Draft No Further Action Proposed Plan 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

Contract No. W912DR-09-D-0005
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14. ABSTRACT
This No Further Action (NFA) Proposed Plan provides the public with information to comment upon the selection of the recommended response action for RVAAP-062-R-01 Water Works #4 Dump Munitions Response Site (MRS) at the former Ravenna Army Ammunition Plant under the Military Munitions Response Program. This NFA Proposed Plan presents the U.S. Army's preliminary recommendations concerning how best to address the Water Works #4 Dump MRS where no munitions and explosives of concern were found that had the potential to originate from historical activities associated with manufacturing, storing, transporting, testing, training, and/or disposal that occurred at the facility. The U.S. Army is issuing this NFA Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 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 for the MRS will also satisfy the requirements of the Ohio EPA Director's Final Findings and Orders,

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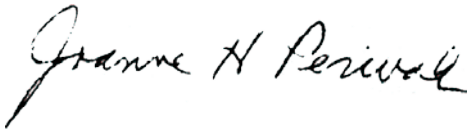
CONTRACTOR'S STATEMENT OF INDEPENDENT TECHNICAL REVIEW

CB&I Federal Services LLC has completed the *Draft No Further Action Proposed Plan for RVAAP-062-R-01 Water Works #4 Dump Munitions Response Site*, Version 1.0, at the former 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:  Date: April 23, 2015

David Crispo
Project Manager

Reviewed/Approved by:  Date: April 23, 2015

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CB&I—CB&I Federal Services LLC
Ohio EPA—Ohio Environmental Protection Agency
RVAAP—former Ravenna Army Ammunition Plant
USACE—United States Army Corps of Engineers

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ACRONYMS AND ABBREVIATIONS

AMEC	AMEC Earth and Environmental, Inc.
amsl	above mean sea level
bgs	below ground surface
Camp Ravenna	Camp Ravenna Joint Military Training Center
CB&I	CB&I Federal Services LLC
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
cm/s	centimeters per second
e^2M	engineering-environmental Management, Inc.
EPA	U.S. Environmental Protection Agency
ERA	ecological risk assessment
Final RI Report	*Final Remedial Investigation Report for RVAAP-062-R-01 Water Works #4 Dump MRS, Version 1.0*
HHRA	human health risk assessment
MC	munitions constituents
MD	munitions debris
MDAS	material documented as safe
MEC	munitions and explosives of concern
MEC HA	MEC Hazard Assessment
mm	millimeter
MMRP	Military Munitions Response Program
MRS	Munitions Response Site
NFA	No Further Action
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
PRG	Preliminary Remediation Goal
RI	Remedial Investigation
RVAAP	former Ravenna Army Ammunition Plant
Shaw	Shaw Environmental & Infrastructure, Inc.
SI	Site Inspection
SI Report	*Final Site Inspection Report*
TNT	trinitrotoluene
U.S.	United States
U.S. Army	U.S. Department of the Army
USDA	U.S. Department of Agriculture
UXO	unexploded ordnance

1.0 INTRODUCTION

This *No Further Action Proposed Plan* is presented by the United States Department of the Army (U.S. Army) to involve the public in the remedy selection process for the RVAAP-062-R01 Water Works #4 Dump Munitions Response Site (MRS) requiring No Further Action (NFA) at the former Ravenna Army Ammunition Plant (RVAAP) in Portage and Trumbull Counties, Ohio (**Figure 1**). 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 concerning how best to address the Water Works #4 Dump MRS where no munitions and explosives of concern (MEC) were found that had the potential to originate from historical activities associated with manufacturing, storing, transporting, testing, training, and/or disposal that occurred at the facility.

This NFA Proposed Plan provides the public with information to comment upon the selection of the recommended response action. The U.S. Army, in consultation with the Ohio EPA, will review and consider all comments during the 30-day public comment period. Therefore, the public is encouraged to review and comment on all recommendations presented in this NFA Proposed Plan.

The U.S. Army is issuing this NFA Proposed Plan as part of 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 also satisfy the requirements of the *Director's Final Findings and Orders* (Ohio EPA, 2004).

This NFA Proposed Plan summarizes information that can be found in greater detail in the *Final Remedial Investigation Report for RVAAP-062-R-01 Water Works #4 Dump MRS, Version 1.0* (Final RI Report; CB&I Federal Services LLC [CB&I], 2015). The U.S. Army encourages the public to review these documents to gain a more comprehensive understanding of the MRS and activities that have been conducted to date at the MRS under the Military Munitions Response Program (MMRP).

