Draft

Proposed Plan
for Soil, Sediment, and Surface Water
at RVAAP-41 Load Line 8

Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

Contract No. W912QR-15-C-0046

Prepared for:

US Army Corps of Engineers®

U.S. Army Corps of Engineers
Louisville District

Prepared by:

leidos

Leidos
8866 Commons Boulevard, Suite 201
Twinsburg, Ohio 44087

January 13, 2017

REPORT DOCUMENTATION PAGE

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at RVAAP-41 Load Line 8
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None.

14. ABSTRACT

This Proposed Plan for Load Line 8 presents to the public the physical characteristics, geology, and hydrogeology of Load Line 8. This plan summarizes nature and extent of contamination in soil, sediment, and surface water; contaminant fate and transport; and human health and ecological risk assessments. These evaluations indicate there are no chemicals of concern (COCs) that pose unacceptable risk. Therefore, this plan presents a recommendation of No Further Action (NFA) with respect to soil, sediment, and surface water to attain Unrestricted (Residential) Land Use to the public.

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proposed plan, no further action, land use, chemicals of concern

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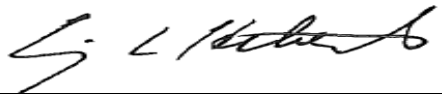
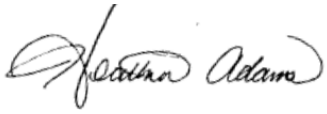
CONTRACTOR STATEMENT OF INDEPENDENT TECHNICAL REVIEW

Leidos has completed the Draft Proposed Plan for Soil, Sediment, and Surface Water at RVAAP-41 Load Line 8 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 the customer's needs consistent with law and existing United States Army Corps of Engineers (USACE) policy.



Craig Hebert, P.G.
Study/Design Team Leader

01/13/2017
Date



Heather Adams, P.G.
Independent Technical Review Team Leader

01/13/2017
Date

Significant concerns and the explanation of the resolution are as follows:

Internal Leidos Independent Technical Review comments are recorded on a Document Review Record per Leidos standard operating procedure ESE A3.1 Document Review. This Document Review Record is maintained in the project file. Changes to the report addressing the comments have been verified by the Study/Design Team Leader. As noted above, all concerns resulting from independent technical review of the project have been considered.

Lisa Jones-Bateman
Senior Program Manager

01/13/2017
Date

PLACEHOLDER FOR:

Documentation of Ohio EPA Concurrence of Final Document

(Documentation to be provided once concurrence is issued.)

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ARNG = Army National Guard.
CO = Central Office.
DERR = Division of Environmental Response and Revitalization.
ILE = Installation, Logistics, and Environment.
OHARNG = Ohio Army National Guard.
NEDO = Northeast District Office.
REIMS = Ravenna Environmental Information Management System.
USACE = U.S. Army Corps of Engineers.

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LIST OF ACRONYMS

amsl	Above Mean Sea Level
AOC	Area of Concern
Army	U.S. Department of the Army
bgs	Below Ground Surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Chemical of Concern
COPEC	Chemical of Potential Ecological Concern
ERA	Ecological Risk Assessment
FWGWMP	Facility-wide Groundwater Monitoring Program
HHRA	Human Health Risk Assessment
HMX	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
HQ	Hazard Quotient
Ohio EPA	Ohio Environmental Protection Agency
PBA08	2008 Performance-based Acquisition
PCB	Polychlorinated Biphenyl
PP	Proposed Plan
RDX	Hexahydro-1,3,5-trinitro-1,3,5-triazine
RI	Remedial Investigation
ROD	Record of Decision
RSL	Regional Screening Level
RVAAP	Ravenna Army Ammunition Plant
SRC	Site-related Contaminant
SVOC	Semi-volatile Organic Compound
TNT	2,4,6-Trinitrotoluene
TR	Target Risk
VOC	Volatile Organic Compound

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1.0 INTRODUCTION

This Proposed Plan (PP) presents the conclusions and recommendations for soil, sediment, and surface water within the Load Line 8 area of concern (AOC) at the former Ravenna Army Ammunition Plant (RVAAP). The former RVAAP is now known as Camp Ravenna Joint Military Training Center abbreviated as Camp Ravenna, and is located in Portage and Trumbull counties, Ohio (Figure 1). Load Line 8 is designated as AOC RVAAP-41. The U.S. Department of the Army (Army), in coordination with the Ohio Environmental Protection Agency (Ohio EPA), issues this PP to provide the public with information necessary to comment on the selection of an appropriate response action. The remedy will be selected for Load Line 8 after all comments submitted during the 30-day public comment period are considered. Therefore, the public is encouraged to review and comment on all alternatives presented in this PP.

The Army is issuing this PP as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) 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). Selecting and implementing a remedy will also be consistent with the requirements of the Ohio EPA *Director's Final Findings and Orders*, dated June 10, 2004.

This PP summarizes information that can be found in detail in the *Remedial Investigation Report for Soil, Sediment, and Surface Water at RVAAP-41 Load Line 8* (USACE 2016) and other documents contained in the Administrative Record file for Load Line 8.

The Army's preferred alternative at Load Line 8 is no further action for soil, sediment, and surface water. The Army encourages the public to review the site background documents to gain a more comprehensive understanding of the AOC, activities that have been conducted to date, and the rationale for the preferred alternative.

Public Comment Period:
Month DD, YYYY to Month DD, YYYY

Public Meeting:
The Army will hold an open house and public meeting to present the conclusions and additional details presented in the *Remedial Investigation Report for Soil, Sediment, and Surface Water at RVAAP-41 Load Line 8* (USACE 2016). Oral and written comments will also be accepted at the meeting. The open house and public meeting are scheduled for ____PM, Month DD, YYYY, at the Shearer Community Center, 9355 Newton Falls Road, Ravenna, Ohio 44266.

Information Repositories:
Information used in selecting the remedy is available for public review at the following locations:

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

Hours of operation:
9AM-9PM Monday-Thursday
9AM-6PM Friday
9AM-5PM Saturday
1PM-5PM Sunday

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

Hours of operation:
10AM-8PM Monday-Thursday
9AM-5PM Friday and Saturday

Online
http://www.rvaap.org/

The **Administrative Record File**, containing information used in selecting the remedy, is available for public review at the following location:

Camp Ravenna Joint Military Training Center (former Ravenna Army Ammunition Plant)
Environmental Office
1438 State Route 534 SW
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.

