

**Final  
No Further Action Proposed Plan  
for  
RVAAP-019-R-01 Landfill North of Winklepeck  
Munitions Response Site**

**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  
10 S. Howard Street, Room 7000  
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**Prepared by:  
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**August 2, 2017**

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**REPORT DOCUMENTATION PAGE**

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None

**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 process for the former Ravenna Army Ammunition Plant (RVAAP)-019-R-01 Landfill North of Winklepeck Munitions Response Site (MRS) in Portage and Trumbull Counties, Ohio. This NFA Proposed Plan presents the U.S. Army's preliminary recommendations for addressing the MRS. The results of the Remedial Investigation fieldwork for the Landfill North of Winklepeck MRS support the determination that no hazards associated with exposure to material potentially presenting an explosive hazard (MPPEH)/munitions and explosives of concern (MEC) and no potential for MC risk to human or environmental receptors exists at the MRS.

**15. SUBJECT TERMS**

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| <b>16. SECURITY CLASSIFICATION OF:</b> |                         |                          | <b>17. LIMITATION OF ABSTRACT</b><br>SAR | <b>18. NUMBER OF PAGES</b><br>34 | <b>19a. NAME OF RESPONSIBLE PERSON</b><br>Kimberly Vaughn        |
| <b>a. REPORT</b><br>U                  | <b>b. ABSTRACT</b><br>U | <b>c. THIS PAGE</b><br>U |  |                                  | <b>19b. TELEPHONE NUMBER (Include area code)</b><br>512-828-6684 |

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

September 6, 2017

Mark Leeper, P.G., MBA  
Team Lead, Cleanup and  
Restoration Branch  
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111 George Mason St.  
Arlington, VA 22204

Re: **US Army Ravenna Ammunition Plt RVAAP  
Remediation Response  
Plans  
Remedial Response  
Portage County  
267000859202**

**Subject: "Final No Further Action Proposed Plan, RVAAP-019-R-01 Landfill North of Winklepeck Munitions Response Site" Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio: Dated August 2, 2017**

Dear Mr. Leeper:

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 (Final PP), RVAAP-019-R-01 Landfill North of Winklepeck Munitions Response Site (MRS)," dated August 2, 2017. This document was received by Ohio EPA's NEDO on August 3, 2017. It 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 PP, other investigation documents/reports, and Ohio EPA's oversight participation during the investigation, Ohio EPA approves the Final PP for the Landfill North of Winklepeck MRS. As stated in the Final PP, the Army will offer a public comment period between November 3 through December 8, 2017, and hold an open house/public meeting on November 8, 2017.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Proffitt".

Michael Proffitt, Chief  
Division of Environmental Response and Revitalization

NCR/nvr

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## CONTRACTOR'S STATEMENT OF INDEPENDENT TECHNICAL REVIEW

HydroGeoLogic, Inc., has completed the *Final No Further Action Proposed Plan for RVAAP-019-R-01 Landfill North of Winklepeck Munitions Response Site*, at the former Ravenna Army Ammunition Plant, 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.

Reviewed/Approved by: Janardan J Patel  
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Date: August 2, 2017

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ARNG – Army National Guard

COR – Contracting Officer’s Representative

IED – Installation and Environment 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

|                                 |  |
|---------------------------------|--|
| ARNG                            | Army National Guard  |
| Camp Ravenna                    | Camp Ravenna Joint Military Training Center  |
| CB&I                            | Federal Services, LLC  |
| CERCLA                          | Comprehensive Environmental Response, Compensation and Liability Act   |
| e <sup>2</sup> M                | Engineering-Environmental Management, Inc.   |
| Final Historical Records Review | <i>Final Military Munitions Response Program Historical Records Review, Ravenna Army Ammunition Plant, Ohio</i>                                  |
| Final RI Report                 | <i>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</i> |
| Final SI Report                 | <i>Final Site Inspection Report, Ravenna Army Ammunition Plant, Ohio</i>   |
| HGL                             | HydroGeoLogic, Inc.  |
| IRP                             | Installation Restoration Program   |
| MC                              | munitions constituents   |
| MEC                             | munitions and explosives of concern  |
| MMRP                            | Military Munitions Response Program  |
| MPPEH                           | material potentially presenting an explosive hazard  |
| MRS                             | munitions response site  |
| NFA                             | No Further Action  |
| Ohio EPA                        | Ohio Environmental Protection Agency   |
| PP                              | Proposed Plan  |
| RI                              | Remedial Investigation   |
| RVAAP                           | Former Ravenna Army Ammunition Plant   |
| SI                              | Site Inspection  |
| TNT                             | trinitrotoluene  |
| U.S.                            | United States  |
| U.S. Army                       | U.S. Department of the Army  |
| USACE                           | U.S. Army Corps of Engineers   |

## 1.0 INTRODUCTION

The United States (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 process** for the RVAAP-019-R-01 Landfill North of Winklepeck **Munitions Response Site (MRS)**. The former Ravenna Army Ammunition Plant (RVAAP) is located in Portage and Trumbull Counties, Ohio, as shown on **Figure 1**. The location of the Landfill North of Winklepeck MRS in relation to the former RVAAP is shown on **Figure 2**.