2.0 FACILITY AND MRS BACKGROUNDS

This section presents the descriptions and background history for the RVAAP and the Water Works #4 Dump MRS presented in this NFA Proposed Plan.

2.1 Facility History

The 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 facility is federally owned and is approximately 11 miles long and 3.5 miles wide. The facility is bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad to the south; Garret, McCormick, and Berry Roads to the west; the Norfolk Southern Railroad to the north; and State Route 534 to the east. In addition, the facility is surrounded by the communities of Windham, Garrettsville, Newton Falls, Charlestown, and Wayland (**Figure 1**).

Public Comment Period:
May XX, 2015, to June XX, 2015

Public Meeting:
The U.S. Army will hold an open house and public meeting to explain the NFA Proposed Plan. Oral and written comments will also be accepted at the meeting. The open house and public meeting are scheduled for 6:00 p.m., May XX, 2015, at the LOCATION TBD.

Information Repositories:
Information used in selecting the conclusion is available online for public review 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.–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**, containing information used in selecting the preferred alternative, is available for public 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 is restricted to Camp Ravenna, but the file can be obtained or viewed with prior notice to Camp Ravenna.

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 (OHARNG) for use as a training site, Camp Ravenna. The restoration program involves cleanup of former production areas across the facility related to former operations under the RVAAP.

The RVAAP was constructed in 1940 and 1941 for depot storage and ammunition assembly/loading. During operations as an ammunition plant, the RVAAP was a government-owned and contractor-operated industrial facility. Industrial operations at the facility 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 (mixture of TNT and Research Department Explosive) into large-caliber shells and bombs. The 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. Following cleaning, the "pink water" waste water, 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 were used to manufacture fuzes, primers, and boosters. From 1946 to 1949, Load Line 12 was used to produce ammonium nitrate for explosives and fertilizers prior to use as a weapons demilitarization facility.

In 1950, the facility was placed in 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. In addition to production missions, various demilitarization activities were conducted at facilities constructed at Load Lines 1, 2, 3, and 12. Demilitarization activities included disassembly of munitions and explosives melt-out and recovery operations using hot water

and steam processes. Periodic demilitarization of various munitions continued through 1992.

In addition to production and demilitarization activities at the load lines, other facilities at the RVAAP include MRSs that were used for the burning, demolition, and testing of munitions. These burning and demolition grounds consist of large parcels of open space or abandoned quarries. Other areas of concern present at the facility include landfills, an aircraft fuel tank testing facility, and various general industrial support and maintenance facilities [Science Applications International Corporation, 2011].

2.2 MRS Background and History

The Water Works #4 Dump MRS originally encompassed 6.15 acres of mostly forested area that included a small clearing, located immediately north of the Water Works #4 treatment building and west of Load Line 7 in the southwestern portion of the facility (**Figure 2**). The Water Works #4 Dump MRS was presumably used for the intentional dumping of nonexplosive metal parts of large-caliber ordnance rounds. These dumping activities reportedly occurred from 1941 to 1949. Large-caliber casings were previously found scattered lying on the ground surface and partially buried throughout the wooded area north of the clearing, as were metal parts identified as ogives from World War I-era 155 millimeter (mm) Mk I shrapnel projectiles (engineering-environmental Management, Inc. [e^2M], 2007). Ogives are the curved or tapered nose of the 155mm projectile that improved streamlining (Naval Explosive Ordnance Disposal Technology Center, 1981).

2.3 MRS Historical Investigations

The following environmental investigations and reports have been completed for the Water Works # 4 Dump MRS under the MMRP:

- *Final Military Munitions Response Program Historical Records Review* (e^2M, 2007)
- *Final Site Inspection Report* (SI Report; e^2M, 2008)

In 2007, a site inspection (SI) was completed at the Water Works #4 Dump MRS under the MMRP. The MRS at the time of the SI was 6.15 acres and consisted of a small clearing and the surrounding wooded area where the large-caliber casings and projectile ogives were historically found (**Figure 3**). During the SI field work, 20 155mm Mk I shrapnel projectile ogives were found scattered throughout the northern wooded area of the MRS. Unexploded ordnance (UXO)-qualified personnel inspected the ogives and determined that they contained no energetic material and were inert. The ogives were classified by the UXO-qualified personnel as material documented as safe (MDAS) and were considered to be munitions debris (MD). Several closely spaced subsurface anomalies were detected during the SI field activities in the open field portion of the MRS.

