FINAL
SOLID WASTE MANAGEMENT PLAN

Evaluation, Identification, and Management of Potential Solid Waste Sites

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

March 26, 2019

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

Page Intentionally Left Blank

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.

1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From - To)*
3/26/2019	Final	December 2017-March 2019

4. TITLE AND SUBTITLE

Final Solid Waste Management Plan
Evaluation, Identification, and Management of Solid Waste Sites
Former Ravenna Army Ammunition Plant/Camp Ravenna Joint Military Training Center, Portage and Trumbull Counties, Ohio

5a. CONTRACT NUMBER
W9133L-14-D-0001

5b. GRANT NUMBER
NA

5c. PROGRAM ELEMENT NUMBER
NA

6. AUTHOR(S)
Salvatore, Amibeth
Gettier, Sarah
Witte, Joe

5d. PROJECT NUMBER
Delivery Order No. 004

5e. TASK NUMBER
NA

5f. WORK UNIT NUMBER
NA

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

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

8. PERFORMING ORGANIZATION REPORT NUMBER
60445221.5

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

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

10. SPONSOR/MONITOR'S ACRONYM(S)
ARNG

11. SPONSOR/MONITOR'S REPORT NUMBER(S)
NA

12. DISTRIBUTION/AVAILABILITY STATEMENT

Reference Distribution Page

13. SUPPLEMENTARY NOTES

None

14. ABSTRACT

This Final Solid Waste Management Plan summarizes data obtained via historical records review, personnel interviews, visual surveys, and intrusive investigation to determine solid waste sites and recommends site specific management for solid waste under Contract W9133L-14-D-0001, Deliver Order 0004.

15. SUBJECT TERMS

Solid Waste Management Plan (SWMP), Visual Assessment Survey Report (VASR), historical records review, personnel interviews, visual surveys, intrusive investigation, solid waste

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Sarah Gettier
U	U	U	SAR	103	19b. TELEPHONE NUMBER *(Include area code)* 301-820-3166

Reset

Page Intentionally Left Blank

Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Laurie A. Stevenson, Director

April 25, 2019

RE: US Army Ammunition Plt RVAAP
Remediation Response
Project Records
Remedial Response
Portage County
ID # 267000859230

Mr. David Connolly
Army National Guard Directorate
Environmental Programs Division
ARNG-ILE-CR
111 George Mason Drive
Arlington, VA 22204

Subject: Approval of the "Final Solid Waste Management Plan for the Evaluation, Identification, and Management of Potential Solid Waste Disposal Sites, Former Ravenna Army Ammunition Plant / Camp Ravenna Joint Military Training Center," dated March 29, 2019

Dear Mr. Connolly:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) has received the "Final Solid Waste Management Plan for the Evaluation, Identification, and Management of Potential Solid Waste Disposal Sites, Former Ravenna Army Ammunition Plant / Camp Ravenna Joint Military Training Center," dated March 29, 2019, on April 1, 2019. The report was prepared for the Army National Guard by AECOM Technical Services, Inc. under Contract Number W9133L-14-D-0001.

This final document was received based on a meeting (conference call) held March 20, 2019 to discuss your response to Ohio EPA comments received in a letter dated February 28, 2019. Based on the satisfactory resolution of outstanding issues during that meeting, the final document was submitted

The final document was reviewed by personnel from Ohio EPA, DERR and Division of Drinking and Ground Waters (DDAGW). Pursuant to the Director's Findings and Orders paragraph 39 (b), Ohio EPA considers the document final and approved.

Page Intentionally Left Blank

CONTRACTOR STATEMENT OF INDEPENDENT TECHNICAL REVIEW

AECOM has completed the Final Solid Waste Management Plan for the Evaluation, Identification, and Management of Potential Solid Waste 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: Sarah Gettier _____ 3/26/2019

Sarah M. Gettier
Project Manager

Date

Page Intentionally Left Blank

FINAL
SOLID WASTE MANAGEMENT PLAN

Evaluation, Identification, and Management of Potential Solid Waste Sites

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

March 26, 2019

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

Page Intentionally Left Blank

Document Distribution:
Final Solid Waste Management Plan

Name and Organization	Number of Copies	
	Printed	Electronic
David Connolly, ARNG-ILE-CR	0	1
Kevin Sedlak, ARNG – Camp Ravenna	0	Email/Transmittal Letter
Katie Tait, OHARNG – Camp Ravenna	1	Email/Transmittal Letter
Kevin Palombo, Ohio EPA Project Manager	1	1
Bob Princic, Ohio EPA - NEDO	0	Email/Transmittal Letter
Mark Johnson, Ohio EPA - NEDO	0	Email/Transmittal Letter
Tom Schneider, Ohio EPA - SWDO	0	Email/Transmittal Letter
Rebecca Shreffler, Administrative Assistant – Camp Ravenna	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

Page Intentionally Left Blank

Table of Contents

List of Figures

List of Tables

Appendices

Acronyms

ACM	asbestos-containing material
AECOM	AECOM Technical Services, Inc.
AOC	area of concern
ARNG	Army National Guard
bgs	below ground surface
CB&I	CB&I Federal Services LLC
CDD	construction and demolition debris
CRJMTC	Camp Ravenna Joint Military Training Center
CRS	Compliance Restoration Site
EBG	Erie Burning Grounds
EPA	U.S. Environmental Protection Agency
e2M	Engineering-environmental Management, Inc.
HGL	HydroGeologic, Inc.
IRP	Installation Restoration Program
LUCs	Land Use Controls
MD	munitions debris
MEC	munitions and explosives of concern
MKM	MKM Engineers, Inc.
mm	millimeter
MMRP	Military Munitions Response Program
MRS	Munitions Response Site
NACA	National Advisory Committee for Aeronautics
NFA	No Further Action
NTA	NACA Test Area
OAC	Ohio Administrative Code
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
ORC	Ohio Revised Code
PP	Proposed Plan
PWS	Performance Work Statement
RI	Remedial Investigation
ROD	Record of Decision

RQL	Ramsdell Quarry Landfill
RVAAP	Ravenna Army Ammunition Plant
SAIC	Science Applications International Corporation
SI	Site Inspection
SWMP	Solid Waste Management Plan
USACE	U.S. Army Corps of Engineers
UXO	unexploded ordnance
VASR	Visual Assessment Survey Report

Page Intentionally Left Blank

Executive Summary

One hundred and fifty-two (152) areas at the former Ravenna Army Ammunition Plant (RVAAP), now known as Camp Ravenna Joint Military Training Center (CRJMTC), in Portage and Trumbull Counties, Ohio were evaluated to identify areas that may have been used in the past for disposal or dumping, storage of construction and demolition debris (CDD), and/or materials storage. Visual surveys were conducted to determine if solid waste was present at these sites. The sites visited included Installation Restoration Program (IRP) sites, Military Munitions Response Program (MMRP) sites, Compliance Restoration Sites (CRSs), Aerial Review Sites, and Interview Sites as presented in the 2017 Visual Assessment Survey Report (VASR) (AECOM, 2017).

The project is driven by an Ohio Environmental Protection Agency (Ohio EPA) RVAAP Team, Northeast District Office interoffice memorandum, to the Army Team, Camp Ravenna, on July 24, 2014 (Ohio EPA, 2014, **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. The following environmental activities were conducted:

- Review historical information to inventory known solid waste sites and identify potential waste sites
- Visually survey current site conditions
- Intrusively investigate subsurface solid waste and delineate site boundaries
- Evaluate site information and Ohio EPA requirements to develop a plan for each site

Site findings were used to identify applicable Ohio Administrative Code (OACs), which guide management recommendations. Applicable waste classification definitions and waste management guidance was provided in the Ohio EPA memorandum (Ohio EPA, 2014). These definitions and regulations are used as decision points in the evaluations of the sites and in management recommendations. Of the 152 visual survey sites evaluated as part of the VASR, 68 did not merit being carried forward into the Solid Waste Management Plan (SWMP) based on the absence of waste. Seven of the 68 sites were initially identified as Solid Waste Sites in the VASR, but have since been cleared of their waste and have been removed. An additional 57 sites are designated as Troop Labor Sites and are included in Appendix D but are not discussed further in the SWMP. Six Troop Labor Sites (Winklepeck Burning Grounds [IRP], 40 mm Firing Range [IRP and MMRP], Fuze and Booster Quarry Landfill/Ponds [IRP and MMRP], and Site C) also include surficial or buried solid waste that is managed according to the SWMP, and as such, are discussed in the SWMP. Thus, 51 sites are not considered Solid Waste Management Sites as a result of Troop Labor Site distinction.

Thirty-three of the potential 152 original Solid Waste Management Sites were retained and are described in the SWMP. As a result of grouping waste at co-located sites into single headers in the SWMP, 19 sections are included in the report but describe all of the 33 Solid Waste Management Sites. The 33 Solid Waste Management Sites identified and cataloged at CRJMTCin this SWMP are shown on **Figure ES-1** in 19 distinct groupings. Several Solid Waste Management Sites at CRJMTC are collocated with existing known areas of concern (AOCs) (ie., IRP, MMRP, or CRS sites) where the solid waste can be buried or surficial. Solid waste at the site may comprise only a portion of a site, or maybe present throughout the entirety of the site. Also, it is important to note that there is sme surficial solid waste identified at buried waste sites, therefore, for management purposes the sites in this SWMP have been grouped by;

- sites with only buried solid waste,
- sites with only surfical solid waste, and
- sites with both buried and surficial solid waste.

One-page fact sheets were developed for each site that presents the Site History, Date of Waste Placement, Investigative Findings, Solid Waste Characterization, Waste Management Activities, and a map and photo(s) of the site.

The sites where only solid waste on the ground surface was encountered is considered Open Dumping, according to OAC 3745-27-01(O)(4). Solid waste in ground (i.e. underground or buried) is considered a solid waste management unit, and will be managed in place. OAC Rule 13 (OAC 3745-27-13) is the authorization requirement for disturbance of buried waste; however, OAC 3745-27-13 (C)(2)(c) provides an exemption from this authorization at CRJMTC.

An August 2018 Ohio EPA memorandum (**Appendix B**) stated the following regarding the applicability of OAC Rule 13 at CRJMTC: "*Because Ohio EPA and the United States Department of the Army have a 2004 Director's Final Findings and Orders in place, the provision under OAC 3745-27-13(C)(2)(c) applies. This provision states that OAC 3745-27-13 does not apply to filling, grading, excavating, building, drilling, or mining at sites subject to either a written agreement entered into by the director with the federal government or a final order issued by the director; and under which a person will perform corrective or remedial investigation or action, ground water investigation, maintenance action to protect a remedy, or other investigation or action to abate air or water pollution or soil contamination, or to protect public health and safety under Chapter 3734, 3746 or 6111 of the Revised Code*." As such, if an action that disturbs buried waste is necessary, then an OAC 3745-27-13(C)(2)(c) exemption applies.

This SWMP will be used by Army National Guard (ARNG) and Ohio ARNG (OHARNG) as a management tool for each site and for future use decisions of the installation. This document will be used in conjunction with the *Final Revised Property Management Plan for the Designated Areas of Concern and Munitions Resonse Sites Version 2.0* (March 30, 2018) (U.S. Army Corps of Engineers [USACE], 2018). The Property Mangagement Plan provides mechanisms to implement and manage Land Use Controls (LUCs) and restrictions for sites at CRJMTC.

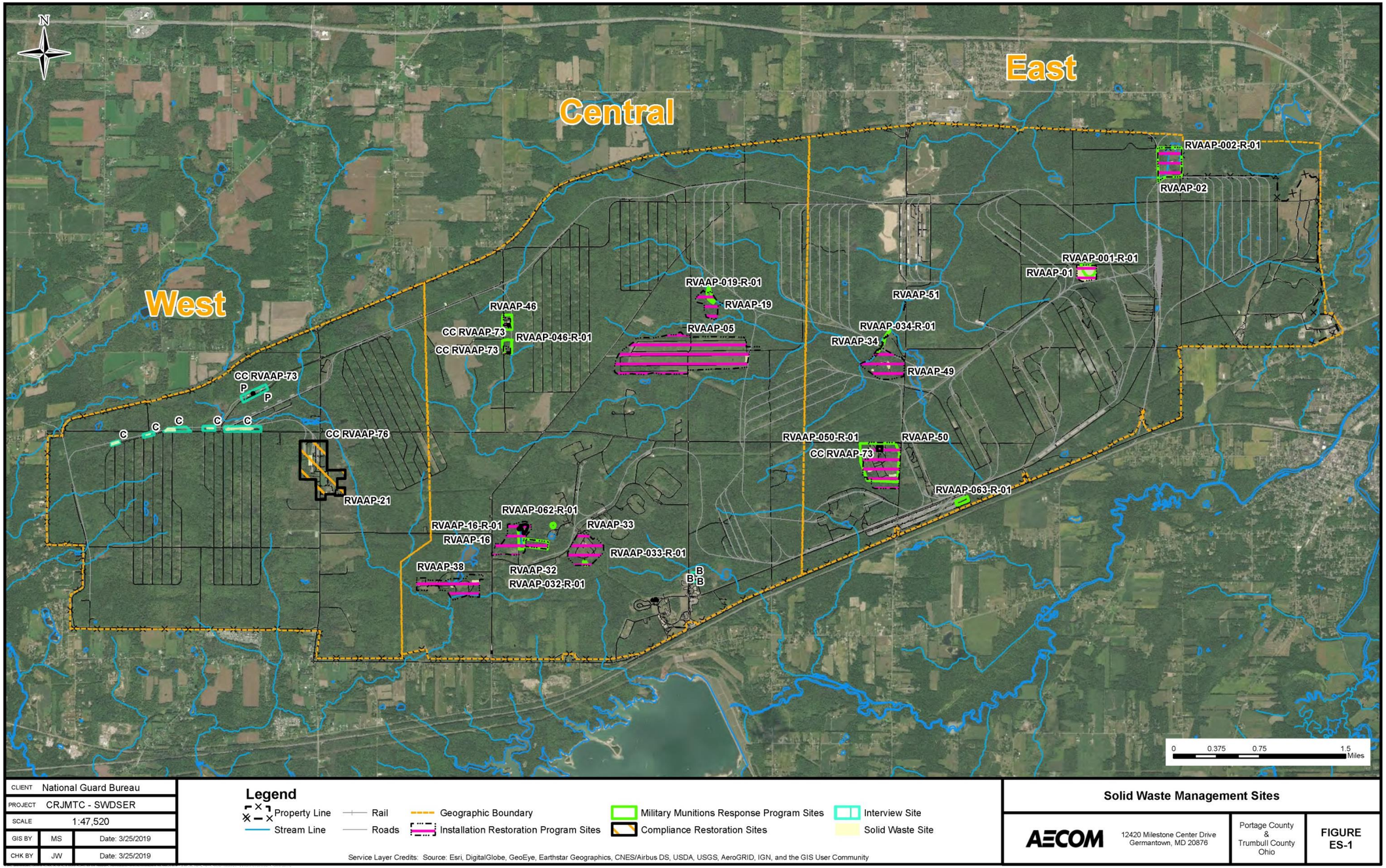


Figure ES-1: Solid Waste Management Sites

This Page Intentionally Left Blank

1 Introduction

1.1 Project Authorization and Background

AECOM Technical Services, Inc. (AECOM) developed this Solid Waste Management Plan (SWMP) 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 (CDD) debris at the former Ravenna Army Ammunition Plant (RVAAP), now known as Camp Ravenna Joint Military Training Center (CRJMTC), in Portage and Trumbull Counties, Ohio (**Figure 1-1**). The PWS was created in response to an interoffice memorandum from the Ohio Environmental Protection Agency (Ohio EPA) RVAAP Team, Northeast District Office (**Appendix A**), to the Army Team, Camp Ravenna, Portage County, on July 24, 2014 (Ohio EPA, 2014).

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 September 30, 2015.

1.2 Purpose and Scope

The project is driven by the interoffice memorandum from the Ohio EPA RVAAP Team (Ohio EPA, 2014). The focus of the memorandum was to provide clarification on Ohio EPA regulations and guidance on addressing solid wastes at Installation Restoration Program (IRP) and Military Munitions Response Program (MMRP) sites. The following environmental activities were conducted:

- Review historical information to inventory known solid waste sites and identify potential solid waste sites
- Visually survey current site conditions
- Intrusively investigate subsurface solid waste and delineate site boundaries
- Evaluate site information and Ohio EPA requirements to develop a management plan for each site

Site findings were used to identify applicable Ohio Administrative Code (OACs), which guide solid management recommendations. Applicable waste classification definitions and waste management guidance provided in the Ohio EPA memorandum (Ohio EPA, 2014) and the applicable OACs are presented in Section 2. These definitions and regulations are used as decision points in the evaluations of the sites and in management recommendations.

1.2.1 Project Deliverables

Work Plan

The Work Plan outlines all the stages of the project leading up to this SWMP and was finalized and approved on May 23, 2016. It includes details on project deliverables, steps to complete the objectives, information on solid waste site identification and evaluation, and determination of applicable regulations (AECOM, 2016).

Visual Assessment Survey Report

The Visual Assessment Survey Report (VASR) was completed and approved on October 18, 2017 (AECOM, 2017) which contains results from the assessement of over 150 areas including the information obtained during the visual survey fieldwork of these areas conducted in April 2016. This document explained the steps taken to identify solid waste sites. All potential sites that were evaluated were included in this report. The results of the evaluation, including whether solid waste is present at each

potential site, were documented in this report. Next steps were also defined, including which sites required further investigation (i.e., intrusive investigation) and which sites were to be carried forward to the SWMP.

Intrusive Investigations

Intrusive investigations were conducted at Load Line 4 (RVAAP-11) and Site O from 12-13 December 2017 to characterize and delineate potential solid waste in compliance with the 2017 Final VASR. Geophysical surveys were unnecessary at both sites because they have visually identifiable boundaries, and surveying would not assist in identifying or classifying potential solid waste present. In accordance with a Field Change Request Form approved by Army National Guard (ARNG) and Ohio EPA on 7 December 2017, AECOM proceeded directly to intrusive investigations at RVAAP-11 and Site O in lieu of geophysical surveys. AECOM excavated test pits at three mounds at RVAAP-11 and at a hummocky area at Site O identified during the Visual Assessment Survey. Intrusive investigation details for both sites are included in the Intrusive Investigation Trip Report (**Appendix C**). The investigation results and historical documentation provided by Ohio ARNG (OHARNG) indicate that the mounds identified at RVAAP-11 are engineered barricades containing no solid waste and will not be discussed further. However, due to minimal surficial solid waste remaining (plastic sheeting, insulators, and railroad ties), RVAAP-11 is considered a Troop Labor Site and is included in **Appendix D**. Investigation results at Site O indicate that there is no solid waste present at the hummocky area. This site will not be discussed further in this SWMP.

Solid Waste Management Plan

This SWMP is the final deliverable for this project. The purpose of the SWMP is to catalog all solid waste sites. **Table 1-1** includes all sites reviewed during the visual assessment; this includes known areas of concern (AOCs) (IRP sites, MMRP sites, and Compliance Restoration Sites (CRS)), aerial review sites (numbered 0 -17) and interview sites (lettered A-U). Correspondingly, **Figure 1-2** identifies these sites evaluated during the VASR. **Table 1-1** also identifies sites that have minimal surficial debris as "Troop Labor Sites". These Troop Labor Sites are grouped together in **Appendix D** along with the corresponding site location and a brief description of debris**.** CRJMTC will address these sites together under this category. These sites will not be discussed further in this report. However, it is possible that a site can have surface debris and solid waste and therefore be categorized as both a Troop Labor Site and a Solid Waste Management Site. This means that there could be minimal surficial debris that troops can address as a routine housecleaning activity and also have surficial and buried solid waste present that is managed is managed under this SWMP.

Several sites identified in the VASR to be carried forward into the SWMP have since had their solid waste removed or were investigated further and determined to not have solid waste present. These sites no longer require discussion in this SWMP, and are listed with justification for their removal in **Table 1-2**.

Sites with solid waste present are categorized as Solid Waste Management Sites and are listed in **Table 1-3**. This table includes the type of waste identified, the date of waste placement if known, and whether the waste is surficial or buried. Detailed information about each of the solid waste sites is provided in Section 3 including: site history, site boundaries, identification of and justification for the classification of the solid waste, applicable regulations/Ohio EPA requirements, and recommendations for management of the sites. For each solid waste site a fact sheet has been developed and is provided in Section 4. Each fact sheet is a one-page summary of Site History, Date of Waste Placement, Investigative Findings, Solid Waste Characterization, Waste Management Activities, and a map and photo(s) of the site.

This SWMP will be used by ARNG and OHARNG as a management tool for each site to identify where solid waste is present and help establish where applicable solid waste regulations apply. This document will be used in conjunction with the *Final Revised Property Management Plan for the Designated Areas of Concern and Munitions Response Sites Version 2.0* and subsequent versions (March 30, 2018) (USACE, 2018). Progress on cleanup at solid waste sites will be reviewed and updated on an annual basis during the Annual Inspection Report of AOCs/MRSs with LUCs. Solid Waste Management Sites do not have LUCs but this will allow for a consistent review and correlation of the SWMP and the Property Management Plan.

1.3 Site Background

CRJMTC is in northeastern Ohio in Portage and Trumbull counties (**Figure 1-1**). Administrative accountability for the entire 21,683-acre facility has been transferred to the United States Property and Fiscal Officer for Ohio, and the property is licensed to the OHARNG for use as a military training site. The RVAAP restoration program involves the cleanup of former production/operational areas throughout the facility.

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 War to load and pack major caliber shells and components. All production ended in August 1957. In October 1957, the installation was again placed in 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 90 millimeter (mm) projectile occurred from June 1973 until March 1974. Demilitarization of various munitions was conducted from 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 standby status by keeping equipment in a condition to permit resumption of production within prescribed limitations. In September 1993, 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.

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

1.4 Report Organization

This report is organized in the sections outlined below. The report sections and descriptions of each are:

- Section 1 – Introduction: Identifies the project purpose, authority, and deliverables, and describes CRJMTC location
- Section 2 – Ohio EPA Waste Regulation Information: describes Ohio EPA waste regulations pertinent to solid waste conditions at CRJMTC
- Section 3 – Solid Waste Management Sites: describes solid waste management site-specific information obtained via desktop data collection, historical data review, and visual survey, and catalogs solid waste at each site
- Section 4 – Solid Waste Site Fact Sheets: Summarizes information presented in Section 3 and presents the solid waste footprint at each site via aerial imagery
- Section 5 – Conclusions: Summarizes the data findings and presents the conclusions of the SWMP
- Section 6 – References: Provides the references used to develop this document

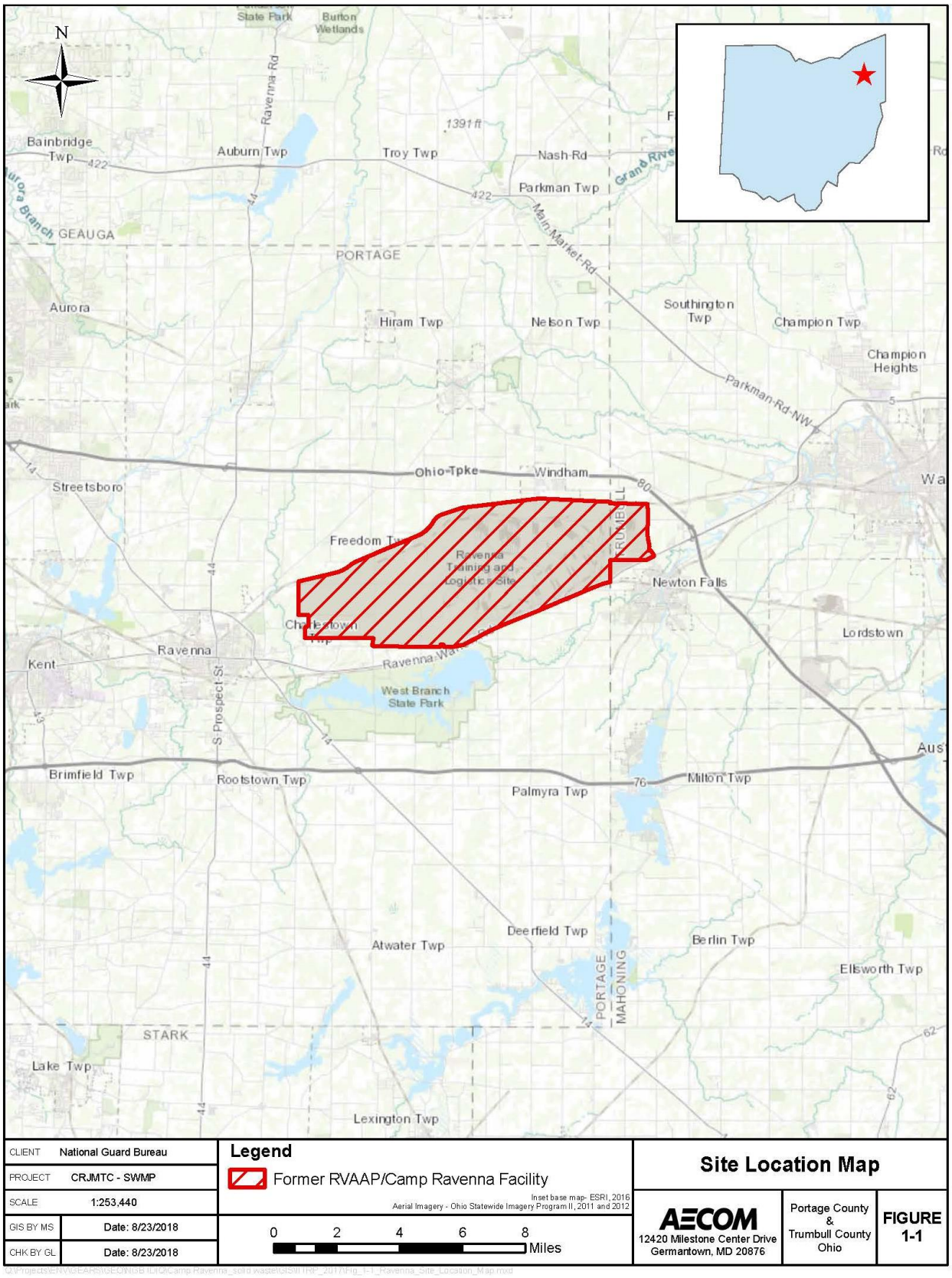


Figure 1-1: Site Location Map

This Page Intentionally Left Blank

Table 1-1: Visual Survey Sites

Geographical Area	Program	AOC ID	Description	Solid Waste Management Site*	Troop Labor Site*
Eastern	CRS	CC RVAAP-68	Electric Substation East	No	No
Central	CRS	CC RVAAP-68	Electric Substation West	No	**Yes**
Central	CRS	CC RVAAP-68	Electric Substation No. 3	No	**Yes**
Central	CRS	CC RVAAP-69	Former Building 1048 Fire Station	No	No
Eastern	CRS	CC RVAAP-70	East Classification Yard	No	**Yes**
Central	CRS	CC RVAAP-71	Barn No. 5 Petroleum Release	No	No
Eastern	CRS	CC RVAAP-73	Load Line 4 Powerhouse Coal Storage	No	No
Eastern	CRS	CC RVAAP-73	Sand Creek Coal Tipple	No	No
Eastern	CRS	CC RVAAP-73	Atlas Scrap Yard Coal Storage	**Yes**	No
Eastern	CRS	CC RVAAP-73	Load Line 12 Powerhouse Coal Storage	No	No
Eastern	CRS	CC RVAAP-73	Load Line 2 Powerhouse Coal Storage	No	No
Eastern	CRS	CC RVAAP-73	Load Line 1 Powerhouse Coal Storage	No	No
Eastern	CRS	CC RVAAP-73	Area 6 Inert Storage Area Coal Storage	No	No
Eastern	CRS	CC RVAAP-73	Roundhouse Coal Storage	No	No
Central	CRS	CC RVAAP-73	Building F-16 Coal Storage	**Yes**	No
Central	CRS	CC RVAAP-73	Building F-15 Coal Storage	**Yes**	No
Central	CRS	CC RVAAP-73	Inert Storage No. 2F-N21 Coal Storage	No	No
Central	CRS	CC RVAAP-73	Power House No. 51-15 Coal Storage	No	No
Central	CRS	CC RVAAP-73	Power House No. 5 Coal Storage	No	No
Central	CRS	CC RVAAP-73	Administration Area Powerhouse Coal Storage	No	No
Western	CRS	CC RVAAP-73	Depot Area Building U-14 Coal Storage	No	**Yes**
Western	CRS	CC RVAAP-73	Depot Area Building U-5 Coal Storage	No	**Yes**
Western	CRS	CC RVAAP-73	North Line Road Coal Tipple Area	No	No
Western	CRS	CC RVAAP-73	U-16 Boiler House Coal Storage	**Yes**	No
Central	CRS	CC RVAAP-74	Building 1034 Motor Pool Hydraulic Lift	No	No

Geographical Area	Program	AOC ID	Description	Solid Waste Management Site*	Troop Labor Site*
Central	CRS	CC RVAAP-75	George Road STP Mercury Spill	No	**Yes**
Western	CRS	CC RVAAP-76	Depot Area	**Yes**	No
Central	CRS	CC RVAAP-77	BLDG 1037 Laundry Waste Water Sump	No	No
Central	CRS	CC RVAAP-78	Quarry Pond Surface Dump	No	**Yes**
Eastern	CRS	CC RVAAP-79	DLA Ore Storage Building 841, Area 8 Inert Storage	No	No
Eastern	CRS	CC RVAAP-79	DLA Ore Storage - Area 2 Ammo Storage Area	No	No
Eastern	CRS	CC RVAAP-79	DLA Load Line 3 Inert and Tank Storage	No	No
Eastern	CRS	CC RVAAP-79	DLA Main Ore Storage Area	No	**Yes**
Western	CRS	CC RVAAP-79	DLA Ore Storage Sites: Rt.80 Tank Farm	No	No
Eastern	CRS	CC RVAAP-80	Group 2 Propellant Can Tops	No	No
Central	CRS	CC RVAAP-83	Former Building 1031	No	No
Central	CRS	CC RVAAP-83	Former Building 1039 Lab	No	No
Central	NA	East and Southeast of CC RVAAP-83	Paved Areas East and Southeast of Former Building 1031	No	No
Central	NA	Near RVAAP 44	West of the intersection of Newton Falls Road and Greenleaf Road	No	**Yes**
Eastern	NA	North of Site 1	Southeastern bank of South Service Road	No	**Yes**
Eastern	IRP	RVAAP-01	Ramsdell Quarry Landfill	**Yes**	No
Eastern	MMRP	RVAAP-001-R-01	Ramsdell Quarry Area 2 (South)	No	**Yes**
Eastern	MMRP	RVAAP-001-R-02	Ramsdell Quarry Area 1 (North)	**Yes**	No
Eastern	IRP	RVAAP-02	Erie Burning Grounds	**Yes**	No
Eastern	MMRP	RVAAP-002-R-01	Erie Burning Grounds MRS	**Yes**	No
Central	IRP	RVAAP-03	Open Demolition Area #1	No	No
Central	IRP	RVAAP-04	Open Demolition Area #2	No	No
Central	MMRP	RVAAP-004-R-01	Open Demolition Area #2 MRS	No	No
Central	IRP	RVAAP-05	Winklepeck Burning Grounds	**Yes****	**Yes**

Geographical Area	Program	AOC ID	Description	Solid Waste Management Site*	Troop Labor Site*
Western	IRP	RVAAP-06	C Block Quarry	No	**Yes**
Central	IRP	RVAAP-07	Building 1601 Hazardous Waste Storage	No	No
Eastern	IRP	RVAAP-08	Load Line 1	No	**Yes**
Eastern	MMRP	RVAAP-008-R-01	Load Line 1 MRS	No	No
Eastern	IRP	RVAAP-09	Load Line 2	No	**Yes**
Eastern	IRP	RVAAP-10	Load Line 3	No	No
Eastern	IRP	RVAAP-11	Load Line 4	No	**Yes**
Eastern	IRP	RVAAP-12	Load Line 12	No	**Yes**
Eastern	MMRP	RVAAP-012-R-01	Load Line 12 MRS	No	No
Eastern	IRP	RVAAP-13	Building 1200-Dilution\Settling Pond	No	**Yes**
Central	IRP	RVAAP-14	Load Line 6 Evaporation Unit	No	No
Central	IRP	RVAAP-15	Load Line 6 Treatment Plant	No	No
Central	IRP	RVAAP-16	Fuze and Booster Quarry Landfill/Ponds	**Yes****	**Yes**
Central	MMRP	RVAAP-016-R-01	Fuze and Booster Quarry	**Yes****	**Yes**
Central	IRP	RVAAP-17	Deactivation Furnace	No	No
Eastern	IRP	RVAAP-18	Load Line 12 Pink Waste Water Treatment	No	No
Central	IRP	RVAAP-19	Landfill North of Winklepeck Burning Grounds	**Yes**	No
Central	MMRP	RVAAP-019-R-01	Landfill North of Winklepeck	**Yes**	No
Eastern	IRP	RVAAP-20	Sand Creek Sewage Treatment Plant	No	**Yes**
Western	IRP	RVAAP-21	Depot Sewage Treatment Plant	**Yes**	No
Central	IRP	RVAAP-22	George Road Sewage Treatment Plant	No	**Yes**
Eastern	IRP	RVAAP-23	Unit Training Equipment Site	No	**Yes**
Western	IRP	RVAAP-24	Waste Oil Tank	No	**Yes**
Central	IRP	RVAAP-25	Building 1034 Motor Pool	No	No
Central	IRP	RVAAP-26	Fuze and Booster Area Settling Tanks	No	No
Eastern	IRP	RVAAP-27	Building 854-PCB Storage	No	No

