

**Draft**  
**Remedial Design for Soil**  
**at RVAAP-51 Dump Along Paris-Windham Road**

**Camp Ravenna Joint Military Training Center**  
**Former Ravenna Army Ammunition Plant**  
**Portage and Trumbull Counties, Ohio**

**Contract No. W912QR-18-C-0013**

***Prepared for:***



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

***Prepared by:***



**October 17, 2018**

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***Place Holder for  
Ohio EPA Approval Letter***

***(Letter will be inserted upon approval)***

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for the  
Draft Remedial Design for Soil at RVAAP-51 Dump Along Paris-Windham Road  
Camp Ravenna Joint Military Training Center  
Former Ravenna Army Ammunition Plant  
Portage and Trumbull Counties, Ohio

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AR = Administrative Record  
ARNG = Army National Guard  
ARNG-IED-CR = Army National Guard – Installation Environmental Division – Cleanup Restoration  
DERR = Division of Environmental Response and Revitalization  
NEDO = Northeast Ohio District  
OHARNG = Ohio Army National Guard  
Ohio EPA = Ohio Environmental Protection Agency  
USACE = U.S. Army Corps of Engineers

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**LIST OF ACRONYMS AND ABBREVIATIONS**

89		
90	ACM	Asbestos Containing Material
91	AOC	Area of Concern
92	AR	Administrative Record
93	ARNG	Army National Guard
94	Camp Ravenna	Camp Ravenna Joint Military Training Center
95	CERCLA	Comprehensive Environmental Response, Compensation, and Liability
96		Act
97	COC	Chemical of Concern
98	ERA	Ecological Risk Assessment
99	FFS	Focused Feasibility Study
100	FYR	Five Year Review
101	LUC	Land Use Control
102	MRS	Munitions Response Site
103	NFA	No Further Action
104	OAC	Ohio Administrative Code
105	Ohio EPA	Ohio Environmental Protection Agency
106	OHARNG	Ohio Army National Guard
107	O&M	Operations and Maintenance
108	PMP	Property Management Plan
109	PP	Proposed Plan
110	RA	Remedial Action
111	RD	Remedial Design
112	ROD	Record of Decision
113	RVAAP	Ravenna Army Ammunition Plant
114	SC	Site Characterization
115	USACE	United States Army Corps of Engineers
116		
117		

## 118 **SECTION 1.0 INTRODUCTION**

119 This Remedial Design (RD) describes the requirements to implement the chosen remedy for soil  
120 (Alternative 2 – Land Use Controls (LUCs) at RVAAP-51 Dump Along Paris Windham Road. Surface  
121 Water and Sediment achieved No Further Action per the Final Record of Decision (ROD) dated  
122 September 2017. Additional information about the selected remedy is documented in the following:

- 123 • Final Proposed Plan (PP) for Soil, Sediment and Surface Water for RVAAP-51 Dump Along  
124 Paris-Windham Road. United States Army Corps of Engineers (USACE). 29 September 2016.
- 125 • Final Record of Decision for Soil, Sediment and Surface Water for RVAAP-51 Dump Along  
126 Paris-Windham Road. USACE. 25 September 2017.

127 The chosen Alternative was Alternative 2 LUCs as stated in the ROD. Alternative 2 contains provisions  
128 to implement specific LUCs at the AOC in order to prevent exposure to polycyclic aromatic hydrocarbons  
129 (PAHs) chemicals of concern (COCs) in shallow surface soils for the Residential Receptor and Asbestos  
130 in soil. A description of the LUCs to be implemented at the Area of Concern (AOC) is provided in  
131 Section 2.0. This RD presents the specifics of the LUCs to be implemented and maintained at the AOC.

