

Task Milestone Summary

Project Schedule & Milestones
Former Ravenna Army Ammunition Plant/Camp Ravenna Joint Military Training Center
Portage and Tumbull Counties, Ohio

ID	Task Name	Duration	Start	Finish
87	Submit Preliminary Draft SWMP	0 days	11/17/16	11/17/16
88	Army Review	30 days	11/18/16	12/17/16
89	Prepare Responses to Comments	5 days	12/18/16	12/22/16
90	Army Review Responses to Comments	5 days	12/23/16	12/27/16
91	Submit Draft SWMP	0 days	12/27/16	12/27/16
92	Regulatory Agency Review	45 days	12/28/16	2/10/17
93	Prepare Final SWMP	10 days	2/11/17	2/20/17
94	Submit Final SWMP	0 days	2/20/17	2/20/17
95	Approval/Concurrence of Final SWMP	5 days	2/21/17	2/25/17
96	**Task 6 Monthly Status Report**	**487 days**	**11/10/15**	**3/10/17**
97	**Monthly Progress Reports**	**487 days**	**11/10/15**	**3/10/17**
115	Contractor Manpower Reporting FY15 thru FY16	1 day	10/8/16	10/8/16
116	Upload to ERIS	2 wks	11/24/16	12/7/16
117	Submit SDSFIE Data	2 wks	11/24/16	12/7/16



Project: Schedule_Ravenna
Date: 5/6/16

Task Milestone Summary

Appendix D
OHARNG Procedures for Inadvertent Discovery of Cultural Materials at Camp Ravenna Joint Military Training Center

OHARNG Procedures for Inadvertent Discovery of Cultural Materials at Camp Ravenna Joint Military Training Center (taken from OHARNG ICRMP and modified for CRJMTC)

Contact(s): Kim Ludt, OHARNG Cultural Resources Manager, 614-336-6569
(Alternate contact, CRJMTC Environmental Office, 614-336-6568/6136)
CRJMTC Range Control 614-336-6041 or MARCS radio Channel #1

Scope: This Standard Operating Procedure (SOP) outlines the steps to be taken upon inadvertent discovery of human remains or artifacts at Camp Ravenna Joint Military Training Center (CRJMTC) during construction, demolition, training events, or other ground disturbing activities. If archaeological surveys or excavations become necessary as a result of the inadvertent discovery, they must be conducted by a person meeting the Secretary of Interior's professional qualification standards for archaeology. Anyone who does not meet these standards and engages in any excavations, including probing during metal detecting, shall be considered to be looting the cultural resources of CRJMTC and subject to prosecution under ARPA. This SOP is intended for all OHARNG personnel, contractors and users of CRJMTC.

Statutory Reference(s):

- Native American Graves Protection and Repatriation Act (NAGPRA) and its implementing regulation (43 CFR 10)
- Archaeological Resources Protection Act (ARPA)
- National Historic Preservation Act (NHPA) and its implementing regulation (36 CFR 800).

Procedures: In the event that artifacts or human remains are encountered, the ground disturbing activity should stop immediately and the following steps should be followed.

- Report any observations or discoveries of artifacts or human remains immediately to CRJMTC Range Control (614-336-6041 or MARCS radio Channel #1). Range Control will immediately notify the OHARNG Cultural Resources Manager (CRM)/CRJMTC Environmental Office.
- The Range Control or the CRM will secure any artifacts or human remains, as appropriate. If human remains are suspected, they are not to be disturbed and Range Control will promptly notify Ohio State Highway Patrol or Federal Bureau of Investigation, as appropriate.
- The CRM and Range Control will take measures to protect the location from further disturbance until appropriate parties are notified.
- If a concentration of artifacts or a burial site is identified as the source of materials discovered, the CRM will make arrangements for site recordation and stabilization, in consultation with the OHPO and any interested Native American tribes.
- Once the site has been cleared by the CRM and CRJMTC Range Control, the activity may resume. Depending on the findings, activities may be cleared to resume in 48 hours or up to 6 months.

