FY2008

RAVENNA ARMY AMMUNITION PLANT

Installation Action Plan

Printed 02 December 2008

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Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multi-year Installation Cleanup Program for an installation. The plan identifies environmental cleanup requirements at each site or area of concern (AOC), and proposes a comprehensive, installation-wide approach, with the costs and schedules required to conduct investigations and take necessary remedial actions (RA).

In an effort to coordinate planning information between the restoration manager, the US Army Environmental Command (USAEC), the National Guard Bureau (NGB), the US Army Corps of Engineers - Louisville District, the Ravenna Army Ammunition Plant, and the Ohio Environmental Protection Agency, an IAP was completed. The IAP is used to track requirements, schedules and tentative budgets for all Army installation cleanup programs.

All site-specific funding and schedule information has been prepared according to projected overall Army funding levels and is, therefore, subject to change.

Acronyms

AOC	Area of Concern
ARNG	US Army National Guard
ASR	Archive Search Report
bgs	below ground surface
BRAC	Base Realignment and Closure
CA	Corrective Action
CC	Compliance-Related Cleanup
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
COC	Contaminants of Concern
CTC	Cost-to-Complete
CTT	Closed, Transferred, and Transferring
cy	cubic yard
DD	Decision Document
DDESB	Department of Defense Explosive Safety Board
DERP	Defense Environmental Restoration Program
DFFO	Director's Final Findings & Orders
EE/CA	Engineering Evaluation/Cost Analysis
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
ER,A	Environmental Restoration, Army
FPRI	Fixed-Price Remediation with Insurance
FS	Feasibility Study
ft	feet
FY	Fiscal Year
GO/CO	Government-Owned/Contractor-Operated
GW	ground water
HMX	Cyclotetramethylenetetranitramine
IAP	Installation Action Plan
IMCOM	Installation Management Command
IRA	Interim Remedial Action
IRP	Installation Restoration Program
K	Thousand
LAP	Load, Assemble and Pack
LL	Load Line
LTM	Long-Term Management
LUC	Land Use Control
MACOM	Major Command
MC	Munitions Constituent
MCL	Maximum Contaminant Level
MEC	Munitions and Explosives of Concern
mm	millimeter
MMRP	Military Munitions Response Program
MNA	Monitored Natural Attenuation
MRSPP	Munition Response Site Prioritization Protocol
N/A	Not Applicable

Acronyms

NACA	National Advisory Committee on Aeronautics
NE	Northeast or Not Evaluated
NFA	No Further Action
NGB	National Guard Bureau
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
OD	Open Detonation
ODA	Open Demolition Area
OE	Ordnance and Explosives
OEPA	Ohio Environmental Protection Agency
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
OMA	Operation and Maintenance Account
OSC	Operations Support Command
OSD	Office of the Secretary of Defense
PA	Preliminary Assessment
PBC	Performance-Based Contract
PCB	Polychlorinated Biphenyl
PMP	Property Management Plan
POM	Program Objective Memorandum
PP	Proposed Plan
ppm	parts per million
PY	Prior Year
RA	Remedial Action
RA(C)	Remedial Action (Construction)
RAB	Restoration Advisory Board
RAC	Risk Assessment Code (now MRSPP)
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RDX	Cyclotrimethylenetrinitramine
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
RIP	Remedy-in-Place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
RTLS	Ravenna Training and Logistics Site
RVAAP	Ravenna Army Ammunition Plant
SAIC	Science Application International Corporation
SI	Site Inspection
SVOC	Semi-Volatile Organic Compound
TAPP	Technical Assistance for Public Participation
TD	Thermal Decomposition
TNT	Trinitrolouene
TRC	Technical Review Committee

Acronyms

USACE	US Army Corps of Engineers
USACHPPM	US Army Center for Health Promotion and Preventive Medicine
USAEC	US Army Environmental Command
USAEHA	US Army Environmental Hygiene Agency (now USACHPPM)
USATCES	US Army Technical Center for Explosives Safety
USATHAMA	United States Army Toxic and Hazardous Materials Agency (now USAEC)
USEPA	US Environmental Protection Agency
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VOC	Volatile Organic Compounds
WBG	Winklepeck Burning Ground

Installation Information

Installation Locale

Installation Size (Acreage): 21,683.28
City: Ravenna
County: Portage and Trumbull
State: Ohio
Other Locale Information

Prior to 2002, the Ravenna Army Ammunition Plant (RVAAP) was a 21,419-acre installation. In 2003 the property boundary was resurveyed by the Ohio Army National Guard (OHARNG) and the actual acreage was found to be 21,683.289. As of February 2006, a total of 20,403 acres has been transferred to the United States Property and Fiscal Officer (USP&FO) for Ohio and leased to the OHARNG as a military training site.

The current RVAAP consists of approximately 1,280 acres in several distinct parcels scattered throughout the OHARNG Ravenna Training and Logistics Site (RTLS). The RVAAP and the RTLS are collocated on contiguous parcels of property. The RTLS is in northeastern Ohio within Portage and Trumbull Counties, approximately three miles east-northeast of the City of Ravenna and approximately one mile northwest of the City of Newton Falls. The RVAAP portions of the property are solely located within Portage County. The RTLS (inclusive of the RVAAP) is approximately 11 miles long and 3.5 miles wide and is bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad on the south, Garret, McCormick, and Berry roads on the west, the Norfolk Southern Railroad on the north, and State Route 534 on the east.

The RTLS is surrounded by several communities. Windham is to the north, Garrettsville is six miles to the northwest, Newton Falls is one mile to the southeast, Charlestown is to the immediate southwest, and Wayland is three miles to the south. When the RVAAP was operational the RTLS did not exist and the entire 21,683-acre parcel was a government owned/contractor-operated (GOCO) industrial facility. Because the RVAAP Installation Restoration Program (IRP) encompasses investigation and cleanup of past activities over the entire 21,683 acres of the former RVAAP, unless otherwise specifically stated, references to the RVAAP in this document are considered to be inclusive of the historical extent of the RVAAP, which is inclusive of the combined acreages of the current RTLS and RVAAP.

Installation Mission

In FY93, the mission of RVAAP was changed from inactive-maintained to modified caretaker status (limited mission). PIKA International of Stafford, TX is the current operating contractor.

Lead Organization

Base Realignment and Closure Division

Lead Executing Agencies for Installation

US Army Corps of Engineers, Louisville District

Regulator Participation

Federal	US Environmental Protection Agency
State	Ohio Environmental Protection Agency

National Priorities List (NPL) Status

No NPL Sites have been identified

Installation Restoration Advisory Board (RAB)/Technical Review Committee (TRC)/Technical Assistance for Public Participation (TAPP) Status

RAB established 1996

Installation Information

Installation Program Summaries

IRP

Primary Contaminants of Concern: Asbestos, Chemical weapon munitions/Chemical agent, Explosives, Metals, Munitions and explosives of concern, Munitions constituents, Nitrate/Nitrite, Polycyclic Aromatic Hydrocarbons, Semi-volatiles, White Phosphorous

Affected Media of Concern: Groundwater, Sediment, Soil, Surface Water

MMRP

Primary Contaminants of Concern: Munitions and explosives of concern, Munitions constituents

Affected Media of Concern: Groundwater, Sediment, Soil, Surface Water

Cleanup Program Summary

Installation Historic Activity

RVAAP is a government-owned/contractor-operated (GOCO) US Army Excess facility. In 1992 RVAAP was declared excess to the Army's needs. Bulk explosives were stored at the facility until 2004. In August 1940, the US Government purchased approximately 25,000 acres in the northeastern part of Ohio in Portage and Trumbull counties and in September 1940. construction of the Load, Assemble, and Pack (LAP) facility started. In August of 1941, munitions production started. The primary missions of the facility included loading, assembling and packaging of large caliber ammunition and depot storage. The facility changed names several times during its history before being designated the RVAAP in 1961.

From September 1940 until the end of World War II, when plant operations were turned over to the Ordnance Department, the Atlas Powder Company operated the facility. From 1946 to 1949, the ammonium nitrate line was operated by the Silas Mason Company for the production of ammonium nitrate fertilizer. In 1950 the facility was placed in standby status and was reactivated during the Korean War for loading and packing major caliber projectiles and components. In August 1957 all production ended. In October 1957, the installation was again placed in a standby condition.

From January to July 1961, Load Line 12 was used to melt-out and recover explosives from bombs; it was the first operation of this type in the ammunition industry. In May 1968 the RVAAP was once again reactivated to produce munitions on three load lines and two component lines in support of the Vietnam War. These facilities were subsequently deactivated in August 1972. A mission for the demilitarization of various munitions continued on a periodic basis through 1992.

In 1980 RVAAP received a Resource Conservation and Recovery Act (RCRA) Part A permit for the storage and treatment of off-specification munitions and munitions-related waste. In 1992 RVAAP submitted a RCRA Part B permit application for the installation's Open Burning and Open Detonation Grounds and a hazardous waste storage building. Open Demolition Area (ODA) # 2 (RVAAP-04) is now the only active RCRA unit at the RVAAP. All others have been closed.

In May 1999 the Operations Support Command (OSC) transferred control and operation of 16,164 acres to the National Guard Bureau (NGB). In March 2002, an agreement was signed to transfer an additional 3,774 uncontaminated acres to the NGB with the remaining acreage to be transferred as restoration of the sites is completed. As of February 2006, a total of 20,403 acres of the former RVAAP had been transferred to the NGB for use by the OHARNG.

Completion of the Installation Restoration Program (IRP), the Military Munitions Response Program (MMRP), and decontamination and demolition of excess buildings for transfer of all property to NGB, with subsequent transfer of accountability to OHARNG, is expected by 2018.

In June 2004, the Army and Ohio EPA signed the Director's Findings and Orders to authorize continued use of Open Demolition Area #2 to support environmental restoration activities (blow in place and emergency demolition actions are authorized without the need to obtain emergency permits). The Orders also authorized the investigation of deactivation furnace soils under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and groundwater monitoring at RVAAP-01 and RVAAP-04. The Ravenna Army Ammunition Plant will close the Demolition Area #2 RCRA unit when it is no longer needed to support restoration.

In 2006 a decision was made to abandon plans for the thermal decomposition of the explosive-contaminated buildings and use conventional demolition methods with special precautions.

Continued support of all of the stakeholders at RVAAP (including the public) will be needed if schedules, objectives, and cost estimates identified in this IAP are to be met. Completion of the IRP and MMRP projects at some sites may be delayed due to lack of funding for removal of large concrete structures and investigation of sewer systems.

RVAAP is not on the USEPA NPL, although it is in the USEPA CERCLIS database. Management of the IRP sites follows CERCLA requirements. There are a number of other regulatory programs addressing other non-IRP sites.

Installation Program Cleanup Progress

Cleanup Program Summary

IRP

Prior Year Progress: A Performance-Based Contract (PBC) was initiated in 2008 and an additional year of groundwater monitoring was completed. The USAEC excavated contaminated soil around the exterior of the buildings in Load Lines 1, 2, 3, and 4. Sub-slab sampling of soil at Load Lines 5, 7, 8, and 10 was completed as was the demolition of building superstructures at Load Lines 2, 3, and 4. The RA at central burn pits was completed and RODs were signed for RVAAP-2, RVAAP-4, and RVAAP-16.

Future Plan of Action: The IRA at RVAAP-08, RVAAP-09, RVAAP-10, and RVAAP-11 will be completed. The LUC issues will be resolved. The ROD and remediation of RVAAP-1, RVAAP-5, RVAAP-12, RVAAP-16, and RVAAP-49 and complete transfer of RVAAP-5 will be completed and sites developed for appropriate sewer lines and the 1.5 acre RCRA unit in ODA#2.

MMRP

Prior Year Progress: The Site Inspection was finalized. Engineering controls were installed at Rocket Ridge.

Future Plan of Action: An RI/FS is scheduled to start in FY09 for some sites.