2.0 RVAAP DESCRIPTION AND BACKGROUND

The facility, consisting of 21,683 acres, is federally owned and is located in northeastern Ohio within Portage and Trumbull counties, approximately 4.8 km (3 miles) east/northeast of the City of Ravenna and approximately 1.6 km (1 mile) northwest of the City of Newton Falls (Figure 1). The facility, previously known as RVAAP, was formerly used as a load, assemble, and pack facility for munitions production. As of September 2013, administrative accountability for the entire acreage of the 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 military training site (Camp Ravenna). References in this document to RVAAP relate to previous activities at the facility as related to former munitions production activities or to activities being conducted under the restoration/cleanup program.

3.0 LOAD LINE 8 DESCRIPTION AND BACKGROUND

3.1 Site Description

Load Line 8, formerly known as Booster Line #2, is an approximately 44-acre fenced AOC located on Fuze and Booster Road in the south-central portion of Camp Ravenna, west of Load Line 6, and south of the 40mm Test Area (Figure 2). Remaining features at Load Line 8 include a one-lane asphalt perimeter road that enters the AOC from the northeast and surrounds the locations of the former production buildings along the northern and western sides. The Load Line 8 perimeter fence is still in place, but it is not currently maintained. Small construction drainage ditches are present along the access road and through the central portion of the AOC. Load Line 8 is currently overgrown with grass, trees, and scrub vegetation.

The topography at Load Line 8 is generally flat to gently sloping towards the perennial drainage channel at the south-central side of the AOC. Ground surface elevations at Load Line 8 range from approximately 1,109–1,125 ft above mean sea level (amsl) (Figure 3).

Surface water drainage generally follows the topography of Load Line 8, flowing into ditch conveyances along the north, west, and central portions of the AOC. The ditches contain water only during precipitation or periods of snowmelt. These ditches drain into an unnamed tributary of Hinkley Creek, which exits the AOC in the southwest. The perennial stream flows west to its confluence with Hinkley Creek. Hinkley Creek ultimately converges with the west branch of the Mahoning River south of Camp Ravenna.

There are five wetlands located within the AOC boundary. The *Remedial Investigation Report for Soil, Sediment, and Surface Water at the RVAAP 41 Load Line 8* (USACE 2016) names and describes these wetlands, as below:

- Wetland 1 – The largest wetland, located along the southwestern boundary that covers 18.4 acres, with 3.8 acres located within the AOC. This wetland has been identified as a jurisdictional wetland and consists primarily of a mix of permanently flooded scrub-shrub and forested habitat.
- Wetlands 2 and 3 – The two smallest wetlands cover 0.05 and 0.03 acres and are located in the central portion of the AOC. They consist primarily of forested habitat.
- Wetland 4 – Located in the western portion of the AOC, covers 0.87 acres, and consists of primarily forested habitat.
- Wetland 5 – A small wetland, located in the eastern portion of the AOC that covers 0.18 acres and consists of primarily forested habitat.

Silty loam overlies sandstone bedrock at Load Line 8, except where disturbed by RVAAP activities. Soil at the AOC exhibits seasonal wetness, rapid runoff, and low permeability. During site investigations, bedrock was encountered at 23.5–24 ft below ground surface (bgs). Groundwater was encountered from 11–19 ft bgs and groundwater elevations ranged

from 1,104.49–1,109.47 ft amsl with a flow pattern to the southwest. The average hydraulic gradient at the AOC is 0.0058 ft/ft (USACE 2016).

3.2 Background

From 1941–1945, Load Line 8 operated at full capacity as a finished product assembly line to produce booster charges for artillery projectiles, along with Load Line 7. The Installation Assessment (USATHAMA 1978) indicated 44,297,487 boosters were produced.

Load Line 8 was deactivated at the end of World War II, and the process equipment removed. From 1969–1971 Load Line 8 was reactivated for melt-pour operations and assembly. No fuel storage tanks were present at Load Line 8 during operations, and no historical information exists to indicate Load Line 8 was used for any other processes.

The buildings at Load Line 8, including building slabs and foundations and the series of wood frame walkways connecting these buildings, were demolished and removed in 2006.

3.3 Potential Contaminants

The 1978 Installation Assessment identified the major contaminants of the former RVAAP to be 2,4,6-trinitrotoluene (TNT), composition B [a combination of TNT and hexahydro-1,3,5-trinitro-1,3,5-triazine (also known as RDX)], sulfates, nitrates, lead styphnate, and lead azide (USATHAMA 1978). Additional potential site-specific contaminants at Load Line 8, based on operation history, include tetryl, Octol [a mixture of TNT and octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)] and heavy metals (lead, chromium, mercury, and arsenic) from munitions assembly activities.

In summary, potential contaminants at Load Line 8 include explosives and inorganic chemicals (e.g., metals). Other potential contaminants at Load Line 8 include volatile organic compounds (VOCs) from former Building 2B-22 that was utilized for solvent storage, polychlorinated biphenyls (PCBs) from on-site transformers, and polycyclic aromatic hydrocarbons from former Buildings 2B-23 and 2B-24 that were used as a heater house that are also additional potential sources of contamination. There is no evidence that bulk handling of the primary explosives took place within the boundaries of Load Line 8; however, finished detonators from Load Line 8 contained lead azide, which were used in booster assembly and stored at Load Line 8 (MKM 2007).

4.0 REMEDIAL INVESTIGATIONS

The AOC characteristics, nature and extent of contamination, and conceptual site model are based on investigations conducted from 1978–2010. The following environmental investigations have been conducted at Load Line 8:

- Installation Assessment (USATHAMA 1978);
- Preliminary Assessment Screening of Boundary Load Line Areas (USAEHA 1994);
- Relative Risk Site Evaluation for Newly Added Sites (USACHPPM 1998);
- Characterization of 14 AOCs (MKM 2007);
- Investigation of the Under Slab Surface Soil (USACE 2009); and
- 2008 Performance-based Acquisition (PBA08) Remedial Investigation (RI), as summarized in the *Remedial Investigation Report for Soil, Sediment, and Surface Water at the RVAAP-41 Load Line 8* (USACE 2016).

