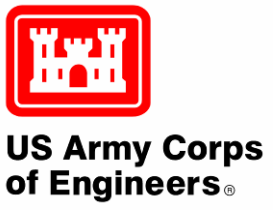
**Final**

# Proposed Plan
# for Soil, Sediment, and Surface Water
# at RVAAP-50 Atlas Scrap Yard

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

**Contract No. W912QR-15-C-0046**

**Prepared for:**




**U.S. Army Corps of Engineers**
**Louisville District**

**Prepared by:**


**Leidos**
**8866 Commons Boulevard, Suite 201**
**Twinsburg, Ohio 44087**

**June 4, 2020**

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# Final

# Proposed Plan
# for Soil, Sediment, and Surface Water
# at RVAAP-50 Atlas Scrap Yard

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**13. SUPPLEMENTARY NOTES**

None.

**14. ABSTRACT**

This Proposed Plan for Atlas Scrap Yard presents to the public the physical characteristics, geology, and hydrogeology of Atlas Scrap Yard; compiles historical and newly acquired environmental data; summarizes nature and extent of contamination in soil; evaluates contaminant fate and transport; provides human health and ecological risk assessments; and presents a preferred alternative to meet the remedial action objective at this AOC. The preferred alternative for lead contamination within the Former Incinerator Area is "FIA Alternative 2: Excavation, Stabilization, and Off-Site Disposal of Surface Soil at the FIA – Attain Unrestricted (Residential) Land Use." The preferred alternative for PAH contamination within the Former Storage Area is "FSA Alternative 3: Ex Situ Thermal Treatment of Surface Soil at ASYss-126M – Attain Commercial/Industrial Land Use."

**15. SUBJECT TERMS**

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Ohio Environmental Protection Agency

**Mike DeWine**, Governor
**Jon Husted**, Lt. Governor
**Laurie A. Stevenson**, Director

July 8, 2020

Mr. Kevin M. Sedlak
Army National Guard
Installations & Environment
Cleanup Branch IPA Designation
1438 State Route 534 SW
Newton Falls, OH 44444

RE: US Army Ravenna Ammunition Plt RVAAP
Remediation Response
Project Records
Remedial Response
Portage County
ID # 267000859110

**TRANSMITTED ELECTRONICALLY**

**Subject: Final Proposed Plan for Soil, Sediment, and Surface Water at RVAAP-50 Atlas Scrap Yard**

Dear Mr. Sedlak:

Ohio EPA, Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) has received and reviewed the "Final Proposed Plan for Soil, Sediment, and Surface Water at RVAAP-50 Atlas Scrap Yard," dated June 4, 2020. It was prepared by Leidos.

Ohio EPA has no comments on the Final Proposed Plan (PP). Based on the information contained in the Final PP document, other investigation documents and reports, and Ohio EPA's oversight participation during the investigation, Ohio EPA concurs with the Final PP document for Soil, Sediment, and Surface Water at RVAAP-50 Atlas Scrap Yard recommending excavation, stabilization, and off-site disposal of surface soil in the Former Incinerator Area to attain residential land use and ex-situ thermal treatment of surface soil in the Former Storage Area to attain commercial/industrial land use.

If you have any questions concerning this letter, please contact Edward D'Amato at (330) 963-1170.

Sincerely,

*Melisa Witherspoon*

Melisa Witherspoon
Chief
Division of Environmental Response and Revitalization

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## CONTRACTOR STATEMENT OF INDEPENDENT TECHNICAL REVIEW

Leidos has completed the Proposed Plan for Soil, Sediment, and Surface Water at RVAAP-50 Atlas Scrap Yard 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.

Sarika Johnson
Study/Design Team Leader

June 4, 2020
Date

Jed Thomas, P.E.
Independent Technical Review Team Leader

June 4, 2020
Date

Significant concerns and the explanation of the resolution are documented within the project file. As noted above, all concerns resulting from independent technical review of the project have been considered.

Lisa Jones-Bateman, PMP, REM
Senior Program Manager

June 4, 2020
Date

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**Final**

# Proposed Plan for Soil, Sediment, and Surface Water at RVAAP-50 Atlas Scrap Yard

Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

Contract No. W912QR-15-C-0046

**Prepared for:**
U.S. Army Corps of Engineers
Louisville District

**Prepared by:**
Leidos
8866 Commons Boulevard, Suite 201
Twinsburg, Ohio 44087

June 4, 2020

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ARNG = Army National Guard.
NEDO = Northeast District Office.
OHARNG = Ohio Army National Guard.
Ohio EPA = Ohio Environmental Protection Agency.
REIMS = Ravenna Environmental Information Management System.
SWDO = Southwest District Office.
USACE = U.S. Army Corps of Engineers.

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## TABLE OF CONTENTS



## LIST OF APPENDICES



## LIST OF FIGURES

## LIST OF TABLES



## LIST OF ACRONYMS

| | |
|---|---|
| AOC | Area of Concern |
| amsl | Above Mean Sea Level |
| ARAR | Applicable or Relevant and Appropriate Requirement |
| Army | U.S. Department of the Army |
| ARNG | Army National Guard |
| bgs | Below Ground Surface |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CJAG | Camp James A. Garfield Joint Military Training Center |
| CMCOC | Contaminant Migration Chemical of Concern |
| COC | Chemical of Concern |
| COPC | Chemical of Potential Concern |
| COPEC | Chemical of Potential Ecological Concern |
| CUG | Cleanup Goal |
| DERP | Defense Environmental Restoration Program |
| DNT | Dinitrotoluene |
| ERA | Ecological Risk Assessment |
| ESV | Ecological Screening Value |
| FIA | Former Incinerator Area |
| FSA | Former Storage Area |
| FWCUG | Facility-wide Cleanup Goal |
| HHRA | Human Health Risk Assessment |
| HMX | 1,3,5,7-Tetranitro-1,3,5,7-Tetrazocine |
| HQ | Hazard Quotient |
| IRP | Installation Restoration Program |
| ISM | Incremental Sampling Methodology |
| LUC | Land Use Control |
| NCP | National Oil and Hazardous Substances Pollution Contingency Plan |
| OHARNG | Ohio Army National Guard |
| Ohio EPA | Ohio Environmental Protection Agency |
| PAH | Polycyclic Aromatic Hydrocarbon |
| PBA08 | 2008 Performance-based Acquisition |

| | | | |
|---|---|---|---|
| PCB | Polychlorinated Biphenyl | SRC | Site-related Contaminant |
| PP | Proposed Plan | SVOC | Semi-volatile Organic Compound |
| QA | Quality Assurance | | |
| QC | Quality Control | TCLP | Toxicity Characteristic Leaching Procedure |
| RAO | Remedial Action Objective | | |
| RI | Remedial Investigation | TR | Target Risk |
| ROD | Record of Decision | USEPA | U.S. Environmental Protection Agency |
| RSL | Regional Screening Level | | |
| RVAAP | Ravenna Army Ammunition Plant | 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 Atlas Scrap Yard area of concern (AOC) at the former Ravenna Army Ammunition Plant (RVAAP).

The former RVAAP is now known as Camp James A. Garfield Joint Military Training Center (CJAG) and is located in Portage and Trumbull counties, Ohio (Figure 1). Atlas Scrap Yard is designated as AOC RVAAP-50.

The Army National Guard (ARNG), in coordination with the Ohio Environmental Protection Agency (Ohio EPA), issues this PP to provide the public with necessary information to comment on selecting an appropriate response action. The remedy will be selected for Atlas Scrap Yard 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.

ARNG 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 (NCP) (40 Code of Federal Regulations 300). The Ohio EPA *Director's Final Findings and Orders*, dated June 10, 2004 (Ohio EPA 2004), acknowledges the Army's responsibility to address the site under CERCLA/NCP.

This PP summarizes information that can be found in detail in the *Remedial Investigation Report for Soil, Sediment, and Surface Water at RVAAP-50 Atlas Scrap Yard* (Leidos 2017), herein referred to as the Remedial Investigation (RI) Report, and the *Feasibility Study Report for Soil, Sediment, and Surface Water at RVAAP-50 Atlas Scrap Yard* (Leidos 2019). The Administrative Record File, containing information used in selecting the remedy, is available for public review.

Two specific areas requiring remediation at Atlas Scrap Yard are the Former Incinerator Area (FIA) and the Former Storage Area (FSA). ARNG's preferred alternative for

**Public Comment Period:**
August 17, 2020 to September 16, 2020

**Public Meeting:**
The Army National Guard 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-50 Atlas Scrap Yard* (Leidos 2017) and the *Feasibility Study Report for Soil, Sediment, and Surface Water at RVAAP-50 Atlas Scrap Yard* (Leidos 2019). Oral and written comments also will be accepted at the meeting. The open house and public meeting are scheduled for 5:00 PM, August 26, 2020, at Camp James A. Garfield, 8451 State Route 5, 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:
9AM-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 James A. Garfield Joint Military Training Center (former Ravenna Army Ammunition Plant)**
Environmental Office
1438 State Route 534 SW
Newton Falls, Ohio 44444
(614) 336-6136
*Note: Access is restricted to Camp James A. Garfield, but the file can be obtained or viewed with prior notice.*

the FIA is ***FIA Alternative 2: Excavation, Stabilization, and Off-site Disposal of Surface Soil at the FIA – Attain Unrestricted (Residential) Land Use***. The preferred alternative for the FSA is ***FSA Alternative 3: Ex Situ Thermal Treatment of Surface Soil at ASYss-126M – Attain Commercial/ Industrial Land Use***. ARNG encourages the public to review the background documents to gain a more comprehensive understanding of the AOC, activities that have been conducted to date, and the rationale for selecting the preferred alternatives.

## 2.0 SITE BACKGROUND

### 2.1 Facility Description and Background

The former RVAAP, now known as CJAG, located in northeastern Ohio within Portage and Trumbull counties, is approximately 3 miles east/northeast of the city of Ravenna and 1 mile north/northwest of the city of Newton Falls (Figures 1 and 2). The facility is approximately 11 miles long and 3.5 miles wide. The facility is bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad to the south; Garrett, McCormick, and Berry Roads to the west; the Norfolk Southern Railroad to the north; and State Route 534 to the east. In addition, the facility is surrounded by the communities of Windham, Garrettsville, Charlestown, and Wayland. The facility is federal property, which has had multiple accountability transfers amongst multiple Army agencies, making the property ownership and transfer history complex. The most recent administrative accountability transfer occurred in September 2013 when the remaining acreage (not previously transferred) was transferred to the U.S. Property and Fiscal Officer for Ohio and subsequently licensed to the Ohio Army National Guard (OHARNG) for use as a military training site (Camp James A. Garfield).

### 2.2 Atlas Scrap Yard Background

Atlas Scrap Yard, formerly known as the construction camp, is approximately 73 acres and is located in the southeastern portion of CJAG. Siebert stakes surround and demarcate the AOC boundary. The AOC is bordered by Newton Falls Road to the north and Paris-Windham Road to the east. Load Line 4 is located to the south of the AOC (Figure 3).

Atlas Scrap Yard has served several operational functions over the history of the former RVAAP, but the AOC was never used for munitions production activities. From 1940–1945, Atlas Scrap Yard operated as a construction camp to house workers and their families during construction of the facility. By the end of World War II, the majority of buildings and structures at Atlas Scrap Yard were demolished or relocated to other areas of the facility. Following World War II through the 1950s, four additional storage structures were constructed in the north central storage and stockpiling area. These new structures, along with the pre-World War II structures that remained, were used to support roads and grounds maintenance activities. All remaining structures were razed after the Vietnam War.

After the Vietnam War, the north central portion of Atlas Scrap Yard became exclusively utilized as a stockpile storage area for bulk material, including gravel, railroad ballasts, sand, culvert pipe, railroad ties, and telephone poles.

While the entire Atlas Scrap Yard was included in the RI, two specific areas were identified as having contamination requiring remediation. The two specific areas are described in the following subsections and are illustrated in Figure 3.

#### *2.2.1 Former Incinerator Area*

The southern portion of Atlas Scrap Yard currently contains a structure of a formerly used incinerator. The former incinerator consists of a 12-ft-long by 8-ft-wide primary chamber that is empty. Attached to the primary chamber is a 14-ft-high chimney. The outside structure associated with the former incinerator is still present, but other components associated with the incinerator have been razed.

As discussed later in this plan, the surface soil (0-1 ft below ground surface [bgs]) in the area of the former incinerator was determined to

have lead contamination requiring a remedial action. The area containing this contaminated surface soil is designated as the FIA.

### *2.2.2 Former Storage Area*

The FSA consists of approximately 14.9 acres and is located in the north central portion of the AOC. After the Vietnam War, this area was utilized as a stockpile storage area for bulk material, including gravel, railroad ballasts, sand, culvert pipe, railroad ties, and telephone poles.

In early 2017, activities were conducted to remove the railroad ties and timbers, as well as stockpiled concrete and asphalt. These activities included sampling the waste material and subsequent determination that the waste streams were considered to be non-hazardous. Approximately 1,160 tons of stockpiled rail ties and telephone poles and 1,655 tons of stockpiled concrete and asphalt were removed and disposed of offsite (ERT 2017).

A crushed slag parking area is located in the north-central portion of Atlas Scrap Yard. The source of slag at Atlas Scrap Yard is unknown.

## 2.3 Potential Contaminants

The RI Report (Leidos 2017) established anticipated primary chemicals of potential concern (COPCs), including metals, polychlorinated biphenyls (PCBs), explosives, semi-volatile organic compounds (SVOCs), and volatile organic compounds (VOCs). These chemical groups are associated with stockpile storage and roads/grounds equipment storage and maintenance.

## 2.4 Remedial Investigations

Atlas Scrap Yard has been involved in numerous assessments and investigations conducted by the U.S. Department of the Army (Army). Assessments performed to initially evaluate site use, assess potential contamination, and help prioritize the site include the following:

- Installation Assessment (USATHAMA 1978);
- Preliminary Assessment for the Characterization of Areas of Contamination (USACE 1996);
- Relative Risk Site Evaluation (USACHPPM 1996); and
- Environmental Baseline Survey of Ravenna Army Ammunition Plant (Vista 1998).