Geographical Area	Program	AOC ID	Description	Solid Waste Management Site*	Troop Labor Site*
Central	IRP	RVAAP-28	Mustard Agent Burial Site - North	No	No
Central	IRP	RVAAP-28	Mustard Agent Burial Site - South	No	No
Eastern	IRP	RVAAP-29	Upper and Lower Cobbs Ponds	No	**Yes**
Central	IRP	RVAAP-30	Load Line 7 Pink Waste Water Treatment	No	No
Eastern	IRP	RVAAP-31	Ore Pile Retention Pond	No	No
Central	IRP	RVAAP-32	40 MM Firing Range	**Yes****	**Yes**
Central	MMRP	RVAAP-032-R-01	40MM Firing Range MRS	**Yes****	**Yes**
Central	IRP	RVAAP-33	Load Line 6	**Yes**	No
Central	MMRP	RVAAP-033-R-01	Firestone Test Facility	**Yes**	No
Eastern	IRP	RVAAP-34	Sand Creek Disposal Road Landfill	**Yes**	No
Eastern	MMRP	RVAAP-034-R-01	RVAAP-034-R-01 Sand Creek Dump	**Yes**	No
Central	IRP	RVAAP-35	Building 1037- Laundry Waste Water Sump	No	No
Central	IRP	RVAAP-36	Pistol Range	No	**Yes**
Central	IRP	RVAAP-37	Pesticide Storage Building T-4452	No	No
Central	IRP	RVAAP-38	NACA Test Area	**Yes**	No
Central	IRP	RVAAP-39	Load Line 5	No	**Yes**
Central	IRP	RVAAP-40	Load Line 7	No	**Yes**
Central	IRP	RVAAP-41	Load Line 8	No	**Yes**
Central	IRP	RVAAP-42	Load Line 9	No	**Yes**
Central	IRP	RVAAP-43	Load Line 10	No	**Yes**
Central	IRP	RVAAP-44	Load Line 11	No	**Yes**
Central	IRP	RVAAP-45	Wet Storage Area	No	**Yes**
Central	IRP	RVAAP-46	Building F15 and F-16	**Yes**	No
Central	MMRP	RVAAP-046-R-01	Building F-15 and F-16 MRS	**Yes**	No
Central	IRP	RVAAP-47	Building T-5301	No	No
Central	IRP	RVAAP-48	Anchor Test Area	No	**Yes**

Geographical Area	Program	AOC ID	Description	Solid Waste Management Site*	Troop Labor Site*
Central	MMRP	RVAAP-048-R-01	Anchor Test Area MRS	No	**Yes**
Eastern	IRP	RVAAP-49	Central Burn Pits	**Yes**	No
Eastern	IRP	RVAAP-50	Atlas Scrap Yard	**Yes**	No
Eastern	MMRP	RVAAP-050-R-01	Atlas Scrap Yard MRS	**Yes**	No
Eastern	IRP	RVAAP-51	Dump Along Paris-Windham Road	**Yes**	No
Central	MMRP	RVAAP-060-R-01	Block D Igloo MRS	No	No
Central	MMRP	RVAAP-062-R-01	Water Works #4 Dump MRS	**Yes**	No
Eastern	MMRP	RVAAP-063-R-01	Group 8 MRS	**Yes**	No
Eastern	NA	Site 0	Previously Disturbed Area - Former Scrape Area	No	No
Eastern	NA	Site 1	Previously Disturbed Area - Former Scrape Area	No	No
Central	NA	Site 10	Previously Disturbed Area - Former Scrape Area	No	**Yes**
Central	NA	Site 11	Previously Disturbed Area - Former Scrape Area	No	**Yes**
Western	NA	Site 12	Previously Disturbed Area	No	No
Eastern	NA	Site 13	Previously Disturbed Area - Current Training Area	No	**Yes**
Eastern	NA	Site 14	Previously Disturbed Area - Current Training Area	No	No
Central	NA	Site 15	Previously Disturbed Area	No	No
Central	NA	Site 16	Previously Disturbed Area - Wetland Mitigation Site	No	No
Eastern	NA	Site 17	Previously Disturbed Area	No	No
Eastern	NA	Site 2	Previously Disturbed Area - Former Scrape Area	No	No
Eastern	NA	Site 3	Previously Disturbed Area - Former Scrape Area	No	No
Eastern	NA	Site 4	Previously Disturbed Area - Former Scrape Area	No	No
Eastern	NA	Site 5	Previously Disturbed Area - Potential Former Construction Staging Area	No	**Yes**
Central	NA	Site 6	Previously Disturbed Area - Wetland Mitigation Site	No	No
Eastern	NA	Site 7	Previously Disturbed Area - Parking Lot for Loading Area	No	**Yes**
Central	NA	Site 8	Previously Disturbed Area - Former Quarry	No	No

Geographical Area	Program	AOC ID	Description	Solid Waste Management Site*	Troop Labor Site*
Central	NA	Site 9	Previously Disturbed Area - Former Training Area	No	No
Eastern	NA	Site A	Potential Area of Solid Waste Debris Identified via Site Interviews	No	**Yes**
Central	NA	Site B	Potential Area of Solid Waste Debris Identified via Site Interviews	**Yes**	No
Western	NA	Site C	Potential Area of Solid Waste Debris Identified via Site Interviews - Block A and Block B	**Yes****	**Yes**
Eastern	NA	Site D	Potential Area of Solid Waste Debris Identified via Site Interviews - Old Class IV Yard	No	No
Eastern	NA	Site E	Potential Area of Solid Waste Debris Identified via Site Interviews - Former Homesteads	No	No
Western	NA	Site F	Potential Area of Solid Waste Debris Identified via Site Interviews	No	No
Eastern	NA	Site G	Potential Area of Solid Waste Debris Identified via Site Interviews - Smokeless Powder Area – Area 3	No	**Yes**
Western	NA	Site H	Potential Area of Solid Waste Debris Identified via Site Interviews - Yard Road	No	**Yes**
Western	NA	Site I	Potential Area of Solid Waste Debris Identified via Site Interviews - Former and Current Building Locations	No	**Yes**
Western	NA	Site J	Potential Area of Solid Waste Debris Identified via Site Interviews - Block A and Block B, South of McCormick Road	No	**Yes**
Western	NA	Site K	Potential Area of Solid Waste Debris Identified via Site Interviews	No	**Yes**
Central	NA	Site L	Potential Area of Solid Waste Debris Identified via Site Interviews - Former Landing Strip	No	**Yes**
Central	NA	Site M	Potential Area of Solid Waste Debris Identified via Site Interviews - Storage Pads	No	No
Central	NA	Site N	Potential Area of Solid Waste Debris Identified via Site Interviews - Block D, Load Lines 4 through 7	No	**Yes**
Central	NA	Site O	Potential Area of Solid Waste Debris Identified via Site Interviews - Storage Pads	No	No
Western	NA	Site P	Potential Area of Solid Waste Debris Identified via Site Interviews	**Yes**	No
Western	NA	Site Q	Potential Area of Solid Waste Debris Identified via Site Interviews - Block A Quarry	No	**Yes**

Geographical Area	Program	AOC ID	Description	Solid Waste Management Site*	Troop Labor Site*
Central	NA	Site R	Potential Area of Solid Waste Debris Identified via Site Interviews	No	**Yes**
Eastern	NA	Site S	Potential Area of Solid Waste Debris Identified via Site Interviews	No	**Yes**
Eastern	NA	Site T	Potential Area of Solid Waste Debris Identified via Site Interviews	No	No
Eastern	NA	Site U	Potential Area of Solid Waste Debris Identified via Site Interviews	No	No
Central	NA	South of RVAAP-062-R-01	Water Works #4 Structures	No	**Yes**
Central	NA	South of RVAAP-48	North of the intersection of Wilcox-Wayland Road and South Patrol Road	No	No
Western	NA	South of Site C	Block A, Line 6 and Line 7	No	**Yes**
Western	NA	West of North Line Road Coal Tippel Area (CC RVAAP-73)	Southside of North Line Road, west of Northline Road Coal Tipple Area (CC RVAAP-73)	No	**Yes**

Notes:
*AOCs that are neither Solid Waste Management Sites nor Troop Labor Sites were investigated and found to contain no solid waste. They are described in detail in the 2017 Final Visual Assessment Survey (AECOM, 2017).
**A portion of the AOC will also be included as a Troop Labor Site
IRP - Installation Restoration Program Site
MMRP - Military Munitions Response Program
CRS - Compliance Restoration Site

This Page Intentionally Left Blank

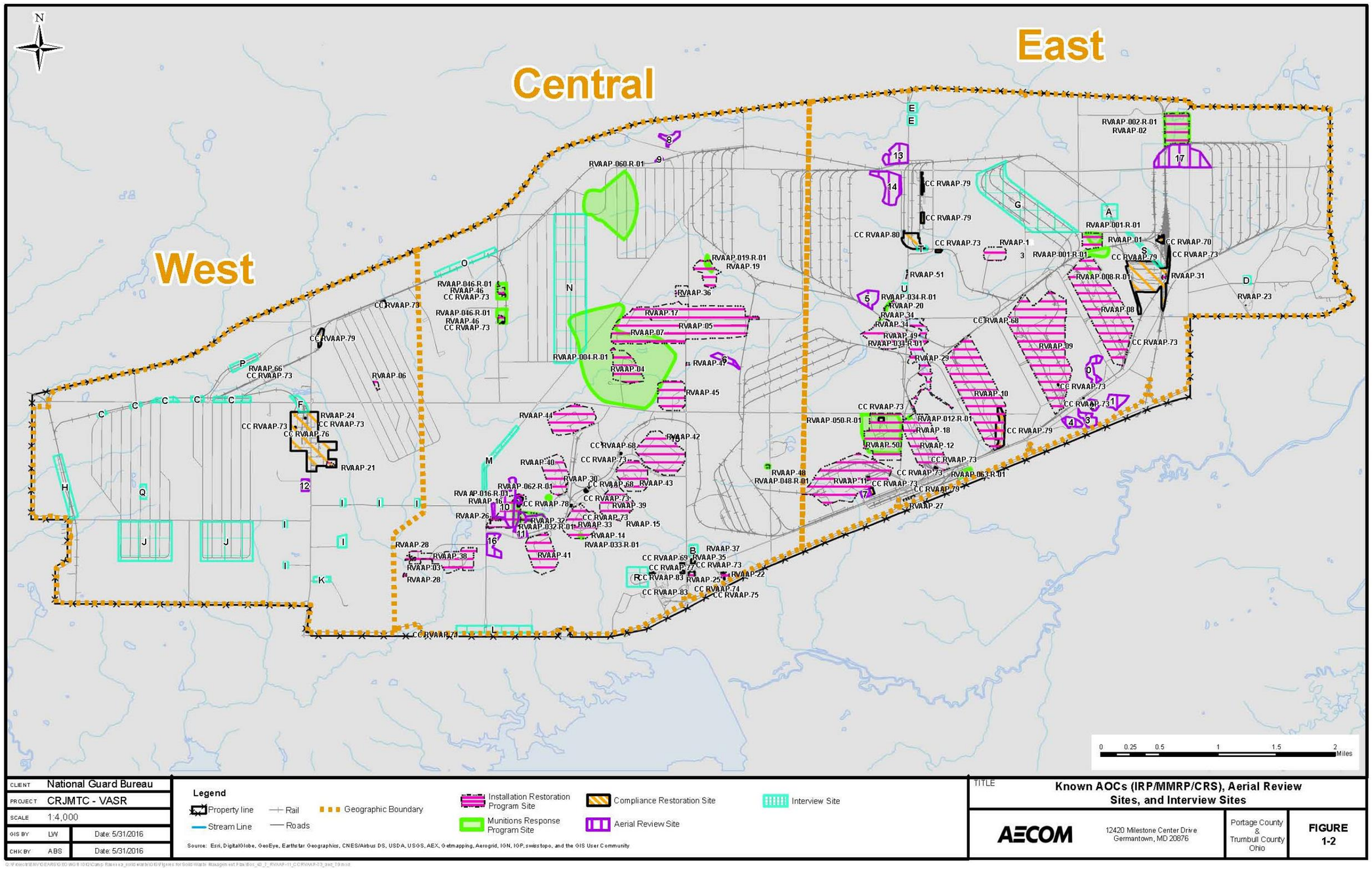


Figure 1-2: Visual Survey Sites - Known AOCs (IRP/MMRP/CRS), Aerial Review Sites, and Interview Sites

This Page Intentionally Left Blank

Table 1-2: VASR Sites Removed from SWMP (Solid Waste No Longer Present)

Geographical Area	Program	AOC ID	Description	Justficiation
Eastern	NA	Site D	Potential Area of Solid Waste Debris Identified via Site Interviews - Old Class IV Yard	All waste (debris and materials) at Site D was removed in October 2017 by CRJMTC.
Central	NA	Site O	Potential Area of Solid Waste Debris Identified via Site Interviews - Storage Pads	During intrusive investigations in December 2017 OHARNG and Ohio EPA confirmed the absence of solid waste at the site. Site O is currently used by OHARNG as a borrow site.
Central	NA	Site 15	Previously Disturbed Area Identified via Site Interviews	The site is a known Clean Hard Fill site. Clean Hard Fill from Site 15 has been used to regrade three other sites within Load Line 1. Due to safety concerns the sites were consolidated and capped with soil.
Eastern	IRP	RVAAP-11*	Load Line 4	During intrusive investigations in December 2017 OHARNG confirmed the absence of solid waste at the site. Large mounds at the site are engineered soil barricades that do not contain solid waste. Minimal surficial debris at the site will be addressed as a Troop Labor Site.
Central	IRP	RVAAP-28	Mustard Agent Burial Site - North	There is no evidence of intent to dispose of waste, nor history of landfill activities at this site. Additionally, no surficial waste exists at the site. A 2016 Final Engineering Evaluation/Cost Analysis demonstrated that it is unlikely that any mustard agent or chemical agent identification sets were used on the former RVAAP, and more unlikely that it was buried on the Installation in any location (USACE, 2016).
Central	IRP	RVAAP-28	Mustard Agent Burial Site - South	Same as above
Central	CRS	CC RVAAP-83	Former Building 1031 & Paved Areas East and Southeast of Former Building 1031	Debris in this area was removed in September 2017 by CRJMTC. The area and now lies within the new cantonment area at CRJMTC where demolition and construction is occurring.

Notes:
*A portion of the AOC will also be included as a Troop Labor Site
IRP - Installation Restoration Program Site
MMRP - Military Munitions Response Program
CRS - Compliance Restoration Site

This Page Intentionally Left Blank

Table 1-3: Solid Waste Management Sites

Section	Program	AOC ID	Description	Buried Waste or Surficial Waste?	Original Waste Placement Date	Waste Type
3.1.1	IRP & MMRP	RVAAP-01 & RVAAP-001-R-02	Ramsdell Quarry Landfill & Ramsdell Quarry Area 1 (North)	Buried	Before 1989	Buried Waste - Solid Waste Management Unit
3.1.2	IRP & MMRP	RVAAP-16 & RVAAP-016-R-01	Fuze and Booster Quarry Landfill/Ponds	Buried	Before 1976	Buried Waste - Solid Waste Management Unit Troop Labor Site
3.1.3	IRP & MMRP	RVAAP-32 & RVAAP-032-R-01	40mm Firing range	Buried	Before 1977	Buried Waste - Solid Waste Management Unit Troop Labor Site
3.1.4	IRP	RVAAP-51	Dump Along Paris-Windham Road	Buried	Unknown	Solid Waste Management Unit: Asbestos Waste
3.2.1	IRP & CRS	RVAAP-21 & CCRVAAP-76	Depot Sewage Treatment Plant & Depot Area CRS	Surficial	Before 1993	Open Dumping of Solid Waste
3.2.2	IRP & MMRP	RVAAP-33 & RVAAP-033-R-01	Load Line 6 & Firestone test Facility	Surficial	2005	Surficial Scattered Waste - CDD Surficial Mounded Waste - Open Dumping of Solid Waste
3.2.3	IRP	RVAAP-38	NACA Test Area	Surficial	1947-1953	Surficial Waste - Open Dumping of Solid Waste
3.2.4	IRP, MMRP & CRS	RVAAP-46, RVAAP-046-R-01, CC RVAAP-73 (F15) & CC RVAAP-73 (F16)	Buildings F15 and F-16, Buildings F15 and F-16 MRS & Building F-15 andF-16 Coal Storage	Surficial	1974	Surficial Scattered Waste - Open Dumping of Solid Waste Surficial Piled Waste - CDD
3.2.5	IRP	RVAAP-49	Central Burn Pits	Surficial	Mid-1970's	Surficial Scattered Waste - Open Dumping of Solid Waste Surficial Mounded Waste - Open Dumping of Solid Waste
3.2.6	CRS	CC RVAAP-73 & Site P	U-16 Boiler House Coal Storage & Site P	Surficial	Before 1979	Open Dumping of Solid Waste
3.2.7	NA	Site B	Potential Area of Solid Waste Debris Identified via Site Interviews	Surficial	Unknown	Open Dumping of Solid Waste
3.2.8	NA	Site C	Potential Area of Solid Waste Debris Identified via Site Interviews - Block A and Block B	Surficial	Unknown	Open Dumping of Solid Waste Troop Labor Site

Section	Program	AOC ID	Description	Buried Waste or Surficial Waste?	Original Waste Placement Date	Waste Type
3.3.1	IRP & MMRP	RVAAP-02 & RVAAP-002-R-01	Erie Burning Grounds & Erie Burning Grounds MRS	Buried and Surficial	1951	Surficial Waste - Open Dumping of Solid Waste Buried Waste - Solid Waste Management Unit
3.3.2	IRP	RVAAP-05	Winklepeck Burning Grounds	Buried and Surficial	Early 1990s	Surficial Waste - Open Dumping of Solid Waste Buried Waste - Solid Waste Management Unit Troop Labor Site
3.3.3	IRP & MMRP	RVAAP-19 & RVAAP-019-R-01	Landfill North of Winklepeck Burning Grounds	Buried and Surficial	Before 1978	Surficial Waste - Open Dumping of Solid Waste Buried Waste - Solid Waste Management Unit
3.3.4	IRP & MMRP	RVAAP-34 & RVAAP-034-R-01	Sand Creek Disposal Road Landfill & RVAAP-034-R-01 Sand Creek Dump	Buried and Surficial	1950-1960	Surficial Waste - Open Dumping of Solid Waste Buried Waste - Solid Waste Management Unit
3.3.5	IRP, MMRP & CRS	RVAAP-50, RVAAP-050-R-01 & CC RVAAP-73	Atlas Scrap Yard, Atlas Scrap Yard MRS & Atlas Scrap Yard Coal Storage	Buried and Surficial	Vietnam War Era	Surficial Waste - Open Dumping of Solid Waste Buried Waste - Solid Waste Management Unit
3.3.6	MMRP	RVAAP-062-R-01	Water Works #4 Dump MRS	Buried and Surficial	1941-1949	Surficial Waste - Open Dumping of Solid Waste Buried Waste - Solid Waste Management Unit
3.3.7	MMRP	RVAAP-063-R-01	Group 8 MRS	Buried and Surficial	Unknown	Surficial Waste - Open Dumping of Solid Waste Buried Waste - Solid Waste Management Unit

2 Ohio EPA Waste Regulation Information

2.1 Waste Classification

The Ohio EPA interoffice memorandum, dated July 24, 2014, from the Ohio EPA RVAAP Team (**Appendix A**), states that the type of material at each waste disposal site should first be identified (Ohio EPA, 2014). The classification drives 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)
- 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.

2.2 Waste Management

The date of disposal should be identified in order to determine the applicable regulations and management recommendations. For example, the Ohio EPA interoffice memorandum outlines the change in regulations based on the landfill closure date, and **Figure 2-1** 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.

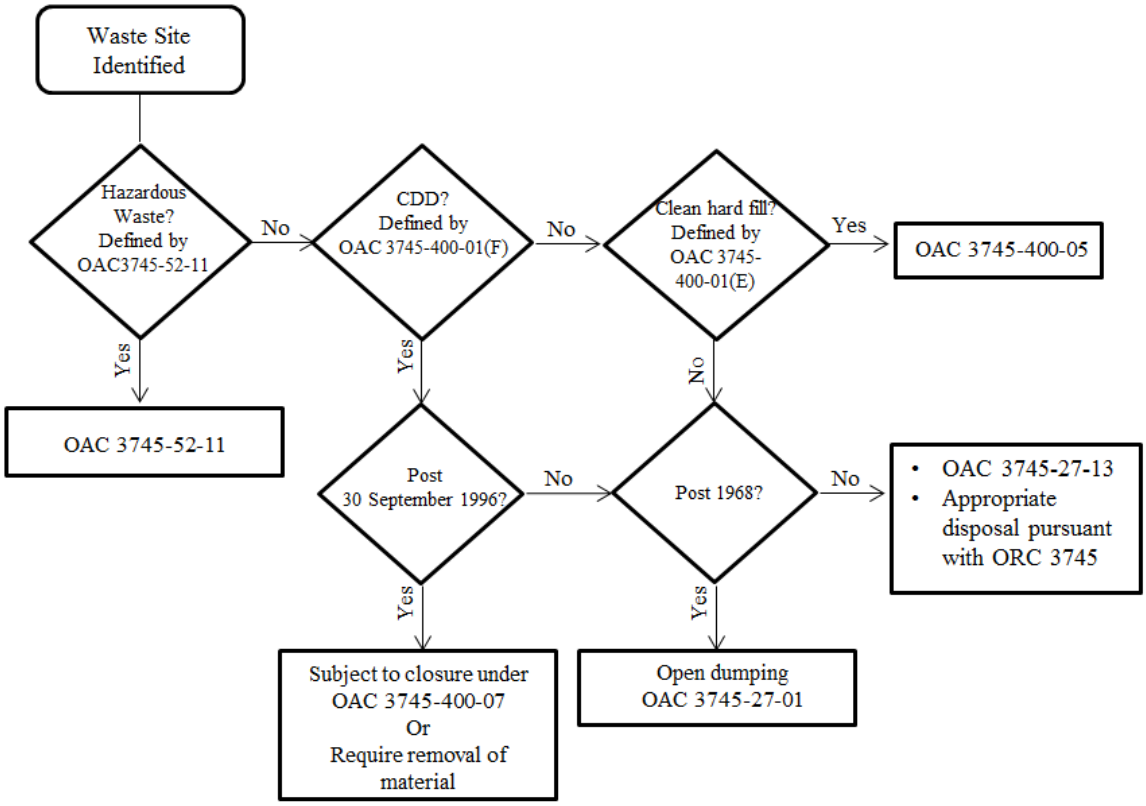


Figure 2-1: Solid Waste Regulatory Flowchart

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.

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 another 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.

2.5 Ohio EPA OAC Definitions from Interoffice Memorandum

The Ohio EPA interoffice memorandum describes a waste determination at CRJMTC as a necessary first step; applicable categories are hazardous waste, solid waste, CDD, or clean hard fill. Waste observed on the ground surface with the potential for direct contact or nuisance concern to human or ecological

receptors is considered to be “open dumping” as defined by OAC 3745-27-01. Waste type definitions per Ohio EPA and explanatory notes were provided in the 2014 interoffice memorandum (**Appendix A**) and are included below for reference:

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."*

Explanatory Notes

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- Division of Environmental Response and Revitilization (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 work plan 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.*

3 Solid Waste Management Sites

This section presents each of the solid waste management sites with detailed information about the site including: site history, site boundaries, identification of and justification for the classification of the solid waste, applicable regulations/Ohio EPA requirements, and recommendations for management of the sites. Where applicable, the limits of waste placement at solid waste management sites were determined from documents available on the Ravenna Environmental Information Management System database. Sections 3.1, 3.2, and 3.3 describe buried solid waste sites, surficial solid waste sites, and sites that have both buried and surficial soild wastes, respectively.

3.1 Buried Waste Only Sites

The following sites are known buried waste sites (i.e. landfills, dumps) or sites where buried solid waste was observed during the 2016 AECOM visual survey.

3.1.1 Ramsdell Quarry Landfill (RVAAP-01) and Ramsdell Quarry Area 1 North (RVAAP-001-R-02)

The Ramsdell Quarry Landfill (RQL) (RVAAP-01) and Ramsdell Quarry munitions response site (MRS) (Area 1 North) (RVAAP-001-R-02) are overlapping, undeveloped sites located in the northeastern portion of CRJMTC. The RQL (RVAAP-01) and Ramsdell Quarry MRS (RVAAP-001-R-02) were historically used as a quarry and a landfill. The landfill operated between 1941 and 1989, after quarry operations were discontinued in 1941. From 1976 until the landfill was closed in 1989, only non-hazardous solid waste was deposited in RQL. The bottom of the quarry was used to burn waste explosives from Load Line 1, including incendiary or napalm bombs and liquid residues from annealing operations, from 1946 to the 1950s. In 1978, a portion of the abandoned quarry was permitted as a sanitary landfill by the state of Ohio, which completed closure procedures in September 1990 under state of Ohio solid waste regulations (OAC 3745-27-10).

Much of the landfill wastes and debris at the abandoned quarry were removed in the 1980s (Science Applications International Corporation [SAIC], 2005a). A portion of the asbestos-containing materials (ACM) within the landfill was also removed from the AOC in 2010 (SAIC, 2011a). The soil and dry sediment were excavated from the quarry bottom at the northeastern section of RQL, and construction and miscellaneous materials considered to be friable ACM were also removed (USACE, 2012a). Following an Engineering Evaluation and Record of Decision (ROD) amendment, a fence was erected around the RQL in 2014. The landfill portion at RQL is currently capped and vegetated, and undergoes routine inspections by Camp Ravenna personnel and representatives from the Portage County Health Department. The RQL IRP site (RVAAP-01) is currently in long-term monitoring and maintenance of Land Use Controls (LUCs) (Leidos, 2016a). No Further Action (NFA) to attain Unrestricted Use is recommended for the Ramsdell Quarry MRS (Area 1 North) (RVAAP-001-R-02).

Residual asbestos is present at RQL. Debris/solid waste is also present in the quarry bottom and in the landfill portion of the RQL.No solid waste was observed during the visual survey (AECOM, 2017). As such, RQL (RVAAP-01) is considered a solid waste management unit and should continue to be managed under Ohio EPA solid waste regulations and according to LUCs established in the 2018 *Final Revised Property Management Plan for the Designated Areas of Concern and Munitions Response Sites Version 2.0* (USACE, 2018). Routine inspections by Camp Ravenna personnel and representatives from the Portage County Health Department will continue at RQL. If an IRP/MMRP project involving ground disturbance occurs at either site, then an OAC 3745-27-13(C)(2)(c) exemption applies. The RQL IRP site and Ramsdell Quarry MRS fact sheet appears in Section 4.

3.1.2 Fuze and Booster Quarry Landfill/Ponds (RVAAP-16; RVAAP-016-R-01)

The Fuze and Booster Quarry Landfill/Ponds contains two co-located IRP (RVAAP-16) and MMRP (RVAAP-016-R-01) sites near the fuze and booster load lines in the southwestern portion of the Central Area. The IRP site is approximately 38.83 acres and the MMRP site, located within the IRP site footprint, is approximately 4.89 acres. Historical operational information indicated fuze and booster assemblies, projectiles, residual ash, and sanitary wastes were dumped or burned in the Fuze and Booster Quarry. The area was originally excavated to provide building material and was used as a burn area and landfill until 1976 when the existing debris was reportedly moved to Ramsdell Quarry or another burn area. At this time, three ponds were constructed and held discharge water from a groundwater treatment plant from 1987 to 1993. In 1998 the AOC was expanded to include three other shallow settling ponds and two debris piles. Adjacent to the three ponds and within the IRP site footprint is a 40mm firing range that is a separate AOC (RVAAP-32; RVAAP-032-R-01).

Various debris and metal scrap were present throughout the AOC during a 2005 Phase I/Phase II remedial investigation (RI) (Spec Pro, Inc.; revised by SAIC, 2005b). In 2007, installation personnel stated that the northern and southern ponds contain munitions and explosives of concern (MEC), and that MEC is visible on the banks at all times (engineering-environmental Management, Inc. [e2M], 2007). Two debris piles were also described along the northern rim of the northernmost pond. Munitions Debris (MD) and anomalies possibly representing buried MD or MEC were identified during a 2008 Site Inspection (SI) (e2M, 2008). 209 tons of non-hazardous soil contaminated with manganese was removed from the site according to a 2010 Remedial Action Report (SAIC, 2010a). The area was regraded following the excavation. Approximately 74.5 pounds of MD were recovered from the trenches during 2013 RI activities (CB&I Federal Services LLC [CB&I], 2015a). Items determined to be non-MEC were replaced to their excavation trenches. An underwater investigation was conducted in all three quarry ponds. Non-munition metal debris including trashcans and construction debris that included metal pipes, sheet metal, etc. was located mostly on the eastern side of the northern pond (CB&I, 2015a).

No debris exists on the east side of the north pond, indicating that the construction debris found during the 2015 Remedial Action (CB&I, 2015a) was likely removed at that time. No solid waste was observed at the IRP/MMRP sites (RVAAP-16; RVAAP-016-R-01) during the 2016 AECOM Visual Survey Assessment; however, non-MEC waste is known to have been reconsolidated during 2015 RI activities. The surficial debris in the site vicinity will be picked up and properly disposed as part of future training site construction projects and addressed as a Troop Labor Site. Historical buried and reconsolidated waste is considered a solid waste management unit. If an IRP/MMRP project involving ground disturbance occurs at the site, then an OAC 3745-27-13(C)(2)(c) exemption applies. The Fuze and Booster Quarry Lanfill/Ponds IRP site and MRS fact sheet appears in Section 4.

3.1.3 40mm Firing Range (RVAAP-32; RVAAP-032-R-01)

The 40mm Firing Range is both an IRP (RVAAP-32) site and an MMRP (RVAAP-032-R-01) site of approximately 8.63 acres located in the southwestern portion of the Central Area and was used as a munitions test range from 1969 to 1971. Between 1971 and 1977, the berm defining the impact area was removed. Several structures, including a former storage shed, remnants of the firing point location, and structure foundations, remain onsite.

No MEC was encountered during 2008 SI field activities (e2M, 2008), but MD consisting of aluminum caps and casings for 40mm rounds were encountered around the site impact area. A 2015 remedial investigation report (CB&I, 2015b) described remaining structures at the site, including a former storage shed, gun mount foundation, and chronograph foundation. MD was found scattered about the area. Cultural debris consisting largely of scrap steel and pieces of concrete were also identified on the ground

surface at several anomaly locations. Debris uncovered during excavation that was determined to not be MD or MEC were reconsolidated and returned to excavataion trenches (CBJ&I, 2015b).

The former storage shed, exists on metal structure and concrete foundations are present in the central portion of the property. Railroad ties and a metal pipe are also present. The small amount of surficial debris present will be picked up and properly disposed as part of future training site construction projects and addressed as a Troop Labor Site. Historical buried and reconsolidated waste is considered a solid waste management unit. If an IRP/MMRP project involving ground disturbance occurs at the site, then an OAC 3745-27-13(C)(2)(c) exemption applies. The 40mm Firing Range IRP site and MRS fact sheet appears in Section 4.

3.1.4 Dump along Paris-Windham Road (RVAAP-51)

The Dump along Paris-Windham Road is an IRP site (RVAAP-51) of approximately 0.25 acre located in the east-central portion of CRJMTC, along a steep embankment on the west side of Paris-Windham Road. The site was used as a dump for miscellaneous construction debris and other materials.

There are no records of the dates that the dump site was in use or quantities of refuse discarded in the area (USACE, 2015a). Some of the debris discarded in the dump site was ACM from construction and demolition activities. In 2003 debris was removed from the dump to the fullest extent possible without undermining the roadway. Remaining debris or ACM was covered with clean hard fill and the soil was re-seeded (USACE, 2015a). The IRP site was recommended for LUCs, including warning signs, in a 2017 ROD for soil, sediment, and surface water (USACE, 2017a).

A cap over the residual buried materials is currently in place, and no evidence of solid waste was observed during the visual survey (AECOM, 2017). The area is currently marked as off-limits with Siebert stakes. LUCs will be installed and implemented as part of a RD/RA and monitored as part of the PMP. The extent of the remaining subsurface solid waste is delineated and currently managed under the IRP. The remaining solid waste at the Dump along Paris-Windham Road (RVAAP-51) is considered a solid waste management unit. If a project involving ground disturbance is necessary, then then an OAC 3745-27-13(C)(2)(c) exemption applies. The Dump along Paris-Windham Road fact sheet appears in Section 4.

3.2 Surficial Waste Only Sites

The following sites are known surficial waste sites or sites where surficial waste was identified during the 2016 AECOM visual survey.

3.2.1 Depot Sewage Treatment Plant (RVAAP-21) & Depot Area (CC RVAAP-76)

The Depot Area is a CRS (CC RVAAP-76) of approximately 79.24 acres located in the eastern portion of the Western Area along Route 80. The Depot Area is a former maintenance, storage, and disposal facility that was also used as the administration area for the Portage Ordnance Depot. Operations performed at the CRS include locomotive and vehicle fueling and repair, petroleum oil and lubricant storage, and solid waste incinerator activities. Site operations occurred between approximately 1941 and 1971. Additionally, munitions demilitarization activities occurred in one onsite building. The Depot Sewage Treatment Plant (RVAAP-21), located within the Depot Area (CC RVAAP-76), was a domestic sewage treatment plant that operated intermittently between 1941 and 1993. The facility was closed in 1993 in accordance with Ohio EPA requirements and standards. The Reserve Maintenance Unit Waste Oil Tank (RVAAP-24), also located within the Depot Area, was the only aboveground storage tank-related AOC at CRJMTC. The waste oil tank was in use from before 1983 to 1993, when it was emptied. It has remained onsite and unused since.The tank at the site had not been removed and disposed of by the time of an environmental baseline survey in 1998 (Vista, 1998).