4.1 Surface and Subsurface Soil

In surface soil (0–1 ft bgs) and subsurface soil (greater than 1 ft bgs), the prevalent site-related contaminants (SRCs) and chemicals of potential concern were identified as discussed below.

Figure 4 shows sample locations of samples included in the RI. The results of the PBA08 RI sampling completed in 2010 were combined

with the results of the Characterization of 14 AOCs (MKM 2007) and the Investigation of Under Slab Surface Soil (USACE 2009) investigations to evaluate the nature and extent of contamination, assess potential future impacts to groundwater, conduct human health risk assessments (HHRAs) and ecological risk assessments (ERAs), and evaluate the need for remedial alternatives.

The Ohio EPA identifies a target risk (TR) of 1E-05 as a cancer risk for carcinogens and an acceptable hazard quotient (HQ) of 1 for non-carcinogens. The evaluation summarized below was performed to assess which chemicals exceeded a TR of 1E-05, HQ of 1, and to establish which chemicals were above their respective background concentrations.

- All explosive, propellant, VOC, PCB, and pesticide concentrations were below a TR of 1E-05, HQ of 1, or their respective background concentrations in surface or subsurface soil, and only two semi-volatile organic compounds (SVOCs) [benzo(a)pyrene and dibenzo(a,h)anthracene] had some samples exceeding a TR of 1E-05, HQ of 1 in surface soil only.
- The only metals that had concentrations that exceeded a TR of 1E-05, HQ of 1, and their respective background concentrations were arsenic and manganese. However, arsenic and manganese were not identified as chemicals of concern (COCs) in the HHRA.
- Only 1 of 18 soil samples exceeded the arsenic subsurface background concentration. No surface soil samples were above the background concentration. The exposure point concentration of arsenic in subsurface soil was below the background concentration. Thus, arsenic is present at naturally occurring conditions and is not a COC in soil.
- Only 3 of 49 soil samples exceeded the manganese surface soil background concentration of 1,450 mg/kg. None of the soil samples exceeded the subsurface background concentration of 3,030 mg/kg. The maximum concentration of 2,400 mg/kg was at sample location LL8ss-003M, indicating that manganese at Load Line 8 is present and at naturally occurring concentrations.

4.2 Sediment and Surface Water

Sediment and surface water samples were collected from site drainage ditches. The results of the samples taken from the drainage ditches are summarized below:

- No explosives, propellants, SVOCs, VOCs, pesticides, or PCBs were detected in sediment and surface water at a concentration that exceeded a TR of 1E-05, HQ of 1 within the drainage ditches.
- The only inorganic chemicals detected at a concentration that exceeded screening levels and respective background concentrations were cobalt and lead in surface water at one location; however, they were not detected above a TR of 1E-05, HQ of 1 in sediment.
- Cobalt was detected in surface water at a concentration of 0.0085 mg/L at LL8sw-090 in 2010. This concentration was slightly above the tap water regional screening level (RSL) of 0.006 mg/L. A sample collected in April 2011 had a lower concentration of 0.00022J mg/L, lower than the tap water RSL.
- Lead was detected in surface water at a concentration of 0.024 mg/L at LL8sw-090 in 2010. This concentration was above the MCL of 0.015 mg/L. A sample collected in April 2011 had a lower concentration of 0.0005J mg/L, lower than the MCL.

4.3 Impacts to Groundwater

The potential for soil and sediment contaminants to impact groundwater was evaluated in a fate and transport evaluation presented in the RI Report (USACE 2016). The fate and transport evaluation included the analysis of leaching and migration from soil and sediment to groundwater. The modeling evaluated the potential for contaminants to leach from soil and sediment and impact

groundwater beneath the AOC. Modeling results indicated arsenic, selenium, and naphthalene in soil were predicted to exceed the screening criteria in groundwater beneath the source area; however, none of these constituents were predicted to exceed screening criteria at the downgradient receptor locations. Barium; cadmium; chromium; cobalt; lead; mercury; nickel; selenium; benz(a)anthracene; benzo(b)fluoranthene; naphthalene; and 4,4'-dichlorodiphenyldichloroethylene in sediment were predicted to exceed the screening criteria in groundwater beneath the source area; however, none of these constituents were predicted to exceed screening criteria at the downgradient receptor location.

Evaluation of modeling results with respect to current AOC groundwater data and model limitations indicate that identified soil and sediment SRCs are not currently influencing groundwater beneath the source areas and that predicted future impacts would be mitigated by factors such as chemical and biological degradation and lateral dispersity. Based on the fate and transport evaluation, no contaminant migration chemicals of concern for soil or sediment were identified as impacting groundwater. The groundwater will be further evaluated under the Facility-wide Groundwater Monitoring Program (FWGWMP).

5.0 SCOPE AND ROLE OF RESPONSE ACTION

An evaluation using Resident Receptor (Adult and Child) facility-wide cleanup goals was used to provide an Unrestricted (Residential) Land Use evaluation. Unrestricted (Residential) Land Use is considered protective for all categories of Land Use at Camp Ravenna, such as Military Training and Commercial/Industrial Land Use. Additional human health receptors associated with Camp Ravenna are the National Guard Trainee and Industrial Receptor. The response action evaluated alternatives to attain Unrestricted (Residential) Land Use for soil, sediment, and surface water.

Groundwater will be addressed under the RVAAP Facility-wide Groundwater AOC (RVAAP-66) as a separate decision. However, the selected remedy for soil at Load Line 8 must also be protective of groundwater.

6.0 SUMMARY OF HUMAN AND ECOLOGICAL RISKS

6.1 Human Health Risk Assessment

Using information presented in Section 4.0 of the PP, an HHRA was performed to identify COCs and provide a risk management evaluation to determine if remediation is required under CERCLA based on potential risks to human receptors.

The media evaluated in the HHRA for the Resident Receptor (Adult and Child) were surface soil (0–1 ft bgs), subsurface soil (1–13 ft bgs), sediment, and surface water.