### 132 **1.1 Site Description**

133 The Dump Along Paris-Windham Road is located in the east-central portion of RVAAP, along a steep  
134 embankment on the west side of Paris-Windham Road between the bridge over Sand Creek and the  
135 intersection of Paris-Windham Road with Remalia Road. The AOC was used as an open dump for a  
136 variety of miscellaneous construction and demolition material, including asbestos containing material  
137 (ACM) which included transite roofing and siding, laboratory bottles and drums, concrete, brick, glass,  
138 scrap metal, fencing, and wood debris. There are no records indicating the quantities of material dumped  
139 at the AOC or the dates of operation.

140 The former dump was approximately 400 ft long by 30 ft wide and slopes east to west, away from Paris-  
141 Windham Road. The slope face ranges 40–60 degrees from horizontal. No permanent surface water  
142 features are present at the AOC. Surface water occurs only intermittently as storm water runoff in the  
143 drainage swale located at the base of the slope face of the dump during and after rainfall events and  
144 periods of snow melt. Surface water runoff follows the topography and flows in a westerly direction  
145 through a drainage swale at the base of the dump slope, entering Sand Creek. Sand Creek is located to the  
146 west and north at distances ranging from approximately 30 ft (north end of the AOC) to 170 ft  
147 (southcentral portion of the AOC). The Sand Creek floodplain occupies the land between the dump and  
148 Sand Creek.

### 149 **1.2 Summary of Previous Environmental Remedial Actions**

150 A limited Remedial Design/Remedial Action (RD/RA) was initiated in April 2003 at the AOC and was  
151 conducted in accordance with Comprehensive Environmental Response, Compensation and Liability Act  
152 (CERCLA) to mitigate risks related to potential contact with exposed waste material. The limited RD/RA  
153 consisted of removal and offsite disposal of surface debris, subsurface debris, and visible transite without  
154 undermining and compromising the integrity of Paris-Windham Road (MKM 2004).

155 During confirmation sampling activities conducted prior to placing the soil cover for the RA, additional  
156 transite debris was found in the excavated areas adjacent to Paris-Windham Road on the southern portion  
157 of the AOC. The additional transite material was subsequently covered in place during AOC restoration  
158 activities so that additional excavation activities would not undermine the road.

159 The results of confirmation sampling also verified the presence of benzo(a)pyrene and  
160 dibenzo(a,h)anthracene in shallow surface soil. These levels exceed Facility-Wide Cleanup Goal  
161 concentrations for the Resident Receptor. The concentrations of COCs at the AOC are within the  
162 Commercial/Industrial Use Standards.

163 The excavation area was restored to grade in November 2003 using a combination of clean hard fill and  
164 approved soil backfill. A layer of clean hard fill was installed first for stability followed by a minimum of  
165 two feet of soil backfill material for cover.

166 After the limited RD/RA was completed, risk at the AOC was further evaluated through a Final Site  
167 Characterization (SC) and Focused Feasibility Study (FFS). This SC/FFS evaluated soil, sediment, and  
168 surface water at the Dump Along Paris-Windham Road. Permanent surface water and sediment are not  
169 present at the AOC; therefore, NFA is required for these media and remedial alternatives only addressed  
170 soil (inclusive of dry sediment). Further, the ecological risk assessment (ERA) recommended NFA for  
171 soil and surface water with respect to ecological receptors. Based on the results of the SC/FFS, the PP  
172 and ROD requires that LUCs be implemented due to the asbestos and COCs remaining in shallow soil

### 173 **1.3 Community Involvement and Regulatory Approval**

174 The *Proposed Plan for Soil, Sediment and Surface water for RVAAP-51 Dump Along Paris-Windham*  
175 *Road* (USACE, 2016) was presented to the public during a public meeting on November 29, 2016. At this  
176 meeting, representatives of the Army National Guard provided information and were available to answer  
177 any questions. A transcript of the public meeting is available to the public and has been included in the  
178 Administrative Record. No verbal comments were received at this meeting and no written comments were  
179 received during the public comment period.