Updated 19 March 2013

Appendix E
Camp Ravenna Waste Management Guidelines

CAMP RAVENNA WASTE MANAGEMENT GUIDELINES

PURPOSE: Guidelines to be followed by contractors working at Camp Ravenna Joint Military Training Center who are generating/shipping Hazardous, Non-Hazardous, Special or Universal Waste.

POLICY: The policy at Camp Ravenna is to comply with all local, state, federal and installation requirements. Contractor is responsible for waste minimization and is required to recycle materials if possible.

Restoration Program POC: Katie Tait (614) 336-6136 Military & Non-Restoration POC: Brad Kline (614) 336-4918

Coordination:

- Coordinate all waste generation and shipments with the appropriate Camp Ravenna POC listed above or the Environmental Supervisor in their absence at (614) 336-6568.
- Notify Camp Ravenna POC prior to waste sampling for characterization. Details about sampling activities must be included (i.e., number of sample, analyticals, etc.).
- All Hazardous and Non-Hazardous waste management storage locations must be pre-approved prior to generation.
- Ensure all labels include: Date, Contractor, and Waste Type.
- When contractors have waste onsite, a weekly Inspection inventory must be completed and submitted to the appropriate POC in the Camp Ravenna environmental office.
- All wastes shall be tracked and logged throughout the duration of the project. Contractor will provide Camp Ravenna POC with a monthly rollup report of all waste and recycled streams generated by no later than the 10th day of the following month.

Hazardous Waste Treatment, Storage and Disposal Facilities and Waste Haulers: Contractors are required to utilize hazardous waste haulers and Treatment, Storage, and Disposal Facilities on the latest Defense Reutilization Marketing Office (DRMO) approved list. The current qualified waste hauler and Treatment, Storage and Disposal Facility (TSDF) list can be viewed by following the "Qualified Facilities" and "Qualified Transporters" links found on the Defense Logistics Agency (DLA) Hazardous Waste Disposal Homepage, http://www.dispositionservices.dla.mil/newenv/hwdisposal.shtml.

Hazardous or Non-Hazardous manifest form, the following must be included:

- Military and non-restoration operations waste Site Name = Camp Ravenna Joint Military Training Center. Mailing and Site address: Camp Ravenna ENV, 1438 State Route 534 SW, Newton Falls, Ohio 44444, (614) 336-4918. Ohio EPA ID # – OHD981192925.
- Restoration Program waste Site Name = Former Ravenna Army Ammunition Plant. Mailing address is same as address above. Site address: 8451 State Route 5, Ravenna, Ohio 44266, (614) 336-6136. Ohio EPA ID # – OH5210020736.
- Contractor's shipping Hazardous Waste must provide a Land Disposal Restriction (LDR) in accordance with 40 CFR Part 268.
- Profiling:
  - The required shipping documentation (i.e. waste profile and executive summary of lab reports (if available)) need to be submitted to appropriate Camp Ravenna POC or designee(s) for approval and signature prior to shipping.
  - Results of characterization must be submitted to appropriate Camp Ravenna POC within 30 days after collecting sample.
- Manifests - Hazardous and Non-Hazardous:
  - The waste carrier/transporter provides appropriate manifest to the contractor.
  - The contractor is required to:
    - Ensure that Camp Ravenna POC or designee(s) is available to sign the manifest on the scheduled day of shipment;
    - Verify that each manifest is properly completed and signed by Camp Ravenna POC or designee(s);
    - Provide the Generator copy of the manifest to Camp Ravenna POC or designee(s); and
    - Ensure that the original Generator copy of the manifest signed by the treatment storage disposal facility is returned to Camp Ravenna within 30 days of the shipping date for Hazardous and Non-Hazardous Waste.
    - The use of a Bill of Lading, in lieu of a waste manifest, must be approved by the Camp Ravenna environmental office.

All satellite accumulation storage sites and containers will comply with 40CFR 262.34(c)(1):

- Any material that is subject to Hazardous Waste Manifest Requirements of the US Environmental Protection Agency must comply with 40 CFR Part 262.
- From the time any waste is placed in a satellite storage container, proper labeling must be on the container (proper labeling includes date, contractors name and product type).
- Pending analysis label is to be used from the time the sample is taken until the results are received.
- In no case will waste labeled pending analysis exceed 45 days.