A 2013 RI/FS study (ECC and AMEC, 2013) found that demolition debris from several former buildings at the Depot Area remained onsite on the soil surface. The 2018 Proposed Plan (PP) for the site recommended excavation with off-site disposal after a public comment period (Parsons, 2018a). Management of the site continues under the IRP.

A large pile of wooden pallets under a covered awning exists in the northern portion of the Depot Area (CC RVAAP-76), measuring approximately 234 feet long, 24 feet wide, and up to 10 feet high (AECOM, 2017). Also present in this area are a large pile of concrete footers from fence posts.

All of the waste at the Depot Sewage Treatment Plant (RVAAP-21) and Depot Area (CC RVAAP-76) is surficial. The surficial waste at the sites qualifies as Open Dumping (OAC 3745-27-01), and will be removed of and disposed of properly as funds become available. The Depot Area CRS and Depot Sewage Treatment Plant fact sheet appears in Section 4.

3.2.2 Load Line 6 (RVAAP-33) & Firestone Test Facility (RVAAP-033-R-01)

The Load Line 6 is an IRP site (RVAAP-33) that encompasses approximately 41 acres in a previously developed, fenced area in the south-central portion of CRJMTC. Located within the footprint of Load Line 6 is an MMRP site, the Firestone Test Facility (RVAAP-033-R-01), and two smaller IRP sites, the former Load Line 6 Evaporation Unit (RVAAP-14) and Load Line 6 Treatment Plant (RVAAP-15). Firestone Test Facility MRS is an approximately 0.4-acre area that consisted of three buildings and a pond and used for classified testing of shaped charges. All three buildings have been removed. The site achieved NFA status in the MMRP in August 2015 (CB&I, 2015c). During the course of MMRP field work, construction debris and metal was described.

Load Line 6 (RVAAP-33) operated as a fuze assembly line from 1941 to 1945, when it was deactivated and the equipment removed. From the 1950s to 1970s, it was used intermittently by Firestone Defense Research for research and development of charges used for armor penetration and weapons experimentation. From 1981 to 1989, Physics International operated a pink water evaporation unit in the AOC and conducted pink water filtration from 1987 to 1989. In 2007, all onsite buildings and structures were demolished, including unused telephone poles and all steam stanchions (MKM Engineers, Inc. [MKM], 2007a). Load Line 6 Evaporation Unit (RVAAP-14) and Load Line 6 Treatment Plant (RVAAP-15) were former building locations within Load Line 6.

All Firestone Test Facility buildings were demolished between 2003 and 2005, and all that remains onsite are piles of demolition debris and the pond formerly used to test underwater shaped charges (e2M, 2007). Subsurface anomalies at the AOC were attributed to construction debris (e.g., metal wire, rebar, nails) during a 2007 Site Investigation (e2M, 2008). Subsurface anomalies (including scrap metal, rebar, and other construction debris) were recorded at the location of the former shape charge test chamber as part of a RI in 2014, but no MEC or MD was identified (CB&I, 2014a). At several areas scrap steel and reinforced concrete were not able to be removed. The 2015 NFA ROD (CB&I, 2015c) stated that “some buried construction debris is evident in the area around the pond due to mounded grass with rebar protruding through the ground surface.”

Surface debris, including glass, metal scraps, and cultural and unidentified debris were observed during a Phase I RI (MKM, 2007a). Remnant infrastructures, including an asphalt perimeter road, shaped charge test chamber, and shaped charge test pond, were described in a 2016 Phase II RI report (Leidos, 2016b). A 2017 ROD determined NFA was required for soil, sediment, and surface water at Load Line 6 to achieve Unrestricted (Residential) Land Use (Leidos, 2017a).

A large mound approximately 170 feet long, 50 feet wide, and 10 feet high that consists of partially-buried brick, metal, and terracotta was observed near the center of Load Line 6 (RVAAP-33) during the visual survey (AECOM, 2017). Scattered around the base of the mound are brick, wood, and metal debris. Two overgrown mounds of debris, comprising most of the remaining site, were confirmed in the area of the Firestone test Facility (RVAAP-033-R-01) The northern mound measures approximately 100 feet by 50 feet and 5 feet high while the southern mound is measures approximately 65 feet by 65 feet and 5 feet high. Metal and concrete partially buried within soil were observed in the mounds during the visual survey. Historical documents state that buried construction debris is evident in the area around the pond as indicated by mounded grass with rebar protruding through the ground surface; this was confirmed during the visual survey.

The scattered surficial solid waste at Load Line 6 (RVAAP-33) and the Firestone Test Facility (RVAAP-033-R-01) is categorized as CDD (OAC 3745-400-04), and requires disposal in a licensed CDD facility or solid waste disposal facility (OAC 3745-400-04). Mounded surficial solid waste at the site is considered Open Dumping under OAC 3745-27-13. This waste will be removed of and disposed of properly as funds become available. The Load Line 6 and Firestone Test Facility fact sheet appears in Section 4.

3.2.3 NACA Test Area (RVAAP-38)

The National Advisory Committee for Aeronautics (NACA) Test Area is an IRP (RVAAP-38) site of approximately 45.62 acres located in the southwestern portion of the Central Area. It operated from 1947 to 1953. Airplanes were fueled, propelled under their own power on an east-west trending guide monorail, and filmed as they crashed into a concrete barrier to assess fuel spillage and plane crash behavior in the area. The concrete crash strip and pad are still present. The NACA Test Area (NTA) is adjacent to the Open Demolition Area 1 (RVAAP-03).

During a 2001 RI, debris protruded from the soil at locations within the suspected former plane burial area (SAIC, 2001a). A 2012 Phase II RI report (SAIC, 2012) recommended removal of approximately 4 cubic yards of soil in the Former Crash Area Well Pit as the most feasible alternative. The limited scope of the soil removal leaves the discussed surface debris in place. Tim Morgan, State Environmental Supervisor, stated that there is debris (e.g., aluminum) on the east side of the NTA, which was historically used as a crash test area for planes. Morgan also stated that remnants from crash testing are buried and surficial on the east side of the site. He reiterated that debris on the east side of the NTA is being managed in place. LTC Tom Tadsen (retired) stated that there may be some debris near Water Works #3 and #4. A 2016 RI/FS report recommended a PP to solicit public input on remedial alternatives for soil, sediment, and surface water (Leidos, 2016c). 2018 RI/FS field activities included scrap metal removal, and it was confirmed that planes were not buried at the site (Leidos, 2018a).

Pieces of metal debris, metal piping, wire, and rubber sheeting observed in the eastern portion of the site during the Visual Assessment Survey was removed during 2018 RI/FS activities (AECOM, 2017). Concrete debris exists north of the crash strip and near the center of the site. Surficial waste at the NTA qualifies as Open Dumping under OAC 3745-27-13. This waste will be removed of and disposed of properly as funds become available. The NTA fact sheet appears in Section 4.

3.2.4 Building F-15 and F-16 (RVAAP-46; RVAAP-046-R-01) & Building F-15 and F-16 Coal Storage (CC RVAAP-73)

Building F-15 and Building F-16 are an MRS (RVAAP-046-R-01) that encompasses approximately 12.3 acres in the northwestern portion of the Central Area. The MRS is northwest of ODA2 and is co-located with an IRP site (RVAAP-46). The Building F-15 Coal Storage (0.11-acre) and Building F-16 Coal Storage (0.06-acre) is a CRS (CC RVAAP-73) located within the footprint of the co-located Building F-15 and

Building F-16 IRP site and MRS. Historical operations at the site included the testing of explosives produced at the installation between 1941 and 1974.

Both buildings at the site have been demolished, although footers remain (e2M, 2007). An abandoned building in disrepair stands in the southwest portion of the Building F-15 site with insulators and metal debris present south of the building in a fenced area that is mostly likely the location of former electrical equipment. Wood debris most likely related to an old wooden structure on a small metal platform exists in the northern portion of the site.

Additionally, a debris pile measuring 31 feet by 26 feet by 4 feet high of corrugated metal, concrete, brick, asphalt, and wood exists in the vicinity of the Building F-15 Coal Storage (CC RVAAP-73) area. A smaller mound of dirt mixed with small pieces of concrete is also present. Two adjacent debris piles consisting of metal, brick, and concrete are in the vicinity of the Building F-16 Coal Storage (CC RVAAP-73) area. The two debris piles are collectively approximately 12 feet wide, 24 feet long, and 2 feet high (AECOM, 2017). These piles were placed as a result of building demolition activities completed before 2007.

The scattered surficial solid waste at the Building F-15 and F-16 (RVAAP-46; RVAAP-046-R-01) and the Building F-15 and F-16 Coal Storage (CC RVAAP-73) qualifies as Open Dumping (OAC 3745-27-01), and will be removed of and disposed of properly as funds become available. The debris piles at the site are categorized as CDD (OAC 3745-400-04) as they were placed after 1996. CDD piles at the site require disposal in a licensed CDD facility or solid waste disposal facility (OAC 3745-400-04). All waste at the site, scattered or piled, is surficial. The Building F-15 and F-16 IRP, MRS and Coal Storage site fact sheet appears in Section 4.

3.2.5 Central Burn Pits (RVAAP-49)

The Central Burn Pits area is an IRP site (RVAAP-49) of approximately 20 acres, overgrown, and was a previously developed parcel located at the intersection of Paris-Windham Road and Lumber Yard Road. The area was originally used for lumber and building material storage, but was used until the mid-1970s for open burning of non-hazardous wastes.

A 2006 FS (SAIC, 2006) recommended the removal of Piles M and N (historical waste piles containing inorganic contaminants [SAIC, 2005b]). The 11 remaining historical waste berms were recommended for NFA.

A 2008 Removal Action Report (SAIC, 2008) described the removal of Piles M and N in November 2007. In total, 51 tons of lead-contaminated debris (concrete rubble) were removed from Pile M, and 157 tons of debris were removed from Pile N. In January 2008, 315 tons of additional concrete rubble was removed, and in February 2008, an additional 181 tons of concrete were removed. A 2009 ROD determined that NFA was required for soil and dry sediment to achieve unrestricted use at the Central Burn Pits (SAIC, 2009).

The two small berms recommended for NFA in the 2009 ROD exist at the site (AECOM, 2017). Small clusters of solid waste, including railroad ties, concrete, bricks, and metal, are present in various locations throughout the site. The two berms are well-characterized by the Supplemental Phase II RI report (SAIC, 2005b), and the location and volume estimates of the piles have been determined. The solid waste around the berms at the Central Burn Pits (RVAAP-49) qualifies as Open Dumping under OAC 3745-27-13. This waste will be removed of and disposed of properly as funds become available. Mounded surficial solid waste in the berms is also considered Open Dumping under OAC 3745-27-13. This waste will be removed of and disposed of properly as funds become available. The Central Burn Pits fact sheet appears in Section 4.

3.2.6 U-16 Boiler House Coal Storage (CC RVAAP-73) & Site P

Site P is on the north side of North Line Road west of Site O and close to the intersection of North Line Road and Newton Falls Road. Site P consists of two, long, raised, concrete loading platforms surrounded by dense vegetation located along Bundling Road. The U-16 Boiler House Coal Storage area is located between the two platforms. The U-16 Boiler House Coal Storage is a CRS (CC RVAAP-73) of approximately 0.13 acre located in the northeastern portion of the Western Area at CRJMTC that is vegetated with grass, low-lying brush, and sparse clusters of trees. The CRS was used to store coal for boiler supply and steam generation. Most of the coal at the site is believed to have been removed by 1979. By 1985, there was no evidence of coal storage in this area; however, during a 2004 visit to this area, residual coal fragments were observed on the ground surface in the area (SAIC, 2011b). Minimal coal was observed during the 2011 HRR (SAIC, 2011b). The 2017 PP for the site recommends NFA for surface soil, subsurface soil, sediment, and surface water at the site (Parsons, 2018b).

Old electrical poles, wood, and metal debris are present on the western platform (AECOM, 2017). Near the western platform is construction debris. All debris at Site P and the U-16 Boiler House Coal Storage area is surficial. The surficial solid waste qualifies as Open Dumping (OAC 3745-27-01), and will be removed of and disposed of properly as funds become available. The U-16 Boiler House Coal Storage area and Site P fact sheet appears in Section 4.

3.2.7 Site B (Building 1035)

Site B (Building 1035) is the remnant of an old borrow pit on the east side of George Road just north of South Service Road that was identified during site interviews with LTC Tom Tadsen (retired). The site is a flat, paved area behind a large building off of George Road, with patches of well-maintained grass.

Debris present at the site consists of large concrete piping; wood, brick, metal, and glass debris; a pile of vinyl siding and wooden debris; and a pile of old, roll-up garage doors (AECOM, 2017). This waste qualifies as Open Dumping (OAC 3745-27-01), and will be removed of and disposed of properly as funds become available. If salvageable, waste at Site B (Building 1035) will be repurposed for yard use at CRJMTC. The Site B (Building 1035) fact sheet appears in Section 4.

3.2.8 Site C

Site C is composed of multiple locations north of Blocks A and B in the Western Area of CRJMTC. The area is currently being used as a Class 4 Yard. At these locations there are dunnage piles that were spacers for explosives storage, piles of sand and stone for road repair, and piles of wood and felled trees to sell for firewood. The site was identified during site interviews by Tim Morgan, State Environmental Supervisor.

Large dunnage piles wrapped with metal banding exist in all five separate storage areas (AECOM, 2017). In addition, multiple new plastic and metal culverts are stored in the easternmost location. A small debris pile of concrete, rocks, metal, and brick also exists at the easternmost location. Metal debris is present on the east side of the road near bunker 6-A-9, and a metal culvert pipe is present along Block A, Line 7. Additionally, brick rubble is present south of Site C near bunker 6-A-13. This brick rubble will be picked up and properly disposed as part of future training site construction projects and is included as a Troop Labor Sites.

All debris at Site C is surficial. The debris observed south of Site C is not included as part of the Site C solid waste site. The solid waste at Site C qualifies as Open Dumping (OAC 3745-27-01), and will be removed of and disposed of properly as funds become available. The Site C fact sheet appears in Section 4.

3.3 Buried and Surficial Waste Sites

The following sites are known buried and surficial waste sites (i.e. landfills, dumps) or sites where buried and surficial solid waste was observed during the 2016 AECOM visual survey.

3.3.1 Erie Burning Grounds (RVAAP-02) and Erie Burning Grounds MRS (RVAAP-002-R-01)

The Erie Burning Grounds (EBG) is both an IRP site (RVAAP-02) and MRS (RVAAP-002-R-01), co-located within the same approximately 34-acre footprint in the northeastern portion of the Eastern Area at CRJMTC. The AOC operated from 1941 to 1951 as a burning ground to conduct open burning of explosives and related material, including bulk, obsolete, non-specification explosives, propellants, rags, and Army railcars used for transporting explosives. Prior to 1941, the area may have been used for brick manufacturing. The area became a wetland in the early 1990s as a consequence of sedimentation, vegetation growth, and beaver damming of the small stream draining into the burning ground, resulting in four main surface water basins occupying the lowlands of the area.

Various debris and metal scrap were encountered throughout EBG, including wood framing lumber, rail ties, vitrified clay pipe fragments, rail spikes, iron pipe, wire fencing, and vehicle parts during a 2001 Phase 1 remedial investigation (RI) and a 2005 Phase II RI (SAIC, 2001b; SAIC, 2005c). In addition, one metal fragment suspected to be shell casing was found. During low water conditions at the time of the Phase II RI, pieces of formerly submerged wooden frame structures were observed in the vicinity of the former waste chute and burn area north of Track 49. Wooden frame debris believed to be remnants of a wooden chute used to offload materials for burning was also found in the vicinity of the former burn area at the end of Track 49 and is. A thin veneer of sediment overlies sandstone fill, construction debris, and other hard substrates (SAIC, 2005c). It was not specified whether debris was removed. A 2007 ROD (SAIC, 2007) recommended NFA for soils and dry sediment at the IRP (RVAAP-02) site.

A 2008 MMRP SI (e2M, 2008) found several subsurface anomalies in the northwest, central, and southwest portions of the area during magnetometer and metal-detector-assisted unexploded ordnance (UXO) surveys. Possible MEC were observed partially buried in the southwest portion of the area. MEC were expected to be found in the flooded sections of the EBG MRS, though the SI did not investigate submerged portions of the area. A 2014 RI report (CB&I, 2014b) indicated that only inert MD was recovered during the field activities.

Parts of the old rail line, including intact rail ties and concrete blocks and intact metal poles along the track, are still in place along the western edge of the site (AECOM, 2017). Abandoned rail ties and metal scrap were noted throughout the site, mainly along the western road. Gravel is also piled along the side of the western road, which is assumed to be used as road base. Inspection of the submerged areas was not completed due to the potential presence of MEC. Buried waste was not observed during the 2016 Visual Assessment Survey but is known to exist at the site. The 2014 RI report (CB&I, 2014b) stated that non-MD/non-MEC solid waste was temporarily removed from and returned to excavation trenches after discovery during the RI activities.

Surficial solid waste at both sites qualifies as Open Dumping under OAC 3745-27-13. This waste will be removed of and disposed of properly as funds become available. Buried solid waste, not including potential MD and MEC, at the sites is considered a solid waste management unit. If an IRP/MMRP project involving ground disturbance occurs at the EBG, then an OAC 3745-27-13(C)(2)(c) exemption applies. The EBG IRP site and MRS fact sheet appears in Section 4.

3.3.2 Winklepeck Burning Grounds (RVAAP-05)

Winklepeck Burning Grounds is an IRP site (RVAAP-05) of approximately 216 acres. Within the footprint of the Winklepeck Burning Grounds are two smaller IRP sites, including Building 1601 Hazardous Waste Storage (RVAAP-07) which is approximately 0.01 acre and the Deactivation Furnace (RVAAP-17) which is approximately 0.07 acre.

The Winklepeck Burning Grounds was used for the destruction of munitions and explosive materials by burning. The site includes at least 70 known burn pads as well as roads where burning took place. Prior to 1980, burning took place on the ground surface; after 1980 burns took place on refractory lined trays. Burning operations at the site ceased in the early 1990s. Ash and debris from burning activities were abandoned in place after burning was complete (USACE, 2012b). Currently, the ARNG/OHARNG conducts annual inspections to confirm that the LUCs (commercial/industrial use, no residential use) at the site remain effective (USACE, 2017b).

An old building exists on the eastern edge of the site (AECOM, 2017). Two grassy mounds containing clean hard fill exist on the southeastern edge of the site and will be used in future range construction. Debris observed on the northeastern edge of the site includes: wood, rail ties, and cinder blocks and will be picked up and properly disposed as part of future training site construction projects and will be addressed as a Troop Labor Sites. Buried waste, including scrap metal, is known to exist at the site (Tetra Tech, 2018).

Remaining waste at the Winklepeck Burning Grounds (RVAAP-05) is both buried and surficial. Surficial waste at the site is considered Open Dumping (OAC 3745-27-01), and will be removed of and disposed of properly as funds become available. If an IRP project involving ground disturbance occurs at the Winklepeck Burning Grounds, then an OAC 3745-27-13(C)(2)(c) exemption applies. The Winklepeck Burning Grounds fact sheet appears in Section 4.

3.3.3 Landfill North of Winklepeck Burning Grounds (RVAAP-19; RVAAP-019-R-01)

The Landfill North of Winklepeck Burning Grounds (LNWBG) is a co-located IRP (RVAAP-19) and MMRP (RVAAP-019-R-01) site in the northeastern portion of the Central Area north of the Winklepeck Burning Grounds (RVAAP-05). The area is situated on top of a small bluff overlooking a stream. The IRP site (RVAAP-19) is 19.65 acres, while the MMRP site (RVAAP-019-R-01) is 2.34 acres. Based on the 2018 RI Report and historical records and sampling activities, the LNWBG was primarily used for burning operations as opposed to trench and fill type of activities associated with a landfill (Leidos, 2018b). Waste and debris was only identified within 1 foot below ground surface (bgs). A 2015 RI report (CB&I, 2015d) indicated that visual surveys of the site revealed that the slope was still littered with metal debris, including a 55-gallon drum and rusted cans and buckets.

A metal drum, a glass bottle, and broken concrete chunks were observed during the visual survey (AECOM, 2017). The small amount of debris appeared to be surficial. The surficial waste at the LNWBG (RVAAP-19; RVAAP-019-R-01) qualifies as Open Dumping under OAC 3745-27-13. This waste will be removed of and disposed of properly as funds become available. Buried solid waste at the site is considered a solid waste management unit. If an IRP/MMRP project involving ground disturbance occurs at the LNWBG, then an OAC 3745-27-13(C)(2)(c) exemption applies. The Landfill North of Winklepeck Burning Grounds fact sheet appears in Section 4.

3.3.4 Sand Creek Disposal Road Landfill (RVAAP-34) and Sand Creek Dump (RVAAP-034-R-01)

Sand Creek Disposal Road Landfill is an IRP (RVAAP-34) site of approximately 1.5 acres located in the eastern portion of CRJMTC along the eastern bank of Sand Creek. Partly overlapping the IRP site is the

Sand Creek Dump MRS (RVAAP-034-R-01), which is approximately 0.85 acre. Sand Creek Disposal Road Landfill is a construction landfill on the bank of Sand Creek that operated from 1950 to 1960.

During a 2012 RI report, site conditions were described as having visible surface debris, primarily construction debris, slag, glass, and plastic materials along the bottom of the embankments of the former disposal area. Soil borings included evidence of fill material that included coal ash and glass debris as deep as 8 feet bgs, and refusal due to buried debris was encountered in at least three borings (Shaw, 2012).

A 2015 RI of the MRS Sand Creek Dump included intrusive investigation at the AOC, in which ACM was removed and disposed of off-site, and debris consisting of bolts, cables, fence posts, nails, pipes, scrap metal, and wire was identified. All debris was returned to the subsurface (CB&I, 2015e). A 2015 ROD in the MMRP (CB&I, 2015e) determined that NFA was required at the Sand Creek Dump (RVAAP-034-R-01). An EE/CA is currently being prepared for the Sand Creek Disposal Landfill (RVAAP-34) under the IRP.

During the visual survey partially buried metal piping and metal rebar was observed (AECOM, 2017). The minor amount of solid waste observed is associated with the landfill. Surficial solid waste at the IRP site and MRS qualifies as Open Dumping under OAC 3745-27-13. This waste will be removed of and disposed of properly as funds become available. Buried solid waste at the sites is considered a solid waste management unit. If an IRP/MMRP project involving ground disturbance occurs at the Sand Creek Disposal Landfill or Sand Creek Dump, then an OAC 3745-27-13(C)(2)(c) exemption applies. The Sand Creek Disposal Landfill and Sand Creek Dump sites are combined into one fact sheet that appears in Section 4.

3.3.5 Atlas Scrap Yard (RVAAP-50), Atlas Scrap Yard MRS (RVAAP-050-R-01) & Atlas Scrap Yard Coal Storage (CC RVAAP-73)

Atlas Scrap Yard is an IRP site (RVAAP-50) of approximately 74 acres and is an overgrown, previously developed parcel located in the southeastern portion of the CRJMTC facility. Overlapping the footprint of the IRP site is an approximately 66-acre MRS (RVAAP-050-R-01). Within the footprint of the both the IRP and MRS is a small, approximately 1-acre CRS (CC RVAAP-73). The Atlas Scrap Yard was used after World War II as a scrap yard for bulk materials, including gravel, railroad ballasts, sand, and culvert pipes. Coal was piled in several areas of the AOC, and the central-east portion of the AOC was used as a staging area for salvaged ammunition boxes from demilitarized Vietnam War munitions.

Some debris, but no ordnance debris, was reported at the Atlas Scrap Yard MRS (RVAAP-050-R-01) in a USACE assessment (e2M, 2007). A 2007 Characterization Report (MKM, 2007b) determined the presence of stockpiles of pipes, railroad ballast, railroad ties, concrete rubble, and chipped ammunition boxes. During a UXO survey in 2008, debris piles were observed in the northern, eastern, and southern portions of the AOC, limiting the amount of area that could be surveyed. Multiple subsurface anomalies were recorded around the debris piles, and base-supplied information suggested a 40mm shell burial area may be at the site (e2M, 2008). A 2010 Phase 1 RI report stated that no evidence of coal storage remained at the Atlas Scrap Yard Coal Storage site (CC RVAAP-73). NFA was recommended for the site under the IRP (SAIC, 2011b).

A 2014 geophysical survey identified areas of high anomaly density in the suspected 40mm shell burial site and 14 additional regions around the Atlas Scrap Yard that were at least partially associated with debris piles observed on the ground surface (Shaw, 2014) . No MD or MEC were recovered, only “other debris,” including scrap metal, hot rocks (i.e., slag), nails, pipe, and construction debris. In total, 12,851 pounds of “other debris” were identified. All debris was temporarily removed from and returned to

excavation trenches. A 2017 RI report recommended the IRP site proceed to an FS (Leidos, 2017b). The 2018 ROD for the MRS determined that NFA was required (HydroGeologic, Inc. [HGL], 2018).

A large concrete and metal debris pile, heavily vegetated in areas, was observed south of the southern gravel road (AECOM, 2017). A concrete pad in the southern portion of the property was surrounded and covered by a mix of insulators, telephone poles, metal scrap, railroad ties, concrete, and asphalt. These debris piles have since been removed from the site and properly disposed of (ERT, Inc., 2017). Only a pile of asphalt south of the southern gravel road and smaller piles of metal, wood, and concrete debris scattered throughout the siteremain at the site. A metal pipe and a metal drum are also near the western boundary of the site.

Additionally, a large pile of railroad ties, approximately 260 feet long and 115 feet wide, was observed in the portion of the Atlas Scrap Yard associated with the Former Coal Storage Area (CC RVAAP-73) during the AECOM Visual Assessmeny Survey. The pile has since been removed, but smaller piles of metal, wood and concrete remain scattered about the site.

This area is well-documented and delineated, and the location of remaining solid waste is known. The surficial waste at the Atlas Scrap Yard (RVAAP-50; RVAAP-050-R-01) and Atlas Scrap Yard Coal Storage (CC RVAAP-73) qualifies as Open Dumping under OAC 3745-27-13. This waste will be removed of and disposed of properly as funds become available. Buried solid waste at the sites is considered a solid waste management unit. If an IRP/MMRP project involving ground disturbance occurs, then an OAC 3745-27-13(C)(2)(c) exemption applies. The Atlas Scrap Yard (RVAAP-50; RVAAP-050-R-01) and Atlas Scrap Yard Coal Storage (CC RVAAP-73) are combined in one fact sheet that appears in Section 4.

3.3.6 Water Works #4 Dump MRS (RVAAP-062-R-01)

Water Works #4 Dump MRS is an MMRP (RVAAP-062-R-01) site of approximately 0.77 acre located in the south-central portion of the Central Area. The area was presumably used for the intentional dumping of nonexplosive metal parts of large-caliber ordnance rounds.

No MEC was encountered during field activities for a 2008 SI (e2M, 2008) at the Water Works #4 Dump. A 2015 RI (CB&I, 2015f) encountered MD and nearly 600 pounds of “other debris” during intrusive investigations of subsurface anomalies, typically at 0.5 feet bgs and throughout the wooded area of the site. All non-MD (i.e., other metallic debris) was temporarily removed during RI field activities and replaced. A 2015 ROD recommended NFA for the MRS under the MMRP (CB&I, 2015g). LTC Tom Tadsen (retired) stated in an interview that there may be debris near Water Works #3 and #4.

A small piece of concrete exists within the site area, and additional solid waste debris consisting of a metal pole and plywood is present immediately to the south of the site. Non-MD waste discovered during the 2015 RI remains buried at the site.

The surficial waste at the Water Works #4 MRS qualifies as Open Dumping under OAC 3745-27-13. This waste will be removed of and disposed of properly as funds become available. Buried solid waste at the site is considered a solid waste management unit. If an MMRP project involving ground disturbance occurs at the Water Works #4 MRS, then an OAC 3745-27-13(C)(2)(c) exemption applies. The Water Works #4 MRS fact sheet appears in Section 4.

3.3.7 Group 8 MRS (RVAAP-063-R-01)

Group 8 is an MRS (RVAAP-063-R-01) of approximately 2.6 acres located between Buildings 846 and 849. Group 8 has been used historically for vehicle staging and may have been used for debris and rubbish burning. In 1996, an anti-personnel fragmentation bomb was found in Group 8. Since that time, a

magnetometer-assisted UXO survey discovered MEC and MD. The site may have been the former location for potential historical construction debris and rubbish burning as well as a collection center for salvaged items to be auctioned off (e2M, 2007). Two potential MEC fuzes were discovered, a large amount of MD was found in the MC3 and MC4 areas of the MRS, and some MD was found in the MC2 area in 2008. All three of these areas were littered with large amounts of debris including metal trash, fencing materials, and wooden scrap (e2M, 2008).

Non-MD consisting of scrap metal, fence materials, and wood scraps were identified at the site in 2015 (CB&I, 2015h). Areas of high anomaly density were identified and 1,418 pounds of documented safe MD were removed. Additionally, 1,281 lbs. of non-MD waste encountered during the investigation was temporarily removed from and returned to excavation trenches during the RI, and is believed to be buried at the site. The site is currently managed under the MMRP, and a 2015 RI report recommended an FS at the Group 8 MRS (CB&I, 2015h).

In the western portion of the site, a debris pile measuring approximately 13 feet by 15.5 feet by 3 feet high and consisting of concrete rubble, telephone pole pieces, scrap metal, and a roll of charred paper exists. Small pieces of metal debris are also present directly north of the debris pile. Adjacent to the pile a buried metal object may be present. The surficial solid waste at the Group 8 MRS qualifies as Open Dumping (OAC 3745-27-01), and will be removed of and disposed of properly as funds become available. Buried solid waste at the site is considered a solid waste management unit. If an MMRP project involving ground disturbance occurs at the site, then an OAC 3745-27-13(C)(2)(c) exemption applies. The Group 8 MRS fact sheet appears in Section 4.

4 Solid Waste Management Site Fact Sheets

This section presents the fact sheets for each Solid Waste Management Site outlined in Section 3. Each fact sheet summarizes information about the site including: site history, identification of and justification for the classification of the solid waste, applicable regulations/Ohio EPA requirements, and recommendations for management of the sites. The fact sheets also provide a footprint of the solid waste observed at each Solid Waste Management Site. Fact sheets for Solid Waste Management Sites with buried waste appear in Section 4.1. Fact sheets for Solid Waste Management Sites with surficial waste only appear in Section 4.2.

4.1 Buried Waste Only Sites

Buried solid waste at each Solid Waste Management Site is considered a unique solid waste management unit. If ground disturbance occurs at a site with a solid waste management unit, then an OAC 3745-27-13(C)(2)(c) exemption applies for the removal and disposal of the buried waste. Fact sheets for Solid Waste Management Sites with buried waste appear as described in the table below.

Fact Sheet 4-1: Ramsdell Quarry Landfill and Ramsdell Quarry Area MRS (RVAAP-01, RVAAP-001-R-02) Solid Waste Site

Site History

The Ramsdell Quarry Landfill (RQL) IRP site (RVAAP-01) and Ramsdell Quarry MRS (RVAAP-001-R-01-02) are overlapping sites at CRJMTC. RQL was in operation between 1941 and 1989, after quarry operations were discontinued in 1941. From 1976 until the landfill was closed in 1989, non-hazardous solid waste was deposited in RQL. Following a 2013 ROD amendment, a fence was erected around the RQL. RQL is currently under post-closure long-term monitoring and does not require any action beyond monitoring and maintenance of LUCs. In 1978, a portion of the quarry was permitted as a sanitary landfill; it completed closure in 1990 under OAC 3745-27-10. In 2010, soil and sediment were excavated from the quarry, removing construction and miscellaneous material considered to be friable ACM (SAIC, 2011a). A Supplemental RI (Leidos, 2017c) report for sediment and surface water recommended NFA at the MRS due to the absence of MEC and MD.

Date of Waste Placement

Buried Waste: Before 1989
Surficial Waste: None

Investigative Findings

Residual non-exposed asbestos in soil at the landfill and ACM in the quarry bottom still exists. No other solid waste was observed during the 2016 AECOM Visual Assessment Survey.

Solid Waste Characterization

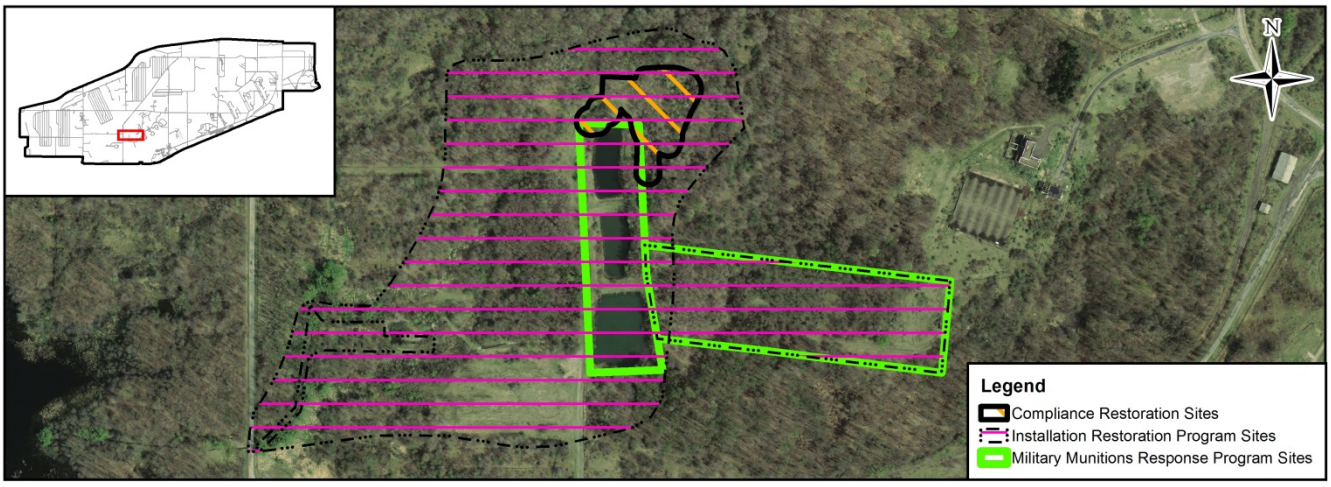
Buried solid waste at IRP and MRS sites is a Solid Waste Management Unit that may contain ACM.