180 A *Record of Decision for Soil, Sediment and Surface Water for RVAAP-51 Dump Along Paris-Windham*  
181 *Road* (USACE 2017) documented the selected remedial action alternative to implement LUCs (described  
182 in Section 2.0). The Ohio EPA approved the Final ROD for RVAAP-51 Dump Along Paris-Windham  
183 Road in a letter dated October 30, 2017.

184

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188 **SECTION 2.0 LUCS TO BE IMPLEMENTED**

189 The Alternative (Alternative 2 – LUCs) to be implemented at the AOC includes the following:

- 190 • Development of a Remedial Design,
- 191 • Signs and boundary markers (Seibert stakes) posted at least every 300 feet along the AOC
- 192 perimeter,
- 193 • Digging Restrictions,
- 194 • General LUC Awareness Training,
- 195 • Annual Inspection, and
- 196 • Five-year Reviews in accordance with CERCLA.

197 **.2.1 Signs and Boundary Markers**

198 Currently, alternating Seibert Stakes (11) and “Unauthorized Personnel” warning signs (9) are placed  
199 along the perimeter at approximately 50-foot intervals (Figure 1). The “Unauthorized Personnel” warning  
200 signs currently in place read:

201 **DANGER**  
202 **UNAUTHORIZED**  
203 **PERSONNEL**  
204 **KEEP OUT**

205 The Seibert Stakes and five of the “Unauthorized Personnel” signs will be kept in place and maintained.  
206 Four “Asbestos Waste Disposal Site” warning signs that read as follows will be replace the four removed  
207 “Unauthorized Personnel” warning signs:

208 **DANGER**  
209 **ASBESTOS WASTE**  
210 **DISPOSAL SITE**  
211 **NO DIGGING**  
212 **DO NOT CREATE DUST**  
213 **BREATHIING ASBESTOS**  
214 **IS HAZARDOUS TO YOUR**  
215 **HEALTH**

216 The signs will meet the requirements of Ohio Administrative Code (OAC) 3745-20-07-(B)(1)(b).

217 **2.2 Digging Restrictions**

218 All digging or excavation within the AOC is prohibited due to residual asbestos and COCs in the surface  
219 soil. The digging restriction will be managed using permanent signs and Seibert Stakes placed along the  
220 AOC perimeter (see Section 2.1). Information about the LUCs at the AOC will be briefed during the  
221 annual general LUC awareness training at Camp Ravenna. An annual LUC inspection will be conducted  
222 to ensure that implemented LUCs remain effective.

223 **2.3 Annual LUC Inspection**

224 An annual LUC inspection will be conducted by the ARNG/OHARNG or other authorized personnel to  
225 confirm that the LUCs remain effective and still meet LUC objectives. The annual LUC inspection will  
226 also note any change in land use and will inspect the soil cover, signs and Seibert Stakes. If deficiencies  
227 are noted, the inspection will recommend corrective actions (required repairs). Any noted LUC violations  
228 will be reported to the ARNG/OHARNG and documented in the report. The required annual inspection  
229 will be submitted with other annual LUC control inspections conducted for other AOCs at Camp

230 Ravenna. The annual inspection will be submitted to the Ohio Environmental Protection Agency (EPA)  
231 for review and approval. The Annual LUC Inspection Form for RVAAP-51 Dump Along Paris-  
232 Windham Road is presented in Appendix B.

#### 233 **2.4 Five-Year Review**

234 Due to the presence of COCs remaining in surface soil above the cleanup goals for  
235 Residential/Unrestricted use and asbestos at the AOC, five-year reviews are required. The five-year  
236 review will evaluate the LUCs at the AOC to determine if they remain protective and effective. The five-  
237 year review will be submitted to the Ohio EPA for review and approval.