Parcel Summary

Summary of Parcel Prioritization and Transfer Strategy

Parcel Name: **40 mm Test Range/Waterworks Ponds**
Parcel Size: 58.00
Associated Sites: RVAAP-32, RVAAP-16, RVAAP-016-R-01, RVAAP-032-R-01
Transfer Date: N/A
Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)
Future Land Use: Other (Military Training)
Encumbrances: N/A
Leases/Permits/Licenses: N/A
Transfer Strategy: Army Retained
Recipient Organization: National Guard Bureau
Other Issues Affecting Transfer: N/A

Parcel Name: **Anchor Test Area**
Parcel Size: 2.00
Associated Sites: RVAAP-48
Transfer Date: N/A
Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)
Future Land Use: Other (Military Training)
Encumbrances: N/A
Leases/Permits/Licenses: N/A
Transfer Strategy: Army Retained
Recipient Organization: National Guard Bureau
Other Issues Affecting Transfer: N/A

Parcel Name: **Building 1039**
Parcel Size: .40
Associated Sites:
Transfer Date: N/A
Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)
Future Land Use: Other (Military Training)
Encumbrances: N/A
Leases/Permits/Licenses: N/A
Transfer Strategy: Army Retained
Recipient Organization: National Guard Bureau
Other Issues Affecting Transfer: NGB requires a letter from Ohio EPA indicating property acceptable for planned reuse.

Ohio EPA will not provide requested letter until investigations have occurred. No investigations are currently planned.

Parcel Summary

Parcel Name: **Buildings 1026, 1034, 1034A, 1037, 1037A, 1038 etc**
Parcel Size: 8.60
Associated Sites:
Transfer Date: N/A
Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)
Future Land Use: Other (Military Training)
Encumbrances: N/A
Leases/Permits/Licenses: N/A
Transfer Strategy: Army Retained
Recipient Organization: National Guard Bureau
Other Issues Affecting Transfer: NGB requires a letter from Ohio EPA indicating property acceptable for planned reuse.

Ohio EPA will not provide requested letter until investigations have occurred. No investigations are currently planned.

Parcel Name: **Cobbs Ponds**
Parcel Size: 9.00
Associated Sites: RVAAP-29
Transfer Date: N/A
Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)
Future Land Use: Other (Military Training)
Encumbrances: N/A
Leases/Permits/Licenses: N/A
Transfer Strategy: Army Retained
Recipient Organization: National Guard Bureau
Other Issues Affecting Transfer: N/A

Parcel Name: **Landfill North of Winklepeck**
Parcel Size: 5.00
Associated Sites: RVAAP-19, RVAAP-019-R-01
Transfer Date: N/A
Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)
Future Land Use: Other (Military Training)
Encumbrances: N/A
Leases/Permits/Licenses: N/A
Transfer Strategy: Army Retained
Recipient Organization: Ohio Army National Guard
Other Issues Affecting Transfer: N/A

Parcel Summary

Parcel Name: **Load Line 1**
Parcel Size: 160.00
Associated Sites:
Transfer Date: N/A
Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)
Future Land Use: Other (Military Training)
Encumbrances: NGB declines property until slabs, aboveground walkways and foundations are removed in order to facilitate military training needs. Ohio EPA will not sign final ROD for this site without environmental investigations conducted post-slab removal. There is currently no funding for slab removal.
Leases/Permits/Licenses: N/A
Transfer Strategy: Army Retained
Recipient Organization: National Guard Bureau/Ohio Army National Guard
Other Issues Affecting Transfer: Sewer issues will be addressed as an option in the FY08 PBC.

Parcel Name: **Load Line 10**
Parcel Size: 36.00
Associated Sites: RVAAP-43
Transfer Date: N/A
Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)
Future Land Use: Other (Military Training)
Encumbrances: N/A
Leases/Permits/Licenses: N/A
Transfer Strategy: Army Retained
Recipient Organization: National Guard Bureau
Other Issues Affecting Transfer: Sewer issues will be addressed as an option in the FY08 PBC.

Parcel Name: **Load Line 11**
Parcel Size: 47.00
Associated Sites: RVAAP-44
Transfer Date: N/A
Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)
Future Land Use: Other (Military Training)
Encumbrances: N/A
Leases/Permits/Licenses: N/A
Transfer Strategy: Army Retained
Recipient Organization: National Guard Bureau
Other Issues Affecting Transfer: Sewer issues will be addressed as an option in the FY08 PBC.

Parcel Summary

Parcel Name: **Load Line 12**

Parcel Size: 75.00

Associated Sites: RVAAP-12

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: NGB declines property until foundations are removed in order to facilitate military training needs. There is currently no funding for foundation removal.

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau

Other Issues Affecting Transfer: Sewer issues will be addressed as an option in the FY08 PBC.

Parcel Name: **Load Line 2**

Parcel Size: 212.00

Associated Sites:

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: NGB declines property until aboveground walkways are removed. Ohio EPA will not sign final ROD for this site without environmental investigations conducted post-slab removal. Slabs and foundations are being removed in 2008.

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau

Other Issues Affecting Transfer: Sewer issues will be addressed as an option in the FY08 PBC.

Parcel Name: **Load Line 3**

Parcel Size: 174.00

Associated Sites:

Transfer Date: N/A

Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)

Future Land Use: Other (Military Training)

Encumbrances: NGB declines property until aboveground walkways are removed. Ohio EPA will not sign final ROD for this site without environmental investigations conducted post-slab removal. Slabs and foundations are being removed in 2008.

Leases/Permits/Licenses: N/A

Transfer Strategy: Army Retained

Recipient Organization: National Guard Bureau

Other Issues Affecting Transfer: Sewer issues will be addressed as an option in the FY08 PBC.

Parcel Summary

Parcel Name: **Load Line 4**
Parcel Size: 129.00
Associated Sites:
Transfer Date: N/A
Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)
Future Land Use: Other (Military Training)
Encumbrances: NGB declines property until aboveground walkways are removed. Ohio EPA will not sign final ROD for this site without environmental investigations conducted post-slab removal. Slabs and foundations are being removed in 2008.
Leases/Permits/Licenses: N/A
Transfer Strategy: Army Retained
Recipient Organization: National Guard Bureau
Other Issues Affecting Transfer: Sewer issues will be addressed as an option in the FY08 PBC.

Parcel Name: **Load Line 5**
Parcel Size: 39.00
Associated Sites: RVAAP-39
Transfer Date: N/A
Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)
Future Land Use: Other (Military Training)
Encumbrances: N/A
Leases/Permits/Licenses: N/A
Transfer Strategy: Army Retained
Recipient Organization: National Guard Bureau
Other Issues Affecting Transfer: Sewer issues will be addressed as an option in the FY08 PBC.

Parcel Name: **Load Line 6**
Parcel Size: 43.00
Associated Sites: RVAAP-033-R-01, RVAAP-33
Transfer Date: N/A
Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)
Future Land Use: Other (Military Training)
Encumbrances: N/A
Leases/Permits/Licenses: N/A
Transfer Strategy: Army Retained
Recipient Organization: National Guard Bureau
Other Issues Affecting Transfer: Sewer issues will be addressed as an option in the FY08 PBC.

Parcel Summary

Parcel Name: **Load Line 7**
Parcel Size: 37.00
Associated Sites: RVAAP-40
Transfer Date: N/A
Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)
Future Land Use: Other (Military Training)
Encumbrances: N/A
Leases/Permits/Licenses: N/A
Transfer Strategy: Army Retained
Recipient Organization: National Guard Bureau
Other Issues Affecting Transfer: Sewer issues will be addressed as an option in the FY08 PBC.

Parcel Name: **Load Line 8**
Parcel Size: 44.00
Associated Sites: RVAAP-41
Transfer Date: N/A
Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)
Future Land Use: Other (Military Training)
Encumbrances: N/A
Leases/Permits/Licenses: N/A
Transfer Strategy: Army Retained
Recipient Organization: National Guard Bureau
Other Issues Affecting Transfer: Sewer issues will be addressed as an option in the FY08 PBC.

Parcel Name: **Load Line 9**
Parcel Size: 106.00
Associated Sites: RVAAP-42
Transfer Date: N/A
Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)
Future Land Use: Other (Military Training)
Encumbrances: N/A
Leases/Permits/Licenses: N/A
Transfer Strategy: Army Retained
Recipient Organization: National Guard Bureau
Other Issues Affecting Transfer: Sewer issues will be addressed as an option in the FY08 PBC.

Parcel Summary

Parcel Name: **Open Demolition Area #2**
Parcel Size: 25.00
Associated Sites: RVAAP-004-R-01
Transfer Date: N/A
Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)
Future Land Use: Other (Military Training)
Encumbrances: N/A
Leases/Permits/Licenses: N/A
Transfer Strategy: Army Retained
Recipient Organization: National Guard Bureau
Other Issues Affecting Transfer:N/A

Parcel Name: **Pistol Range**
Parcel Size: 20.00
Associated Sites:
Transfer Date: N/A
Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)
Future Land Use: Other (Military Training)
Encumbrances: N/A
Leases/Permits/Licenses: 20060224
Transfer Strategy: Army Retained
Recipient Organization: National Guard Bureau
Other Issues Affecting Transfer:N/A

Parcel Name: **Ramsdell Landfill**
Parcel Size: 15.00
Associated Sites: RVAAP-01, RVAAP-001-R-01
Transfer Date: N/A
Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)
Future Land Use: Other (Military Training)
Encumbrances: N/A
Leases/Permits/Licenses: N/A
Transfer Strategy: Army Retained
Recipient Organization: National Guard Bureau
Other Issues Affecting Transfer:N/A

Parcel Summary

Parcel Name: **Wet Storage**
Parcel Size: 36.00
Associated Sites: RVAAP-45
Transfer Date: N/A
Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)
Future Land Use: Other (Military Training)
Encumbrances: N/A
Leases/Permits/Licenses: N/A
Transfer Strategy: Army Retained
Recipient Organization: National Guard Bureau
Other Issues Affecting Transfer: N/A

Parcel Name: **Winklepeck Burning Grounds**
Parcel Size: 20.00
Associated Sites: RVAAP-05
Transfer Date: N/A
Current Land Use: Other (BRAC Non-Excess, Army Ammunition Plant)
Future Land Use: Other (Military Training)
Encumbrances: N/A
Leases/Permits/Licenses: N/A
Transfer Strategy: Army Retained
Recipient Organization: National Guard Bureau
Other Issues Affecting Transfer: N/A

RAVENNA ARMY AMMUNITION PLANT

Non-BRAC Excess
Installation Restoration Program

IRP Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Response Complete (RC) Sites: 54/20

Installation Site Types with Future and/or Underway Phases

2 Burn Area
(RVAAP-05, RVAAP-49)
1 Contaminated Buildings
(RVAAP-33)
1 Contaminated Ground Water
(RVAAP-66)
1 Contaminated Soil Piles
(RVAAP-48)
3 Disposal Pit/Dry Well
(RVAAP-06, RVAAP-28, RVAAP-51)
1 Explosive Ordnance Disposal Area
(RVAAP-03)
1 Firing Range
(RVAAP-32)
1 Industrial Discharge
(RVAAP-46)
3 Landfill
(RVAAP-01, RVAAP-19, RVAAP-34)
7 Spill Site Area
(PBC at Ravenna, RVAAP-39, RVAAP-40, RVAAP-41, RVAAP-42, RVAAP-43, RVAAP-44)
2 Storage Area
(RVAAP-45, RVAAP-50)
1 Surface Disposal Area
(RVAAP-38)
4 Surface Impoundment/Lagoon
(RVAAP-12, RVAAP-13, RVAAP-16, RVAAP-29)
1 Waste Lines
(RVAAP-67)

Most Widespread Contaminants of Concern

Asbestos, Chemical weapon munitions/Chemical agent, Explosives, Metals, Munitions and explosives of concern, Munitions constituents, Nitrate/Nitrite, Polycyclic Aromatic Hydrocarbons, Semi-volatiles, White Phosphorous

Media of Concern

Groundwater, Sediment, Soil, Surface Water

Completed Remedial Actions (Interim Remedial Actions / Final Remedial Actions (IRA/FRA))

Site ID	Site Name	Action	Remedy	FY	Cost
RVAAP-23	UNIT TRAINING EQUIPMENT SITE UST	FRA	WASTE REMOVAL - DRUMS, TANKS, BULK CONTAINERS	1989	TBD
RVAAP-47	BUILDING T-5301	FRA	REMOVAL	2000	TBD
RVAAP-03	OPEN DEMOLITION AREA #1	IRA	EX SITU SOIL TREATMENT	2003	TBD
RVAAP-34	SAND CREEK DISPOSAL ROAD LANDFILL	FRA	WASTE REMOVAL - SOLIDS (NON-SOILS)	2004	TBD
RVAAP-51	DUMP ALONG PARIS-WINDHAM ROAD	IRA	WASTE REMOVAL - SOILS	2004	TBD
PBC at Ravenna	PBC (2005)	FRA	OTHER	2008	TBD
RVAAP-08	LOAD LINE 1	FRA	WASTE REMOVAL - SOLIDS (NON-SOILS)	2008	TBD
RVAAP-08	LOAD LINE 1	IRA	WASTE REMOVAL - SOILS	2008	TBD
RVAAP-09	LOAD LINE 2	IRA	REMOVAL	2008	TBD