Waste Management Activities

Management recommendations for the RQL IRP site and Ramsdell Quarry MRS include:

- Continued management (quarterly inspections and annual reports) as required by State of Ohio solid waste regulations until such time it reaches 30 years of post-closure care and requirements may be renegotiated
- If a project involving ground disturbance occurs at either site, then an OAC 3745-27-13(C)(2)(c) exemption applies.

Fact Sheet 4-2: Fuze and Booster Quarry Landfill/Ponds (RVAAP-16; RVAAP-016-R-01) Solid Waste Site



Site History

The Fuze and Booster Quarry Landfill/Ponds contains two co-located IRP (RVAAP-16) and MMRP (RVAAP-016-R-01) sites near the fuze and booster load lines. Historical operations included dumping or burning of of fuze and booster assemblies, projectiles, residual ash, and sanitary wastes in the quarry. The area was excavated to provide building material and was used as a burn area and landfill until 1976 when the existing debris was moved to Ramsdell Quarry or another burn area. 75 pounds of MD were recovered from trenches during 2013 RI activities (CB&I, 2015a). Items determined to be non-MEC were replaced to their excavation trenches. Additionally, non-munition metal debris including trashcans and construction debris that included metal pipes, sheet metal, etc. was located mostly on the eastern side of the northern pond (CB&I, 2015a).

Date of Waste Placement

Buried Waste: Before 1976
Buried Waste Reconsolidation: 2013
Surficial waste: Before 1976 (minimal waste)

Investigative Findings

Minimal surficial debris was observed scattered at the site. Buried waste is known to have been reconsolidated and returned to excavation trenches at the site (AECOM, 2017).

Solid Waste Characterization

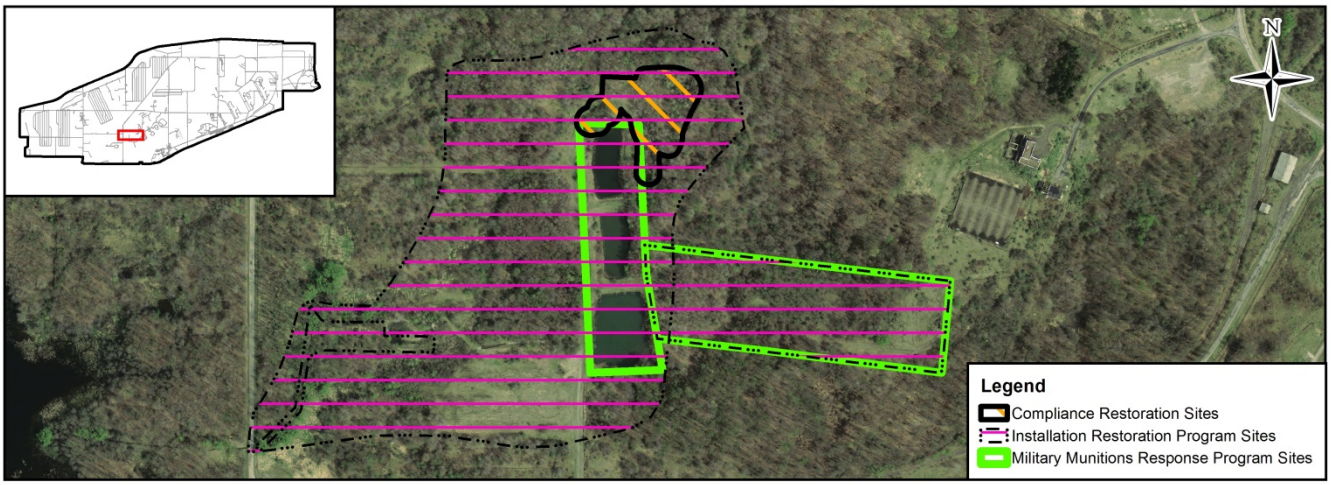
Scattered surficial waste is minimal and will be addressed as a Troop Labor Site. Buried historical and reconsolidated waste is considered a solid waste management unit.

Waste Management Activities

Management recommendations at the Fuze and Booster Quarry Landfill/Ponds include:

- Buried solid waste is a solid waste management unit that will remain in place. If disturbance is required then an OAC 3745-27-13(C)(2)(c) exemption applies.

Fact Sheet 4-3: 40mm Firing Range (RVAAP-32; RVAAP-032-R-01) Solid Waste Site



Site History

The 40mm Firing Range is both an IRP (RVAAP-32) site and an MMRP (RVAAP-032-R-01) site of approximately 8.63 acres located in the southwestern portion of the Central Area. The site was used as a munitions test range from 1969 to 1971. Between 1971 and 1977, the berm defining the impact area was removed. Several structures, including a former storage shed, remnants of the firing point location, and structure foundations, remain onsite. A 2015 Remedial Investigation report (CB&I, 2015b) described remaining structures at the site; including a former storage shed, gun mount foundation, and chronograph foundation. MD was found scattered about the area. Cultural debris consisting largely of scrap steel and pieces of concrete were also identified on the ground surface at several anomaly locations. Debris uncovered during a 2011 excavation that was determined to not be MD or MEC were reconsolidated and returned to excavation trenches (CBJ&I, 2015b).

Date of Waste Placement

Buried Waste: Before 1977
Buried Waste reconsolidation: 2011

Investigative Findings

Minimal surficial debris was observed scattered at the site. Buried waste is known to have been reconsolidated and returned to excavation trenches at the site (AECOM, 2017).

Solid Waste Characterization

Scattered surficial waste is minimal and will be addressed as a Troop Labor Site. Buried historical and reconsolidated waste is considered a solid waste management unit.

Waste Management Activities

Management recommendations at the 40mm Firing Range include:

- Buried solid waste is a solid waste management unit that will remain in place. If disturbance is required then an OAC 3745-27-13(C)(2)(c) exemption applies.

Fact Sheet 4-4: Dump along Paris-Windham Road (RVAAP-51) Solid Waste Site

Site History

The Dump along Paris-Windham Road is an IRP site (RVAAP-51), approximately 0.25 acre, located along a steep embankment on the west side of Paris-Windham Road. The site was used as a dump for construction debris and other materials. No records of the dates that the site was in use or quantities of refuse discarded in the area exist (USACE, 2015a). ACM has been discarded in the dump site from construction and demolition activities. The site was excavated in 2003 to remove debris to the fullest extent possible without undermining the roadway. Following the excavation, any remaining debris or ACM was covered with clean hard fill, and the soil was re-seeded (SAIC, 2010b).

Date of Waste Placement

Buried waste: Dates unknown
Buried waste reconsolidation: 2003

Investigative Findings

The cap over buried materials was observed during the 2016 AECOM Visual Assessment Survey. No evidence of solid waste was observed. The area is marked as off-limits with Siebert stakes, and the extent of the remaining subsurface solid waste is delineated.

Solid Waste Characterization

The remaining solid waste at the Dump along Paris-Windham Road is buried waste that is considered a solid waste management unit. No surficial waste exists at the site.

Waste Management Activities

Management recommendations for the Dump Along Paris-Windham Road include:

- Buried solid waste is a solid waste management unit that will remain in place. If disturbance is required then an OAC 3745-27-13(C)(2)(c) exemption applies.

4.2 Surficial Waste Only Sites

Surficial solid waste at each Solid Waste Management Site is considered Open Dumping (OAC 3745-27-01) in most cases. This waste will be removed and disposed of properly as funds become available. Fact sheets for Solid Waste Management Sites with surficial waste only appear as described in the table below.

Solid Waste Site ID	Description	Page Number
RVAAP-21 & CC RVAAP-76	Depot Sewage Treatment Plant & Depot Area	4-7
RVAAP-33 & RVAAP-033-R-01	Load Line 6 & Firestone test Facility	4-8
RVAAP-38	NACA Test Area	4-9
RVAAP-46, RVAAP-046-R-01 & CC RVAAP-73	Buildings F-15 and F-16 Coal Storage & Buildings F-15 and F-16	4-10
RVAAP-49	Central Burn Pits	4-11
CC RVAAP-73 & Site P	U-16 Boiler House Coal Storage & Site P	4-12
Site B	NA	4-13
Site C	NA	4-14

Fact Sheet 4-5: Depot Sewage Treatment Plant (RVAAP-21) and Depot Area (CC RVAAP-76) Solid Waste Site

Site History

The Depot Area is a 79-acre CRS (CC RVAAP-76) located along Route 80 that encompasses the Depot Sewage Treatment Plant (RVAAP-21). Operations performed at the CRS include locomotive/vehicle fueling and repair, petroleum oil/lubricant storage, and solid waste incinerator activities. Site operations occurred between 1941 and 1971. Additionally, munitions demilitarization activities occurred in one onsite building. The sewage treatment plant operated intermittently between 1941 and 1993. The facility was closed in 1993 in accordance with Ohio EPA requirements. The treatment plant was associated with former Buildings U-19 and U-19A. Sludge generated at the facility was transported to the George Road Sewage Treatment Plant for disposal. The facility was closed in 1993 in accordance with Ohio EPA requirements. A 1998 environmental baseline survey (Vista, 1998) of the site discussed the removal of on-site tanks and water treatment-related equipment. No future IRP phases were recommended for the site. The NPDES permit was terminated in May 2000. Demolition debris from several former buildings remained on site on the soil surface in 2013 (ECC and AMEC, 2013).

Date of Waste Placement

Surficial waste: Before 1993

Investigative Findings

A 234 ft long, 24 ft pile, 10 ft high pile of wooden pallets under a covered awning exists at the site (AECOM, 2017). A large pile of concrete footers from fence posts are also at the site.

Solid Waste Characterization

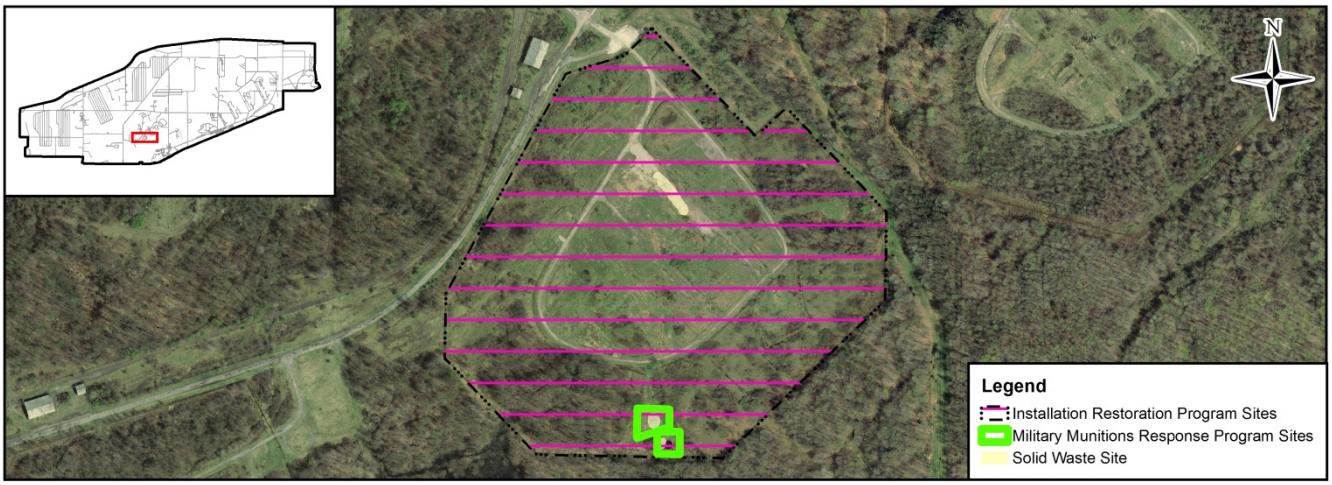
Surficial solid waste at the Depot Sewage Treatment Plant (RVAAP-21) is categorized as Open Dumping (OAC 3745-27-01).

Waste Management Activities

Management recommendations for the surficial solid waste at the Depot Area and Depot Sewage Treatment Plant include:

- Disposal of surficial solid waste in a disposal facility as defined by OAC 3745-27-01 and licensed in accordance with OAC Chapter 3745-37.

Fact Sheet 4-6: Load Line 6 (RVAAP-33) & Firestone Test Facility (RVAAP-033-R-01) Solid Waste Site



Site History

Load Line 6 is a 43-acre fenced IRP site (RVAAP-33) located south of Fuze and Booster Road that includes the 0.04-acre Firestone Test Facility MRS (RVAAP-033-R-01). The Firestone Test Facility included three buildings and pond used for shaped charge testing. Load Line 6 operated as a fuze assembly line from 1941 to 1945, and as a research and development facility from the 1950s to 1970s. From 1981 to 1989, a pink water evaporation unit operated at the site. All on-site buildings and structures were demolished by 2005 (MKM, 2007a). Glass, metal scraps, and cultural and unidentified debris were observed during a 2007 Phase I RI (MKM, 2007a). A 2014 RI stated that construction debris was temporarily removed and replaced to excavation holes (CB&I, 2014a) during 2011 RI work. Remaining on site is the foundation of the Shaped Charge Test Chamber, the Former Test Pond, concrete blocks around the pond, and piles of demolition debris. The 2017 IRP Final ROD concluded NFA was required for soil, sediment, and surface water and allows for unrestricted (residential) land use (Leidos, 2017a).

Investigative Findings

A 170-ft long, 50-ft wide, and 10-ft high mound of brick, metal, and terracotta exists near the center of the site (AECOM, 2016). Brick, wood, and metal debris are scattered around the base of the mound. Two overgrown mounds (100 feet by 50 feet by 5 feet, and 65 feet by 65 feet by 5 feet) are also present near the pond. Metal and concrete protrudes through the mound surfaces.

Solid Waste Characterization

Surficial scattered solid waste at the sites is considered CDD. Mounded solid waste at the site qualifies as a Open Dumping.

Date of Waste Placement

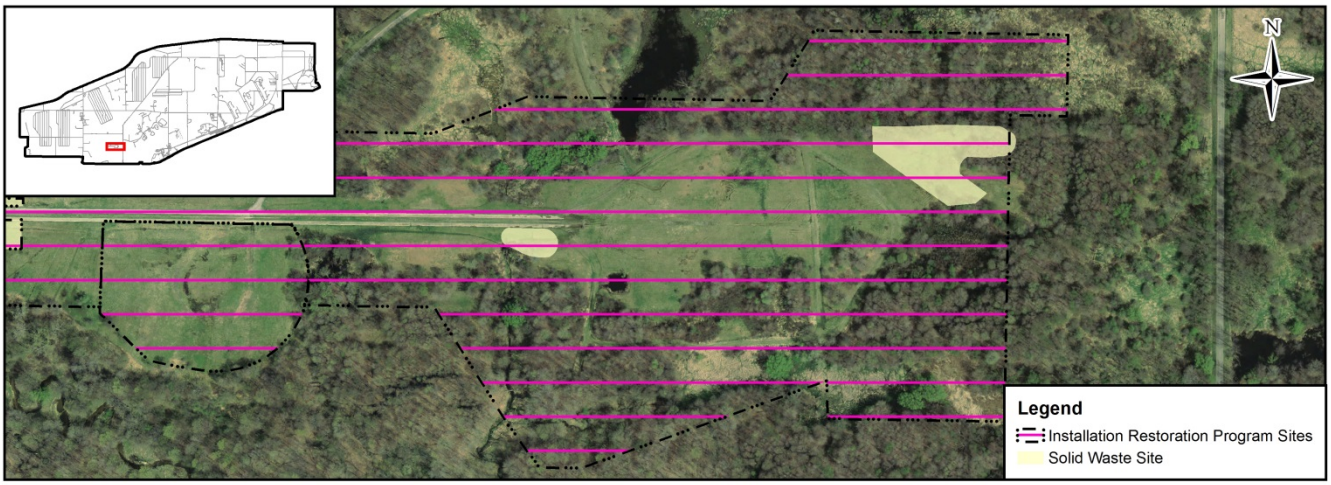
Original Waste Placement: 2005
Waste Reconsolidation: 2011

Waste Management Activities

Management recommendations for waste at the sites include:

- Disposal of surficial scattered solid waste in a licensed CDD facility or solid waste disposal facility (OAC 3745-400-04).
- Mounded solid waste is considered Open Dumping under OAC 3745-27-13. This waste will be removed of and disposed of properly as funds become available.

Fact Sheet 4-7: NACA Test Area (RVAAP-38) Solid Waste Site



Site History

The NACA Test Area (NTA) is an IRP site (RVAAP-38) of approximately 45.62 acres located in the Central Area of CRJMTC. It was in operation from 1947 to 1953. Airplanes were fueled, propelled under their own power on an east-west trending guide monorail, and filmed as they crashed into a concrete barrier to assess fuel spillage and plane crash behavior. The concrete crash strip and pad are still present. After the planes were tested they were moved from the end of the test strip to a staging area where they were scrapped out and removed from the site. Plane debris remains on the site as surficial solid waste. 2018 RI/FS field activities included scrap metal removal, and it was confirmed that planes were not buried at the site (Leidos, 2018a).

Date of Waste Placement

Surficial waste: 1947–1953

Investigative Findings

Concrete debris was observed north of the crash strip and near the center of the site during the 2016 AECOM Visual Assessment Survey. Metal debris, metal piping, wire, and rubber sheeting were also noted in the eastern portion of the site.

Solid Waste Characterization

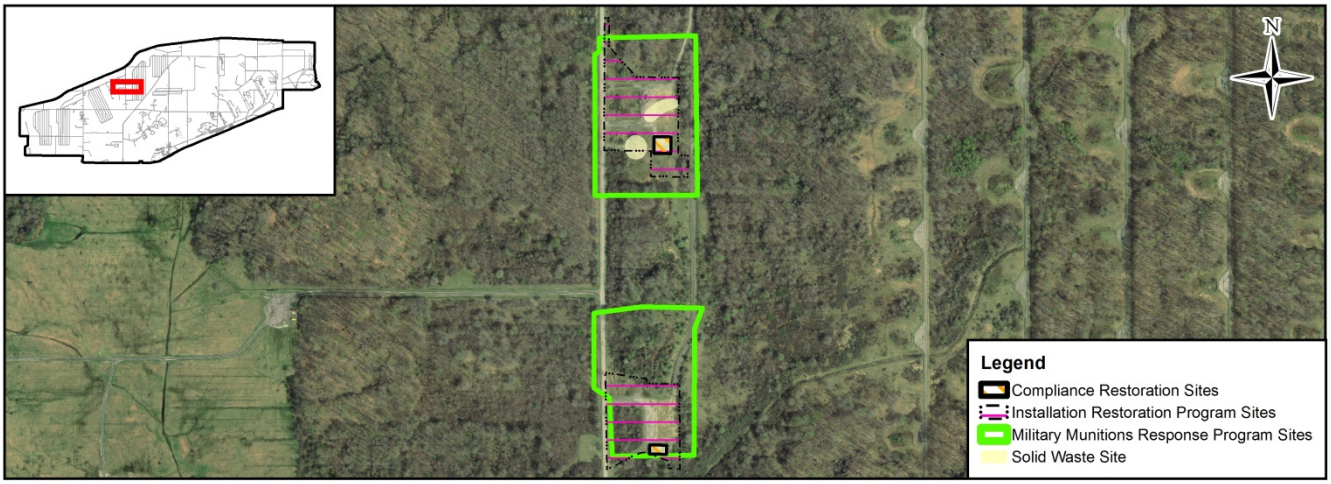
The surficial solid waste at the NTA qualifies as Open Dumping (OAC 3745-27-01).

Waste Management Activities

Management recommendations at the NACA Test Area (RVAAP-38) include:

- Dispose of surficial solid waste in a disposal facility as defined by OAC 3745-27-01 and licensed in accordance with OAC Chapter 3745-37 as funds become available.

Fact Sheet 4-8: Buildings F-15 and F-16 IRP Site (RVAAP-46), MRS (RVAAP-046-R-01), & Coal Storage (CC RVAAP-73) Solid Waste Site



Site History

Building F-15 and Building F-16 MRS (RVAAP-046-R-01) encompasses 12.3 acres and is co-located with an IRP site (RVAAP-46). The Building F-15 Coal Storage (0.11-acre) and Building F-16 Coal Storage (0.06-acre) is a CRS (CC RVAAP-73) located within the footprint of the co-located Building F-15 and Building F-16 IRP site and MRS. Historical operations at the site included testing of explosives between 1941 and 1974. Both buildings at the site have been demolished, although foundation and building debris remain at Building F-16 and a raised foundation remains at Building F-15. Building demolition activities at the site were completed before 2007 (e2M, 2007).

Date of Waste Placement

Surficial waste: Before 2007

Investigative Findings

Insulators and metal debris exist in the southwest portion of the Building F-15 North site (AECOM, 2017). Wood debris and small pieces of metal debris are scattered about the site. A 31 feet long, by 26 feet wide, 4 feet high pile of corrugated metal, concrete, brick, asphalt, and wood exists in the vicinity of Building F-15. A smaller mound of dirt mixed with pieces of concrete is also present. Two adjacent debris piles (12 feet wide, 24 feet long, and 2 feet high) consisting of metal, brick, and concrete are in the vicinity of Building F-16.

Solid Waste Characterization

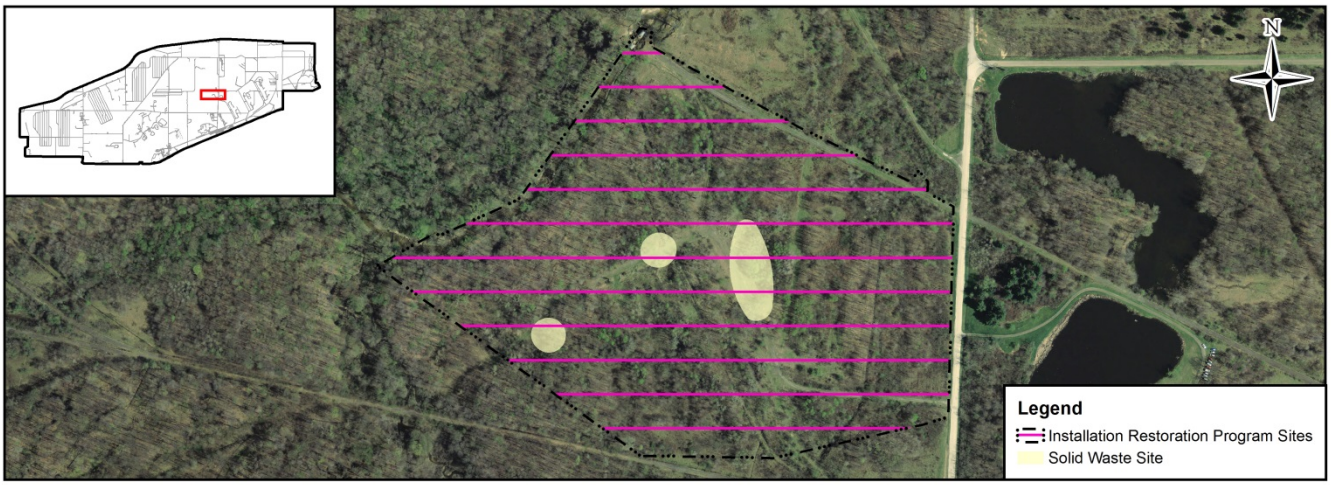
Surficial scattered solid waste at the Building F-15 and Building F-16 MRS, IRP, and CRS site is categorized as Open Dumping. The debris piles at the site are categorized as CDD (OAC 3745-400-04) as they were placed after 1996.

Waste Management Activities

Management recommendations include:

- Dispose of surficial solid waste in a disposal facility as defined by OAC 3745-27-01 and licensed in accordance with OAC Chapter 3745-37.
- Disposal of CDD piles in a licensed CDD facility or solid waste disposal facility (OAC 3745-400-04).

Fact Sheet 4-9: Central Burn Pits (RVAAP-49) Solid Waste Site



Site History

The Central Burn Pits IRP site (RVAAP-49) is approximately 20 acres, overgrown, and located at the intersection of Paris-Windham Road and Lumber Yard Road. The area was originally used for lumber and building material storage, but was used until the mid-1970s for open burning of non-hazardous wastes. Waste material (e.g., concrete, metal, excess fill dirt and gravel) was placed in piles and elongated berms throughout the site. A 2005 RI report (SAIC, 2005b) identified 13 debris piles of soil-like material in the west and north portions the site. Contamination in two piles (Piles M and N) required removal; 51 tons of lead-contaminated debris and 496 tons of concrete rubble were removed (2007–2008).11 waste berms remain. A 2009 ROD (SAIC, 2009) concluded that NFA was required for soil and dry sediment to achieve unrestricted use at the Central Burn Pits.

Date of Waste Placement

Buried Waste: None
Surficial Waste (mounded): Mid-1970s

Investigative Findings

Debris piles, possibly containing waste material known to have been placed at the site, were observed during the AECOM 2016 Visual Assessment Survey. Additionally, small clusters of surficial solid waste, including railroad ties, concrete, bricks, and metal were present throughout the site.

Solid Waste Characterization

Surficial scattered and mounded solid waste at the Central Burn Pits (RVAAP-49) is categorized as Open Dumping.

Waste Management Activities

Open dumping of materials requires those materials to be disposed of or recycled properly. Therefore, management recommendations include:

- Dispose of scattered and mounded surficial waste in a solid waste disposal facility as defined by OAC 3745-27-01 and licensed in accordance with OAC Chapter 3745-37 as funds become available.

Fact Sheet 4-10: U-16 Boiler House Coal Storage (CC RVAAP-73) & Site P Solid Waste Site

Site History

The U-16 Boiler House Coal Storage is a CRS (CC RVAAP-73) of approximately 0.13 acre located in the northeastern portion of the Western Area. The site is located within the footprint of Site P, an area identified by LTC Tom Tadsen during site interviews. The U-16 Boiler House Coal Storage area is located between two concrete loading platforms comprising Site P. The CRS was used to store coal for boiler supply/steam generation. Most of the coal at the site is believed to have been removed by 1979. By 1985, there was no evidence of coal storage in this area; however, during a 2004 visit to this area, residual coal fragments were observed on the ground surface (SAIC, 2011b). Minimal coal was observed during the 2011 HRR (SAIC 2011b).

Date of Waste Placement

Buried waste: NoneSurficial waste: Estimated before 1979

Investigative Findings

Old electrical poles, wood, and metal debris are present on the western platform, and construction debris is present near the western platform. All debris at Site P and the U-16 Boiler House Coal Storage area is surficial.

Solid Waste Characterization

Surficial solid waste at the U-16 Boiler House Coal Storage CRS and Site P is categorized as Open Dumping (OAC 3745-27-01). There is no buried waste present at the site.

Waste Management Activities

Open dumping of materials requires those materials to be disposed of or recycled properly. Therefore, management recommendations include:

- Disposal of surficial solid waste in a disposal facility as defined by OAC 3745-27-01 and licensed in accordance with OAC Chapter 3745-37 as funds become available.

Fact Sheet 4-11: Site B (Building 1035) Solid Waste Site

Site History

Site B (Building 1035) is the remnant of an old borrow pit on the east side of George Road just north of South Service Road in the Central Area at CRJMTC. LTC Tom Tadsen (retired) stated during interviews that this area potentially contained solid waste. The site is a flat, paved area behind a large building off of George Road, with patches of well-maintained grass.

Waste Management Activities

Open dumping of materials requires those materials to be disposed of or recycled properly. Therefore, management recommendations include disposal of the surficial waste at Site B by one of the following methods or a combination thereof:

- Repurpose usable materials on site for yard use.
- Dispose in a solid waste disposal facility as defined by OAC 3745-27-01 and licensed in accordance with OAC Chapter 3745-37 as funds become available.

Date of Waste Placement

Buried waste: None
Surficial waste: Date unknown

Investigative Findings

Solid waste observed at the site during the 2016 AECOM Visual Assessment Survey included a large concrete pipe; wood, brick, metal, and glass debris; a pile of vinyl siding and wooden debris; and a pile of old, roll-up garage doors. The small amount of debris appeared to be surficial.

Solid Waste Characterization

Surficial solid waste at Site B (Building 1035) qualifies as Open Dumping (OAC 3745-27-01).

Fact Sheet 4-12: Site C Solid Waste Site

Site History

Site C is composed of multiple locations to the north of Blocks A and B in the Western Area. The area is currently being used as a Class 4 Yard. At these locations there are dunnage piles that were spacers for explosives storage, piles of sand and stone for road repair, and piles of wood and felled trees to sell for firewood. The site consists of several paved clearings along the northern road that connects all Block A and Block B lines and is easily accessible by vehicle. Site C was identified by State Environmental Supervisor, Tim Morgan, via site interviews as a potential area with solid waste.

Date of Waste Placement

Buried waste: None
Surficial waste: Date unknown

Investigative Findings

Large dunnage piles wrapped with metal banding were observed in five separate storage areas during the 2016 AECOM Visual Assessment Survey. Multiple new plastic and metal culverts were also stored in the easternmost location. A small debris pile of concrete, rocks, metal, and brick was also observed at one of the sites at Site C. Brick and metal waste observed south of Site C is addressed separately as a Troop Labor Site.

Solid Waste Characterization

Surficial solid waste at Site C is categorized as Open Dumping (OAC 3745-27-01). There is no buried waste present at the site.

Waste Management Activities

Open dumping of materials requires those materials to be disposed of or recycled properly. Therefore, management recommendations include:

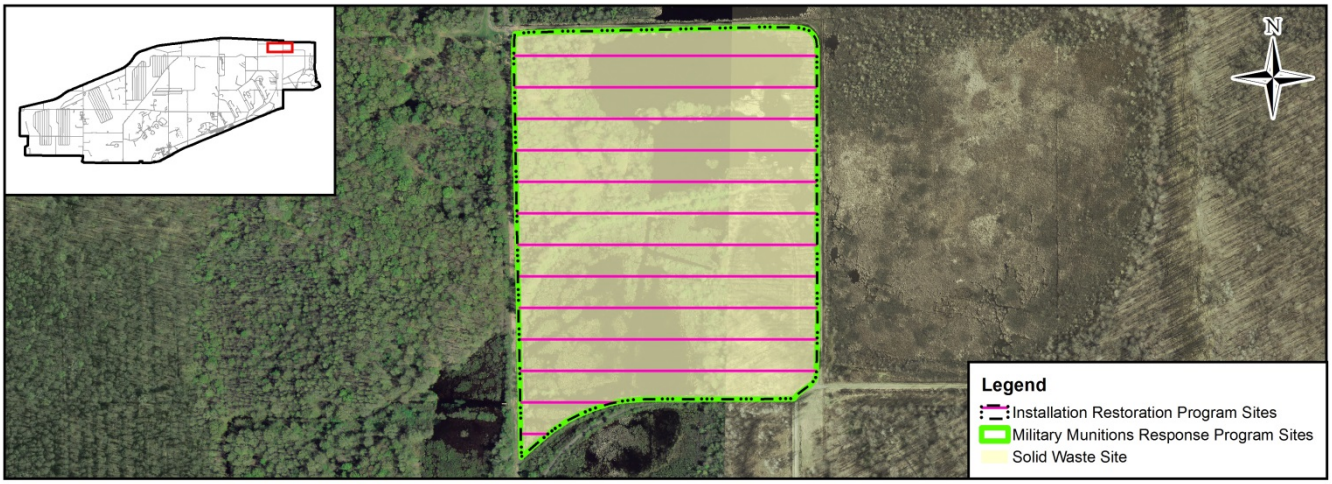
- Dispose of surficial solid waste in a disposal facility as defined by OAC 3745-27-01 and licensed in accordance with OAC Chapter 3745-37.

4.3 Buried and Surficial Waste Sites

At sites with both buried and surficial solid waste present, the regulations will apply as described in Sections 4.1 and 4.2. The surficial solid waste is considered Open Dumping (OAC 3745-27-01) in most cases, where the waste will be removed and disposed of properly as funds become available. The buried solid waste is considered a unique solid waste management unit, and if ground disturbance occurs at a site with a solid waste management unit, then an OAC 3745-27-13(C)(2)(c) exemption applies for the removal and disposal of the buried waste. Fact sheets for Solid Waste Management Sites with both buried and surficial waste appears as described in the table below.

Solid Waste Site ID	Description	Page Number
RVAAP-02 and RVAAP-002-R-01	Erie Burning Grounds	4-16
RVAAP-05	Winklepeck Burning Grounds	4-17
RVAAP-19 and RVAAP-019-R-01	Landfill North of Winklepeck Burning Grounds	4-18
RVAAP-34 and RVAAP-034-R-01	Sand Creek Disposal Landfill and Sand Creek Dump	4-19
RVAAP-50, RVAAP-050-R-01 & CC RVAAP-73	Atlas Scrap Yard & Atlas Scrap Yard Coal Storage	4-20
RVAAP-062-R-01	Water Works #4 Dump	4-21
RVAAP-063-R-01	Group 8 MRS	4-22

Fact Sheet 4-13: Erie Burning Grounds (RVAAP-02, RVAAP-002-R-01) Solid Waste Site



Site History

The Erie Burning Grounds (EBG) is both an IRP site (RVAAP-02) and MRS (RVAAP-002-R-01), co-located within the same approximately 34-acre footprint. EBG operated from 1941 to 1951 as a burning ground to conduct open burning of explosives and related material. During 2012 RI activities, scrap metal was recovered, reconsolidated, and returned to the ground, creating a solid waste management unit (CB&I, 2014b). Materials encountered include road base slag, metal rods, hinges, steel rails, cans, and miscellaneous scrap metal. The EBG MRS is currently being investigated under the MMRP.