238

239 **SECTION 3.0 OPERATIONS AND MAINTENANCE PLAN**

240 **3.1 Sign Maintenance**

241 Signs, poles and Seibert markers will be inspected annually to confirm that they are visible and in good  
242 repair. Signs, poles and Seibert markers will be repaired or replaced as appropriate. At least annually,  
243 brush, weeds and other vegetative growth will be cleared so that the signs and markers remain visible to  
244 personnel approaching the site.

245 **3.2 Soil Cover Inspection**

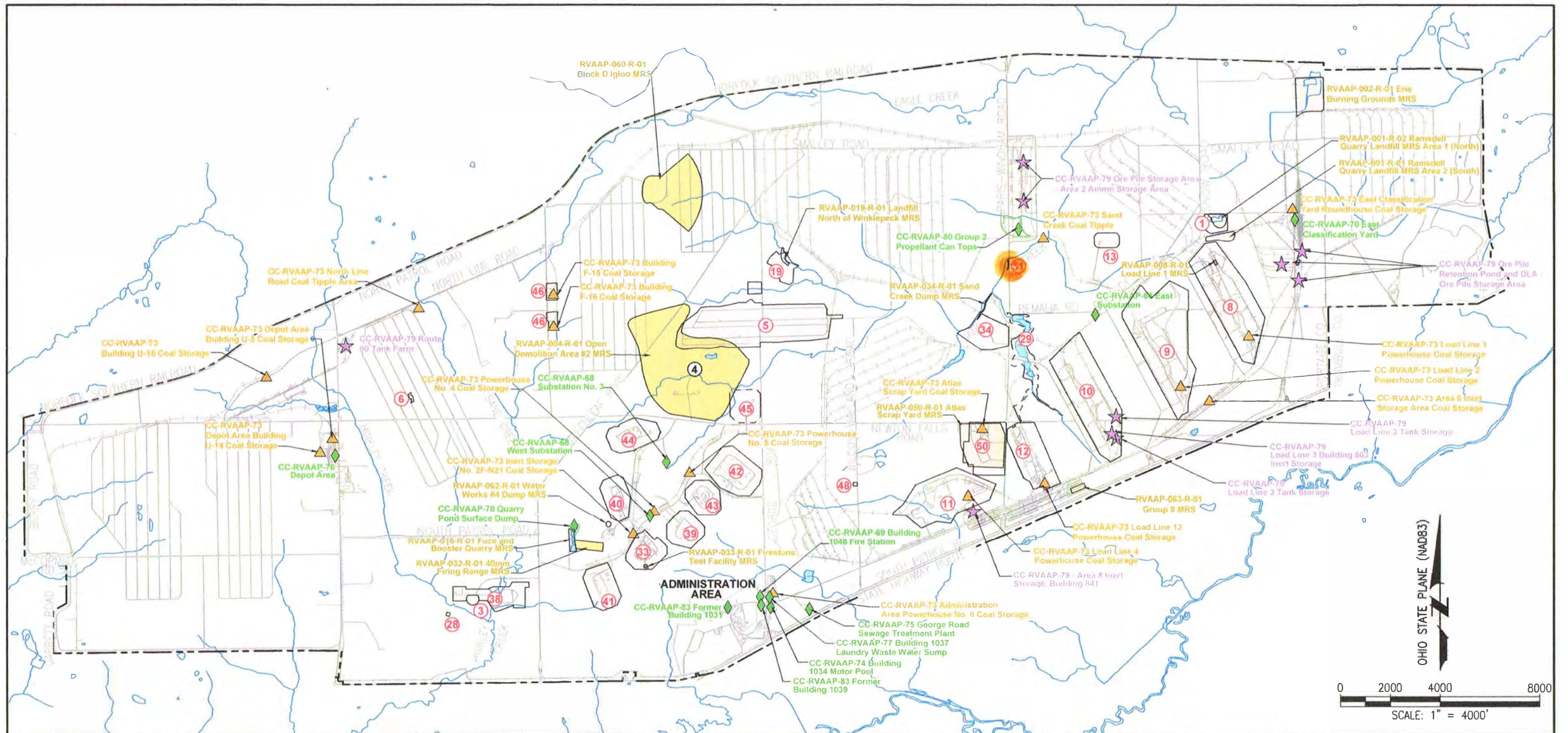
246 The condition of the soil cover at the AOC will be inspected as part of the annual inspection. Repairs, if  
247 required, will utilize clean soil and appropriate equipment. Personnel conducting repairs will be briefed  
248 on the LUCs at the AOC.