IRP Summary

Completed Remedial Actions (Interim Remedial Actions / Final Remedial Actions (IRA/FRA))

Site ID	Site Name	Action	Remedy	FY	Cost
RVAAP-09	LOAD LINE 2	FRA	REMOVAL	2008	TBD
RVAAP-10	LOAD LINE 3	IRA	REMOVAL	2008	TBD
RVAAP-10	LOAD LINE 3	FRA	REMOVAL	2008	TBD
RVAAP-11	LOAD LINE 4	IRA	REMOVAL	2008	TBD
RVAAP-11	LOAD LINE 4	FRA	REMOVAL	2008	TBD

Duration of IRP

Year of IRP Inception: 198802

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 201409/204409

Date of IRP completion including Long Term Management (LTM): 204409

IRP Contamination Assessment

Contamination Assessment Overview

The contamination at RVAAP originated from past industrial activities associated with the assembly and demilitarization of large caliber projectiles, general-purpose bombs, and parts for these munitions. RVAAP produced munitions during World War II and the Korean and Vietnam Wars. The industrial operations at RVAAP consisted of 12 production areas known as Load Lines. Load Lines 1 through 4 (melt-pour Lines) were the primary sources of secondary explosives contamination such as TNT, HMX and RDX, which were melted and poured into projectiles and bombs. Load Line 1 and 12 were used for demilitarization of projectiles. Load Line 1 was used to produce and recondition anti-tank mines. Workers would periodically use steam and hot water to hose down equipment, floors and walls of buildings contaminated with explosive dust, spills, and vapors. The explosive-contaminated water from the cleaning, known as pink water, then drained out doorways and through floor drains onto the soils surrounding the buildings or was discharged into open ditches or ponds after being filtered through sawdust to remove suspended explosives. Waste explosives from the melt pour lines were routinely disposed of by open burning and detonation at other sites on the installation.

Load Lines 5 through 11 (fuse and booster) were used to assemble fuses, primers, and boosters while Load Line 12 housed the ammonium nitrate plant. Potential contaminants in Lines 5 through 11 include lead azide, mercury fulminate, lead styphnate, black powder, heavy metals, TNT, and Composition B. The amount of explosives used at the fuse and booster lines was much less than that used at the melt-pour lines because of the types of small munitions components made there. Also, the operations did not create as much waste and were cleaner due to the special handling procedures needed when working with the shock and heat sensitive primary explosives. Load Line 12 recrystallized ammonium nitrate for explosives, fertilizers and aluminum chloride. It also was periodically used for demilitarization projects involving the melt-out of TNT and other secondary explosives from the bombs and projectiles. As in the other melt pour lines, these activities resulted in pink water being released to the soils, ditches, and ponds in and around the line. Other types of contaminated sites associated with past industrial activities at RVAAP include landfills, testing facilities, dumps, munitions burial sites, a pistol range, storage facilities, a scrap yard, and decontamination buildings. Although not present at every one of these sites, the contaminants of potential concerns include primary and secondary explosives, propellants, heavy metals, volatile and semi-volatile organics, PCBs and pesticides. Industrial activities ceased in 1992 when RVAAP was declared excess.

In 1989 RVAAP started the IRP. At present there are 30 active sites of which 10 are under performance-based contracts (PBCs). The sites were given a Relative Risk Site Evaluation (RRSE) rating of high, medium, or low based on the results of limited sampling in 1996 and 1998. Sampling of the soil, sediment, surface water, and groundwater at many of the high relative risk sites and some of the medium risk sites has been performed as part of the remedial investigation process.

Well sampling conducted by the Ohio EPA in 1997 and 1998 showed no off-post explosives contamination of residential wells. A Phase I RI examined 11 high priority sites identified as RVAAP-04, -05, -08, -09, -10, -11, -12, -13, -18, -19, and -29. A final RI report was issued in 1997. The study concluded that Load Lines 1-4 and 12 appeared to be the most contaminated and contaminants were probably not migrating far from the sources in significant concentrations. The report recommended further study.

For the most part, results from more recent studies have confirmed that explosives and heavy metals are the most common contaminants and are generally located immediately around buildings in the load lines and in the ditches and ponds draining the sites. Less common contaminants include PCBs, SVOCs and propellants. These same contaminants have been detected in the water and sediment within the storm and sanitary sewers. Installation monitoring wells located to the southeast of Load Line 2 near the perimeter have shown trace amounts of explosives. Surface water and sediment samples do not indicate that significant levels of contaminants are migrating from the installation.

RI data are also available for some of the other sites used to support the main production activities. Limited data available from earlier efforts again show explosives and heavy metals to be the principal contaminants of potential concern at sites used to burn, dump, or bury explosive waste from the Load Lines. These contaminants are found in the soils at Winklepeck Burning Grounds, Open Demolition Area 2 and Erie Burning Grounds, and areas used to detonate and burn waste explosives. Erie Burning Grounds is a high quality wetland. Explosives, metals and some organics have been detected in the surface water and sediment at the site and downstream of the site.

Cleanup Exit Strategy

The Army will complete restoration of the sites at RVAAP under the PBCs. In March 2005 all high relative risk sites were placed under contract. The PBC awarded in FY2008 is intended to achieve RIP/RC at the remaining medium relative risk and low relative risk sites. Long-term management will be performed on both a facility-wide and a site-by-site basis. No Further Action at all the sites will be achieved by ensuring there will not be any unacceptable risk for the proposed future use by the OHARNG.

IRP Contamination Assessment

See individual sites for specific strategies.

IRP Previous Studies

	Title	Author	Date
1978			
	Installation Assessment of Ravenna Army Ammunition Plant. Report No. 132	USATHAMA	NOV-1978
1989			
	Ravenna Army Ammunition Plant RCRA Facility Assessment Draft RR/VSI Report	Jacobs Engineering Group, Inc	OCT-1989
	Hazardous Waste Management Study No. 37-26-0442-84: Phase 2 of AMC Open Burning/Open Detonation Groundwater Evaluation	USAEHA	OCT-1989
1995			
	Installation Action Plan RVAAP- FY 1995	Mason and Hanger Corp.	JAN-1995
1996			
	Facility-Wide Safety and Health Plan	SAIC	FEB-1996
	Preliminary Assessment for the Ravenna Army Ammunition Plant (RVAAP)	SAIC	FEB-1996
	Preliminary Assessment for the Characterization of Areas of Contamination	SAIC	FEB-1996
	Installation Action Plan RVAAP- FY 1996	Mason and Hanger Corp.	MAR-1996
	Action Plan for the Ravenna Army Ammunition Plant	SAIC	MAR-1996
	Facility-Wide Sampling and Analysis Plan for the Ravenna Army Ammunition Plant	SAIC	APR-1996
	Phase 1 Remedial Investigation Site Safety and Health Plan Addendum for High Priority Areas of Concern for RVAAP	SAIC	JUL-1996
	Phase 1 Remedial Investigation Sampling and Analysis Plan Addendum for High Priority Areas of Concern for RVAAP	SAIC	JUL-1996
	Final Facility-Wide Sampling and Analysis Plan Amendment No., SAIC, 8-Jul	SAIC	AUG-1996
	Interim Measures Plan for the Open Detonation (OD) Grounds Hazardous Waste Treatment Unit	SAIC	AUG-1996
	Installation Restoration Program (IRP) Management Plan	USAEC	DEC-1996
1997			
	Public Meeting Briefing - Phase I RI of High Priority sites at the RVAAP	USACE	SEP-1997
1998			
	Quality Control Plan for the phase II RI for Winklepeck Burning Grounds at RVAAP	USACE	JAN-1998
	Installation Action Plan RVAAP- FY 1998	Mason and Hanger Corp.	FEB-1998
	Sampling and Analysis Plan Addendum for the Phase II Remedial Investigation of the Winklepeck Burning Grounds (AOC-05) and Determination of Facility-Wide Background at RVAAP	SAIC	APR-1998
	Sampling and Analysis Plan Addendum for the Phase II Remedial Investigation of the Winklepeck Burning Grounds (AOC-05) and Determination of Facility-Wide Background at RVAAP	SAIC	APR-1998
	Site Safety and Health Plan Addendum for the Phase II Remedial Investigation of the Winklepeck Burning Grounds (AOC-05) and Determination of Facility -Wide Background at RVAAP	SAIC	APR-1998

IRP Previous Studies

	Title	Author	Date
1998			
	Sampling and Analysis Plan Addendum for the Groundwater Investigation of the Former Ramsdell Quarry Landfill (AOC-01)	SAIC	JUN-1998
	Site Safety and Health Plan Addendum for the Groundwater Investigation of the Former Ramsdell Quarry Landfill (AOC-01) at RVAAP	SAIC	JUN-1998
1999			
	Installation Action Plan RVAAP- FY 1999	Mark Patterson	MAR-1999
	Sampling and Analysis Plan Addendum No. 1 for the Phase I Remedial Investigation of the Erie Burning Grounds (AOC-02) at RVAAP	SAIC	JUL-1999
	Sampling and Analysis Plan Addendum No. 1 for the Phase II Remedial Investigation of Load Line 1 (AOC-08) at the Ravenna Army Ammunition Plant	SAIC	AUG-1999
	Site Safety and Health Plan Addendum No. 1 for the Phase II Remedial Investigation of Load Line 1 (AOC-08) at the Ravenna Army Ammunition Plant	SAIC	AUG-1999
	Environmental Information Management Needs Assessment at RVAAP	SAIC	SEP-1999
	Sampling and Analysis Plan Addendum No. 1 for the Phase I Remedial Investigation of Demolition Area 1 (RVAAP-03)	SAIC	OCT-1999
	Site Safety and Health Plan Addendum No. 1 for the Phase I Remedial Investigation of Demolition Area #1 (AOC-03) at RVAAP	SAIC	OCT-1999
	Sampling and Analysis Plan Addendum No. 1 for the Phase 1 Remedial Investigation of the NACA Test Area (AOC-38) at the Ravenna Army Ammunition Plant	SAIC	OCT-1999
	Site Safety and Health Plan Addendum No. 1 for the Phase I Remedial Investigation of the NACA Test Area (AOC-38) at the Ravenna Army Ammunition Plant	SAIC	OCT-1999
	Scope of Work for the Interim Removal Action and Decontamination & Demolition of Building T-5301 (RVAAP-47)	MKM Engineers, Inc.	DEC-1999
2000			
	Installation Action Plan RVAAP- FY 2000	USACE	MAR-2000
	Installation Action Plan RVAAP- FY 2001	USACE	MAR-2000
	Final Report on the Groundwater Investigation of the Ramsdell Quarry Landfill (AOC-01) at RVAAP	SAIC	AUG-2000
	Site Safety and Health Plan Addendum No. 1 for the Phase II Remedial Investigation of Load Line 1 (AOC-08) at the Ravenna Army Ammunition Plant	SAIC	AUG-2000
	Installation Action Plan RVAAP- FY 2001	USACE	AUG-2000
	Sampling and Analysis Plan Addendum No. 2 for the Phase II Remedial Investigation of Load Line 1 (AOC-08) at the Ravenna Army Ammunition Plant	SAIC	SEP-2000
	Sampling and Analysis Plan Addendum No. 1 for the Winklepeck Burning Grounds (AOC-05) Feasibility Study at RVAAP	SAIC	OCT-2000
	Site Safety and Health Plan Addendum No. 1 for the Winklepeck Burning Grounds (AOC-05) Feasibility Study at RVAAP	SAIC	OCT-2000

