Draft

Record of Decision for Soil, Sediment, and Surface Water at RVAAP-42 Load Line 9

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

November 29, 2018

18-037(E)/103118

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From - To)*
29-11-2018	Technical	Nov 1978 – Nov 2018

4. TITLE AND SUBTITLE

Draft
Record of Decision for Soil, Sediment, and Surface Water
at RVAAP-42 Load Line 9
Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

5a. CONTRACT NUMBER
W912QR-15-C-0046

5b. GRANT NUMBER
NA

5c. PROGRAM ELEMENT NUMBER
NA

6. AUTHOR(S)
Thomas, Jed, H.

5d. PROJECT NUMBER
NA

5e. TASK NUMBER
NA

5f. WORK UNIT NUMBER
NA

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

Leidos
8866 Commons Boulevard
Suite 201
Twinsburg, Ohio 44087

8. PERFORMING ORGANIZATION REPORT NUMBER
18-037(E)/103118

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

USACE - Louisville District
U.S. Army Corps of Engineers
600 Martin Luther King Jr., Place
PO Box 59
Louisville, Kentucky 40202-0059

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

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

12. DISTRIBUTION/AVAILABILITY STATEMENT

Reference distribution page.

13. SUPPLEMENTARY NOTES

None.

14. ABSTRACT

This Record of Decision for Load Line 9 presents the physical characteristics, geology, and hydrogeology of Load Line 9. This decision document summarizes nature and extent of contamination in soil, sediment, and surface water; contaminant fate and transport; and human health and ecological risk assessments. Remedial alternatives were developed and assessed, resulting in the selection of Alternative 3: Excavation and Off-site Disposal at LL9ss-011 and Ex-Situ Thermal Treatment at LL9ss-096/097 – Attain Unrestricted (Residential) Land Use as the remedial alternative. This information was presented to the public, and all public input was considered during the selection of the final remedy for soil, surface water, and sediment at Load Line 9 in this ROD.

15. SUBJECT TERMS

proposed plan, land use, chemicals of concern

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Nathaniel Peters, II
U	U	U	U	76	19b. TELEPHONE NUMBER *(Include area code)* 502.315.2624

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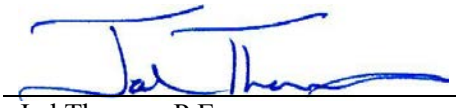
Leidos has completed the Record of Decision for Soil, Sediment, and Surface Water at RVAAP-42 Load Line 9 at the Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of 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 U.S. Army Corps of Engineers policy.



11/29/2018

Jed Thomas, P.E.
Study/Design Team Leader

Date

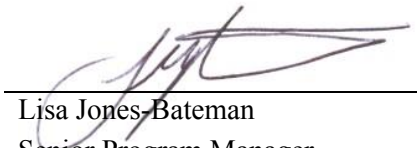
11/29/2018

Sarika Johnson
Independent Technical Review Team Leader

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.



11/29/2018

Lisa Jones-Bateman
Senior Program Manager

Date

PLACEHOLDER FOR:

Documentation of Ohio EPA Concurrence of Final Document

(Documentation to be provided once concurrence is issued.)

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Former Ravenna Army Ammunition Plant
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ARNG = Army National Guard.
IED = Installation and Environment Division.
OHARNG = Ohio Army National Guard.
Ohio EPA = Ohio Environmental Protection Agency.
NEDO = Northeast District Office.
REIMS = Ravenna Environmental Information Management System.
SWDO = Southwest District Office.
USACE = U.S. Army Corps of Engineers.

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ACRONYMS AND ABBREVIATIONS

amsl	above mean sea level
AOC	Area of Concern
ARAR	Applicable or Relevant and Appropriate Requirements
ARNG	Army National Guard
Army	U.S. Department of the Army
AT123D	Analytical Transient 1-, 2-, and 3-Dimensional Model
bgs	below ground surface
Camp Ravenna	Camp Ravenna Joint Military Training Center
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CMCOC	Contaminant Migration Chemical of Concern
CMCOPC	Contaminant Migration Chemical of Potential Concern
COC	Chemical of Concern
COPC	Chemical of Potential Concern
COPEC	Chemical of Potential Ecological Concern
CUG	Cleanup Goal
DWA	Dry Well Area
ERA	Ecological Risk Assessment
FPA	Former Production Area
FS	Feasibility Study
FWCUG	Facility-wide Cleanup Goal
FWGWMP	Facility-wide Groundwater Monitoring Plan
HHRA	Human Health Risk Assessment
HQ	Hazard Quotient
IRP	Installation Restoration Program
LUC	Land Use Control
NPA	Non-production Area
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
PAH	Polycyclic Aromatic Hydrocarbon
PBA08 RI	2008 Performance-based Acquisition Remedial Investigation
RAO	Remedial Action Objective
RD	Remedial Design
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
SEMS	Superfund Environmental Management System
TNT	2,4,6-Trinitrotoluene

TR	Target Risk
USEPA	U.S. Environmental Protection Agency
USP&FO	U.S. Property and Fiscal Officer
VEG©	Vapor Energy Generation

PART I: THE DECLARATION

A SITE NAME AND LOCATION

This Record of Decision (ROD) addresses soil, sediment, and surface water contaminants at Load Line 9. Load Line 9 is designated as area of concern (AOC) RVAAP-42 within the former Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio (Figures 1 and 2).

The former RVAAP is now known as Camp Ravenna Joint Military Training Center (Camp Ravenna). Camp Ravenna, consisting of 21,683 acres, is federally owned and is located in northeastern Ohio within Portage and Trumbull counties, approximately 4.8 kilometers (3 miles) east/northeast of the city of Ravenna and approximately 1.6 kilometers (1 mile) northwest of the city of Newton Falls. As of September 2013, administrative accountability for the entire acreage of the facility has been transferred to the U.S. Property and Fiscal Officer (USP&FO) for Ohio and subsequently licensed to the Ohio Army National Guard (OHARNG) for use as a military training site (Camp Ravenna).

Load Line 9 is located in the south-central portion of Camp Ravenna. The Superfund Environmental Management System (SEMS) Identifier for RVAAP is OH5210020736.

B STATEMENT OF BASIS AND PURPOSE

The Army National Guard (ARNG) is the lead agency and has chosen the selected remedy for Load Line 9 in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, and the National Oil and Hazardous Substances Pollution Contingency Plan. This decision is based on information contained in the Administrative Record file for the AOC.

The Ohio Environmental Protection Agency (Ohio EPA), the supporting state regulatory agency, concurred with the *Phase II Remedial Investigation Report and Feasibility Study for Soil, Sediment, and Surface Water at RVAAP-42 Load Line 9* (USACE 2016; herein referred to as the Load Line 9 RI/FS Report) and *Proposed Plan for Soil, Sediment, and Surface Water at RVAAP-42 Load Line 9* (USACE 2017; herein referred to as the Load Line 9 Proposed Plan).

The Director's Final Findings and Orders (DFFO) was issued to the U.S. Department of the Army (Army) on June 10, 2004. The objective of the DFFO was for the Army and Ohio EPA to "contribute to the protection of public health, safety, and welfare and the environment from the disposal, discharge, or release of contaminants at or from the site, through implementation of a CERCLA-based environmental remediation program. This program will include the development by respondent of an remedial investigation (RI)/feasibility study (FS) for each AOC or appropriate group of AOCs at the site, and upon completion and publication of a Proposed Plan and ROD or other appropriate document for each AOC or appropriate group of AOCs, the design, construction, operation, and maintenance of the selected remedy as set forth in the ROD or other appropriate document for each AOC or appropriate group of AOCs."

The RI/FS Report evaluated contaminated soil, sediment, and surface water at Load Line 9. No chemicals of concern (COCs) requiring remediation were identified for sediment or surface water; however, COCs requiring remediation were identified in soil. The Load Line 9 RI/FS Report provided an evaluation of remedial alternatives for soil. Alternative 3: Excavation and Off-site Disposal at LL9ss-011 and Ex-situ Thermal Treatment at LL9ss-096/097 – Attain Unrestricted (Residential) Land Use was the recommended alternative.

The decision to conduct a remedial action to address contamination at Load Line 9 satisfies the requirements of the DFFO, as the Army and Ohio EPA have completed the CERCLA RI/FS phase of investigation at Load Line 9. ARNG is publishing this ROD to select a remedy for this site that is protective of human health and the environment. Part II, Section M explains how the selected remedy is protective of human health and the environment and that the selected remedy satisfies the statutory requirements of CERCLA Section 121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

C ASSESSMENT OF SITE

The response action selected in this ROD is necessary to protect public health, welfare, or the environment from actual or threatened releases of contaminants in soil at Load Line 9.

D DESCRIPTION OF THE SELECTED REMEDY

The potential future uses for Load Line 9 are Military Training Land Use or Commercial/Industrial Land Use. The Representative Receptors corresponding to these potential future uses are the National Guard Trainee and Industrial Receptor, respectively. Although residential use is not anticipated at the former RVAAP or at this AOC, an Unrestricted (Residential) Land Use scenario was evaluated.

The nature and extent of potentially impacted media has been sufficiently characterized, the fate and transport modeling did not identify soil contaminant migration chemicals of concern (CMCOCs) impacting groundwater, and no ecological risk was identified. However, the human health risk assessment (HHRA) in the Load Line 9 RI/FS Report (USACE 2016) identified the following locations with surface soil [0–1 ft below ground surface (bgs)] COCs to be carried forward for remediation:

- Sample location LL9ss-011 has lead and mercury as COCs requiring remediation for the Resident Receptor, Industrial Receptor, and National Guard Trainee.
- Sample locations LL9ss-096 and LL9ss-097 has benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenz(a,h)anthracene as COCs requiring remediation for the Resident Receptor and only benzo(a)pyrene requiring remediation for the National Guard Trainee.

Since the areas of contamination requiring remediation are basically the same for each Land Use scenario, it was determined to be practical for the remediation to take measures to attain Unrestricted

(Residential) Land Use. The Load Line 9 RI/FS Report (USACE 2016) developed and evaluated remedial alternatives for soil at Load Line 9. The remedial alternatives are listed below:

- Alternative 1: No Action.
- Alternative 2: Excavation and Off-site Disposal – Attain Unrestricted (Residential) Land Use.
- Alternative 3: Excavation and Off-site Disposal at LL9ss-011 and Ex-situ Thermal Treatment at LL9ss-096/097 – Attain Unrestricted (Residential) Land Use.

The selected remedy for Load Line 9 is Alternative 3: Excavation and Off-site Disposal at LL9ss-011 and Ex-Situ Thermal Treatment at LL9ss-096/097 – Attain Unrestricted (Residential) Land Use. This alternative involves removing lead- and mercury-contaminated surface soil (0–1 ft bgs) at location LL9ss-011 and thermally treating polycyclic aromatic hydrocarbon (PAH)-contaminated surface soil at locations LL9ss-096/097.

The selected remedy was chosen because it is protective for all receptors (Resident Receptor, Industrial Receptor, and National Guard Trainee), is cost effective, and can be performed in a timely manner. The following is a brief list of activities associated with Alternative 3.

- An estimated 16 yd^3 (in-situ) of contaminated soil from location LL9ss-011 at 0–1 ft bgs will be excavated and disposed at an off-site facility licensed to accept these wastes.
- An estimated 761 yd^3 (in-situ) of PAH-contaminated soil from locations LL9ss-096/097 at 0–1 ft bgs will undergo thermal treatment to remove COCs.
- Confirmation sampling will be conducted to determine whether cleanup goals (CUGs) have been attained.
- Successfully remediated areas will be graded and backfilled with clean soil and seeded.

The selected remedy will achieve a requisite level of protectiveness for the AOC. The cost for the selected remedy is estimated to be $296,732. The Army will not be required to develop and implement land use controls (LUCs) and five-year reviews, as this remedy attains Unrestricted (Residential) Land Use.

E STATUTORY DETERMINATIONS

The selected remedy protects human health and the environment, complies with federal and state laws and regulations that are applicable or relevant and appropriate to the remedial action, is cost effective, and utilizes permanent solutions to the maximum extent practicable. The selected remedy satisfies the statutory preference for treatment, as a thermal treatment technology is part of the selected remedy for PAH-contaminated soil at locations LL9ss-096/097.

Because the selected remedy will not result in hazardous substances, pollutants, or contaminants remaining on site above levels that allow for Unrestricted (Residential) Land Use, five-year reviews will not be required for this remedial action.

F DATA CERTIFICATION CHECKLIST

Table 1 provides the location of key remedy selection information contained in Part II, Decision Summary. Additional information can be found in the Administrative Record file for Load Line 9.

Table 1. ROD Data Certification Checklist

ROD Data Checklist Item	ROD Section
COCs and their respective concentrations	II.G.1
Baseline risk represented by the COCs	II.G
Cleanup goals established for COCs and the basis for these goals	II.H
How source materials constituting principal threats are addressed	II.K
Current and reasonably anticipated future Land Use assumptions used in the baseline risk assessment and ROD	II.F
Suitable potential land uses, following the selected remedy	II.L.4
Estimated capital and the total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected	II.L.3
Key factor(s) that led to selecting the remedy	II.L.1

COC = Chemical of concern.
ROD = Record of Decision.