249 **3.3 Notification**

250 Conditions at the AOC will be inspected and documented on an annual basis. Any LUC deficiencies or  
251 violations will be reported to the ARNG/OHARNG. Repairs will be made as necessary in a timely  
252 manner. Conditions noted and findings of the inspection will be reported in an annual LUC report.


## **FIGURES**

- Figure 1      Location of AOCs at RVAAP/Camp Ravenna
- Figure 2      “As Installed” Seibert Markers and Signs and Proposed Asbestos Warning Sign  
Locations



IRP SITES - CERCLA		COMPLIANCE RESTORATION SITES (13 SITES)		MMRP SITES (14 SITES)		OTHER REGULATORY - RCRA	
1	RVAAP-01..... RAMSDELL QUARRY LANDFILL	38	RVAAP-38..... NACA TEST AREA	RVAAP-001-R-01.....	RAMSDELL QUARRY LANDFILL AREA 2 (SOUTH)	4	RVAAP-04..... OPEN DEMOLITION AREA #2
3	RVAAP-03..... OPEN DEMOLITION AREA #1	39	RVAAP-39..... LOAD LINE 5	RVAAP-002-R-01.....	ERIE BURNING GROUNDS MRS		COMPLIANCE RESTORATION SITES - APPROVED
5	RVAAP-05..... WINKLEPECK BURNING GROUNDS	40	RVAAP-40..... LOAD LINE 7	RVAAP-004-R-01.....	OPEN DEMOLITION AREA #2 MRS	*	DLA ORE STORAGE AREAS (7 SITES)
6	RVAAP-06..... C BLOCK QUARRY	41	RVAAP-41..... LOAD LINE 8	RVAAP-008-R-01.....	LOAD LINE 1 MRS	▲	COAL STORAGE AREAS (17 SITES)
8	RVAAP-08..... LOAD LINE 1	42	RVAAP-42..... LOAD LINE 9	RVAAP-016-R-01.....	FUZE AND BOOSTER QUARRY MRS	□	AOC SITES
9	RVAAP-09..... LOAD LINE 2	43	RVAAP-43..... LOAD LINE 10	RVAAP-019-R-01.....	LANDFILL NORTH OF WINKLEPECK MRS	■	MMRP SITES
10	RVAAP-10..... LOAD LINE 3	44	RVAAP-44..... LOAD LINE 11	RVAAP-032-R-01.....	40MM FIRING RANGE MRS	+	RAILROAD TRACKS
11	RVAAP-11..... LOAD LINE 4	45	RVAAP-45..... WET STORAGE AREA	RVAAP-033-R-01.....	FIRESTONE TEST FACILITY MRS	- - - - -	FENCELINE
12	RVAAP-12..... LOAD LINE 12	46	RVAAP-46..... BUILDINGS F-15 AND F-16	RVAAP-034-R-01.....	SAND CREEK DUMP MRS	~~~~~	STREAM OR CREEK
13	RVAAP-13..... BLDG 1200 & DILUTION/SETTLING POND	48	RVAAP-48..... ANCHOR TEST AREA	RVAAP-050-R-01.....	ATLAS SCRAP YARD MRS		
19	RVAAP-19..... LANDFILL NORTH OF WINKLEPECK BURNING GROUNDS	49	RVAAP-49..... ATLAS SCRAP YARD	RVAAP-060-R-01.....	BLOCK D IGLOO MRS		
28	RVAAP-28..... MUSTARD AGENT BURIAL SITE	50	RVAAP-50..... DUMP ALONG PARIS-WINDHAM ROAD	RVAAP-061-R-01.....	BLOCK D IGLOO - TD MRS		
29	RVAAP-29..... UPPER AND LOWER COBBS PONDS	51	RVAAP-51..... FACILITY-WIDE GROUNDWATER	RVAAP-062-R-01.....	WATER WORKS #4 DUMP MRS		
33	RVAAP-33..... LOAD LINE 6	67	RVAAP-67..... FACILITY-WIDE SEWERS	RVAAP-063-R-01.....	GROUP 8 MRS		
34	RVAAP-34..... SAND CREEK DISPOSAL ROAD LANDFILL						