IRP Previous Studies

	Title	Author	Date
2000			
	Installation Action Plan RVAAP- FY 2001	USACE	DEC-2000
2001			
	Sampling and Analysis Plan Addendum for the Remedial Investigation of Load Line 11 (RVAAP-44)	MKM Engineers, Inc.	JAN-2001
	Facility-Wide Sampling and Analysis Plan for Environmental Investigations	SAIC	MAR-2001
	Technical Memorandum Human Health and Ecological Risk Assessment Approach for the Load Line 1 (AOC-08) and Load Line 12 (AOC-12) Phase II Remedial Investigations at RVAAP	SAIC	MAR-2001
	Summary and Technical Assumptions for Area, Volume, and Cost Estimations for the Winklepeck Burning Grounds (AOC-05) Strategic Plan Ravenna Army Ammunition Plant	SAIC	MAR-2001
	Phase II Remedial Investigation Report for the Winklepeck Burning Ground (AOC-05) at RVAAP	SAIC	APR-2001
	Final Sampling & Analysis Plan Addendum for the Remedial Landfill Design/Removal Action at the Sand Creek Disposal Road Landfill (AOC-34)	MKM Engineers, Inc.	APR-2001
	Final Site-specific Safety and Health Plan for the Remedial Design/Removal Action at the Sand Creek Disposal Road Landfill (AOC-34)	MKM Engineers, Inc.	APR-2001
	Final Workplan for the Remedial Design/Removal Action at Sand Creek Disposal Road Landfill (AOC-34)	MKM Engineers, Inc.	APR-2001
	Final Sampling & Analysis Plan Addendum for the Remedial Design/Removal Action at the Paris-Windham Road Dump (AOC-51)	MKM Engineers, Inc.	APR-2001
	Final Site-Specific Safety and Health Plan for the Remedial Design/Removal Action at the Paris Windham Road Dump (AOC-51)	MKM Engineers, Inc.	APR-2001
	Final Work Plan for the Remedial Design/Removal Action at the Paris-Windham Road Dump (AOC-51)	MKM Engineers, Inc.	APR-2001
	Final Work Plan for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC 29)	MKM Engineers, Inc.	JUN-2001
	Final Sampling and Analysis Plan Addendum for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC-29)	MKM Engineers, Inc.	JUL-2001
	Final Site-Specific Safety and Health Plan for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC-29)	MKM Engineers, Inc.	JUL-2001
	Final Site-Specific Safety and Health Plan for the Remedial Investigation at Central Burn Pits (AOC-49) at the Ravenna	MKM Engineers, Inc.	AUG-2001
	Final Work Plan for the Remedial Investigation at Central Burn Pits (AOC-49) at the Ravenna Army Ammunition Plant	MKM Engineers, Inc.	AUG-2001
	Groundwater Assessment Plan for the Ramsdell Quarry Landfill (AOC-01)	MKM Engineers, Inc.	SEP-2001
	Geophysical Survey Results Suspected Mustard Agent Burial Site RVAAP	SAIC	OCT-2001
	Phase I Remedial Investigation Report for the Erie Burning Grounds (AOC-02) at RVAAP	SAIC	DEC-2001
	Phase I Remedial Investigation Report for the Demolition Area #1 (AOC-03) at RVAAP	SAIC	DEC-2001

IRP Previous Studies

	Title	Author	Date
2001			
	Final Work Plan for the Remedial Design/Removal Action at the Sand Creek Disposal Road Landfill (AOC-34)	SAIC	DEC-2001
	Phase 1 Remedial Investigation Report for NACA Test Area (AOC-38) at the Ravenna Army Ammunition Plant	SAIC	DEC-2001
2002			
	Installation Action Plan RVAAP- FY 2002	Mark Patterson	FEB-2002
	Sampling and Analysis Plan Addendum No. 3 for the Biological Measurements at Winklepeck Burning Grounds (AOC-05) at the Ravenna Army Ammunition Plant	SAIC	MAY-2002
	Work Plan and Sampling and Analysis Plan Addenda for the Phase II Remedial Investigation of Demolition Area 2	SpecPro	JUN-2002
	Work Plan and Sampling and Analysis Plan Addenda for the Phase II Remedial Investigation of Demolition Area 2	SpecPro	JUN-2002
	Investigation-Derived Waste Characterization and Disposal Plan	SpecPro	NOV-2002
	Installation Action Plan RVAAP- FY 2003	Mark Patterson	DEC-2002
	Phase II Remedial Investigation Report for the Load Line 1 (RVAAP-08) at RVAAP	SAIC	DEC-2002
	Groundwater Monitoring Well Installation and Groundwater Sampling at the Suspected Mustard Agent Burial Site (RVAAP-28)	SpecPro	DEC-2002
2003			
	Final Compliance Monitoring Program for the Open Demolition Area #2 (RVAAP-04)	MKM Engineers, Inc.	JAN-2003
	Report on the Biological Field-Truthing Effort at Winklepeck Burning Grounds (AOC-05)	SAIC	MAR-2003
	RVAAP Applied Dried Paints at Load Lines 6 (AOC-33) and 9 (AOC-42) GCMS PCB Results	MKM Engineers, Inc.	APR-2003
	RVAAP Facility Wide Ecological Risk Work Plan	USACE	APR-2003
	Phase II Remedial Investigation Report for the Load Line 1(RVAAP-08) at RVAAP	SAIC	APR-2003
	Installation Action Plan RVAAP- FY 2004	Mark Patterson	JUN-2003
	Phase II Remedial Investigation Report for the Load Line 1 (RVAAP-08) at RVAAP	SAIC	JUN-2003
	Phase II Remedial Investigation Report for the Load Line 1 (RVAAP-08) at RVAAP	SAIC	JUN-2003
	Safety and Health Plan for the Remedial Investigation of Load Lines 6 (RVAAP-33) and 9 (RVAAP-42)	MKM Engineers, Inc.	JUL-2003
	Community Relations Plan	USACE	SEP-2003
	Safety and Health Plan for the Remedial Investigation of Load Lines 6 (RVAAP-33) and 9 (RVAAP-42)	MKM Engineers, Inc.	SEP-2003
	Sampling and Analysis Plan Addendum for the Remedial Investigation of Load Line #6 (RVAAP-33)	MKM Engineers, Inc.	SEP-2003
	Sampling and Analysis Plan Addendum for the Remedial Investigation of Load Line #9 (RVAAP-42)	MKM Engineers, Inc.	SEP-2003
	Sampling and Analysis Plan Addendum No. 1 for the Phase I Remedial Investigation of Ramsdell Quarry Landfill (AOC-01) at RVAAP	SAIC	OCT-2003
	Site Safety and Health Plan Addendum No. 1 for the Phase I Remedial Investigation of Ramsdell Quarry Landfill	SAIC	OCT-2003

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	Title	Author	Date
2003			
	Sampling and Analysis Plan Addendum No 1 for the Phase II Remedial Investigation of the Erie Burning Grounds (RVAAP-02)	SAIC	OCT-2003
	Sampling and Analysis Plan Addendum No. 1 for the Phase II Remedial Investigation of the Erie Burning Grounds (AOC-02) at RVAAP	SAIC	OCT-2003
	Final Work Plan and Sampling and Analysis Plan Addenda for the Phase I/Phase II Remedial Investigation of the Fuze and Booster Quarry Landfill/Ponds at RVAAP	SpecPro	OCT-2003
	Sand Creek Dump (AOC-34) Cleanup Project Weekly Reports August - October 2003	MKM Engineers, Inc.	OCT-2003
	Paris-Windham Dump (AOC-51) Clean Up Project Weekly Reports, Photos, Misc Data April-October 2003	MKM Engineers, Inc.	OCT-2003
	Decon-Demo Load Lines 6 (AOC-33) and 9 (AOC-42) Misc Corres, Reports, Photos at RVAAP	Unknown	DEC-2003
2004			
	OE/UXO Removal & Interim Removal Action Report For The Open Demolition Area #1 (RVAAP-03)	MKM Engineers, Inc.	MAR-2004
	Remedial Design/Removal Action Plan for Sand Creek Dump (AOC-34)	MKM Engineers, Inc.	MAR-2004
	Final Report Interim Removal Action at Load Line 11 (AOC-44)	MKM Engineers, Inc.	MAR-2004
	Interim Removal Action Report for Load Line #11 (AOC-44) Vol 1 Main Text - Appendices A-G	MKM Engineers, Inc.	MAR-2004
	Interim Removal Action Report for Load Line #11 (AOC-44) Vol 2 Appendices H-I	MKM Engineers, Inc.	MAR-2004
	Final Report for Remedial Design/Removal Action at Paris-Windham Road Dump (AOC-51) at Ravenna Army Ammunition Plant	MKM Engineers, Inc.	MAR-2004
	Installation Action Plan RVAAP- FY 2005	Mark Patterson	MAY-2004
	Facility-Wide Biological and Water Quality Study 2003	USACE	JUN-2004
	Supplemental Baseline Human Health Risk Assessment	Shaw/SAIC	JUL-2004
	Phase II Remedial Investigation Report for the Load Line 2 (AOC-09) at the Ravenna Army Ammunition Plant, Volume 1 - Main Text	Shaw/SAIC	JUL-2004
	Phase II Remedial Investigation Report for Load Line 3 (AOC-10) at the Ravenna Army Ammunition Plant Volume 1 - Main Text	Shaw/SAIC	JUL-2004
	Phase II Remedial Investigation Report for Load Line 3 (AOC-10) at the Ravenna Army Ammunition Plant Volume 2 - Appendices A-S	Shaw/SAIC	JUL-2004
	Work Plan for the Phase I MEC Density Survey of Winklepeck Burning Grounds (AOC-05)	USATCES/MK	AUG-2004
	Phase II Remedial Investigation Report for Load Line 4 (AOC-11) at the Ravenna Army Ammunition Plant Volume 1 - Main Text	Shaw/SAIC	SEP-2004
	Phase II Remedial Investigation Report for Load Line 4 (AOC-11) at the Ravenna Army Ammunition Plant Volume 2 - Appendices A-S	Shaw/SAIC	SEP-2004
	Facility-Wide Groundwater Monitoring Program Plan, Portage	Shaw	SEP-2004
	Proposed Remedial Goal Options for Soil at Load Lines 1 (AOC-08), 2 (AOC-09), 3 (AOC-10), and 4 (AOC-11) at	Shaw	SEP-2004

IRP Previous Studies

	Title	Author	Date
2004			
	RVAAP		
	Sampling and Analysis Plan for the Data Gap Analysis and Additional Sampling and Security, Emergency Response and Contingency Plan and Safety, Health and Emergency Response Plan for the Remediation of Soils at Load Lines 1 (AOC-08), 2 (AOC-09), 3 (AOC-10), and 4 (AOC-11) at RVAAP	Shaw	OCT-2004
	Final Sampling and Analysis Plan Addendum for the Characterization of 14 RVAAP AOCs at RVAAP	MKM Engineers, Inc.	OCT-2004
	Sampling and Analysis Plan for the Data Gap Analysis and Additional Sampling in Support of the Remediation of Soils at Load Lines 1 (AOC-08), 2 (AOC-09), 3 (AOC-10), and 4 (AOC-11) at RVAAP	Shaw	OCT-2004
	Final Site Safety and Health Plan Addendum for the Characterization of 14 RVAAP AOCs	MKM Engineers, Inc.	OCT-2004
2005			
	Final November 2004 Sampling Completion Report for Load Lines 1 - 4	Shaw	FEB-2005
	Focused Feasibility Study for the Winklepeck Burning Grounds (AOC-05) at RVAAP	SAIC	FEB-2005
	Phase I MEC Density Survey After Action Report At Winklepeck Burning Grounds (AOC-05)	MKM Engineers, Inc.	MAR-2005
	Phase III Remedial Investigation Report for the Winklepeck Burning Grounds (AOC-05) at RVAAP	SAIC	MAR-2005
	Phase III Remedial Investigation Report for the Winklepeck Burning Grounds (AOC-05) at RVAAP	USACE	MAR-2005
	Final Work Plan for Phase II MEC Clearance and Munitions Response at Winklepeck Burning Grounds (AOC-05)	MKM Engineers, Inc.	MAR-2005
	Final Site Safety and Health Plan for the Phase II MEC Clearance and Munitions Response at Winklepeck Burning Grounds (AOC-05)	MKM Engineers, Inc.	MAR-2005
	Winklepeck Burning Grounds AutoCAD Figures for Phase I After Action Report	MKM Engineers, Inc.	MAR-2005
	Focused Feasibility Study for the Remediation of Soils at Load Lines 1 through 4 (AOC-08) (AOC-09) (AOC-10) (AOC-11) at the RVAAP	Shaw	MAY-2005
	Final Focused Feasibility Study for the Remediation of Soils at LLs 1-4, RVAAP	Shaw	MAY-2005
	Focused Feasibility Study for the Remediation of Soils at Load Lines 1 through 4 (AOC-08) (AOC-09) (AOC-10) (AOC-11) at the RVAAP	Shaw	MAY-2005
	Phase I Remedial Investigation December 2004 Follow-On Groundwater Sampling at the Ramsdell Quarry Landfill (AOC-01)	SAIC	JUN-2005
	Final Report on the Groundwater Monitoring Well Installation and Groundwater Sampling at the Suspected Mustard Agent Burial Site (RVAAP AOC-28) - Main Report and Appendices A-H	SpecPro	JUL-2005
	Installation Action Plan RVAAP- FY 2006-Non Public Version	Mark Patterson	JUL-2005
	Final Report on the Groundwater Monitoring Well Installation and Groundwater Sampling at the Suspected Mustard Agent Burial Site (RVAAP AOC-28)	SpecPro	JUL-2005