A sample for the evaluation of munitions constituents (MC) was collected in surface soil from the open field portion of the MRS during the SI field work and was analyzed for Target Analyte List metals, propellants, and explosives using U.S. Environmental Protection Agency (EPA) Methods 6010C and 8330B. The sample was compared to the EPA Region 9 Residential Soil Preliminary Remediation Goals (PRGs), the screening criteria used at the time of the SI. Thallium was the only metal detected above one-tenth the noncarcinogenic PRG at an estimated (i.e., "B" flagged) concentration of 1.1 milligrams per kilogram; however, thallium was dismissed as non-munitions related and was not considered as an MC. No explosives or propellants were detected in the soil sample.

No MEC was found during the SI field work, and it was recommended in the SI Report (e^2M, 2008), and subsequently approved by the stakeholders, that the MRS footprint be reduced from 6.15 to 0.77 acres to include only the open field area of the MRS where subsurface anomalies were detected. The original MRS acreage in the SI and the recommended reduced area (i.e., the current MRS) are presented on **Figure 3**. Since no MC was identified above the screening criteria during the SI field work,

further characterization of MC was not recommended for the MRS under the MMRP (e^2M, 2008).

2.4 MRS Characteristics

During development of the remedial investigation (RI) strategy at the Water Works #4 Dump MRS, the revised MRS boundaries that were established in the SI Report (e^2M, 2008) were reevaluated. Although few subsurface anomalies were detected during the SI field work in the wooded areas outside of the current MRS, the various MD previously identified on the ground surface in these areas represented concerns for remaining material potentially presenting an explosive hazard. Therefore, the wooded areas where the ogives were found during the SI were considered to require further investigation for MEC and the 5.38 acres removed from the MRS during the SI were reintroduced for further evaluation under the RI (i.e., the expanded investigation area) (Shaw Environmental & Infrastructure, Inc. [Shaw], 2011). **Figure 3** presents the current MRS boundaries and cultural features that remain near the Water Works #4 Dump MRS and the expanded investigation area for the RI field work. The characteristics of the MRS and the expanded investigation area are discussed in this section.

The topography at the Water Works #4 Dump MRS and surrounding area trends downgradient towards the southeast. The topography at the 0.77-acre MRS is relatively flat at approximately 1,150 feet above mean sea level (amsl). There is an elevation change of approximately 20 feet within the expanded investigation area that surrounds the MRS. The highest elevation is approximately 1,165 feet amsl at the northwest corner of the expanded investigation area, and the lowest elevation is approximately 1,145 amsl at the southeast corner of the investigation area.

The Water Works #4 Dump MRS is located over the Mercer Member geologic formation, and the bedrock elevation ranges from 1,100 to 1,150 feet amsl (AMEC Earth and Environmental, Inc. [AMEC], 2008). No bedrock formations were observed or encountered at the MRS during the RI; however, bedrock at the MRS appears to be relatively shallow, at depths less than 10 feet below ground surface (bgs) across the MRS (U.S. Department of Agriculture [USDA] et al., 1978).

Two native soil types, the Mahoning Silt Loam and the Mitiwanga Silt Loam, are present at the Water Works #4 Dump MRS and expanded investigation area. Both soil types have 2 to 6 percent slopes (AMEC, 2008).

The Mahoning Silt Loam is the predominant soil type at the MRS and at the eastern portion of the expanded investigation area. This soil type is characterized with medium to rapid runoff, severe seasonal wetness, and slow permeability. The average permeability of the Mahoning Silt Loam with a 2 to 6 percent slope is 9.1×10^{-5} centimeters per second (cm/s) (USDA et al., 1978).

The Mitiwanga Silt Loam is the predominant soil type in the expanded investigation area and a small area at the west side of the MRS. This is a nearly level soil type in wide, flat areas such as the MRS and the expanded investigation area. Permeability is very slow in the subsoil and underlying glacial till with an average rate of 1.04×10^{-7} cm/s. Runoff is slow and ponding is common after heavy rains or seasonally wet weather (USDA et al., 1978).