The U.S. 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 Proposed Plan presents the U.S. Army's preliminary recommendations for addressing the Landfill North of Winklepeck MRS. Investigations indicate that **material potentially presenting an explosive hazard (MPPEH)**, **munitions and explosives of concern (MEC)**, or concentrated areas of **munitions debris** are not present at the MRS. As no MPPEH, MEC, or munitions debris is present, there cannot be a source for **munitions constituents (MC)**. Therefore, no **explosive hazards** or MC risks to human or environmental receptors exist.

The U.S. Army is issuing this NFA Proposed Plan 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** (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 (DFFO) for RVAAP** (Ohio EPA, 2004).

This NFA **Proposed Plan** summarizes information contained in the *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* (Final **Remedial Investigation [RI] Report**) (CB&I Federal Services, LLC [CB&I], 2015). The U.S. Army encourages the public to review this document 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 U.S. Army, in consultation with the Ohio EPA, will review and consider all comments on this NFA Proposed Plan received during the 30-day public comment period. The public is encouraged to review and comment on all recommendations presented in this NFA Proposed Plan.

## 2.0 FACILITY AND MRS BACKGROUND

This section presents a summary of the history of the former RVAAP and of the Landfill North of Winklepeck MRS.

### 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.

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

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

The former RVAAP was constructed in 1940 and 1941 for assembly/loading and **depot storage** of ammunition. While serving as an ammunition plant, 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**, normal maintenance of equipment, and munitions storage. **Production** activities 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 disassembling munitions and melting out and recovering explosives using hot water and steam processes. These activities continued through 1992.

**Public Comment Period:**

November 3 to December 8, 2017

**Public Meeting:**

The U.S. Army will hold an open house/public meeting to explain the NFA Proposed Plan. 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 November 8, 2017, at the Charlestown Town Hall, 6368 Rock Spring Road, Ravenna, Ohio 44266.

**Information Repositories:**

Information used in selecting the preferred remedy is available online at [www.rvaap.org](http://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.–9 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:

10 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 remedy, 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  
(330) 872-8003

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

In addition to production and demilitarization activities at the load lines, other facilities at 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 2007 *Final Military Munitions Response Program Historical Records Review* (Final Historical Records Review) modified the boundary and acreage of the Landfill North of Winklepeck MRS. The boundary of the MRS as established by the Historical Records Review is shown on **Figure 3** (Engineering-Environmental Management, Inc. [e<sup>2</sup>M], 2007). The landfill operated from 1969 to 1976 and accepted general RVAAP refuse, explosive waste residue, and open burn waste including flares and booster cups from the nearby Winklepeck Burning Grounds.

The MRS overlaps with the RVAAP-19 area of concern being investigated under the **Installation Restoration Program (IRP)**. RVAAP-19 is composed of the landfill area itself and is immediately west of the MRS. The RVAAP-19 boundary is shown on **Figure 3**.

The MRS acreage was revised based on the findings of the Site Inspection (See Section 2.3). The MRS addressed in this NFA Proposed Plan was initially 14.05 acres, revised to be a 2.3-acre area immediately east of the landfill on top of a small bluff in the north-central portion of the former RVAAP. The 2.3-acre MRS is shown in the RVAAP-019-R-01 boundary on **Figure 3**.

This Proposed Plan addresses the Landfill North of Winklepeck MRS and does not include the IRP area of concern, RVAAP-19. Additional details describing the MRS history are provided in the following sections.

## 2.3 MRS Historical Investigations

The following investigations and reports have been completed under the MMRP for the Landfill North of Winklepeck MRS:

- Final Historical Records Review (e<sup>2</sup>M, 2007);
- *Final Site Inspection Report* (Final Site Inspection [SI] Report) (e<sup>2</sup>M, 2008); and
- Final RI Report (CB&I, 2015).

### 2.3.1 Site Inspection Summary

In 2007, SI field activities were conducted at former RVAAP MRSs including the Landfill North of Winklepeck MRS. Recommendations were made in the Final SI Report to reduce the size of the MRS and to further investigate the MRS with respect to MEC and MC contamination under the MMRP.

Investigation activities included conducting a visual survey for unexploded ordnance on a meandering path along the hillside, creek bed, wooded area to the southeast, and downstream area of the MRS identified during the Historical Records Review (**Figure 4**).

No MEC items were discovered; however, munitions debris items recovered include a flare canister, a partially buried bomb casing fragment, and an empty 105mm projectile. Two areas of high subsurface anomaly density were identified along the length of the hillside adjacent to the landfill. The single composite sample collected where the flare canister was recovered did not contain explosives or propellants at concentrations greater than the preliminary remediation goals; however, lead, iron, and thallium levels exceeded former RVAAP background values. Locations of these findings are presented on **Figure 4**.