IRP Previous Studies

2005

Title	Author	Date
Report on the Groundwater Monitoring Well Installation and Groundwater Sampling at the Suspected Mustard Agent Burial Site (RVAAP AOC-28)	SpecPro	JUL-2005
Final Proposed Plan for the Remediation of Soils at LL1-4 (RVAAP-08, RVAAP-09, RVAAP-10, RVAAP-11)	Shaw	JUL-2005
Proposed Plan for the Remediation of Soils at LL1-4 (RVAAP-08, RVAAP-09, RVAAP-10, RVAAP-11)	Shaw	JUL-2005
Final Report on the Groundwater Monitoring Well Installation and Groundwater Sampling at the Suspected Mustard Agent Burial Site (RVAAP AOC-28)	SpecPro	JUL-2005
Final Report Facility Wide Groundwater Monitoring Program April 2005 Sampling Event Report - Main Report and Appendices A-D	SpecPro	AUG-2005
Final Report Facility Wide Groundwater Monitoring Program Sampling Event Report - Main Report and Appendices A-D	SpecPro	AUG-2005
Site Safety and Health Plan for the Phase I MEC Density Survey of Winklepeck Burning Grounds (AOC-05)	MKM Engineers, Inc.	AUG-2005
Final Facility Wide Groundwater Monitoring Program Report on the July 2005 Sampling Event -Vol 1- Main Report	SpecPro Inc.	AUG-2005
Final Facility Wide Groundwater Monitoring Program Report on the July 2005 Sampling Event-Vol 2-Appendices A-C	SpecPro Inc.	AUG-2005
RVAAP/Ohio EPA Cooperative Agreement (CA) Work Plans	Various	AUG-2005
Installation Action Plan RVAAP- FY 2006	Mark Patterson	SEP-2005
Final Work Plan Containing Addendums(SAP,QAPP,SSHP,UXO) for Groundwater Monitoring Well Installation and Groundwater Sampling at the Suspected Mustard Agent Burial Site (AOC-28)	SpecPro, Inc.	SEP-2005
Final Remedial Investigation Report Central Burn Pits (RVAAP-49)	SAIC/MKM	SEP-2005
Final for the Remedial Investigation at Load Line 11 (AOC-44)	MKM Engineers, Inc.	SEP-2005
Final for the Remedial Investigation at Load Line 11 (AOC-44) VOL 2	MKM Engineers, Inc.	SEP-2005
Final for the Remedial Investigation at Load Line 11 (AOC-44) VOL 3	MKM Engineers, Inc.	SEP-2005
Final for the Remedial Investigation at Load Line 11 (AOC-44) VOL 4	MKM Engineers, Inc.	SEP-2005
Final for the Remedial Investigation at Load Line 11 (AOC-44) VOL 5	MKM Engineers, Inc.	SEP-2005
Final for the Remedial Investigation at Load Line 11 (AOC-44) VOL 1	MKM Engineers, Inc.	SEP-2005
Final for the Remedial Investigation at Load Line 11 (AOC-44) VOL 2	MKM Engineers, Inc.	SEP-2005
Phase I Remedial Investigation Report for the Ramsdell Quarry Landfill at RVAAP	SAIC	SEP-2005
Phase I Remedial Investigation Report for the Ramsdell Quarry Landfill (AOC-01) at RVAAP	SAIC	SEP-2005
Final for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC 29) Vol 1	MKM Engineers, Inc.	SEP-2005
Final for the Phase II Remedial Investigation at the	MKM Engineers, Inc.	SEP-2005

IRP Previous Studies

2005

Title	Author	Date
Upper and Lower Cobbs Pond (AOC 29) Vol 2		
Final for the Phase II Remedial Investigation at the Upper and Lower Cobbs Pond (AOC 29) Vol 3	MKM Engineers, Inc.	SEP-2005
Final Phase II Remedial Investigation Report for the Erie Burning Grounds (AOC-02) at RVAAP	SAIC	SEP-2005
Final Phase II Remedial Investigation Report for the Open Demolition Area #2 (AOC-4) Vol 2	SpecPro/SAIC	SEP-2005
Final Proposed Plan for the Winklepeck Burning Grounds	SAIC	OCT-2005
Facility-Wide Biological and Water Quality Study 2003, Part 1-Streams, Part 2-Ponds	USACE	NOV-2005
Final Phase II Remedial Investigation Supplemental Report for Load Line 12 (AOC-12)	SAIC	NOV-2005
Final Phase II Remedial Investigation Supplemental Report for Load Line 12 at RVAAP	SAIC	NOV-2005
Final Sampling and Analysis Plan Addendum No. 1 Supplemental Phase II Remedial Investigations (RVAAP-04) ODA#2, (RVAAP-16) F&BQL/P, and (RVAAP-49) CBPs	SAIC	NOV-2005
Final Report Phase I/II Remedial Investigation of the Fuze & Booster Quarry Landfill/Ponds (RVAAP-16) Volume One - Main Report	SpecPro/SAIC	NOV-2005
Final Report Phase I/II Remedial Investigation of the Fuze & Booster Quarry Landfill/Ponds (RVAAP-16) Volume Two - Appendices A-K	SpecPro/SAIC	NOV-2005
Final Facility Wide Groundwater Monitoring Program Report on the July 2005 Sampling Event-Main Report and Appendices A-C	SpecPro	NOV-2005
Final Proposed Plan for the Winklepeck Burning Grounds	SAIC	DEC-2005
Phase II MEC Clearance and Munitions Response at Winklepeck Burning Grounds (AOC-05)	MKM Engineers, Inc.	DEC-2005
Phase II MEC Clearance and Munitions Response at Winklepeck Burning Grounds (AOC-05)	MKM Engineers, Inc.	DEC-2005

2006

Sampling and Analysis Plan Addendum No. 2 for the Winklepeck Burning Grounds Feasibility Study at RVAAP	SAIC	FEB-2006
Final FS for Ramsdell Quarry Landfill	SAIC	JUL-2006
Final FS for Load Line 12	SAIC	JUL-2006
Final FS for Fuze-Booster Quarry Pond Landfill	SAIC	JUL-2006
Facility-Wide Ground Water Sampling Event #1	SpecPro	AUG-2006
Revised ECO Field Truthing Report	SAIC	SEP-2006
Final RI Addendum for ODA#2	SAIC	SEP-2006
Final RI Addendum for Erie Burning Grounds	SAIC	SEP-2006
Final P&A After Action Report for Ramsdell Quarry Landfill	SAIC	SEP-2006
Facility-Wide Ground Water Sampling Event #2	SpecPro	OCT-2006

2007

Final EE/CA for Central Burn Pits	SAIC	JAN-2007
Final Structural Analysis report for Load Lines 1 through 4	Shaw	JAN-2007

IRP Previous Studies

2007

Title	Author	Date
Final Proposed Plan for Soil and Dry Sediment at RVAAP--2 Erie Burning Grounds	SAIC	FEB-2007
Facility-Wide Ground Water Sampling Event #3	SpecPro	MAR-2007
Final Proposed Plan for Soil and Dry Sediment at RVAAP-12 Load Line 12	SAIC	MAR-2007
Final Proposed Plan for Soil and Dry Sediment at RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	SAIC	MAR-2007
Final Proposed Plan for Soil and Dry Sediment at RVAAP-01 Ramsdell Quarry Landfill	SAIC	MAR-2007
Final Facility Wide Groundwater Monitoring Program Report on the October 2006 Sample Event	SpecPro, Inc.	MAR-2007
Final Report of the Characterization of 14 Areasof Concern	MKM Engineers, Inc.	MAR-2007
Final Facility Wide Groundwater Monitoring Program Report on the July 2006 Sampling Event No. 3	SpecPro, Inc.	MAR-2007
Final Remedial Action Work Plan Remediation of Soils at RVAAP- 08, 09, 10, and 11 Load Lines 1- 4	Shaw Environmental	APR-2007
Final Work Plan for the DLA Storage Area Reclamation-Route 80 Tank Farm and East Ore Yard Culvert Replacement	SpecPro, Inc.	APR-2007
Final Facility Wide Groundwater Monitoring Program Annual Report for 2006	SpecPro, Inc.	MAY-2007
Final Record of Decision issued for signatures	Shaw	JUN-2007
Final Action Memorandum for RVAAP-49 Central Burn Pits	SAIC	JUN-2007
Final Facility-Wide Groundwater Monitoring Program Report on the January 2007 Sampling Event (#1)	SpecPro, Inc.	JUL-2007
Final Stormwater Pollution Prevention Plan for the Remediation of Soils at RVAAP- 08, 09, 10, and 11 Load Lines 1- 4	Shaw Environmental	JUL-2007
Final Sampling and Analysis Plan and the Site Safety and Health Plan for the Exposed Soil Sampling and Characterization After Slab and Foundation Removals at RVAAP-39 Load Line 5, RVAAP-40 Load Line 7, RVAAP-41 Load Line 8, and RVAAP-43 Load Line 10	United States Army Corps of Engineers	AUG-2007
Final Construction Completion Report on the Munitions Response for the Demolition of RVAAP-41 and RVAAP-43, Load Lines 8 and 10	PIKA International, Inc.	AUG-2007
Final Report for the Phase I Remedial Investigation of RVAAP-33 Load Line 6	MKM Engineers, Inc.	AUG-2007
Final Removal Action Work Plan for RVAAP-49 Central Burn Pits	SAIC	AUG-2007
Final Record of Decision for Soil and Dry Sediment at the RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	SAIC	SEP-2007
Final Record of Decision for Soil and Dry Sediment at the RVAAP-02 Erie Burning Grounds	SAIC	SEP-2007
Final Record of Decision for Soil and Dry Sediment at the RVAAP-02 Open Demolition Area #2	SAIC	SEP-2007
Final Report for the Phase I Remedial Investigation at RVAAP-42 Load Line 9, Volume 1	MKM Engineers, Inc.	OCT-2007
Draft Proposal to Update the Facility-Wide Groundwater Monitoring Program	United States Army Corp of Engineers	OCT-2007
Draft Project Completion Report for the DLA Storage Reclamation-Route 80 Tank Farm and East Ore Yard	SpecPro Inc.	NOV-2007

IRP Previous Studies

	Title	Author	Date
2007			
	Culvert Replacement		
	Final Report on the Disposal of Munitions and Explosives of Concern (MEC), Discarded Military Munitions (DMM) and Munitions Constituents (MC)	PIKA International, Inc.	NOV-2007
	Final Work Plan for the Geophysical Investigation of the suspected RVAAP-28 Mustard Agent Burial Site	Environmental Quality Management/John M. Miller, John Vanderlaan	NOV-2007
	Preliminary Draft Remedial Investigation Addunedum No. 1 for the RVAAP-49 Central Burn Pits	SAIC	NOV-2007
	Final Facility-Wide Groundwater Monitoring Program April 2007 Sampling Event	Environmental Quality Management, Inc.	NOV-2007
	Draft Facility-Wide Groundwater Monitoring Program Annual Report for 2007	Environmental Quality Management, Inc.	DEC-2007
	Final Project completion Report for the Munitions Response for Demolition of Load Lines 5, 7, Building 1039, and Transite Removal at Building T-1604	Lakeshore Engineering Services, Inc.	DEC-2007
2008			
	Final Propellant Removal Summary Report for MEC Support for RVAAP- 08 Load Line 1	Shaw Environmental, Inc.	JAN-2008

RAVENNA ARMY AMMUNITION PLANT

Non-BRAC Excess

Installation Restoration Program

Site Descriptions

Site ID: PBC at Ravenna
Site Name: PBC (2005)

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals

Media of Concern: Sediment, Soil

Phases	Start	End
PA	200308	200308
RA(C)	200310	200809
LTM	200810	201009

RIP Date: N/A

RC Date: 200809

SITE DESCRIPTION

This site carries funding requirements for USACE oversight of the 2005 Performance Based Contract (PBC). PBC 2005 was awarded to Science Applications International Corporation (SAIC) and will expire in September 2010. The involved sites include RVAAP-01, RVAAP-02, RVAAP-04, RVAAP-12, RVAAP-16 and RVAAP-49.