All Camp Ravenna Hazardous and Non-Hazardous records are maintained at the Camp Ravenna environmental office, point of contacts are Katie Tait at (614) 336-6136 and Brad Kline at (614) 336-4918.

CAMP RAVENNA WEEKLY NON-HAZARDOUS & HAZARDOUS WASTE INSPECTION/INVENTORY SHEET

Contractor:_____ Month:_____ Year:_____Waste Description: _____

Container Nos. _____

	WEEK 1	WEEK 2	WEEK 3	WEEK 4
	Date: **Time:**	**Date:** **Time:**	**Date:** **Time:**	**Date:** **Time:**
Point of Contact (Name / Number)				
Project Name:				
Contracting Agency and POC:				
***Location on installation:**				
Date Generated:				
Projected date of disposal:				
Nonhaz, Satellite or 90 day storage area:				
Waste generation site:				
Number of Containers (size / type):				
Condition of Container:				
Containers closed, no loose lids, no loose bungs?	**yes / no**	**yes / no**	**yes / no**	**yes / no**
Waste labeled properly and visible (40 CFR 262.34 (c) (1):	**yes / no**	**yes / no**	**yes / no**	**yes / no**
Secondary containment	**yes / no**	**yes / no**	**yes / no**	**yes / no**
Incompatibles stored together?	**yes / no**	**yes / no**	**yes / no**	**yes / no**
Any spills?	**yes / no**	**yes / no**	**yes / no**	**yes / no**
Spill kit available?	**yes / no**	**yes / no**	**yes / no**	**yes / no**
Fire extinguisher present and charged?	**yes / no**	**yes / no**	**yes / no**	**yes / no**
Containers grounded if ignitables?	**yes / no**	**yes / no**	**yes / no**	**yes / no**
Emergency notification form/info present?	**yes / no**	**yes / no**	**yes / no**	**yes / no**
Container log binder present?	**yes / no**	**yes / no**	**yes / no**	**yes / no**
Signs posted if required?	**yes / no**	**yes / no**	**yes / no**	**yes / no**
Photo's submitted	**yes / no**	**yes / no**	**yes / no**	**yes / no**
Printed Name:				
Signature:				

This form is required for Non-Hazardous and Hazardous waste including PCB and special waste.

CONTRACTORS ARE REQUIRED TO SUBMIT THIS FORM WEEKLY TO THE CAMP RAVENNA ENV OFFFICE, AND THE COR, WHEN WASTE IS STORED ON SITE.

CONTRACTORS ARE ENCOURAGED TO INCLUDE PHOTOS WITH EACH WEEKLY INSPECTION SHEET WHEN WASTE IS STORED ON SITE.

*Draw detailed map showing location of waste within the site.

Appendix F
First Responder Reporting Form

FIRST RESPONDER REPORTING FORM

(Print all information)

Collect as much of the information on the top half of this form as possible before making initial notification. Complete the top and bottom of the form before turning in to Camp Ravenna.

Name of individual reporting spill: _____

When did the spill occur (Date and Time)? _____

Spill Location (Building or area name / number, indoors or out; if vehicle involved, type and bumper number):
_____

What was spilled? _____ How much was spilled? _____

Rate at which material is currently spilling. _____

Extent of spill travel? _____

Did the spill reach water (ditch, creek, stream, pond, well head) _____

Number of injured personnel and type injuries, if applicable. _____

Do you need the Fire Department to respond to protect life, property, and environment? _____

Unit: _____ State: _____ Report Date & Time: _____

On Scene Coordinator Name and Grade: _____ Phone: _____

How did the spill occur (be specific). _____

_____

What remedial action was taken? _____

_____

Was soil and absorbent material generated? _____ How much? _____

What is the location of the soil and absorbents? _____

Was the Environmental Office contacted (yes or No, date and time)? _____

Who did you talk to in the Environmental Office? _____

Was the site cleared by the Env. Office (Yes or No, date and time)? _____

Who cleared the site (name and grade, date and time)? _____

Initial information is critical. Get as much information as you can, but don't hesitate to make the initial notification if a spill is moving or worsening rapidly!