Date of Waste Placement

Original waste placement: 1941–1951
Buried waste reconsolidation: 2012
Surficial waste: Date unknown

Investigative Findings

Parts of the old rail line, including concrete blocks along the track, were observed along the western edge of the site during the AECOM 2016 Visual Assessment Survey. Abandoned rail ties and metal scrap were noted throughout the site, mainly along the western road. Buried solid waste was not observed but is known to exist at the EBG and EBG MRS.

Solid Waste Characterization

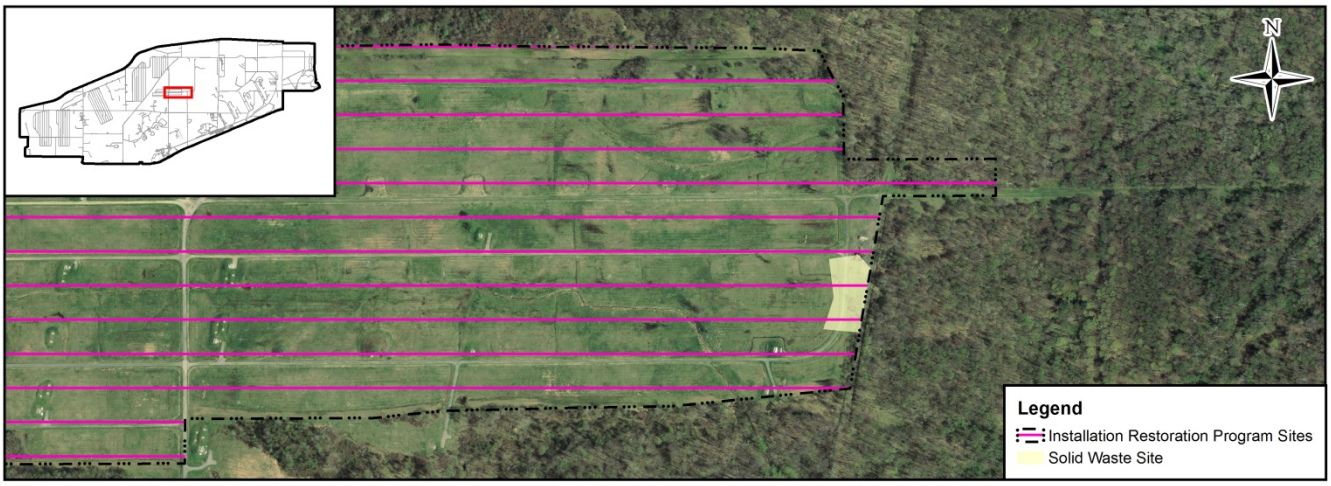
Surficial solid waste at EBG (RVAAP-02) and the EBG MRS (RVAAP-002-R-01) qualifies as Open Dumping. Buried historical and reconsolidated solid waste is considered a Solid Waste Management Unit.

Waste Management Activities

Management recommendations at EBG include:

- Buried solid waste is a solid waste management unit that will remain in place. If disturbance is required then an OAC 3745-27-13(C)(2)(c) exemption applies.
- Surface waste qualifies as Open Dumping (OAC 3745-27-01) and will be removed and disposed of properly as funds become available.

Fact Sheet 4-14: Winklepeck Burning Grounds (RVAAP-05) Solid Waste Site



Site History

Winklepeck Burning Grounds is an IRP site (RVAAP-05) of approximately 216 acres. The site was used for the destruction of munitions and explosive materials by burning. The site includes at least 70 known burn pads. The burning also took place on roads at the site. Prior to 1980, burning took place on the ground surface; after 1980, burns took place on refractory-lined trays. Burning operations at the site ceased in the early 1990s. Ash and debris from burning activities were abandoned in place after burning was complete (USACE, 2012b). Currently, the Army conducts periodic monitoring of LUCs via site inspections to confirm that the LUCs at the site remain effective and meet objectives (USACE, 2017b).

Date of Waste Placement

Buried waste: Early 1990s
Surficial waste: Early 1990s

Investigative Findings

An old building was observed on the eastern edge of the site during the 2016 AECOM Visual Assessment Survey. Two grassy mounds containing clean hard fill exist on the southeastern edge of the site and will be used in future range construction. Debris on the northeastern edge of the site includes: wood, rail ties, and cinder blocks and will be addressed as part of future training site construction projects as a Troop Labor Site. Buried waste, including scrap metal, is known to exist at the site.

Solid Waste Characterization

Surficial solid waste at the site is categorized as Open Dumping (OAC 3745-27-01). Buried solid waste is a solid waste management unit.

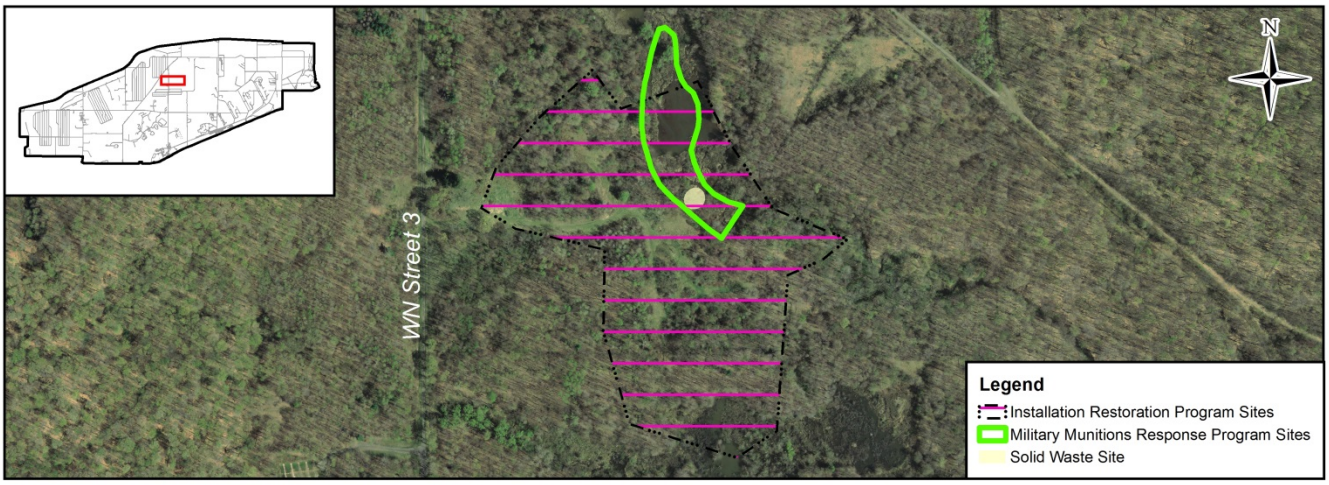
Waste Management Activities

Management recommendations for waste at the Winklepeck Burning Grounds IRP site include:

- Disposal of surficial solid waste in a facility as defined by OAC 3745-27-01 and licensed in accordance with OAC Chapter 3745-37 as funds become available.
- Buried solid waste is a solid waste management unit, which will remain in place. If disturbance is required then an OAC 3745-27-13(C)(2)(c) exemption applies.

Waste on the northeastern edge of the site will be addressed as a Troop Labor Site.

Fact Sheet 4-15: Landfill North of Winklepeck Burning Grounds (RVAAP-19, RVAAP-019-R-01) Solid Waste Site



Site History

The Landfill North of Winklepeck Burning Grounds is a co-located IRP (RVAAP-19) and MMRP site (RVAAP-019-R-01). The site is currently being investigated under the IRP program. The area is situated on top of a small bluff overlooking a stream. The IRP site is 19.65 acres, while the MMRP site is 2.34 acres. The LNWBG was primarily used for burning operations as opposed to trench and fill type of activities associated with a landfill (Leidos, 2018b). Waste and debris was only identified within 1 foot bgs. A 2015 RI report (CB&I, 2015d) indicated that visual surveys of the site revealed that the sloped areas of the MRS have metal debris, including a 55-gallon drum and rusted cans and buckets.

Date of Waste Placement

Buried Waste: Before 1978
Surficial Waste: Date unknown

Investigative Findings

A metal drum, a glass bottle, and broken concrete chunks were observed in the southeastern area of the MRS during the 2016 AECOM Visual Assessment Survey. The debris appeared to be surficial.

Solid Waste Characterization

The surficial waste at the Landfill North of Winklepeck Burning Ground (RVAAP-19; RVAAP-019-R-01) qualifies as Open Dumping. Buried solid waste at the site qualifies as a Solid Waste Management Unit.

Waste Management Activities

The site has surficial waste in a concentrated area.

- Surface debris qualifies as Open Dumping (OAC 3745-27-01) and will be removed and disposed of properly as funds become available.
- Buried solid waste is a solid waste management unit that will remain in place. If disturbance is required then an OAC 3745-27-13(C)(2)(c) exemption applies.

Fact Sheet 4-16: Sand Creek Disposal Landfill and Sand Creek Dump MRS (RVAAP-34, RVAAP-034-R-01) Solid Waste Site

Site History

Sand Creek Disposal Road Landfill is an approximately 1.5-acre IRP site (RVAAP-34) located along the eastern bank of Sand Creek that partly overlaps the 0.85-acre Sand Creek Dump MRS (RVAAP-034-R-01). RVAAP-34 is a construction landfill that operated from 1950 to 1960. In 2012, the landfill had visible surface debris, primarily construction debris, slag, glass, and plastic materials, along the embankments of the former disposal area. Soil borings displayed evidence of fill material, including coal ash and glass debris. During a 2013 MMRP (CB&I, 2015e) intrusive investigation, ACM was removed from the site, remaining miscellaneous scrap metal was returned to the ground, and NFA was concluded in the Final ROD (CB&I, 2015e). The site is currently being investigated under the IRP.

Date of Waste Placement

Original waste placement: 1950–1960
Buried waste reconsolidation: 2013
Surficial Waste: Date unknown

Investigative Findings

Partially buried metal piping and metal rebar was observed at and adjacent to the site (AECOM 2016). The solid waste observed is associated with the landfill. The solid waste is believed to be exposed due to erosion at the site.

Solid Waste Characterization

Solid waste observed at RVAAP-34 and RVAAP-034-R-01 appears to be associated with past landfill operations. Surficial solid waste is considered Open Dumping, and buried solid waste is a solid waste management unit.

Waste Management Activities

Management recommendations for solid waste include:

- Surface waste qualifies as Open Dumping (OAC 3745-27-01) and will be removed and disposed of properly as funds become available.
- Buried solid waste is a solid waste management unit, which will remain in place. If disturbance is required then an OAC 3745-27-13(C)(2)(c) exemption applies.

Fact Sheet 4-17: Atlas Scrap Yard IRP Site and MRS (RVAAP-50, RVAAP-050-R-01) and Atlas Scrap Yard Coal Storage CRS (CC RVAAP-73) Solid Waste Site

Site History

Atlas Scrap Yard is a 74-acre IRP site (RVAAP-50) overlapping with a 66-acre MRS (RVAAP-050-R-01) and Coal Storage CRS (CC RVAAP-73). The site was used after World War II as a scrap yard for bulk materials, including gravel, railroad ballasts, sand, and culvert pipes. Coal was piled at the site, and the central-east portion of the site was used as a staging area for salvaged ammunition from Vietnam War munitions. Demolition and grading occurred at most of the coal storage sites, and NFA was recommended for the Atlas Scrap Yard Coal Storage CRS (SAIC, 2011b). No residual coal was found according to a 2015 RI report (ECC and AMEC, 2015). A 2014 geophysical survey identified 12,851 pounds of scrap metal, slag, nails, pipe, and construction debris (Shaw, 2014). Debris was temporarily removed from the ground and replaced, and the 2017 MMRP Proposed Plan (HGL, 2017) concluded NFA. A 2017 IRP RI was conducted and FS is planned (Leidos, 2017b).

Date of Waste Placement

Buried Waste: Vietnam War era (approx. 1975)
Surficial Waste: Vietnam War era (approx. 1975)
Buried Waste Reconsolidation: 2014

Investigative Findings

Large piles of concrete and metal, railroad ties, insulators, and asphalt observed during the AECOM 2016 Visual Assessment Survey have since been removed. Smaller piles of metal, wood, and concrete surface debris remain scattered throughout the site.

Solid Waste Characterization

Surficial solid waste at the Atlas Scrap Yard is considered Open Dumping. Buried scrap metal and debris encountered during 2014 MMRP activities that was returned to the ground is now considered a solid waste management unit.

Waste Management Activities

Management recommendations for solid waste at the Atlas Scrap Yard include:

- Surficial waste qualifies as Open Dumping (OAC 3745-27-01) and will be removed and disposed of properly as funds become available.
- Buried solid waste is a solid waste management unit, which will remain in place. If disturbance is required then an OAC 3745-27-13(C)(2)(c) exemption applies.

Fact Sheet 4-18: Water Works #4 Dump MRS (RVAAP-062-R-01) Solid Waste Site

Site History

Water Works #4 Dump MRS (RVAAP-062-R-01) is an approximately 0.77-acre area located in the Central Area at CRJMTC. The area was presumably used for dumping of non-explosive metal parts of large-caliber ordnance rounds between 1941 and 1949, and was investigated under the MMRP. A 2015 RI (CB&I, 2015f) encountered MD and nearly 600 pounds of "other debris" during intrusive investigations of subsurface anomalies, typically at 0.5 foot bgs throughout the wooded area of the site. "Other debris" was described as metallic material that did not include material potentially presenting an explosive hazard or MD. All non-MD was removed and then replaced in the subsurface. The Final MMRP NFA ROD was signed in 2015 (USACE, 2015b).

Date of Waste Placement

Original waste placement: 1941–1949
Buried waste reconsolidation: 2011
Surficial waste: 1941–1949

Investigative Findings

A small piece of concrete and additional solid waste debris consisting of a metal pole and plywood was observed at the site and immediately south of the site during the 2016 AECOM Visual Assessment Survey.

Solid Waste Characterization

Surficial solid waste at the Water Works #4 Dump MRS is categorized as Open Dumping. Buried solid waste at the site is considered a solid waste management unit.

Waste Management Activities

Management recommendations include:

- Surficial waste qualifies as Open Dumping (OAC 3745-27-01) and will be removed and disposed of properly as funds become available.
- Buried solid waste is a solid waste management unit, which will remain in place. If disturbance is required then an OAC 3745-27-13(C)(2)(c) exemption applies.

Fact Sheet 4-19: Group 8 MRS (RVAAP-063-R-01) Solid Waste Site

Site History

Group 8 is a 2.6-acre MRS (RVAAP-063-R-01) located between Buildings 846 and 849. Group 8 was used for construction debris and rubbish burning and as a collection center for salvaged items for an undetermined amount of time. During a 2011 MMRP RI, non-MD was identified in all 14 trenches (including metal trash, fencing materials, and wooden scrap) (CB&I, 2015h). 1,281 pounds of non-MD waste encountered during the investigation was removed and then returned to the subsurface during the RI. The site is currently being investigated under the MMRP.

Date of Waste Placement

Buried waste: Dates unknown
Buried waste reconsolidation: 2011
Surficial waste: Dates unknown

Investigative Findings

A debris pile approximately 13 feet by 15 feet by 3 feet consisting of concrete rubble, telephone pole pieces, scrap metal, and charred paper was observed during the AECOM 2016 Visual Assessment Survey. Small pieces of metal debris were present north of the debris pile. Adjacent to the pile, an item was observed that may have been a buried metal object.

Solid Waste Characterization

Surficial solid waste at Group 8 is considered Open Dumping. Buried historical and reconsolidated solid waste is considered a solid waste management unit.

Waste Management Activities

Management recommendations include:

- Surficial waste qualifies as Open Dumping (OAC 3745-27-01) and will be removed and disposed of properly as funds become available.
- Buried solid waste is a solid waste management unit, which will remain in place. If disturbance is required then an OAC 3745-27-13(C)(2)(c) exemption applies.

5 Conclusions

Approximately 150 sites were evaluated to identify areas that may have been used in the past for disposal or dumping of solid waste and storage of CDD. Visual surveys were conducted to determine if solid waste was present at these sites. The sites visited included IRP sites, MMRP sites, CRSs, Aerial Review Sites, and Interview Sites as presented in the 2017 VASR (AECOM, 2017).

Several environmental activities were conducted in support of the SWMP and they are listed below.

- Review historical information to inventory known solid waste sites and identify potential waste sites
- Visually survey current site conditions
- Intrusively investigate subsurface solid waste and delineate site boundaries
- Evaluate site information and Ohio EPA requirements to develop a management plan for each site

Site findings were used to identify applicable OACs, which guide solid waste management recommendations. Applicable waste classification definitions and waste management guidance was provided in the Ohio EPA memorandum (Ohio EPA, 2014). This SWMP identified and cataloged the Solid Waste Management Sites at CRJMTC as shown on **Figure 5-1**. Several Solid Waste Management Sites at CRJMTC are collocated with existing known AOCs (ie., IRP, MMRP, or CRS sites) where the solid waste can be buried or surficial. Solid waste at the site may comprise only a portion of a site, or maybe present throughout the entirety of the site. Also, it is important to note that there is some surficial solid waste identified at buried waste sites, therefore, for management purposes the sites in this SWMP have been grouped by;

- sites with only buried solid waste,
- sites with only surfical solid waste, and
- sites with both buried and surficial solid waste.

One-page fact sheets were developed for each site that presents the Site History, Date of Waste Placement, Investigative Findings, Solid Waste Characterization, Waste Management Activities, and a map and photo(s) of the site.

The sites where only solid waste on the ground surface was encountered is considered Open Dumping, according to OAC 3745-27-01(O)(4). Solid waste in ground (i.e. underground, or buried) is considered a solid waste management unit, and will be managed in place. OAC Rule 13 (OAC 3745-27-13) is the authorization requirement for disturbance of buried waste; however, OAC 3745-27-13 (C)(2)(c) provides and exemption from this authorization at CRJMTC.

This SWMP will be used by ARNG and OHARNG as a management tool for each site to identify where solid waste is present and help establish where applicable solid waste regulastion apply. This document will be used in conjunction with the *Final Revised Property Management Plan for the Designated Areas of Concern and Munitions Resonse Sites Version 2.0* and subsequent versions (March 30, 2018).

This Page Intentionally Left Blank

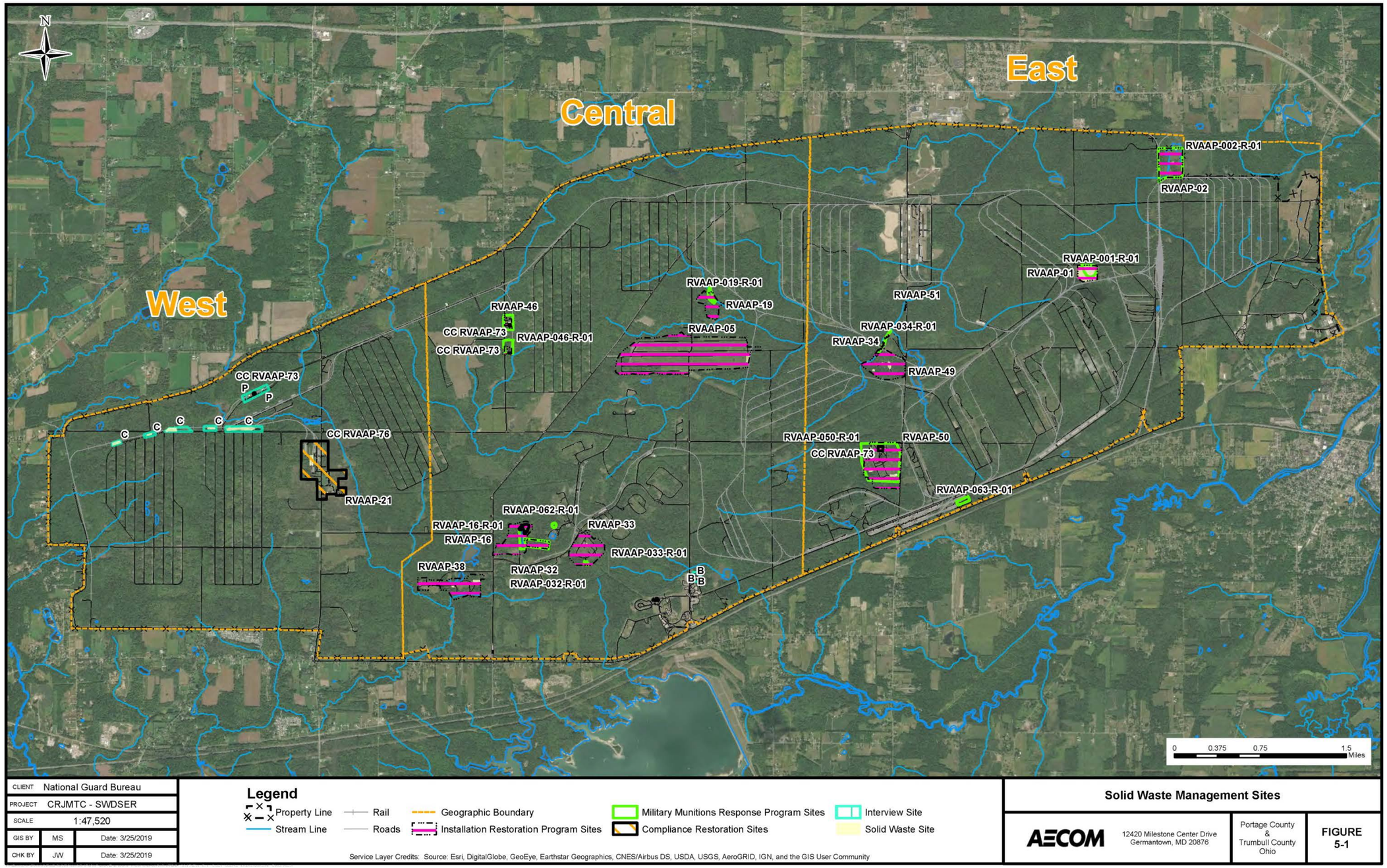


Figure 5-1: Solid Waste Management Sites

Page Intentionally Left Blank

6 References

AECOM Technical Services (AECOM), 2016. *Final Work Plan; Evaluation, Identification, and Management of Potential Solid Waste Disposal Sites at Former Ravenna Army Ammunition Plant/Camp Ravenna Joint Military Training Center, Portage and Trumbull Counties, Ohio.* May 6, 2016.

AECOM, 2017. *Final Visual Assessment Survey; Evaluation, Identification, and Management of Potential Solid Waste Sites at Former Ravenna Army Ammunition Plant/Camp Ravenna Joint Military Training Center, Portage and Trumbull Counties, Ohio.* August 29, 2017.

AECOM, 2018. *Trip Report for Intrusive Investigations at RVAAP-11 and Site O.* December 11-13, 2017.

CB&I, 2014a. *Final Remedial Investigation Report for RVAAP-033-R-01 Firestone Test Facility MRS, Version 1.0, Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio,* August 26, 2014.

CB&I, 2014b. *Final Remedial Investigation Report for RVAAP-002-R-01 Erie Burning Grounds MRS, Version 1.0, Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio,* August 27, 2014.

CB&I, 2015a. *Remedial Investigation Report for RVAAP-016-R-01 Fuze and Booster Quarry MRS, Version 1.0, Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio,* June 5, 2015.

CB&I, 2015b. *Final Remedial Investigation Report for RVAAP-032-R-01 40 mm Firing Range Munitions Response Site, Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio,* April 30, 2015.

CB&I, 2015c. *Final No Further Action Record of Decision for RVAAP-033-R-01 Firestone Test Facility Munitions Response Site, Version 1.0, Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio,* August 14, 2015.

CB&I, 2015d. *Final Remedial Investigation Report for RVAAP-019-R-01 Landfill North of Winklepeck MRS and RVAAP-060-R-01 Block D Igloo MRS, Version 1.0, Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio,* March 4, 2015.

CB&I, 2015e. *No Further Action Record of Decision for RVAAP-034-R-01 Sand Creek Dump Munitions Response Site, Version 1.0, Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio,* September 29, 2015.

CB&I, 2015f. *Final Remedial Investigation Report for RVAAP-062-R-01 Water Works #4 Dump Munitions Response Site, Version 1.0, Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio,* March 10, 2015.

CB&I, 2015g. *Final No Further Action Record of Decision for RVAAP-062-R-01 Water Works #4 Dump Munitions Response Site, Version 1.0, Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio,* September 29, 2015.

CB&I, 2015h. *Final Remedial Investigation report for RVAAP-063-R-01 Group 8 MRS Version 1.0, Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio,* May 19, 2015.

ECC and AMEC, 2013. *Draft Remedial Investigation/Feasibility Study CC RVAAP-76 Depot Area, Ravenna Army Ammunition Plant, Ravenna, Ohio,* June 17, 2013.engineering-environmental Management, Inc. (e2M), 2007. *Final Military Munitions Response Program Historical Records Review at Ravenna Army Ammunition Plant*, January 2007 (revised).

e2M, 2008. *Final Site Inspection Report, Ravenna Army Ammunition Plant, Ohio, Military Munitions Response Program, Site Inspection, Munitions Response Sites,* May 2008.

ERT, Inc., 2017. *Final Construction Completion Report for FY Recylcing of Materials at RVAAP-50 Atlas Scrap Yard Area of Concern and Setup of Temporary Storage Facility, Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio*. August 17, 2017.

HydroGeologic, Inc. (HGL), 2017. *Final No Further Action Proposed Plan for RVAAP-050-R-01 Atlas Scrap Yard Munitions Response Site for Former Ravenna Army Ammunitions Plan, Portage and Trumbull Counties, Ohio*. August 3, 2017.

HGL, 2018. *Final No Further Action record of Decision for RVAAP-055-R-01 Atlas Scrap Yard Munitions Response Site, Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio*. September 5, 2018.

Leidos, 2016a. *Final Remedial Investigation Work Plan for Sediment and Surface Water at RVAAP-01, RVAAP-04, RVAAP-16, RVAAP-001-R-01, and Inventory of Sediment and Surface Water at Multiple Sites at Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio*. August 12, 2016.

Leidos, 2016b. *Draft Phase II Remedial Investigation Report for Soil, Sediment, and Surface Water at RVAAP-33 Load Line 6, Ravenna Army Ammunition Plant, Ravenna, Ohio,* March 11, 2016.

Leidos, 2016c. *Revised Draft Phase II Remedial Investigation Report and Feasibility Study for Soil, Sediment, and Surface Water at RVAAP-38 NACA Test Area at Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio*. August 15, 2016.

Leidos, 2017a. *Draft Record of Decision for Soil, Sediment, and Surface Water at RVAAP-33 Load Line 6 for Former Ravenna Army Ammunition Plant Portage and Trumbull Counties, Ohio*. August 10, 2017.

Leidos, 2017b. *Revised Final Remedial Investigation Report for Soil, Sediment, and Surface Water at RVAAP-50 Atlas Scrap Yard Version 2.0 at Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio.* August 4, 2017.

Leidos, 2017c. *Draft Supplemental Remedial Investigation for Sediment and Surface Water at RVAAP-01, RVAAP-04, RVAAP-16, RVAAP-001-R-01 at Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio*. June 9, 2017.

Leidos, 2018a. *Final Phase II Remedial Investigation Report and Feasibility Study for Soil, Sediment, and Surface Water at RVAAP-38 NACA Test Area at Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio.* July 16, 2018.

Leidos, 2018b. *Final Remedial Investigation Report for Soil, Sediment, and Surface Water at RVAAP-19 Landfill North of Winklepeck Burning Grounds at Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio.* April 25, 2018.

MKM Engineers, Inc. (MKM), 2007a. *Final Report for the Phase I Remedial Investigation of RVAAP-33 Load Line 6 (RVAAP 33), Ravenna Army Ammunition Plant, 8451 St. Route 5, Ravenna, OH 44266,* August 2007.

MKM, 2007b. *Final Characterization of 14 AOCs at Ravenna Army Ammunition Plant*, March 2007.

Ohio Environmental Protection Agency (Ohio EPA), 2014. *Interoffice Memorandum, Solid Waste Regulations Governing Materials Found During Investigations at Ravenna Army Ammunition Plant's (RVAAP) Areas of Concern.* July 24, 2014.

Parsons, 2018a. *Final Proposed Plan for CC RVAAP-76 Depot Area at Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio.* February 1, 2018.

Parsons, 2018b. *Final Proposed Plan for CC RVAAP-73 Facility-Wide Coal Storage at Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio.* February 1, 2018.

SAIC, 2001a. *Phase I Remedial Investigation Report for the NACA Test Area at the Ravenna Army Ammunition Plant, Ravenna, Ohio,* December 2001.

SAIC, 2001b. *Final Phase I Remedial Investigation Report for the Erie Burning Grounds at the Ravenna Army Ammunition Plant, Ohio,* December 2001.

SAIC, 2005a. *Final Phase I Remedial Investigation Report for Ramsdell Quarry Landfill at the Ravenna Army Ammunition Plant, Ravenna, Ohio*, September 2005.

SAIC, 2005b. *Final Sampling and Analysis Plan Addendum No.1, Supplemental Phase II Remedial Investigations, Open Demolition Area #2 (RVAAP-02), Fuze and Booster Quarry Landfill/Ponds (RVAAP-16), and Central Burn Pits (RVAAP-49), Ravenna Army Ammunition Plant, Ravenna, Ohio,* November 2005.

SAIC, 2005c. *Final Phase II Remedial Investigation Report for Erie Burning Grounds (RVAAP-02) at the Ravenna Army Ammunition Plant, Ravenna, Ohio*, September 2005.

SAIC, 2006. *Draft Feasibility Study for Central Burn Pits (RVAAP-49), Ravenna Army Ammunition Plant Ravenna, Ohio,* March 2006.

SAIC, 2007. *Final Record of Decision for Soil and Dry Sediment at the Erie Burning Grounds (RVAAP-02), Ravenna Army Ammunition Plant, Ravenna, Ohio*, September 2007.

SAIC, 2008. *Final Removal Action Report for the RVAAP- 49 Central Burn Pits, Ravenna Army Ammunition Plant, Ravenna, Ohio*, December 5, 2008.

SAIC, 2009. *Final Record of Decision for Soil and Dry Sediment at RVAAP- 49 Central Burn Pits at Ravenna Army Ammunition Plant, Ravenna Army Ammunition Plant, Ravenna, Ohio*, April 21, 2009.

SAIC, 2010a. *Final Remedial Action Report for the RVAAP-16 Fuze and Booster Quarry Landfill/Ponds, Ravenna Army Ammunition Plant, Ravenna, Ohio*, March 5, 2010.

SAIC, 2010b. *Final Site Characterization and Focused Feasibility Study Work Plan for the RVAAP-51 Dump along Paris-Windham Road at Ravenna Army Ammunition Plant.* August 5, 2010.

SAIC, 2011a. *Final Engineering Evaluation for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill, Ravenna Army Ammunition Plant, Ravenna, Ohio*, September 2, 2011.

SAIC, 2011b. *Final Historical Records Review Report for the 2010 Phase I Remedial Investigation Services at Compliance Restoration Sites (9 Areas of Concern), Revision 0, Ravenna Army Ammunition Plant, Ravenna, Ohio*, December 22, 2011.

SAIC, 2012. *Draft Phase II Remedial Investigation Report and Feasibility Study for Soil, Sediment, and Surface Water at RVAAP-38 NACA Test Area, Ravenna Army Ammunition Plant, Ravenna, Ohio,* February 17, 2012.

Shaw Environmental, Inc. (Shaw), 2012. *Draft Phase I Remedial Investigation Report for RVAAP-34 Sand Creek Disposal Road Landfill, Version 1.0, Ravenna Army Ammunition Plant, Ravenna, Ohio*, July 19, 2012.

Shaw, 2014. *Final Remedial Investigation Report for RVAAP-050-R-01 Atlas Scrap Yard MRS, Version 2.0, Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio,* August 25, 2014.

Tetra Tech, 2018. *Final Remedial Action Completion Report for the Soil Removal Remedy at RVAAP-05 Winklepeck Burning Grounds, Former Ravenna Army Ammunition Plant, Camp Ravenna, Portage and Trumbull Counties, Ohio,* February 2018.

URS Group, Inc., 2010. *Final Sampling and Analysis of Soils Below Floor Slabs at RVAAP- 08 Load Line 1 and Other Building Locations, Ravenna Army Ammunition Plant, 8451 St. Route 5, Ravenna, OH 44266-9297,* September 17, 2010.

U.S. Army Corps of Engineers (USACE), 2012a. *Final First Installation-Wide Five-Year Review Report for RVAAP-01 Ramsdell Quarry Landfill, RVAAP-05 Winklepeck Burning Grounds, RVAAP-08 Load Line 1, RVAAP-09 Load Line 2, RVAAP-10 Load Line 3, RVAAP-11 Load Line 4, and RVAAP-12 Load Line 12*, *Ravenna Army Ammunition Plant, Ravenna, Ohio*, August 2012.

USACE, 2012b. *Final Work Plan for Additional Evaluation of the RVAAP-05 Winklepeck Burning Grounds RVAAP/Camp Ravenna, Ravenna, Ohio, Revision 0,* October 29, 2012.

USACE, 2015a. *Final Site Characterization and Focused Feasibility Study for the RVAAP-51 Dump Along Paris-Windham Road Revision 1 for Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio*. December 15, 2015.