PBC 2003 was awarded to Shaw Environmental and expired in September 2008. The sites involved included RVAAP-08, RVAAP-09, RVAAP-10, and RVAAP-11 (Load Lines 1, 2, 3, and 4). No costs are carried for this PBC.

A new PBC awarded in 2008 has a projected expiration of September 2013. This PBC includes RVAAP-06, RVAAP-13, RVAAP-19, RVAAP-29, RVAAP-32, RVAAP-33, RVAAP-38, RVAAP-39, RVAAP-40, RVAAP-41, RVAAP-42, RVAAP-43, RVAAP-44, RVAAP-45, RVAAP-46, RVAAP-48, and RVAAP-50. Oversight costs and Surface Water Investigations were carried in RVAAP-06 until the PBC was awarded.

CLEANUP/EXIT STRATEGY

CTC assumptions include LTM of 1,574 hours over six years (carried in Administrative Land Use Controls) for USACE oversight of the PBC 2005 contract.

Site ID: RVAAP-01
Site Name: RAMSDELL QUARRY LANDFILL

STATUS

Parcel: Ramsdell Landfill (15 acres)

Regulatory Driver: CERCLA
RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Semi-volatiles

Media of Concern: Groundwater, Soil

Phases	Start	End
PA	198802	198804
SI	198906	198906
RI/FS	200306	201009
RD	200803	201009
RA(C)	200803	201109

RIP Date: N/A

RC Date: 201109

SITE DESCRIPTION

RVAAP-01 (Ramsdell Quarry Landfill), located in the eastern section of the RVAAP facility, is a 10 acre unlined landfill, with a depth of 18 to 20 feet, in part of an abandoned quarry. The quarry is excavated to the underlying Sharon Sandstone/Conglomerate. The depth of the soil in the remaining portion of the quarry varies from none to several feet. A pool of water is intermittently present at the bottom of the quarry at approximately 35 feet below ground surface (BGS).

This landfill was used from 1941 to 1989. From 1946 to 1950 the site was used as a land-surface burning site to thermally destroy waste explosives from Load Line 1 and napalm bombs. From 1976 to 1989, a portion of the site was used strictly as a non-hazardous solid waste landfill. No historical information has been located for 1950 to 1976. In September 1989 the landfill ceased operation and in May 1990 closure was completed under State of Ohio solid waste regulations. Because this unit is unlined, there is a potential for releases from the landfill to surrounding soils and groundwater.

Work done by Jacobs Engineering in 1989 indicates that the landfilled material is variable domestic, commercial, industrial, and solid wastes including, but not limited to, explosives (TNT, Composition B), napalm, gasoline, acid dip liquor, annealing residue (sulfuric acid, shell casings, sodium orthosilicate, chromic acid and alkali), aluminum chloride, and inert material; however, the volume of landfilled material is unknown.

In 1988 five groundwater monitoring wells were installed around the landfill perimeter. In 2006 these wells were regulatorily decommissioned and in 1998 new wells were installed to further investigate the nature and extent of groundwater contamination at the landfill. In October 1998 a report of the findings was published.

In the fall of 2003 additional wells were installed and soil, sediment and surface water samples were taken to further determine the nature and extent of the contamination of the CERCLA portion of the quarry. The new wells are monitored on a regular basis as part of the facility-wide groundwater monitoring program. Low levels of explosives and metals have been detected in the groundwater. In February 2005 the groundwater unit was transferred from the RCRA solid waste program to CERCLA.

In April 2007 a final RI/FS was completed and approved and a ROD was subsequently drafted. Future OHARNG use will be restricted access. In 2005 a PBC was awarded to complete the investigation and any required remediation in accordance with the Defense Planning Guidance. Munitions and explosives of concern (MEC) are present at the site and will be addressed under the MMRP site RVAAP-001-R-01.

Site ID: RVAAP-01
Site Name: RAMSDELL QUARRY LANDFILL

CLEANUP/EXIT STRATEGY

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066. No other funding requirements are anticipated.

Site ID: RVAAP-03
Site Name: OPEN DEMOLITION AREA #1

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: HIGH

Phases	Start	End
PA	198802	198804
SI	198906	198906
RI/FS	199910	201109
IRA	199910	200309

RIP Date: N/A

RC Date: 201109

SITE DESCRIPTION

The RVAAP-03 (Open Demolition Area 1) of approximately 6 acres was used to thermally treat munitions by open burning and detonation. The site now consists of a circular one to 1.5 foot berm surrounding a grassed area of approximately one to 1.5 acres. The entire AOC is within the National Advisory Committee on Aeronautics (NACA) Test Area. Contaminants of Concern (COCs) include explosive compounds and metals. The 1989 report from Jacobs Engineering indicates that munition fragments including scrap metal, small arms primers, and fuses were found outside the bermed area and that the area was operational from 1941 through 1949.

In December 2001 a final Phase I RI report was completed. In July 2001 a BRAC-funded IRA involving removal of surface hot spots containing high levels of metals and explosives was completed. Site closeout documentation was initiated in FY03 and is expected to be completed in FY09.

Groundwater monitoring is being conducted under the NACA Test Area (RVAAP-38). In May 1999 this site was transferred to the NGB.

CLEANUP/EXIT STRATEGY

No funding is required.

Site ID: RVAAP-05
Site Name: WINKLEPECK BURNING GROUNDS

STATUS

Parcel: Winklepeck Burning Grounds (20 acres)

Regulatory Driver: CERCLA
RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Semi-volatiles

Media of Concern: Groundwater, Soil

Phases	Start	End
PA	198802	198804
SI	198906	198906
RI/FS	199410	201009
RD	200610	201009
RA(C)	200803	201109

RIP Date: N/A

RC Date: 201109

SITE DESCRIPTION

The Winklepeck Burning Grounds, which operated from 1948 to 1998, consists of approximately 200 acres. Prior to 1980, open-burning activities were performed in unlined pits, pads, and sometimes on the roads within the 200 acre area. The pre-1980 burning conducted on bare ground resulted in in-place abandonment of ash. Prior to 1980, RDX, antimony sulfide, Composition B, lead azide, TNT, propellants, black powder, waste oils, sludge from the load lines, domestic wastes, explosive contaminated wastes (e.g. rags, papers, cardboard) and small amounts of laboratory chemicals were burned. Munitions and explosive constituents (MEC) (primarily scrap metal) are present at the site. From 1980 to 1998, activities environmentally improved with the burning of scrap explosives, propellants and explosive-contaminated materials within raised refractory-lined trays confined to a 1.5 acre area.

In 1994 the Army notified the Ohio EPA of the intent to withdraw the Part B permit application. In 1998 the burn trays along with the 90-day storage unit, Building 1601, were closed in accordance with the Ohio EPA's guidance.

The deactivation furnace soils were transferred to this AOC under the June 2004 Director's Final Findings & Orders. The management of groundwater monitoring is under the Facility-wide Groundwater Monitoring Program (FWGWMP).

The RI/FS is complete. The proposed plan was finalized in 2006. The ROD is in preliminary draft with the Army waiting for Land Use Control language for consensual finalization by all affected Army components. The Army reviewed draft is expected to be submitted in 2008.

In 2006 the Army transferred approximately 180 acres to the NGB for construction of a Mark 19 grenade machine gun range. The remaining 20 acres contains three burn-pad locations under current contract for remediation in FY08 pending consensus of LUC language within the RD and the ROD. Following this the remaining parcel will be reassigned as contiguous with the current assigned NGB's 180 acre parcel.

During 2004 and 2005 a limited MEC environmental cleanup took place within various portions of the site. There is a Remedial Action for soil excavation planned for FY09. This was previously funded.

CLEANUP/EXIT STRATEGY

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066. No other funding requirements are anticipated.

Site ID: RVAAP-06
Site Name: C BLOCK QUARRY

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: LOW

Contaminants of Concern: Metals, Semi-volatiles, Volatiles

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA	198802	198804
SI	198906	198906
RI/FS	200408	201301
RD	201302	201308
RA(C)	201308	201407

RIP Date: N/A

RC Date: 201407

SITE DESCRIPTION

This site is an abandoned quarry of approximately 0.3 acres. For a short time during the 1950s the site was used as a disposal area for annealing process wastes (chromic acid). Liquid wastes were reported to have been dumped on the ground in the pit bottom. The site is now heavily forested with trees of one foot diameter or larger. IRP constituents of concern include metals, SVOCs, VOCs and propellants.

In May 1999 the Army executed reassignment of this site to the NGB. It is one of 14 sites investigated in FY04-FY05 to provide data for a future contract. RI/FS PBC execution is scheduled for FY08. Oversight and surface water investigation costs related to PBC 2008 are carried under this site.

CLEANUP/EXIT STRATEGY

The CTC assumptions in the RI/FS include surface water investigations and 1,914 hours over five years (carried in Administrative Land Use Controls) for USACE oversight of the 2008 PBC.

Assumptions in the RAC include:
1) One acre will be cleared and grubbed
2) 1,500 linear feet of access road will be established
3) 5,500 cubic yards of soil will be excavated
4) A nonhazardous off-site disposal of 6,188 cubic yards will be carried out
5) 18 confirmation samples and 14 disposal samples will be taken
6) Hazardous offsite disposal of 688 cubic yards will be carried out
7) A decontamination pad will be constructed and operated for 11 weeks.
8) 1,149 hours over three years (carried in Administrative Land Use Controls) will be devoted to USACE oversight of the 2008 PBC.
9) The site will reach closeout.

Site ID: RVAAP-12
Site Name: LOAD LINE 12

STATUS

Parcel: Load Line 12 (75 acres)

Regulatory Driver: CERCLA
RRSE: HIGH

Contaminants of Concern: Explosives, Metals, Nitrate/Nitrite

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA	198802	198804
SI	198906	198906
RI/FS	199910	201009
RD	200707	201009
RA(C)	200803	201109

RIP Date: N/A

RC Date: 201109

SITE DESCRIPTION

From 1941 to 1943 and 1946 to 1950, ammonium nitrate was produced at this site. From 1949 to 1993, munitions were periodically demilitarized. Building wash-down water and wastewater from the bomb melt-out facility operations was collected in a house gutter system, and flowed through a piping system to two stainless steel tanks. The first tank was used for settling, and the second tank was used for filtration. Prior to the 1980¿s, the water leaked under the building and ponded there. Wash-down water from Building F-904 was also swept out through doorways onto the ground surrounding the building. After 1981, the water was treated in the Load Line 12 wastewater treatment system, which discharged to a pond.

Contaminants of Concern at this site include explosive compounds, nitrates and heavy metals. Media of concern include soil, surface water, sediment, and groundwater. On May 1, 2000 the NPDES permit for the original pink water treatment plant servicing Building F-904 was revoked. Therefore, the treatment plant is considered closed.

In 2000, a composting pilot study was initiated which used soils contaminated with explosives from the area of Building F-904. This pilot bioremediation project was successful for remediation of the explosives.

High levels of nitrates exceeding the MCL are present in the groundwater at this site. Metals and explosives detected positive in the soil, sediment and groundwater. Metals were also detected in surface water. This is one of the six sites in the FY05 PBC.

In 2006 an RI/FS was completed for soil and dry sediment. In May 2007 a Proposed Plan (PP) was completed which recommended soil and dry sediment removal. Groundwater monitoring to track soil attenuation for the reduction of high-level nitrates in groundwater is anticipated for the RAO phase.

MEC will be addressed under MMRP site RVAAP-012-R-01.

CLEANUP/EXIT STRATEGY

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-13
Site Name: BLDG 1200-DILUTION\SETTLING POND

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: LOW

Contaminants of Concern: Explosives, Metals

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA	198802	198804
SI	198906	198906
RI/FS	200408	201301
RD	201302	201308
RA(C)	201308	201408

RIP Date: N/A

RC Date: 201408

SITE DESCRIPTION

From approximately 1941 to 1971, ammunition was demilitarized at this building by steaming munitions rounds. The steam decontamination generated pink water, which drained to a constructed ditch. The ditch discharged into a 0.5 acre sedimentation pond, and the overflow from this pond discharged into Sand Creek.