All items discovered during the SI were determined to be safe. No MEC was found during the visual survey. The SI recommended that the MRS footprint be decreased from 14.05 acres to a 2.3 acres in the northern portion of the MRS. The reduced footprint includes the area adjacent to and along the length of the former landfill down the slope to an unnamed stream to the

northeast. The new MRS boundary slightly overlaps with the IRP landfill to the south, includes the location where the flare canister was discovered, the location of the suspected booster cups and as shown on **Figure 4** (e<sup>2</sup>M, 2008).

## 2.4 Remedial Investigation Results

CB&I conducted RI field activities in 2011 to characterize the nature and extent of MPPEH and MC within the MRS. Historical information and the SI results were reviewed when planning the RI field effort. Activities included an **instrument-assisted visual survey** of 1.6 acres that covered 100 percent of accessible areas. The remaining 0.7 acres along the eastern slope of the landfill was determined to be inaccessible due to obstacles that limited the extent of the visual survey such as deadfall, standing water, and thick vegetation. The RI field activity results (**Figure 5**) are as follows:

- The sloped areas of the southwestern portion of the MRS were littered with metal debris (55-gallon drum, rusted pails/cans). Subsurface anomalies also were detected in these areas. It was assumed that any buried items would be consistent with the surface debris. Intrusive investigations were determined to be unnecessary.
- MEC was not found during the investigation. Therefore, a geophysical investigation and sample collection were not warranted.

Based on the results of the RI fieldwork, the project team concluded that the nature and extent of MEC and MC at the Landfill North of Winklepeck MRS (**Figure 5**) had been adequately characterized. No explosive safety hazards or potential sources of MEC were found; therefore, it was concluded that no source of MC existed within the MRS. The MRS was recommended for NFA (CB&I, 2015).

## 3.0 SCOPE AND ROLE OF RESPONSE ACTION

The results of the RI fieldwork conducted at the Landfill North of Winklepeck MRS support the selection of NFA as the preferred remedy for the MRS. The remedy must be protective of the

receptors associated with future land use. The future land use of the MRS is military training. The likely **human receptors** for the future land use are facility personnel, contractors, occasional trespassers, and National Guard trainees. **Environmental receptors** for the future land use include aquatic biota, terrestrial invertebrates (earthworms), voles, shrews, rabbits, robins, foxes, hawks, muskrats, ducks, minks, and benthic invertebrates (insect larvae, crayfish, snails, clams, and bivalves) (CB&I, 2015).

No MPPEH or concentrated areas of munitions debris are present, and no potential source of MC 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.

Although not anticipated, if any additional hazards are identified at the MRS, they would be addressed under the Military Munitions Response Program as a separate response action. No other investigations are ongoing at the MRS under the MMRP.

## 4.0 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 receptors identified for future land use at the Landfill North of Winklepeck MRS are facility personnel, contractors, occasional trespassers, and National Guard trainees. The likely environmental receptors include aquatic biota, terrestrial invertebrates (earthworms), voles, shrews, rabbits, robins, foxes, hawks, muskrats, ducks, minks, and benthic invertebrates (insect larvae, crayfish, snails, clams, and bivalves) (CB&I, 2015).

No MPPEH is present on the MRS. Therefore, no explosive safety hazards or risks associated with MC exist for the likely receptors at the Landfill North of Winklepeck MRS.



## 5.0 CONCLUSIONS AND RECOMMENDATIONS

The results of the RI fieldwork for the Landfill North of Winklepeck MRS support the determination that no hazards associated with exposure to MPPEH and no potential for MC risk to human or environmental receptors exists at the Landfill North of Winklepeck MRS. The U.S. Army, in consultation with the Ohio EPA, is recommending NFA as the preferred remedy under the MMRP for the Landfill North of Winklepeck 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 U.S. Army, in consultation with the Ohio EPA, will select the remedy for the MRS after reviewing and considering all comments submitted during the 30-day public comment period.

## 6.0 COMMUNITY PARTICIPATION

Public participation is an important component of the remedy selection process. The U.S. Army, in coordination with the Ohio EPA, is soliciting input from the community on the preferred remedy. The comment period extends from November 3 to December 8, 2017. This period includes a public meeting at which the U.S. Army will present this NFA Proposed Plan. The U.S. Army will accept oral and written comments at this meeting.

### 6.1 Public Comment Period

The 30-day comment period extends from November 3 to December 8, 2017 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 Proposed Plan. The U.S. Army and Ohio EPA will consider all public comments before selecting a remedy. During the comment period, the public is also encouraged to review documents pertinent to the Landfill North of Winklepeck MRS. This information is available at the Information Repositories and online at

[www.rvaap.org](http://www.rvaap.org). To obtain further information, contact the Camp Ravenna Environmental Office.

### 6.2 Public Meeting

The U.S. Army will hold an open house/public meeting on this NFA Proposed Plan on November 8, 2017, at 6:00 p.m. 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 preferred remedy. Comments made at the meeting will be transcribed.