G AUTHORIZING SIGNATURE AND APPROVAL

William M. Myer
COL, GS
I&E, Army National Guard

Date

PART II: DECISION SUMMARY

A SITE NAME, LOCATION, AND DESCRIPTION

When the RVAAP Installation Restoration Program (IRP) began in 1989, RVAAP (SEMS Identification Number OH5210020736) was identified as a 21,419-acre installation. In 2002 and 2003, OHARNG surveyed the property and the total acreage was found to be 21,683 acres. The RVAAP IRP encompasses investigation and cleanup of past activities over the entire 21,683-acre former RVAAP.

As of September 2013, administrative accountability for the entire acreage of the facility has been transferred to the USP&FO for Ohio and subsequently licensed to OHARNG for use as a military training site (Camp Ravenna). ARNG is the lead agency for any remediation, decisions, and applicable cleanup at Load Line 9. These activities are being funded and conducted under the IRP. Ohio EPA is the supporting state regulatory agency.

Camp Ravenna 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. 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.

Camp Ravenna is a parcel of property approximately 17.7 km (11 miles) long and 5.6 km (3.5 miles) wide, bounded by State Route 5 and the CSX System Railroad on the south; Garrett, McCormick, and Berry roads on the west; the Norfolk Southern Railroad on the north; and State Route 534 on the east (see Figures 1 and 2). Camp Ravenna is surrounded by several communities: Windham 11.2 km (7 miles) to the north, Garrettsville 9.6 km (6 miles) to the north, Newton Falls 1.6 km (1 mile) to the southeast, Charlestown 3.6 km (6 miles) to the southwest, and Wayland 4.8 km (3 miles) to the south.

Load Line 9 is approximately 69 acres and is located north of Fuze and Booster Road, west of George Road, and northeast of Load Line 10 in the south-central portion of Camp Ravenna (Figure 2). The distinct surface features of the AOC, shown on Figure 3, include an old elevated water tank (WW-32) and an AOC fence, both of which are not currently maintained. All 54 process and support buildings were removed in 2003, and the slabs and foundations were removed in 2003 and 2007. There are gravel roads within the AOC, as well as two dirt mounds immediately north-northeast of the locations of former buildings DT-2 and DT-5 (Figure 3). Small constructed drainage ditches border the gravel road. The AOC is currently overgrown with grass, trees, and scrub vegetation.

The AOC boundary encompasses the former production area (FPA) and non-production area (NPA) exposure units. The FPA is 33.2 acres and is located within the gravel perimeter road. The buildings within the FPA were historically used to produce and store fuze component parts for artillery projectiles. The NPA is 35.8 acres and includes the area between the access road and AOC fence. The NPA contains the location of former solvent storage (DT-33), former detonator destroying house

(DT-34), and associated control house (DT-35). Also included in the RI is the dry well area (DWA). The DWA contains a 6-inch well that is approximately 190 ft north of the AOC fence.

B SITE HISTORY AND ENFORCEMENT ACTIVITIES

RVAAP was constructed in 1940 and 1941 for depot storage and ammunition assembly/loading and placed on standby status in 1950. The primary purpose of the former RVAAP was to load medium and major caliber artillery ammunition (i.e., bombs, mines, fuze and boosters, primers, and percussion elements) and store finished components. Load Lines 5 through 11 produced fuzes, boosters, primers, detonators, and percussion elements.

In June 2004, the DFFO was issued to the Army. The objective of the DFFO was for the Army and Ohio EPA to "contribute to the protection of public health, safety, and welfare and the environment from the disposal, discharge, or release of contaminants at or from the site, through implementation of a CERCLA-based environmental remediation program. This program will include the development by respondent of an RI/FS for each AOC or appropriate group of AOCs at the site, and upon completion and publication of a Proposed Plan and ROD or other appropriate document for each AOC or appropriate group of AOCs, the design, construction, operation, and maintenance of the selected remedy as set forth in the ROD or other appropriate document for each AOC or appropriate group of AOCs."

From 1941–1945, Load Line 9 operated at full capacity to produce fuze component parts for artillery projectiles. The Installation Assessment (USATHAMA 1978) indicated 19,257,297 miscellaneous fuzes were produced. No historical information exists to indicate Load Line 9 was used for any other processes other than what is presented above. No fuel storage tanks were present at the AOC during operations. Additionally, no fuel materials were used operationally at Load Line 9, and no burning was conducted. Building DT-33 was the only building at Load Line 9 whose purpose was solvent storage.

There have been no CERCLA enforcement actions related to Load Line 9.

C COMMUNITY PARTICIPATION

Using the RVAAP community relations program, the Army and Ohio EPA have interacted with the public through public notices, public meetings, reading materials, direct mailings, an internet website, and receiving and responding to public comments.

Specific items in the community relations program include the following:

- **Restoration Advisory Board –** The Army established a Restoration Advisory Board in 1996 to promote community involvement in U.S. Department of Defense environmental cleanup activities and allow the public to review and discuss the progress with decision makers. Board meetings are generally held 2–3 times per year and are open to the public.
- **Community Relations Plan –** The *Community Relations Plan* (Vista 2017) is maintained to establish processes to keep the public informed of activities at RVAAP. The plan is available in the Administrative Record at Camp Ravenna.
- **Internet Website –** The Army established an internet website in 2004 for RVAAP. It is accessible to the public at www.rvaap.org.

In accordance with CERCLA Section 117(a) and National Oil and Hazardous Substances Pollution Contingency Plan Section 300.430(f)(2), the Army released the Load Line 9 Proposed Plan (USACE 2017) to the public on June 6, 2018. The Proposed Plan and other project-related documents were made available to the public in the Administrative Record maintained at Camp Ravenna and in the Information Repositories at Reed Memorial Library in Ravenna, Ohio, and Newton Falls Public Library in Newton Falls, Ohio. A notice of availability for the Proposed Plan was sent to radio stations, television stations, and newspapers (e.g., *Warren Tribune-Chronicle* and *Ravenna Record Courier*), as specified in the Community Relations Plan. The notice of availability initiated the 30-day public comment period beginning June 6, 2018, and ending July 6, 2018.

The Army held a public meeting on June 21, 2018, at the Shearer Community Center, 9355 Newton Falls Road, Ravenna, Ohio 44266 to present the Proposed Plan. At this meeting, representatives of the Army provided information and were available to answer any questions. A transcript of the public meeting is available to the public and has been included in the Administrative Record. Responses to any comments received at this meeting and during the public notification period are included in the Responsiveness Summary, which is Part III of this ROD.

The Army considered public input from the public meeting on the Proposed Plan when selecting the remedy.

D SCOPE AND ROLE OF RESPONSE ACTIONS

The overall program goal of the IRP at the former RVAAP is to clean up previously contaminated lands to reduce contamination to concentrations that are not anticipated to cause risks to human health or the environment. No IRP remedial activities have been performed at Load Line 9 to date.

This ROD addresses soil, sediment, and surface water. The potential future Land Uses for Load Line 9 are Military Training Land Use or Commercial/Industrial Land Use, which are consistent with the intended future Land Uses for Camp Ravenna. There were no COCs requiring remediation for sediment or surface water at Load Line 9; however, COCs requiring remediation were identified in soil. The soil contamination present at Load Line 9 poses a potential risk to human health because the COC concentrations exceeded CUGs for the Representative Receptor for Military Training Land Use

(National Guard Trainee) and Commercial/Industrial Land Use (Industrial Receptor), as well as the Resident Receptor for Unrestricted (Residential) Land Use.

Implementing the remedy described in this ROD will address potential risk through thermal treatment and removal and off-site disposal of contaminated soil. The selected remedy described in the ROD is consistent with, and protective for, the intended future use (Military Training or Commercial/Industrial) at the AOC. Other media (e.g., groundwater) and AOCs at Camp Ravenna will be managed as separate actions or decisions by the Army and will be considered under separate RODs.

Potential impacts to groundwater from soil (e.g., contaminant leaching) were evaluated in the Load Line 9 RI/FS Report (USACE 2016), as protectiveness to groundwater was included in the fate and transport analysis. However, groundwater will be evaluated as an individual AOC for the entire facility (designated as RVAAP-66) under the Facility-wide Groundwater Monitoring Program (FWGWMP).

E SITE CHARACTERISTICS

This section presents site characteristics, nature and extent of contamination, and the conceptual site model for Load Line 9. These characteristics and findings are based on investigations conducted from 1978–2011 and are further summarized in the Load Line 9 RI/FS Report (USACE 2016).

E.1 Physical Characteristics

This section describes the topography/physiology, geology, hydrogeology, and ecological characteristics of Camp Ravenna and Load Line 9 that were key factors in identifying the potential contaminant transport pathways, receptor populations, and exposure scenarios to evaluate human health and ecological risks.

E.1.1 Topography/Physiography

The topography of Camp Ravenna is gently undulating with an overall decrease in ground elevation from a topographic high of approximately 1,220 ft above mean sea level (amsl) in the far western portion of the facility to low areas at approximately 930 ft amsl in the far eastern portion. Ground elevations within Load Line 9 range from 1,088–1,140 ft amsl, with the two dirt mounds immediately north-northeast of the locations of former buildings DT-2 and DT-5 being the topographic high.

No permanent surface water features are present at the AOC. Surface water intermittently occurs as overland storm water runoff associated with heavy rainfall events and generally drains into small ditches bordering roads. As shown on Figure 3, surface water drainage generally follows the topography of Load Line 9.

E.1.2 Geology

The soil type covering more than 70% of Load Line 9 is Dekalb channery loam (2–6% slopes and 6-12% slopes). The Dekalb channery loam is a moderately sloping, well-drained soil formed from residuum weathered from sandstone where unweathered bedrock is generally less than 40 inches bgs. The Loudonville silt loam (2–6% slopes) covers the remaining 30% of the AOC. The Loudonville silt loam is a gently sloping, well-drained silt formed from residuum weathered from sandstone where unweathered bedrock is generally less than 48 inches bgs (USDA 2010).

As shown on Figure 4, Load Line 9 is located within Hiram Till glacial deposits. At Load Line 9, unconsolidated zone characteristics may vary due to site disturbances, including building construction, demolition, and re-grading.

As shown on Figure 5, the bedrock formation underlying the unconsolidated deposits at Load Line 9, as inferred from existing geologic data, is the Pennsylvanian-age Pottsville Formation, Homewood Sandstone Member. Bedrock was encountered at Load Line 9 at the surface to 15.5 ft bgs during monitoring well installation activities as part of the Characterization of 14 AOCs (MKM 2007). During the 2008 Performance-based Acquisition Remedial Investigation (PBA08 RI), soil borings at Load Line 9 indicated the presence of bedrock at ground surface in the northwestern portion of the AOC to 15.5 ft bgs at LL9mw-001 just outside the southwest boundary of the AOC.

E.1.3 Hydrogeology

Six monitoring wells are present at Load Line 9 that were installed in 2004 during the Characterization of 14 AOCs (MKM 2007). All monitoring wells at Load Line 9 are screened in bedrock. Initial depths to groundwater encountered during groundwater monitoring well installation varied from 10–23.4 ft bgs. Water level elevations at the AOC had a range of 1,110.36–1,124.15 ft amsl. Potentiometric data indicate the groundwater table occurs within bedrock throughout the AOC.

E.1.4 Ecology

The ecological risk assessment (ERA) in the Load Line 9 RI/FS Report (USACE 2016) concluded that there are no important and significant ecological resources at the AOC. A field survey conducted by Leidos field biologists at Load Line 9 in 2008 and 2010 identified two main habitat types, presented in Figure 6: dry, mid-successional, cold-deciduous shrubland in the center of the area and red maple (*Acer rubrum*) successional forest along the boundary of the AOC. The dry, herbaceous field habitat is largely located in the central part of the AOC, inside the roadway that encircles the old load line. Demolition activities associated with removing buildings and other infrastructure have cleared much of the shrubland that was formerly present at the AOC.

The northern long-eared bat (*Myotis septentrionalis*; endangered species) exists at Camp Ravenna. There are no other federally listed species and no critical habitat occurs on Camp Ravenna. Load Line 9 has not had a site-specific survey for federal- or state-listed species. However, surveys have been

conducted throughout the facility and have not identified state-listed, federally listed, threatened, or endangered species at the AOC (OHARNG 2014).

E.2 Site Investigations

In 1978, the U.S. Army Toxic and Hazardous Materials Agency conducted an Installation Assessment of RVAAP to review the potential for contaminant releases at multiple former operations areas, as documented in *Installation Assessment of Ravenna Army Ammunition Plant* (USATHAMA 1978). This assessment indicated historical operations may have utilized lead azide or lead styphnate, which are primary explosives. 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 (RDX)]; sulfates; nitrates; lead styphnate; and lead azide (USATHAMA 1978). Additional potential contaminants at Load Line 9 based on operation history include mercury fulminate and heavy metals (lead, chromium, mercury, and arsenic) from munitions assembly activities, volatile organic compounds from former Building DT-33 that was utilized for solvent storage, polychlorinated biphenyls from on-site transformers, and PAHs from former Buildings DT-32 and DT-41 through DT-50 that were used as heater houses.

Since 1978, Load Line 9 has been included in various historical assessments and investigations conducted at the former RVAAP. The following environmental investigations have been completed for Load Line 9:

- Installation Assessment of Ravenna Army Ammunition Plant (USATHAMA 1978);
- Resource Conservation and Recovery Act Facility Assessment (Jacobs 1989);
- Preliminary Assessment for the Characterization of Areas of Contamination (USACE 1996);
- Relative Risk Site Evaluation for Newly Added Sites (USACHPPM 1998);
- 2002 Lead Azide Screening, summarized in the *Phase I Remedial Investigation at Load Line 9* (MKM 2007);
- 2003 Phase I RI (MKM 2007); and
- 2010/2011 PBA08 RI (USACE 2016).