The nature and extent of contamination, conceptual site model, fate and transport assessment, human health risk assessment (HHRA), and ecological risk assessment (ERA) are based on RIs conducted from 2004–2011. The following RIs have been conducted at Atlas Scrap Yard:

- 2004/2005 Characterization of 14 AOCs (MKM 2007),
- 2010 Performance-based Acquisition (PBA08) RI, and
- 2011 Supplemental Sampling.

The following subsections further describe the RIs conducted at Atlas Scrap Yard. The overall sampling scheme for the Characterization of 14 AOCs and 2010 PBA08 RI is presented in Figure 5, along with polycyclic aromatic hydrocarbon (PAH) sample results.

### *2.4.1 2004/2005 Characterization of 14 AOCs*

From August 2004 through May 2005, potential impacts from former operations at Atlas Scrap Yard were evaluated. During this investigation, 33 incremental sampling methodology (ISM) surface soil samples were collected, one ISM sediment sample was collected from the drainage ditch, three surface soil quality assurance/quality control (QA/QC) samples were collected, geotechnical samples were collected from monitoring well borings, and an electromagnetic geophysical investigation was conducted. (The sediment sample ASYsd-104M collected adjacent to Load Line 12 was included in the Load Line 12 evaluation. This sediment sample was not included in the Atlas Scrap Yard risk assessments).

The Characterization of 14 AOCs Report stated that a full risk evaluation should be considered in the overall risk management decisions for the AOC.

### *2.4.2 2010 PBA08 Remedial Investigation*

In April 2010, the PBA08 RI was implemented by collecting discrete surface soil and subsurface soil samples and ISM surface soil samples. Soil samples were collected to assess contaminant occurrence and distribution in soil.

As part of the 2010 PBA08 RI, a source area investigation was conducted to assess contaminant occurrence and distribution in surface soil. The PBA08 RI samples were designed to delineate extent of areas previously identified as having the greatest likelihood of contamination (e.g., adjacent to buildings or within sediment accumulation areas such as ditches). Nineteen ISM samples were collected around former ISM sample areas to delineate locations where chemicals were detected above facility-wide cleanup goals (FWCUGs) (hazard quotient [HQ] of 1, target risk [TR] of 1E-05) and to further define the lateral extent of contamination.

In addition, 18 large grid ISM samples (ASYss-086M through ASYss-103M) were collected to complete characterization of Atlas Scrap Yard. Grid ISM sample locations ranged from 3.1–4.2 acres in extent, encompassing the entirety of Atlas Scrap Yard. The individual large grid ISM samples included all areas within the grid boundary, including other sample locations that may overlap with the large ISM samples. These grid samples were collected to provide characterization of the entire AOC.

### *2.4.3 2011 Supplemental Sampling*

In April 2011, a Supplemental Sampling event was conducted to refine PAH chemical of concern (COC) contamination within the FSA. Three features were targeted during the 2011 Supplemental Sampling:

- The debris piles, including railroad tie, concrete debris, and other rubble piles;
- The parking areas made up of slag and asphalt gravel west of the railroad tie pile; and
- The ditch alongside the access road entering Atlas Scrap Yard from Newton Falls Road.

The debris piles (railroad ties, concrete debris, and other rubble piles) were considered for additional evaluation to determine if they were the sources of contamination observed in the 2010 large grid samples ASYss-089M and ASYss-088M. The objective of the 2011 Supplemental Sampling was to collect ISM samples at varying distances to the piles to better define the horizontal extent of contamination. ISM samples from areas 5 and 10 ft wide were collected immediately adjacent to and around the piles. The sampling scheme for the 2011 Supplemental Sampling event and the PAH results are presented in Figure 6.

The parking areas made up of slag and asphalt gravel have been maintained to sustain vehicle or machine traffic at the FSA and are currently covered with gravel and wood chips. These areas were initially sampled in 2010 as ASYss-089M and ASYss-088M. In 2011, these two grid samples were subdivided into ASYss-116M, ASYss-117M, ASYss-118M, and ASYss-119M for sampling based on the current location of the parking/staging area. The ditch alongside the access road that enters Atlas Scrap Yard from Newton Falls Road was originally included in the 2010 grid sample ASYss-093M and was resampled in 2011 as locations ASYss-123M and ASYss-126M.

### *2.4.4 Data Gap Assessment*

At the completion of the RIs, a data gap assessment was performed. The RI Report (Leidos 2017) identified a data gap associated with the location of the former T-4704 Roads and Grounds Maintenance Building. Although releases of PCBs at this location have not been documented, ARNG will collect a surface soil (0-1 ft bgs) sample at this location to verify that no PCB contamination exists in this area.

## 3.0 SITE CHARACTERISTICS

Atlas Scrap Yard is a 73-acre AOC located southwest of the intersection of Newton Falls Road and Paris-Windham Road, north of Load Line 4, in the southeastern portion of CJAG.

The interior of the AOC is currently vegetated with shrub/scrub vegetation in unpaved areas and is forested around its perimeter. The north-central portion of Atlas Scrap Yard is sparsely vegetated due to extensive gravel and mulch-like material cover.

All buildings and structures have been demolished, with the exception of the brick structure associated with the former incinerator and the slab for former Building T-3901. Remaining features at Atlas Scrap Yard include several one-lane gravel/slag access roads that enter Atlas Scrap Yard from the north and east, a crushed slag parking area located in the north-central portion of Atlas Scrap Yard, and small construction drainage ditches that border the access roads.

Topographic relief at Atlas Scrap Yard is low, with a topographic high in the northwestern portion of the site that slopes downward to the topographic low in the central-eastern boundary. No documentation was available concerning fill or soil brought onto Atlas Scrap Yard during building demolition. Ground elevations within Atlas Scrap Yard range from approximately 976–986 ft above mean sea level (amsl).

Surface water follows topographic relief and drains into roadside ditches along the eastern portion of Atlas Scrap Yard (Figure 3). Although wetlands exist at the site, perennial surface water bodies are not present. Therefore, sediment and surface water are not media of concern at this AOC.

## 4.0 SCOPE AND ROLE OF RESPONSE ACTION AND LAND USE

ARNG, in coordination with Ohio EPA, is implementing the Installation Restoration Program (IRP) with the overall program strategy of addressing the principal environmental threats at each site posing a risk to applicable receptors. This PP addresses soil, sediment, and surface water. The response action for these media at Atlas Scrap Yard is being conducted to meet this overall program strategy.

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

The potential future uses for Atlas Scrap Yard are Military Training Land Use or Commercial/Industrial Land Use. Although residential use is not anticipated at CJAG or Atlas Scrap Yard, Unrestricted (Residential) Land Use was evaluated in accordance with Defense Environmental Restoration Program (DERP) Manual 4715.20 (DoD 2012) in order to make appropriate risk management decisions.

Resident Receptor (Adult and Child) FWCUGs were used to conduct an Unrestricted (Residential) Land Use evaluation. Sites that meet the standards for Unrestricted (Residential) Land Use are also considered protective for Military Training and Commercial Industrial Land Uses.

No prior removal actions have been conducted at this site, and early or interim actions are not planned. The proposed response actions at Atlas Scrap Yard will be implemented by ARNG. The Ohio EPA Director's Final Findings and Orders acknowledges the Army's responsibility to address the site under CERCLA/NCP.

## 5.0 SUMMARY OF SITE RISKS

The results of the 2004/2005 Characterization of 14 AOCs, 2010 PBA08 RI, and 2011 Supplemental Investigation were used to evaluate the nature and extent of contamination, assess potential future impacts to groundwater, conduct HHRAs and ERAs, and evaluate the need for remedial alternatives.

The media evaluated were surface soil and subsurface soil. Although wetlands exist at the site, perennial surface water bodies are not

present. Therefore, sediment and surface water are not media of concern at this AOC.

## 5.1 Human Health Risk Assessment

The HHRA identified COCs and conducted a risk management analysis to determine if COCs pose unacceptable risk to the Resident Receptor. FWCUGs were used to evaluate Unrestricted (Residential) Land Use. Sites that meet the standards for Unrestricted (Residential) Land Use are considered protective for other land uses at CJAG, including Military Training and Commercial/Industrial Land Use. If an unacceptable risk was identified for the Resident Receptor, the risk to the National Guard Trainee and Industrial Receptor was evaluated.

The entirety of Atlas Scrap Yard was evaluated for human health risk in soil, and no subsurface soil COCs required remediation to be protective of the Resident Receptor, Industrial Receptor, or National Guard Trainee. The following subsections summarize the surface soil COCs identified as requiring remediation.

### *5.1.1 Lead at the Former Incinerator*

As presented in Figure 4, one general area located around surface soil samples ASYss-019M and ASYsb-064 near the old incinerator will require remediation of lead in surface soil (0–1 ft bgs) to be protective for Unrestricted (Residential) Land Use, National Guard Training Land Use, and Commercial/ Industrial Land Use. The surface soil concentrations from these two samples exceeded the Resident Receptor Cleanup Goal (CUG), National Guard Trainee CUG, and Industrial Receptor RSL. No other locations at Atlas Scrap Yard require remediation for lead.

Remediating this area to concentrations below the Resident Receptor CUG of 400 mg/kg would result in the entirety of this area being allowed for Unrestricted (Residential) Land Use, as no other COCs require remediation.

### *5.1.2 PAH Contamination at the Former Storage Area*

PAHs were detected at numerous sample locations at concentrations exceeding the 2017 U.S. Environmental Protection Agency (USEPA) Resident Soil Regional Screening Level (RSL) at a TR of 1E-05 within Atlas Scrap Yard. The PAH RSLs are presented in Table 1, and the areas exceeding these PAH RSLs are presented in Figures 5 and 6.

The area containing a large majority of the exceedances is in the FSA. Three sample locations outside of the FSA (ASYss-069M, ASYss-071M, and ASYss-101M) exceeded the benzo(a)pyrene 2017 USEPA Resident Soil RSLs. These three sample locations do not require a remedial action to be protective of the Resident Receptor based on the weight-of-evidence presented below:

- ASYss-069M
  - The concentrations for benz(a)-anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, and dibenz-(a,h)anthracene were below the USEPA Resident Soil RSL at a TR of 1E-05.

**Table 1. Former Storage Area Cleanup Goals**

| Chemical of Concern | Concentration (mg/kg) | | |
|---|---|---|---|
| | Maximum Surface Soil Concentration | Resident Receptor | Industrial Receptor |
| Benz(a)anthracene | 51J | 11 | 210 |
| Benzo(a)pyrene | 50J | 1.1 | 21 |
| Benzo(b)fluoranthene | 56J | 11 | 210 |
| Benzo(k)fluoranthene | 37J | 110 | 2100 |
| Dibenz(a,h)anthracene | 7.7J | 1.1 | 21 |

The Resident Receptor CUG is based on the USEPA Resident Soil RSL at a TR of 1E-05, dated June 2017.
The Industrial Receptor CUG is based on the USEPA Composite Worker Soil RSL at a TR of 1E-05, dated June 2017.
CUG = Cleanup Goal
RSL = Regional Screening Level
TR = Target Risk
USEPA = U.S. Environmental Protection Agency

- The concentration of benzo(a)pyrene (1.7 mg/kg) was only slightly greater than the USEPA Resident Soil RSL of 1.1 mg/kg.
- A soil boring (ASYsb-059) was collected within the ISM sample ASYss-069M. The surface soil (0-1 ft bgs) concentrations for all five PAHs at ASYsb-059 were below the USEPA Resident Soil RSLs. In addition, the five PAHs were not detected in the subsurface soil samples (1-13 ft bgs) from ASYsb-059.
- Sample location ASYss-069M was collected within the larger ISM sample ASYss-091M. The surface soil (0-1 ft bgs) concentrations for all five PAHs at ASYss-091M were below the USEPA Resident Soil RSLs.

- ASYss-071M
  - The concentrations for benz(a)-anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, and dibenz-(a,h)anthracene were below the USEPA Resident Soil RSL at a TR of 1E-05.
  - A large portion of this sample location was within the southern access road within Atlas Scrap Yard, which likely contributed to the elevated benzo(a)pyrene concentration.
  - Sample location ASYss-071M was collected within the larger ISM sample ASYss-096M. The surface soil (0-1 ft bgs) concentrations for all five PAHs at ASYss-096M were below the USEPA Resident Soil RSLs.
- ASYss-101M
  - The concentrations for benz(a)-anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, and dibenz-(a,h)anthracene were below the USEPA Resident Soil RSL at a TR of 1E-05.
  - The concentration of benzo(a)pyrene (1.4 mg/kg) was only slightly greater than the USEPA Resident Soil RSL of 1.1 mg/kg.
  - This sample location is immediately adjacent to Paris-Windham Road and contained the southern access road within Atlas Scrap Yard. These features likely contributed to the elevated benzo(a)pyrene concentration.

The FSA is the final area requiring a remedial action for PAHs within Atlas Scrap Yard. Only one sample location (ASYss-126M) within the FSA had an exceedance of the Industrial Receptor PAH CUG. Benzo(a)pyrene was detected at a concentration of 50J mg/kg at this sample location, compared to the Industrial Receptor CUG of 21 mg/kg. Figure 7 depicts this sample location (ASYss-126M) requiring remediation to attain Commercial/Industrial Land Use.

Figure 8 shows that the entirety of the FSA requires remediation to attain Unrestricted (Residential) Land Use.

### 5.2 Ecological Risk Assessment

Atlas Scrap Yard contains terrestrial habitat and aquatic habitat that support ecological receptors. Atlas Scrap Yard is currently vegetated with shrub/scrub vegetation in unpaved areas and is forested around its perimeter. The north-central portion (FSA) of Atlas Scrap Yard is sparsely vegetated due to extensive gravel/slag cover and mulch-like material. Atlas Scrap Yard also contains a number of seasonal wetlands. An abundance of wildlife is present on the facility: 35 species of land mammals, 214 species of birds, 41 species of fish, and 34 species of amphibians and reptiles have been identified. The northern long-eared bat (*Myotis septentrionalis*; federally threatened) exists at CJAG. There are no other federally listed species, and no critical habitat occurs (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. Ecological resources at Atlas Scrap Yard were compared to the list of important ecological places and resources (Leidos 2017). Chemical contamination identified in soil at Atlas Scrap

Yard using historical and PBA08 RI data, along with wetlands, which are important and significant ecological resources near contamination in the AOC, invoked a Level II assessment.