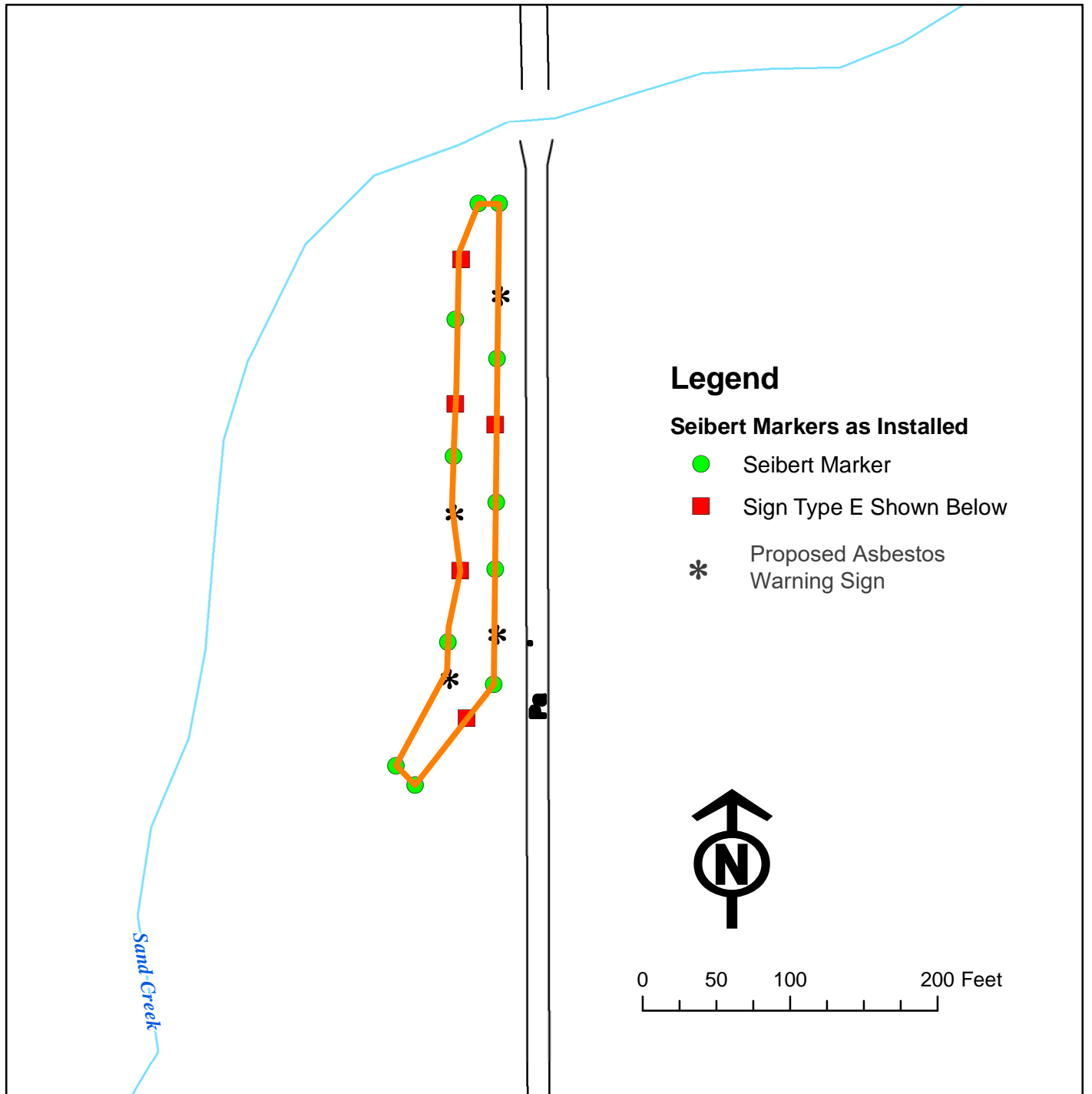
Figure 1 - Location of AOCs at RVAAP/Camp Ravenna.