The results of the PBA08 RI sampling were combined with applicable results of previous sampling events to evaluate the nature and extent of contamination, examine contaminant fate and transport, conduct risk assessments, and evaluate potential remedial alternatives, as summarized in the Load Line 9 RI/FS Report (USACE 2016).

E.3 Nature and Extent of Contamination

Data from the 2002 lead azide screening, 2003 Phase I RI, and 2010/2011 PBA08 RI effectively characterized the nature and extent of contamination at the AOC. Figure 7 presents the RI sample locations.

Sites where explosives were identified as potential contaminants from previous use were thoroughly evaluated, including around former process buildings and across each exposure unit. The maximum

concentrations for explosives and propellants were all below their respective screening levels and were not considered chemicals of potential concern (COPCs). Results from the 2002 lead azide sample screening indicated that there is no detectable safety concern related to azide contamination at Load Line 9, and there is minimal contamination of secondary explosives. No explosives were detected above reporting limits in any of the surface soil, sediment, or surface water samples.

The soil around the elevated water tank was evaluated by soil samples collected at LL9sb-024 and LL9sb-025. The concentrations for lead in surface and subsurface soil at these locations were below the residential regional screening level (RSL) of 400 mg/kg, with a maximum concentration of 320 mg/kg at LL9ss-024 in surface soil (0–1 ft bgs).

As identified in the Phase I RI Report (MKM 2007), concentrations of contaminants are generally low, with a notable exception being a localized spot at LL9ss–011 in surface soil (0–1 ft bgs). Mercury was detected above the Resident Receptor facility-wide cleanup goal (FWCUG) at a target risk (TR) of 1E-05, hazard quotient (HQ) of 1 with a maximum detected concentration of 882 mg/kg observed at sample location LL9ss-011 adjacent to a former detonator destroying house (DT-34). Additional samples analyzed for mercury in April 2011 helped delineate the lateral extent of mercury contamination at this location. In addition, lead had a concentration of 1,330 mg/kg at this location, exceeding the residential RSL of 400 mg/kg and industrial RSL of 800 mg/kg.

Soil borings LL9ss-096 and LL9ss-097 had PAH concentrations greater than their respective Resident Receptor FWCUG at a TR of 1E-05, HQ of 1. Both soil borings were located near the former dining facility (DT-52) and former change house (DT-28) buildings. Although these buildings were not production buildings, they were most likely heated and had heavy vehicle traffic during operations. Subsurface samples were not collected at these locations; however, subsurface soil was characterized at the neighboring change house (DT-29) and did not contain PAH detections in deeper sample intervals (1–4 and 4–6 ft bgs). In addition, identified PAH contamination at the former RVAAP has been predominately in surface soil (0–1 ft bgs).

Building DT-33 was the only building at Load Line 9 whose purpose was solvent storage. The samples associated with former Building DT-33 (LL9sb-055 and LL9sb-056) had no detectable concentrations of volatile organic compounds in the surface soil. In addition, there were no detected concentrations of polychlorinated biphenyls in the soil samples collected across the site, and none of the detected chemical concentrations in sediment or surface water were above the Resident Receptor FWCUG at a TR of 1E-05, HQ of 1.

E.4 Conceptual Site Model

Conceptual site model elements are discussed in this section, including primary and secondary contaminant sources and release mechanisms, contaminant migration pathways and discharge or exit points, and potential human receptors and ecological resources.

E.4.1 Primary and Secondary Contaminant Sources and Release Mechanisms

No primary contaminant sources (e.g., operational facilities) are currently located at Load Line 9, with the exception of an elevated water tank (WW-32) in the western portion of the AOC. All buildings were thermally decontaminated and demolished in 2003, and the footer and slab removal was conducted in 2007. Remnant contamination in soil and sediment is considered a secondary source of contamination.

The potential mechanisms for contaminant releases from secondary sources at Load Line 9 include:

- Eroding soil with sorbed contaminants and mobilization in turbulent surface water flow under storm conditions,
- Dissolving soluble contaminants and transport in surface water,
- Re-suspending contaminated sediment during periods of high flow with downstream transport within the surface water system, and
- Contaminant leaching to groundwater.

E.4.2 Contaminant Migration Pathways and Exit Points

The potential for soil and sediment contaminants to impact groundwater was evaluated in the fate and transport evaluation presented in the Load Line 9 RI/FS Report (USACE 2016). Contaminants in surface soil may migrate to surface water via drainage ditches in the dissolved phase following a storm event or as particulates in storm water runoff.

Maximum site-related contaminant concentrations identified in surface and subsurface soil were evaluated using a series of generic screening steps to identify initial contaminant migration chemicals of potential concern (CMCOPCs). These CMCOPCs for soil were further evaluated using the Seasonal Soil Compartment model to predict leaching concentrations and identify final CMCOPCs based on RVAAP facility-wide background criteria and the lowest risk-based screening criteria among U.S. Environmental Protection Agency (USEPA) maximum contaminant levels, USEPA tap water RSLs, or RVAAP groundwater FWCUGs for the Resident Receptor Adult. Final CMCOPCs were evaluated using the Analytical Transient 1-, 2-, and 3-Dimensional (AT123D) model to predict groundwater mixing concentrations beneath source areas and concentrations at the nearest downgradient groundwater receptor to the AOC (e.g., stream). Maximum site-related contaminant concentrations in sediment were evaluated using an analytical solution to identify final CMCOPCs for evaluation using AT123D. The AT123D modeling results were evaluated with respect to AOC groundwater monitoring data, as well as model limitations and assumptions, to identify chemicals to be retained as CMCOCs.

Conclusions of the soil and sediment screening, leachate modeling, and groundwater modeling are as follows:

- Among the soil CMCOPCs, arsenic, cobalt, manganese, mercury, and naphthalene were predicted to exceed the screening criteria in groundwater beneath the source area, and only naphthalene was predicted to be above its criteria at the downgradient receptor location.
- Among the sediment CMCOPCs, mercury, nitroguanidine, pentaerythritol tetranitrate, benz(a)anthracene, benzo(b)fluoranthene, and naphthalene were predicted to exceed the screening criteria in groundwater beneath the source area; however, none of these CMCOPCs were predicted to be above criteria in the downgradient receptor location.

A qualitative assessment of the sample results was performed and the limitations and assumptions of the models were considered to identify if any CMCOCs are present in soil at Load Line 9 that may potentially impact groundwater. This qualitative assessment concluded there were no CMCOCs present in soil and sediment that may impact the groundwater beneath the source or at the downstream receptor location. No further action is required of soil and sediment at Load Line 9 for the protection of groundwater. Groundwater will be further evaluated under the FWGWMP.

E.4.3 Potential Human Receptors and Ecological Resources

In February 2014, the Army and Ohio EPA amended the risk assessment process to address changes in the RVAAP restoration program. The *Final Technical Memorandum: Land Uses and Revised Risk Assessment Process for the RVAAP Installation Restoration Program* (ARNG 2014) identified the following three Categorical Land Uses and Representative Receptors to be considered during the RI phase of the CERCLA process.

1. Unrestricted (Residential) Land Use – Resident Receptor (Adult and Child) (formerly called Resident Farmer).
2. Military Training Land Use – National Guard Trainee.
3. Commercial/Industrial Land Use – Industrial Receptor (USEPA Composite Worker).

An evaluation using Resident Receptor (Adult and Child) FWCUGs was used to provide an Unrestricted (Residential) Land Use evaluation. If a site meets the standards for Unrestricted (Residential) Land Use, it can be used for all categories of Land Use at Camp Ravenna. The receptor is assumed to be exposed to surface soil from 0–1 ft bgs and subsurface soil from 1–13 ft bgs.

Load Line 9 does not have any important and significant ecological resources such as wetlands, terrestrial areas used for breeding by large or dense populations of animals, habitats used by threatened and endangered species, state land designated for wildlife or game management, or locally important ecological places. Groundwater is not considered an exposure medium for ecological receptors on the AOC given its depth and occurrence within bedrock, and there are no discharge points (e.g., springs, seeps) that would represent potential exposure points.

F CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USES

Load Line 9 is currently managed by Army National Guard/OHARNG. The AOC is not currently being utilized for training purposes. The potential future uses for Load Line 9 are Military Training Land Use or Commercial/Industrial Land Use. The Resident Receptor was evaluated in the HHRA to assess an Unrestricted (Residential) Land Use scenario. This ROD discusses future Land Use as it pertains to soil, sediment, and surface water and how it impacts human health, the environment, and groundwater.

G SUMMARY OF SITE RISKS

The HHRA and ERA estimated risks to human receptors and ecological resources; identified exposure pathways; presented COCs and chemicals of potential ecological concern (COPECs), if any; and provided a basis for remedial decisions. This section of the ROD summarizes the results of the HHRA and ERA, which are presented in detail in the Load Line 9 RI/FS Report (USACE 2016) and Load Line 9 Proposed Plan (USACE 2017) located in the Administrative Record and Information Repositories.

G.1 Human Health Risk Assessment

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 were surface soil, subsurface soil, sediment, and surface water.

No COCs requiring remediation were identified for any receptor in subsurface soil, sediment, or surface water. The HHRA identified lead and mercury as surface soil COCs to be carried forward for potential remediation near sample location LL9ss-011, in the area of the former Detonator Destroying House (DT-34), to be protective of the Resident Receptor, Industrial Receptor, and National Guard Trainee.

In addition, the HHRA identified four PAHs in surface soil (0–1 ft bgs) to be carried forward for potential remediation near sample locations LL9ss-096 and LL9ss-097: benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenz(a,h)anthracene. This location is in the area of the Former Change House (DT-28). Figure 8 presents the concentrations of the samples results exceeding CUGs.

G.2 Ecological Risk Assessment

The ecological habitat at Load Line 9 is approximately 69 acres and consists of mostly field (grasses), shrubland, and forest. The vegetation provides a habitat for birds, mammals, insects, and other organisms. There is no aquatic habitat; the closest perennial surface water feature is a tributary to Sand Creek approximately 1,100 ft to the north-northwest of the AOC. No wetlands exist within the fenced AOC boundary, and there is no known connection between Load Line 9 and any off-site wetlands.

Ecological resources at Load Line 9 were compared to the list of important ecological places and resources. Based on the 39 criteria defining important places as identified by the Army and Ohio EPA, no important/significant ecological resources were identified at the AOC. The vegetation types present at Load Line 9 are also found elsewhere near the AOC, at Camp Ravenna, and in the ecoregion.

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 9 has not had a site-specific survey for federal- or state-listed species. However, surveys have been conducted throughout the facility and have not identified state-listed, federally listed, threatened, or endangered species at the AOC (OHARNG 2014).

The ERA was conducted in accordance with the *Guidance for Conducting Ecological Risk Assessments* (Ohio EPA 2008). The ERA evaluated chemical contamination to determine if it posed a risk to the environment. There are 18 integrated COPECs in deep surface soil at the FPA, 12 integrated COPECs in deep surface soil at the NPA, 5 integrated COPECs in sediment at the Drainage Ditches, 2 integrated COPECs in sediment at the DWA, 1 integrated COPEC in surface water at the Drainage Ditches, and 2 integrated COPECs in surface water at the DWA. These COPECs consist of inorganic chemicals, explosives, propellants, and semi-volatile organic compounds.

However, Load Line 9 does not have any important and significant ecological resources such as wetlands, terrestrial areas used for breeding by large or dense populations of animals, habitats used by threatened and endangered species, state land designated for wildlife or game management, or locally important ecological places. Consequently, the Level I ERA concluded that there are no important ecological resources present near contamination at Load Line 9. No further action is recommended to be protective from an ecological perspective at Load Line 9.

H REMEDIAL ACTION OBJECTIVES

The remedial action objective (RAO) references CUGs and risk levels that are considered protective of human health under current and future use scenarios. The RAO for Load Line 9 is to prevent Resident Receptor exposure to surface soil (0–1 ft bgs) with concentrations above lead and mercury CUGs at sample location LL9ss-011 and concentrations above benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenz(a,h)anthracene CUGs at sample locations LL9ss-096 and LL9ss-097.

Figure 8 presents the estimated extent of surface soil (0–1 ft bgs) requiring remediation. Table 2 presents the remedial CUGs. The PAH CUGs presented in this ROD are different from the CUGs presented in the Load Line 9 RI/FS Report (USACE 2016) and Load Line 9 Proposed Plan (USACE 2017). Since the finalization of the Load Line 9 RI/FS Report, USEPA updated the cancer slope factors for the carcinogenic PAHs using more recent toxicity studies. These updated values are utilized in the June 2017 USEPA RSLs. The Resident Receptor FWCUGs and the USEPA Resident Soil RSLs at a TR of 1E-05 for the PAH COCs, updated in June 2017, are presented in Table 2.

Accordingly, the current USEPA Resident Soil RSLs are being used as the CUGs for PAH remedial activities at Load Line 9.

Table 2. Remedial Cleanup Goals

Chemical of Concern	Remedial Cleanup Goal (mg/kg)
Mercury	22.7
Lead	400
Benz(a)anthracene	11
Benzo(a)pyrene	1.1
Benzo(b)fluoranthene	11
Dibenz(a,h)anthracene	1.1

mg/kg = Milligrams per kilogram.

I DESCRIPTION OF ALTERNATIVES

The Load Line 9 RI/FS Report (USACE 2016) developed and evaluated remedial alternatives for surface soil at Load Line 9. The remedial alternatives are listed below:

- Alternative 1: No Action.
- Alternative 2: Excavation and Off-site Disposal – Attain Unrestricted (Residential) Land Use.
- Alternative 3: Excavation and Off-site Disposal at LL9ss-011 and Ex-situ Thermal Treatment at LL9ss-096/097 – Attain Unrestricted (Residential) Land Use.

This section includes a description of various components of the remedial alternatives identified in the RI/FS Report, including soil removal, disposal, and handling.

I.1 Alternative 1: No Action

Alternative 1 provides no remedial action and is required under NCP as a baseline for comparison with other remedial alternatives. Alternative 1 provides no additional protection to human health and the environment. Any current legal and administrative LUC mechanisms at the AOC would be discontinued. No future legal, administrative, or physical LUC mechanisms would be employed at the AOC. Environmental monitoring would not be performed, and five-year reviews would not be conducted in accordance with CERCLA 121(c). In addition, no restrictions on Land Use would be pursued.

I.2 Alternative 2: Excavation and Off-site Disposal – Attain Unrestricted Land Use

Implementing surface soil removal (0–1 ft bgs) at sample locations LL9ss-011 and LL9ss-096/097 would attain Unrestricted (Residential) Land Use. The following subsections describe activities associated with this alternative.

I.2.1 Delineation and Waste Characterization Sampling

To coincide with and support development of a remedial design (RD), a delineation/pre-excavation sampling plan would be implemented with the intent of: (1) adequately defining the extent of soil requiring removal to support the direct loading of soil on to trucks for off-site disposal, and (2) minimizing the time required to implement the remedial action by eliminating the need for post-excavation confirmation sampling. In addition, waste characterization samples would be collected from the area requiring removal and off-site disposal (LL9ss-011) to assess if soil is characteristically hazardous.

I.2.2 Remedial Design

An RD would be developed to outline site preparation activities (e.g., staging and equipment storage areas, truck routes, storm water controls); the extent of the excavation; sequence and description of excavation and site restoration activities; decontamination; and segregation, transportation, and disposal of various waste streams. Erosion and health and safety controls would be developed during the active construction period to ensure remediation workers and the environment are protected.

I.2.3 Soil Removal

To achieve a scenario in which the AOC is protective for Unrestricted (Residential) Land Use, soil would be removed from the vicinity of LL9ss-011, which exceeded the CUG for lead and mercury, and soil from LL9ss-096 and LL9ss-097, the area contaminated by PAHs, would be hauled by truck to a licensed and permitted disposal facility.

I.2.4 Site Restoration

All disturbed and excavated areas would be backfilled with clean soil and graded to meet neighboring contours. The backfill soil would come from a clean source that was previously sampled and approved for use by Ohio EPA. To ensure adequate vegetation is established within the excavated area, a layer of topsoil from a clean source that was previously sampled and approved for use by Ohio EPA would be placed on the treated soil.

After the areas are backfilled and graded, workers would apply a seed mixture (as approved by OHARNG) and mulch. Restored areas would be inspected and monitored as required in the storm water best management practices established in the RD.

I.3 Alternative 3: Excavation and Off-site Disposal at LL9ss-011 and Ex-Situ Thermal Treatment at LL9ss-096/097 – Attain Unrestricted (Residential) Land Use

This alternative involves two remedial technologies: Excavation and off-site disposal for the soil at LL9ss-011 and ex-situ thermal treatment, such as the Vapor Energy Generation (VEG©) treatment, for soil at sample locations LL9ss-096 and LL9ss-097. Implementing these remedial technologies

would attain Unrestricted (Residential) Land Use. The following subsections describe activities associated with this alternative.

I.3.1 Delineation and Waste Characterization Sampling

To coincide with and support development of an RD, a delineation/pre-excavation sampling plan would be implemented with the intent of: (1) adequately defining the extent of soil requiring removal to support the direct loading of soil on to trucks for off-site disposal, and (2) minimizing the time required to implement the remedial action by eliminating the need for post-excavation confirmation sampling. In addition, waste characterization samples would be collected from the area requiring removal and off-site disposal (LL9ss-011) to assess if that soil is characteristically hazardous.

I.3.2 Remedial Design

An RD would be developed to outline site preparation activities (e.g., staging and equipment storage areas, truck routes, storm water controls); the extent of the excavation; sequence and description of excavation and site restoration activities; decontamination; and segregation, transportation, and disposal of various waste streams. Erosion and health and safety controls would be developed during the active construction period to ensure remediation workers and the environment are protected.

I.3.3 Soil Removal at LL9ss-011

To achieve a scenario in which the AOC is protective for Unrestricted (Residential) Land Use, soil would be removed from the vicinity of LL9ss-011, which exceeded the CUG for lead and mercury. The contaminated soil would be hauled by truck to a licensed and permitted disposal facility.

I.3.4 Soil Treatment at LL9ss-096/097

The PAH-contaminated soil at LL9ss-096 and LL9ss-097 would undergo ex-situ thermal treatment. Treated soil would be stockpiled and analyzed for COCs. Once the laboratory analysis determines COCs are below CUGs, the treated soil would be used for backfill and site restoration. Should confirmation samples indicate that any contaminants are not sufficiently treated, then those soils would be rerun through the treatment system, likely at a higher temperature, until the target post-treatment levels are reached.

I.3.5 Site Restoration

All disturbed and excavated areas would be backfilled with clean soil and graded to meet neighboring contours. The backfill soil would come from a clean source that was previously sampled and approved for use by Ohio EPA and from what was confirmed cleaned after thermal treatment. To ensure adequate vegetation is established within the excavated area, a layer of topsoil from a clean source that was previously sampled and approved for use by Ohio EPA would be placed on the treated soil.

After the areas are backfilled and graded, workers would apply a seed mixture (as approved by OHARNG) and mulch. Restored areas would be inspected and monitored as required in the storm water best management practices established in the RD.

J COMPARATIVE ANALYSIS OF ALTERNATIVES

These alternatives were evaluated with respect to the nine comparative analysis criteria. These criteria are further described, as outlined by CERCLA, in Table 3.

The nine criteria are categorized into three groups: threshold criteria, primary balancing criteria, and modifying criteria as follows:

Threshold Criteria – Must be met for the alternative to be eligible for selection as a remedial option.

1. Overall protection of human health and the environment.
2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs).

Primary Balancing Criteria – Used to weigh major trade-offs among alternatives.

3. Long-term effectiveness and permanence.
4. Reduction of toxicity, mobility, or volume through treatment.
5. Short-term effectiveness.
6. Implementability.
7. Cost.

Modifying Criteria – FS consideration to the extent that information was available. Evaluated fully after public comment period on the Proposed Plan.

8. State acceptance.
9. Community acceptance.

Table 3. CERCLA Evaluation Criteria

Overall Protection of Human Health and the Environment – considers whether or not an alternative provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.
Compliance with Applicable or Relevant and Appropriate Requirements – considers how a remedy will meet all the applicable or relevant and appropriate requirements of other federal and state environmental statutes and/or provide grounds for invoking a waiver.
Long-term Effectiveness and Permanence – considers the magnitude of residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup goals have been met.
Reduction of Toxicity, Mobility, or Volume Through Treatment – considers the anticipated performance of the treatment technologies that may be employed in a remedy.
Short-Term Effectiveness – considers the speed with which the remedy achieves protection, as well as the potential to create adverse impacts on human health and the environment that may result during the construction and implementation period.
Implementability – considers the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the chosen solution.
Cost – considers capital costs and operation and maintenance costs associated with the implementation of the alternative.
State Acceptance – indicates whether the state concurs with, opposes, or has no comment on the preferred alternative.
Community Acceptance – considers public input following a review of the public comments received on the Remedial Investigation/Feasibility Study Report and Proposed Plan.

The following subsections discuss the comparative analysis of the alternatives developed for Load Line 9, and a scoring of these alternatives is presented in Table 4.

Table 4. Summary of Comparative Analysis of Remedial Alternatives

NCP Evaluation Criteria	Alternative 1: No Action	Alternative 2: Excavation and Off-site Disposal - Attain Unrestricted (Residential) Land Use	Alternative 3: Excavation and Off-site Disposal at LL9ss-011 and Ex-situ Thermal Treatment at LL9ss-096/097– Attain Unrestricted (Residential) Land Use
Threshold Criteria	***Result***	***Result***	***Result***
1. Overall Protectiveness of Human Health and the Environment	Not protective	Protective	Protective
2. Compliance with ARARs	Not compliant	Compliant	Compliant
Balancing Criteria	***Score***	***Score***	***Score***
3. Long-term Effectiveness and Permanence	Not applicable	1	2
4. Reduction of Toxicity, Mobility, or Volume through Treatment	Not applicable	1	2
5. Short-term Effectiveness	Not applicable	1	2
6. Implementability	Not applicable	2	1
7. Cost	Not applicable ($0)	1 ($410,360)	2 ($296,732)
Balancing Criteria Score	*Not applicable*	*6*	*9*

Any alternative considered "not protective" for overall protectiveness of human health and the environment or "not compliant" for compliance with ARARs is not eligible for selection as the recommended alternative. Therefore, that alternative is not ranked as part of the balancing criteria evaluation.

Scoring for the balancing criteria is as follows: Most favorable = 2, least favorable = 1. The alternative with the highest total balancing criteria score is considered the most feasible.

ARAR = Applicable and Relevant or Appropriate Requirement.

NCP = National Contingency Plan.

J.1 Overall Protection of Human Health and the Environment

Overall protection and compliance with ARARs are threshold criteria that must be met by any alternative to be eligible for selection. If any alternative is considered "not protective" for overall protectiveness of human health and the environment or "not compliant" for compliance with ARARs, it is not eligible for selection as the recommended alternative.

Alternative 1 is not protective of human health and is not compliant with ARARs. In addition, Alternative 1 does not meet the RAO to prevent Resident Receptor exposure to surface soil (0–1 ft bgs). The concentrations of lead and mercury are above CUGs at sample location LL9ss-011 and the concentrations benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenz(a,h)anthracene are above CUGs at sample locations LL9ss-096 and LL9ss-097. Therefore, Alternative 1 is not eligible for selection.

For the remaining alternatives, the balancing criteria (short- and long-term effectiveness; reduction of contaminant toxicity, mobility, or volume through treatment; ease of implementation; and cost) are used to select a recommended alternative among the alternatives that satisfy the threshold criteria. The remaining alternatives are ranked among one another for each of the balancing criteria and a total score is generated.

Alternative 3 scores the highest and is the recommended alternative. Alternative 3 is effective in the long term and will attain Unrestricted (Residential) Land Use. In addition, Alternative 3 is a green and highly sustainable alternative for on-site treatment and unrestricted reuse of soil and implements a treatment alternative to reduce the toxicity, mobility, and volume of contamination.

The implementability of Alternative 3 is predicated on the on-site availability of the thermal treatment system. In the event that a thermal treatment system is not available on site at the former RVAAP, Alternative 2 is readily available for implementation. Excavation and off-site disposal alternatives have been implemented multiple times during restoration efforts at the former RVAAP. As with Alternative 3, Alternative 2 is effective in the long term and attains Unrestricted (Residential) Land Use. Alternative 2 reduces the mobility of contaminants by placing contamination in an engineered landfill.

J.2 State Acceptance

State acceptance was evaluated formally after the public comment period on the Proposed Plan. Ohio EPA has expressed its support for Alternative 3: Excavation and Off-site Disposal at LL9ss-011 and Ex-Situ Thermal Treatment at LL9ss-096/097 – Attain Unrestricted (Residential) Land Use.

J.3 Community Acceptance

Community acceptance was evaluated formally after the public comment period. During the public meeting, the community voiced no objections to Alternative 3: Excavation and Off-site Disposal at

LL9ss-011 and Ex-Situ Thermal Treatment at LL9ss-096/097 – Attain Unrestricted (Residential) Land Use, as indicated in Part III of this ROD, the Responsiveness Summary.

K PRINCIPLE THREAT WASTES

Principal threat wastes, as defined by the USEPA in *A Guide to Principal Threat and Low Level Threat Wastes* (USEPA 1991), are source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur.

Wastes that generally are considered to constitute principal threats include, but are not limited to:

- Liquids – wastes contained in drums, lagoons, or tanks, free product floating on or under groundwater.
- Mobile source material – surface soil or subsurface soil containing high concentrations of chemicals that are mobile due to wind entrainment, volatilization, surface runoff, or subsurface transport.
- Highly toxic source material – buried drummed non-liquid wastes, buried tanks containing non-liquid wastes, or soils containing significant concentrations of highly toxic materials.

USEPA guidance indicates where mobility and toxicity of source material combine to pose a potential risk of 10^{-3} or greater, generally treatment alternatives should be considered. Load Line 9 does not contain source materials that are considered principal threat wastes, as described above, and no chemicals pose a risk of 10^{-3} or greater. As such, no remedies are required to address principal threat wastes at this AOC.

L SELECTED REMEDY

Alternative 3: Excavation and Off-site Disposal at LL9ss-011 and Ex-Situ Thermal Treatment at LL9ss-096/097 – Attain Unrestricted (Residential) Land Use is selected for implementation at the Load Line 9. This alternative also attains the requisite level of cleanup for Military Training Land Use and Commercial/Industrial Land Use.