No groundwater monitoring wells have been specifically installed for the Water Works #4 Dump MRS. Based on the facility groundwater data collected for the Facility-Wide Groundwater Monitoring Program, the groundwater elevation at the MRS and the immediate vicinity appears to be at a potentiometric high at approximately 1,100 feet amsl. The groundwater appears to flow in all directions from this higher formation. The approximate depth to groundwater in the unconsolidated aquifer at the Water Works #4

Dump MRS and the immediate surrounding area is 50 feet bgs (Environmental Quality Management, Inc., 2012).

The plant communities present at and in the vicinity of the Water Works #4 Dump MRS and the expanded investigation area are a combination of red maple woods and oak-maple-tulip tree forest classifications (AMEC, 2008), while the open field consists mainly of grasses. Vegetation at the current MRS (open field area) may have been influenced/disturbed by the former use of the land as a dumping area.

Biological inventories have not occurred specifically within the MRS boundary, although no confirmed sightings of federal- or state-listed species have been reported. Although there is the potential for federal, state-listed, or rare species to be within the MRS boundary, the potential is unlikely due to the minimal size of the MRS (Camp Ravenna, 2010).

Current activities at the Water Works #4 Dump MRS include maintenance and natural resource management activities.

2.5 Remedial Investigation

Between September and December 2011, CB&I conducted the field work for the RI at the Water Works #4 Dump MRS. The RI field work included a Schonstedt-assisted visual survey at the 0.77-acre MRS as well as the 5.38-acre expanded investigation area and full-coverage digital geophysical mapping at the MRS area only.

Five ogives were found on the ground surface at the expanded investigation area during the Schonstedt-assisted visual survey. Two ogives were found during the intrusive investigation at the MRS at a maximum depth of 1 inch bgs. All of the ogives were classified as MDAS by the UXO-qualified personnel in the field and were considered as MD. The remainder of the anomalies identified during the intrusive investigation was considered to be non-munitions related or "Other Debris." No MEC were identified during the Schonstedt-assisted visual survey or the intrusive investigation at the MRS.

Sampling for MC at the MRS was not proposed during development of the RI field work unless MEC or concentrated areas of MD were found (Shaw, 2011). No MEC was identified at the Water Works #4 Dump MRS during RI field activities, and only individual MD consisting of ogives were found at isolated locations. Therefore; sampling for MC was not warranted.

To date, no MEC has been found at the Water Works #4 Dump MRS and the only MD historically found were ogives on the ground surface or subsurface soil at a maximum depth of 1 inch bgs. The RI field work confirmed the results of previous investigations at and outside the MRS where no MEC has ever been found; therefore, it is not expected that an explosive safety hazard would be present at the Water Works #4 Dump MRS. Based on the results of the MC sampling during the SI field activities and the MEC investigation portion of the RI field activities, it was determined that no potential source of MC was present at the Water Works #4 Dump MRS.

3.0 SCOPE AND ROLE OF RESPONSE ACTION

The Water Works #4 Dump MRS is federal property that is licensed to the OHARNG for future use as a military training site. The purpose of the RI field work was to evaluate for the presence of MEC associated with the historical findings of MD at the MRS and the expanded investigation area in support of its intended use. The selected remedy must be protective of the receptors associated with the future land use.

No explosive safety hazards have ever been found at the Water Works #4 Dump MRS or the expanded investigation area during the RI or previous investigations. Further, since no

MEC or concentrated areas of MD have been identified, there is no potential source of MC. Therefore, there are no source materials or impacted environmental media at the MRS or the expanded investigation area. Further, there are no nearby surface water features associated with the MRS.

No other investigations are currently ongoing at the MRS under the MMRP or the Installation Restoration Program. Although not anticipated, if any additional hazards are identified at this MRS that were not found during the RI field work, then they would be addressed under the MMRP as a separate response action.

4.0 SUMMARY OF HUMAN AND ECOLOGICAL RISKS

The overall recommendation of NFA under the MMRP must be protective of the human and environmental receptors identified for the MRS. The planned method for risk evaluation for explosive safety hazards at an MRS is the *Interim Munitions and Explosives of Concern Hazard Assessment (MEC HA) Methodology* (EPA, 2008). In addition to the risk assessment for MEC, screening-level risk assessments for both human health and ecological risks were proposed when environmental media that represented the potential for MC were identified and collected (Shaw, 2011). The evaluation of risk is required to estimate risk reduction for any response action, including NFA, and the evaluation and determinations for risk at the Water Works #4 Dump MRS, as presented in the Final RI Report (CB&I, 2015), are discussed in this section.