Contaminants of concern at this site are explosive compounds, propellants and metals. Media of concern include soil, surface water, sediment and groundwater.

This site was transferred to NGB in May 1999. The buildings were demolished, and all foundations and footings were removed.

This is one of 14 sites that were investigated in FY04-05 to prepare for a future contract. RI/FS PBC execution is scheduled for FY08.

CLEANUP/EXIT STRATEGY

CTC assumptions include the following items in RAC:
1)Clear and grub one acre
2)200 linear feet of access road
3)Excavation of 200 cubic yards of soil
4)Nonhazardous offsite disposal of 225 cubic yards
5)One confirmation sample and one disposal sample
6)Hazardous offsite disposal of 25 cubic yards
7)Construction and operation of a decontamination pad for one week.
8)Site Closeout

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-16
Site Name: FUZE &BOOSTER QUARRY LANDFILL/PONDS

STATUS

Parcel: 40 mm Test Range/Waterworks Ponds (58 acres)

Regulatory Driver: CERCLA
RRSE: HIGH

Contaminants of Concern: Explosives, Metals

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA	198802	198804
SI	198906	198906
RI/FS	200101	200809
RD	200708	201009
RA(C)	200803	201109

RIP Date: N/A

RC Date: 201109

SITE DESCRIPTION

This site operated from 1945 through 1993. It consists of three ponds in an abandoned rock quarry. The ponds are 20 to 30 feet deep and are separated by earthen berms. Prior to 1976, the quarry was reportedly used for open burning and as a landfill. The debris from the burning/landfill was reported to have been removed during pond construction. From 1976 to 1993, spent brine regenerate and sand filtration backwash water from Waterworks Three was discharged into the ponds. This discharge was regulated under a NPDES permit (revoked on May 1, 2000). In 1998, this site expanded to include three other shallow settling ponds and two debris piles, bringing the site to approximately 45 acres. Further actions will depend on the results of the MMRP SI, to be completed in FY08.

IRP Constituents of Concern include explosives and metals in groundwater, soil, surface water and sediment.

In 2005 an RI was completed and in 2006 an FS was completed. A ROD proposing soil and dry sediment cleanup by BRACD was submitted to the Ohio EPA and in January 2008 it was signed by the Director. A remedial action is scheduled for FY09. This is one of the six sites included in the FY05 PBC.

CLEANUP/EXIT STRATEGY

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-19
Site Name: LANDFILL NORTH OF WINKLEPECK BURN GRND

STATUS

Parcel: Landfill North of Winklepeck (5 acres)

Regulatory Driver: CERCLA
RRSE: LOW

Contaminants of Concern: Metals, Munitions constituents, Semi-volatiles

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA	198802	198804
SI	198906	198906
RI/FS	200408	201301
RD	201302	201308
RA(C)	201308	201408

RIP Date: N/A

RC Date: 201408

SITE DESCRIPTION

This approximately 2.5 acre unlined landfill located upgradient of a wetland was used for general refuse. The landfill operated from 1969 to 1976. The general appearance of the site suggests that a trench and fill method of operation was used for waste disposal. Waste types possibly associated with this landfill include booster cups, aluminum liners, municipal waste, explosive and munitions waste and ash, and scrap metal from the Winklepeck Burning Grounds (RVAAP-5).

Present Contaminants of Concern at this site include metals, munitions and explosives, and munitions constituents (MC). The IRP RI/FS was scheduled to start in FY08. The MMRP SI was completed in FY08 with the proposed MMRP RI/FS scheduled for FY09.

This is one of 14 sites investigated in FY04-05 to prepare for the 2008 PBC.

CLEANUP/EXIT STRATEGY

CTC assumptions include the following items in RAC:
1)Clear and grub four acres
2)Landfill soil cover (2.5 acres, two feet thick with six inches of foundation)
3)Landscape four acres
4)Construction and operation of a decontamination pad for eight weeks.
5)Site Closeout

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-28
Site Name: MUSTARD AGENT BURIAL SITE

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: LOW

Contaminants of Concern: Chemical weapon munitions/Chemical agent

Media of Concern: Groundwater, Soil

Phases	Start	End
PA	198802	198804
SI	198906	198906
RI/FS	200306	201009

RIP Date: N/A

RC Date: 201009

SITE DESCRIPTION

This unit of 15 by 18 feet is a possible mustard agent burial site. In 1969, records indicate that an Explosive Ordnance Disposal Unit excavated a suspected mustard agent burial site near the west end of the NACA runway. Recovered from the site in 1969 were one 50 gallon drum and seven rusty canisters. All recovered items were empty, and no contamination was discovered.

The suspected area presently is marked by reflective Seibert stakes. In 1998 two non-intrusive geophysical surveys, EM-31, and EM-61, were completed at the site. The two surveys identified the demarcated area with positive metallic responses. Some, if not all, responses related to cultural features at or near the surface. Surface soil samples collected in 1998 contained no thiodiglycol (mustard breakdown product). The technical survey disturbed soil or numerous buried metallic objects that would clearly delineate a formal burial site.

In 2004, groundwater samples collected to test for mustard and mustard breakdown products further confirmed that there were no mustard or mustard breakdown products. Groundwater monitoring is ongoing. In May 1999 the site was transferred from the US Army to the NGB land steward oversight.

In 2006, additional wells installed and sampled for mustard agent and associated breakdown by-products. The chemical analysis reported no detections of mustard agent or the latent by-products.

A FY08 second suspected area investigation, suggested by a member of the public, at the end of the NACA runway detected unidentified anomalies.

This site is located within operational range area, and therefore it is ineligible for MMRP.

CLEANUP/EXIT STRATEGY

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-29
Site Name: UPPER AND LOWER COBB PONDS

STATUS

Parcel: Cobbs Ponds (9 acres)

Regulatory Driver: CERCLA
RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals

Media of Concern: Groundwater, Sediment, Surface Water

Phases	Start	End
PA	198802	198804
SI	198906	198906
RI/FS	200101	201409

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

This site is comprised of approximately 5 acres at Upper Cobbs Pond and 4 acres at Lower Cobbs Pond. These are unlined ponds that contain abundant fish and wildlife. A ponded area known as "a backwater area" is located south of Upper Cobbs Pond. This area of about one acre was created by beaver activity and was not present during operations.

From 1941 to 1971 the Upper and Lower Cobbs ponds were used as sedimentation basins for Load Line 12 & 3 waste water effluent and stormwater runoff. The Cobbs Pond complex received wastewater effluent from Load Line 3 (RVAAP-10) and Load Line 12 (RVAAP-12). Waste types associated with this site include TNT, RDX, HMX, Composition B, lead, chromium, mercury, and aluminum chloride.

In May 1999 this site was transferred from the US Army to the NGB.

The RI will be initiated in FY08.

CLEANUP/EXIT STRATEGY

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-32
Site Name: 40 MM FIRING RANGE

STATUS

Parcel: 40 mm Test Range/Waterworks Ponds (58 acres)

Regulatory Driver: CERCLA
RRSE: MEDIUM

Contaminants of Concern: Metals, Munitions and explosives of concern

Media of Concern: Soil

Phases	Start	End
PA	199407	199602
SI	199607	199612
RI/FS	200409	201409

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

During the late 1960s and early 1970s this site of approximately two acres was used as a test firing range for 40mm projectiles. Former workers at RVAAP reported that from 1969 to 1971the site was a test firing range for munitions. There is no original file documentation for the operation. UXO is suspected at the site.

The site is partially covered with pole timber. Soil samples collected by USACHPPM in 1996 detected arsenic and cadmium above the RRSE screening concentrations.

In the fall of 2003 additional samples were collected. This site will be included in PBC 2008.

CLEANUP/EXIT STRATEGY

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-33
Site Name: LOAD LINE 6

STATUS

Parcel: Load Line 6 (43 acres)

Regulatory Driver: CERCLA
RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA	199407	199602
SI	199407	199901
RI/FS	200207	201301
RD	201302	201308
RA(C)	201308	201408

RIP Date: N/A

RC Date: 201408

SITE DESCRIPTION

This site operated primarily as a fuse assembly line from 1941 to 1945, when it was deactivated. In 1950 the Firestone Defense Products Division became a tenant. In the late 1980s, Firestone sold its Defense Products Division to Physics International. Three years later Physics International became a subsidiary of Olin Corporation. Olin remained as the tenant until closure in early 1993.

Throughout the history of Load Line 6's tenant occupancy the work regimen remained the same. Former workers at RVAAP reported that Load Line 6 (LL6) was a security classified experimental test facility for munitions. Shaped charges were constructed and tested under contract with the Department of Defense. The site consisted of a pond (underwater test chamber), two above ground test-firing chambers, and several buildings covering approximately 45 acres. There is no original file documentation for this site.

The contaminants of potential concern are explosives and metals.

In July 2006 the demolition of all LL6 buildings was completed. The test chamber foundation and the concrete blocks around the test pond remain at the site. In August 2007 the Final Report for the Phase I (SI) Remedial Investigation of Load Line 6 was completed. The Phase II RI was scheduled for FY08. This investigation will determine whether Land Use Controls (LUCs) are needed. The MMRP SI, completed in FY08, recommends MC cleanup under IRP and MEC cleanup under MMRP. The MMRP RI/FS is scheduled to begin in FY09 with programmed LTM.

CLEANUP/EXIT STRATEGY

CTC assumptions include the following items in RAC:
1)Clear and grub one acre
2)500 linear feet of access road
3)Excavation of 2,000 cubic yards of soil
4)Nonhazardous offsite disposal of 2,250 cubic yards
5)Nine confirmation samples and five disposal samples
6)Hazardous offsite disposal of 250 cubic yards
7)Construction and operation of a decontamination pad for four weeks.
8)Site Closeout

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-34
Site Name: SAND CREEK DISPOSAL ROAD LANDFILL

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: LOW

Contaminants of Concern: Metals, Semi-volatiles

Media of Concern: Sediment, Soil, Surface Water

Phases	Start	End
PA	199407	199602
SI	199407	199906
RI/FS	200201	200208
RA(C)	200209	200409
LTM	200410	204409

RIP Date: N/A

RC Date: 200409

SITE DESCRIPTION

The site of approximately 2.7 acres is located adjacent to Sand Creek. Former workers at RVAAP reported that the site was an open dump for concrete, wood, asbestos debris, lab bottles, 55-gallon drums and fluorescent light tubes. Debris is at the surface, but covered by vegetation. The exact dates of operation of this site are unknown, but it is believed to have been around the 1950s.

Sediment and surface water samples indicated metals and SVOCs were leaching into Sand Creek, a State Resource Water.

In May 1999 this site was transferred to the NGB. In a report submitted in April 2004 the IRA documented that soil and debris removal (IRA) had been completed in the summer of 2003. An IRP RI/FS is scheduled for FY08. The MMRP SI was completed in FY08.

This site also carries the facility-wide non-groundwater LTM and programmatic support requirements.

CLEANUP/EXIT STRATEGY

CTC assumptions include the following programmatic items in LTM (FACILITY-WIDE):
1)Risk Assessment Revisions (750 hours over two years)
2)Ravenna Environmental Information Management System (4,517 hours over five years)
3)Administrative Record (2,872 hours over five years)
4)Property Management Plan (383 hours over five years)
5)Project Scheduling (6,317 hours over three years)
6)USACE Support (44,414 hours over five years)
7)Project Management Support (3,829 hours over five years)
8)RAB Support (957 hours over five years)

CTC assumptions include the following items in LTM for all sites (including RVAAP-34):
1)35 five-year reviews
2)30 years of Administrative Land Use Controls
3)Site Closeouts
4)Cap maintenance for 84 acres.
5)Site closeout

Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-38
Site Name: NACA TEST AREA

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: MEDIUM

Contaminants of Concern: Metals, Semi-volatiles

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA	199508	199602
SI	199508	199812
RI/FS	199909	201301
RD	201302	201308
RA(C)	201308	201408

RIP Date: N/A

RC Date: 201408

SITE DESCRIPTION

This site of approximately 12 acres was used as an aircraft test area by NACA. Surplus military aircraft crashed into constructed barriers, using a fixed rail attached to the aircraft landing gear, in an attempt to develop crash-worthy fuel tanks and/or high flashpoint aviation fuel. Some of the demolished aircraft were buried at the site after the tests. Open Demolition Area 1, RVAAP-03, is surrounded by RVAAP-38.