While COCs were identified, such as benzo(a)pyrene and dibenz(a,h)anthracene, the evaluation in the RI Report indicated that no COCs requiring remediation were required for any media of concern for the Resident Receptor. Therefore, the site is protective for Unrestricted (Residential) Land Use. Because the site is protective for Unrestricted (Residential) Land Use, it is also protective for Commercial/Industrial Land Use and Military Training Land Use.

6.2 Ecological Risk Assessment

The ecological habitat in Load Line 8 consists of 44 acres of mostly field (grasses) and shrubland with some forest. Load Line 8 also contains wetlands and surface water. Surface water flows into a series of drainage ditches that converge to form a tributary to Hinkley Creek in the southwest corner of the AOC; this is sufficient to maintain aquatic habitat. The terrestrial vegetation provides a habitat for birds, mammals, insects, and other organisms. The northern long-eared bat (*Myotis septentrionalis*; federally threatened) exists at Camp Ravenna. There are no other federally listed species or critical habitats on Camp Ravenna. Load Line 8 has not been previously surveyed for federal- or state-listed species;

however, there have been no documented sightings of state-listed, federally listed, threatened, or endangered species at the AOC (OHARNG 2014).

The Level I Scoping ERA presents important ecological resources on or near the AOC and evaluates the potential for current contamination to impact ecological resources. There is chemical contamination present in soil, sediment, and surface water at Load Line 8. This contamination was identified using historical and PBA08 RI data. Ecological resources at Load Line 8 were compared to the list of important ecological places and resources. Based on the 39 criteria defining important places and resources as identified by the Army and Ohio EPA, the wetlands and surface water are important and significant ecological resources at Load Line 8 (USACE 2016). Because contamination is at or near the important resources, these findings invoked a requirement of a Level II ERA. The Level II ERA incorporated available data to identify integrated chemicals of potential ecological concern (COPECs). There were 18 integrated soil COPECs, 9 integrated sediment COPECs, and 9 integrated surface water COPECs identified in the Level II ERA at Load Line 8.

The soil, sediment, and surface water COPECs were further evaluated with technical and refinement factors agreed upon by the Army and Ohio EPA. The results concluded that there are no chemicals requiring remediation or further evaluation to be protective of the environment. Per guidance from Ohio EPA, there was sufficient justification to recommend no further action to be protective of ecological receptors at Load Line 8.

7.0 CONCLUSIONS

The HHRA determined that no remediation is required to be protective for the Resident Receptor (Adult and Child). The ERA concluded that no chemicals require remediation or further evaluation to protect the environment. The fate and transport assessment determined chemicals in soil and sediment will not impact groundwater. Groundwater will be further evaluated under the FWGWMP. Accordingly, the Army, in coordination with Ohio EPA, is recommending no further action to attain Unrestricted (Residential) Land Use for soil, sediment, and surface water at Load Line 8.

This recommendation is not a final decision. The Army, in coordination with Ohio EPA, will select the remedy for Load Line 8 after reviewing and considering all comments submitted during the 30-day public comment period.

The HHRA determined that no remediation is required to be protective for

8.0 COMMUNITY PARTICIPATION

8.1 Community Participation

Public participation is an important component of the remedy selection. The Army, in coordination with Ohio EPA, is soliciting input from the community on the preferred alternative.

The comment period extends from Month DD, YYYY to Month DD, YYYY. This period includes a public meeting at which the Army will present this PP. The Army will accept oral and written comments at this meeting.

8.2 Public Comment Period

The 30-day comment period is from Month DD, YYYY to Month DD, YYYY, 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 PP.

All public comments will be considered by the Army and Ohio EPA before selecting a remedy. During the comment period, the public is encouraged to review documents pertinent to Load Line 8.

This information is available at the Information Repository and online at www.rvaap.org. To obtain further information, contact Kathryn Tait

of the Camp Ravenna Environmental Office at kathryn.s.tait.nfg@mail.mil.

8.3 Written Comments

If the public would like to comment in writing on this PP or other relevant issues, please deliver comments to the Army at the public meeting or mail written comments (postmarked no later than Month DD, YYYY).

POINT OF CONTACT FOR WRITTEN COMMENTS

Mailing Address:
Camp Ravenna Joint Military Training Center
Environmental Office
Attn: Kathryn Tait
1438 State Route 534 SW
Newton Falls, Ohio 44444

E-mail Address:
kathryn.s.tait.nfg@mail.mil

8.4 Public Meeting

The Army will hold an open house and public meeting on this PP on Month DD, YYYY, at ___PM, in the Shearer Community Center, 9355 Newton Falls Road Ravenna, Ohio 44266 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.

8.5 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.

The Responsiveness Summary, a document that summarizes the Army's responses to comments received during the public comment period, will be included in the Record of Decision (ROD). The Army's final choice of action will be documented in the ROD.

The ROD will be added to the RVAAP Restoration Program Administrative Record and Information Repositories.

ADMINISTRATIVE RECORD FILE

Camp Ravenna Joint Military Training Center (former Ravenna Army Ammunition Plant)
Environmental Office
1438 State Route 534 SW
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.

INFORMATION REPOSITORIES

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

Hours of operation:
10AM-8PM Monday-Thursday
9AM-5PM Friday and Saturday

Online
http://www.rvaap.org/

GLOSSARY OF TERMS

Administrative Record: a collection of documents, typically reports and correspondence, generated during site investigation and remedial activities. Information in the Administrative Record represents the information used to select the preferred alternative.

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

Contaminant Migration Chemical of Concern (CMCOC): a chemical substance specific to an area of concern that potentially poses significant potential to leach to groundwater at a concentration above human health risks goals. CMCOCs are typically further evaluated for remedial action.

Chemical of Concern (COC): a chemical substance specific to an area of concern that potentially poses significant human health or ecological risks. COCs are typically further evaluated for remedial action.

Chemical of Potential Concern (COPC): a chemical substance specific to an area of concern that potentially poses human health risks and requires further evaluation in the RI. COPCs are typically not evaluated for remedial action.