4.1 MEC Hazard Assessment

The MEC HA (EPA, 2008) addresses human health and safety concerns associated with potential exposure to MEC at a MRS under a variety of site conditions, including various cleanup scenarios and land use assumptions. If an explosive hazard is identified, the MEC HA evaluation will include the information available for the MRS up to and including the RI field activities and provide a scoring summary for the current and future land use activities. If no explosive hazard is found at the MRS, then there is no need to calculate a MEC HA score because there are no human health safety concerns.

No MEC representing an explosive safety hazard at the Water Works #4 Dump MRS were identified during the RI field activities. Therefore, calculation of a MEC HA score was not warranted for the MRS and the MEC exposure pathways for all receptors at the MRS are incomplete.

4.2 Human Health and Ecological Risk Assessment

The purpose of a human health risk assessment (HHRA) is to document whether MRS conditions may pose a risk to current or future receptors and to identify which, if any, MRS conditions need to be addressed further in the CERCLA process. An ecological risk assessment (ERA) evaluates the potential for adverse effects posed to ecological receptors from potential releases at a MRS.

Since no MEC or concentrated areas of MD was identified between the SI and RI field activities at the Water Works #4 Dump MRS, media sampling for MC was not warranted. Therefore, an HHRA or an ERA was not required to be performed for the MRS and no risk associated with MC was identified for human or ecological receptors at the MRS.

5.0 CONCLUSIONS AND RECOMMENDATIONS

No evidence of MEC or a source of MC was found at the Water Works #4 Dump MRS during the RI field work that was conducted under the MMRP. Based on these results, no risks associated with exposures to MEC or MC are present and the U.S. Army, in consultation with the Ohio EPA, is recommending NFA under the MMRP for the Water Works #4 Dump MRS. The overall recommendation of NFA under the MMRP is protective of the human and environmental receptors identified

for 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. The U.S. Army, in coordination with Ohio EPA, is soliciting input from the community on the preferred alternative. The comment period extends from May XX, 2015, to June XX, 2015. 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 is from May XX, 2015, to June XX, 2015, 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. All public comments will be considered by the U.S. Army and Ohio EPA before selecting a remedy. During the comment period, the public is encouraged to review documents pertinent to the Water Works #4 Dump MRS. This information is available at the Information Repositories and online at 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 and public meeting on this NFA Proposed Plan on May XX, 2015, at 6:00 p.m., at LOCATION TBD to accept comments. This meeting will provide an opportunity for the public to comment on the proposed action. Comments made at the meeting will be transcribed.

6.3 Written Comments

If the public would like to comment in writing on this NFA Proposed Plan or other relevant issues, please deliver comments to the U.S. Army at the public meeting or mail written comments (postmarked no later than June XX, 2015).

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 the public's comments as part of the process in reaching a final decision for the most appropriate action to be taken. The 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.

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GLOSSARY OF TERMS

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 Camp Ravenna Environmental Office; call (330) 872-8003 for an appointment.

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.

Complete Pathway: Complete pathways imply potential risks or hazards may exist and need to be addressed by managing the pathway.

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.

Incomplete Pathway: No risk or hazard associated with the pathway. No further data required to confirm the pathway is incomplete.

Material Potentially Presenting an Explosive Hazard (MPPEH): Material potentially containing explosives or munitions (e.g., munitions containers and packaging material; munitions debris remaining after munitions use, demilitarization, or disposal; and range-related debris); or material potentially containing 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). Excluded from MPPEH are munitions within the Department of Defense's established munitions management system and other hazardous items that may present explosion hazards (e.g., gasoline cans, compressed gas cylinders) that are not munitions and are not intended for use as munitions.

Military Munitions Response Program (MMRP): A 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 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.

National Contingency Plan: 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).

Potentially Complete Pathway: Data needs determine if the pathway is complete. If the pathway is determined to be incomplete, there is no risk or hazard. If the pathway is

determined to be complete, a potential risk or hazard exists.

Proposed Plan (PP): 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 alternative before a ROD is established.

Record of Decision (ROD): 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 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.

Responsiveness Summary: A section of the ROD where the U.S. Army documents and responds to written and oral comments received from the public about the Proposed Plan.

Unexploded Ordnance (UXO): Military munitions that have been primed, fuzed, armed, or otherwise prepared for action; have been fired, dropped, launched, projected, or placed in such a manner as to constituent a hazard to operations, installations, personnel, or material; and remain unexploded either by malfunction, design, or any other cause.