The Level II assessment evaluated soil data and identified chemicals of potential ecological concern (COPECs). There are 28 integrated COPECs for soil at Atlas Scrap Yard. Aluminum; arsenic; cadmium; chromium; cobalt; copper; lead; manganese; mercury; selenium; silver; zinc; 2,6-dinitrotoluene (DNT); benz(a)anthracene; benzo(a)pyrene; bis(2-ethylhexyl)phthalate; chrysene; and naphthalene are the 18 integrated COPECs that exceeded their background concentrations and ecological screening values (ESVs). Nine chemicals (2-amino-4,6-DNT; 2-nitrotoluene; 3-nitro-toluene; 4-amino-2,6-DNT; octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine [HMX]; nitrocellulose; tetryl; carbazole; and dibenzofuran) are integrated COPECs because they did not have an ESV. Mercury and PCB-1260 are persistent, bioaccumulative, and toxic compounds.

The integrated soil COPECs were further evaluated with technical and refinement factors in Step 3A of the ERA. The factors in Step 3A showed there are no integrated COPECs that are of ecological concern requiring remediation or further evaluation. In addition, based on their Ohio Rapid Assessment Method category, size, and location, four wetlands (Wetlands 1, 6, 8, and 9) were evaluated using individual ISM samples representative of the wetland or the area between the wetland and potential sources areas. Based on the limited exceedances in these individual ISM samples, significant releases from the source areas at Atlas Scrap Yard to the wetlands have not occurred. Consequently, the ERA for Atlas Scrap Yard can conclude with Level II that no further action is necessary from the ecological perspective.

### 5.3 Impacts to Groundwater

Inorganic and organic site-related contaminants (SRCs) exist in soil at Atlas Scrap Yard. Evaluation of modeling results with respect to current AOC groundwater data and model limitations indicated identified soil SRCs are not currently impacting groundwater beneath the source areas and that predicted future impacts would be mitigated by factors such as chemical and biological degradation and lateral dispersivity. All SRCs identified in surface and subsurface soil at Atlas Scrap Yard were evaluated through the stepwise fate and transport evaluation and were eliminated as posing future impacts to groundwater.

Based on review of the screening and modeling results, along with weight-of-evidence factors, none of the identified contaminant migration chemicals of concern (CMCOCs) are impacting groundwater and no further action is required of soil and sediment at Atlas Scrap Yard for the protection of groundwater.

## 6.0 REMEDIAL ACTION OBJECTIVE

The RI Report (Leidos 2017) identified lead in FIA surface soil (0-1 ft bgs) as a COC requiring a remedial action in one general area located around surface soil samples ASYss-019M and ASYsb-064 to be protective of the Resident Receptor, Industrial Receptor, and National Guard Trainee.

To be protective of the Resident Receptor, the entirety of the FSA requires a remedial action. However, only one sample location (ASYss-126M) within the FSA had an exceedance of the Industrial Receptor PAH CUG. Benzo(a)pyrene was detected at a concentration of 50J mg/kg at this sample location, compared to the Industrial Receptor CUG of 21 mg/kg. All other PAH COCs at this sample location were at concentrations below their respective Industrial Receptor CUG.

The remedial action objective (RAO) for Atlas Scrap Yard is as follows:

- Prevent Resident Receptor exposure to 1) surface soil (0-1 ft bgs) with concentrations of lead above 400 mg/kg at the FIA, and 2) surface soil (0-1 ft bgs) with concentrations of benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene,

benzo(k)fluoranthene, and dibenz(a,h)-anthracene above CUGs at the FSA.

The CUGs for the PAHs in the FSA are presented in Table 1. The volume estimates of soil requiring remediation at the FIA are presented in Table 2, and the volume estimates of soil requiring remediation at the FSA are presented in Tables 3 and 4. Figure 9 presents the areas within Atlas Scrap Yard requiring a remedial action.

**Table 2. Estimated Volume Requiring a Remedial Action to Attain Unrestricted (Residential) Land Use at the Former Incinerator Area**

| Remedial Area | Media | Treatment Interval | Surface Area | In Situ | | In Situ with Constructability[1] | | Ex Situ[1,2] | |
|---|---|---|---|---|---|---|---|---|---|
| | | (ft bgs) | ($ft^2$) | Volume ($ft^3$) | Volume ($yd^3$) | Volume ($ft^3$) | Volume ($yd^3$) | Volume ($ft^3$) | Volume ($yd^3$) |
| Former Incinerator Area | Surface Soil | 0-1 | 6,586 | 6,586 | 244 | 8,233 | 305 | 9,879 | 366 |
| Incinerator and Chimney | Brick and Steel | NA | 108 | 980 | 37 | 980 | 37 | 1,634 | 62 |

[a]Constructability factor accounts for over excavation, sloping of sidewalls, and addresses limitations of removal equipment. The in situ volume is increased by 25% for a constructability factor.
[b]Includes 20% swell factor.
NA = Not Applicable.

**Table 3. Estimated Volume Requiring a Remedial Action to Attain Unrestricted (Residential) Land Use at the Former Storage Area**

| Remedial Area | Media | Treatment Interval | Surface Area | In Situ | | In Situ with Constructability[1] | | Ex Situ[1,2] | |
|---|---|---|---|---|---|---|---|---|---|
| | | (ft bgs) | ($ft^2$) | Volume ($ft^3$) | Volume ($yd^3$) | Volume ($ft^3$) | Volume ($yd^3$) | Volume ($ft^3$) | Volume ($yd^3$) |
| Former Storage Area | Surface Soil | 0-1 | 549,084 | 549,084 | 20,336 | 686,355 | 25,421 | 823,626 | 30,505 |

[a]Constructability factor accounts for over excavation, sloping of sidewalls, and addresses limitations of removal equipment. The in situ volume is increased by 25% for a constructability factor.
[b]Includes 20% swell factor.

**Table 4. Estimated Volume Requiring a Remedial Action to Attain Commercial (Industrial) Land Use at the Former Storage Area**

| Remedial Area | Media | Treatment Interval | Surface Area | In Situ | | In Situ with Constructability[1] | | Ex Situ[1,2] | |
|---|---|---|---|---|---|---|---|---|---|
| | | (ft bgs) | ($ft^2$) | Volume ($ft^3$) | Volume ($yd^3$) | Volume ($ft^3$) | Volume ($yd^3$) | Volume ($ft^3$) | Volume ($yd^3$) |
| ASYss-126M | Surface Soil | 0-1 | 8,521 | 8,521 | 316 | 10,651 | 394 | 12,782 | 473 |

[a]Constructability factor accounts for over excavation, sloping of sidewalls, and addresses limitations of removal equipment. The in situ volume is increased by 25% for a constructability factor.
[b]Includes 20% swell factor.
bgs = Below Ground Surface.

## 7.0 SUMMARY OF ALTERNATIVES

Remedial technologies and process options were screened to identify potential remedial alternatives that can achieve the RAO. These remedial alternatives are presented below for the FIA (Section 7.1) and FSA (Section 7.2).

### 7.1 Former Incinerator Area

A detailed description of each remedial alternative for the FIA is provided in the following sections. Based on concentrations of lead from samples collected in this area, these alternatives were developed assuming that the contaminated soil at the FIA would be considered characteristically hazardous waste if disposed of without treatment. Consequently, an alternative was developed that includes stabilization of the soil for disposal as non-hazardous waste, and an alternative was developed that involves transport and disposal of the soil as characteristically hazardous waste (i.e., without stabilization).

#### *7.1.1 FIA Alternative 1: No Action*

In accordance with the NCP, the No Action alternative must be evaluated. This alternative provides the baseline against which other remedial alternatives are compared.

This alternative assumes all current actions (e.g., access restrictions and environmental monitoring) will be discontinued and no future actions will take place to protect human receptors or the environment. COCs at the FIA will not be removed or treated.

#### *7.1.2 FIA Alternative 2: Excavation, Stabilization, and Off-site Disposal of Surface Soil at the FIA – Attain Unrestricted (Residential) Land Use*

Alternative 2 will achieve Unrestricted (Residential) Land Use at the FIA by removal, stabilization, and off-site disposal of surface soil (0-1 ft bgs) containing lead above Resident Receptor CUGs.

The incinerator will be demolished and removed. The incinerator consists of a 12-ft-long by 8-ft-wide primary chamber that is empty. Attached to the primary chamber is a 3-ft-long by 4-ft-wide by 14-ft-high chimney. As part of this remedial alternative, the incinerator will be demolished and removed, including the brick walls and mortar and railroad rails used in the ceiling and floor. An estimated 76 tons of material are assumed to be associated with this former incinerator. In September 2018, OHARNG collected samples of the red brick, white brick, and grout from within the former incinerator for laboratory analysis of toxicity characteristic leaching procedure (TCLP) metals, PCBs, and asbestos. The TCLP and PCB results were below regulatory limits, and asbestos was not detected in the sampled material. Other material within the incinerator, such as ash and brick within the primary chamber, will be segregated during demolition activities and sampled for additional waste characterization prior to disposal. It is currently assumed that the material associated with the incinerator can be disposed of as nonhazardous waste.

To achieve a scenario in which the FIA is protective for Unrestricted (Residential) Land Use, this alternative consists of excavation, stabilization, and off-site disposal of surface soil from the FIA. Pre-excavation delineation sampling will be conducted. The assumed extent of the excavation is depicted in Figure 4 with an in situ volume of approximately 244 $yd^3$, which includes soil beneath the incinerator.

Soil will be removed using conventional construction equipment, such as backhoes, bulldozers, front-end loaders, and scrapers. Oversized debris will be crushed or otherwise processed to meet disposal facility requirements. The vertical limit of the excavation is 1 ft bgs, and the horizontal limits of the excavation will be defined by the pre-excavation samples collected.

Soil will be transferred to an onsite mixing area, where the stabilization agent will be added to the soil. The soil and stabilizing agent will be mixed in this area until a homogeneous mixture is achieved. Upon completion of the mixing phase, soil samples will be collected and undergo TCLP analysis. Once the soil

samples indicate the stabilized soil is considered non-hazardous, the treated soil will be hauled by truck to a licensed and permitted disposal facility.

Upon completing the excavation, confirmatory samples will be collected from the excavation floor and sidewalls per the sampling methodology and scheme approved in the remedial design to ensure contaminated soil has been successfully removed.

Once the excavated area is confirmed to meet the CUG, all disturbed and excavated areas will be backfilled with clean soil and graded to meet neighboring contours. The backfill soil will come from a clean source that was previously sampled and approved for use by Ohio EPA and the Army. After the area is backfilled and graded, workers will apply a seed mixture (as approved by OHARNG) and mulch. Restored areas will be inspected and monitored as required in the storm water best management practices established in the remedial design.

### *7.1.3 FIA Alternative 3: Excavation and Off-site Disposal of Surface Soil at the FIA – Attain Unrestricted (Residential) Land Use*

Alternative 3 will achieve Unrestricted (Residential) Land Use at the FIA by removal and off-site disposal of surface soil (0–1 ft bgs) containing lead above the Resident Receptor CUGs.

The incinerator will be demolished and removed. The incinerator consists of a 12-ft-long by 8-ft-wide primary chamber that is empty. Attached to the primary chamber is a 3-ft-long by 4-ft-wide by 14-ft-high chimney. As part of this remedial alternative, the incinerator will be demolished and removed, including the brick walls and mortar and railroad rails used in the ceiling and floor. An estimated 76 tons of material are assumed to be associated with this former incinerator. In September 2018, OHARNG collected samples of the red brick, white brick, and grout from within the former incinerator for laboratory analysis of TCLP metals, PCBs, and asbestos. The TCLP and PCB results were below regulatory limits, and asbestos was not detected in the sampled material. Other material within the incinerator, such as ash and brick within the primary chamber, will be segregated during demolition activities and sampled for additional waste characterization prior to disposal. It is currently assumed that the material associated with the incinerator can be disposed of as nonhazardous waste.

To achieve a scenario in which the FIA is protective for Unrestricted (Residential) Land Use, this alternative consists of excavation and off-site disposal of surface soil from the FIA. Pre-excavation delineation sampling will be conducted. The assumed extent of the excavation is depicted in Figure 4 with an in situ volume of approximately 244 $yd^3$, which includes soil beneath the incinerator.

Soil will be removed using conventional construction equipment, such as backhoes, bulldozers, front-end loaders, and scrapers. Oversized debris will be crushed or otherwise processed to meet disposal facility requirements.

Based on concentrations of lead from samples collected in this area, this alternative assumes that the contaminated soil at the FIA would be considered characteristically hazardous waste if disposed of without treatment. The excavated soil will be hauled by truck to a licensed and permitted disposal facility to accept hazardous waste.

The vertical limit of the excavation is 1 ft bgs, and the horizontal limits of the excavation will be defined by the pre-excavation samples collected. Upon completing the excavation, confirmatory samples will be collected from the excavation floor and sidewalls per the sampling methodology and scheme approved in the remedial design to ensure contaminated soil has been successfully removed.

Once the excavated area is confirmed to meet the CUG, all disturbed and excavated areas will be backfilled with clean soil and graded to meet neighboring contours. The backfill soil will come from a clean source that was previously sampled and approved for use by Ohio EPA and the Army. After the area is

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

## 7.2 Former Storage Area

A detailed description of each remedial alternative for the FSA is provided in the following sections. Contrary to the soil in the FIA, it is assumed that the soil in the FSA can be disposed of (if specified by the selected remedy) as non-hazardous waste without treatment.

### *7.2.1 FSA Alternative 1: No Action*

In accordance with the NCP, the No Action alternative must be evaluated. This alternative provides the baseline against which other remedial alternatives are compared.

This alternative assumes all current actions (e.g., access restrictions and environmental monitoring) will be discontinued and no future actions will take place to protect human receptors or the environment. COCs at the FSA will not be removed or treated.

### *7.2.2 FSA Alternative 2: Excavation and Off-site Disposal of ASYss-126M – Attain Commercial/Industrial Land Use*

Alternative 2 will achieve Commercial/ Industrial Land Use at the FSA by removal and off-site disposal of surface soil (0–1 ft bgs) at sample location ASYss-126M that has PAH COCs at concentrations above the Industrial Receptor CUGs.

This alternative consists of excavation and off-site disposal of surface soil from sample location ASYss-126M. The assumed extent of the contamination is depicted in Figure 7 with an in situ volume of approximately 316 $yd^3$.

Soil will be removed using conventional construction equipment such as backhoes, bulldozers, front-end loaders, and scrapers. Oversized debris will be crushed or otherwise processed to meet disposal facility requirements. Excavated soil will be hauled by truck to a licensed and permitted disposal facility. The vertical limit of the excavation is 1 ft bgs, and the horizontal limits of the excavation will be defined by the pre-excavation samples collected.

Upon completing the excavation, confirmatory samples will be collected from the excavation floor and sidewalls per the sampling methodology and scheme approved in the remedial design to ensure contaminated soil has been successfully removed.

Once the excavated area is confirmed to meet the CUG, all disturbed and excavated areas will be backfilled with clean soil and graded to meet neighboring contours. The backfill soil will come from a clean source that was previously sampled and approved for use by Ohio EPA and the Army. After the area is backfilled and graded, workers will apply a seed mixture (as approved by OHARNG) and mulch. Restored areas will be inspected and monitored as required in the storm water best management practices established in the remedial design.

PAH COCs will remain on site above the Resident Receptor CUGs in the FSA; therefore, this alternative also will rely on land use controls (LUCs) to prevent Resident Receptor exposure to COCs in the FSA. Five-year reviews will be conducted for the FSA to assess the effectiveness of the LUCs and whether a need to modify the LUCs exists.

### *7.2.3 FSA Alternative 3: Ex Situ Thermal Treatment of Surface Soil at ASYss-126M – Attain Commercial/ Industrial Land Use*

Alternative 3 will achieve Commercial/ Industrial Land Use at the FSA by ex situ thermal treatment of surface soil (0–1 ft bgs) at sample location ASYss-126M containing PAH COCs at concentrations above the Industrial Receptor CUGs.

The assumed extent of the contamination is depicted in Figure 7 with an in situ volume of approximately 316 $yd^3$. The estimated total

soil volume (i.e., ex situ) requiring thermal treatment is approximately 473 $yd^3$.

The treatment system will be pre-heated to the optimal treatment temperature based on results of past bench- and pilot-scale tests. While the system is being heated, soil will be excavated using conventional construction equipment, such as backhoes, bulldozers, front-end loaders, and scrapers, and will be stockpiled immediately adjacent to the treatment system into approximately 50-$yd^3$ (ex situ) piles. Once the treatment system is at the optimal treatment temperature, contaminated soil will be fed directly into the fully enclosed, pre-heated chamber and exposed to steam to serve as the heat source for the thermal treatment. While emissions are contained within the system, PAHs are removed from the soil.

Upon completing the thermal treatment of soil, soil samples will be collected from the individual stockpiles to ensure contaminated soils have been successfully treated to PAH concentrations below the CUGs. Once the laboratory analysis determines that PAH COC concentrations in the stockpiles are below the Industrial Receptor CUGs, the treated soil will be used for backfill and site restoration.

In addition, confirmatory samples will be collected from the excavation floor and sidewalls per the sampling methodology and scheme approved in the remedial design to ensure contaminated soil has been successfully removed.

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

PAH COCs will remain on site above the Resident Receptor CUGs in the FSA; therefore, this alternative also will rely on LUCs to prevent Resident Receptor exposure to COCs in the FSA. Five-year reviews will be conducted for the FSA to assess the effectiveness of the LUCs and whether a need to modify the LUCs exists.

#### *7.2.4 FSA Alternative 4: Excavation and Off-site Disposal of Surface Soil at the FSA – Attain Unrestricted (Residential) Land Use*

Alternative 4 will achieve Unrestricted (Residential) Land Use at the FSA by removal and off-site disposal of surface soil (0–1 ft bgs) containing PAH COCs at concentrations above the Residential CUGs.

This alternative consists of excavation and off-site disposal of surface soil from the FSA. The assumed extent of the contamination is depicted in Figure 8 with an in situ volume of approximately 20,336 $yd^3$.

Soil will be removed using conventional construction equipment, such as backhoes, bulldozers, front-end loaders, and scrapers. Oversized debris will be crushed or otherwise processed to meet disposal facility requirements. Excavated soil will be hauled by truck to a licensed and permitted disposal facility. The vertical limit of the excavation is 1 ft bgs, and the horizontal limits of the excavation will be defined by the pre-excavation samples collected.

Upon completing the excavation, confirmatory samples will be collected from the excavation floor and sidewalls per the sampling methodology and scheme approved in the remedial design to ensure contaminated soil has been successfully removed.

Once the excavated area is confirmed to meet the CUG, all disturbed and excavated areas will be graded to meet neighboring contours. After the area is graded, workers will apply a seed mixture (as approved by OHARNG) and mulch. Restored areas will be inspected and monitored as required in the storm water best management practices established in the remedial design.

#### *7.2.5 FSA Alternative 5: Ex Situ Thermal Treatment of Surface Soil at the FSA – Attain Unrestricted (Residential) Land Use*

Alternative 5 will achieve Unrestricted (Residential) Land Use at the FSA by ex situ

thermal treatment of surface soil (0–1 ft bgs) to reduce PAH concentrations to below Residential CUGs.

The assumed extent of the contamination is depicted in Figure 8 with an in situ volume of approximately 20,336 $yd^3$. The estimated total soil volume (i.e., ex situ) requiring thermal treatment is approximately 30,505 $yd^3$.

The treatment system will be pre-heated to the optimal treatment temperature based on results of past bench- and pilot-scale tests. While the system is being heated, soil will be excavated using conventional construction equipment, such as backhoes, bulldozers, front-end loaders, and scrapers, and will be stockpiled immediately adjacent to the treatment system into approximately 50-$yd^3$ (ex situ) piles. Once the treatment system is at the optimal treatment temperature, contaminated soil will be fed directly into the fully enclosed, pre-heated chamber and exposed to steam to serve as the heat source for the thermal treatment. While emissions are contained within the system, PAHs are removed from the soil.

Upon completing the thermal treatment of soil, soil samples will be collected from the individual stockpiles to ensure contaminated soils have been successfully treated to PAH concentrations below the CUGs. Once the laboratory analysis determines that PAH COC concentrations in the stockpiles are below the Industrial Receptor CUGs, the treated soil will be used for backfill and site restoration.

In addition, confirmatory samples will be collected from the excavation floor and sidewalls per the sampling methodology and scheme approved in the remedial design to ensure contaminated soil has been successfully removed.

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

## 8.0 EVALUATION OF ALTERNATIVES

A comparative analysis was performed for the FIA and FSA alternatives in order to provide a direct comparison to one another with respect to the threshold criteria and balancing criteria, as outlined by CERCLA. These criteria, along with the modifying criteria, are presented in Table 5.

**Table 5. CERCLA Evaluation Criteria**

| |
|---|
| **THRESHOLD 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 ARARs** – Considers how a remedy will meet all of the applicable or relevant and appropriate requirements of other federal and state environmental statutes and/or provide grounds for invoking a waiver. |
| **BALANCING CRITERIA** |
| **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. |
| **MODIFYING CRITERIA** |
| **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 RI Report, Feasibility Study, and PP. |

### 8.1 Former Incinerator Area

Table 6 provides results of the comparative analysis conducted for the FIA alternatives. FIA Alternative 1 is not protective of human health and is not compliant with applicable or relevant and appropriate requirements (ARARs). In addition, FIA Alternative 1 does not meet the RAO to prevent Resident Receptor exposure to surface soil (0-1 ft bgs) with concentrations of lead above 400 mg/kg at the FIA. Therefore, FIA Alternative 1 is not eligible for selection.

For the remaining alternatives, the balancing criteria (i.e., long-term effectiveness and permanence; reduction of contaminant toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost) were used to select a preferred alternative among the alternatives that would satisfy the threshold criteria. The remaining alternatives were scored among one another for each of the balancing criteria and a total score was generated.

Both FIA Alternative 2 and FIA Alternative 3 are effective in the long term, as the contaminants will be removed from the site. FIA Alternative 2 is a green and highly sustainable alternative for on-site treatment and stabilization of the lead-contaminated soil, and this alternative reduces the mobility of the contaminants that will be disposed of in an off-site facility. FIA Alternative 2 is technically and administratively feasible, as excavation and stabilization agents are common and successfully used to address lead-contaminated soil. Multiple off-site disposal facilities will be available to accept generated waste. FIA Alternative 2 has an estimated cost of $235,655, and FIA Alternative 3 has an estimated cost of $372,578.

With the lower costs and rationale provided above, ***FIA Alternative 2: Excavation, Stabilization, and Off-site Disposal of Surface Soil at the FIA – Attain Unrestricted (Residential) Land Use*** is the preferred alternative for the FIA.

### 8.2 Former Storage Area

Table 7 provides results of the comparative analysis conducted for the FSA alternatives. FSA Alternative 1 is not protective of human health and is not compliant with ARARs. In addition, FSA Alternative 1 does not meet the RAO to prevent Resident Receptor exposure to surface soil (0-1 ft bgs) with concentrations of benz(a)anthracene, benzo(a)pyrene, benzo-(b)fluoranthene, benzo(k)fluoranthene, and dibenz(a,h)anthracene above CUGs at the FSA. Therefore, FSA Alternative 1 is not eligible for selection.

For the remaining alternatives, the balancing criteria (i.e., long-term effectiveness and permanence; reduction of contaminant toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost) were used to select a preferred alternative among the alternatives that would satisfy the threshold criteria. The remaining alternatives were scored among one another for each of the balancing criteria and a total score was generated.

Alternatives 4 and 5 scored the highest regarding long-term effectiveness, as all of the contaminated soil in the FSA is remediated. Alternatives 3 and 5 scored the highest regarding reduction of toxicity, mobility, and volume through treatment, as these two alternatives involve treatment of the contaminated soil.

Alternatives 2 and 3 scored the highest regarding short-term effectiveness, as a significantly less amount of soil is being remediated. Therefore, these alternatives will create less adverse impacts on human health and the environment during the construction and implementation period.

FSA Alternative 2 has an estimated cost of $294,389; FSA Alternative 3 has an estimated cost of $224,194; FSA Alternative 4 has an estimated cost of $4,496,580; and FSA Alternative 5 has an estimated cost of $2,718,988.

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**Table 6. Comparative Analysis of Former Incinerator Area Remedial Alternatives**

| NCP Evaluation Criteria | FSA Alternative 1: No Action | FIA Alternative 2: Excavation, Stabilization, and Off-site Disposal of Surface Soil at the FIA – Attain Unrestricted (Residential) Land Use | FIA Alternative 3: Excavation and Off-site Disposal of Surface Soil at the FIA – 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 | 2 | 1 |
| 4. Reduction of Toxicity, Mobility, or Volume Through Treatment | Not applicable | 2 | 1 |
| 5. Short-Term Effectiveness | Not applicable | 2 | 1 |
| 6. Implementability | Not applicable | 1 | 2 |
| 7. Cost | Not applicable ($0) | 2 ($235,655) | 1 ($372,578) |
| ***Balancing Criteria Score*** | *Not applicable* | *9* | *6* |

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 preferred alternative. Therefore, that alternative is not scored as part of the balancing criteria evaluation.

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

ARAR = Applicable or Relevant and Appropriate Requirement.

FIA = Former Incinerator Area.

FSA = Former Storage Area.

NCP = National Oil and Hazardous Substances Pollution Contingency Plan.

**Table 7. Comparative Analysis of Former Storage Area Remedial Alternatives**

| NCP Evaluation Criteria | FSA Alternative 1: No Action | FSA Alternative 2: Excavation and Off-site Disposal of Surface Soil at ASYss-126M – Attain Commercial/Industrial Land Use | FSA Alternative 3: Ex Situ Thermal Treatment of Surface Soil at ASYss-126M – Attain Commercial/Industrial Land Use | FSA Alternative 4: Excavation and Off-site Disposal of Surface Soil at the Former Storage Area – Attain Unrestricted (Residential) Land Use | FSA Alternative 5: Ex Situ Thermal Treatment of Surface Soil at the Former Storage Area – Attain Unrestricted (Residential) Land Use |
|---|---|---|---|---|---|
| ***Threshold Criteria*** | ***Result*** | ***Result*** | ***Result*** | ***Result*** | ***Result*** |
| 1. Overall Protectiveness of Human Health and the Environment | Not protective | Protective | Protective | Protective | Protective |
| 2. Compliance with ARARs | Not compliant | Compliant | Compliant | Compliant | Compliant |
| ***Balancing Criteria*** | ***Score*** | ***Score*** | ***Score*** | ***Score*** | ***Score*** |
| 3. Long-Term Effectiveness and Permanence | Not applicable | 1 | 2 | 4 | 3 |
| 4. Reduction of Toxicity, Mobility, or Volume Through Treatment | Not applicable | 1 | 3 | 2 | 4 |
| 5. Short-Term Effectiveness | Not applicable | 3 | 4 | 1 | 2 |
| 6. Implementability | Not applicable | 4 | 3 | 2 | 1 |
| 7. Cost | Not applicable ($0) | 3 ($294,389) | 4 ($224,194) | 1 ($4,496,580) | 2 ($2,718,988) |
| ***Balancing Criteria Score*** | *Not applicable* | *12* | *16* | *10* | *12* |

Any alternative 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 preferred alternative. Therefore, that alternative is not scored as part of the balancing criteria evaluation.

Scoring for the balancing criteria is as follows for applicable alternatives: Most favorable = 4, least favorable = 1. The alternative with the highest total balancing criteria score is considered the most feasible.

ARAR = Applicable or Relevant and Appropriate Requirement.

FSA = Former Storage Area.

NCP = National Oil and Hazardous Substances Pollution Contingency Plan.

FSA Alternative 3 scores the highest and is the preferred alternative. ***FSA Alternative 3 Ex Situ Thermal Treatment of Surface Soil at ASYss-126M – Attain Commercial/ Industrial Land Use*** is effective in the long term through treatment of benzo(a)pyrene in soil and LUCs. In addition, FSA Alternative 3 is a green and highly sustainable alternative for on-site treatment and reuse of soil and implements a treatment alternative to reduce the toxicity, mobility, and volume of contamination. In the event that a thermal treatment system is not available for use at the former RVAAP, FSA Alternative 2: Excavation and Off-site Disposal of Surface Soil at ASYss-126M – Attain Commercial/ Industrial Land Use would be readily available.

## 9.0 PREFERRED ALTERNATIVE

The preferred alternative for the FIA is ***FIA Alternative 2: Excavation, Stabilization, and Off-site Disposal of Surface Soil at the FIA – Attain Unrestricted (Residential) Land Use***. FIA Alternative 2 is effective in the long term and will attain Unrestricted (Residential) Land Use. Excavation and off-site disposal alternatives have been implemented multiple times during restoration efforts at the former RVAAP. In addition, FIA Alternative 2 is a green and highly sustainable alternative for on-site treatment of soil and implements a treatment alternative to reduce the toxicity, mobility, and volume of contamination. FIA Alternative 2 is effective in the long term and attains Unrestricted (Residential) Land Use. FIA Alternative 2 reduces the mobility of contaminants by placing contamination in a licensed, engineered landfill. The estimated cost for FIA Alternative 2 is $235,655.

The preferred alternative for the FSA is ***FSA Alternative 3: Ex Situ Thermal Treatment of Surface Soil at ASYss-126M – Attain Commercial/Industrial Land Use***. FSA Alternative 3 is effective in the long term through treatment of benzo(a)pyrene in soil and LUCs. In addition, FSA Alternative 3 is a green and highly sustainable alternative for on-site treatment and reuse of soil and implements a treatment alternative to reduce the toxicity, mobility, and volume of contamination. The estimated cost for FSA Alternative 3 is $224,194, which includes an estimated $97,978 for LUCs. Five-year reviews will be conducted for the FSA to assess the effectiveness of the LUCs and whether a need to modify the LUCs exists. In the event that a thermal treatment system is not available for use at the former RVAAP, FSA Alternative 2: Excavation and Off-site Disposal of Surface Soil at ASYss-126M – Attain Commercial/Industrial Land Use, would be readily available.

In addition, a surface soil (0-1 ft bgs) sample will be collected from the location of the former T-4704 Roads and Grounds Maintenance Building to verify that no PCB contamination exists in this area.

After implementation of the two preferred alternatives and verification that no PCB contamination exists at the location of the former T-4704 Roads and Grounds Maintenance Building, the area designated as the FSA will require LUCs to ensure use is limited to Commercial/Industrial Land Use. The area that will require LUCs after implementation of the preferred alternatives is depicted in Figure 10. This depicted area also will be the extent of the AOC after implementation of the preferred alternatives. The remaining portions of Atlas Scrap Yard will attain Unrestricted (Residential) Land Use.

This recommendation is not a final decision. ARNG, in coordination with Ohio EPA, will select the remedy for Atlas Scrap Yard after reviewing and considering all comments submitted during the 30-day public comment period. Comments received from the public on this PP will be considered in preparing a Record of Decision (ROD) to document the final remedy. The ROD also will include a responsiveness summary addressing comments received on the PP.

## 10.0 COMMUNITY PARTICIPATION

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

The comment period extends from August 17, 2020 to September 16, 2020. This period includes a public meeting at which ARNG will present this PP and accept oral and written comments.

### 10.1 Public Comment Period

The 30-day comment period is from August 17, 2020 to September 16, 2020, 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.

ARNG and Ohio EPA will consider all public comments before selecting a remedy. During the comment period, the public is encouraged to review documents pertinent to Atlas Scrap Yard.

This information is available at the Information Repositories and online at www.rvaap.org. To obtain further information, contact Kathryn Tait of the Camp James A. Garfield Environmental Office at kathryn.s.tait.nfg@mail.mil.

### 10.2 Written Comments

If the public would like to comment in writing on this PP or other relevant issues, please deliver comments to ARNG at the public meeting or mail written comments (postmarked no later than September 16, 2020).

**POINT OF CONTACT FOR WRITTEN COMMENTS**

**Mailing Address:**
**Camp James A. Garfield Joint Military Training Center**
Environmental Office
Attn: Kathryn Tait
1438 State Route 534 SW
Newton Falls, Ohio 44444

Email Address:
kathryn.s.tait.nfg@mail.mil

### 10.3 Public Meeting

ARNG will hold an open house and public meeting on this PP on August 26, 2020, at 5:00 PM, at Camp James A. Garfield, 8451 State Route 5, 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.

### 10.4 Review of Public Comments

ARNG 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 ARNG's responses to comments received during the public comment period, will be included in the ROD. ARNG'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 James A. Garfield Joint Military Training Center (former Ravenna Army Ammunition Plant)**
Environmental Office
1438 State Route 534 SW
Newton Falls, Ohio 44444
(614) 336-6136

*Note: Access is restricted to Camp James A. Garfield, but the file can be obtained or viewed with prior notice.*

## INFORMATION REPOSITORIES

**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:
9AM-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.

**Applicable or Relevant and Appropriate Requirements (ARAR):** a promulgated federal or more stringent state law or regulation, aimed at protecting human health and the environment during the cleanup at a site, and that has been evaluated and found to be legally applicable or relevant for the site.

**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.

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

**Chemical of Potential Ecological Concern (COPEC):** a chemical substance specific to an AOC 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.

**Feasibility Study:** a CERCLA document that reviews and evaluates multiple remedial technologies under consideration at a site. It also identifies the preferred remedial action alternative.

**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 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 Action Objective (RAO): a** medium-specific goal for protecting human health and the environment that specifies contaminants, media of interest, and cleanup goals.

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

**Responsiveness Summary:** a section of the ROD 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.

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

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

## REFERENCES


DoD (U.S. Department of Defense) 2012. *Defense Environmental Restoration Program (DERP) Management Manual*. Number 4715.20. March 2012.

ERT (ERT Inc.) 2017. *Construction Completion Report for FY16 Recycling of Materials at RVAAP-50 Atlas Scrap Yard Area of Concern and Setup of Temporary Storage Facility*. August 2017.

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MKM (MKM Engineers) 2007. *Final Characterization of 14 AOCs at Ravenna Army Ammunition Plant*. March 2007.

OHARNG (Ohio Army National Guard) 2014. *Integrated Natural Resources Management Plan at the Camp Ravenna Joint Military Training Center, Portage and Trumbull Counties, Ohio.* December 2014.

Ohio EPA (Ohio Environmental Protection Agency) 2004. *Director's Final Findings and Orders for the Ravenna Army Ammunition Plant*. June 2004.

Ohio EPA 2009. *Technical Decision Compendium: Human Health Cumulative Carcinogenic Risk and Non-carcinogenic Hazard Goals for DERR Remedial Response Program.* August 2009.

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.

USACHPPM (U.S. Army Center for Health Promotion and Preventive Medicine) 1996. *Relative Risk Site Evaluation at the Ravenna Army Ammunition Plant, Ravenna, Ohio*. Hazardous and Medical Waste Study No. 37-EF-5360-97. November 1996.

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

Vista Technologies (Vista) 1998. *Environmental Baseline Survey of the Ravenna Army Ammunition Plant*. September 1998.

# FIGURES

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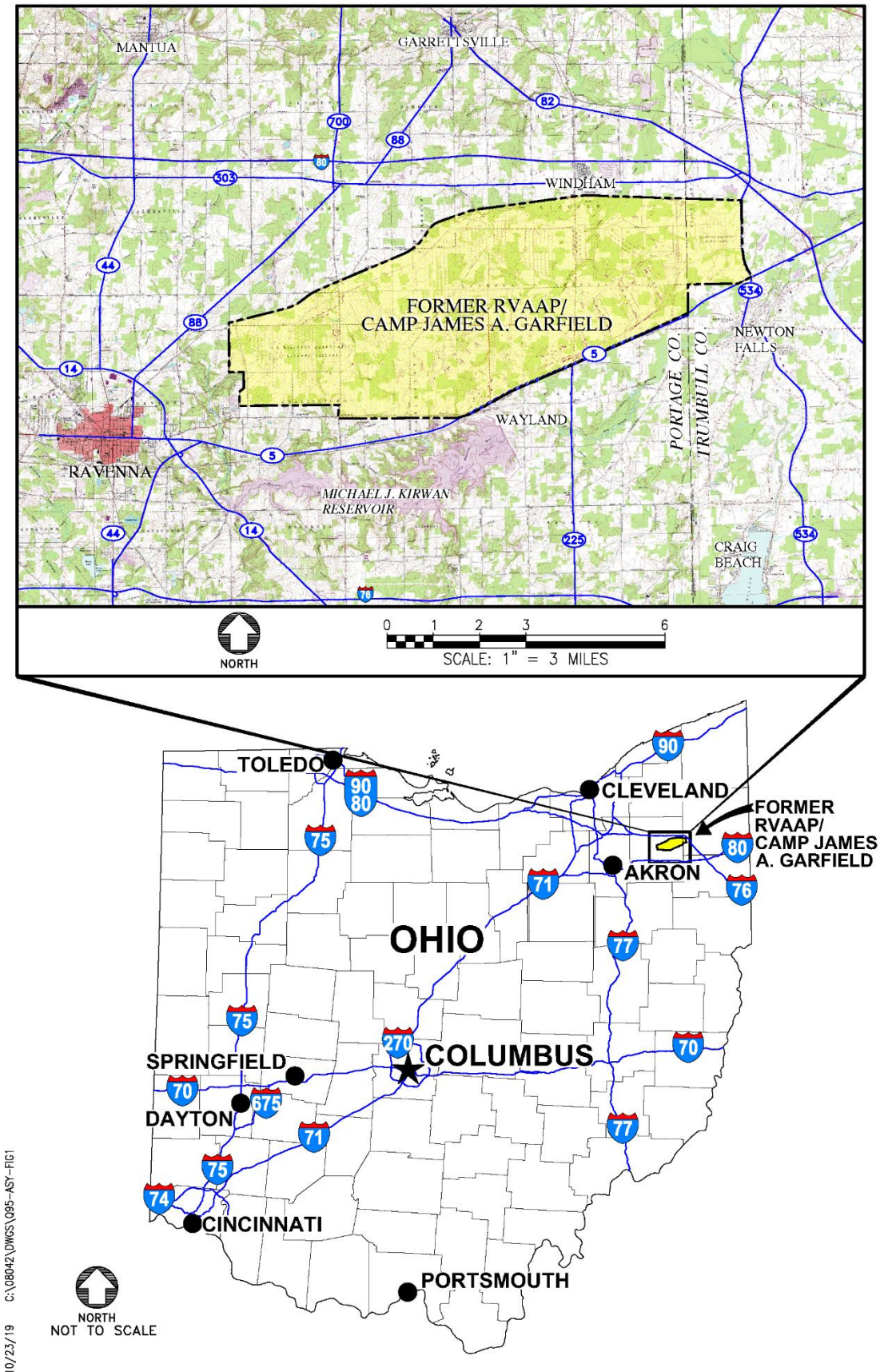


**Figure 1. General Location and Orientation of Camp James A. Garfield**

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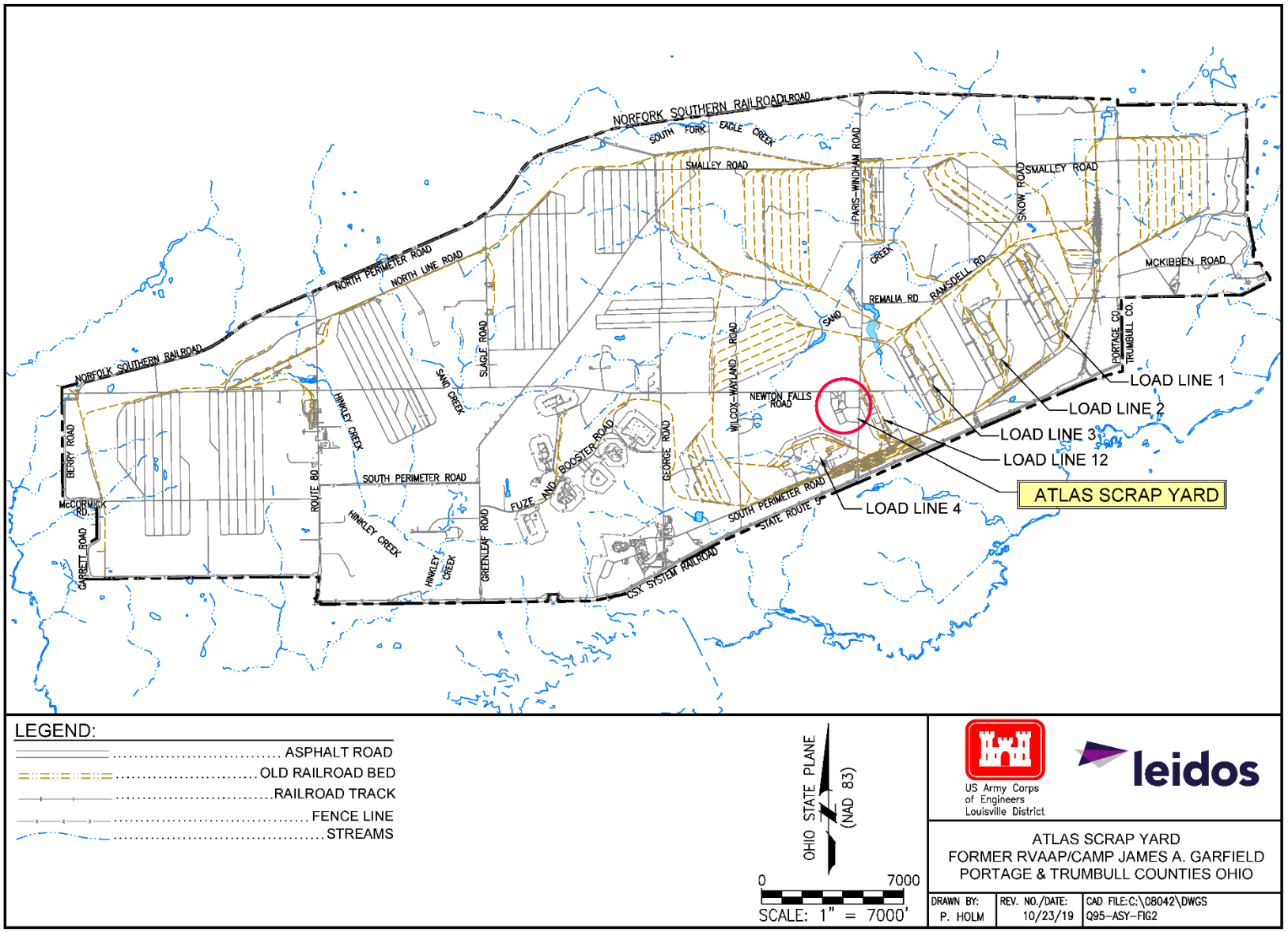


**Figure 2. Location of Atlas Scrap Yard within Camp James A. Garfield**

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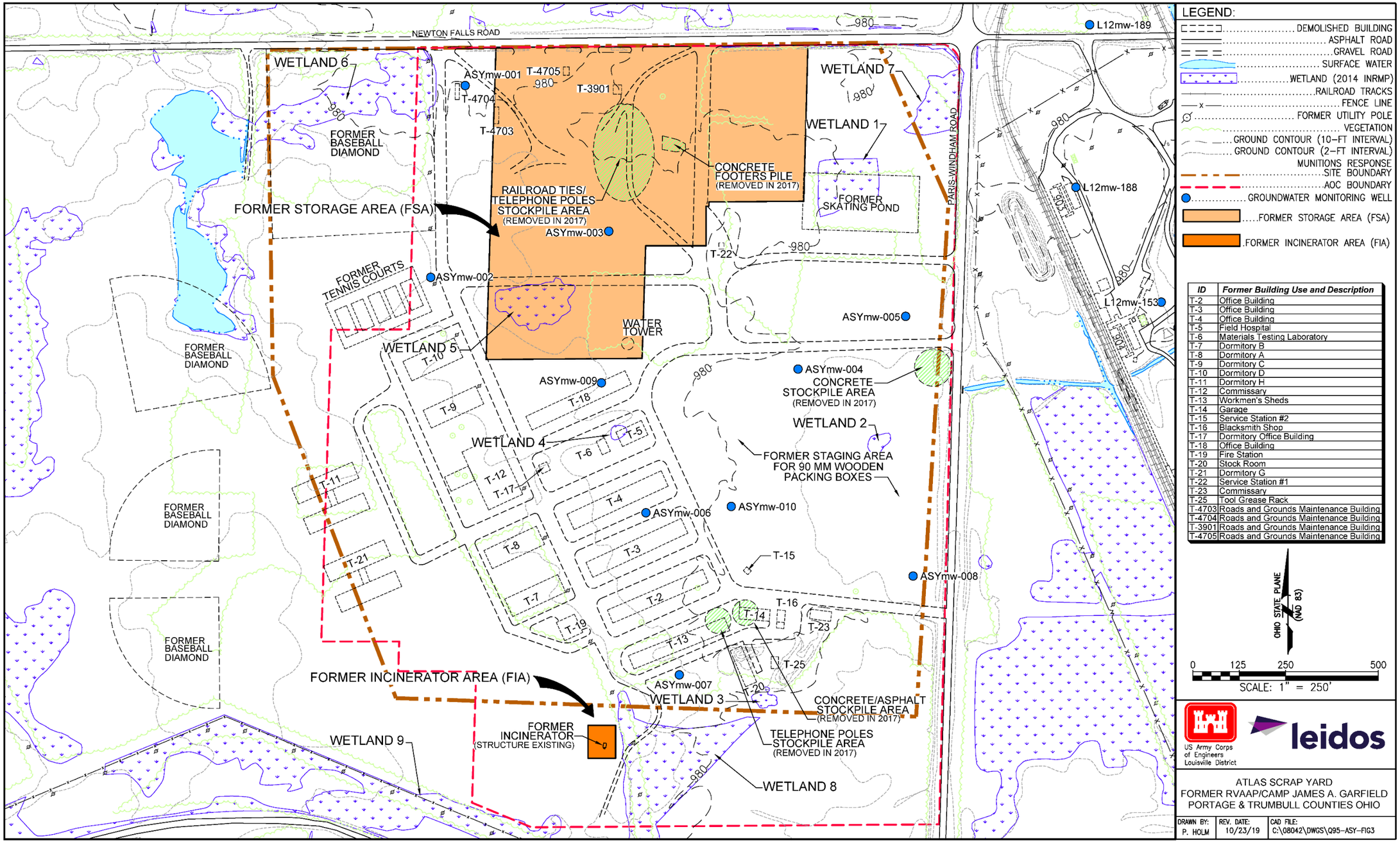



| ID | Former Building Use and Description |
|---|---|
| T-2 | Office Building |
| T-3 | Office Building |
| T-4 | Office Building |
| T-5 | Field Hospital |
| T-6 | Materials Testing Laboratory |
| T-7 | Dormitory B |
| T-8 | Dormitory A |
| T-9 | Dormitory C |
| T-10 | Dormitory D |
| T-11 | Dormitory H |
| T-12 | Commissary |
| T-13 | Workmen's Sheds |
| T-14 | Garage |
| T-15 | Service Station #2 |
| T-16 | Blacksmith Shop |
| T-17 | Dormitory Office Building |
| T-18 | Office Building |
| T-19 | Fire Station |
| T-20 | Stock Room |
| T-21 | Dormitory G |
| T-22 | Service Station #1 |
| T-23 | Commissary |
| T-25 | Tool Grease Rack |
| T-4703 | Roads and Grounds Maintenance Building |
| T-4704 | Roads and Grounds Maintenance Building |
| T-3901 | Roads and Grounds Maintenance Building |
| T-4705 | Roads and Grounds Maintenance Building |