US Army Corps of Engineers  
Louisville District

**FORMER RVAAP/CAMP RAVENNA  
PORTAGE & TRUMBULL COUNTIES, OHIO**

DRAWN BY: P. HOLM	REV. NO./DATE: REV.2/02-05-16	CAD FILE: 08042/DWGS/Q94-RVAAP-AOCs
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**Figure 2 - "As-Installed" Seibert Markers & Signs and Proposed Asbestos Warning Sign Locations**

(10"x14")

Black stripe faces AOC



**Paris-Windham Road Dump**

**Camp Ravenna  
Ravenna, Ohio**

**APPENDIX A**

**RVAAP-51 Dump Along Paris-Windham Road Land Use Control Inspection  
Form**

**Camp Ravenna Joint Military Training Center (Camp Ravenna)/Former Ravenna Army Ammunition Plant (RVAAP)**

**RVAAP-51 Dump Along Paris Windham Road – Inspection Form**

In accordance with the Camp Ravenna/former RVAAP Property Management Plan (PMP), an inspection of RVAAP-51 Dump Along Paris Windham Road was conducted by \_\_\_\_\_ on \_\_\_\_\_.

The annual inspection required by the PMP includes the following:

- Review of LUC training and documentation as applicable to the Dump Along Paris Windham Road.
- Evaluation of activities at the AOC to ensure that residential use and digging is not occurring.
- Inspection of Seibert Stakes and signage.
- Inspection of the soil cover.

LUC deficiencies or inconsistent land uses that are identified must be reported and identified on the inspection form and properly reported to the Army National Guard (ARNG)/Ohio Army National Guard (OHARNG).

---

**Review of LUCs – Management/Effectiveness/Corrective Action**

**1. Activities and Land Use**

- a.) This AOC is restricted from residential land use. Has residential use occurred?
- b.) Digging is prohibited at the AOC. Has digging occurred at the AOC?
- c.) Warning signs and Seibert Stakes are required at the AOC along the boundary. Are Seibert Stakes and signage present, functional and in good condition? Are they visible (free of vegetation)?
- d.) The soil cover installed after the 2003 soil removal action creates a barrier between the receptor and the residual PAHs and asbestos in the soil. Is the soil cover intact? Is any damage or erosion on the soil cover present?



**2. Inspections and Reporting**

a.) Inspections are required on an annual basis. Are annual inspections being completed?

b.) An annual report is required. Has the annual report been completed and submitted?

**3. Training (as applicable to WBG)**

a.) Was LUC training (specific to the AOC) being conducted as applicable? Describe the training (content/who attended/who provided/documentation of training).

b.) If training was not provided, explain why and what corrective actions were initiated?

---

**4. Description of any observed/noted LUC violation(s):**

**5. Date of Notification of LUC violation (if applicable):**

**6. Description of any corrective actions taken to remedy observed LUC violation(s) or recommended corrective actions:**

**7. Additional Notes/Comments:**

---

**Original Inspection Completed by:**

Signature:

Printed Name:

Title:

Organization:

Date: