

**Final
No Further Action Proposed Plan
for
RVAAP-001-R-01 Ramsdell Quarry Landfill Munitions Response Site Area 2 (South)
Version 1.0**

**Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio**

**Contract No. W912DR-15-D-0016
Delivery Order No. 0001**

Prepared for:



**US Army Corps
of Engineers®**

**U.S. Army Corps of Engineers
Baltimore District
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Prepared by:

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January 4, 2019

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REPORT DOCUMENTATION PAGE

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14. ABSTRACT The U.S. Department of the Army (U.S. Army) is presenting this No Further Action (NFA) Proposed Plan to involve the public in the remedy selection for the former Ravenna Army Ammunition Plant, RVAAP-001-R-01 Ramsdell Quarry Landfill Munitions Response Site (MRS) Area 2 (South), in Portage and Trumbull Counties, Ohio. This NFA Proposed Plan presents the U.S. Army's preliminary recommendations for addressing the Ramsdell Quarry Landfill MRS Area 2 (South). Investigations have found no munitions and explosives of concern or concentrated areas of munitions debris, and no potential source of munitions constituents exists at the MRS. Therefore, there is no source material or impacted environmental media resulting from historical U.S. munitions-related activities at the MRS.					
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a. REPORT	b. ABSTRACT	c. THIS PAGE			Kimberly Vaughn
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January 24, 2019

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

**Re: US Army Ravenna Ammunition Pit RVAAP
Remediation Response
Project Records
Remedial Response
Portage County
267000859253**

Subject: Receipt and Review of the "Final No Further Action Proposed Plan for RVAAP-001-R-01 Ramsdell Quarry Landfill Munitions Response Site Area 2 (South), Version 1.0" Dated January 4, 2019 (Work Activity No. 267000859253)

Dear Mr. Connolly:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) has received and reviewed the "Final No Further Action Proposed Plan for RVAAP-001-R-01 Ramsdell Quarry Landfill Munitions Response Site Area 2 (South), Version 1.0" dated January 4, 2019. This document received by Ohio EPA's NEDO on January 7, 2019, was prepared by HydroGeoLogic, Inc. as a result of the investigation completed under the military munitions response program.

Based on the information contained in the final proposed plan, other investigation documents/reports, Ohio EPA concurs with the no further action determination presented. As stated in the proposed plan, the Army will offer a public comment period between March 1 and April 3, 2019; and hold an open house/public meeting on March 6, 2019. This is required prior to the submittal of the Record of Decision (ROD).

If you have any questions or concerns, please do not hesitate to contact Nicholas Roope at (330) 963-1235.

Sincerely,

A handwritten signature in blue ink that reads "J. Sferra".

James Sferra
Chief
Division of Environmental Response and Revitalization

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JAN 24 2019

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CONTRACTOR'S STATEMENT OF INDEPENDENT TECHNICAL REVIEW

HydroGeoLogic, Inc., has completed the *Final No Further Action Proposed Plan for RVAAP-001-R-01 Ramsdell Quarry Landfill Munitions Response Site Area 2 (South)*, Version 1.0, at the Ravenna Army Ammunition Plant in 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 data quality objectives; technical assumptions; methods, procedures and materials to be used; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets customer's needs consistent with law and existing United States Army Corps of Engineers policy.

Prepared/Approved by:



Timothy Leahy
Project Manager
APTIM Federal Services

Date: January 4, 2019

Reviewed/Approved
by:



Kimberly Vaughn
Project Manager
HydroGeoLogic, Inc.

Date: January 4, 2019

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DOCUMENT DISTRIBUTION

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Gail Harris, RVAAP Administrative Records Manager	2	2

ARNG – Army National Guard
 COR – Contracting Officer’s Representative
 IED – Installation and Environmental Division
 OHARNG – Ohio Army National Guard
 RVAAP – Former Ravenna Army Ammunition Plant
 USACE – United States Army Corps of Engineers

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ACRONYMS AND ABBREVIATIONS

ARAR	applicable, relevant, and appropriate requirements	MEC	munitions and explosives of concern
Army	U.S. Department of the Army	mm	millimeter
ARNG	Army National Guard	MMRP	Military Munitions Response Program
CB&I	CB&I Federal Services LLC	MRS	Munitions Response Site
Camp Ravenna	Camp Ravenna Joint Military Training Center	MRSPP	Munitions Response Site Prioritization Protocol
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>	NCP	<i>National Oil and Hazardous Substances Pollution Contingency Plan</i>
COR	Contracting Officer's Representative	NFA	No Further Action
DA	U.S. Department of the Army	OHARNG	Ohio Army National Guard
DMM	discarded military munitions	Ohio EPA	Ohio Environmental Protection Agency
DoD	U.S. Department of Defense	PP	Proposed Plan
e ² M	engineering-environmental Management, Inc.	RI	Remedial Investigation
Final RI Report	<i>Final Remedial Investigation Report for RVAAP-001-R-01 Ramsdell Quarry Landfill Munitions Response Site</i>	ROD	Record of Decision
FS	<i>Final Feasibility Study for RVAAP-001-R-01 Ramsdell Quarry Landfill Munitions Response Site Area 2 (South)</i>	RVAAP	Ravenna Army Ammunition Plant
GP	general purpose	SI	Site Inspection
HGL	HydroGeoLogic, Inc.	SI Report	<i>Final Site Inspection Report</i>
HRR	<i>Final Military Munitions Response Program Historical Records Review</i>	TNT	2,4,6-Trinitrotoluene
IED	Installation and Environmental Division	U.S.	United States
ISM	Incremental Sampling Methodology	USACE	U.S. Army Corps of Engineers
lb	pound	USP&FO	U.S. Property and Fiscal Officer for Ohio
LUC	land use control	UXO	unexploded ordnance
MC	munitions constituents		
MD	munitions debris		

1.0 INTRODUCTION

The United States (U.S.) Department of the Army (Army or DA) is presenting this No Further Action (NFA) **Proposed Plan* (PP)** to involve the public in the **remedy selection process** for the RVAAP-001-R-01 Ramsdell Quarry Landfill **Munitions Response Site (MRS)** Area 2 (South). The former Ravenna Army Ammunition Plant (RVAAP) located in Portage and Trumbull Counties, Ohio, as shown on **Figure 1**. The location of the Ramsdell Quarry Landfill MRS Area 2 (South) in relation to the former RVAAP is shown on **Figure 2**.

The Army, in consultation with the Ohio Environmental Protection Agency (Ohio EPA), is the lead agency for investigating, reporting, making **remedial decisions**, and taking **remedial actions** at the former RVAAP. This NFA PP presents the Army's preliminary recommendations for addressing the Ramsdell Quarry Landfill MRS Area 2 (South). Investigations indicate that no **U.S. Department of Defense (DoD) military munitions** that were confirmed as **munitions and explosives of concern (MEC)** or risks associated with **munitions constituents (MC)**-related contamination exist.

The Army is issuing this NFA PP to address its public participation responsibilities under Section 117(a) of the **Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)**, as amended by the Superfund Amendments and Reauthorization Act of 1986 and Section 300.430(f)(2) of the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP)** (40 Code of Federal Regulations 300). Implementation of the selected remedy at the MRS will comply with the requirements of the *Director's Final Findings and Orders for RVAAP* (Ohio EPA, 2004).

*Terminology used in this Proposed Plan is defined in the Glossary found at the back of this document.

This NFA PP summarizes information contained in the *Final Remedial Investigation Report for RVAAP-001-R-01 Ramsdell Quarry Landfill Munitions Response Site, Version 1.0* (Final **Remedial Investigation [RI]** Report; CB&I Federal Services LLC [CB&I], 2015) and the *Final Feasibility Study for RVAAP-001-R-01 Ramsdell Quarry Landfill Munitions Response Site Area 2 (South), Version 1.0* (Final **Feasibility Study [FS]**) (HydroGeoLogic, Inc. [HGL], 2018). The Army encourages the public to review these documents to better understand the history of the MRS, activities that have been conducted there, and determinations that have been made for the MRS under the **Military Munitions Response Program (MMRP)**.

The Army, in consultation with the Ohio EPA, will review and consider all comments on this NFA PP received during the 30-day public comment period. The public is encouraged to review and comment on all recommendations presented in this NFA PP.

2.0 FACILITY AND MRS BACKGROUNDS

This section summarizes the history of the former RVAAP and the Ramsdell Quarry Landfill MRS Area 2 (South).

2.1 Facility History

The former RVAAP (Federal Facility ID No. OH213820736), now known as the Camp Ravenna Joint Military Training Center (Camp Ravenna), is located in northeastern Ohio within Portage and Trumbull Counties and is approximately 3 miles east-northeast of the city of Ravenna. The federally owned facility, approximately 11 miles long and 3.5 miles wide, is bounded by a Norfolk Southern railroad line to the north; State Route 5, the Michael J. Kirwan Reservoir, and a CSX railroad line to the south; State Route 534 to the east; and Garret, McCormick, and Berry Roads to the west. The facility is surrounded by the communities of Windham, Garrettsville, Newton Falls, Charlestown, and Wayland.

Administrative control of the 21,683-acre facility has been transferred to the U.S. Property and Fiscal Officer for Ohio (USP&FO) and subsequently licensed to the Ohio Army National Guard (OHARNG) for use as a training site, Camp Ravenna. The restoration program for the facility involves the remediation of areas affected by past activities of the former RVAAP.

The former RVAAP was constructed in 1940 and 1941 for assembly/loading and **depot storage** of ammunition. While being used as an ammunition plant, the former RVAAP was a U.S. Government-owned and contractor-operated industrial facility. The ammunition plant consisted of 12 munitions assembly facilities, referred to as “load lines.” Load Lines 1 through 4 were used to melt and load 2,4,6-Trinitrotoluene (TNT) and Composition B (a mixture of TNT and Research Department Explosive) into **large-caliber shells** and bombs. Operations on the load lines produced explosive dust, spills, and vapors that collected on the floors and walls of each building. Periodically, the floors and walls were cleaned with water and steam. After cleaning, the “pink water” wastewater, which contained TNT and Composition B was collected in concrete holding tanks, filtered, and pumped into unlined ditches for transport to **earthen settling ponds**. Load Lines 5 through 11 manufactured **fuzes, primers, and boosters**. From 1946 to 1949, Load Line 12 produced ammonium nitrate for explosives and fertilizers; subsequently it was used as a **weapons demilitarization facility**.

In 1950, the facility was placed on standby status, and operations were limited to **renovation, demilitarization**, and normal maintenance of equipment, along with storage of munitions. **Production** activities were resumed from July 1954 to October 1957 and again from May 1968 to August 1972. Demilitarization and production activities were conducted at Load Lines 1, 2, 3, and 12. Demilitarization activities included

Public Comment Period:

March 1 to April 3, 2019

Public Meeting:

The Army will hold an open house/public meeting to explain the NFA PP. Oral and written comments on the document will be accepted at the meeting. The open house/public meeting is scheduled for 6:00 p.m. on March 6, 2019, at the Charlestown Town Hall, 6368 Rock Spring Road, Ravenna, Ohio 44266.

Information Repositories:

Information used in selecting the Preferred Alternative is available online at www.rvaap.org and at the following locations:

Reed Memorial Library

167 East Main Street
Ravenna, Ohio 44266
(330) 296-2827

Hours of Operation:

9 a.m.–8 p.m., Monday–Thursday
9 a.m.–6 p.m., Friday
9 a.m.–5 p.m., Saturday
1 p.m.–5 p.m., Sunday

Newton Falls Public Library

204 South Canal Street
Newton Falls, Ohio 44444
(330) 872-1282

Hours of Operation:

9 a.m.–8 p.m., Monday–Thursday
9 a.m.–5 p.m., Friday and Saturday

The **Administrative Record** File, which includes the information used to select the Preferred Alternative, is available for review at the following location:

Camp Ravenna Joint Military Training Center (Camp Ravenna)

Environmental Office
1438 State Route 534
Newton Falls, Ohio 44444
(614) 336-6136

Note: Access to Camp Ravenna is restricted, but an appointment to review the Administrative Record File can be scheduled.

disassembling munitions and melting out and recovering explosives using hot water and steam processes. These activities continued through 1992.

In addition to production and demilitarization activities at the load lines, other facilities at the former RVAAP included areas used for the burning, demolition, and testing of munitions. These burning and demolition grounds consisted of large, open areas and abandoned quarries. Other **Areas of Concern** at the former RVAAP include landfills, an aircraft fuel tank testing area, and various industrial support and maintenance facilities (CB&I, 2015).

2.2 MRS History

The Ramsdell Quarry Landfill MRS Area 2 (South) is a 6.93-acre parcel located in the northeast portion of Camp Ravenna within Portage County. The MRS is located south of the Ramsdell Quarry Landfill MRS Area 1 (North) and north of Load Line #1. The MRS is heavily wooded with thick ground vegetation and contains a small, inactive soil **borrow pit** at the east side of the MRS. Approximately 0.5 acres of wetland are now located in the former soil borrow pit and along the eastern boundary of the MRS. **Figure 3** depicts the MRS boundaries and site features.

The area that constitutes the current Ramsdell Quarry Landfill MRS Area 2 (South) was not identified as an area potentially containing explosive hazards until the preparation of the **Historical Records Review** (HRR; engineering-environmental Management, Inc. [e²M], 2007). The HRR focused primarily on the area that is currently the Ramsdell Quarry Landfill MRS Area 1 (North) where DoD military munitions had been thermally treated but did mention that installation personnel had observed DoD military munitions at an area south of the Ramsdell Quarry Landfill. None of the DoD military munitions reportedly observed had been evaluated to determine if they were MEC. There was no available information regarding the historical munitions-related activities that occurred at the MRS or how the DoD military munitions arrived there (e²M, 2007). The HRR concluded that the north and south areas be evaluated together under the MMRP going forward.

2.3 MRS Historical Investigations

The following investigations and reports have been completed under the MMRP for the Ramsdell Quarry Landfill MRS Area 2 (South):

- *Final Military Munitions Response Program Historical Records Review, Ravenna Army Ammunition Plant, Ohio* (e²M, 2007)
- *Final Site Inspection Report, Ravenna Army Ammunitions Plant, Ohio* (e²M, 2008)
- *Final Remedial Investigation Report for RVAAP-001-R-01 Ramsdell Quarry Landfill Munitions Response Site, Version 1.0* (CB&I, 2015)
- *Final Feasibility Study for RVAAP-001-R-01 Ramsdell Quarry Landfill MRS Area 2 (South)* (HGL, 2018)

2.3.1 Historical Records Review

The HRR (e²M, 2007) described the Ramsdell Quarry Landfill MRS as an approximate 3.79-acre unlined landfill situated at the bottom of the former quarry where open burning/open demolition activities occurred. This area is the current Ramsdell Quarry Landfill MRS Area 1 (North). It was during the preparation of the HRR that installation personnel indicated the presence of potential MEC items on the ground surface south of the former quarry at the area that is the current Ramsdell Quarry Landfill MRS Area 2 (South). None of the DoD military munitions reportedly observed had been evaluated to determine if they were MEC. There was no available information regarding the historical munitions-related activities that occurred at the area south of the former quarry or how the DoD military munitions arrived there. It was suspected that the location may have been used as a disposal area for DoD military munitions that were treated at the Ramsdell Quarry Landfill MRS Area 1 (North). It was determined in the HRR that the north and south areas would be evaluated together under the MMRP going forward (e²M, 2007).

2.3.2 Site Inspection Summary

In 2007, a Site Inspection (SI) was conducted for the evaluation of DoD military munitions and MC-related contamination at the MRS. The evaluation for DoD military munitions included a meandering path and line-abreast magnetic surveys. No DoD military munitions confirmed to be MEC were found; however, two munitions debris (MD) items were encountered on the ground surface. The MD consisted of one inert 105-millimeter (mm) projectile and one inert 155mm projectile.

Four soil samples were collected at the MRS and were analyzed for MC-related contamination. Low (estimated) concentrations of 1,3,5-Trinitrobenzene were detected at two of the sample areas (MC2 and MC3). Concentrations of lead and manganese were detected at one sample area (MC3) at concentrations that exceeded the facility background values and one-tenth the U.S. Environmental Protection Agency Residential Soil Preliminary Remediation Goals; the screening criteria used at that time. These metal concentrations were considered to be MC-related contamination.

No **explosive hazards** were found at the MRS during the SI and further characterization for MEC was not recommended in the SI Report (e²M, 2008). Based on the SI sampling results, further characterization for MC-related contamination was recommended in the SI Report (e²M, 2008). The SI Results are presented in **Figure 4**.

2.4 Remedial Investigation Results

During planning for the RI field work, it was determined that the presence of MD encountered during the SI indicated the potential for MEC and that further characterization for DoD military munitions at the MRS should be conducted. The RI field activities were conducted for further investigation for DoD military munitions and characterization of MC-related contamination at the MRS in 2011.

The investigation for DoD military munitions consisted of **digital geophysical mapping** and intrusive investigations. No DoD military munitions that were confirmed to be MEC were encountered during the RI; however, various MD items were found on the ground surface and in subsurface soils. The MD consisted of fragments and parts associated with the 20-pound (lb) AN-M41 series bomb, the 155mm MK-1 series projectile, the 250-lb AN-M57 series general purpose (GP) bomb, and the 500-lb AN-M64 series GP bomb (CB&I, 2015). The locations of the MD found at the MRS during the RI are presented in **Figure 5**.

Sampling for MC-related contamination was conducted during the RI using the **Incremental Sampling Methodology** (ISM). Two ISM samples were collected during the RI at depths between 0 and 0.5 feet where MD was found (**Figure 5**). The detections of some site-related chemicals (nitroguanidine, antimony, cadmium, chromium, chromium (as trivalent chromium [Cr⁺³]), copper, lead, mercury, and strontium, bis(2-ethylhexyl) phthalate, di-n-butyl phthalate, and fluoranthene occurred. The site-related chemicals were carried forward for further evaluation into the **Human Health Risk Assessment** and **Ecological Risk Assessment** in the RI. The RI concluded that no known or suspected MC hazard exists at the MRS for either ecological or human receptors, including evaluation for the Unrestricted (Residential) Receptor (CB&I, 2015).

To date, no DoD military munitions confirmed to be MEC have been encountered at the Ramsdell Quarry Landfill MRS Area 2 (South) and only MD has been found. The RI fieldwork confirmed the results of previous investigations at the MRS; therefore, an explosive hazard is not expected to be present at the MRS. The RI confirmed that no known or suspected MC hazard exists at the MRS (CB&I, 2015).

Based on the results of the RI fieldwork, the project team concluded that the nature and extent of DoD military munitions and MC-related contamination at the Ramsdell

Quarry Landfill MRS Area 2 (South) (**Figure 5**) had been adequately characterized. No explosive safety hazards or potential sources of DoD military munitions confirmed as MEC were found and it was concluded that no known or suspected MC hazards exist within the MRS (CB&I, 2015).

Because no explosive hazards were found during the RI no MEC hazard assessment was required. The MRS was assigned a Munitions Response Site Prioritization Protocol (MRSPP) priority of 5.

2.5 Remedial Action Objective

As established in the RI, there are no identifiable hazards from MEC in soil and the MEC in soil poses no risk to human or ecological receptors. Therefore, no remedial action objectives were developed for the MRS.

3.0 EVALUATION OF THE NO FURTHER ACTION ALTERNATIVE

Based on further evaluation of the RI results, the Army concluded the Ramsdell Quarry Landfill MRS Area 2 (South) be recommended for NFA.

The Army also determined that, because the RI recommended conducting a FS, the FS should be conducted to provide the necessary rationale to support and document the NFA determination. An FS was prepared by the Army to perform a detailed analysis of the NFA alternative for the MRS. The purpose of this detailed analysis was to support NFA at the MRS.

3.1 Detailed Analysis of NFA Alternative

The detailed analysis presented in the FS consisted of evaluating the NFA alternative using the nine criteria listed in the NCP. The NCP states that the first two criteria, protection of human health and the environment and compliance with **applicable, relevant, and appropriate requirements** (ARARs), are “threshold criteria” that must be met by the selected remedial action unless a waiver is granted under Section 121(d)(4) of CERCLA. The next five criteria are “primary balancing

criteria,” and the trade-offs within this group must be balanced. The final two criteria, state and community acceptance, are “modifying criteria” that are evaluated following the comment periods on the FS report and the PP.

Threshold Criteria

Overall Protection of Human Health and the Environment – A determination and declaration that this criterion will be met by the proposed remedial action must be made in the **Record of Decision** (ROD); therefore, the selected remedy must meet this threshold criterion. The threshold criterion will be met if the risks associated with the human exposures are eliminated, reduced, or controlled through treatment, engineering, or **land use controls** (LUCs), and if the remedial action is protective of the environment. No explosive hazards or unacceptable risks associated with MC-related contamination are present at the MRS; therefore, the No Action alternative is protective of human health and the environment and meets this criterion.

Compliance with ARARs – Compliance with ARARs is a threshold criterion that must be met by the proposed remedial alternative. There are no chemical-specific, location-specific, or action-specific ARARs identified for this alternative. Therefore, the No Action alternative meets this criterion.

Balancing Criteria

Long-Term Effectiveness and Permanence – This criterion evaluates the long-term level of risk associated with MEC and MC-related contamination after implementation of the remedial alternative. No explosive hazards or known or suspected MC hazards are present at the MRS; therefore, the No Action alternative will be effective in the long-term and no residual hazards will remain at the MRS.

Reduction of Toxicity, Mobility, or Volume Through Treatment – The statutory preference for remedial technologies that significantly and permanently reduce the toxicity, mobility, or volume of the waste is addressed by this criterion. The No Action alternative includes no

treatment because there are no explosive hazards or unacceptable risks associated with MC-related contamination present at the MRS.

Short-Term Effectiveness – Because no active remediation activities are conducted, no additional hazards are posed to current receptors or the future industrial receptor as a result of implementing the No Action alternative. The No Action alternative will not result in any adverse short-term effects on the environment.

Implementability – The technical and administrative feasibility of implementing the remedial alternative will be addressed. Technical feasibility refers to the ability to construct, reliably operate, and meet technology-specific regulations for process options until a remedial action is complete; it also includes operation, maintenance, replacement, and monitoring of technical components of an alternative, if required, until the future after the remedial action is complete. Administrative feasibility refers to the ability to obtain approvals from other offices and agencies, the availability of treatment, storage, and disposal services and capacity, and the requirements for, and availability of, specific equipment and technical specialists. The No Action alternative does not involve active remediation; therefore, technical feasibility is not a consideration. This alternative will not interfere with any planned remedial action in the future. The No Action alternative is administratively feasible to OHARNG/Camp Ravenna because no explosive hazards or unacceptable risks associated with MC-related contamination are present on the MRS and no services or equipment is necessary to implement this alternative. The No Action alternative is expected to receive Ohio EPA concurrence because no explosive hazards or unacceptable risks associated with MC-related contamination are present at the MRS.

Cost – Capital and long-term management costs are estimated under this criterion. The No Action alternative does not include treatment, removal, or any other remedial action because

no explosive hazards or risks due to MC-related contamination are present.

Modifying Criteria

State Acceptance – This criterion will be evaluated during incorporation of regulatory review comments into this FS, and during the future submittals of the PP and ROD.

Community Acceptance – This criterion will be evaluated when the PP is presented to the public for review and comment.

3.2 Overall Evaluation

The NFA alternative is technically and administratively implementable and there are no costs. The No Action alternative is protective of human health and the environment because no explosive hazard or unacceptable risk due to MC-related contamination is present at the MRS.

The MRSPP tables were updated during the FS in accordance with the MRSPP Primer. The revised FS MRSPP priority is “No Longer Required” (HGL, 2018).

4.0 SCOPE AND ROLE OF RESPONSE ACTION

The results of the RI fieldwork and evaluation in the FS for the Ramsdell Quarry MRS Area 2 (South) MRS support the selection of NFA as the preferred remedy for the MRS. The remedy must be protective of the receptors associated with the future land use. The future land use at the Ramsdell Quarry Landfill MRS Area 2 (South) will include maintenance, natural resource activities, and environmental sampling activities. It will also include military training as part of military use. The likely **human receptor** for the future land use is the Industrial Receptor or full-time occupational receptor whose activities are consistent with full-time employees or career military personnel who are expected to work daily at Camp Ravenna over their career (facility personnel, contractors, occasional trespassers, and National Guard trainees). The NFA determination is protective of other potential future human receptors (such as residential receptors). Though there are no current plans for the MRS to change from an

industrial land use to a residential land use, there are no unacceptable risks to a potential future residential receptor from explosive hazards. **Environmental receptors** for the future land use include terrestrial invertebrates (earthworms), voles, shrews, robins, foxes, barn owls, hawks, muskrat, mink, mallards, great blue heron, benthic invertebrates, and aquatic biota (CB&I, 2015).

DoD military munitions confirmed to be MEC were not encountered at the Ramsdell Quarry Landfill MRS Area 2 (South). The results of the RI indicated that the detected site-related chemicals in surface soil at the MRS do not pose potential risks to the human and environmental receptors at the MRS. No other site-related chemicals were identified. Therefore, no explosive safety hazards or risks associated with MC-related contamination exist for the receptors that may be present on the MRS.

Site-related chemicals were detected in samples collected for MC-related contamination at the MRS during the RI field work. The site-related chemicals were carried forward into the risk assessments in the RI. It was determined in the RI that no known or suspected MC hazard exists at the MRS for either ecological or human receptors (CB&I, 2015). Although not anticipated, if any explosive hazards are identified at the MRS, they would be addressed under the MMRP as a separate response action. No other investigations are ongoing at the MRS under the MMRP.

5.0 SUMMARY OF HUMAN AND ECOLOGICAL RISKS

Under the MMRP, a recommendation of NFA must be protective of the human and environmental receptors at the MRS. The likely human receptor identified for future land use at the Ramsdell Quarry Landfill MRS Area 2 (South) is the Industrial Receptor (facility personnel, contractors, occasional trespassers, and National Guard trainees). Environmental receptors (biota) identified for the MRS include terrestrial invertebrates (earthworms), voles, shrews, robins, foxes, barn owls, hawks,

muskrat, mink, mallards, great blue heron, benthic invertebrates, and aquatic biota (HGL, 2018).

Based on the results of the RI, no explosive safety hazards or potential sources of DoD military munitions confirmed as MEC were found at the MRS. The RI concluded that no known or suspected MC hazards exist within the MRS (CB&I, 2015).

6.0 PREFERRED ALTERNATIVE

The results of the RI fieldwork and the evaluation conducted in the FS for the Ramsdell Quarry Landfill MRS Area 2 (South) support the determination that there are no explosives or risks associated with MC-related contamination to human or environmental receptors at the MRS. The Army, in consultation with the Ohio EPA, is recommending NFA as the Preferred Alternative under the MMRP for the MRS.

As no risks have been identified at the MRS, the overall recommendation of NFA under the MMRP is protective of receptors that may be present at the MRS. This recommendation is not a final decision. The Army, in consultation with the Ohio EPA, will select NFA for the MRS after reviewing and considering all comments submitted during the 30-day public comment period.

6.1 Summary Statement

Based on the information currently available, the ARNG believes that NFA meets the threshold criteria and provides the best overall protection of the public. The ARNG expects NFA to satisfy the following statutory requirements of CERCLA Section 121(b): (1) be protective of human health and the environment; (2) comply with ARARs (or justify a waiver); (3) be cost effective; (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and (5) satisfy the preference for treatment as a principle element, or explain why the preference for treatment will not be met.

7.0 COMMUNITY PARTICIPATION

Public participation is an important component of the alternative selection. The Army, in coordination with the Ohio EPA, is soliciting input from the community on the Preferred Alternative. The comment period extends from March 1 to April 3, 2019. This period includes a public meeting at which the Army will present this NFA PP. The Army will accept oral and written comments on the NFA PP at this meeting.

7.1 Public Comment Period

The 30-day comment period extends from March 1 to April 3, 2019, and provides an opportunity for public involvement in the decision-making process for the proposed action. The public is encouraged to review and comment on this NFA PP. All public comments will be considered by the Army and Ohio EPA before selecting an alternative. During the comment period, the public is also encouraged to review documents pertinent to the Ramsdell Quarry Landfill MRS Area 2 (South). This information is available at the Information Repositories and online at www.rvaap.org. To obtain further information, contact the Camp Ravenna Environmental Office.

7.2 Public Meeting

The Army will hold an open house and public meeting on this NFA PP on March 6, 2019, at the Charlestown Town Hall, 6368 Rock Spring Road, Ravenna, Ohio 44266. This meeting will provide an opportunity for the public to comment on the proposed action. Comments made at the meeting will be transcribed.

7.3 Written Comments

If the public would like to provide comments, questions, or suggestions on this NFA PP or other relevant issues in writing, they should be delivered to the Army at the public meeting or mailed (postmarked no later than April 3, 2019). The public can also submit comments, questions, or suggestions via email before the end of the comment period to the Camp Ravenna Environmental Office at kathryn.s.tait.nfg@mail.mil.

POINT OF CONTACT FOR WRITTEN COMMENTS

Ms. Kathryn Tait
Camp Ravenna Environmental Office
1438 State Route 534 SW
Newton Falls, Ohio 44444

7.4 Army Review of Public Comments

The Army will review the public's comments as part of the process in reaching a final decision for the most appropriate action to be taken. A **Responsiveness Summary**, a document that summarizes the Army's responses to comments received during the public comment period, will be included in the ROD. The Army's final choice of action will be documented in the ROD. The ROD will be added to the RVAAP Administrative Record and Information Repositories.

GLOSSARY OF TERMS

Administrative Control: Direction or exercise of authority over subordinate or other organizations in respect to administration and support, including organization of Service forces, control of resources and equipment, personnel management, unit logistics, individual and unit training, readiness, mobilization, demobilization, discipline, and other matters not included in the operational missions of the subordinate or other organizations.

Administrative Record: This is a collection of documents, typically reports and correspondence, generated during site investigation and remedial activities. Information in the Administrative Record is used to select the Preferred Alternative. It is available for public review at the Ravenna Army Ammunition Plant, Building 1037; call (330) 358-7311 for an appointment.

Applicable or Relevant and Appropriate Requirements (ARARs): The federal and state requirements that a selected alternative will attain. These requirements may vary among sites and alternatives.

Booster: A sensitive explosive charge that acts as a bridge between a (relatively weak) conventional detonator and a low-sensitivity (but typically high-energy) explosive such as TNT. By itself, the initiating detonator would not deliver sufficient energy to set off the low-sensitivity charge. However, it detonates the primary charge (the booster), which then delivers an explosive shockwave sufficient to detonate the secondary, main, high-energy charge.

Borrow Pit: An area where material (usually soil, gravel or sand) has been dug for use at another location.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): This federal law was passed in 1980 and is commonly referred to as the Superfund Program. It provides for liability, compensation, cleanup, and emergency response in connection with the cleanup of inactive hazardous waste release sites that endanger public health or the environment.

Demilitarization: The reduction of one or more types of weapons or weapons systems.

Depot Storage: A designated location for the storage of military supplies.

Digital Geophysical Mapping: The process by which buried objects are observed, analyzed, and recorded in the field and displayed in real-time.

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

Department of Defense (DoD) Military Munitions: A munition or explosive deposited by DoD activities that may pose an explosive safety risk because it either did not function as designed, was discharged and/or abandoned, or is an explosive constituent. The term includes UXO, DMM, and MC.

Earthen Settling Pond: An earthen structure that uses sedimentation to remove settleable matter and turbidity from wastewater.

Environmental Receptor: Living organisms other than humans, the habitat which supports such organisms, or natural resources which could be adversely affected by environmental contamination at a site.

Ecological Risk Assessment: The process for evaluating how likely it is that the environment may be impacted as a result of exposure to one or more environmental stressors such as chemicals, land change, disease, invasive species and climate change.

Explosive Hazard: Any hazard containing an explosive component. Explosive hazards include UXO (including land mines), booby traps, improvised explosive devices, and bulk explosives.

Feasibility Study (FS): A study undertaken by the lead agency to develop and evaluate options for remedial action. The RI data are

GLOSSARY OF TERMS

used to define the objectives of the response action, to develop remedial action alternatives, and to undertake an initial screening and detailed analysis of the alternatives. The term also refers to a report that describes the results of the study.

Fuze: A device that detonates a munition's explosive material under specified conditions. In addition, a fuze has safety and arming mechanisms that protect users from premature or accidental detonation.

Human Health Risk Assessment: The process used to estimate the nature and probability of adverse health effects in humans who may be exposed to hazards in contaminated environmental media, now or in the future.

Human Receptor: Any human individual or population that is presently or will potentially be exposed to, and adversely affected by, the release or migration of contaminants or exposure to potentially explosive hazards.

Incendiary Bomb: A weapon designed to start fires or destroy sensitive equipment using fire (and sometimes used as anti-personnel weaponry), that uses materials such as napalm.

Incremental Sampling Methodology (ISM): A sample collection and processing approach having specific elements designed to control data that is variable due to non-continuous distribution of contaminants in environmental media. ISM samples consist of collecting a sufficient number of discrete "increments" (typically 30 to 100) in an unbiased manner throughout a specified area, combining and variously processing the increments into a single larger sample, and incrementally separating out smaller samples (i.e., sub-samples) from the processed larger sample to obtain a representative aliquot (i.e., smaller sized sample) for analysis. Properly executed, the method provides unbiased, representative and reproducible estimates of the mean concentration of analytes for that sample area.

Land Use Controls (LUCs): Used in CERCLA remedies to prevent or control exposures of potential receptors to contamination remaining in place at the site

and to assure continued effectiveness of the response action. LUCs include access controls and monitoring.

Large-Caliber Shell: A projectile or shell is a missile fired from the muzzle of a gun or cannon. Projectiles above 7 inches in caliber are considered large-caliber.

Magnetic Survey: A survey method that uses a metal detection instrument (i.e., magnetometer) to measure the spatial difference in the earth's magnetic field and identify buried metallic items.

Military Munitions Response Program (MMRP): A DoD program consisting of actions necessary to ensure protection of human health, welfare, and the environment from the hazards associated with MEC and MC at locations impacted by historical military activities.

Moderate Quality Wetland: A Category 2 wetland as identified by Ohio Rapid Assessment Method 5.0 that supports moderate wildlife habitat and hydrological functions.

Munitions Constituents (MC): Any material originating from UXO, DMM, or other military munitions, including explosive and nonexplosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions.

Munitions Debris (MD): Remnants of military munitions (e.g., fragments, penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization, or disposal.

Munitions and Explosives of Concern (MEC): A munitions or explosive that may pose an explosive safety risk because it either did not function as designed, was discharged and/or abandoned, or is an explosive constituent. MEC includes UXO, DMM, and explosive constituents of munitions present in high enough concentrations to pose an explosive hazard.

Munitions Response Site (MRS): Any area on a defense site that is known or suspected to contain MEC or MC.

GLOSSARY OF TERMS

Munitions Response Site Prioritization Protocol (MRSPP): The methodology that was developed for prioritizing MRSs for response actions under the MMRP.

Napalm Bomb: A bomb made from a thick and highly incendiary liquid, usually consisting of petrol gelled with aluminum soaps.

National Contingency Plan (NCP): The National Oil and Hazardous Substances Pollution Contingency Plan. These CERCLA regulations provide the federal government the authority to respond to the problems of abandoned or uncontrolled hazardous waste disposal sites as well as to certain incidents involving hazardous wastes (e.g., spills).

Nonhazardous Solid Waste Landfill: Also known as a municipal solid waste landfill, this is a discrete area of land or excavation that receives (or received) household waste. Other types of wastes routinely disposed of in a nonhazardous solid waste landfill can include commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator waste, and industrial nonhazardous solid waste.

Open Burning/Open Demolition: A disposal method of unserviceable and obsolete munitions through controlled burn and detonation.

Primer: A primer, also known as a blasting cap, is a small, sensitive, primary explosive device generally used to detonate a larger, more powerful and less-sensitive secondary explosive such as TNT, dynamite, or plastic explosive. Primers come in a variety of types, including nonelectric caps, electric caps, and fuse caps.

Production: The action of making or manufacturing from components or raw materials.

Proposed Plan (PP): This CERCLA document provides the public with information necessary to participate in the selection of an alternative. It is designed to solicit public comment on a Preferred Alternative before a ROD is established.

Receptor: See environmental receptor, human receptor, and representative receptor.

Record of Decision (ROD): A legal record signed by the Army and Ohio EPA. It describes the cleanup action or alternative selected for a site, the basis for selecting that alternative, public comments, responses to comments, and the estimated cost of the alternative.

Remedial Action: The actual construction or implementation phase of a CERCLA site cleanup that follows Remedial Design.

Remedial Decision: A formal, written communication from the regulating authority that approves a site investigation, identifies the Preferred Alternative, and approves the remedial action, if any, at a site.

Remedial Investigation (RI): A CERCLA investigation that involves sampling environmental media, such as air, soil, and water, to determine the nature and extent of contamination and to calculate human health and environmental risks that result from the contamination.

Remedy Selection Process: A part of the CERCLA process, typically from the PP through the Record of Decision that involves public participation in identifying the Preferred Alternative. The final selection of the Preferred Alternative is made in the Record of Decision after taking into consideration the recommendations in the PP and any comments received from the public during the 30-day comment period.

Renovation: The process of improving a broken, damaged, or outdated structure or piece of equipment.

Responsiveness Summary: A section of the Record of Decision where the Army documents and responds to written and oral comments received from the public about the PP.

Sanitary Landfill Permit: A permit issued for nonhazardous solid waste landfills (also known as municipal solid waste landfills) in the State of Ohio under Ohio Administrative Code Chapter 3745-27, Rules 01 to 20, and regulated pursuant to Subtitle D of Resource

GLOSSARY OF TERMS

Conservation and Recovery Act under Section 40, Part 258 of the Code of Federal Regulations.

Site Inspection (SI): Part of the CERCLA evaluation process that is conducted following a Preliminary Assessment to further evaluate the extent to which a site presents a threat to human health or the environment.

Weapons Demilitarization Facility: A facility or installation involved in the reduction of a nation's army, weapons, weapons systems, or military vehicles to an agreed upon minimum.

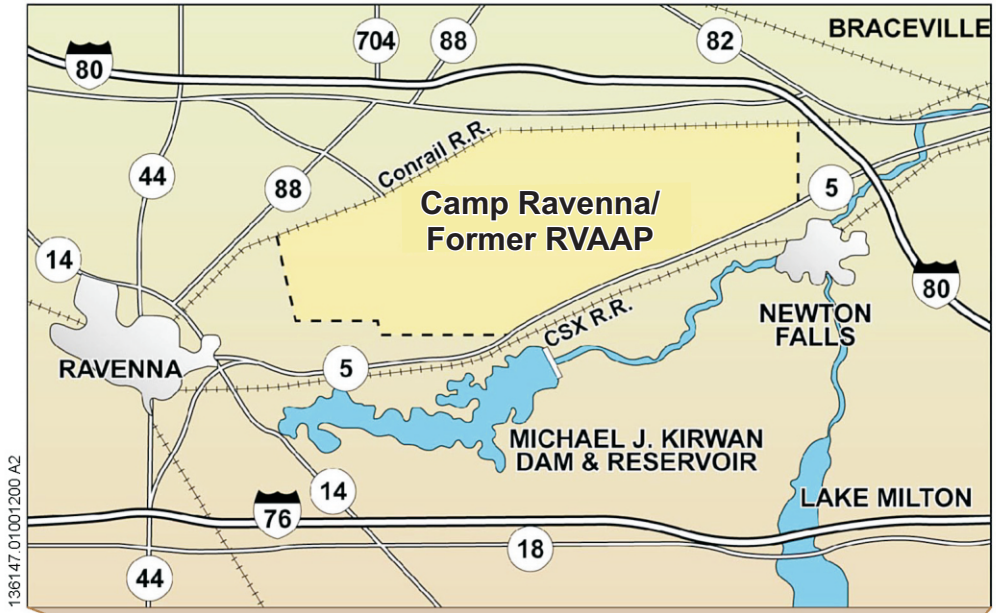
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FIGURES

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 Source: CB&I

Legend

 Camp Ravenna/Former RVAAP




Figure 1
Location Map
Camp Ravenna/
Former RVAAP
Portage and Trumbull
Counties, Ohio



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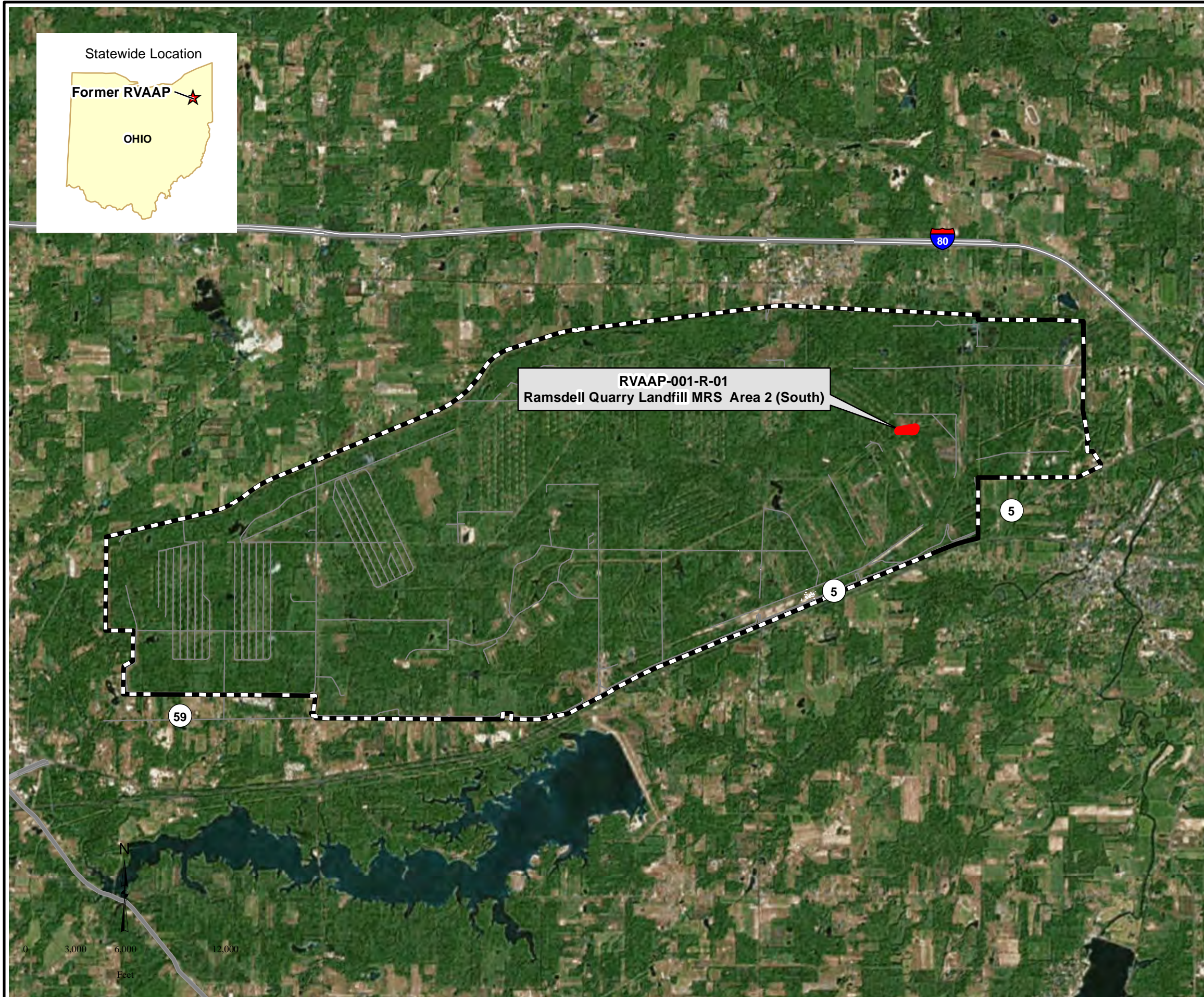
Figure 2
MRS Location Map
Ramsdell Quarry Landfill MRS
Area 2 (South)
Camp Ravenna/Former RVAAP
Portage and Trumbull Counties, Ohio