Chemical of Potential Ecological Concern (COPEC): a chemical substance specific to an area of concern that potentially poses ecological risks and requires further evaluation in the RI. COPECs are typically not evaluated for remedial action.

Ecological Receptor: a plant, animal, or habitat exposed to an adverse condition.

Exposure Point Concentration (EPC): in accordance with the *RVAAP Facility-wide Human Health Risk Assessors Manual – Amendment 1* (USACE 2005), the EPC is the calculated 95% upper confidence limit of the mean concentration of a chemical or the maximum detected concentration of a chemical, whichever value is lowest.

Human Receptor: a hypothetical person, based on current or potential future land use, who may be exposed to an adverse condition. For example, the National Guard Trainee is considered the hypothetical person when evaluating Military Training Land Use at the former Ravenna Army Ammunition Plant (RVAAP).

National Oil and Hazardous Substances Pollution Contingency Plan (NCP): the set of regulations that implement CERCLA and address responses to hazardous substances and pollutants or contaminants.

Record of Decision (ROD): a signed legal record that describes the cleanup action or remedy selected for a site, the basis for selecting that remedy, public comments, and responses to comments.

Remedial Investigation (RI): 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 that documents and responds to written and oral comments received from the public about the Proposed Plan.

Risk Assessment: an evaluation that determines potential harmful effects, or lack thereof, posed to human health and the environment due to exposure to chemicals found at a CERCLA site.

Sum-of-Ratio (SOR): to adjust for multiple chemicals, divide the standard for each COC by the number of COCs. The adjusted value can then be compared to the single chemical value, and each ratio summed. If the summed ratios are less than one, the applicable standards are met. If summed ratios exceed one, the applicable standards are not met.

Target Risk: the Ohio Environmental Protection Agency (2009) identifies 1E-05 as a target for cancer risk for carcinogens and an acceptable target hazard quotient of 1 for non-carcinogens.

Unrestricted (Residential) Land Use: defined for the former RVAAP restoration that is considered protective for all three Land Uses at Camp Ravenna. If an AOC meets the requirements for Unrestricted (Residential) Land Use, then the AOC can also be used for Military Training and Commercial/Industrial purposes.

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USAEHA (U.S. Army Environmental Hygiene Agency) 1994. *Preliminary Assessment Screening No. 38-26-1329-94, Boundary Load Line Areas, Ravenna Army Ammunition Plant, Ravenna, Ohio*. June 1994.

USATHAMA (U.S. Army Toxic and Hazardous Materials Agency) 1978. *Installation Assessment of Ravenna Army Ammunition Plant*, Records Evaluation Report No. 132. November 1978.

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FIGURES

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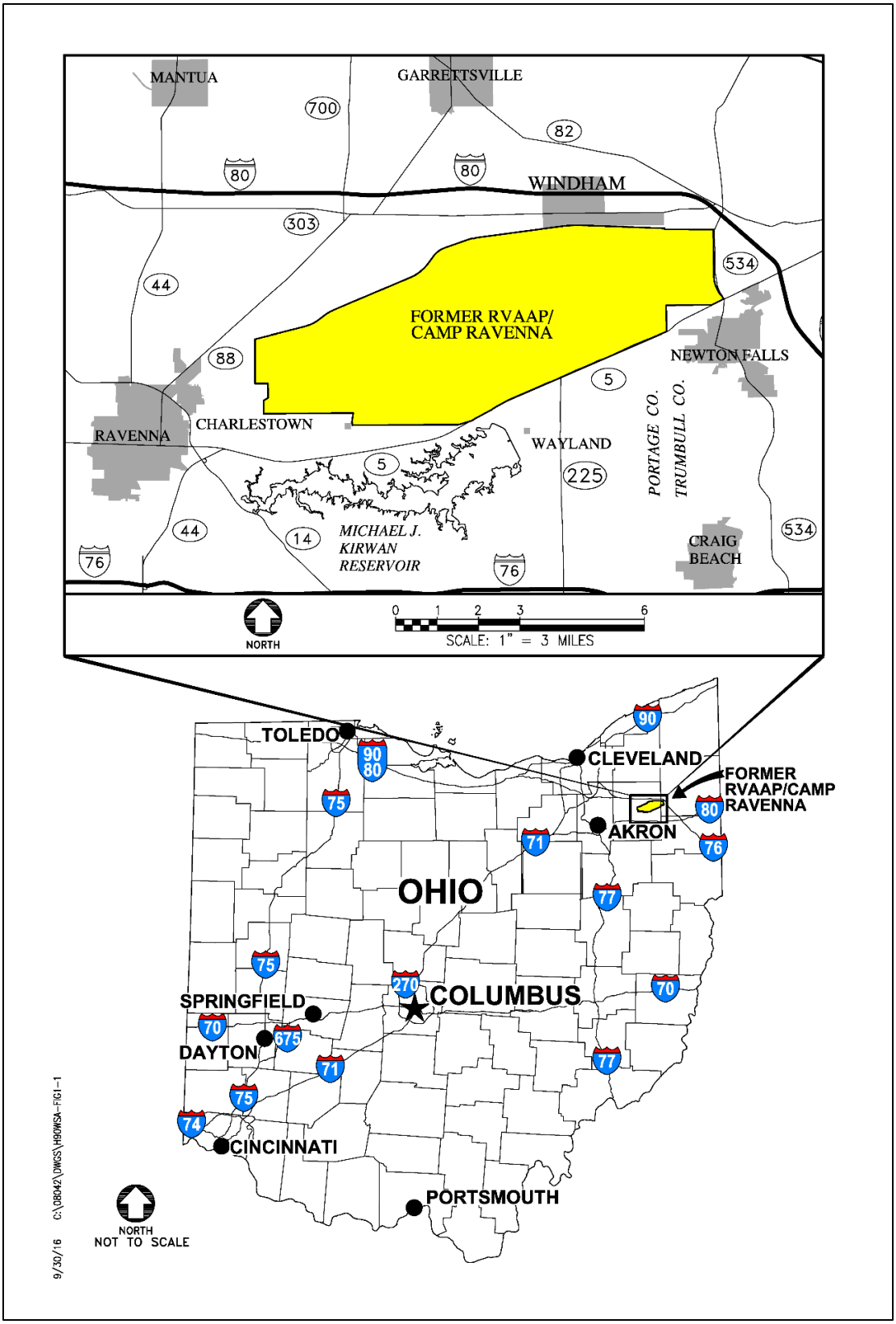