### 6.3 Written Comments

If the public would like to provide comments, questions, or suggestions on this NFA Proposed Plan or other relevant issues in writing, they should be delivered to the U.S. Army at the public meeting or mailed (postmarked no later than December 8, 2017). The public can also submit comments, questions, or suggestions via email before the end of the comment period to the Camp Ravenna Environmental Office using the following email address: [kathryn.s.tait.nfg@mail.mil](mailto:kathryn.s.tait.nfg@mail.mil).

### POINT OF CONTACT FOR WRITTEN COMMENTS

**Camp Ravenna Environmental Office**  
1438 State Route 534 SW  
Newton Falls, Ohio 44444

### 6.4 U.S. Army Review of Public Comments

The U.S. Army will review all public comments before selecting the most appropriate action for the MRS. A **Responsiveness Summary**, a document that summarizes the U.S. Army's responses to comments received during the public comment period, will be included in the **Record of Decision**. The U.S. Army's final choice of action will be documented in the Record of Decision. The Record of Decision 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:** 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 remedy. It is available for public review at the Camp Ravenna Environmental Office; call (330) 872-8003 for an appointment.

**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.

**Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (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.

**Discarded Military Munitions:** 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**, military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed of in a manner consistent with applicable environmental laws and regulations.

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

**Environmental Receptor:** Any living organisms other than humans, the habitat that supports such organisms, or natural resources that could be adversely affected by environmental contaminations resulting from a release at or migration from a site.

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

**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 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.

**Information Repository:** A collection of documents relating to a facility with investigations and response actions under CERCLA and/or a site's permitting activity or corrective action. It includes documents and information about site activities as well as general information about environmental regulations and CERCLA. The purpose of an Information Repository is to (1) ensure open and convenient public access to site-related documents and (2) better inform the public of the restoration process.

**Installation Restoration Program (IRP):** A comprehensive program to identify,

## GLOSSARY OF TERMS

investigate, and clean up contamination at active/operating U.S. Army installations. Eligible sites include those contaminated by past defense activities that require response under CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA), and certain corrective actions required by the Resource Conservation and Recovery Act (RCRA). The objective of the IRP is to clean up contaminated environmental impacts from past U.S. Army activities with the following goals: (1) reduce risk to acceptable levels to protect the health and safety of installation personnel and the public, and (2) restore the quality of the environment. The IRP also complies with state, regional, and local requirements applicable to the cleanup of hazardous materials contamination, as well as related site safety. Community involvement activities are an integral part of the U.S. Army's IRP. Installation commanders seek community involvement early and throughout the cleanup process.

**Instrument-Assisted Visual Survey:** An investigation process whereby a line of unexploded ordnance technicians walks across the property in a systematic manner to identify items on the ground surface by sight or metallic items on or just below the ground surface using a magnetometer or other instrument. This approach is necessary in areas where there is vegetation that cannot be removed.

**Large-Caliber Shell:** A projectile or shell is a missile fired from the muzzle of a gun; it is always the projectile, whether issuing from the muzzle of a breech-loading rifle, using separate ammunition, or from the muzzle of a rapid-fire gun, using fixed, cartridge-case ammunition. Projectiles for guns of and above 7 inches in caliber are considered large-caliber.

**Material Potentially Presenting an Explosive Hazard (MPPEH):** Material that, prior to determination of its explosives safety status, potentially contains explosives or munitions (e.g., munitions containers and packaging material; munitions debris remaining after munitions use, demilitarization, or disposal;

and range-related debris); or potentially contains a high enough concentration of explosives such that the material presents an explosive hazard (e.g., equipment, drainage systems, holding tanks, piping, or ventilation ducts that were associated with munitions production, demilitarization, or disposal operations).

**Military Munitions Response Program (MMRP):** A U.S. Department of Defense 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.

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

**Munitions Debris:** 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 munition 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 unexploded ordnance, discarded military munitions, 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.

**National Oil and Hazardous Substances Pollution Contingency Plan:** The National Oil and Hazardous Substances Pollution Contingency Plan is a collection of CERCLA regulations that provide the U.S. Government the authority to respond to the problems of abandoned or uncontrolled hazardous waste

## GLOSSARY OF TERMS

disposal sites as well as to certain incidents involving hazardous wastes (e.g., spills).

**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, or the process of being so manufactured.

**Proposed Plan:** This CERCLA document provides the public with information necessary to participate in the selection of a remedy. It is designed to solicit public comment on a preferred remedy before a Record of Decision is established.

**Receptor:** See human or ecological receptor.

**Record of Decision:** A legal record signed by the U.S. Army following coordination and concurrence with the Ohio EPA as per a June 10, 2004, agreement between the two parties. It describes the cleanup action or remedy selected for a site, the basis for selecting that remedy, public comments, responses to comments, and the estimated cost of the remedy.

**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 remedy, 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 Proposed Plan through the Record of Decision, that involves public participation in identifying the preferred remedy. The final selection of the preferred remedy is made in the Record of Decision after taking into consideration the recommendations in the Proposed Plan 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 U.S. Army documents and responds to written and oral comments received from the public about the Proposed Plan.

**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.

## REFERENCES

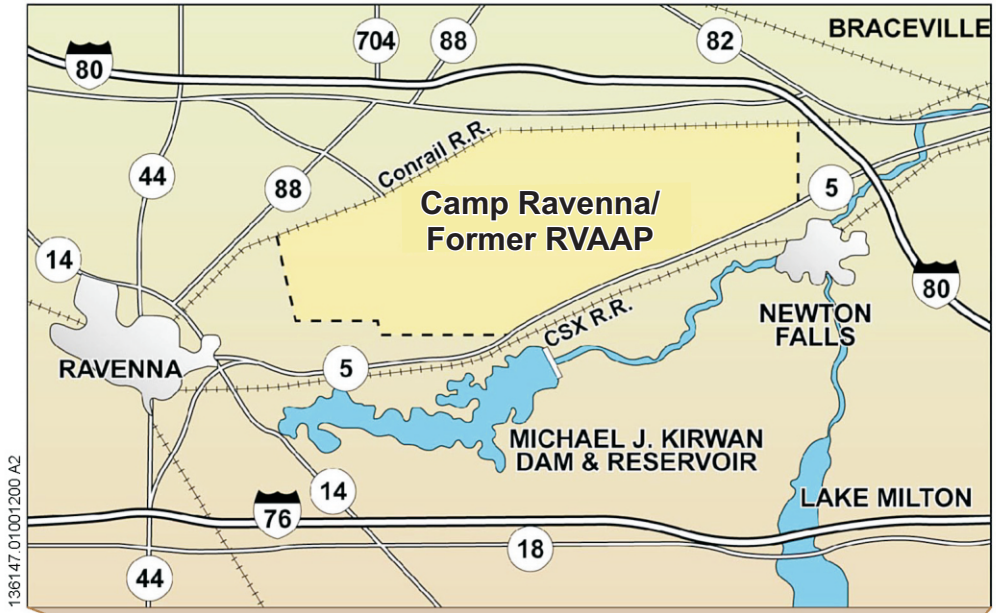
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## **FIGURES**

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 (01)Location\_Map.cdr  
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 Source: CB&I