USACE, 2015b. *Final No Further Action Record of Decision for RVAAP-062-R-01 Water Works #4 Dump Munitions Response Site Version 1.0 for Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio.* September 29, 2015.

USACE, 2017a. *Draft Record of Decision for Soil, Sediment, and Surface Water at RVAAP-51 Dump Along Paris-Windham Road for Former Ravenna Army Ammunition Plant/Camp Ravenna, Portage and Trumbull Counties, Ohio.* May 16, 2017.

USACE, 2017b. *Draft Revised Property Management Plan for the Designated Areas of Concerns and Munitions Response Sites – Version 2.0 Ravenna Army Ammunition Plant Ravenna, Ohio*. April 24, 2017.

USACE, 2018. *Final Revised Property Management Plan for the Designated Areas of Concerns and Munitions Response Sites – Version 2.0 Ravenna Army Ammunition Plant Ravenna, Ohio*.

Vista Technologies, Inc. (Vista), 1998. *Environmental Baseline Survey for the Ravenna Army Ammunition Plant, Final Report*, September 25, 1998.

Appendix A

2014 Ohio EPA Interoffice Memorandum, Solid Waste Regulations Governing Material Found during Investigations at Ravenna's AOCs

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

2018 Ohio EPA Memorandum, Applicability of Ohio Administrative Code 3745-27-13, Former Ravenna Army Ammunition Plant/Camp Ravenna

Ohio Environmental Protection Agency

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

August 30, 2018

Mr. David Connolly
RVAAP Restoration Program Manager
Army National Guard Directorate
National Guard Bureau
111 South George Mason Drive
Arlington, VA 22204-1373

Re: US Army Ravenna Ammunition Plt RVAAP
Director's Authorization
Correspondence
Remedial Response
Portage County
267000859138

Subject: Applicability of Ohio Administrative Code 3745-27-13 at the Proposed Multi-Purpose Machine Gun (MPMG) Range Buried Solid Waste Management RVAAP-05, Winklepeck Burning Grounds (267-000859-138), Former Ravenna Army Ammunition Plant/Camp Ravenna

Dear Mr. Connolly:

On Monday August 13, 2018, representatives from the Ohio Environmental Protection Agency (Ohio EPA) and the Ohio Army National Guard (OHARNG) had a conference call to discuss the construction activities for the Multi-Purpose Machine Gun (MPMG) Range at the Winklepeck Burning Grounds (WBG) Area of Concern (AOC) and the applicability of Ohio Administrative Code (OAC) 3745-27-13.

Multi-Purpose Machine Gun (MPMG) Range Construction
OHARNG plans to begin construction activities of the MPMG Range. Construction activities are planned to begin as early as Fall/Winter 2018. Construction of the MPMG Range will result in filling, grading and excavation activities on the WBG AOC. During CERCLA remedial activities conducted at WBG AOC, hazardous and solid wastes have been encountered, removed and disposed of off-property. These removal activities were conducted to address removal of soils that exceed the site-wide cleanup goals.

With the construction of the MPMG, it is anticipated that the construction activities will result in filling, grading and excavating on land where solid wastes were disposed on the WBG AOC.

Applicability of OAC 3745-27-13

Because Ohio EPA and the United States Department of the Army have a 2004 Director's Final Findings and Orders in place, the provision under OAC 3745-27-13(C)(2)(c) applies. This provision states that OAC 3745-27-13 does not apply to filling, grading, excavating, building, drilling, or mining at sites subject to either a written agreement entered into by the director with the federal government or a final order issued by the director; and under which a person will perform corrective or remedial investigation or action, ground water investigation, maintenance action to protect a remedy, or other investigation or action to abate air or water pollution or soil contamination, or to protect public health and safety under Chapter 3734, 3746 or 6111 of the Revised Code.

MPMG Range Environmental Workplan
It is Ohio EPA's understanding that OHARNG created an environmental workplan for this project. Ohio EPA requests OHARNG provide a summary of the activities planned for construction of the MPMG Range. We anticipate that the workplan describes the management of wastes that may include but are not limited to Discarded Military Munitions (DMM), Munitions Constituents (MC), Munitions and Explosives of Concern (MEC), or Unexploded Ordnance (UXO) as well as possible Contaminants, as defined in the 2004 Orders, that may be encountered during the MPMG Range construction activities.

Please make sure the environmental workplan includes:

- Map that shows the proposed layout for the MPMG range on the WBG AOC;
- Describe the proposed filling, grading excavating, building, drilling, or mining. Provide details of where cuts and fills are proposed. Ensure the existing monitoring wells are identified on the map and steps are made to ensure the monitoring wells are not damaged during the construction activities.
- Controls of air emissions, control surface water run-on/run-off, explosive and gas migration and protection of ground water.
- Waste characterization, management and disposal plan; and
- Worker safety.

ACTION ITEMS:
Ohio EPA requests you submit a copy of this environmental workplan for the MPMG Range project prior to implementing the MPMG construction on the WBG AOC. Ohio EPA's approval of this workplan is not required prior to starting this work.

Within 30 days of completion of the MPMG Range Construction, provide Ohio EPA with a summary report describing if wastes were encountered, and how they were managed and disposed. Include disposal manifests in this summary report. If wastes were encountered but remains in place, provide a figure showing the location, depth, estimated volume and nature of wastes.

Ohio EPA's Northeast District Office staff are consulting with our legal office and Central Office management staff regarding the applicability of OAC 3745-37-13(C)(2)(c) to other areas on the Ravenna Army Ammunitions Plant (RVAAP).

If you have any questions or concerns, please do not hesitate to contact me at (330) 963-1293.

Sincerely,

Mark S. Johnson Jr., Environmental Manager
Division of Environmental Response and Revitalization

MJ/nvp

ec: Kevin Sedlak, ARNG-ILE, Camp Ravenna
David Connolly, Army National Guard
Craig Coombs, USACE, Louisville District
Bob Princic, Ohio EPA, NEDO-DERR
Katie Tate, OHARNG, Camp Ravenna
Timothy Morgan, OHARNG, Camp Ravenna
Tom Schneider, Ohio EPA, SWDO-DERR
Mark Johnson, Ohio EPA, NEDO, DERR

Appendix C

Intrusive Investigation Trip Report

Page Intentionally Left Blank

This trip report documents the intrusive investigation activities performed by AECOM at Camp Ravenna 11-13 December 2017. RVAAP-11 (also called Load Line 4) and Site O were identified during the visual assessment survey as sites that required further geophysical investigation to characterize and delineate solid waste. In accordance with the Field Change Request Form (**Attachment A**) approved by Ohio Army National Guard (OHARNG) and Ohio Environmental Protection Agency (OHEPA) on 7 December 2017, AECOM proceeded directly to intrusive investigations at RVAAP-11 and Site O in lieu of geophysical surveys. **Figure 1** identifies locations RVAAP-11 and Site O at Camp Ravenna. The intrusive investigation activities for each day are summarized below. AECOM excavated test pits at three mounds at RVAAP-11 and at a hummocky area at Site O identified during the visual assessment survey and established in the Field Change Request Form. The field team documented the work with detailed notes and photographs. Every test pit was photographed and GPS locations were collected. The field team also noted any debris or evidence of subsurface debris observed during this field effort. The findings from this investigation will be included in the Solid Waste Management Plan.

Monday, 11 December 2017:

Sarah Gettier and Joe Witte (AECOM) met with Katie Tait (OHARNG) and Kevin Sedlak (Camp Ravenna Restoration Project Manager) at 1340 hours at the Camp Ravenna Environmental Office. A brief meeting to discuss scheduled activities preceded a site visit to the RVAAP-11 and Site O. Katie Tait and Kevin Sedlak provided information about other activities occurring at Camp Ravenna that week, including hunting, range activities, wildlife present (deer, coyote, bear, etc.), and the potential to encounter poachers on installation. They also stated that members of OHEPA would be observing intrusive investigation activities on Wednesday, 13 December 2017. Weather and road conditions were also discussed, as snowfall was forecasted for the following days. AECOM was notified of Camp Ravenna procedural requirements, including checking in with Range Control upon entry and exit of Camp Ravenna, notifying Range Control of any cultural findings, and exiting the installation by 1630 each day. Katie Tait provided AECOM staff with a Camp Ravenna installation map and described the best directions to each site. Keys to the Load Line 4 area (RVAAP-11) were given to Joe Witte for temporary access during investigation activities.

Kevin Sedlak and Katie Tait indicated that the mounds at RVAAP-11 had the potential to be remnants of building demolition or earthen mounds. The hummocky area at Site O was postulated to contain remnants of building foundation based on historical images (**Attachment B**) showing a building at the current Site O location. The group confirmed that, at minimum, five test pits would be excavated at each mound selected for intrusive investigation at RVAAP-11 and the hummocky area at Site O, and that test pits would not exceed 4 feet below ground surface.

The group traveled together to Camp Ravenna Range Control (Building 1037) and checked in with Range Control staff, who alerted AECOM that Site O is west of an active drop zone and the team would be notified to move offsite if training was occurring in the nearby drop zone during site work.

Katie Tait and Kevin Sedlak escorted Joe Witte and Sarah Gettier to RVAAP-11 to view the three mounds and develop a logistical approach for the intrusive investigation. The group determined they would enter the site through the gated entrance on the eastern border of the area and approach the mounds via road. Mound 1 and Mound 2 were visually confirmed. Standing water and heavy vegetation were observed on multiple sides of Mound 1. Downed trees blocked road access to Mound 3. The excavator used for test pitting would be used to

remove downed trees from the Mound 3 access road. Site O was not visited during the pre-investigation site tour.

Tuesday, 12 December 2017:

Sarah Gettier, Joe Witte, and Michael McCarthy (AECOM) met with Kevin Sedlak at 0730 hours at the Camp Ravenna Contractor Building (Building 1036) to discuss health and safety, and the day's activities. A tailgate safety briefing was held; topics included cold weather, vehicle safety, bears, slip/trips/falls, and operating heavy machinery (excavator). AECOM health and safety forms were discussed and signed. Heavy snow was expected throughout the day. All parties mobilized to RVAAP-11 (**Figure 2**) to begin excavating test pits at Mound 1 at 0830 hours. Katie Tait joined the team onsite at 1015 hours, and provided the group with Load Line 4 historical documents depicting these mounds as engineered barricades (**Attachment C**). The documents suggest the engineered barricades were used to reduce blast zone radii during historical Load Line 4 use. Michael McCarthy operated the excavator during the intrusive investigation at both RVAAP-11 and Site O under direction from Sarah Gettier and Joe Witte. A photoionization detector (PID) was used to monitor for volatile organic compounds (VOCs) during test pit excavation activities. PID readings ranged from 0.0 to 0.3 at all RVAAP-11 mound test pits investigated, indicating no hazardous atmosphere present during the intrusive investigation.

In total, five test pits were excavated at Mound 1 (Test Pit 1 – Test Pit 5). The locations of each test pit at Mound 1 are shown on **Figure 3**. Test pits ranged from approximately 3 to 4 feet deep, were approximately 6 feet long, and the width of the excavator bucket. Test Pit 5 at Mound 1 was hand-augered to a depth of 4 feet at the center of the mound. No solid waste was observed at any test pit excavated at Mound 1. Photographs of each test pit excavated at RVAAP-11 during the intrusive investigation are included in the activity photolog (**Attachment D**). Additionally, a stormwater drain and slightly elevated walkway/surface was observed on the southern side of Mound 1.

After the excavation of test pits at Mound 1, the excavator was used to clear the access road to the remaining mounds of fallen trees. Katie Tait left the site at 1115 hours.

All parties mobilized to Mound 2 to begin excavating Test Pit 1 of Mound 2 at 1140 hours. Five test pits were excavated in total at Mound 2 (Test Pit 1 – Test Pit 5). The locations of each test pit at Mound 2 are shown on **Figure 4**. Test pits were approximately 4 feet deep, approximately 6 feet long, and the width of the excavator bucket. Test Pit 5 at Mound 2 was hand-augered to a depth of 4 feet at the center of the mound. Gravel fill was encountered at Test Pit 1 and Test Pit 2. The gravel fill was at each test pit comprised approximately 10% of the excavated materials. The majority of material encountered at Test Pits 1 and 2 at Mound 2 was soil. No gravel fill was observed at any of the remaining test pits, and no solid waste was observed at any test pit excavated at Mound 2 of RVAAP-11. The same walkway observed at RVAAP-11 Mound 1 extended to the north side of Mound 2, and connected with the access road on the west end of the mound.

Excavation at Mound 3 began at 1345 hours. An elevated walkway/surface, similar to that observed at Mounds 1 and 2, was observed abutting the southern side of Mound 3. Additionally, a concrete support structure was observed protruding from the west wall of Mound 3. Sarah Gettier mobilized off installation to travel home at 1400 hours. Five test pits were excavated at Mound 3 (Test Pit 1 – Test Pit 5). The locations of each test pit at Mound 3 are shown on **Figure 5**. Test pits ranged from approximately 4 to 5 feet deep, approximately 6 to 7 feet long, and were the width of the excavator bucket. A concrete "footer," or

foundational support structure, was encountered at Test Pit 3. The footer was approximately 1.5 feet wide, 2 feet tall, and continued north-south, parallel to the eastern wall of Mound 3 beneath the ground surface. The structure appeared intact and is presumed to be an engineered support structure of the mound. No solid waste was observed at any test pit excavated at Mound 3.

Wednesday, 13 December 2017:

Joe Witte and Michael McCarthy met with Kevin Sedlak at 0800 hours at the Camp Ravenna Contractor Building to discuss health and safety, and the day's activities. A tailgate safety briefing was held; topics included cold weather, vehicle safety, bears, slip/trips/falls, icy road conditions, and operating heavy machinery (excavator). AECOM health and safety forms were discussed and signed. Additionally, Kevin Palombo (OHEPA) was expected to observe investigation activities beginning at 1000 hours. All parties mobilized to Site O (**Figure 6**) to begin excavating test pits at 0845 hours. Under Kevin Sedlak's direction, AECOM staff decided to leave all test pits open for OHEPA inspection upon their arrival. AECOM staff would backfill excavated materials to their originating test pits after OHEPA inspection. A PID was used to monitor for volatile organic compounds during test pit excavation activities. PID readings ranged from 0.0 to 0.1 at all Site O test pits investigated, indicating no hazardous atmosphere present during the intrusive investigation. In total, eight test pits were excavated at Site O (**Figure 7**). Photographs of each test pit excavated at Site O during the intrusive investigation are included in the activity photolog (**Attachment D**). The summary below details intrusive investigation activities at Site O.

Excavation of Test Pit 1 at Site O was completed at 0915 hours. Test Pit 1 was excavated from the southern edge of a mound on the southern border of the hummocky area at Site O and approximately 4 feet deep, 7 feet long, and the width of the excavator bucket. Asphalt pieces were encountered in Test Pit 1, and a single piece of asphalt was observed approximately 10 feet south of Test Pit 1 on flat ground. Besides asphalt, no other debris was encountered at Test Pit 1. Approximately 90% of the material excavated from Test Pit 1 was soil.

Excavation of Test Pit 2 at Site O was completed at 0930 hours. Test Pit 2 was excavated from the southern edge of a mound west of Test Pit 1 on the southern border of the hummocky area at Site O. Test Pit 2 was excavated to approximately 4 feet deep, 6 feet long, and the width of the excavator bucket. Asphalt pieces, concrete pieces, and steel rebar were encountered in Test Pit 3. Similar to Test Pit 1, approximately 90% of the material excavated from Test Pit 1 was soil.

Excavation of Test Pit 3 at Site O was completed at 0940 hours. Test Pit 3 was excavated from the eastern edge of a mound west of Test Pit 2 on the southern border of the hummocky area at Site O. Test Pit 3 was excavated to approximately 3 feet deep, 6 feet long, and the width of the excavator bucket. No solid waste or building/road related debris was observed in Test Pit 3; however, a small, empty glass vial was encountered found. Kevin Sedlak mobilized offsite to the Camp Ravenna entrance to receive members of OHEPA. AECOM staff continued with investigation activities.

Excavation of Test Pit 4 at Site O was completed at 0945 hours. Test Pit 4 was excavated from the edge of a mound on the southwestern border of the hummocky area at Site O. Concrete debris was observed immediately adjacent to Test Pit 4. More concrete rubble was observed in the excavated material from the test pit. Test Pit 4 was excavated to approximately 3.5 feet deep, 5 feet long, and the width of the excavator bucket. Natural soil was encountered at the pit's maximum depth (3.5 feet).

Excavation of Test Pit 5 at Site O was completed at 0955 hours. Test Pit 5 was excavated from the edge of a mound approximately 15 feet north of Test Pit 4. A small piece of wooden debris was observed in the excavated material from the test pit. Test Pit 5 was excavated to approximately 4 feet deep, 5 feet long, and the width of the excavator bucket. Natural soil was encountered at the pit's maximum depth (4 feet).

Excavation of Test Pit 6 at Site O was completed at 1000 hours. Test Pit 6 was excavated from north-center interior of the hummocky area at Site O. An even mixture of soil and gravel fill was encountered in the excavated material from the test pit. Test Pit 6 was excavated to approximately 5 feet deep, 5 feet long, and the width of the excavator bucket. A piece of concrete debris with steel support was observed west of Test Pit 6. The debris is likely foundation material from the former building that occupied the space.

Excavation of Test Pit 7 at Site O was completed at 1005 hours. Test Pit 7 was excavated approximately 20 feet east of Test Pit 6 from north-center interior of the hummocky area at Site O. No solid waste or debris was observed in the excavated material from the test pit. Test Pit 7 was excavated to approximately 4 feet deep, 5 feet long, and the width of the excavator bucket.

Kevin Sedlak returned to Site O with Katie Tait, Kevin Palombo (OHEPA) and Josh Adams (OHEPA) during the excavation of Test Pit 7. All parties engaged in a brief health and safety discussion, signed AECOM health and safety forms, and then walked to the previously excavated test pits to observe their contents. Michael McCarthy began excavating Test Pit 8 while the remaining staff discussed the site, the intrusive investigation, and the findings of each pit. Upon observing Test Pits 1 through 7 at Site O, Kevin Palombo was satisfied with test pit locations and depths.

Excavation of Test Pit 8 at Site O was completed at 1045 hours. Test Pit 8 was excavated from north-eastern boundary of the hummocky area at Site O. A foundational concrete support structure and steel rebar was observed within Test Pit 8. The debris encountered was similar to that observed in the vicinity of Test Pit 6. Test Pit 8 was excavated to approximately 5 feet deep, 6 feet long, and the width of the excavator bucket. Besides the concrete debris and steel support observed, all other contents observed in Test Pit 8 was soil.

At 1100 hours, OHARNG and OHEPA staff completed their inspection of all eight open test pits at Site O. AECOM staff began backfilling each test pit, beginning with Test Pit 8. OHEPA staff left the site, accompanied by Katie Tait. At 1130 hours all eight test pits at Site O were backfilled, the intrusive investigation was complete, and AECOM staff left the installation.

Summary:

- All work associated with the RVAAP-11 and Site O intrusive investigation was completed as planned.
- No health and safety incidents occurred.
- OHEPA indicated their satisfaction with investigation test pit locations and depths.

Attachment A

Field Change Request Form Approved by OHARNG and OHEPA

Field Change Request (FCR)

FCR NO. 1 DATE INITIATED: 11/30/2017

PROJECT Evaluation, Identification, and Management of Potential Solid Waste Sites, Former Ravenna Army Ammunition Plant/Camp Ravenna Joint Military Training Center, Portage and Trumbull Counties, Ohio

CONTRACT NO W9133L-14-D-0001 Delivery Order No. 0004

REQUESTOR IDENTIFICATION

NAME Sarah Gettier, P.E. ORGANIZATION AECOM Technical Services PHONE 301-820-3166

TITLE Project Manager SIGNATURE Sarah Gettier

BASELINE IDENTIFICATION

BASELINE(S) AFFECTED ☐Cost ☐ Scope ☐Milestone ☒ Method of Accomplishment

AFFECTED DOCUMENT (TITLE, NUMBER AND SECTION):
Final Work Plan, Evaluation, Identification, and Management of Potential Solid Waste Sites, Section 3.2

DESCRIPTION OF CHANGE:

It is proposed that performing a geophysical survey is not warranted at the two sites identified in the Visual Assessment Survey Report (VASR) which were selected for further field investigation. Section 2.4.2 of the Work Plan states, "if necessary, field personnel will perform a geophysical survey and/or intrusive investigations (see Section 3.2)." It is recommended that the field investigation proceed directly to intrusive investigation (5 test pits per area). A total of 15 test pits will be conducted at RVAAP-11 and 5 test pits at Site O.

JUSTIFICATION:

Geophysical surveys would be used to delineate the extent of suspected subsurface solid waste. Upon further discussion with a geophysicist and after additional aerial photography analysis, it was determined that a geophysical investigation would not identify or classify the potential solid waste present. The two sites identified by the VASR (RVAPP-11 and Site O) are above ground and have visually identifiable boundaries. Intrusive investigations of these two sites will provide a more definitive visual confirmation and aid in the classification of the solid waste.

IMPACT OF NOT IMPLEMENTING REQUEST

Intrusive investigation is the more appropriate method for classifying the potential solid wastes and meets the project requirements.

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST

AECOM Technical Services, ARNG, Ohio EPA

COST ESTIMATE: $0 ESTIMATOR SIGNATURE Not Applicable (N/A)

PHONE N/A DATE N/A

PREVIOUS FCR AFFECTED ☐YES ☒NO; IF YES, FCR NO.

ARNG DIRECTORATE [signature] 5 Dec 2017

OHIO EPA PROJECT MANAGER [signature] DATE Dec 7, 2017

AECOM H&S MANAGER SIGNATURE N/A DATE

Attachment B

Site O Historical Aerial Imagery

Camp Ravenna

0 200 400 800
Feet

1950

G:\Projects\USACE\OH-Ravenna\Ravenna_Area_O.mxd aer 11/13/2017

Camp Ravenna

0 200 400 800 Feet

1966

G:\Projects\USACE\OH-Ravenna\Ravenna_Area_O.mxd aer 11/13/2017

Camp Ravenna

0 200 400 800
Feet

1997

G:\Projects\USACE\OH-Ravenna\Ravenna_Area_O.mxd aer 11/13/2017

Attachment C

Load Line 4 Historical Documents

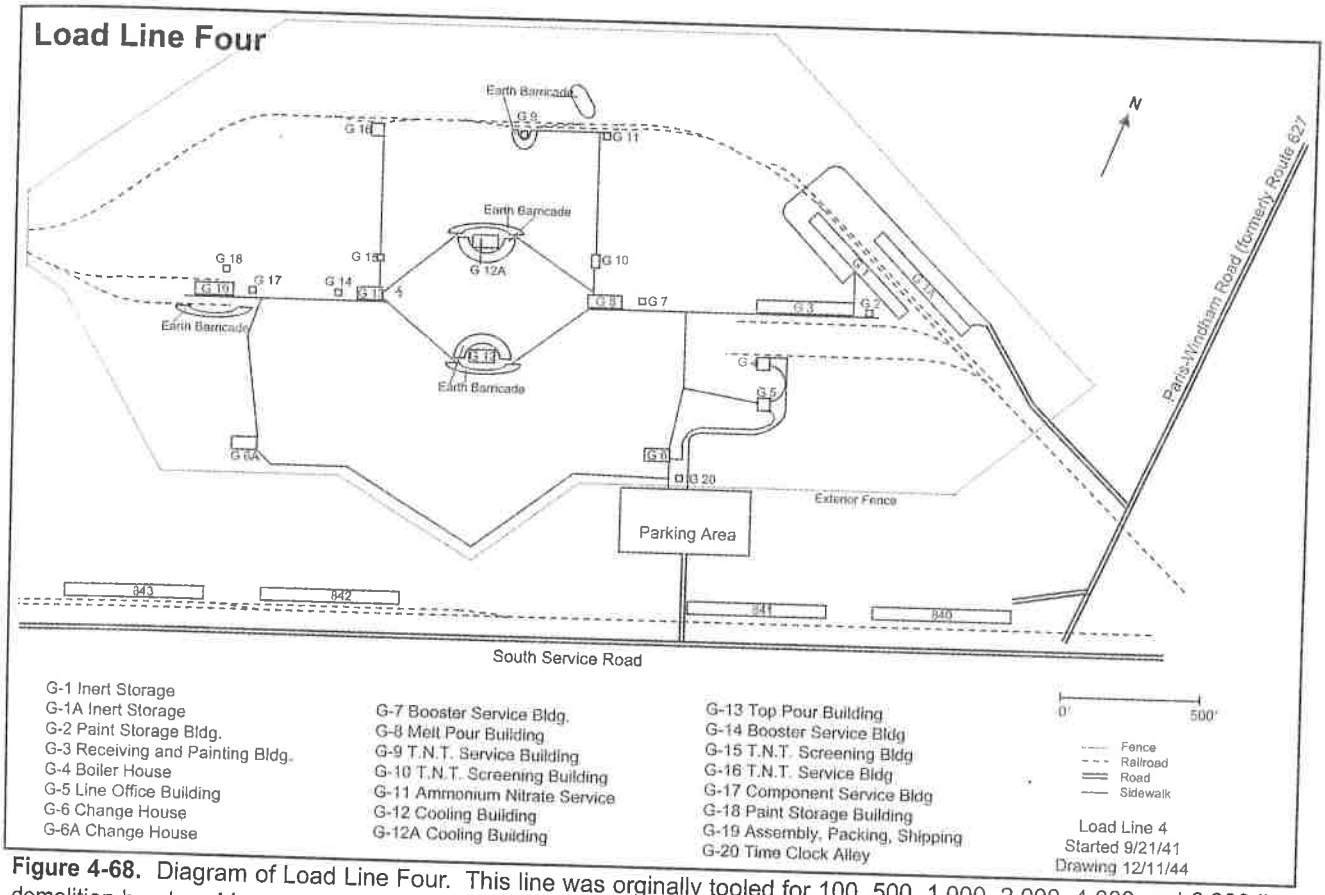


Figure 4-68. Diagram of Load Line Four. This line was orginally tooled for 100, 500, 1,000, 2,000, 4,000 and 6,000 lb. demolition bombs. *Map adapted from original 1944 drawing.*

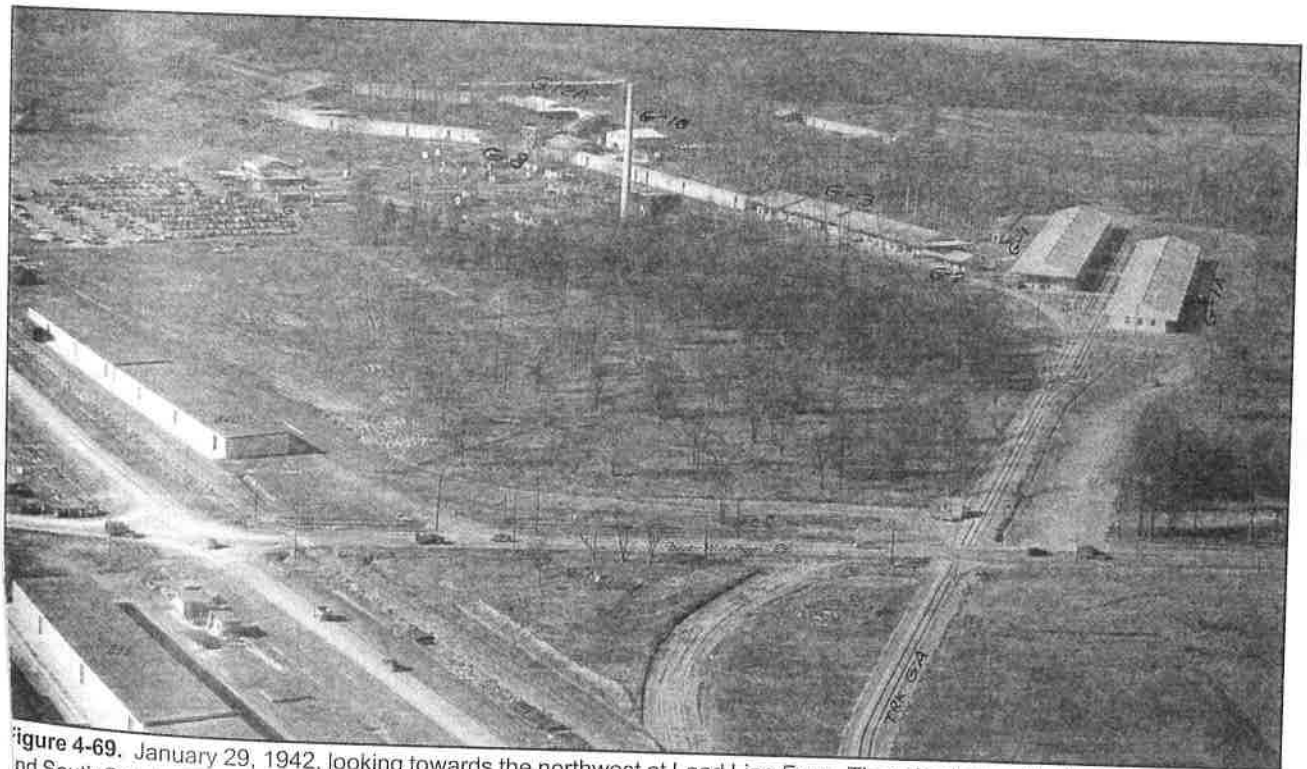
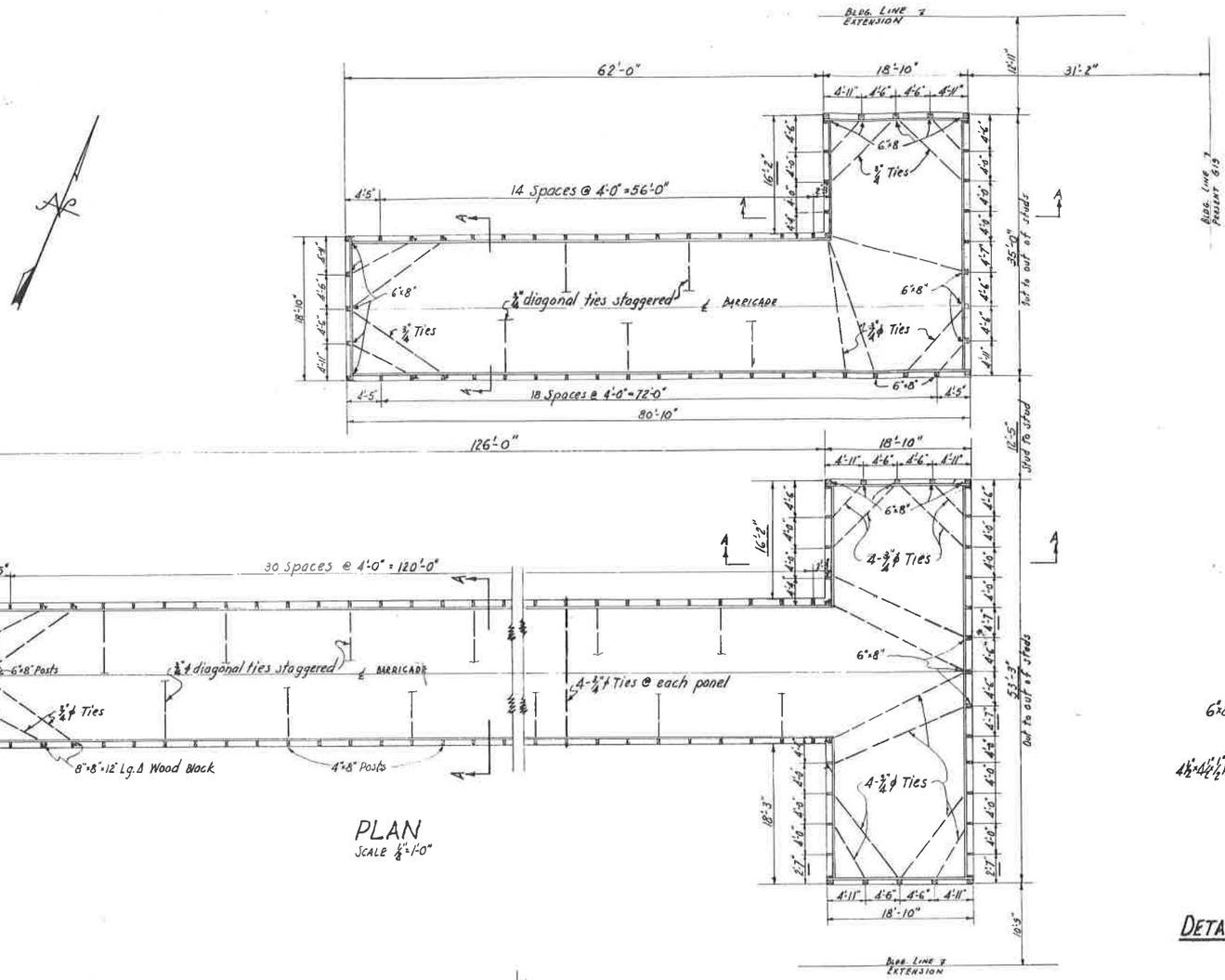
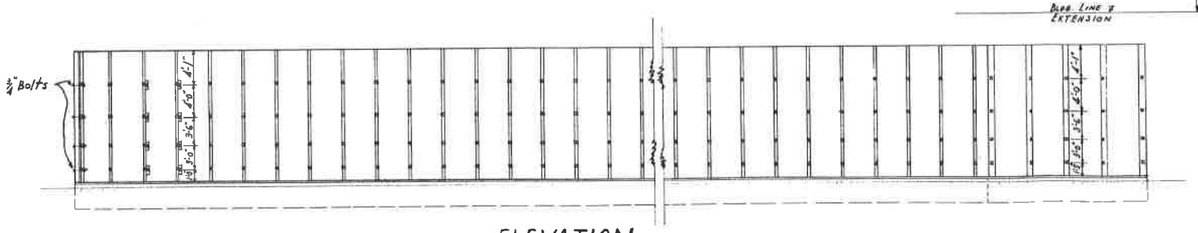