L.1 Rationale for the Selected Remedy

The selected remedy meets the threshold criteria and provides the best overall balance of trade-offs in terms of the five balancing criteria:

- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, and volume;
- Short-term effectiveness;
- Implementability; and
- Cost.

The selected remedy is protective for the future use, is cost effective, and can be performed in a timely manner. Based on the available risk assessment information, the selected remedy will achieve the RAO, which prevents Resident Receptor exposure to surface soil (0–1 ft bgs) with concentrations above lead and mercury CUGs at sample location LL9ss-011 and concentrations above benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenz(a,h)anthracene CUGs at sample locations LL9ss-096 and LL9ss-097.

Using engineering controls, personal protective equipment, erosion and sediment controls, proper waste handling practices, and monitoring will mitigate short-term effects during construction. The selected remedy addresses state and community concerns by removing and treating contaminated soil from the Load Line 9.

Alternative 3 is a green and highly sustainable alternative for on-site treatment and unrestricted reuse of PAH-contaminated soil and implements a treatment alternative to reduce the toxicity, mobility, and volume of contamination.

L.2 Description of the Selected Remedy

Alternative 3 consists of thermally treating PAH-contaminated soil at sample locations LL9ss-096/097 and excavation with off-site disposal of the mercury and lead contaminated soil at sample location LL9ss-011. This alternative is described in more detail in Section I.3.

L.3 Summary of the Estimated Remedy Costs

The cost to complete Alternative 3 is approximately $296,732 (in base year 2015 dollars). No operations and maintenance is required; therefore, no operations and maintenance costs are associated with this alternative. This cost assumes an existing thermal treatment system is on site and ready for mobilization.

This cost estimate is based on the best available information regarding the anticipated scope of the selected remedy. This is an order of magnitude engineering cost estimate that is expected to be within –30 to +50% of the actual project cost in accordance with USEPA guidance (USEPA 1988).

L.4 Expected Outcomes of the Selected Remedy

Table 2 provides a summary of CUGs to be achieved for soil at Load Line 9 after the remedial activities are complete. Residual risks after implementing the selected remedy will be within the acceptable risk range for the future use, and will meet the criteria for Unrestricted (Residential) Land Use. Removing contaminated soil will reduce the likelihood of contaminant migration to other environmental media, such as surface water or groundwater. Removing soil to attain human health CUGs will also reduce risks to ecological receptors.

No negative socioeconomic and community revitalization impacts are expected from this remedial action. Positive socioeconomic impacts are expected from excavating and removing soil exceeding the CUGs because additional resources will available for use by the OHARNG training mission.

M STATUTORY DETERMINATIONS

The selected remedy satisfies the statutory requirements of CERCLA Section 121 and the NCP, as described below.

M.1 Protection of Human Health and the Environment

Human exposure to COCs will be eliminated to levels that are protective through treatment and excavation and off-site disposal of soil at Load Line 9. The selected remedy also protects environmental resources from potential exposure to COC-contaminated media. The selected remedy will attain the CUGs listed in Table 2.

M.2 Compliance with ARARs

The selected remedy will comply with the action-specific ARARs listed in Attachment A.

M.3 Cost Effectiveness

The selected remedy meets the statutory requirement for a cost-effective remedy. Cost effectiveness is concerned with the reasonableness of the relationship between the effectiveness afforded by each alternative and its costs compared to other available options.

M.4 Utilization of Permanent Solutions and Alternative Treatment (or Resource Recovery) Technologies to the Maximum Extent Practicable

The selected remedy represents the maximum extent to which permanent solutions are practicable for soil at the AOC. The selected remedy represents the best balance of trade-offs between the alternatives because it provides a permanent solution for contaminated media, is cost-effective, and eliminates the need for long-term LUCs respective to chemical contaminants in soil.

M.5 Preference for Treatment as a Principal Element

The selected remedy uses permanent solutions to the maximum extent practicable. The remedy satisfies the statutory preference for treatment, as a thermal treatment technology is part of the selected remedy for PAH-contaminated soil at locations LL9ss-096/097.

M.6 Five-Year Review Requirements

Five-year reviews in compliance with CERCLA Section 121(c) and NCP Section 300.430(f)(4)(ii) will not be required.

N DOCUMENTATION OF SIGNIFICANT CHANGES FROM PREFERRED ALTERNATIVE OF PROPOSED PLAN

The Load Line 9 Proposed Plan (USACE 2017) was released for public comment on June 6, 2018. Feedback received from the public during the public comment period and public meeting are presented in Part III of this ROD. The Proposed Plan identified Alternative 3: Excavation and Off-site Disposal at LL9ss-011 and Ex-Situ Thermal Treatment at LL9ss-096/097 – Attain Unrestricted (Residential) Land Use as the recommended alternative for Load Line 9. No significant changes were necessary or appropriate following the conclusion of the public comment period.

PART III: RESPONSIVENESS SUMMARY FOR PUBLIC COMMENTS ON THE ARMY PROPOSED PLAN FOR RVAAP-42 LOAD LINE 9

A OVERVIEW

On June 6, 2018, the Army released the Load Line 9 Proposed Plan (USACE 2017) for public comment. A 30-day public comment period was held from June 6, 2018 to July 6, 2018. The Army hosted a public meeting on June 21, 2018 to present the Proposed Plan and take questions and comments from the public for the record. The public comment period and public meeting also included Proposed Plans for Load Line 7, Load Line 12, Wet Storage Area, and Upper and Lower Cobbs Ponds.

For soil, surface water, and sediment at Load Line 9, the Army recommended Alterative 3: Excavation and Off-site Disposal at LL9ss-011 and Ex-Situ Thermal Treatment at LL9ss-096/097 – Attain Unrestricted (Residential) Land Use. During the public meeting, Ohio EPA concurred with the recommendation of this alternative.

The community voiced no objections to this recommendation. All public input, including the oral and written comments provided, was considered during the selection of the final remedy for soil, surface water, and sediment at Load Line 9 in this ROD.

B STAKEHOLDER ISSUES AND LEAD AGENCY RESPONSES

The following subsections summarize the oral and written comments provided during the public comment period and public meeting. ARNG's responses provided below are considered final upon approval of the Final ROD.

B.1 Oral Comments from Public Meeting

Comment 1: What impacts or what will occur when you excavate the contaminated soil? Is there any testing that is done to monitor airborne contaminants?
Response: Excavation of contaminated soil would include the use of engineering controls to mitigate risk from airborne contaminants to workers and the community. These controls include constant visual inspections to verify that excessive dust is not created in excavation or transport, wetting of the contaminated soil if dust is created, and ensuring the contaminated soil is covered when in the haul trucks prior to exiting the site.

If contaminated media are at concentrations that airborne particulates can pose unacceptable risk to workers or the community via an airborne pathway, the RD will specify that air monitoring equipment will be on site and continually monitored.

B.2 Written Comments

Comment 1: What happens to Sand Creek after the exit from the arsenal area into Windham?
Response: Sand Creek flows through the center of the former RVAAP (Camp Ravenna), generally in a northeast direction to its confluence with South Fork Eagle Creek. This confluence is just inside the Camp Ravenna perimeter fence. After the confluence, South Fork Eagle Creek exits Camp Ravenna between Windham Road and Snow Road and continues in a northerly direction for approximately 3 miles to its confluence with Eagle Creek.

C TECHNICAL AND LEGAL ISSUES

There were no technical or legal issues raised during the public comment period.

PART IV: REFERENCES

ARNG (Army National Guard) 2014. *Final Technical Memorandum: Land Uses and Revised Risk Assessment Process for the Ravenna Army Ammunition Plant (RVAAP) Installation Restoration Program, Portage/Trumbull Counties, Ohio*. Memorandum between ARNG-ILE Cleanup and the Ohio Environmental Protection Agency. February 2014.

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OHARNG (Ohio Army National Guard) 2008. *Updated Integrated Natural Resources Management Plan for the Ravenna Training and Logistics Site, Portage and Trumbull Counties, Ohio*. March 2008.

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USACE (U.S. Army Corps of Engineers) 1996. *Preliminary Assessment for the Characterization of Areas of Contamination at the Ravenna Army Ammunition Plant, Ravenna, Ohio*. February 1996.

USACE 2016. *Phase II Remedial Investigation and Feasibility Study Report for Soil, Sediment, Surface Water at RVAAP-42 Load Line 9, Former Ravenna Army Ammunition Plant Portage and Trumbull Counties, Ohio*. June 2016.

USACE 2017. *Proposed Plan for Soil, Sediment, Surface Water at RVAAP-42 Load Line 9, Former Ravenna Army Ammunition Plant Portage and Trumbull Counties, Ohio*. March 2017.

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

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USEPA (U.S. Environmental Protection Agency) 1988. *Guidance for Conducting Remedial Investigation/Feasibility Studies under CERCLA*. October 1988.

USEPA 1991. *Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals)*. EPA/540/R-92/003, U.S. Environmental Protection Agency Office of Emergency and remedial Response, Washington, DC. December 1991.

Vista (Vista Sciences Corporation) 2017. *Community Relations Plan 2017 for the Ravenna Army Ammunition Plant Restoration Program*. March 2017.

FIGURES

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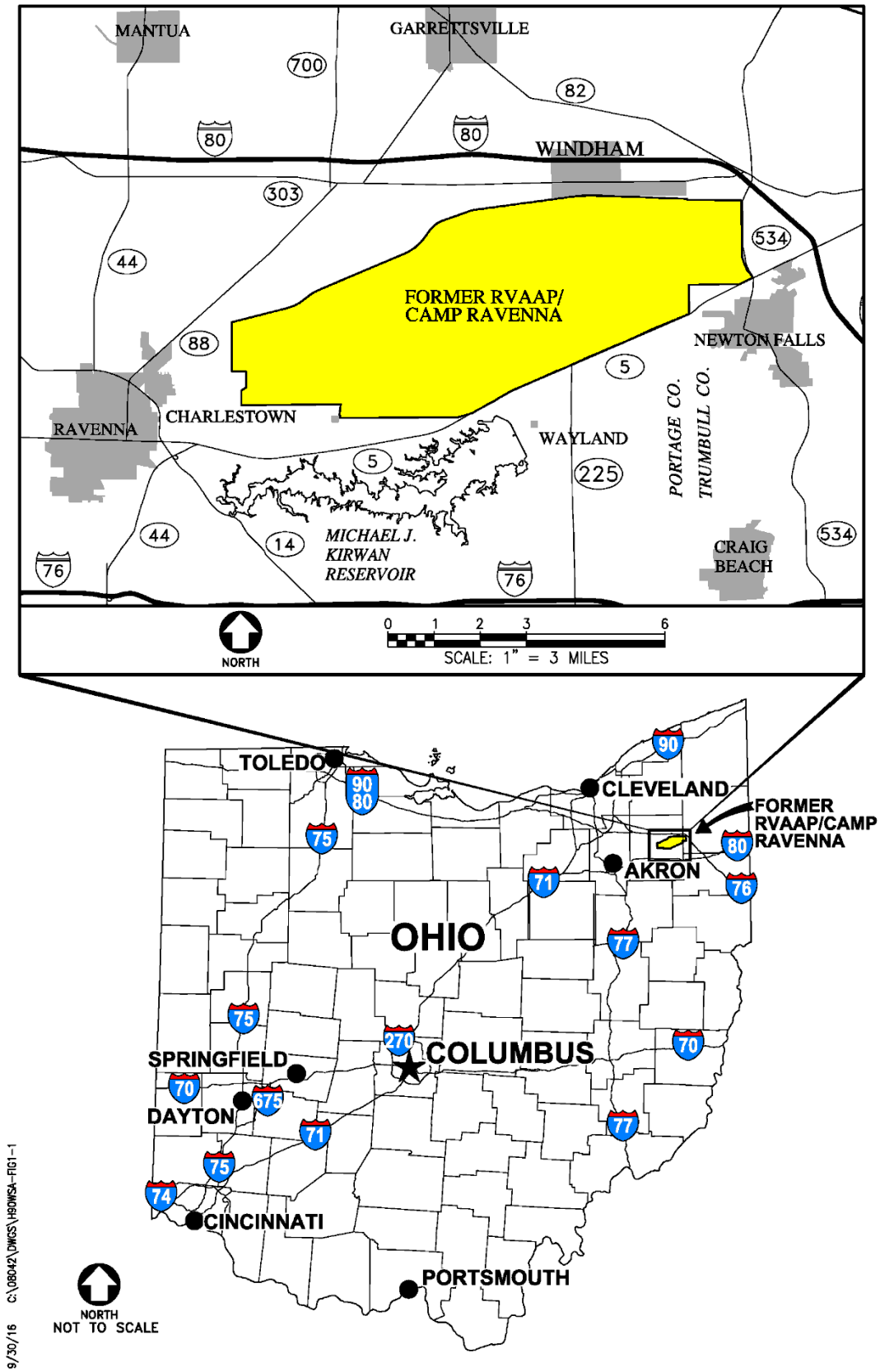