Legend

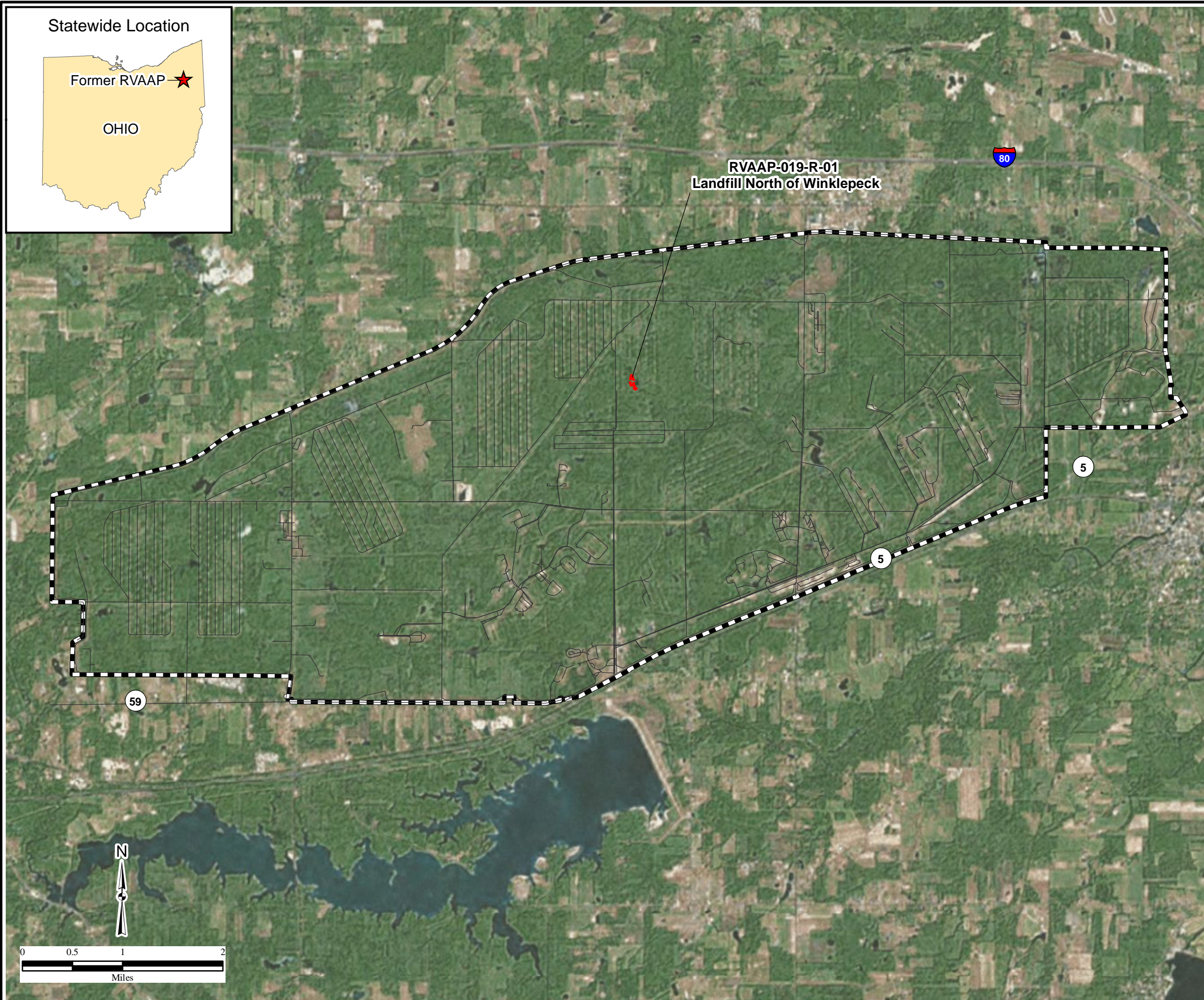
 Camp Ravenna/Former RVAAP

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



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**Figure 2**  
**MRS Location**  
**Camp Ravenna/Former RVAAP**  
**Portage and Trumbull Counties, Ohio**



Legend

- Road
- ▭ MRS
- ▭ Installation Boundary

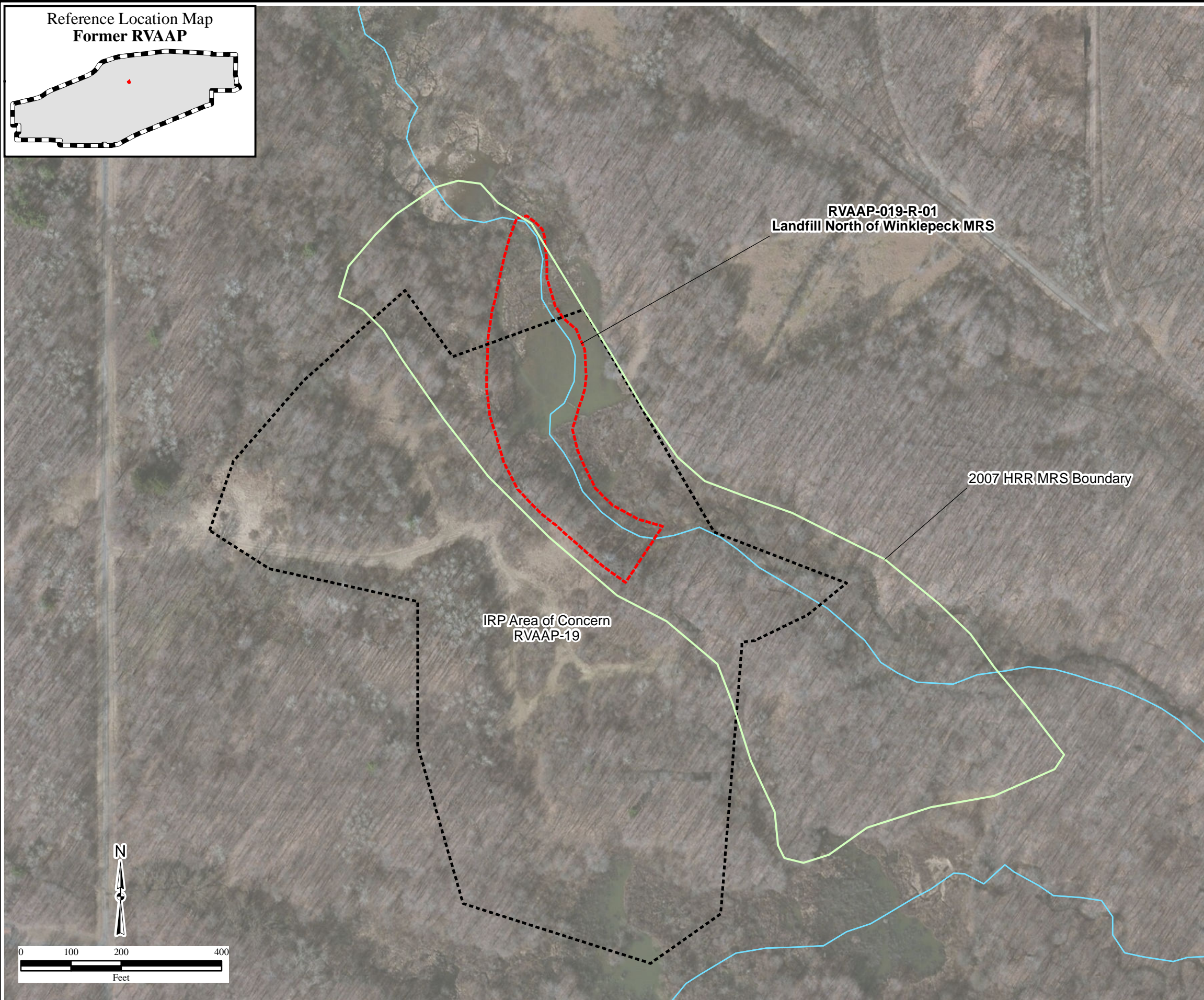
Notes:  
MRS=munitions response site  
RVAAP=Ravenna Army Ammunition Plant

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Source: HGL, CB&I, USACE, e3M  
ArcGIS Online Imagery






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**Figure 3**  
**Landfill North of Winklepeck MRS**  
**Previous Investigation Footprints**  
**Camp Ravenna/Former RVAAP**  
**Portage and Trumbull Counties, Ohio**



Legend

-  IRP Area of Concern
-  2007 HRR MRS Boundary
-  MRS

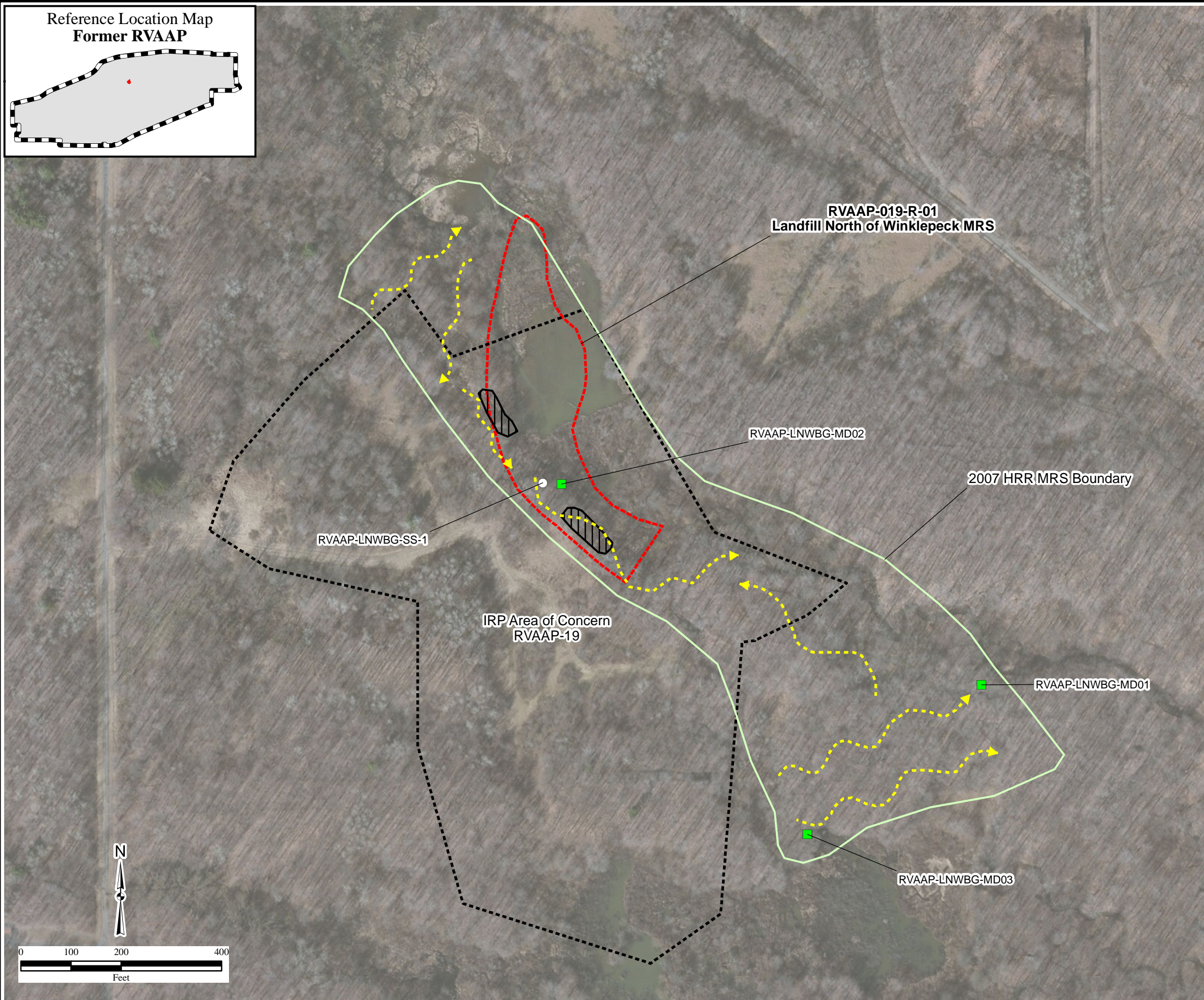
Notes:  
HRR=Historical Records Review  
IRP=Installation Restoration Program  
MRS=munitions response site  
RVAAP=Ravenna Army Ammunition Plant

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Source: HGL, CB&I, USACE, e3M  
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**Figure 4**  
**Landfill North of Winklepeck MRS**  
**2008 Site Inspection Results**  
**Camp Ravenna/Former RVAAP**  
**Portage and Trumbull Counties, Ohio**



Legend

- Soil Sample
- Munition Debris
- > Meandering Path Survey Transect
- ▨ Subsurface Anomaly Area
- IRP Area of Concern
- 2007 HRR MRS Boundary
- ▭ MRS

| Munition Debris  | Item Description       |
|------------------|------------------------|
| RVAAP-LNWBG-MD01 | Fragmented bomb casing |
| RVAAP-LNWBG-MD02 | Empty flare canister   |
| RVAAP-LNWBG-MD03 | Empty 105mm projectile |

Notes:  
Munitions debris items identified during the October 2007 Site Inspection field effort.