Figure 1. General Location and Orientation of Camp Ravenna

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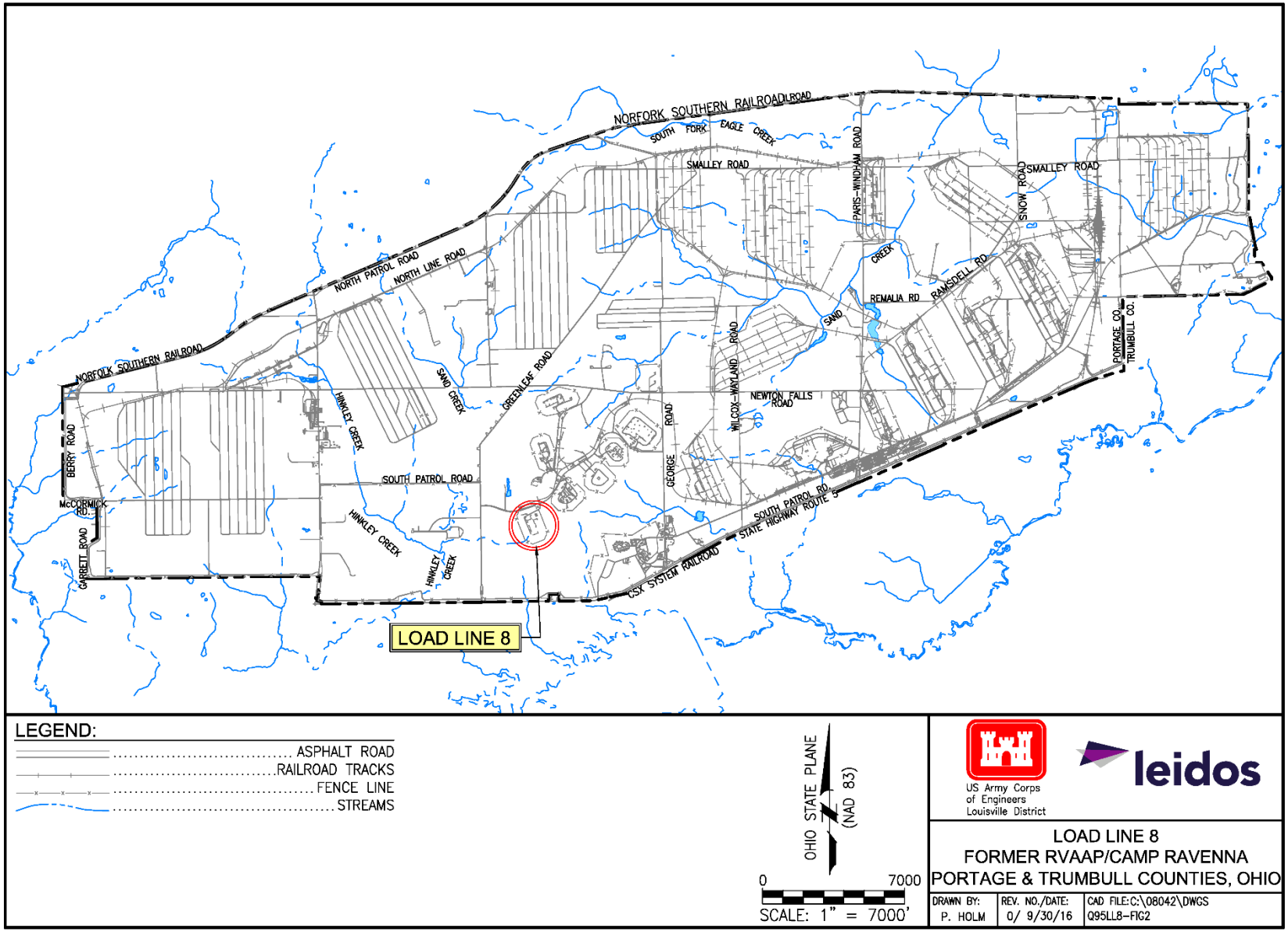

Figure 2. Location of Load Line 8 at Camp Ravenna

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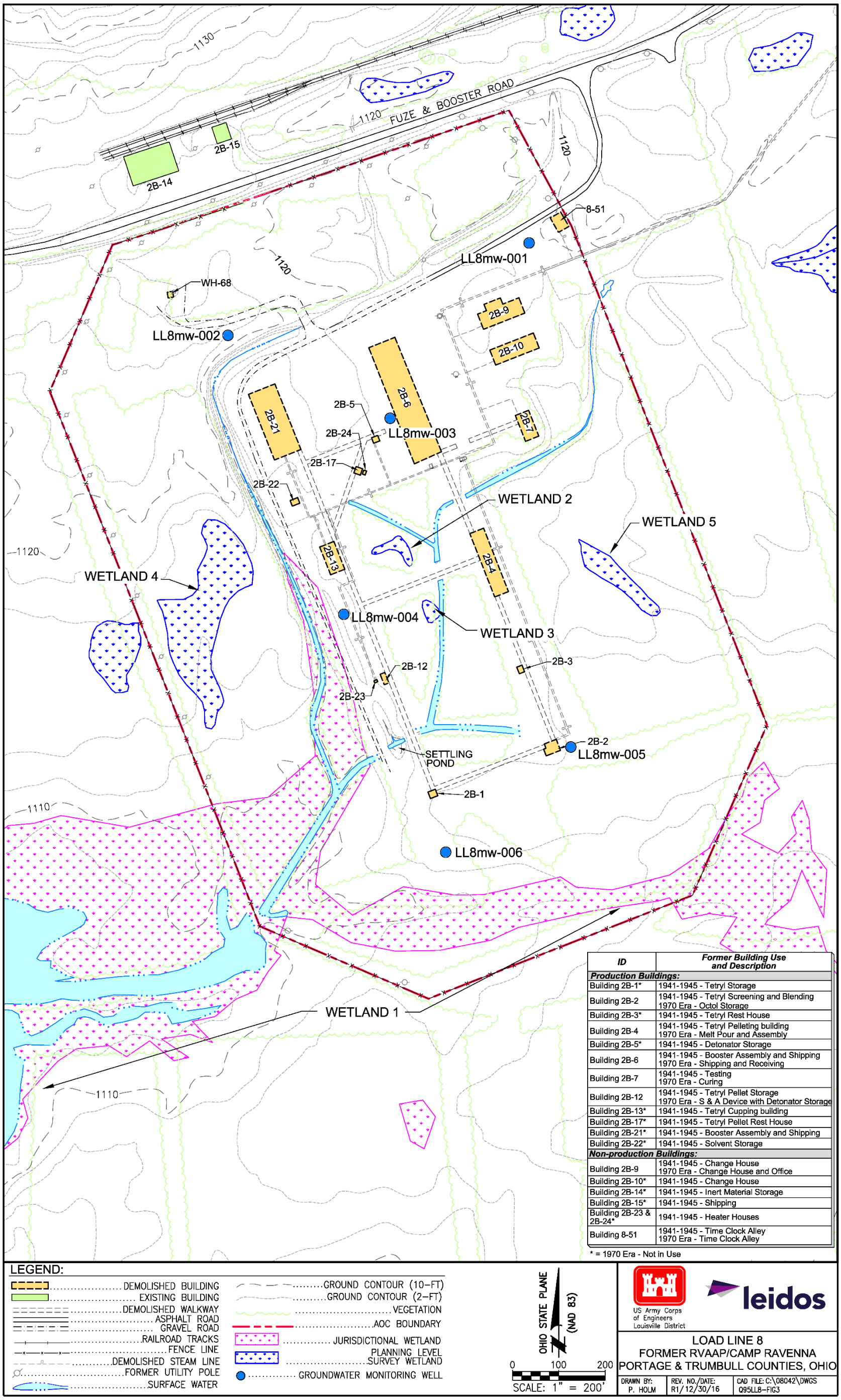


ID	Former Building Use and Description
Production Buildings:	
Building 2B-1*	1941-1945 - Tetryl Storage
Building 2B-2	1941-1945 - Tetryl Screening and Blending 1970 Era - Octol Storage
Building 2B-3*	1941-1945 - Tetryl Rest House
Building 2B-4	1941-1945 - Tetryl Pelleting building 1970 Era - Melt Pour and Assembly
Building 2B-5*	1941-1945 - Detonator Storage
Building 2B-6	1941-1945 - Booster Assembly and Shipping 1970 Era - Shipping and Receiving
Building 2B-7	1941-1945 - Testing 1970 Era - Curing
Building 2B-12	1941-1945 - Tetryl Pellet Storage 1970 Era - S & A Device with Detonator Storage
Building 2B-13*	1941-1945 - Tetryl Cupping building
Building 2B-17*	1941-1945 - Tetryl Pellet Rest House
Building 2B-21*	1941-1945 - Booster Assembly and Shipping
Building 2B-22*	1941-1945 - Solvent Storage
Non-production Buildings:	
Building 2B-9	1941-1945 - Change House 1970 Era - Change House and Office
Building 2B-10*	1941-1945 - Change House
Building 2B-14*	1941-1945 - Inert Material Storage
Building 2B-15*	1941-1945 - Shipping
Building 2B-23 & 2B-24*	1941-1945 - Heater Houses
Building 8-51	1941-1945 - Time Clock Alley 1970 Era - Time Clock Alley

* = 1970 Era - Not in Use

LEGEND:

- DEMOLISHED BUILDING
- EXISTING BUILDING
- DEMOLISHED WALKWAY
- ASPHALT ROAD
- GRAVEL ROAD
- RAILROAD TRACKS
- FENCE LINE
- DEMOLISHED STEAM LINE
- FORMER UTILITY POLE
- SURFACE WATER
- GROUND CONTOUR (10-FT)
- GROUND CONTOUR (2-FT)
- VEGETATION
- AOC BOUNDARY
- JURISDICTIONAL WETLAND
- PLANNING LEVEL SURVEY WETLAND
- GROUNDWATER MONITORING WELL

OHIO STATE PLANE (NAD 83)

0 100 200

SCALE: 1" = 200'

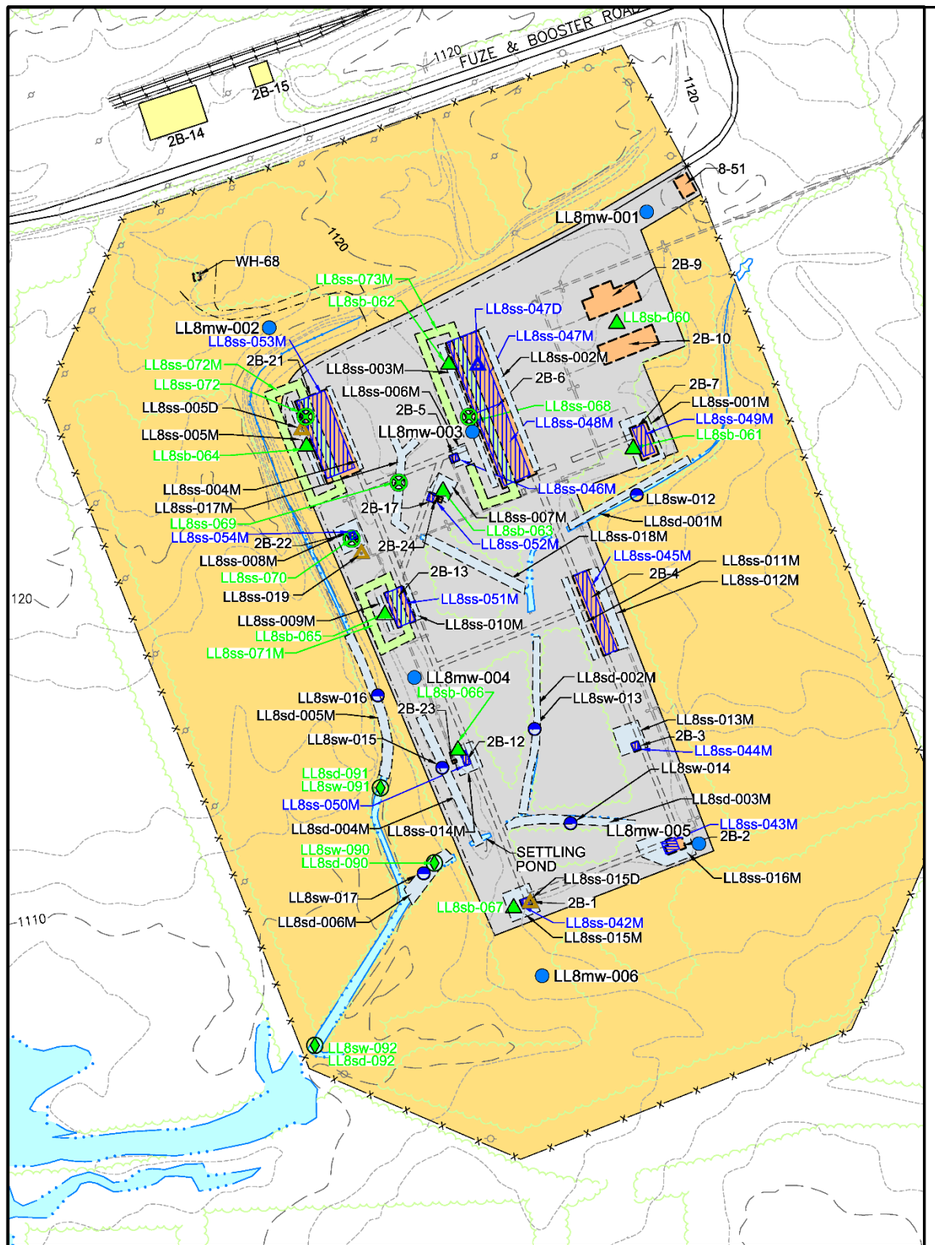
US Army Corps of Engineers Louisville District

leidos

LOAD LINE 8
FORMER RVAAP/CAMP RAVENNA
PORTAGE & TRUMBULL COUNTIES, OHIO

DRAWN BY:	REV. NO./DATE:	CAD FILE: C:\08042\DWGS
P. HOLM	R1/12/30/16	Q95LL8-FIG3

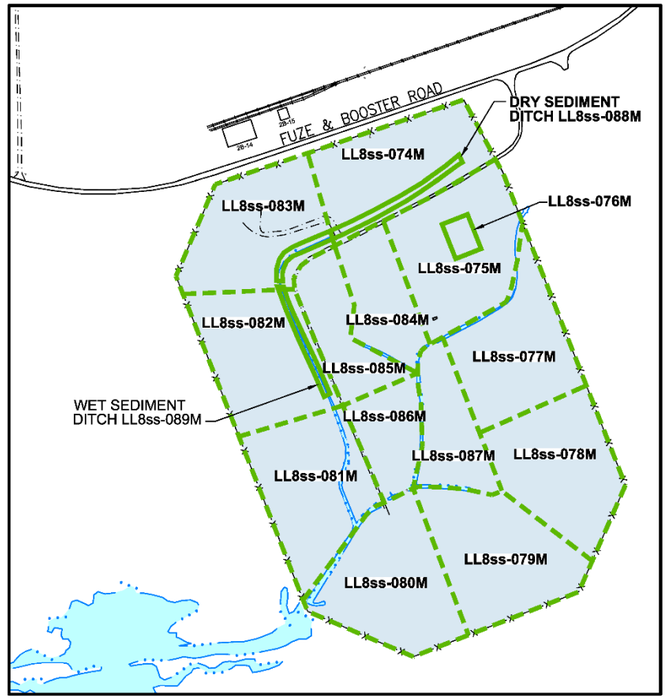
Figure 3. Load Line 8 Site Features



SOURCE AREA ISM & DISCRETE SAMPLES

0 125 250

SCALE: 1" = 250'



MULTI-ACRE ISM INSET

0 250 500

SCALE: 1" = 500'

ID	Former Building Use and Description
Production Buildings:	
Building 2B-1*	1941-1945 - Tetryl Storage
Building 2B-2	1941-1945 - Tetryl Screening and Blending 1970 Era - Octol Storage
Building 2B-3*	1941-1945 - Tetryl Rest House
Building 2B-4	1941-1945 - Tetryl Pelleting building 1970 Era - Melt Pour and Assembly
Building 2B-5*	1941-1945 - Detonator Storage
Building 2B-6	1941-1945 - Booster Assembly and Shipping 1970 Era - Shipping and Receiving
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Non-production Buildings:	
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- EXISTING BUILDING
- DEMOLISHED WALKWAY
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- GRAVEL ROAD
- RAILROAD TRACKS
- FENCE LINE
- DEMOLISHED STEAM LINE
- FORMER UTILITY POLE
- SURFACE WATER
- GROUND CONTOUR (10-FT)
- GROUND CONTOUR (2-FT)
- VEGETATION
- FORMER PRODUCTION AREA (FPA)
- NON-PRODUCTION AREA (NPA)
- 2007 POST-SLAB REMOVAL ISM LOCATIONS

PBA08 RI SAMPLE LOCATIONS:

- SOIL BORING
- CHROMIUM SPECIATION
- CO-LOCATED SURFACE WATER/SEDIMENT
- ISM AREA TO DELINEATE PREVIOUS EXCEEDANCE
- ISM GRID SAMPLE

HISTORICAL SAMPLE LOCATIONS:

- GROUNDWATER MONITORING WELL
- SURFACE WATER SAMPLE
- SURFACE SOIL SAMPLE
- ISM SAMPLING AREA

OHIO STATE PLANE (NAD 83)

US Army Corps of Engineers Louisville District

leidos

LOAD LINE 8
FORMER RVAAP/CAMP RAVENNA
PORTAGE & TRUMBULL COUNTIES, OHIO

DRAWN BY:	REV. NO./DATE:	CAD FILE: C:\08042\DWGS
P. HOLM	1/9/17	Q95LL8-FIG4

Figure 4. Load Line 8 Sample Locations