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FIGURES

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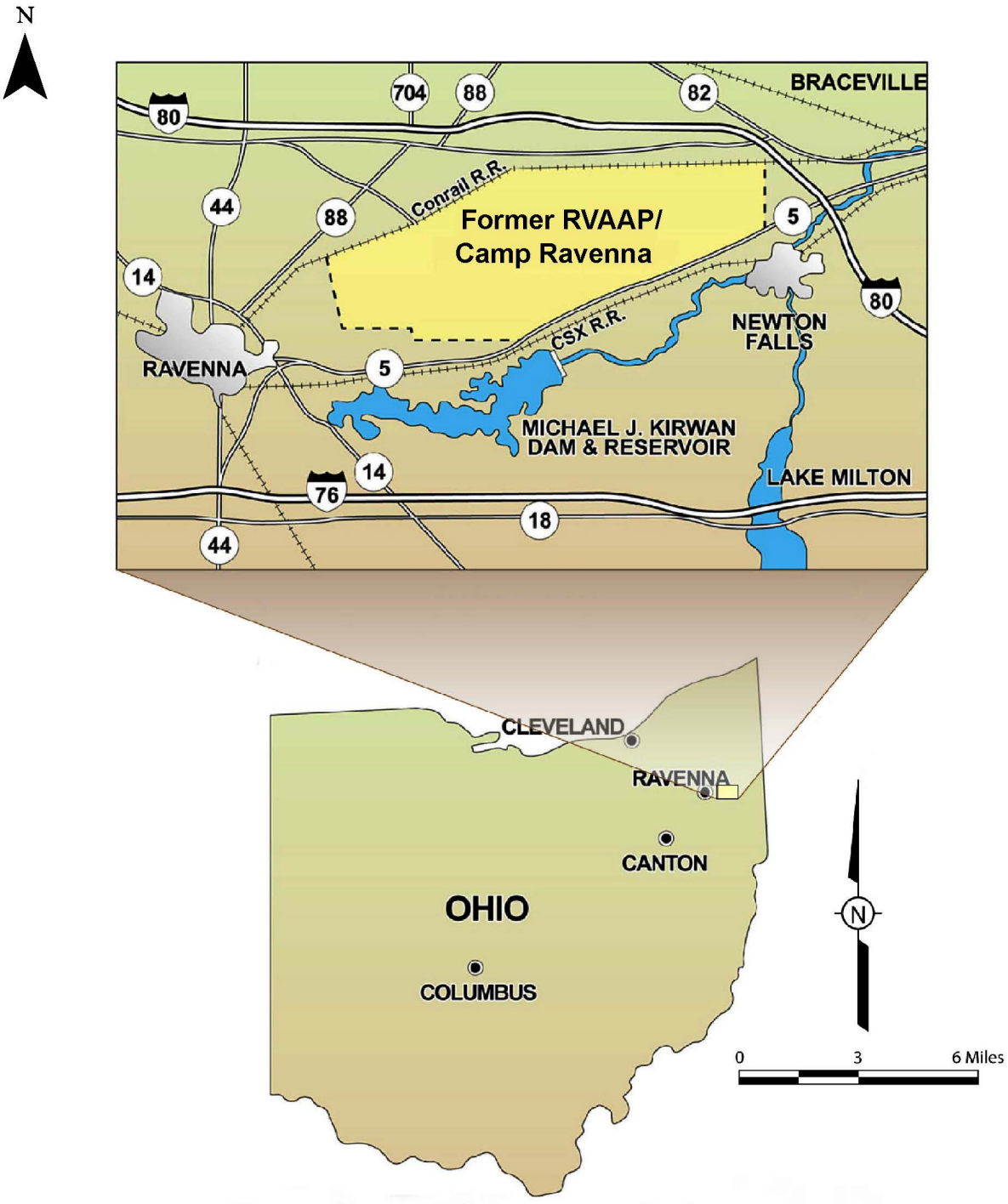

Note:
The Scale is for the Upper Map Only
Showing the Former RVAAP/Camp Ravenna Location

U.S. ARMY
CORPS OF ENGINEERS
BALTIMORE DISTRICT

MILITARY MUNITIONS RESPONSE PROGRAM

FORMER RVAAP/CAMP RAVENNA
PORTAGE AND TRUMBULL COUNTIES, OHIO

CB&I Federal Services LLC
150 Royall Street
Canton, MA 02021

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FIGURE 1 INSTALLATION LOCATION MAP