Figure 4-69. January 29, 1942, looking towards the northwest at Load Line Four. There is plenty of traffic on Paris-Windam and South Service Roads, and there are at least 200 vehicles in the parking lot. This plant appears to be complete, but there is still plenty of construction in the area. At the bottom center, railroad ties are lined up to build the line running parallel to South Service Road. *Portage County Historical Society Collection*

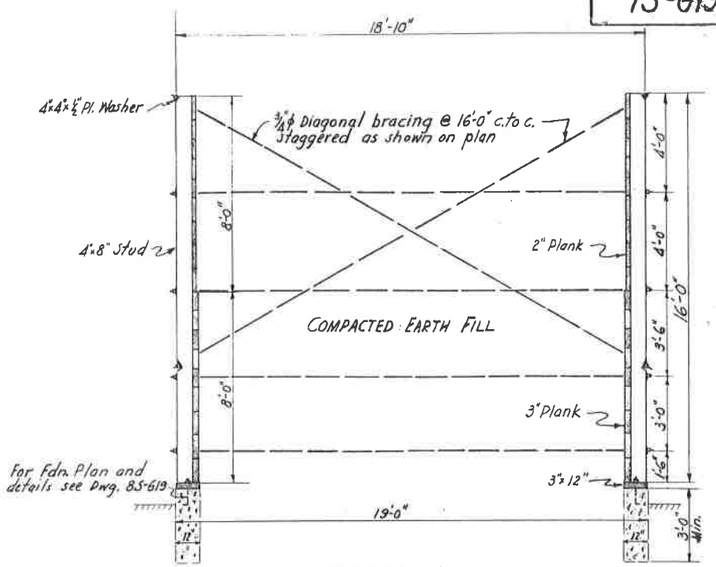
7S-619



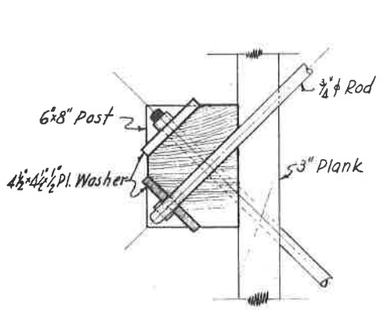
PLAN
SCALE 1/8"=1'-0"



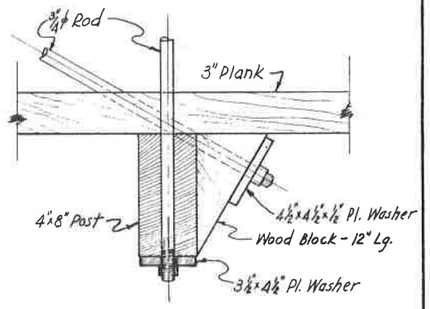
ELEVATION
SCALE 1/8"=1'-0"



SECTION A-A
SCALE 3/8"=1'-0"



DETAIL OF CONNECTIONS 6"x8" POSTS
SCALE 3"=1'-0"



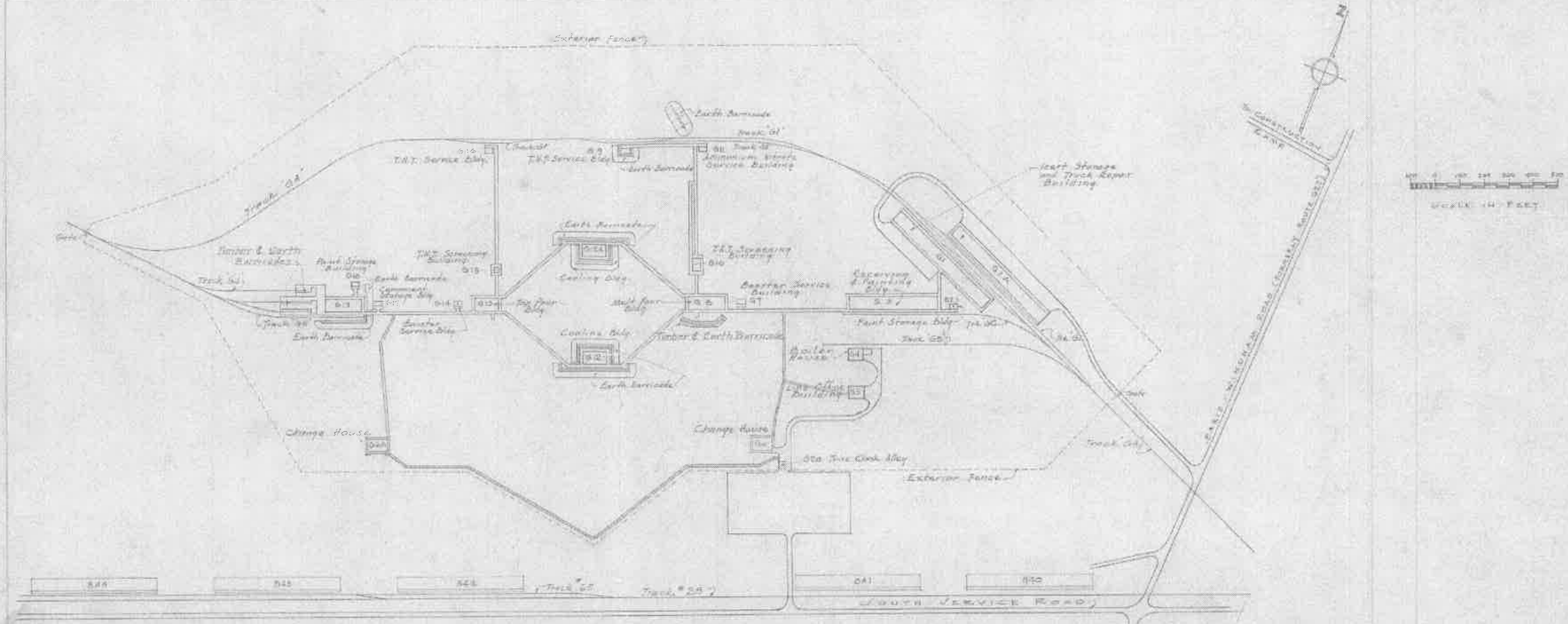
DETAIL OF CONNECTIONS - 4"x8" POSTS
SCALE 3"=1'-0"

NOTE
For complete details of barricade locations and bldg. extension foundation plan see Dwg. 85-619)

RAVENNA ARMY AMMUNITION PLANT RAVENNA, OHIO OPERATED BY RAVENNA ARSENAL, INC.			
APPROVED	SIGNATURE	DATE	TITLE
SAFETY			LOAD LINE N° 4 PROJ. 233 EARTH FILLED TIMBER BARRICADES SHIPPING BUILDING G19
TECHNICAL MANAGER			
PRODUCTION			
ENGINEERING			
GENERAL MANAGER			REF. DWG NO.
COMMANDING OFFICER			DRWN. GLR CHKD. ENGR.
			DATE 5/19/69 412.305
			SCALE AS SHOWN

THIS REPRODUCIBLE MADE FROM ORIGINAL PENCIL CONSTRUCTION DRAWING

7S-619



EXPLOSIVE LIMITS FOR BUILDINGS ON LOAD LINE #4

BLDG. NO.	NAME OF BUILDING		EXPLOSIVE LIMITS
G-1	INERT STORAGE		—
G-1A	INERT STORAGE		—
G-2	PAINT STORAGE BLDG.		—
G-3	RECEIVING & PAINTING BLDG.		—
G-4	BOILER HOUSE		—
G-5	LINE OFFICE BLDG.		—
G-6	CHANGE HOUSE		—
G-6A	CHANGE HOUSE		—
G-7	BOOSTER SERVICE BLDG.		1600#
G-8	MELT POUR BUILDING	BAY "A"	Hopper Room 7250#
			Melt and Mixer Rm. 4000#
			Drain-off Room 8000#

BLDG. NO.	NAME OF BUILDING		EXPLOSIVE LIMITS
G-8	MELT POUR BUILDING (Continued)	BAY "B"	Booster & Thum Make-up 4000#
			Booster Storage 750#
			Booster Service 100#
		BAY "C"	Calibration 2500#
G-9	T.N.T. SERVICE BUILDING		25000#
G-10	T.N.T. SCREENING BUILDING		6000#
G-11	AMMONIUM NITRATE SERVICE BUILDING		0#
G-12	COOLING BUILDING		3 Bays-each 51000#
G-12A	COOLING BUILDING		3 Bays-each 51,000#

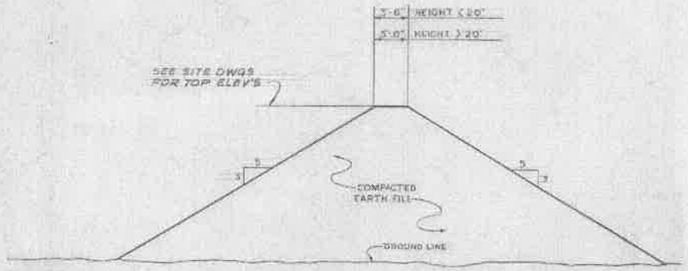
BLDG. NO.	NAME OF BUILDING	EXPLOSIVE LIMITS
G-13	TOP POUR BUILDING	Melt Room 1500#
		Puttering Room 1000#
		Top-off & Boostering 17,500#
G-14	BOOSTER SERVICE BUILDING	2500#
G-15	T.N.T. SCREENING BUILDING	500#
G-16	T.N.T. SERVICE BUILDING	15,000#
G-17	COMPONENT SERVICE BUILDING	2500#
G-18	PAINT STORAGE BUILDING	—
G-19	ASSEMBLY, PACKING & SHIPPING BLDG.	100,000#

BD 542½ – R.W.B. 12-11-44

LOAD LINE 4#

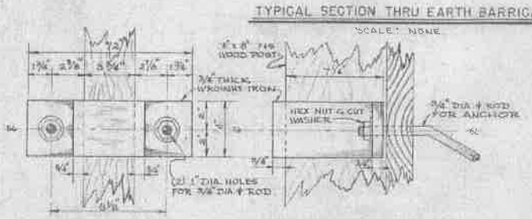
CORPS OF ENGINEERS

U. S. ARMY



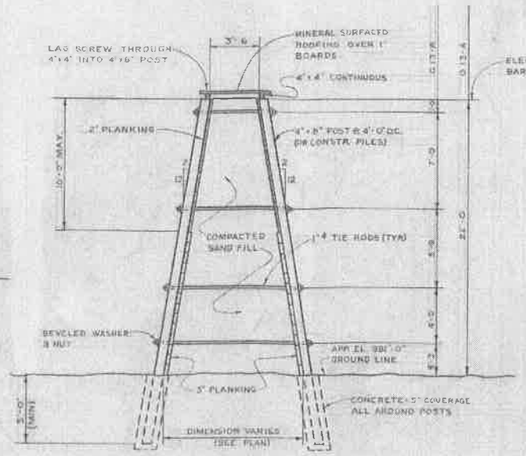
TYPICAL SECTION THRU EARTH BARRICADES

SCALE: 1" = NONE

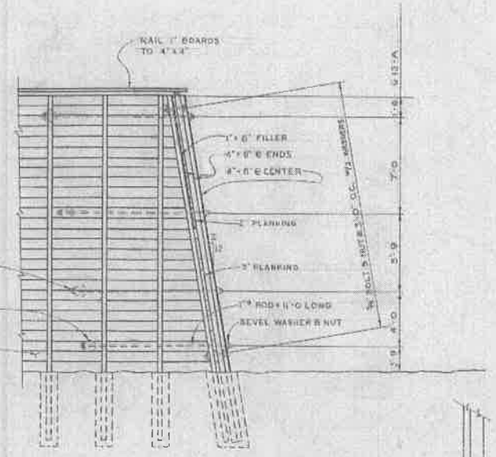


DETAIL OF WROUGHT IRON SADDLE

SCALE: 3" = 1'-0"



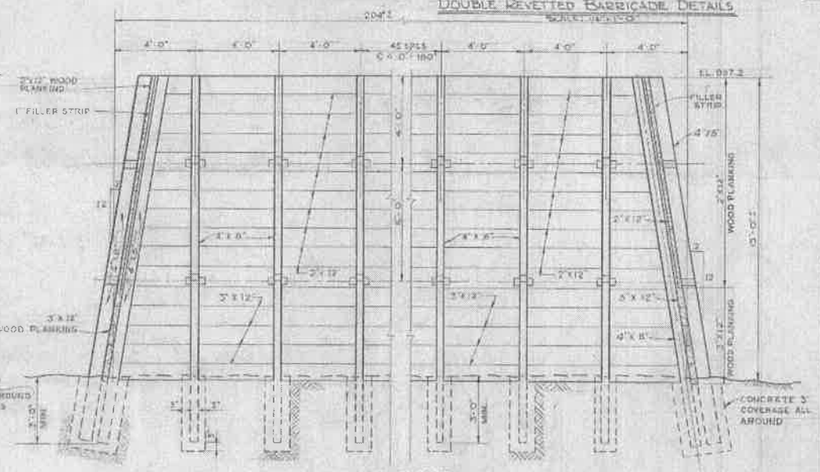
CROSS - SECTION



PARTIAL ELEVATION

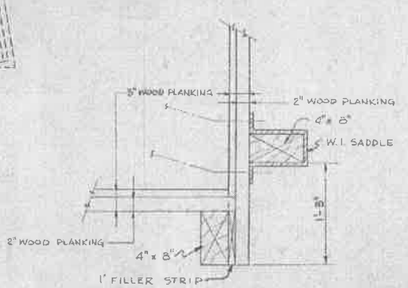
DOUBLE REVETTED BARRICADE DETAILS

SCALE: 1/8" = 1'-0"



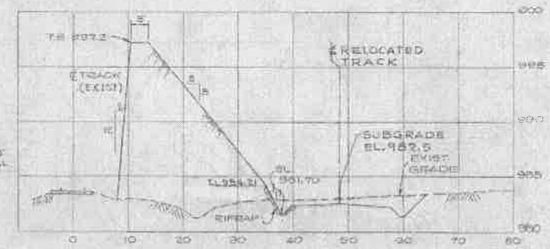
SOUTH ELEVATION

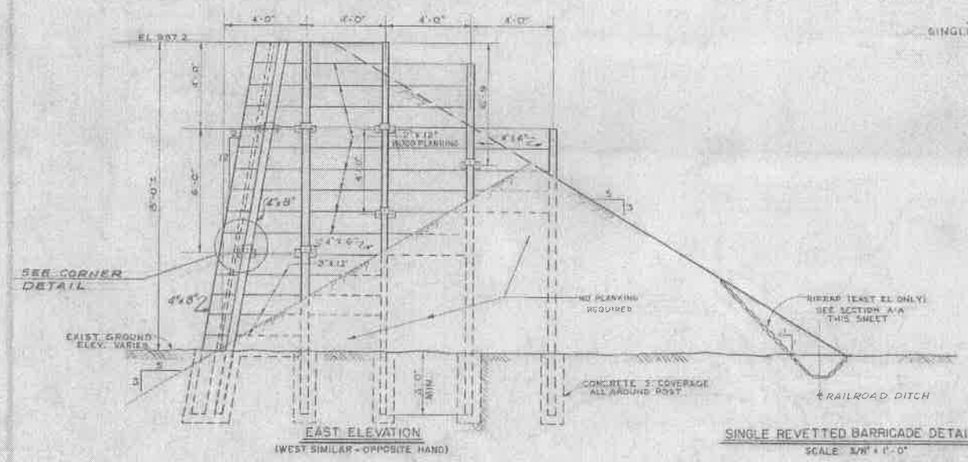
SINGLE REVETTED BARRICADE



CORNER DETAIL

SCALE: 1/2" = 1'-0"



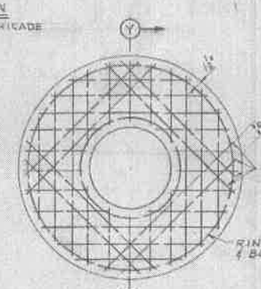


EAST ELEVATION

(WEST SIMILAR - OPPOSITE HAND)

SINGLE REVETTED BARRICADE DETAILS

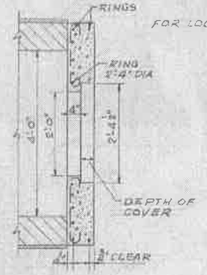
SCALE: 3/16" = 1'-0"



PLAN-SHALLOW MANHOLE CONCRETE COVER & MANHOLE FRAME

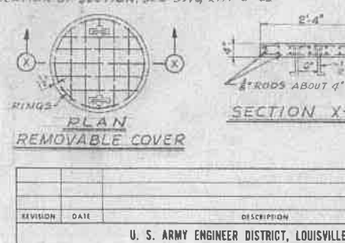
SCALE: 3/4" = 1'-0"

TOP AS SHOWN TO BE USED FOR MHS 1 & 3
BOTTOM PORTION SAME AS SHOWN ON DWG. RAV-6-50



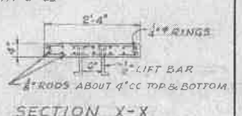
SECTION Y-Y

GRAPHIC SCALES



SECTION A-A

FOR LOCATION OF SECTION, SEE DWG. RAV-6-48



SECTION X-X

REVISION	DATE	DESCRIPTION	BY

U. S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

DESIGNED: W.P.G.	RAVENNA ARMY AMMUNITION PLANT
DRAWN: TRACED:	RAVENNA, OHIO
CHECKED: W.P.G.	SHELL PROCESSING FACILITY
SUBMITTED: [signature]	LOAD LINE 4
SCALE: AS SHOWN	BARRICADE & SHALLOW MANHOLE DETAILS
	DATE: MAR. 1959
	DRAWING NUMBER 37-01-05
	SH. 8

RAV-6-51

RECORD DRAWING-"AS BUILT"

Attachment D

Intrusive Investigation Photolog

..

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 1	Date: 12-12-17

Mound 1

Description:

View facing south from access road

Photo No. 2	Date: 12-12-17

Mound 1 - Test Pit 1

Description:

View facing North

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 3	Date: 12-12-17

Mound 1 – Test Pit 1

Description:

No solid waste observed

Photo No. 4	Date: 12-12-17

Mound 1 – Test Pit 1

Description:

Backfilled Test Pit 1 at Mound 1

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 5	Date: 12-12-17

Mound 1 – Test Pit 2

Description:

View facing west

Photo No. 6	Date: 12-12-17

Mound 1 – Test Pit 2

Description:

No solid waste observed

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 7	Date: 12-12-17

Mound 1 – Test Pit 2

Description:

Backfilled Test Pit 2 at Mound 1

Photo No. 8	Date: 12-12-17

Mound 1 – Test Pit 3

Description:

View facing northwest

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 9	Date: 12-12-17

Mound 1 – Test Pit 3

Description:

No solid waste observed

Photo No. 10	Date: 12-12-17

Mound 1 – Test Pit 3

Description:

Backfilled Test Pit 3 at Mound 1

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 11	Date: 12-12-17

Mound 1 – Test Pit 4

Description:

View from Test Pit 4 facing north towards backhoe on access road

Photo No. 12	Date: 12-12-17

Mound 1 – Test Pit 4

Description:

No solid waste observed

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 13	Date: 12-12-17

Mound 1 – Test Pit 4

Description:

Backfilled Test Pit 4 at Mound 1

Photo No. 14	Date: 12-12-17

Mound 1 – Test Pit 5

Description:

View facing northwest, backhoe and access road in the background. Hand augering Test Pit 5 on top of Mound 1.

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 15	Date: 12-12-17

Mound 1 – Test Pit 5

Description:

Test Pit 5 borehole augered to depth of 4 feet.

Photo No. 16	Date: 12-12-17

Mound 2 – Test Pit 1

Description:

View facing southwest

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 17	Date: 12-12-17

Mound 2 – Test Pit 1

Description:

Soil and gravel fill observed

Photo No. 18	Date: 12-12-17

Mound 2 – Test Pit 1

Description:

Gravel in soil encountered at Test Pit 1 at Mound 2

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 19	Date: 12-12-17

Mound 2 – Test Pit 1

Description:

Backfilled Test Pit 1 at Mound 2

Photo No. 20	Date: 12-12-17

Mound 2 – Test Pit 2

Description:

View facing southwest

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 21	Date: 12-12-17

Mound 2 – Test Pit 2

Description:

Soil and gravel observed

Photo No. 22	Date: 12-12-17

Mound 2 – Test Pit 2

Description:

Soil and gravel in excavated material from Test Pit 2 at Mound 2

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 23 | **Date:** 12-12-17

Mound 2 – Test Pit 2

Description:

Backfilled Test Pit 2 at Mound 2

Photo No. 24 | **Date:** 12-12-17

Mound 2 – Test Pit 3

Description:

View facing southeast

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 25	Date: 12-12-17

Mound 2 – Test Pit 3

Description:

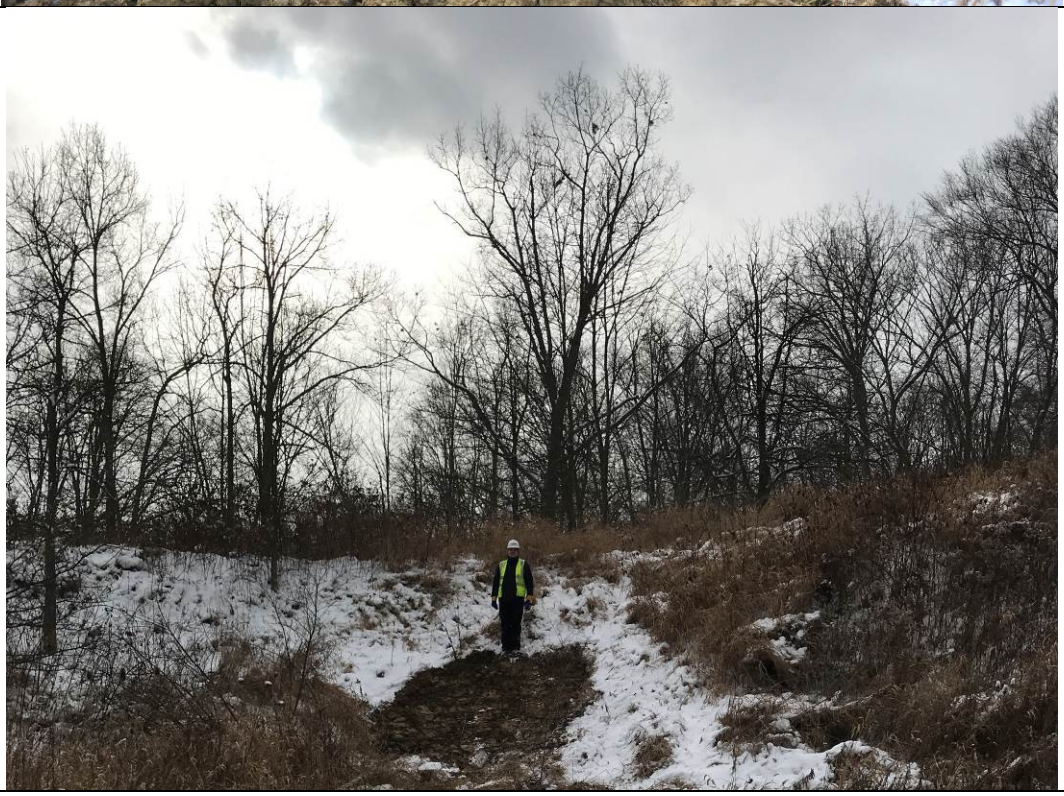
No solid waste observed

Photo No. 26	Date: 12-12-17

Mound 2 – Test Pit 3

Description:

Backfilled Test Pit 3 at Mound 2



AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 27	Date: 12-12-17

Mound 2 – Test Pit 4

Description:

View facing northeast. No solid waste observed.

Photo No. 28	Date: 12-12-17

Mound 2 – Test Pit 4

Description:

Backfilled Test Pit 4 at Mound 2

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 29	Date: 12-12-17

Mound 2 – Test Pit 5

Description:

Hand augering to a depth of 4 feet at Test Pit 5

Photo No. 30	Date: 12-12-17

Mound 3

Description:

View facing SE. Backhoe positioned at Mound 3 Test Pit 1 location

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 31	Date: 12-12-17

Mound 3

Description:

View facing northwest from elevated platform south of Mound 3

Photo No. 32	Date: 12-12-17

Mound 3 – Test Pit 1

Description:

No solid waste observed in excavated material at Mound 3 Test Pit 1. Only soil and rock observed.

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 33	Date: 12-12-17

Mound 3

Description:

Concrete support structure in Mound 3 south of Test Pit 1

Photo No. 34	Date: 12-12-17

Mound 3 – Test Pit 2

Description:

No solid waste observed in Test Pit 2 at Mound 3

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 35	Date: 12-12-17

Mound 3 – Test Pit 2

Description:

Backfilled Test Pit 2 at Mound 3

Photo No. 36	Date: 12-12-17

Mound 3 – Test Pit 3

Description:

View facing southwest

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 37	Date: 12-12-17

Mound 3 – Test Pit 3

Description:

Concrete support structure encountered in Test Pit 3 at Mound 3. No solid waste observed.

Photo No. 38	Date: 12-12-17

Mound 3 – Test Pit 3

Description:

Backfilled Test Pit 3 at Mound 3

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 39	Date: 12-12-17

Mound 3 – Test Pit 4

Description:

View facing southwest

Photo No. 40	Date: 12-12-17

Mound 3 – Test Pit 4

Description:

No solid waste observed

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 41	Date: 12-12-17

Mound 3 – Test Pit 4

Description:

Backfilled Test Pit 4 at Mound 3

Photo No. 42	Date: 12-12-17

Mound 3 – Test Pit 5

Description:

View facing southwest

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	RVAAP-11 (Load Line 4)

Photo No. 43	Date: 12-12-17

Mound 3 – Test Pit 5

Description:

No solid waste observed

Photo No. 44	Date: 12-12-17

Mound 3 – Test Pit 4 and Test Pit 5

Description:

Backfilled Test Pit 4 and Test Pit 5

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	Site O

Photo No. 45 | **Date:** 12-13-17

Site O

Description:

View facing north from North Line Road

Photo No. 46 | **Date:** 12-13-17

Site O

Description:

Eastern edge of hummocky area at Site O. View facing north from North Line Road.

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	Site O

Photo No. 47	Date: 12-13-17

Site O

Description:

View facing north. Wooded area north of Site O.

Photo No. 48	Date: 12-13-17

Site O – Test Pit1, Test Pit 2, and Test Pit 3

Description:

From left to right: Test Pit1, Test Pit 2, and Test pit 3

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	Site O

Photo No. 49	Date: 12-13-17

Site O

Description:

Asphalt piece on ground south of Test Pit 1

Photo No. 50	Date: 12-13-17

Site O – Test Pit 1

Description:

Soil excavated from Test Pit 1. Asphalt pieces encountered at Test Pit 1.

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	Site O

Photo No. 51	Date: 12-13-17

Site O – Test Pit 1

Description:

Asphalt pieces encountered at Test Pit 1

Photo No. 52	Date: 12-13-17

Site O – Test Pit 2

Description:

Soil excavated from Test Pit 2. Concrete debris encountered.

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	Site O

Photo No. 53	Date: 12-13-17

Site O – Test Pit 2

Description:

Concrete debris observed at Test Pit 2

Photo No. 54	Date: 12-13-17

Site O – Test Pit 3

Description:

Soil excavated from Test Pit 3

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	Site O

Photo No. 55	Date: 12-13-17

Site O – Test Pit 3

Description:

Empty glass vial observed in Test Pit 3

Photo No. 56	Date: 12-13-17

Site O – Test Pit1, Test Pit 2, and Test Pit 3

Description:

From left to right: backfilled Test Pit1, Test Pit 2, and Test pit 3

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	Site O

Photo No. 57	Date: 12-13-17

Site O – Test Pit 4

Description:

Soil, concrete debris, and small boulders encountered at observed at Test Pit 4. View facing southeast.

Photo No. 58	Date: 12-13-17

Site O – Test Pit 4

Description:

Concrete debris observed at Test Pit 4

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	Site O

Photo No. 59	Date: 12-13-17

Site O – Test Pit 5

Description:

Soil excavated from Test Pit 5. Wooden debris observed.

Photo No. 60	Date: 12-13-17

Site O – Test Pit 5

Description:

Wooden debris observed from Test Pit 5.

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	Site O

Photo No. 61	Date: 12-13-17

Site O – Test Pit 4 and Test Pit 5

Description:

Backfilled Test Pit 4 and Test Pit 5 at Site O

Photo No. 62	Date: 12-13-17

Site O – Test Pit 6

Description:

Concrete and steel support observed near Test Pit 6

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	Site O

Photo No. 63	Date: 12-13-17

Site O – Test Pit 6

Description:

Soil and gravel observed at Test Pit 6

Photo No. 64	Date: 12-13-17

Mound 3 – Test Pit 6

Description:

Soil and gravel observed at Test Pit 6

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	Site O

Photo No. 65	Date: 12-13-17

Site O – Test Pit 6

Description:

Backfilled Test Pit 6 at Site O

Photo No. 66	Date: 12-13-17

Site O – Test Pit 7

Description:

View facing east. No solid waste observed.

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	Site O

Photo No. 67	Date: 12-13-17

Site O – Test Pit 7

Description:

Backfilled Test Pit 7 at Site O

Photo No. 68	Date: 12-13-17

Site O – Test Pit 8

Description:

View facing northwest.