**Figure 3. Atlas Scrap Yard Site Features**

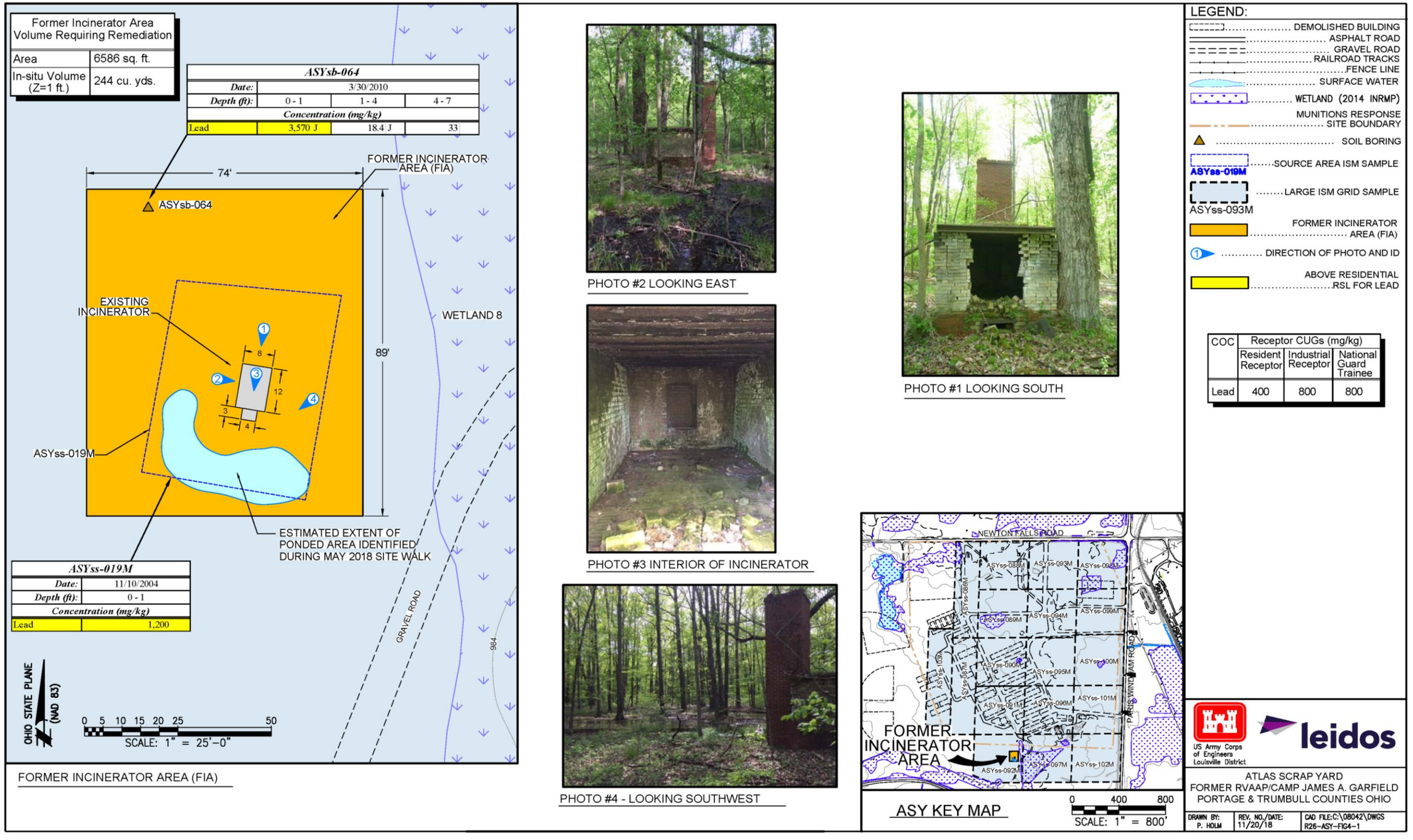



**Figure 4. Former Incinerator Area – Area Requiring a Remedial Action for Lead**

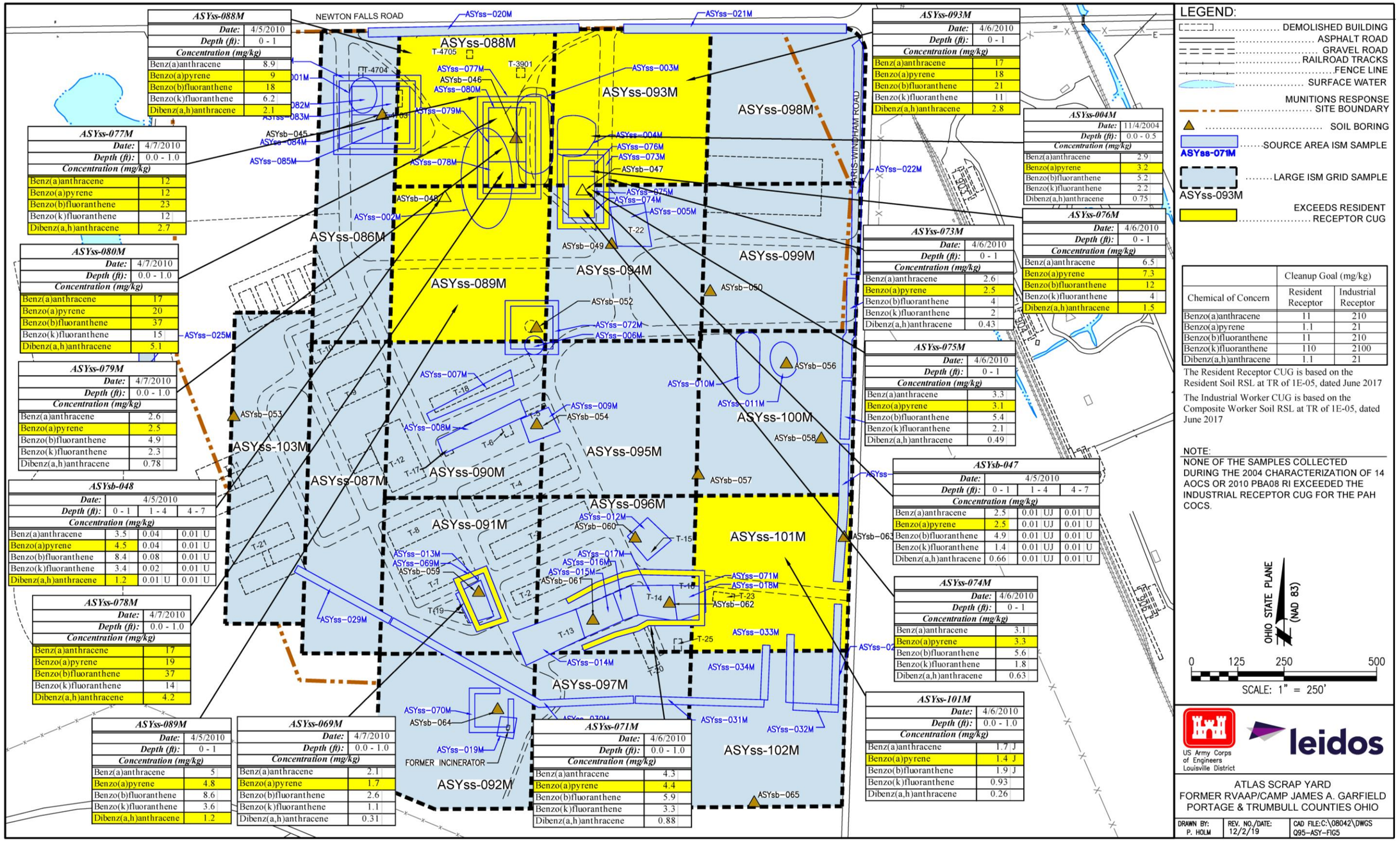



**Figure 5. Characterization of 14 AOCs and 2010 PBA08 RI – PAH Sample Results**

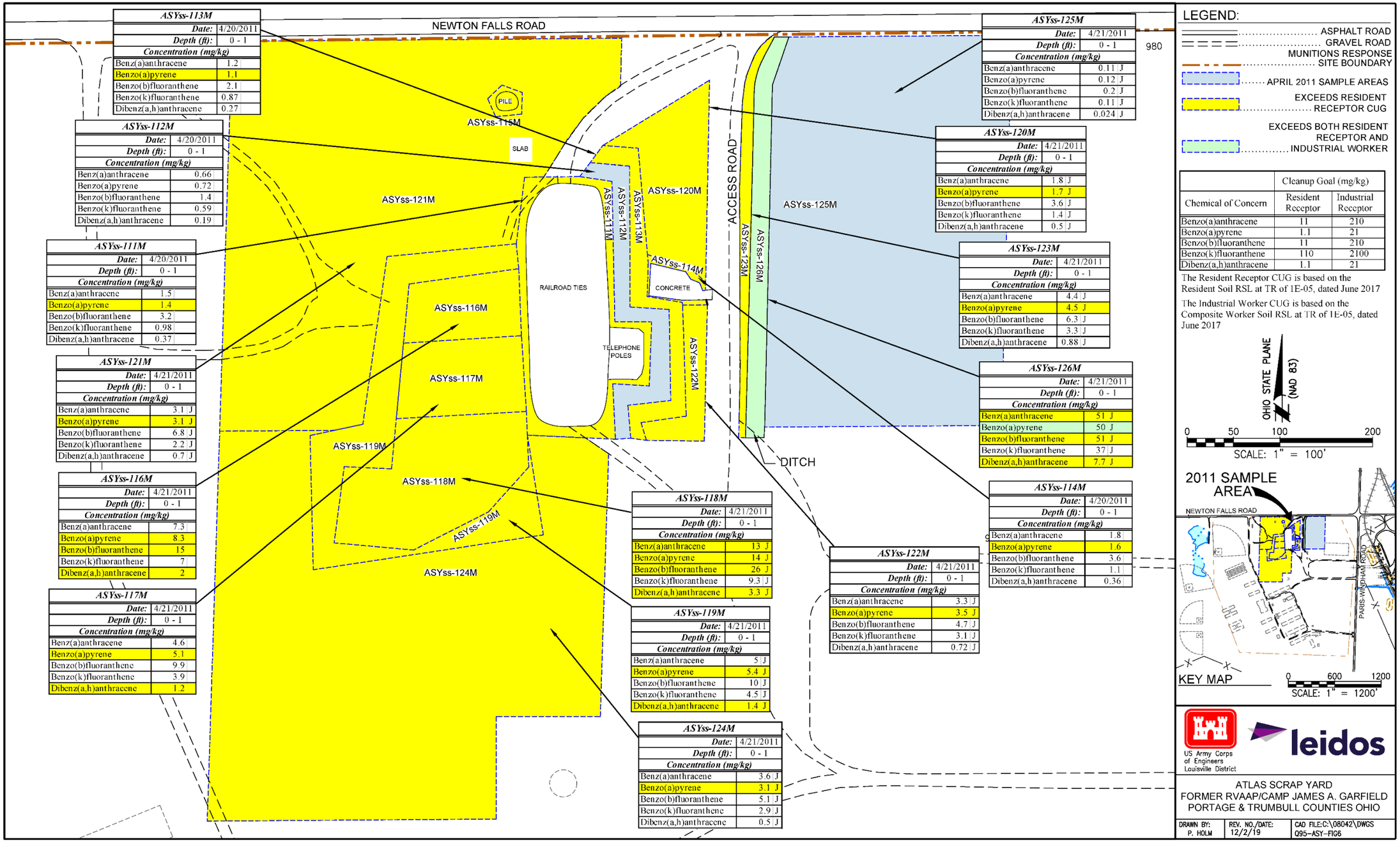



**Figure 6. 2011 Supplemental Sampling – PAH Sample Results**

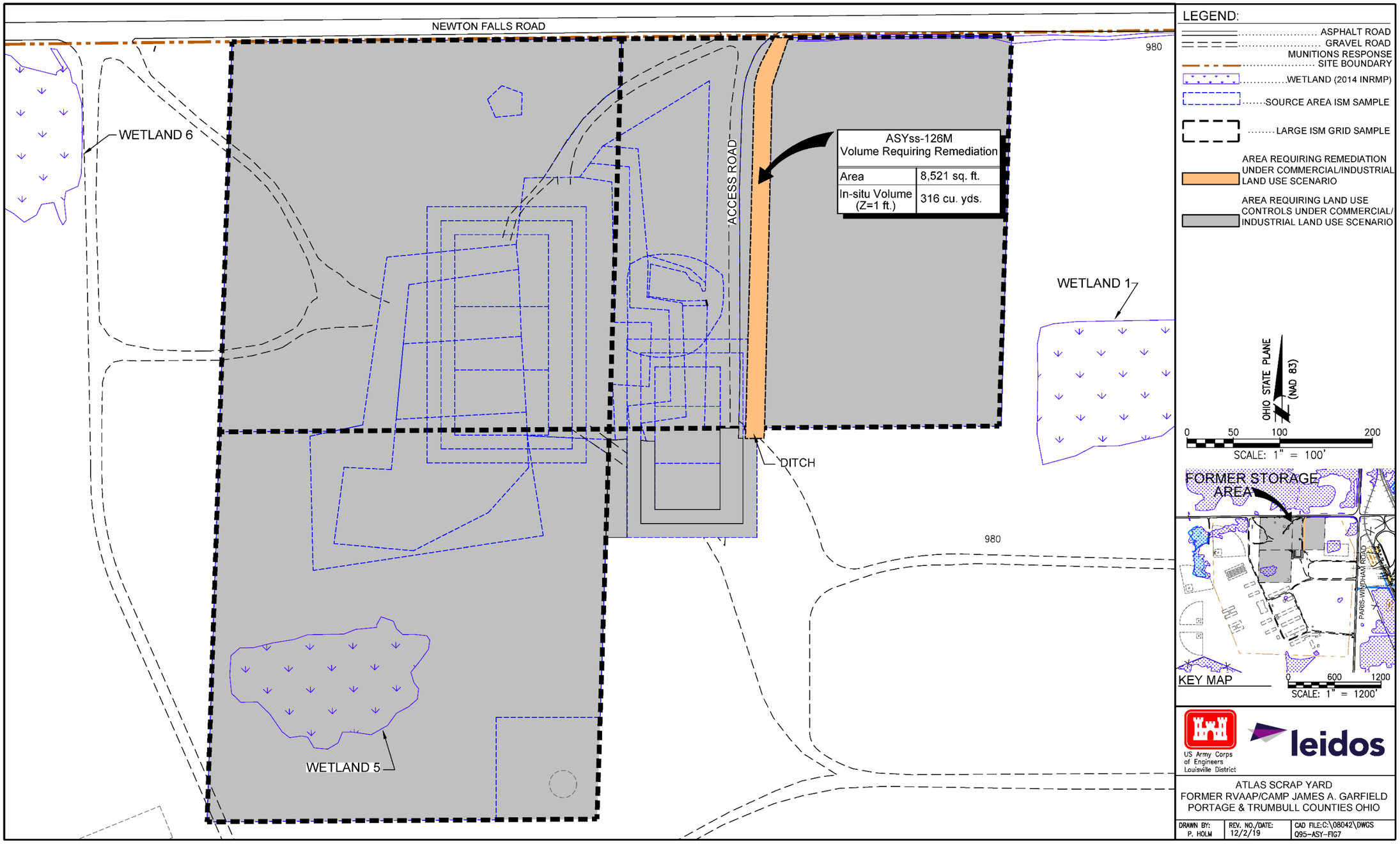



**Figure 7. Former Storage Area – Area Requiring a Remedial Action for PAHs to Attain Commercial/Industrial Land Use**

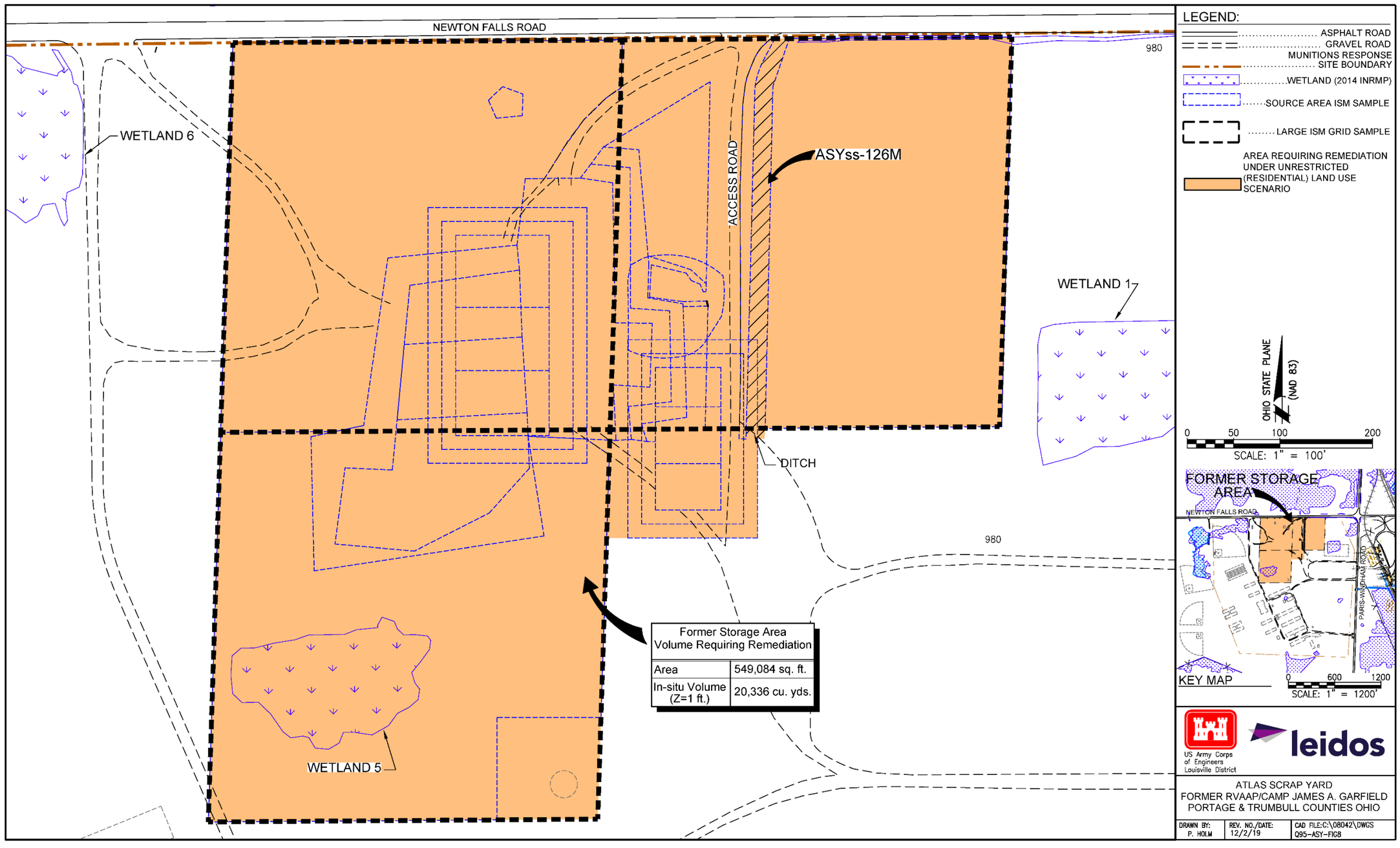
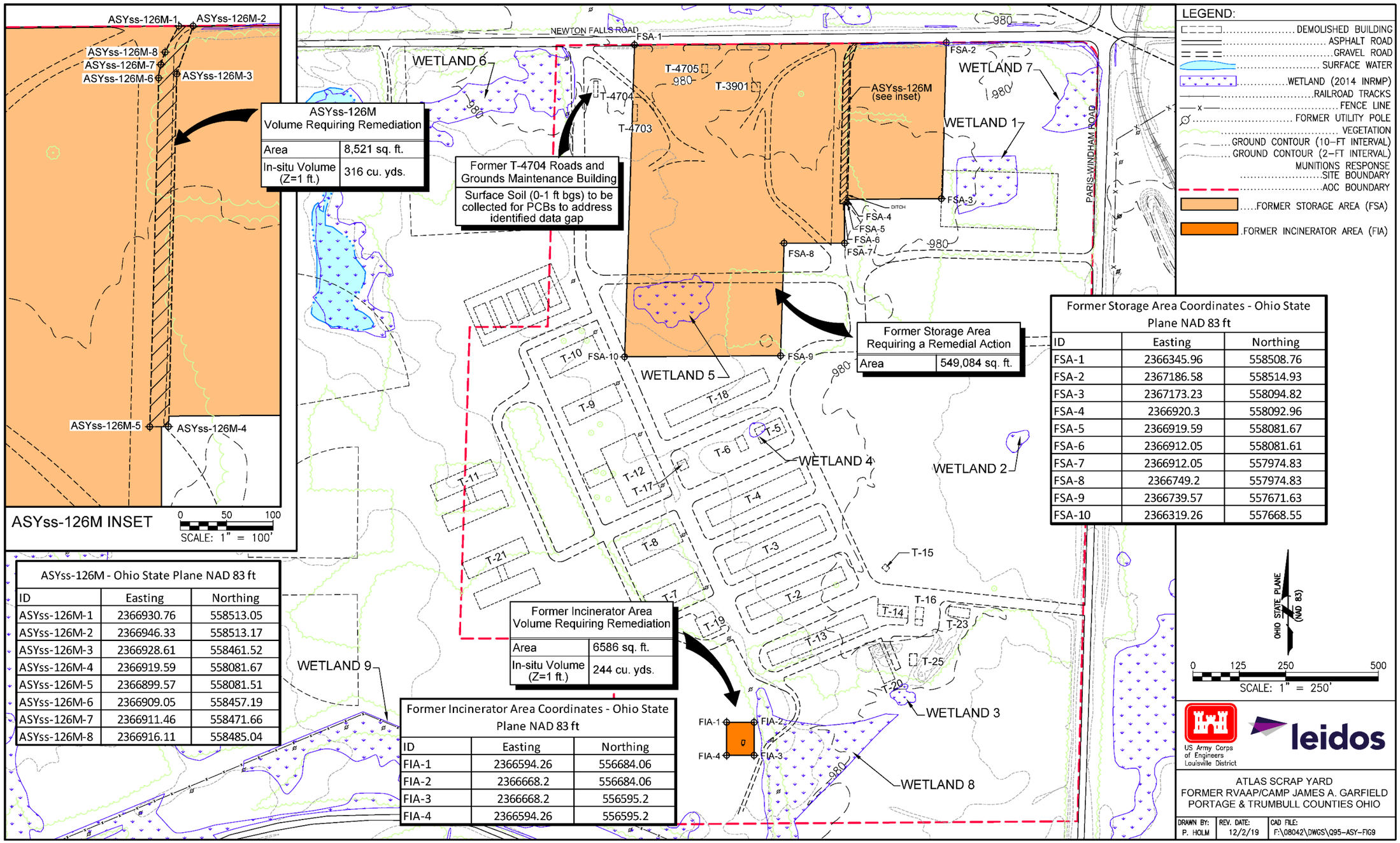