HRR=Historical Records Review  
IRP=Installation Restoration Program  
MRS=munitions response site  
RVAAP=Ravenna Army Ammunition Plant

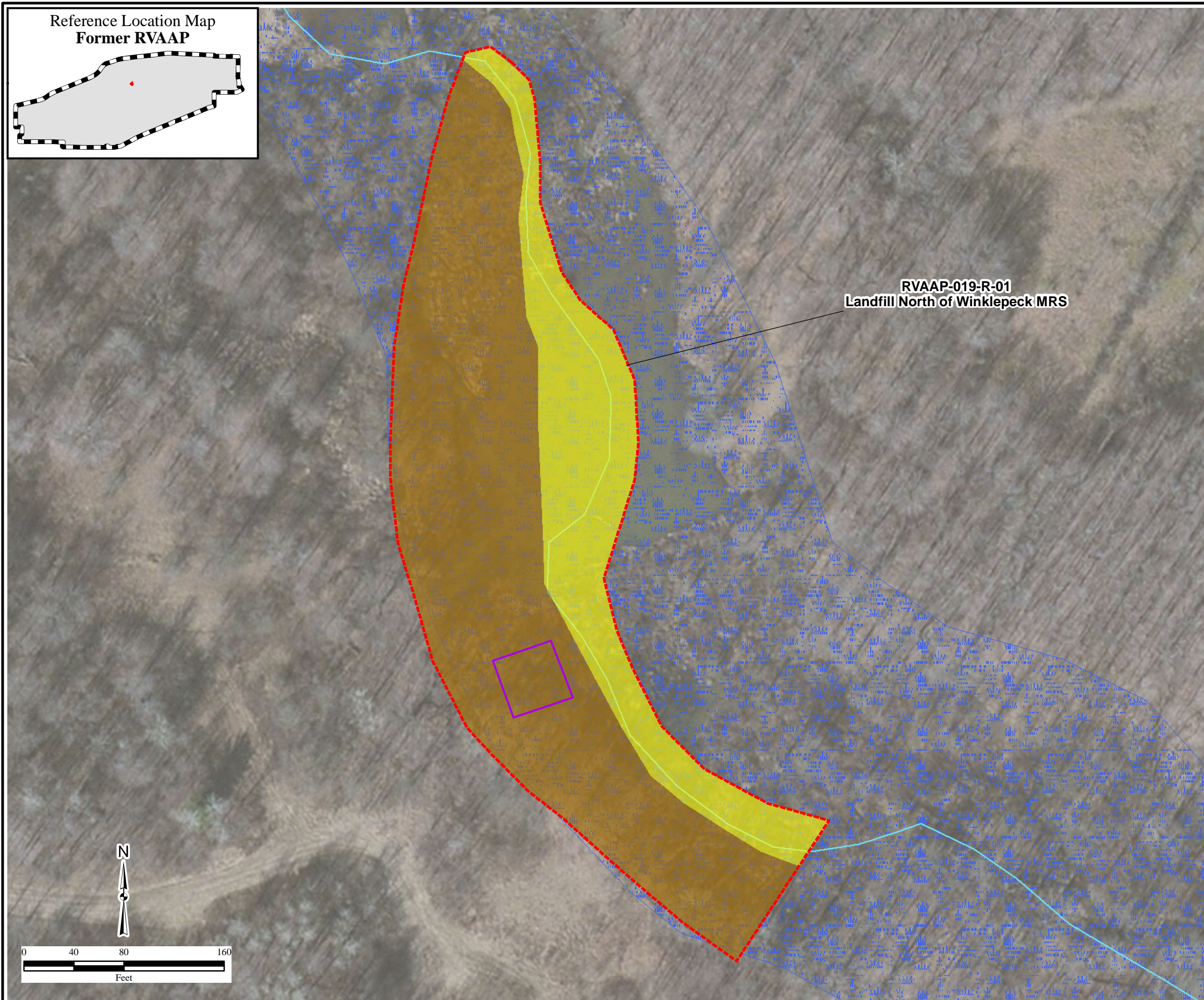
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Source: HGL, CB&I, USACE, e²M









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**Figure 5**  
**Landfill North of Winklepeck MRS**  
**2015 Remedial Investigation Results**  
**Camp Ravenna/Former RVAAP**  
**Portage and Trumbull Counties, Ohio**



Legend

-  Stream
-  Primary Area of Debris Along Slope
-  Inaccessible Area (Water)
-  Surface Sweep Complete  
(No Munitions Debris or Material Potentially Presenting Explosive Hazard Items Found)
-  Planning Level Surveys Wetland
-  MRS

Notes:  
MRS=munitions response site  
RVAAP=Ravenna Army Ammunition Plant

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Source: HGL, CB&I, USACE, e2M  
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