AECOM

PHOTOGRAPHIC LOG

CRJMTC Intrusive Investigation	Site O

Photo No. 69	Date: 12-13-17

Site O – Test Pit 8

Description:

Concrete debris observed in Test Pit 8

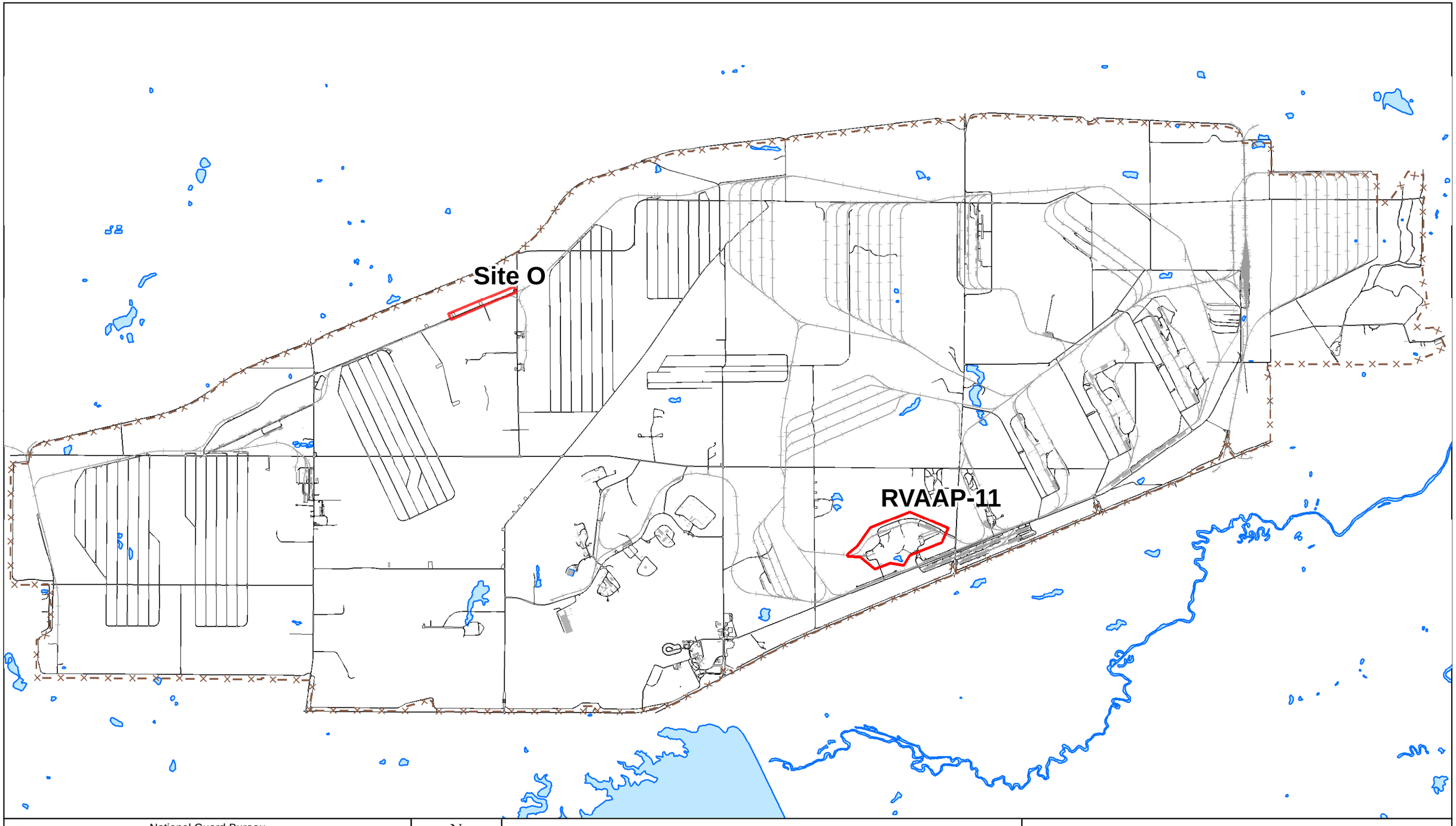
Photo No. 70	Date: 12-13-17

Site O – Test Pit 8

Description:

Backfilled Test Pit 8 at Site O

Figures



CLIENT	National Guard Bureau			
PROJECT	Camp Ravenna - Solid Waste			
0 1,875 3,750 7,500 11,250 Feet				
SCALE	1:45,000	GIS BY	MS	Date: 1/5/2018
		CHK BY	JW	Date: 1/5/2018

N

Legend

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

RVAAP-11 and Site O Locations

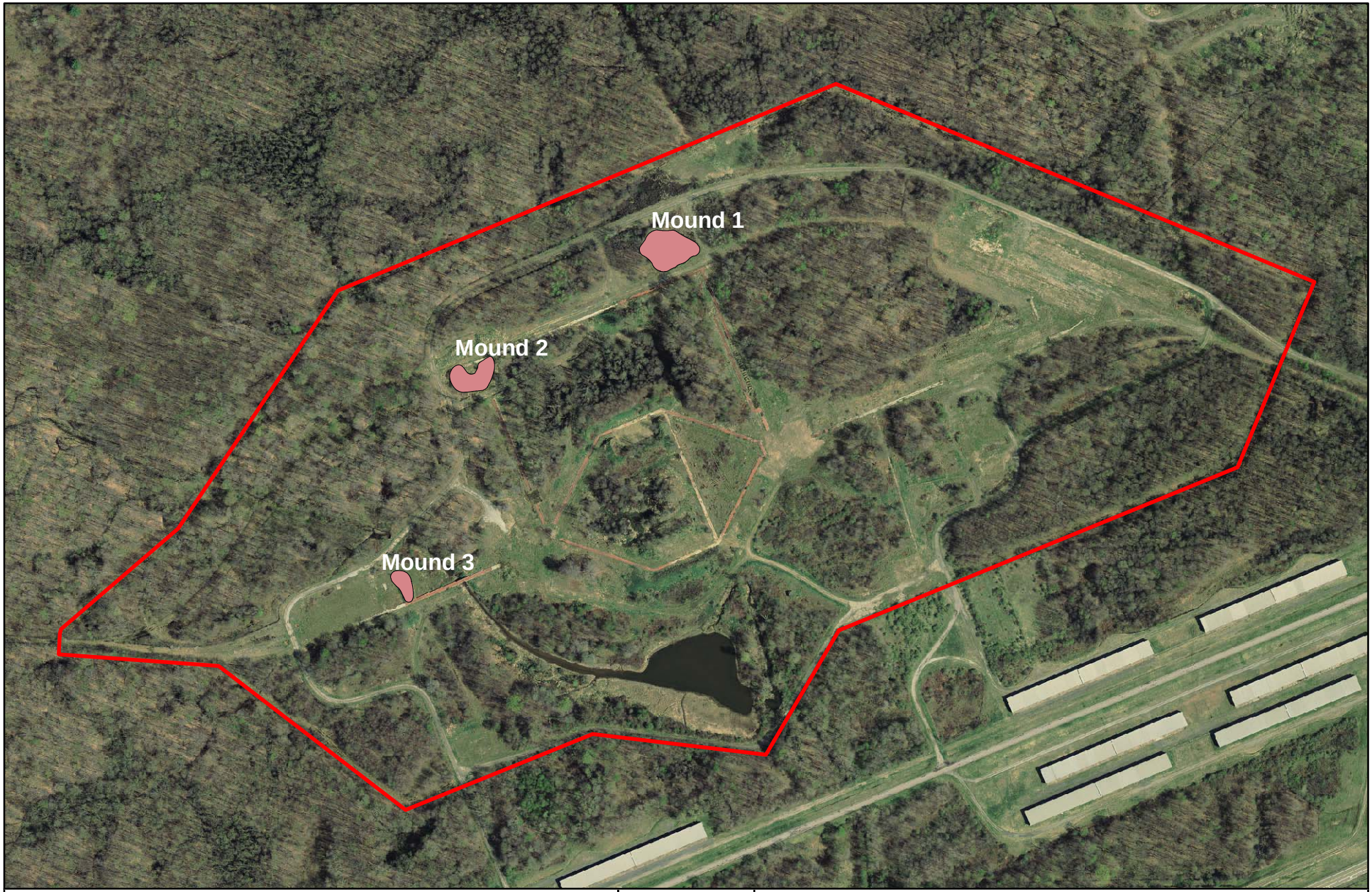
AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Portage County & Trumbull County Ohio

FIGURE 1

Q:\Projects\ENV\GEARS\GEO\NGB IDIQ\Camp Ravenna_solid waste\GIS\IITRP_2017\Fig-1_Ravenna_RVAAP-11_Site-O_Locations.mxd



CLIENT	National Guard Bureau			
PROJECT	Camp Ravenna - Solid Waste			
	0 225 450 900 Feet			
SCALE	1:5,400	GIS BY	MS	1/10/2018
Aerial Source: 2011 Ohio Statewide Orthoimagery Program		CHK BY	JW	1/10/2018

N

TITLE

RVAAP-11 Layout

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Portage County
&
Trumbull County
Ohio

Figure 2

Q:\Projects\ENV\GEARS\GEO\NGB IDIQ\Camp Ravenna_solid waste\GIS\IITRP_2017\Fig-2_RVAAP-11_Layout.mxd

CLIENT	National Guard Bureau			
PROJECT	Camp Ravenna - Solid Waste			
0 25 50 100 Feet				
SCALE	1:600	GIS BY	MS	1/10/2018
Aerial Source: 2011 Ohio Statewide Orthoimagery Program		CHK BY	JW	1/10/2018

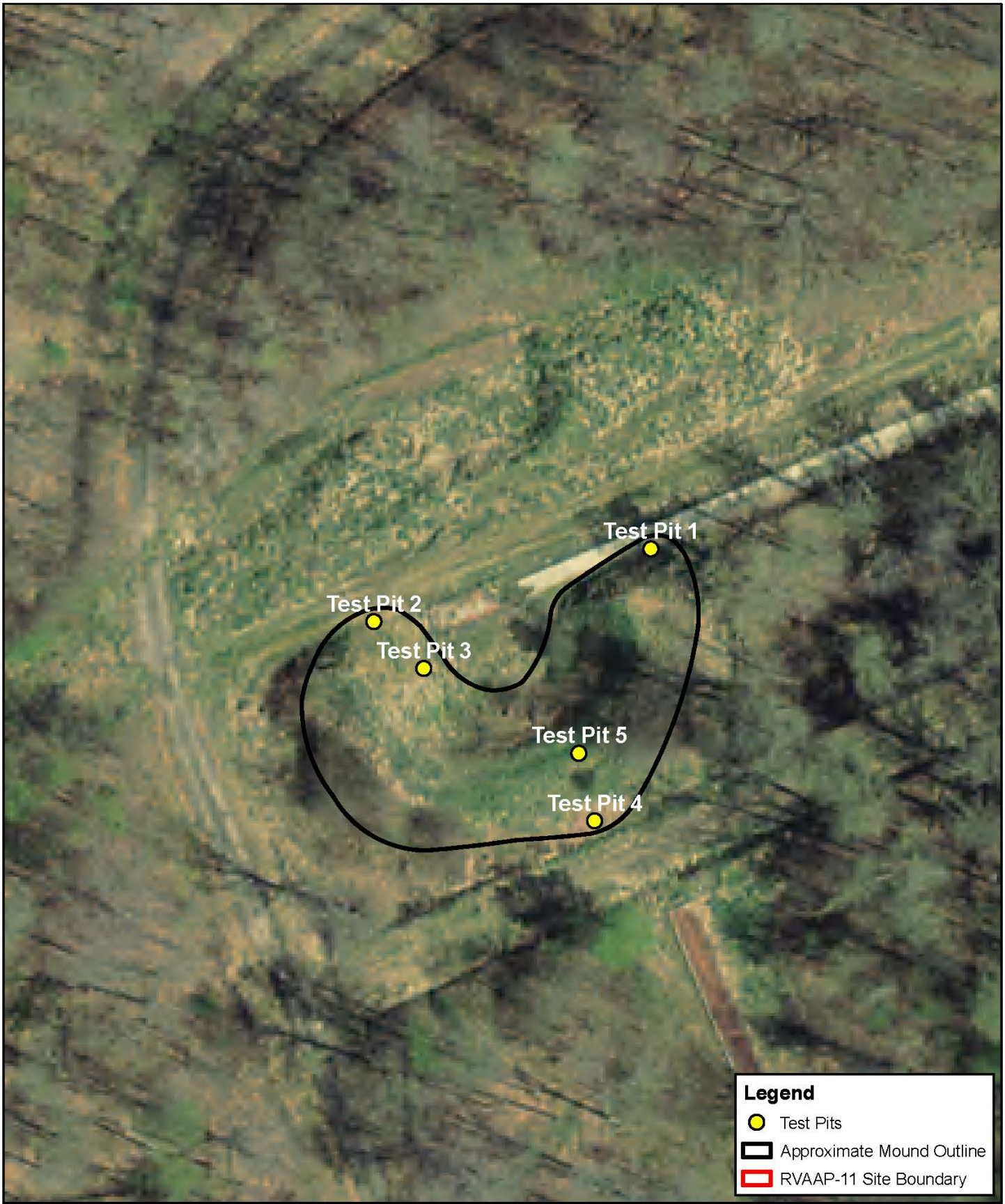
Mound 1 Test Pits

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Portage County & Trumbull County Ohio

Figure 3

Q:\Projects\ENV\GEARS\GEO\NGB IDIQ\Camp Ravenna_solid waste\GIS\ITRP_2017\Fig-3_RVAAP-11_Mound_1.mxd



CLIENT	National Guard Bureau			
PROJECT	Camp Ravenna - Solid Waste			
0 25 50 100 Feet				
SCALE	1:600	GIS BY	MS	1/10/2018
Aerial Source: 2011 Ohio Statewide Orthoimagery Program		CHK BY	JW	1/10/2018

Mound 2 Test Pits

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Portage County & Trumbull County Ohio

Figure 4

Q:\Projects\ENV\GEARS\GEO\NGB IDIQ\Camp Ravenna_solid waste\GIS\IITRP_2017\Fig-4_RVAAP-11_Mound_2.mxd

CLIENT	National Guard Bureau			
PROJECT	Camp Ravenna - Solid Waste			
0 25 50 100 Feet				
SCALE	1:600	GIS BY	MS	1/10/2018
Aerial Source: 2011 Ohio Statewide Orthoimagery Program		CHK BY	JW	1/10/2018

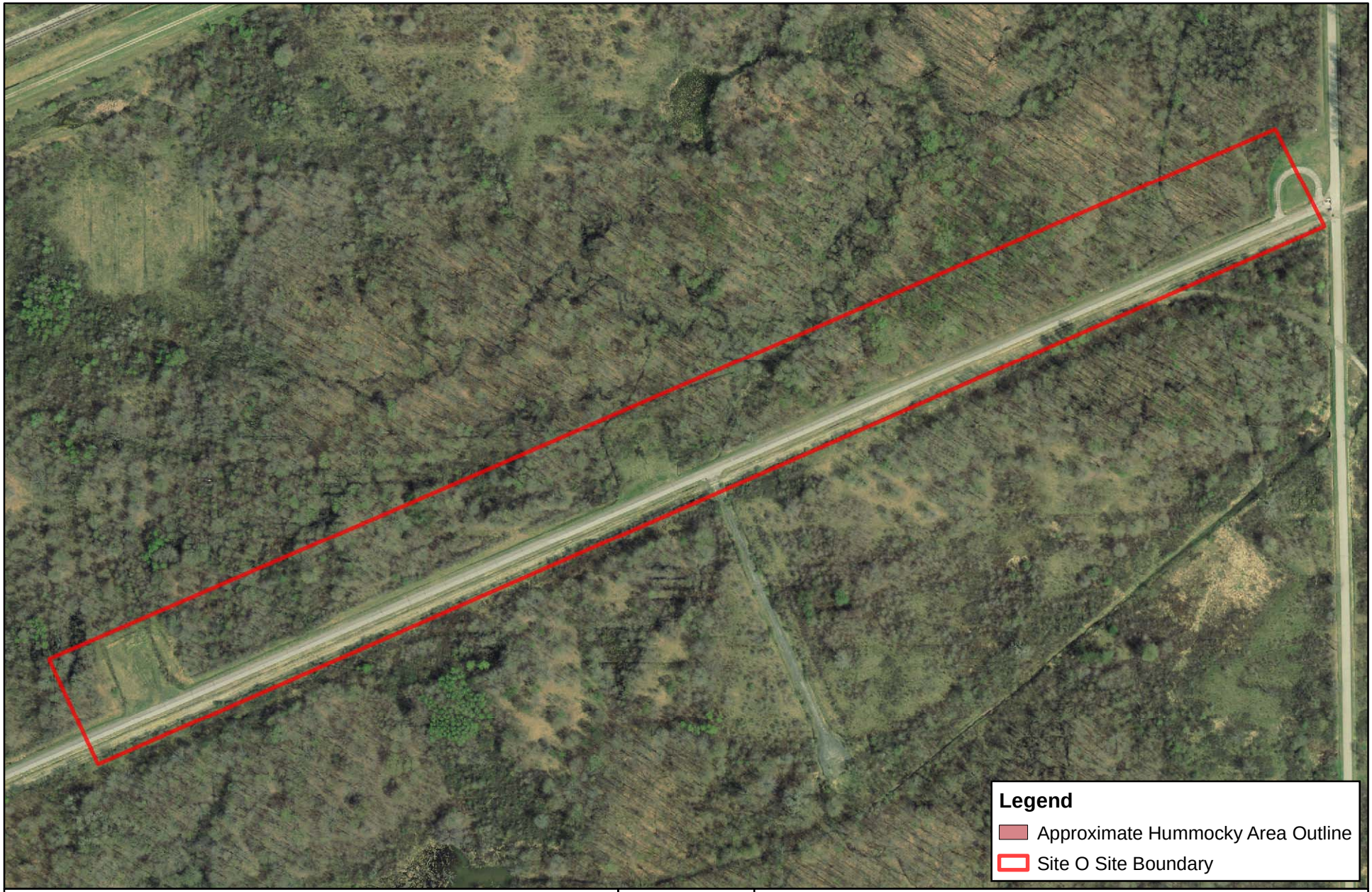
Mound 3 Test Pits

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Portage County & Trumbull County Ohio

Figure 5

Q:\Projects\ENV\GEARS\GEO\NGB IDIQ\Camp Ravenna_solid waste\GIS\IITRP_2017\Fig-5_RVAAP-11_Mound_3.mxd



CLIENT	National Guard Bureau			
PROJECT	Camp Ravenna - Solid Waste			
	0 150 300 600 Feet			
SCALE	1:3,600	GIS BY	MS	1/10/2018
Aerial Source: 2011 Ohio Statewide Orthoimagery Program		CHK BY	JW	1/10/2018

N

TITLE

Site O Layout

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Portage County
&
Trumbull County
Ohio

Figure 6

Q:\Projects\ENV\GEARS\GEO\NGB IDIQ\Camp Ravenna_solid waste\GIS\IITRP_2017\Fig-6_Site-O_Layout.mxd

CLIENT	National Guard Bureau			
PROJECT	Camp Ravenna - Solid Waste			
0 25 50 100 Feet				
SCALE	1:600	GIS BY	MS	1/10/2018
Aerial Source: 2011 Ohio Statewide Orthoimagery Program		CHK BY	JW	1/10/2018

Site O Test Pits

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Portage County & Trumbull County Ohio

Figure 7

Q:\Projects\ENV\GEARS\GEO\NGB IDIQ\Camp Ravenna_solid waste\GIS\IITRP_2017\Fig-7_Site-O_Test_Pits.mxd

Appendix D

Troop Labor Sites

TROOP LABOR SITES

The following table presents the Troop Labor Sites, which were identified during the VASR as locations with minimal surficial debris. The debris at these sites will be collected and properly disposed as part of future training activities. Load Line 4 (RVAAP-11) is discussed in further detail following the table below. Intrusive investigations at Load Line 4 confirmed the absence of solid waste at the site, resulting in its removal as a solid waste management site but inclusion as a Troop Labor Site. Intrusive investigation details for Load Line 4 are included in **Appendix C**. Additionally, six sites included in the list below, denoted by an asterisk (*), are both Troop Labor Sites and Solid Waste Management sites. These sites are Winklepeck Burning Grounds (RVAAP-05), Fuze and Booster Quarry Landfill/ponds (RVAAP-16 and RVAAP-016-R-01), 40 MM Firing Range (RVAAP-32 and RVAAP-032-R-01), and Site C.

Geographical Area	Program	AOC ID	Site Name/Description	Debris Description	VASR Section	VASR Figure #
Eastern	MMRP	RVAAP-001-R-01	Ramsdell Quarry Area 2 (South)	Barbed wire in a tree stump and metal scrap protruding from the ground	4.1	4-2
Eastern	IRP	RVAAP-08	Load Line 1	A pile of rail ties, small pieces of scrap metal, brick, and an old light fixture	4.3	4-4
Eastern	IRP	RVAAP-09	Load Line 2	Rail ties, rubber sheeting, a wooden pallet, metal scrap, and concrete rubble from a former building area	4.4	4-5
Eastern	IRP	RVAAP-11	Load Line 4	Plastic sheeting and rail ties along northeastern edge of the site. Mounds evaluated with intrusive investigation.	4.6	4-7
Eastern	IRP	RVAAP-12	Load Line 12	Metal debris and railroad ties	4.7	4-8
Eastern	IRP	RVAAP-13	Building 1200-Dilution\Settling Pond	Two small gravel mounds, scattered metal pipes and railroad ties	4.8	4-9
Eastern	IRP	RVAAP-20	Sand Creek Sewage Treatment Plant	A large stack of unused brick and a small amount of debris consisting of wooden pallets and a rubber shoe	4.9	4-10
Eastern	IRP	RVAAP-23	Unit Training Equipment Site	A metal handcart, broken concrete, and debris related to an abandoned monitoring well (well box and concrete apron pieces)	4.10	4-11
Eastern	IRP	RVAAP-29	Upper and Lower Cobbs Ponds	A large concrete culvert pipe and a piece of a rusted metal pipe	4.12	4-13
Eastern	IRP	CC RVAAP-70	East Classification Yard	A downed electrical pole, railroad ties, and metal cables, broken glass, brick, and metal piping	4.20	4-19
Eastern	IRP	CC RVAAP-79	DLA Main Ore Storage Area	Piles of railroad ties, in-place railroad ties, and a metal bucket filled with railroad pins	4.13	4-14
Eastern	NA	Site 5	Previously Disturbed Area - Potential Former Construction Staging Area	Small pieces of metal debris and old railroad ties	4.26	4-10
Eastern	NA	Site 7	Previously Disturbed Area - Parking Lot for Loading Area	A small pile of broken ceramic insulators	4.27	4-7
Eastern	NA	Site 13	Previously Disturbed Area - Current Training Area	A small pile of debris consisting of wooden pallets	4.28	4-22
Eastern	NA	Site A	Potential Area of Solid Waste Debris Identified via Site Interviews	A plastic bucket	4.30	4-23
Eastern	NA	Site G	Potential Area of Solid Waste Debris Identified via Site Interviews - Smokeless Powder Area – Area 3	Empty metal drums, metal banding, railroad ties, plastic bins, wooden pallets, and cultural debris (e.g., disposable coffee cups, plastic water bottle)	4.33	4-24

Geographical Area	Program	AOC ID	Site Name/Description	Debris Description	VASR Section	VASR Figure #
Eastern	NA	Site S	Potential Area of Solid Waste Debris Identified via Site Interviews	A tire	4.34	4-14
Eastern	NA	North of Site 1	Southeastern bank of South Service Road	Metal debris	4.25	4-20
Central	IRP	RVAAP-05*	Winklepeck Burning Grounds	Metal, glass, wood, rail ties, cement, remnants of a blower, empty fuel cans, old filter, piles of telephone poles, and dummy 40 mm rounds.	5.3	5-4
Central	IRP	RVAAP-16*	Fuze and Booster Quarry Landfill/Ponds	Small pieces of metal debris and larger concrete chunks	5.5	5-6
Central	MMRP	RVAAP-016-R-01*	Fuze and Booster Quarry	Small pieces of metal debris and larger concrete chunks	5.5	5-6
Central	IRP	RVAAP-22	George Road Sewage Treatment Plant	Concrete debris, metal piping, metal debris, a downed metal sign, a downed electrical pole, and sewage settling pond infrastructure	5.7	5-8
Central	IRP	RVAAP-32*	40MM Firing Range	A wooden structure, large metal structure, concrete slabs/foundations, railroad ties, and a metal pipe	5.10	5-10
Central	MMRP	RVAAP-032-R-01*	40MM Firing Range MRS	A wooden structure, large metal structure, concrete slabs/foundations, railroad ties, and a metal pipe	5.10	5-10
Central	NA	Site 11	Former Scrape Area	A wooden structure, large metal structure, concrete slabs/foundations, railroad ties, and a metal pipe	5.45	5-10
Central	IRP	RVAAP-36	Pistol Range	A pile of old range material consisting of pieces of wood and particle board, and a pile of concrete debris	5.12	5-11
Central	IRP	RVAAP-39	Load Line 5	Small scattered pieces of brick and glass debris likely from the demolition of former buildings	5.15	5-12
Central	IRP	RVAAP-40	Load Line 7	Small scattered pieces of brick and glass debris likely from the demolition of former buildings, and a piece of broken PVC piping	5.16	5-13
Central	IRP	RVAAP-41	Load Line 8	Small scattered pieces of brick and glass debris likely from the demolition of former buildings	5.17	5-14
Central	IRP	RVAAP-42	Load Line 9	A concrete block and ammo box	5.18	5-15
Central	IRP	RVAAP-43	Load Line 10	Small scattered pieces of brick debris likely from the demolition of former buildings and pieces of metal debris	5.19	5-16
Central	IRP	RVAAP-44	Load Line 11	Small scattered pieces of brick debris likely from the demolition of former buildings, and wooden and plastic debris	5.20	5-17
Central	IRP	RVAAP-45	Wet Storage Area	Wooden pallets	5.21	5-18
Central	IRP	RVAAP-48	Anchor Test Area	A concrete culvert pipe	5.24	5-20
Central	MMRP	RVAAP-048-R-01	Anchor Test Area MRS	A concrete culvert pipe	5.24	5-20
Central	IRP	CC RVAAP-68	Electric Substation West	Wood debris	5.27	5-23
Central	IRP	CC RVAAP-68	Electric Substation No. 3	Metal wire, metal debris, cable, piping, broken ceramic insulators, and wood debris	5.28	5-23, 5-24
Central	IRP	CC RVAAP-75	George Road STP Mercury Spill	Concrete debris and metal piping	5.7	5-8
Central	IRP	CC RVAAP-78	Quarry Pond Surface Dump	Small pieces of metal debris and larger concrete chunks	5.5	5-6

Geographical Area	Program	AOC ID	Site Name/Description	Debris Description	VASR Section	VASR Figure #
Central	IRP	Site 10	Former Scrape Area	Small pieces of metal debris and larger concrete chunks	5.5	5-6
Central	NA	Site L	Potential Area of Solid Waste Debris Identified via Site Interviews - Former Landing Strip	Trash, including plastic wrappers and nitrile gloves	5.37	5-25
Central	NA	Site N	Potential Area of Solid Waste Debris Identified via Site Interviews - Block D, Load Lines 4 through 7	Scattered brick debris	5.39	5-28
Central	NA	Site R	Potential Area of Solid Waste Debris Identified via Site Interviews	Abandoned vehicles, brick and metal debris, discarded tires, and stone masonry debris	5.41	5-26
Central	NA	Near RVAAP 44	West of the intersection of Newton Falls Road and Greenleaf Road	A metal pipe	5.20	5-17
Central	NA	South of RVAAP-062-R-01	South of Water Works #4 Structures	Metal pole and plywood	5.26	5-22
Western	IRP	RVAAP-06	C Block Quarry	A rusted, half-buried drum	6.1	6-2
Western	IRP	RVAAP-24	Waste Oil Tank	Metal and wooden debris	6.2	6-3
Western	IRP	CC RVAAP-73	Depot Area Building U-14 Coal Storage	A concrete and metal debris pile and wooden pallets	6.2	6-3
Western	IRP	CC RVAAP-73	Depot Area Building U-5 Coal Storage	Metal equipment with an electrical component	6.2	6-3
Western	NA	Site H	Potential Area of Solid Waste Debris Identified via Site Interviews - Yard Road	Metal debris, old railroad ties, a metal pipe, and old building foundation	6.7	6-6
Western	NA	Site I	Potential Area of Solid Waste Debris Identified via Site Interviews - Former and Current Building Locations	Discarded tires, rubber sheeting, metal debris, a wooden pallet, and a metal car frame	6.8	6-7
Western	NA	Site J	Potential Area of Solid Waste Debris Identified via Site Interviews - Block A and Block B, South of McCormick Road	Scattered pieces of brick, metal, and concrete	6.9	6-8
Western	NA	Site K	Potential Area of Solid Waste Debris Identified via Site Interviews	A piece of concrete debris	6.10	6-7
Western	NA	Site Q	Potential Area of Solid Waste Debris Identified via Site Interviews - Block A Quarry	Small amounts of partially-buried, metal debris	6.12	6-10
Western	NA	Site C*	Potential Area of Solid Waste Debris Identified via Site Interviews - Block A and Block B	Piles of wooden boards and pallets bundled with metal bands. Small pile of concrete debris, cast iron, brick and rock also present.	6.5	6-5
Western	NA	South of Site C	Block A, Line 6 and Line 7	Brick rubble	6.5	6-5
Western	NA	West of North Line Road Coal Tipple Area (CC RVAAP-73)	Southside of North Line Road, west of Northline Road Coal Tipple Area (CC RVAAP-73)	Railroad ties	6.4	6-4

Load Line 4 (RVAAP-11)

Load Line 4 is an IRP (RVAAP-11) site of approximately 124.9 acres located in the southwestern portion of the Eastern Area at CRJMTC. The site is an overgrown, previously developed parcel. Load Line 4 used for munitions manufacturing. Explosives were melted down and packed into bombs and other devices. The site was in use during World War II, the Korean War, and the Vietnam War. The site also contained a wastewater treatment facility. A review of historical documentation for the potential presence of onsite solid waste at the IRP site Load Line 4 (RVAAP-11) indicated that after the demolition of superstructures in 2007, five soil and debris piles totaling 501 tons were removed in 2010 (URS Group, Inc., 2010).

Large grass-covered mounds exist at the site (AECOM, 2017). Plastic sheeting was also observed along the tree line on the eastern side of the site. AECOM performed an intrusive investigation at RVAAP-11 in December 2017. Test pits were excavated at each of the grass-covered mounds identified during the visual survey (AECOM, 2017). The investigation results and historical documentation provided by OHARNG indicate that the mounds identified at RVAAP-11 are engineered barricades containing no solid waste. Intrusive investigation procedures and results are detailed in the January 2018 AECOM Trip Report (**Appendix C**). No solid waste was observed at RVAAP-11 except for the plastic sheeting, insulators, and railroad ties on the eastern tree line. As such, this debris will be collected and properly disposed as part of future training activities as one of CRJMTC's Troop Labor Sites.

Appendix E

Ohio Environmental Protection Agency Correspondence

NATIONAL GUARD BUREAU
111 SOUTH GEORGE MASON DRIVE
ARLINGTON VA 22204-1373

February 27, 2019

Ohio Environmental Protection Agency
DERR-NEDO
Attn: Kevin Palombo
2110 East Aurora Road
Twinsburg, OH 44087-1924

Subject: Former Ravenna Army Ammunition Plant/Former Camp Ravenna Joint Military Training Center/ Camp James A. Garfield/, Portage/Trumbull Counties, *Evaluation, Identification, and Management of Potential Solid Waste Disposal Sites, Draft Visual Assessment Survey Report*

Dear Mr. Palombo:

Enclosed for your review and approval, please find the responses to comments dated February 12, 2019 on the *Draft Solid Waste Management Plan for the Evaluation, Identification, and Management of Potential Solid Waste Disposal Sites* at the former Ravenna Army Ammunition Plant/Former Camp Ravenna Joint Military Training Center (CRJMTC)/Camp James A. Garfield in Ravenna, Ohio. This response to comment document was prepared for the Army by AECOM Technical Services, Inc. in support of the CRJMTC environmental restoration program.

The Army requests the Ohio EPA review this document prior to a proposed clarification teleconference meeting. The Army will be contacting you in the near future to set up this meeting. Lastly, please contact the undersigned at (703) 607-7589 or david.m.connolly8.civ@mail.mil if there are issues or concerns with the submission.

Sincerely,

SEDLAK.KEVIN.MICHAEL.1254440171
Digitally signed by SEDLAK.KEVIN.MICHAEL.1254440171
Date: 2019.02.27 07:47:48 -05'00'

FOR David Connolly
Army National Guard
Installations & Environment – Cleanup Branch

cc: Mark Johnson, Ohio EPA, DERR-NEDO
Bob Princic, Ohio EPA, DERR-NEDO
Tom Schneider, Ohio EPA, SWDO
Katie Tait, OHARNG, Camp Ravenna
Kevin Sedlak, ARNG, Camp Ravenna
Rebecca Shreffler, Chenega

Comment Resolution Table

Installation: Camp James A. Garfield
Document: Draft Solid Waste Management Plan
Reviewer(s): Kevin M. Palombo, Environmental Specialist, OHEPA, (330) 963-1292
Date: 12 February 2019

Comment No.	Page or Sheet	Comment	Response
OHEPA Statement	General	In your response to Ohio EPA's first general statement in the comment letter dated November 21, 2018, several important issues were clarified; however, we still need to understand the rationale on why 61 areas were eliminated from the Solid Waste Management Plan (SWMP). Provide a brief statement for each. Also, Ohio EPA counted 53 sites in the Troop Labor Site list in Appendix D.	The 61 sites in question were not eliminated from the Solid Waste Management Plan (SWMP) but were removed from consideration prior to the SWMP during the Visual Assessment Survey Report (VASR) phase. After these sites were visited, observed, and noted to have no solid waste present in the OHEPA-approved VASR, it was then determined that the site was not going to be carried forward to the SWMP as these sites had no solid waste present at the site. For a description of the conditions observed at each site, please refer to the VASR. A footnote will be added to Table 1-1, Visual Survey Sites, where the site was marked "No" to if the site was a "Solid Waste Management Site" indicating that no solid waste was present during the visual survey and directing the reader to the site description in the Final VASR, August 2017. The Ohio EPA count of 53 sites is correct. Additionally, per the correct assertion in Ohio EPA Comment 8, the Fuze and Booster Quarry Landfill (RVAAP-16 and RVAAP-016-R-01) will be added to Appendix D. Winklepeck Burning Grounds (RVAAP-05), another troop labor site unintentionally left off of Appendix D, will be added. Appendix D will now list 56 sites with the addition of RVAAP-16 and RVAAP-016-R-01, and RVAAP-05. The relevant text and tables have been updated to reflect this change.
OHEPA Comment 1	General	As stated above, the Army National Guard's response to Ohio EPA's General Statement clarified many issues, but to avoid questions in the future, and to document the rationale on why many disposal areas were eliminated from this plan, some brief explanation should be provided for each.	
OHEPA Comment 2	General	See Ohio EPA's response above. An additional table could state why a site was eliminated.	
OHEPA Comment 3	Executive Summary, Page ES-1, lines 24 and 25	Ohio EPA concurs with this response.	No response.
OHEPA Comment 4	Page 1-2	Ohio EPA concurs with this response.	No response.
OHEPA Comment 5	Page 1-2, lines 18 and 19; Table 1-1	Ohio EPA concurs with this response.	No response.

Comment Resolution Table

Installation: Camp James A. Garfield
Document: Draft Solid Waste Management Plan
Reviewer(s): Kevin M. Palombo, Environmental Specialist, OHEPA, (330) 963-1292
Date: 12 February 2019

Comment No.	Page or Sheet	Comment	Response
OHEPA Comment 6	Page 1-2, lines 32 and 33; Table 1-3	Ohio EPA concurs with this response; however, Table 1-3 needs to be added to the Table of Contents.	Table 1-3 has been added to the Table of Contents.
OHEPA Comment 7	Section 3.1.1, page 3-1, Last line	Ohio EPA concurs with this response.	No response.
OHEPA Comment 8	Section 3.1	The response to Ohio EPA's question is still unclear. The Fuze and Booster Quarry Landfill (RVAAP-16 or RVAAP-016-R-01), although described in Section 3.1.2 as a Troop Labor Site, is not included on the Troop Labor Site Table in Appendix D. This table needs to be revised.	This assertion is correct and the Fuze and Booster Quarry Landfill (RVAAP-16 or RVAAP-016-R-01) has been added to Appendix D. Additionally, the Appendix D footnote was updated to state that four sites are both Troop Labor Sites and also Solid Waste Management Sites (Winklepeck Burning Grounds, 40 mm Firing Range, Fuze and Booster Quarry Landfill/Ponds, and Site C). These are listed in Appendix D and also discussed in the corresponding sections of the SWMP.
OHEPA Comment 9	Section 3.2.1, Page 3-4, lines 9 and 10	The response to this question states that solid waste sites documented in the SWMP will be reviewed on an annual basis to document progress or removal of sites. It goes on to say that the review will be documented during the annual review of the Property Management Plan (PMP). Will this review be included in the PMP, or will it be conducted and submitted separately at the same time as the PMP?	Progress on the solid waste sites will be reviewed and updated on an annual basis during the Annual Inspection Report of AOCs/MRSs with Land Use Controls. These sites do not have LUCs but this will allow for a consistent review and correlation of the PMP with the SWMP. The text was revised to make this distinction.
OHEPA Comment 10	Section 3.2.3 NACA Test Area	Ohio EPA concurs with this response.	No response.
OHEPA Comment 11	General	Ohio EPA concurs with this response.	No response.
OHEPA Comment 12	General	Ohio EPA concurs with this response.	No response.