This form must be completed for all releases and turned-in to Camp Ravenna Range Control within 24 hours.

FIRST RESPONDER SPILL/RELEASE RESPONSE ACTIONS

Units or contractors performing training or other operations at Camp Ravenna shall be responsible for adhering to the provisions identified in the Camp Ravenna Integrated Contingency Plans (ICP). A copy of the ICP may be obtained from the Camp Ravenna Environmental Supervisor. Following discovery of a spill (any size), the procedures outlined below shall be executed where applicable:

1. **If necessary, initiate evacuation of the immediate area.**

2. **Notify Camp Ravenna Range Control via two-way radio or by calling (614) 336-6041, and report information contained on the "First Responder Reporting Form" if it is known or can reasonably be determined. This form has been copied on the opposite side of this page. If Range Control cannot be reached, contact a Camp Ravenna OSC (listed below).**

3. **Stop spill flow when possible without undue risk of personal injury.**

4. **If trained, contain the spill using available spill response equipment or techniques.**

5. **Make spill scene OFF LIMITS to unauthorized personnel.**

6. **Restrict all sources of ignition when flammable substances are involved.**

7. **Report to the OSC upon his/her arrival to the scene.**

8. **Turn in a completed copy of the Camp Ravenna First Responder Form to Camp Ravenna Range Control for ALL releases, even ones cleaned up by the reporter.**

TELEPHONE NUMBER

When Camp Ravenna Range Control is not available, the Camp Ravenna OSC must to be contacted by the discoverer/first responder following a release if it is in water, at or above a reportable quantity (25 gallons or more of POL), a hazardous or extremely hazardous substance, a hazardous waste, or involves fire, explosion, or is otherwise a major incident.

NAME	JOB TITLE	OFFICE	24 HOUR
Camp Ravenna Range Control	Operations and Training	(614)336-6041	(614) 202-5783
Tim Morgan (Primary OSC)	Environmental Supervisor	(614)336-6568	(330)322-7098
Katie Tait	Environmental Specialist	(614)336-6136	Contact Alternate
CPT Mike Yates	Range Operations	(614)336-6193	(330) 819-5038
MAJ Richard Saphore	Logistics Officer	(614)336-6790	(614) 593-1654
LTC Ed Meade	Garrison Commander	(614)336-6560	(614)307-0493
Joint Forces Command (Alternate POC)	OHARNG Emergency Center	(888)637-9053	(888)637-9053

Off-site (from Camp Ravenna area code 614 phones)

Windham Fire Department ……..…9-1-330-326-2222
Portage County Sheriff ……..… 9-1-330-296-5100
Trumbull County Police, Fire Department and Hazmat…… 911

SEE REVERSE FOR FIRST RESPONDER REPORTING FORM

Appendix G
Response to Comments

Comment Resolution Table

Installation: RVAAP/Camp Ravenna
Document: Draft Work Plan for the Evaluation, Identification, and Management of Solid Waste Disposal Sites
Reviewer(s): Ohio EPA, Kevin Palombo
Date: 25 April 2016

Cmt. No.	Page or Sheet	Comment	Recommendation	Response
1	TOC	Table of Contents (TOC) Table 1-1, page number is missing from TOC		The page number for Table 1-1 was added to the TOC.
2	TOC	Section 2.4 title in TOC does not match document, Sections 2.4.1, and 2.4.2 are either missing from TOC or mislabeled		The TOC was updated to match the Section headings.
3	TOC	Figure 2-2 , Potential Waste Categories : Known and Unknown Sites is missing from the Table of Contents		Figure 2-2 was added to the TOC.
4	TOC	Figure 2-3 , page 2-8 , title does not match TOC		The title in the TOC was updated to match the figure.
5	TOC	All of Section 2.5, 2.5.1 through 2.5. 3 is missing from TOC		These sections were added to the TOC.
6	TOC	Section 4.2.3 , page number needs to be changed on TOC		The page number for this section is 4-2, which matches the TOC.
7	Page 4-1	Section 4.2, Based on the information in the section , please clarify whether this section was intended to be titled , Solid Waste Management Plan		The section and the TOC were updated to "Solid Waste Management Plan."
8	TOC	Section 4.3 , Project Data, is missing from the TOC		Section 4.3 was added to the TOC.
9	Page 5-1	Section Five: The Quality Control Plan should have a brief introductory paragraph, and the table should be labeled "Table 5-1" to be consistent with the rest of the document		The following introductory paragraph was added: "This section presents the Quality Control Plan for the project. The fundamental aspects in quality are applied when we: Plan (Plan for Quality), Do (Work the Plan-Build the Quality), Check (Confirm Quality), and Act (Fix Any Problems & Improve Procedures). The key and project-required components of the AECOM's Quality Management System are Detail Checking and Independent Technical Reviews (ITRs). The following table outlines