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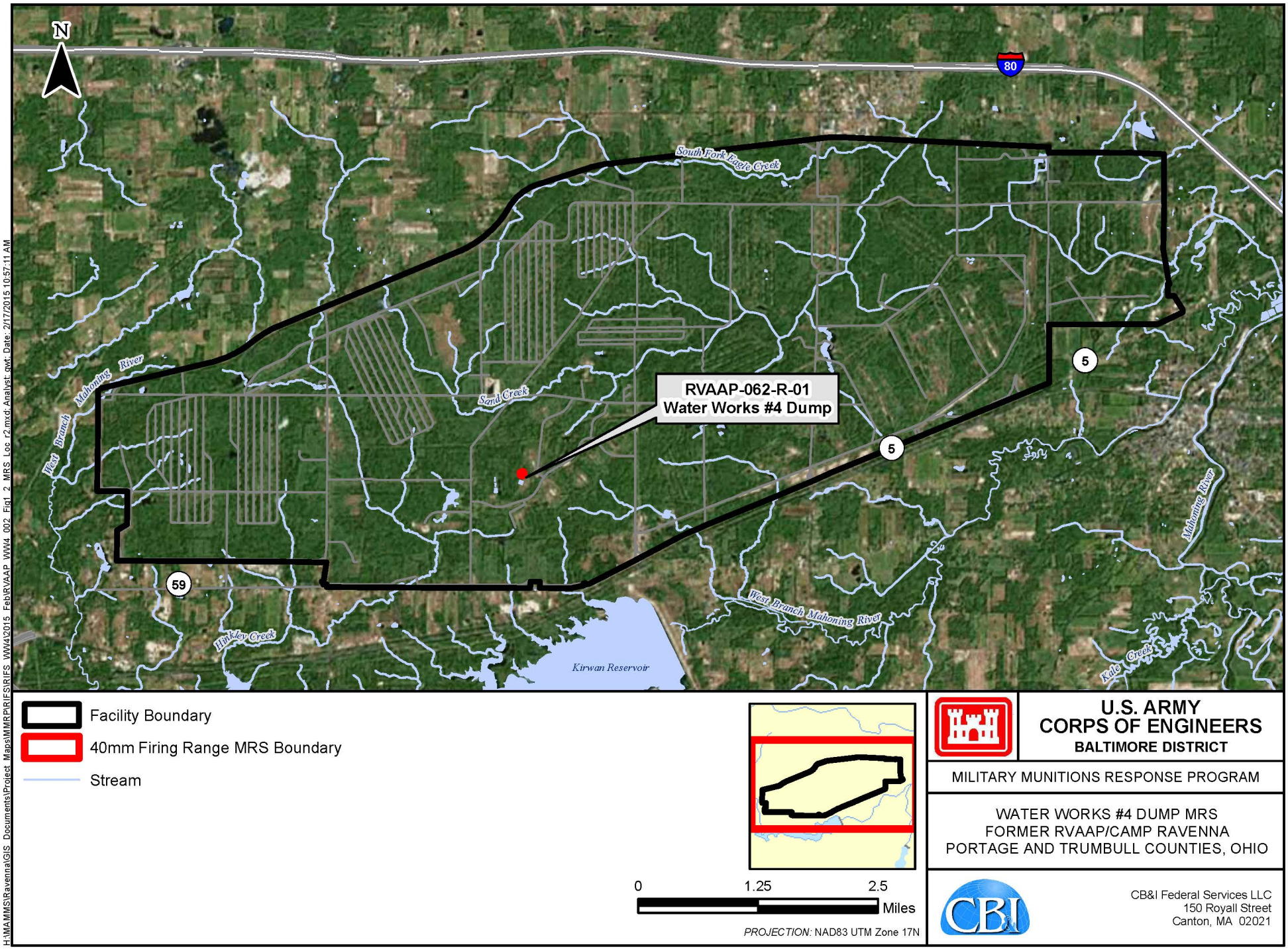

FIGURE 2 MRS LOCATION MAP

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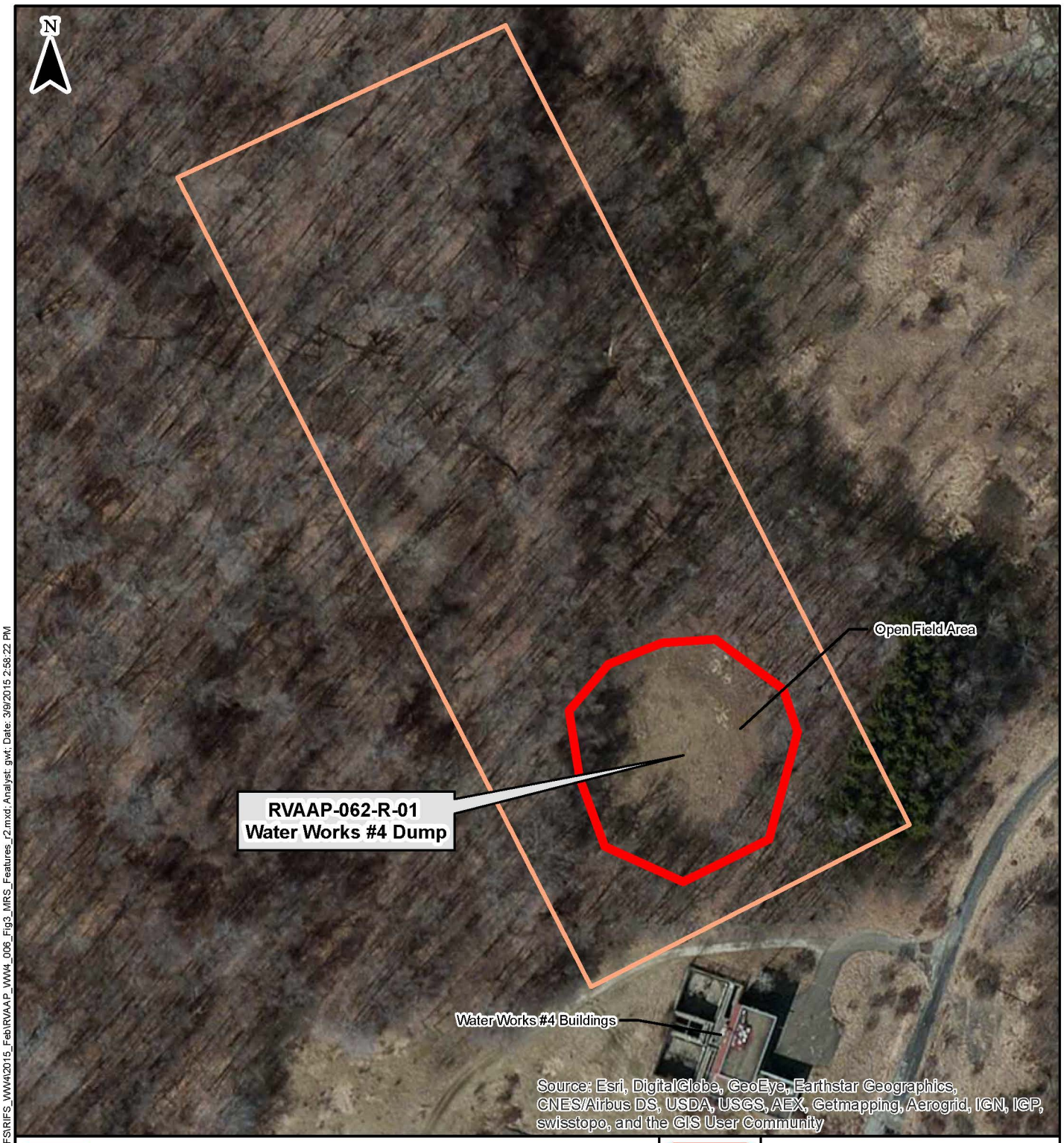

MRS Boundary

Site Investigation MRS Boundary and Remedial Investigation Expanded Investigation Area

0 130 260 Feet

Projection : NAD_1983_UTM_Zone_17N

U.S. ARMY CORPS OF ENGINEERS
BALTIMORE DISTRICT

MILITARY MUNITIONS RESPONSE PROGRAM

WATER WORKS #4 DUMP MRS
FORMER RVAAP/CAMP RAVENNA
PORTAGE AND TRUMBULL COUNTIES, OHIO

CB&I Federal Services LLC
150 Royall Street
Canton, MA 02021

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FIGURE 3 SITE FEATURES MAP

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COMMENT RESPONSE TABLE

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