**Figure 8. Former Storage Area – Area Requiring a Remedial Action for PAHs to Attain Unrestricted (Residential) Land Use**




ASYss-126M - Ohio State Plane NAD 83 ft

| ID | Easting | Northing |
|---|---|---|
| ASYss-126M-1 | 2366930.76 | 558513.05 |
| ASYss-126M-2 | 2366946.33 | 558513.17 |
| ASYss-126M-3 | 2366928.61 | 558461.52 |
| ASYss-126M-4 | 2366919.59 | 558081.67 |
| ASYss-126M-5 | 2366899.57 | 558081.51 |
| ASYss-126M-6 | 2366909.05 | 558457.19 |
| ASYss-126M-7 | 2366911.46 | 558471.66 |
| ASYss-126M-8 | 2366916.11 | 558485.04 |

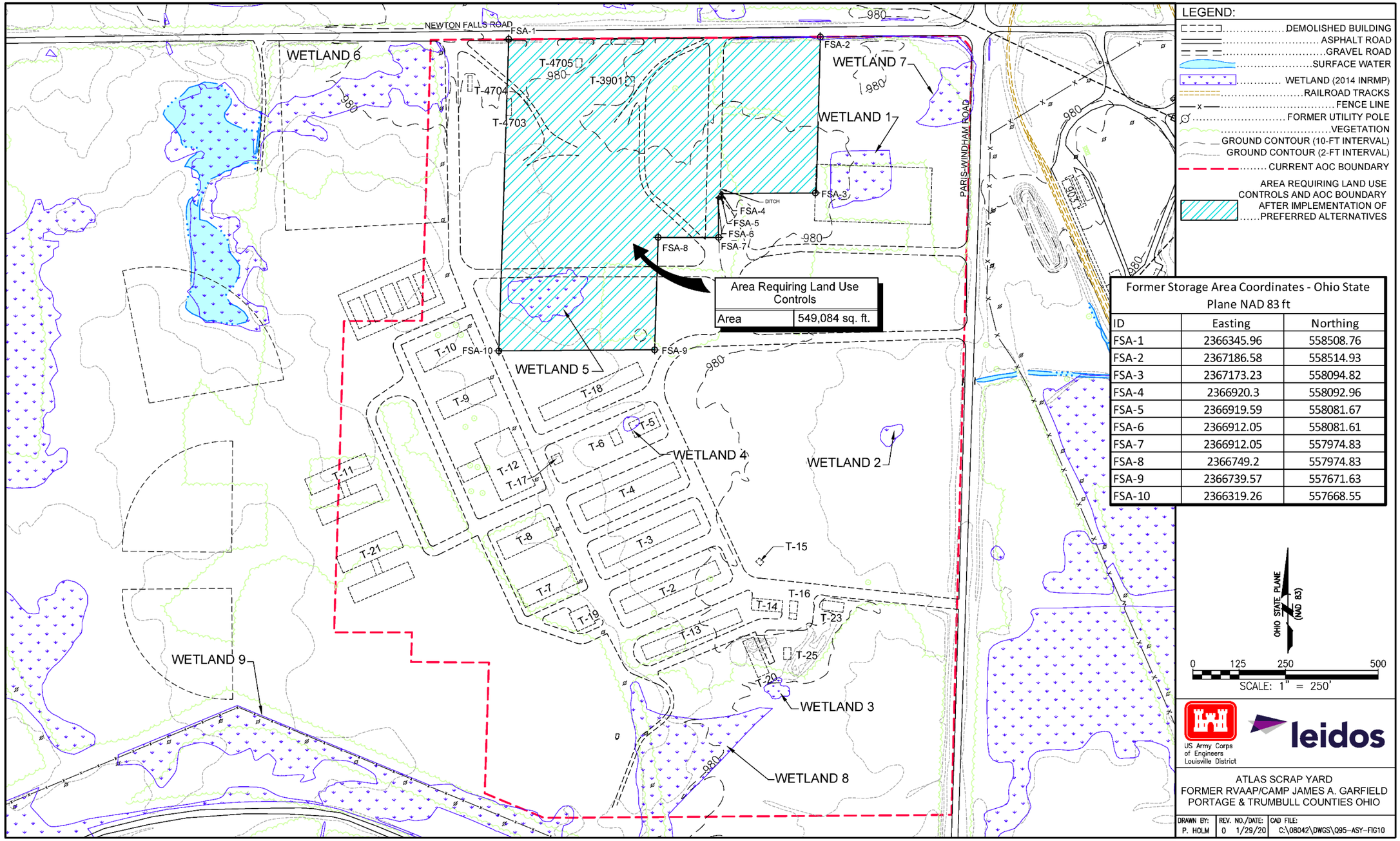
Former Storage Area Coordinates - Ohio State Plane NAD 83 ft

| ID | Easting | Northing |
|---|---|---|
| FSA-1 | 2366345.96 | 558508.76 |
| FSA-2 | 2367186.58 | 558514.93 |
| FSA-3 | 2367173.23 | 558094.82 |
| FSA-4 | 2366920.3 | 558092.96 |
| FSA-5 | 2366919.59 | 558081.67 |
| FSA-6 | 2366912.05 | 558081.61 |
| FSA-7 | 2366912.05 | 557974.83 |
| FSA-8 | 2366749.2 | 557974.83 |
| FSA-9 | 2366739.57 | 557671.63 |
| FSA-10 | 2366319.26 | 557668.55 |

Former Incinerator Area Coordinates - Ohio State Plane NAD 83 ft

| ID | Easting | Northing |
|---|---|---|
| FIA-1 | 2366594.26 | 556684.06 |
| FIA-2 | 2366668.2 | 556684.06 |
| FIA-3 | 2366668.2 | 556595.2 |
| FIA-4 | 2366594.26 | 556595.2 |

**Figure 9. Areas Requiring a Remedial Action at Atlas Scrap Yard**




Former Storage Area Coordinates - Ohio State Plane NAD 83 ft

| ID | Easting | Northing |
|---|---|---|
| FSA-1 | 2366345.96 | 558508.76 |
| FSA-2 | 2367186.58 | 558514.93 |
| FSA-3 | 2367173.23 | 558094.82 |
| FSA-4 | 2366920.3 | 558092.96 |
| FSA-5 | 2366919.59 | 558081.67 |
| FSA-6 | 2366912.05 | 558081.61 |
| FSA-7 | 2366912.05 | 557974.83 |
| FSA-8 | 2366749.2 | 557974.83 |
| FSA-9 | 2366739.57 | 557671.63 |
| FSA-10 | 2366319.26 | 557668.55 |

**Figure 10. Area Requiring Land Use Controls after Implementation of Preferred Alternative**

# APPENDIX A

# Ohio EPA Comments

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Ohio Environmental Protection Agency

**Mike DeWine**, Governor
**Jon Husted**, Lt. Governor
**Laurie A. Stevenson**, Director

May 27, 2020

RE: US Army Ravenna Ammunition Plt RVAAP
Remediation Response
Project Records
Remedial Response
Portage County
ID # 267000859110

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

**TRANSMITTED ELECTRONICALLY**

**Subject: Draft Proposed Plan for Soil, Sediment, and Surface Water at RVAAP-50 Atlas Scrap Yard, dated March 26, 2020**

Dear Mr. Connolly:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) has received and reviewed the Army's May 18, 2020 response to Ohio EPA's May 1, 2020 comment letter on the "Draft Proposed Plan for Soil, Sediment, and Surface Water at RVAAP-50 Atlas Scrap Yard".

The Army has proposed the following revision to text in Section 7.1.2 of the draft Proposed Plan:

> "Upon completing the excavation, confirmatory samples will be collected from the excavation floor and sidewalls per the sampling methodology and scheme approved in the remedial design to ensure contaminated soil has been successfully removed."

This response is acceptable. Please make the change and submit the document in final form.

If you have any questions concerning this letter, please contact me at (330) 963-1170, or via email at ed.damato@epa.ohio.gov.

Sincerely,

Edward D'Amato
Site Coordinator
Division of Environmental Response and Revitalization

ED/sc

ec: David Connolly, ARNG
Katie Tait, OHARNG RTLS
Kevin Sedlak, OHARNG RTLS
Nat Peters, USACE
Craig Coombs, USACE
Rebecca Shreffler, Chenega
Natalie Oryshkewych, Ohio EPA, NEDO, DERR
Megan Oravec, Ohio EPA, NEDO, DERR
Bob Princic, Ohio EPA, NEDO, DERR
Tom Schneider, Ohio EPA, SWDO, DERR
William Damschroder, Ohio EPA, CO, Legal

**NATIONAL GUARD BUREAU**
111 SOUTH GEORGE MASON DRIVE
ARLINGTON VA 22204-1373

May 18, 2020

Ohio Environmental Protection Agency
DERR-NEDO
Attn: Mr. Edward D'Amato
2110 East Aurora Road
Twinsburg, OH 44087-1924

Subject: Ravenna Army Ammunition Plant (RVAAP) Restoration Program, Portage/Trumbull Counties, RVAAP-50 Atlas Scrap Yard, Responses to Comments on the Draft Proposed Plan (Work Activity No. 267-000-859-110)

Dear Mr. D'Amato:

The Army appreciates your comment on the Draft Proposed Plan for Soil, Sediment, and Surface Water at RVAAP-50 Atlas Scrap Yard. Enclosed for your review is a response to your comment, as agreed upon during the May 11, 2020 resolution meeting amongst the Army and Ohio EPA. Upon your concurrence of this response, the Army will provide a Final version of the proposed plan to Ohio EPA.

This comment response was prepared for the Army National Guard in support of the RVAAP restoration program. Please contact the undersigned at (703) 607-7589 or david.m.connolly8.civ@mail.mil if there are issues or concerns with this submission.

Sincerely,

Digitally signed by CONNOLLY.DAVID.M.1292853633
Date: 2020.05.18 20:38:27 -04'00'

David Connolly
RVAAP Restoration Program Manager
Army National Guard Directorate

cc: Natalie Oryshkewych, Ohio EPA, NEDO, DERR
Bob Princic, Ohio EPA, NEDO, DERR
Megan Oravec, Ohio EPA, NEDO, DERR
Thomas Schneider, Ohio EPA, SWDO, DERR
Brian Tucker, Ohio EPA, CDO, DERR
Kevin Sedlak, ARNG, Camp James A. Garfield
Katie Tait, OHARNG, Camp James A. Garfield
Craig Coombs, USACE Louisville
Nathaniel Peters, II, USACE Louisville
Jed Thomas, Leidos
Jennifer Tierney, Vista Sciences Corporation
Rebecca Shreffler, Chenega

**Ohio EPA Comment:** Section 7.1.2 and elsewhere in the draft PP reads: "(u)pon completing the excavation, confirmatory [Incremental Sampling Methodology (ISM)] samples will be collected from the excavation floor and sidewalls to ensure contaminated soil has been successfully removed."

The use of ISM is inappropriate for confirmation sampling. This text should be removed and replaced with another method that is more specific for ensuring limits of excavation are met, not one for determining a representative average concentration of any particular chemical of concern. For example, use of discrete samples (minimum of three or five samples per wall and floor, depending on the size of the area) or possibly a three or five point or similar composite samples may be used to ensure adequate limits of excavation have been met.

Please note that for all excavations (current and future, other areas of concern), the ISM method should not be used for confirmation samples.

Army Response: During the May 11, 2020 resolution meeting, the Army and Ohio EPA agreed that the Army may use ISM for confirmatory sampling in the RVAAP Restoration Program. However, the confirmatory sampling methodology (e.g., ISM, discrete sampling, composite sampling) is to be evaluated and selected on a site-by-site basis, and the site-specific methodology needs Ohio EPA concurrence.

As agreed during the resolution meeting, text discussing confirmatory sampling in the Atlas Scrap Yard Proposed Plan has been revised to the following:

> "Upon completing the excavation, confirmatory ~~ISM~~ samples will be collected from the excavation floor and sidewalls per the sampling methodology and scheme approved in the remedial design to ensure contaminated soil has been successfully removed."

Ohio Environmental Protection Agency

**Mike DeWine**, Governor
**Jon Husted**, Lt. Governor
**Laurie A. Stevenson**, Director

May 1, 2020

RE: US Army Ravenna Ammunition Plt RVAAP
Remediation Response
Project Records
Remedial Response
Portage County
ID # 267000859110

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

**TRANSMITTED ELECTRONICALLY**

**Subject: Draft Proposed Plan for Soil, Sediment, and Surface Water at RVAAP-50 Atlas Scrap Yard, dated March 26, 2020**

Dear Mr. Connolly:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) has received and reviewed the "Draft Proposed Plan for Soil, Sediment, and Surface Water at RVAAP-50 Atlas Scrap Yard," dated March 26, 2020. It was prepared by Leidos.

Please forward the final version of the Proposed Plan (PP) to Ohio EPA for review after you have addressed the comments below:

1) Section 7.1.2 and elsewhere in the draft PP reads: "(u)pon completing the excavation, confirmatory [Incremental Sampling Methodology (ISM)] samples will be collected from the excavation floor and sidewalls to ensure contaminated soil has been successfully removed."

   The use of ISM is inappropriate for confirmation sampling. This text should be removed and replaced with another method that is more specific for ensuring limits of excavation are met, not one for determining a representative average concentration of any particular chemical of concern. For example, use of discrete samples (minimum of three or five samples per wall and floor, depending on the size of the area) or possibly a three or five point or similar composite samples may be used to ensure adequate limits of excavation have been met.

   Please note that for all excavations (current and future, other areas of concern), the ISM method should not be used for confirmation samples.

If you have any questions concerning this letter, please contact me at (330) 963-1170 or by email at ed.damato@epa.ohio.gov.

Sincerely,

Edward D'Amato
Site Coordinator
Division of Environmental Response and Revitalization

ED/sc

ec: David Connolly, ARNG
Katie Tait, OHARNG RTLS
Kevin Sedlak, OHARNG RTLS
Nat Peters, USACE
Craig Coombs, USACE
Rebecca Shreffler, Chenega
Natalie Oryshkewych, Ohio EPA, NEDO, DERR
Megan Oravec, Ohio EPA, NEDO, DERR
Bob Princic, Ohio EPA, NEDO, DERR
Tom Schneider, Ohio EPA, SWDO, DERR
William Damschroder, Ohio EPA, Legal