Legend

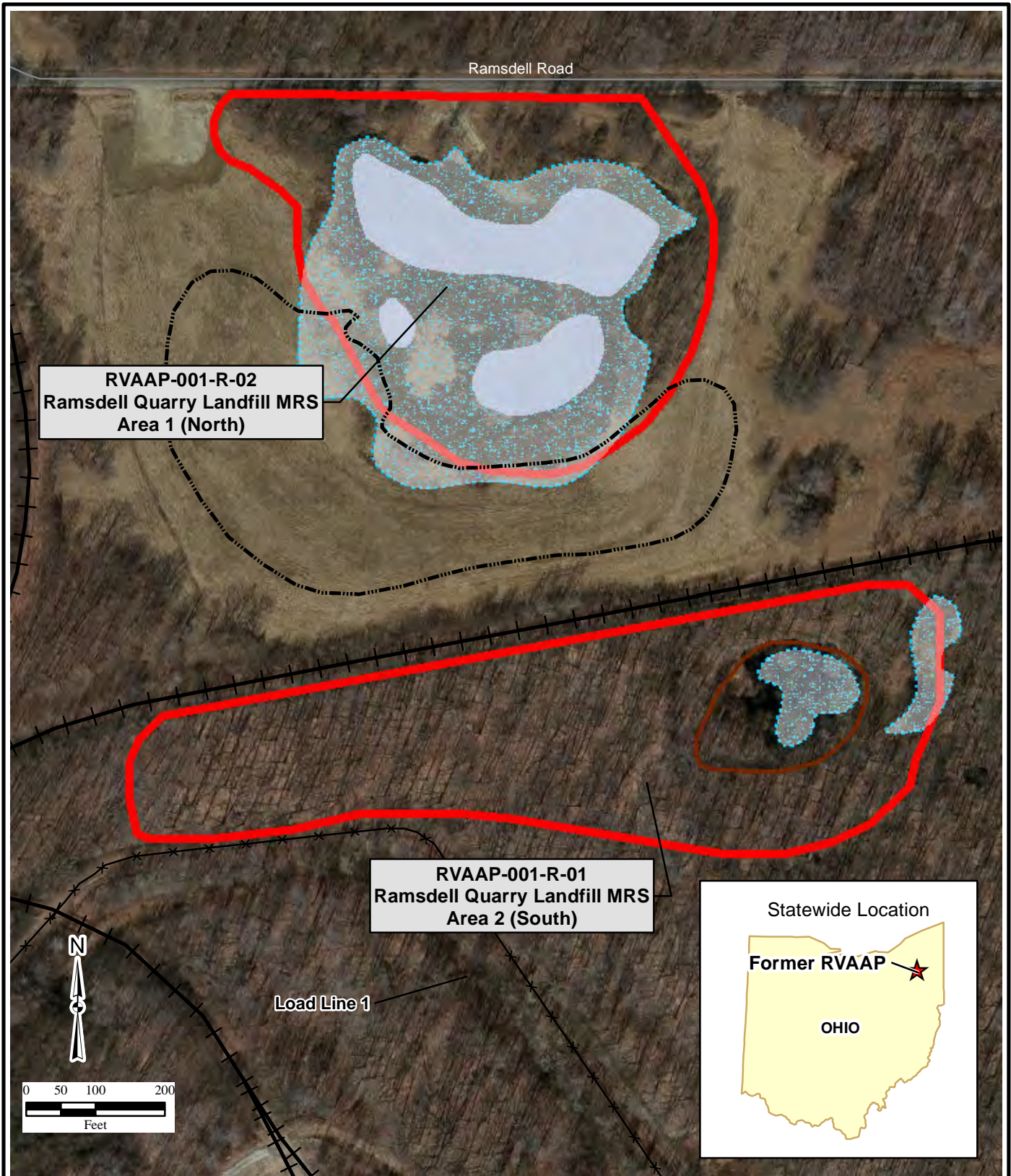
-  Munitions Response Site Boundary
-  Facility Boundary
-  Road

Notes:
MRS denotes Munitions Response Site
RVAAP denotes Ravenna Army Ammunition Plant

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**RVAAP-001-R-02
Ramsdell Quarry Landfill MRS
Area 1 (North)**








**RVAAP-001-R-01
Ramsdell Quarry Landfill MRS
Area 2 (South)**



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Boundary.mxd
6/08/2017 JWR
Source CB&I



Legend







-  MRS Boundary
-  Surface Water
-  Wetland
-  Approximate Landfill Boundary
-  Former Soil Borrow Pit
-  Former Railbed
-  Fence Line

**Figure 3
MRS Map
Ramsdell Quarry Landfill MRS
Area 2 (South)
Camp Ravenna/Former RVAAP
Portage and Trumbull Counties, Ohio**

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Figure 4
2007 Site Investigation Results
Ramsdell Quarry Landfill MRS
Area 2 (South)
Camp Ravenna/Former RVAAP
Portage/Trumbull Counties, Ohio

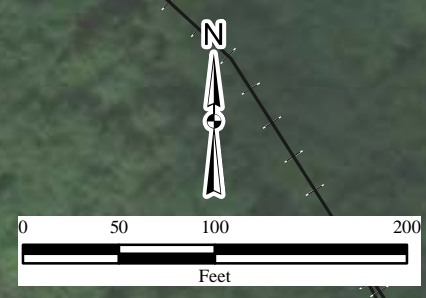
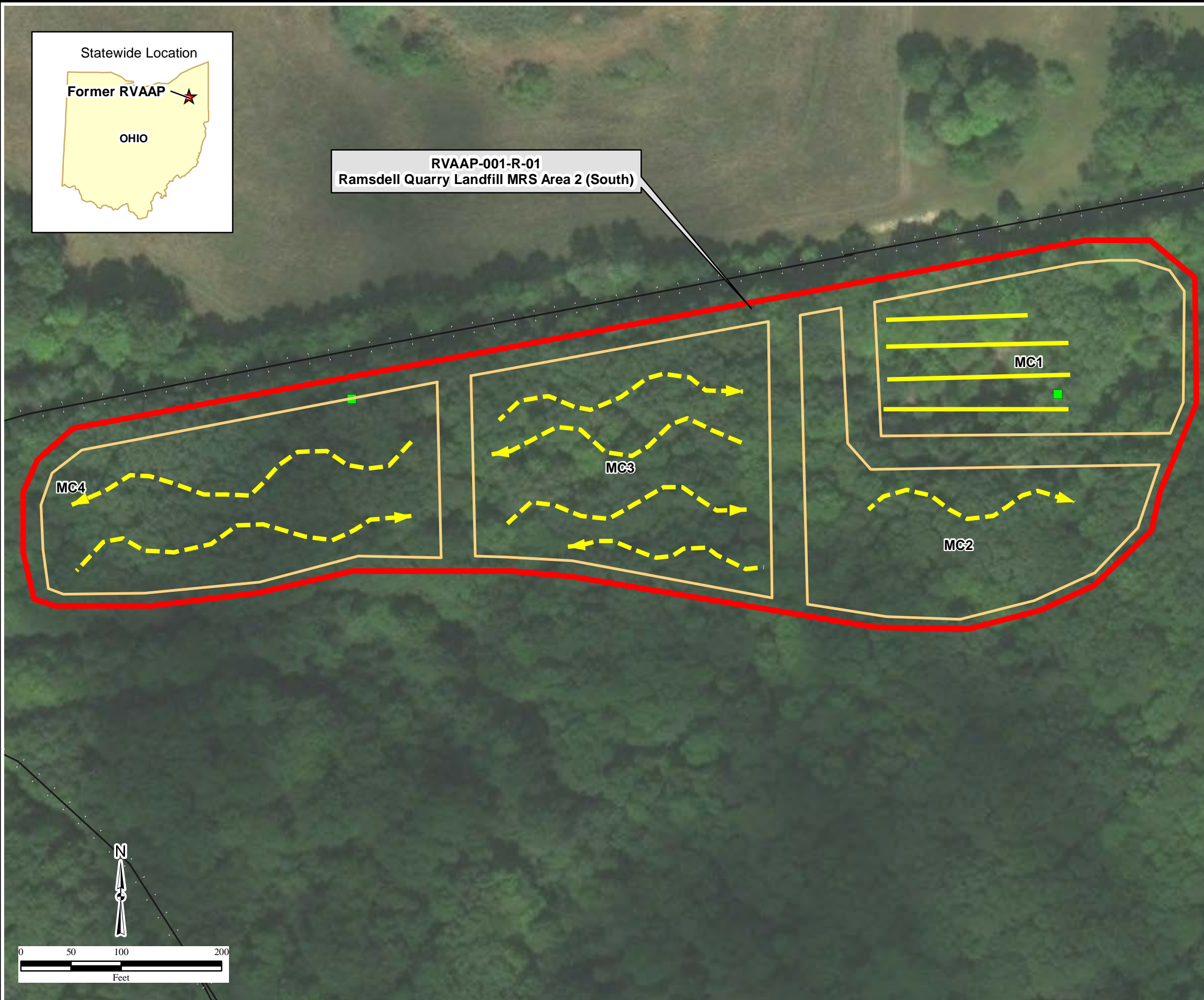
Legend

-  MRS Boundary
-  Sample Area for MC-Related Contamination
-  Line Abreast Survey Transects
-  Meanering Path Survey Transects
-  Munition Debris Location
-  Former Railroad

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Source APTIMI








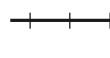







RVAAP-001-R-01
Ramsdell Quarry Landfill MRS Area 2 (South)



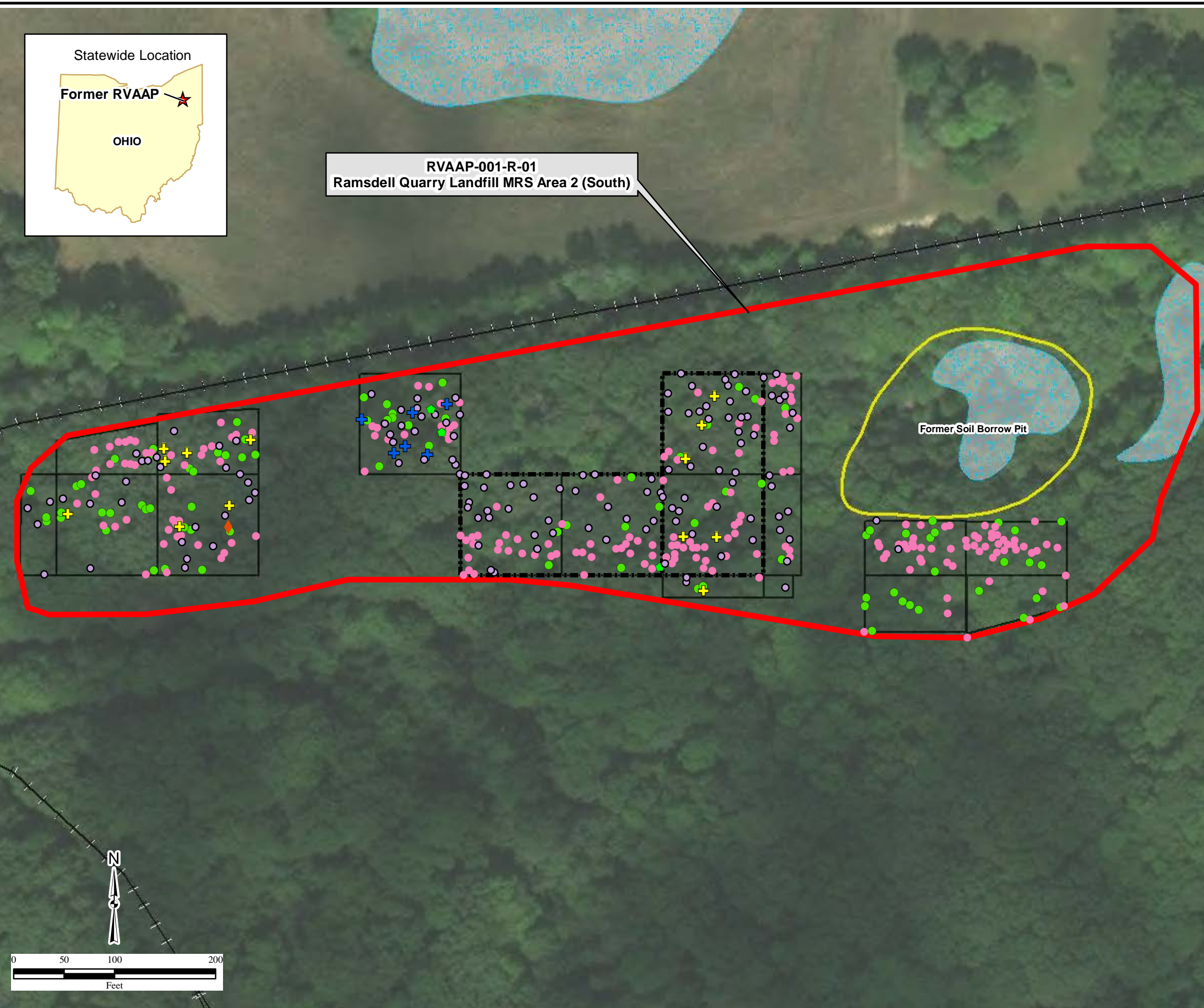
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Figure 5
2011 Remedial Investigation Results
Ramsdell Quarry Landfill MRS
Area 2 (South)
Camp Ravenna/Former RVAAP
Portage/Trumbull Counties, Ohio

Legend

-  MRS Boundary
 -  Wetland
 -  Former Soil Borrow Pit
 -  DGM Grid Boundaries
 -  Sample Areas for MC-Related Contamination
 -  Former Railroad
- Munition Debris (MD) and Other Debris**
-  Bomb, 250 lb, General Purpose, AN-M57
 -  Bomb, 500 lb, General Purpose, AN-M64
 -  Bomb, fragment, 20 lb, AN-M41
 -  Projectile, 155mm, Shrapnel, MK 1
 -  MD fragment, unknown
 -  Other Debris
 -  Anomaly Type Unknown

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