Figure 1. General Location and Orientation of RVAAP/Camp Ravenna

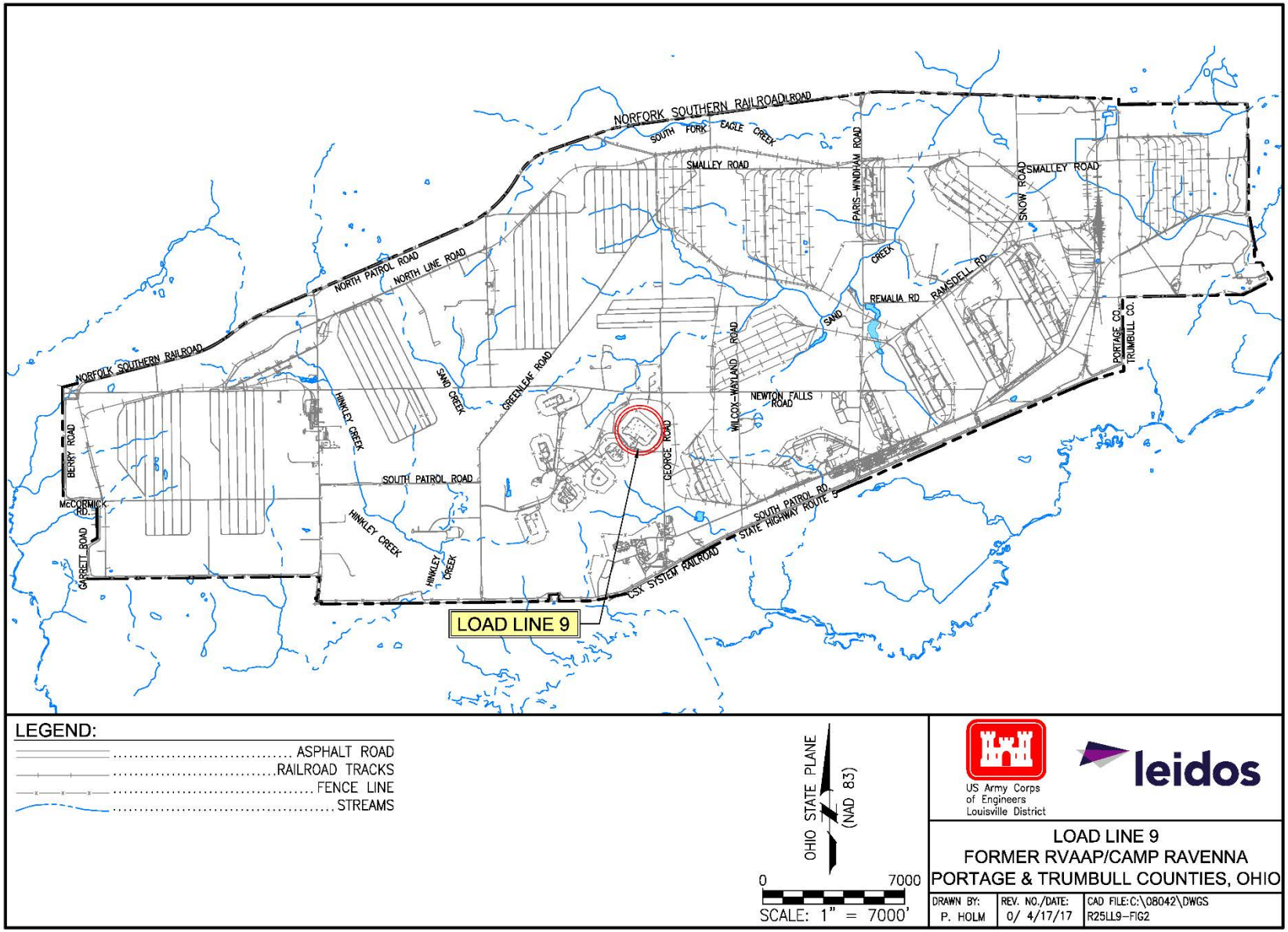
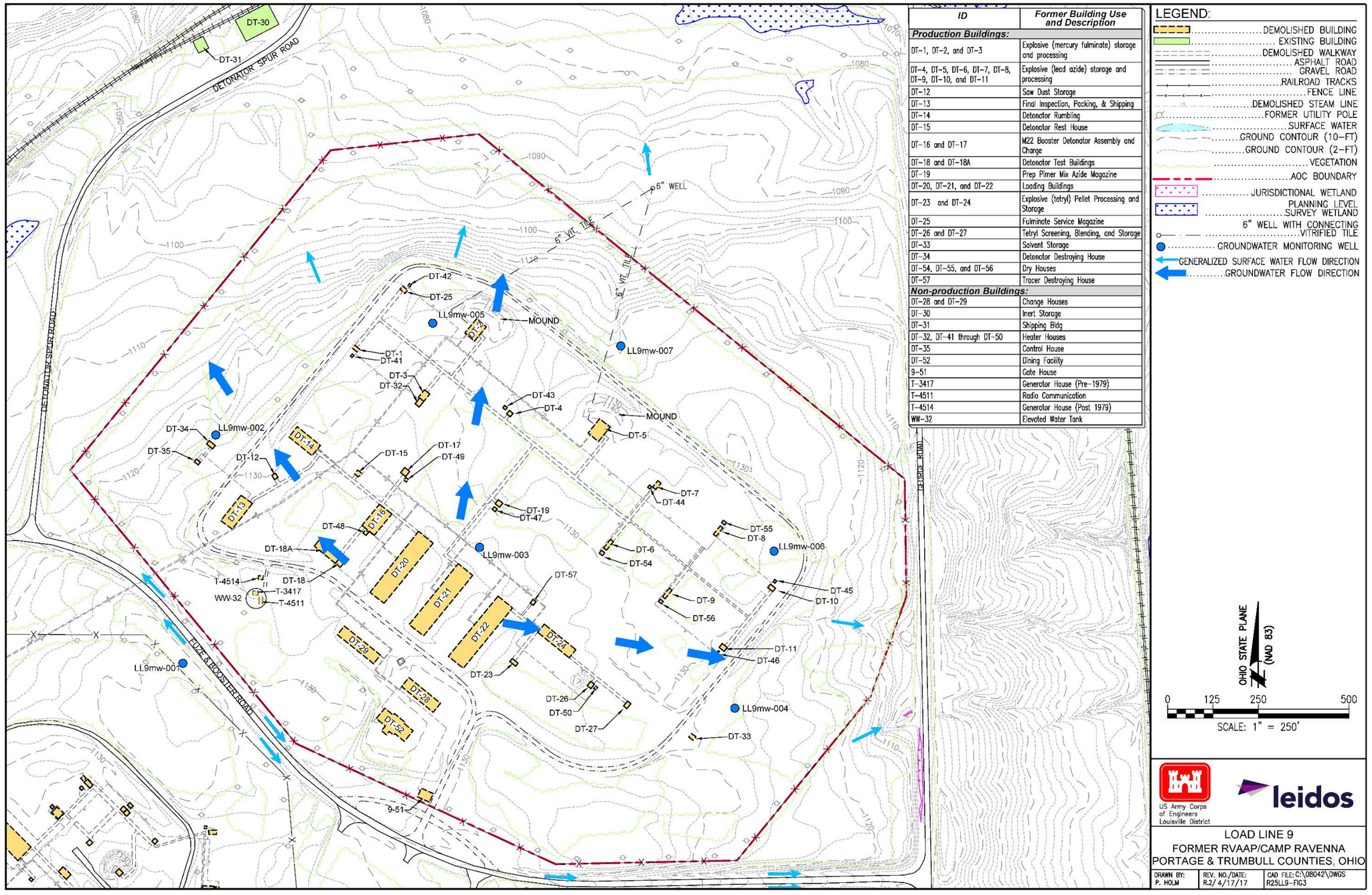


Figure 2. RVAAP/Camp Ravenna Installation Map



ID	Former Building Use and Description
Production Buildings:	
DT-1, DT-2, and DT-3	Explosive (mercury fulminate) storage and processing
DT-4, DT-5, DT-6, DT-7, DT-8, DT-9, DT-10, and DT-11	Explosive (lead azide) storage and processing
DT-12	Saw Dust Storage
DT-13	Final Inspection, Packing, & Shipping
DT-14	Detonator Rumbling
DT-15	Detonator Rest House
DT-16 and DT-17	M22 Booster Detonator Assembly and Charge
DT-18 and DT-18A	Detonator Test Buildings
DT-19	Prep Primer Mix Azide Magazine
DT-20, DT-21, and DT-22	Loading Buildings
DT-23 and DT-24	Explosive (tetryl) Pellet Processing and Storage
DT-25	Fulminate Service Magazine
DT-26 and DT-27	Tetryl Screening, Blending, and Storage
DT-33	Solvent Storage
DT-34	Detonator Destroying House
DT-54, DT-55, and DT-56	Dry Houses
DT-57	Tracer Destroying House
Non-production Buildings:	
DT-28 and DT-29	Change Houses
DT-30	Inert Storage
DT-31	Shipping Bldg
DT-32, DT-41 through DT-50	Heater Houses
DT-35	Control House
DT-52	Dining Facility
9-51	Gate House
T-3417	Generator House (Pre-1979)
T-4511	Radio Communication
T-4514	Generator House (Post 1979)
WW-32	Elevated Water Tank

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
- 6" WELL WITH CONNECTING VITRIFIED TILE
- GROUNDWATER MONITORING WELL
- GENERALIZED SURFACE WATER FLOW DIRECTION
- GROUNDWATER FLOW DIRECTION

OHIO STATE PLANE (NAD 83)

0 125 250 500

SCALE: 1" = 250'

US Army Corps of Engineers Louisville District

leidos

LOAD LINE 9
FORMER RVAAP/CAMP RAVENNA
PORTAGE & TRUMBULL COUNTIES, OHIO

DRAWN BY:	REV. NO./DATE:	CAD FILE:
P. HOLM	R.2/ 4/17/17	C:\08042\DWGS R25LL9-FIG3

Figure 3. Load Line 9 Site Features

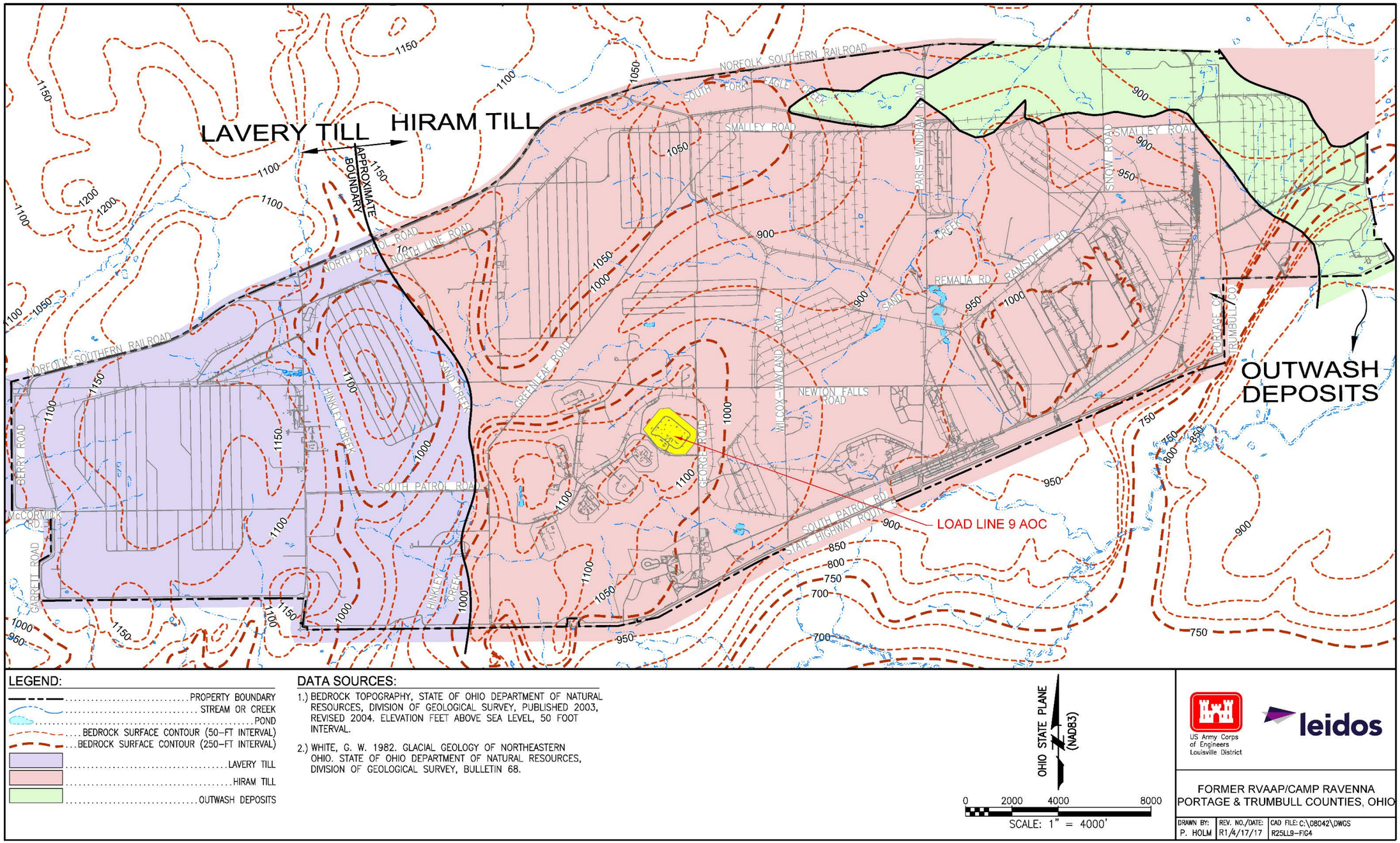


Figure 4. Geologic Map of Unconsolidated Deposits on Camp Ravenna

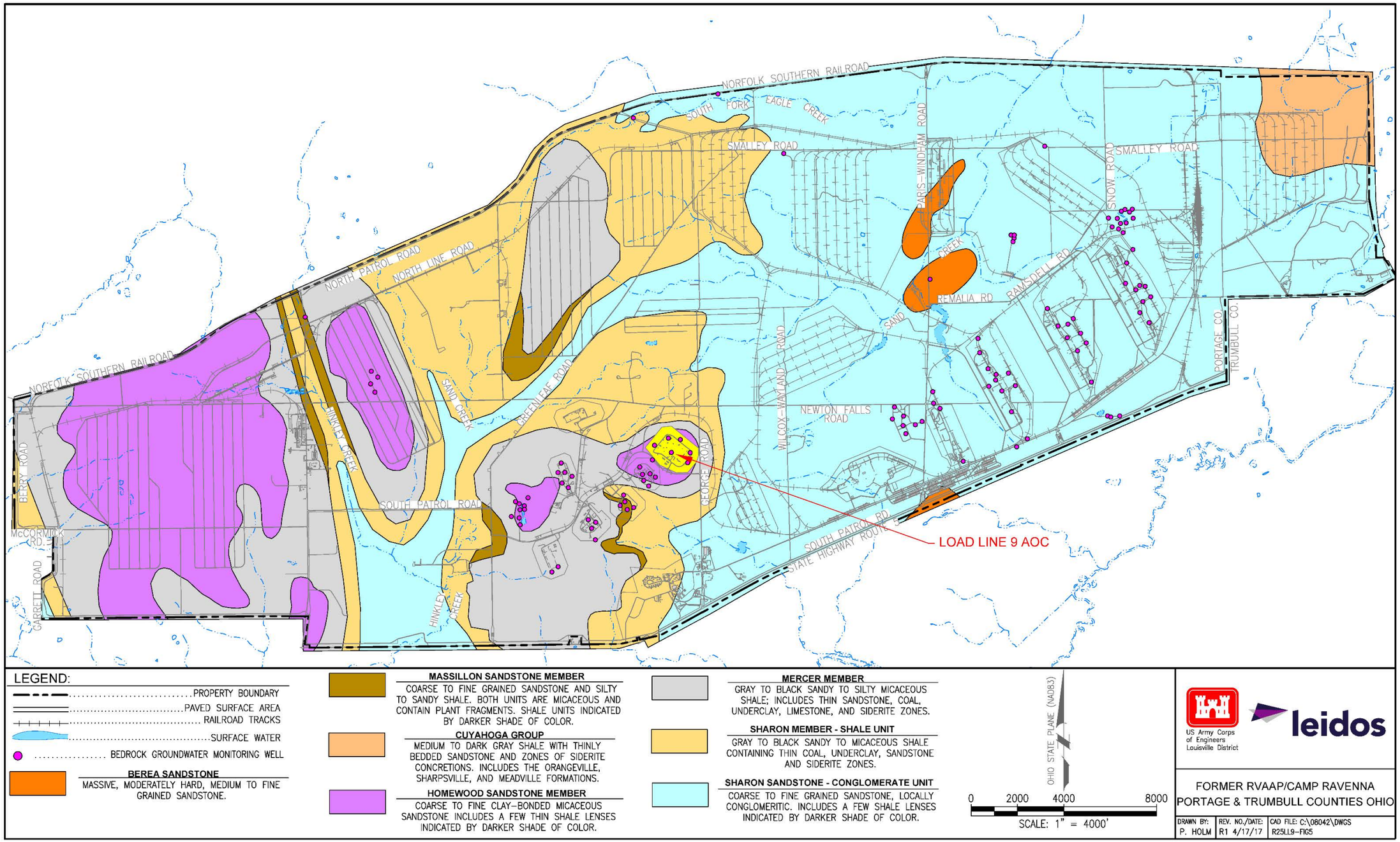


Figure 5. Geologic Bedrock Map and Stratigraphic Description of Units on Camp Ravenna

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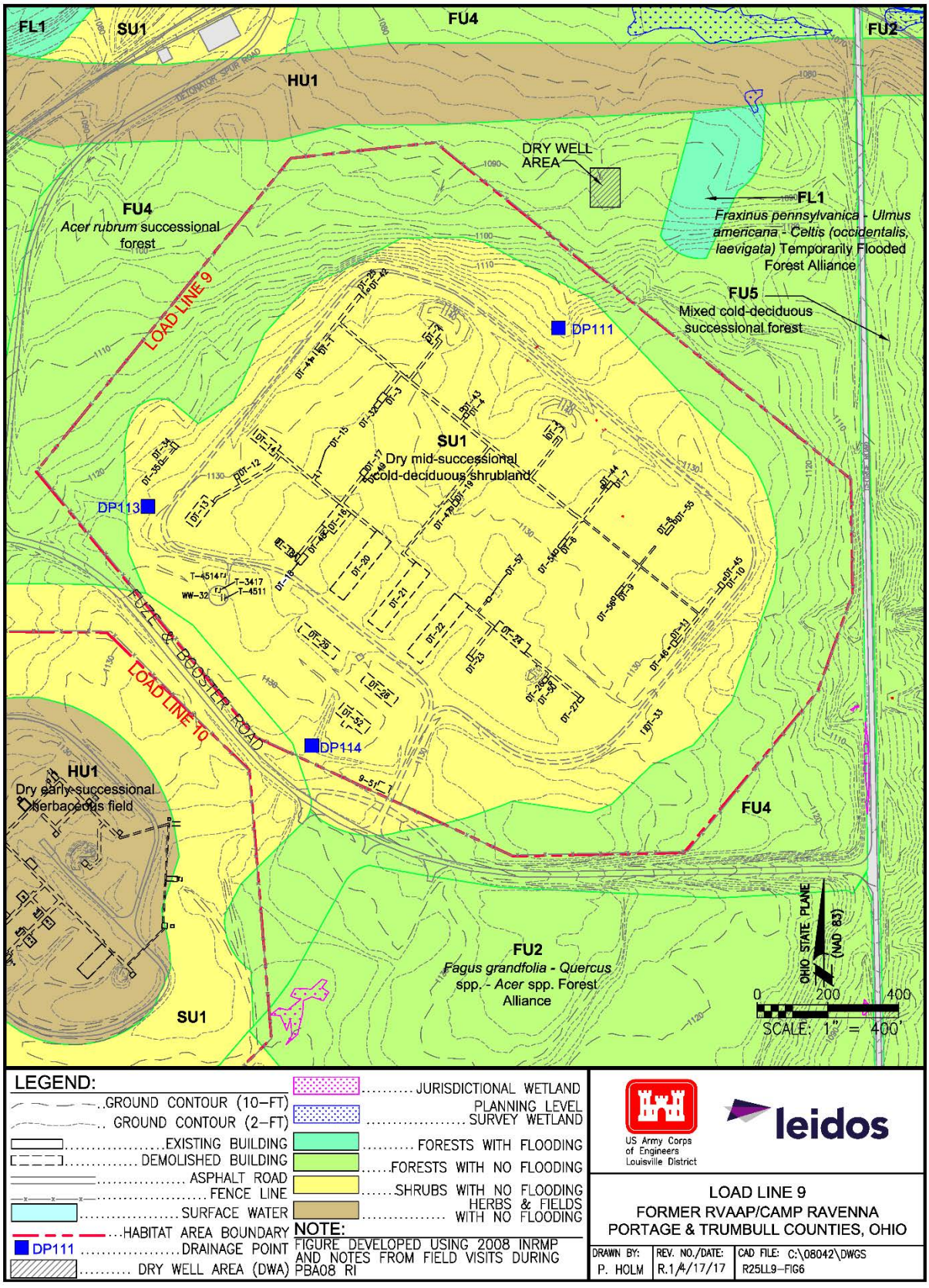

Figure 6. Natural Resources Inside and Near Habitat Area at Load Line 9

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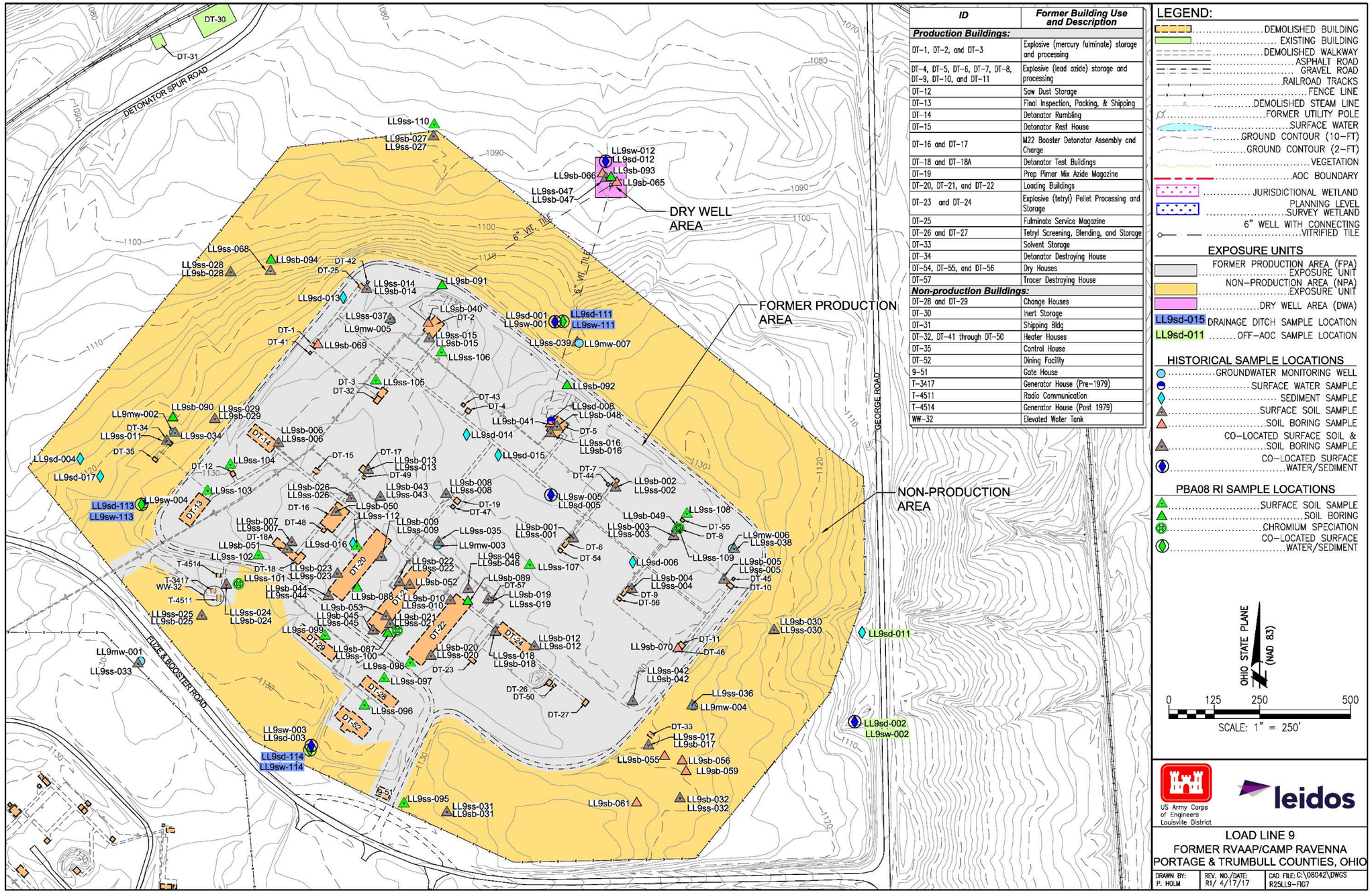

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- VEGETATION
- AOC BOUNDARY
- JURISDICTIONAL WETLAND
- PLANNING LEVEL SURVEY WETLAND
- 6" WELL WITH CONNECTING VITRIFIED TILE

EXPOSURE UNITS

- FORMER PRODUCTION AREA (FPA) EXPOSURE UNIT
- NON-PRODUCTION AREA (NPA) EXPOSURE UNIT
- DRY WELL AREA (DWA)
- LL9sd-015 DRAINAGE DITCH SAMPLE LOCATION
- LL9sd-011 OFF-AOC SAMPLE LOCATION

HISTORICAL SAMPLE LOCATIONS

- GROUNDWATER MONITORING WELL
- SURFACE WATER SAMPLE
- SEDIMENT SAMPLE
- SURFACE SOIL SAMPLE
- SOIL BORING SAMPLE
- CO-LOCATED SURFACE SOIL & SOIL BORING SAMPLE
- CO-LOCATED SURFACE WATER/SEDIMENT

PBA08 RI SAMPLE LOCATIONS

- SURFACE SOIL SAMPLE
- SOIL BORING
- CHROMIUM SPECIATION
- CO-LOCATED SURFACE WATER/SEDIMENT

OHIO STATE PLANE (NAD 83)

0 125 250 500

SCALE: 1" = 250'

US Army Corps of Engineers Louisville District

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LOAD LINE 9
FORMER RVAAP/CAMP RAVENNA
PORTAGE & TRUMBULL COUNTIES, OHIO

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Figure 7. Load Line 9 Sample Locations

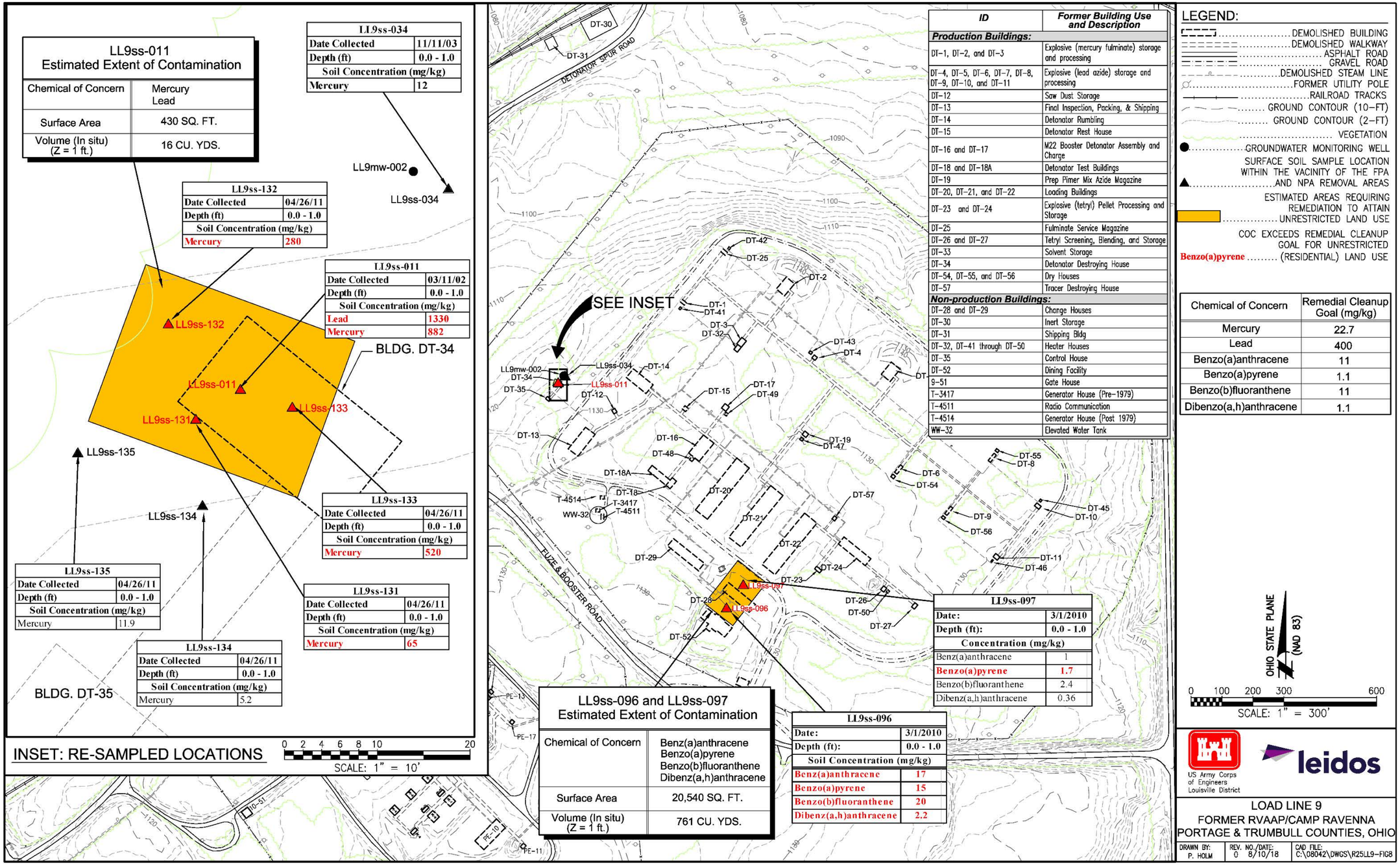

Figure 8. Estimated Extent of Soil Requiring Remediation

APPENDIX A.

Applicable or Relevant and Appropriate Requirements (ARARs)

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Table A–1. Potential Action-Specific ARARs

Media and Citation	Description of Requirement	Potential ARAR Status	Standard
Prohibition of air pollution nuisances (e.g., fugitive dust) OAC Section 3745-15-07	These rules prohibit releasing nuisance air pollution that endangers health, safety, or welfare of the public or cause personal injury or property damage.	Applies to any activity that could result in the release of a nuisance air pollutant. This would include dust from excavation or soil management processes.	Any person undertaking an activity is prohibited from emitting nuisance air pollution.
Storm water requirements at construction sites 40 CFR Part 450	These rules require that storm water controls be employed at construction sites that exceed 1 acre.	Applies to any construction activity that exceeds 1 acre.	Persons undertaking construction activities (including grubbing and land clearing) at an AOC where the construction footprint is over 1 acre must design and implement erosion and runoff controls.
Hazardous Waste Determination OAC Section 3745-52-11	These rules require that a generator determine whether a material generated is a hazardous waste.	Applies to any material that is or contains a solid waste. Must be characterized to determine whether the material is or contains a hazardous waste.	Any person that generates a waste as defined must use prescribed methods to determine if waste is considered characteristically hazardous using the prescribed methods.
Management of contaminated soil or debris that is or contains a hazardous waste OAC Sections 3745-52-30 through 3745-52-34	These rules require that hazardous waste be properly packaged, labeled, marked, and accumulated on site pending on- or off-site disposal.	Applies to any hazardous waste, or media containing a hazardous waste that is generated from on-site activities.	All hazardous waste must be accumulated in a compliant manner that includes proper marking, labeling, and packaging in accordance with the specified regulations. This includes inspecting containers or container areas where hazardous waste is accumulated on site.
Acquisition and use of manifests for hazardous waste shipments to off-site treatment, storage or disposal facilities OAC Sections 3745-52-20 through - 3745-52-23	These rules require that a Uniform Hazardous Waste Manifest be used for any off-site shipment of hazardous waste.	Applies to any shipment of hazardous waste to an off-site facility for treatment, storage, or disposal.	Requires a generator who transports or offers to transport hazardous waste for off-site treatment, storage, or disposal to prepare a uniform hazardous waste manifest.

Table A–1. Potential Action-Specific ARARs (continued)

Media and Citation	Description of Requirement	Potential ARAR Status	Standard
Soil contaminated with RCRA hazardous waste OAC Section 3745-270-49 OAC Section 3745-270-48 UTS	These rules prohibit land disposal of RCRA hazardous waste subject to them, unless the waste is treated to meet certain standards that are protective of human health and the environment. Standards for treating hazardous waste-contaminated soil prior to disposal are set forth in the two cited rules. Using the greater of either technology-based standards or UTS is prescribed.	LDRs apply only to RCRA hazardous waste. This rule is considered for ARAR status only upon generating a RCRA hazardous waste. If any soil is determined to be RCRA hazardous waste, and if it will be disposed of on site, this rule is potentially applicable to disposal of the soil.	All soil subject to treatment must be treated as follows: 1) For non-metals, treatment must achieve 90% reduction in total constituent concentration (primary constituent for which the waste is characteristically hazardous as well as for any organic or inorganic UHC), subject to item 3 below. 2) For the inorganic chemicals carbon disulfide, cyclohexanone, and methanol, treatment must achieve 90% reduction in constituent concentrations as measured in leachate from the treated media (tested according to the TCLP) or 90% reduction in total constituent concentrations (when a inorganic chemical removal treatment technology is used), subject to item 3 below. 3) When treating any constituent subject to achieve a 90% reduction standard would result in a concentration less than 10 times the UTS for that constituent, treatment to achieve constituent concentrations less than 10 times the UTS is not required. This is commonly referred to as "90% capped by 10xUTS."

Table A–1. Potential Action-Specific ARARs (continued)

Media and Citation	Description of Requirement	Potential ARAR Status	Standard
Soil/debris contaminated with RCRA hazardous waste – variance OAC Section 3745-270-44	The Ohio EPA Director will recognize a variance approved by the USEPA from the alternative treatment standards for hazardous contaminated soil or for hazardous debris.	Potentially applicable to RCRA hazardous soil or debris that is generated and placed back into a unit and that will be disposed of on site.	A site-specific variance from the soil treatment standards that can be used when treatment to concentrations of hazardous constituents higher than those specified in the soil treatment standards and minimizes short- and long-term threats to human health and the environment. In this way, on a case-by-case basis, risk-based LDR treatment standards approved through a variance process could supersede the soil treatment standards.
Soil/debris that is contaminated but not a hazardous waste for disposal. OAC Section 3745-27-05	Establishes standard for disposing solid waste within the state of Ohio.	Potentially applicable to contaminated soil disposed offsite under state solid waste disposal requirements.	Establishes allowable methods of solid waste disposal and prohibits management by open burning or dumping.

AOC = Area of concern.
ARAR = Applicable and Relevant or Appropriate Requirements.
CFR = Code of Federal Regulations.
LDR = Land Disposal Restrictions.
OAC = Ohio Administrative Code.
RCRA = Resource Conservation and Recovery Act.
TCLP = Toxicity characteristic leaching procedure.
UHC = Underlying Hazardous Constituent.
USEPA = U.S. Environmental Protection Agency.
UTS = Universal Treatment Standard.

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APPENDIX B.

Affidavits

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Affidavit of Publication, Tribune Chronicle, June 6, 2018

NOTICE OF DOCUMENT AVAILABILITY
Proposed Plans for Load Line 7, Load Line 9, Load Line 12, Wet Storage Area and Upper and Lower Cobbs Ponds at the Former Ravenna Army Ammunition Plant (RVAAP)

The Proposed Plans for Load Line 7, Load Line 12, and Upper and Lower Cobbs Ponds each present a recommendation of No Further Action and provide the rationale for this recommendation. The Proposed Plans for Load Line 9 and Wet Storage Area present the preferred alternative, Ex-situ Thermal Treatment. These Proposed Plans are now available for public review for 30 days from June 6, 2018 to July 6, 2018.

The Proposed Plans are available at:

Newton Falls Public Library	Reed Memorial Library
204 South Canal Street	167 East Main Street
Newton Falls, Ohio 44444	Ravenna, Ohio 44266

The Proposed Plans are also available at www.rvaap.org

Please join us for an OPEN HOUSE and PUBLIC MEETING.

The Army will host an informational open house and a public meeting to explain the recommendations in the Proposed Plans. Oral and written comments will be accepted at the meeting. Written comments may be mailed to the Camp Ravenna Environmental Office, 1438 State Route 534 SW, Newton Falls, OH 44444. Comments will be accepted during the public comment period from June 6, 2018 to July 6, 2018.

The public meeting is scheduled for:

Thursday, June 21, 2018	at: Shearer Community Center
6:00 pm Open House	(Paris Township Hall)
6:30 pm Public Meeting	9355 Newton Falls Road
	Ravenna, OH 44266

For more information or if you need special accommodations to attend, please contact Katie Tait at 614-336-6136.
#157-1T-June 6, 2018 #3674

PROOF OF PUBLICATION

STATE OF OHIO
TRUMBULL COUNTY SS: PAMELA EAZOR

BEING DULY SWORN, UPON OATH STATES THAT SHE IS AN AUTHORIZED REPRESENTATIVE OF THE TRIBUNE CHRONICLE, (A DIVISION OF EASTERN OHIO NEWSPAPERS INC) A DAILY NEWSPAPER PRINTED IN THE CITY OF WARREN, COUNTY OF TRUMBULL, STATE OF OHIO AND OF GENERAL CIRCULATION IN THE CITY OF WARREN, TRUMBULL COUNTY, OHIO AND IS INDEPENDENT IN POLITICS.

THAT THE ATTACHED ADVERTISEMENT WAS PUBLISHED IN THE TRIBUNE CHRONICLE EVERY WEDNESDAY FOR (1) ONE CONSECUTIVE WEEKS AND THAT THE FIRST INSERTION WAS ON WEDNESDAY THE 6th DAY OF JUNE 2018.

Pamela Eazor

SWORN TO BEFORE ME AND SUBSCRIBED IN MY PRESENCE ON THIS 11th DAY OF JUNE 2018

Constance A. Pacek
NOTARY PUBLIC

NOTARY PUBLIC STATE OF OHIO

CONSTANCE A. PACEK
Notary Public, State of Ohio
My Commission Expires
March 7, 2021

ADVERTISING COST $ 283.32

Affidavit of Publication, Record Courier, June 6, 2018

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3119399B

Proof of Publication
Record Publishing Company
1050 W. Main Street,
Kent, OH 44240
Phone (330) 541-9400
Fax (330) 673-6363

I, [signature] being first duly sworn depose and say that I am Advertising Clerk of
Record Publishing Company

30 Record-Courier a newspaper printed and published in the city of Kent, and of General circulation in the County of Portage, State of Ohio, and personal knowledge of the facts herein stated and that the notice hereto annexed was Published in said newspapers for 1 insertions on the same day of the week from and after the 6th day of June, 2018 and that the fees charged are legal.

[signature]

Name of Account: Leidos
Ad Number: 12454540
No. of Lines: 28

Day(s) Published: 06/06.
Printers Fee: $115.20

Sworn to and subscribed before this 6th day of June, 2018.

[signature]
Elizabeth McDaniel
Notary Public
Commission Expires June 19, 2021

Notice of Document Availability

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