Comment Resolution Table

Installation: RVAAP/Camp Ravenna
Document: Draft Work Plan for the Evaluation, Identification, and Management of Solid Waste Disposal Sites
Reviewer(s): Ohio EPA, Kevin Palombo
Date: 25 April 2016

				the quality measures that will be followed for each project task." The following label was also added prior to the table: "Table 5-1: Project Tasks and Quality Measures."
10	Page 5-1	The first bullet in the table states that all project activities will conform to AECOM 's Quality Management System, as laid out in the Project Management Plan/Quality Control Plan (AECOM, 2015) . This referenced Plan should append this document or be available to Ohio EPA for review, if necessary		Reference to the Project Management Plan/Quality Control Plan was removed. Most of the relevant information from this document was already included in this section. The following sentence replaced the reference "All project activities will comply with AECOM's Quality Management System, which conforms to the International Organization for Standardization (ISO) 9001 quality standard, extends to all personnel engaged in project work, and applies to all project phases from planning through completion." Additionally, further information about Independent Technical Reviews (ITRs) was added: "ITRs are performed for all project deliverables to verify completion of any necessary detail checking, and to verify or validate assumptions, plans, results, or conclusions. ITRs also serve to verify that completed work meets contractual requirements and is consistent with the professional standard of care."
11	Appendix B	Appendix B, Project Contact Information should include Ohio EPA's contact and phone number information. Please update Appendix B		Kevin Palombo's specific contact information was added to the Ohio EPA row.
12	Page 3-1	Section 3.1, add the acronym "LTM" and its meaning to the acronym list on page iii		LTM was previously defined on page 2-1. The LTM acronym, was defined in the acronym list.
13	Page 3-3	Section 3.2 describes potential intrusive investigations of identified waste disposal areas. Page 3-3		This sentence was revised to state "Although unlikely to encounter, any removed debris will be properly disposed in a licensed disposal

Comment Resolution Table

Installation: RVAAP/Camp Ravenna
Document: Draft Work Plan for the Evaluation, Identification, and Management of Solid Waste Disposal Sites
Reviewer(s): Ohio EPA, Kevin Palombo
Date: 25 April 2016

		paragraph 3 , sentence 5 states, " ...any removed debris will be properly disposed in accordance with applicable federal, state and local regulations." Ohio EPA requests assurance that this material will not be disposed of on site , but in a properly licensed disposal facility . Please provide this clarification		facility in accordance with applicable federal, state, and local regulations."
14	Section 3.2	Section 3.2: This section describes the field activities that will be conducted as a part of the evaluation of potential disposal areas, including geophysical surveys, and potential intrusive investigations. Based on the Director's Final Findings and Orders, the work needs to be in compliance with the appropriate precautions under OAC 3745-27 , so that this work will not create a nuisance or impact the environment or human health. This should be stated in Section 3.2		The first sentence of the last paragraph on page 3-2 was changed to read "These investigations will be conducted in compliance with the appropriate sections of OAC 3745-27, and will be used to determine the types of waste present."
15	Section 4.2	It is assumed any additional disposal sites identified after the initial Solid Waste Management Plan has been completed will be added and also managed according to the Plan. Please clarify in Section 4.2		The following sentence was added to the end of Section 4.2: "Any additional solid waste disposal sites that are identified after the SWMP is completed will be added and managed according to the SWMP."