Soil analysis of the site detected low levels of metals and organics. Dry sediment analysis performed within the NACA site detected nitrocellulose. Additional study was needed of the area. In May 1999 the site was transferred to the NGB and in 2002 an SI/Phase 1 RI was completed. An RI/FS is scheduled to begin in FY08.

In 2004 12 groundwater monitoring wells were installed and sampled. Analytical results indicated metals and low levels of SVOCs.

CLEANUP/EXIT STRATEGY

CTC assumptions include the following items in RAC:
1)Clear and grub two acres
2)Landfill soil cover (0.3 acres, two feet thick with six inches of foundation)
3)In Situ Land farming (87,120 square feet, or two 2 acres)
4)Construction and operation of a decontamination pad for four weeks.
5)Site closeout

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-39
Site Name: LOAD LINE 5

STATUS

Parcel: Load Line 5 (39 acres)

Regulatory Driver: CERCLA
RRSE: MEDIUM

Contaminants of Concern: Metals, Semi-volatiles

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA	199802	199806
SI	199807	199807
RI/FS	200408	201301
RD	200803	201308
RA(C)	200803	201408

RIP Date: N/A

RC Date: 201408

SITE DESCRIPTION

This site of approximately 12 acres was used as an aircraft test area by NACA. Surplus military aircraft crashed into constructed barriers, using a fixed rail attached to the aircraft landing gear, in an attempt to develop crash-worthy fuel tanks and/or high flashpoint aviation fuel. Some of the demolished aircraft were buried at the site after the tests. Open Demolition Area 1, RVAAP-03, is surrounded by RVAAP-38.

Soil analysis of the site detected low levels of metals and organics. Dry sediment analysis performed within the NACA site detected nitrocellulose. Additional study was needed of the area. In May 1999 the site was transferred to the NGB and in 2002 an SI/Phase 1 RI was completed. An RI/FS is scheduled to begin in FY08.

In 2004 12 groundwater monitoring wells were installed and sampled. Analytical results indicated metals and low levels of SVOCs.

CLEANUP/EXIT STRATEGY

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-40
Site Name: LOAD LINE 7

STATUS

Parcel: Load Line 7 (37 acres)

Regulatory Driver: CERCLA
RRSE: LOW

Contaminants of Concern: Explosives, Metals, Semi-volatiles, Volatiles

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA	199802	199806
SI	199807	199807
RI/FS	200408	201301
RD	200803	201308
RA(C)	200803	201408

RIP Date: N/A

RC Date: 201408

SITE DESCRIPTION

Between 1941 and 1945 booster charges for artillery projectiles were assembled at this site. In 1945 Load Line 7 (LL-7) was deactivated and the equipment was removed. In 1969 and 1970 LL-7 was used again to produce 40mm projectiles. Between 1989 and 1993 the site was reactivated under a tenant contract operated by an Olin Corporation subsidiary, Physics International (PI), for the manufacture of large caliber conventional weaponry. The PI LL-7 munitions process constructed and used a carbon-adsorption filtration plant to treat process wastewaters contaminated with explosives. In May 2000 the NPDES permit for the filtration plant was revoked. Therefore the plant is considered closed.

Early site investigation showed the presence of metals above screening levels and VOCs, SVOCs and explosives in soil, sediment, surface water and groundwater. This is one of 14 sites that was SI investigated in FY04-FY05. In FY07 the buildings, including slabs and foundations, were completely removed.

In August 2007 an under-slab multi-increment sampling and analysis regimen for SVOCs, VOCs, metals, explosives, propellants, herbicides, pesticides, nitrates, chlorates, PCBs, and toxicity characteristic leaching procedures was completed A formal report is scheduled for publication in FY08.

An RI/FS is scheduled to begin in FY08 under a PBC.

CLEANUP/EXIT STRATEGY

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-41
Site Name: LOAD LINE 8

STATUS

Parcel: Load Line 8 (44 acres)

Regulatory Driver: CERCLA
RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Semi-volatiles, Volatiles

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA	199802	199806
SI	199807	199807
RI/FS	200408	201301
RD	200803	201308
RA(C)	200803	201408

RIP Date: N/A

RC Date: 201408

SITE DESCRIPTION

Between 1941 and 1945 booster charges for artillery projectiles were assembled at this site. In 1945 Load Line 8 was deactivated and the equipment was removed.

Early site investigation showed a presence above screening levels for metals, VOCs, SVOCs and explosives in soil, sediment, surface water and groundwater. This is one of 14 sites that was SI investigated in FY04-FY05 with the subsequent SI data collection used to develop a future contract. In FY07 buildings, including slabs and foundations, were completely removed.

In August 2007 an under-slab multi-increment sampling and analysis regimen for SVOCs, VOCs, metals, explosives, propellants, herbicides, pesticides, nitrates, chlorates, PCBs, and toxicity characteristic was leaching completed. A formal report is scheduled for publication in FY08.

An RI/FS is scheduled to begin under a PBC in FY08.

CLEANUP/EXIT STRATEGY

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-42
Site Name: LOAD LINE 9

STATUS

Parcel: Load Line 9 (106 acres)

Regulatory Driver: CERCLA
RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA	199802	199806
SI	199807	199807
RI/FS	200208	201301
RD	200803	201308
RA(C)	200803	201408

RIP Date: N/A

RC Date: 201408

SITE DESCRIPTION

From 1941 to 1945 detonators were produced at this site. In 1945 Load Line 9 was deactivated and its equipment was removed.

Limited samples collected in 2000 detected levels below two percent of lead azide in sediment and surface water in the sumps. In FY07 buildings, including slabs and foundations, were completely removed.

In July 2007 a completed SI/Phase I RI submittal took place. In FY08 an RI/FS is scheduled to begin under a PBC.

CLEANUP/EXIT STRATEGY

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-43
Site Name: LOAD LINE 10

STATUS

Parcel: Load Line 10 (36 acres)

Regulatory Driver: CERCLA
RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Semi-volatiles, Volatiles

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA	199802	199806
SI	199807	199807
RI/FS	200408	201301
RD	200803	201308
RA(C)	200803	201408

RIP Date: N/A

RC Date: 201408

SITE DESCRIPTION

From 1941 to 1945 percussion elements were produced at this site. In 1945 Load Line 10 went on standby status. From 1951 to 1957 LL-10 produced primers and percussion elements. From 1969 to 1971 LL-10 was reactivated, producing munitions primers. It has been inactive since 1971.

Early site investigation showed a presence above screening levels for metals, VOCs, SVOCs and explosives in soil, sediment, surface water and groundwater. This is one of 14 sites that was SI investigated in FY04-FY05 with the subsequent SI data collection used to develop a future contract. In FY07 buildings, including slabs and foundations, were completely removed.

In August 2007 an under-slab multi-increment sampling and analysis regimen for SVOCs, VOCs, metals, explosives, propellants, herbicides, pesticides, nitrates, chlorates, PCBs, and toxicity characteristic leaching was completed. A formal report is scheduled for publication in FY08.

In FY08 an RI/FS is scheduled to begin under a PBC.

CLEANUP/EXIT STRATEGY

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-44
Site Name: LOAD LINE 11

STATUS

Parcel: Load Line 11 (47 acres)

Regulatory Driver: CERCLA
RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Volatiles

Media of Concern: Groundwater, Soil

Phases	Start	End
PA	199802	199806
SI	199807	199807
RI/FS	199910	201409

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

From 1941 to 1945 primers for artillery projectiles were produced at this site. In 1945 Load Line 11 was placed on standby. From 1951 to 1957 it was used to produce primers and fuses.

Contaminants of concern at this site included lead, asbestos, and SVOCs. During an IRA in 2001 lead/asbestos-lined sumps, lead-contaminated sediments, and solvent-contaminated soils were removed. In April 2004 the Final IRA report was completed. Several of the sewer lines were intentionally plugged with grout to prevent migration of contaminants.

In FY05, prior to demolition of the buildings, the SI/Phase I RI was completed after which the buildings, including slabs and foundations, were completely removed.

In FY08 an RI/FS is scheduled to begin under a PBC.

CLEANUP/EXIT STRATEGY

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-45
Site Name: WET STORAGE AREA

STATUS

Parcel: Wet Storage (36 acres)

Regulatory Driver: CERCLA
RRSE: LOW

Contaminants of Concern: Explosives, Metals, Semi-volatiles

Media of Concern: Soil

Phases	Start	End
PA	199802	199806
SI	199807	199807
RI/FS	200408	201301
RD	201302	201308
RA(C)	201308	201408

RIP Date: N/A

RC Date: 201408

SITE DESCRIPTION

From 1941 to 1945 primary explosives were stored in water-filled drums at this site. There is no documentation concerning any spills in the area.

Contaminants of Concern include metals and explosives.

During the 2003-2004 time frame four of the six igloos were demolished. This is one of 14 sites investigated under a SI/Phase I RI in FY04-FY05.

In FY08 an RI/FS is scheduled to begin under a PBC.

CLEANUP/EXIT STRATEGY

CTC assumptions include the following items in RAC:
1)Clear and grub one acre
2)Excavation of 150 cubic yards of soil
3)Nonhazardous offsite disposal of 169 cubic yards
4)One confirmation sample and one disposal sample
5)Hazardous offsite disposal of 19 cubic yards
6)Construction and operation of a decontamination pad for one week.
7)Site closeout

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-46
Site Name: BUILDING F-15 AND F-16

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Semi-volatiles

Media of Concern: Soil, Surface Water

Phases	Start	End
PA	199802	199806
SI	199807	199807
RI/FS	200312	201301
RD	201302	201308
RA(C)	201308	201408

RIP Date: N/A

RC Date: 201408

SITE DESCRIPTION

During World War II, the Korean Conflict and the Vietnam War miscellaneous explosives were tested at these buildings. The quantities and exact dates of testing are unknown.

Earlier site investigations conducted in 2005 and 2006 found metals, explosives and SVOCs in soil and surface water above the screening criteria. The Phase I RI did not include investigation of the groundwater. Groundwater will be investigated under an RI/FS in the FY08 PBC.

In May 1999 this site was transferred to the NGB. This is one of 14 sites investigated in FY04-FY05 to provide data for a future contract. The RI/FS is scheduled to begin under a PBC in FY08. The MMRP SI was completed in FY08 with a preliminary draft determination that no MEC is present at the site. The MC will be addressed by the IRP during an RI/FS or an RA.

CLEANUP/EXIT STRATEGY

CTC assumptions include the following items in RAC:
1)Clear and grub 1.2 acres
2)2,000 linear feet of access road
3)Excavation of 200 cubic yards of soil
4)Nonhazardous offsite disposal of 225 cubic yards
5)One confirmation sample and one disposal sample
6)Hazardous offsite disposal of 25 cubic yards
7)Construction and operation of a decontamination pad for one week.
8)Site closeout

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-48
Site Name: ANCHOR TEST AREA

STATUS

Parcel: Anchor Test Area (2 acres)

Regulatory Driver: CERCLA
RRSE: MEDIUM

Contaminants of Concern: Metals

Media of Concern: Soil

Phases	Start	End
PA	199802	199806
SI	199807	199807
RI/FS	200408	201409

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

The Anchor Test Area is located in the central part of the installation. Information about this research and development area is limited. Use of the site is believed to have been for testing of explosively driven soil anchoring devices, but the dates of use are unknown. It currently consists of several dirt mounds with a nearby sand pit (approximately 6 by 30 feet). There is metal debris in the area. Metals were found in soil above screening levels.

This is one of 14 sites investigated in FY04-FY05 to provide data for a future contract. An IRP RI/FS is scheduled under the FY08 PBC with the exception of a 0.25 acre portion which will undergo an MMRP investigation. The MMRP SI completed in FY08 shows a preliminary draft determination that no MEC is present at the site. MC will be addressed by the IRP during an RI/FS or an RA.

CLEANUP/EXIT STRATEGY

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-49
Site Name: CENTRAL BURN PITS

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: HIGH

Contaminants of Concern: Metals, Semi-volatiles

Media of Concern: Soil

Phases	Start	End
PA	199802	199806
SI	199807	199807
RI/FS	200010	201109
IRA	200704	200909

RIP Date: N/A

RC Date: 201109

SITE DESCRIPTION

Non-explosive scrap materials were burned at this approximately 20 acre site, but the dates of operation are unknown.

In May 1999 the site was transferred from the US Army to the NGB.

This is one of the six sites in the FY05 PBC. An EE/CA was completed and in 2005 the SI/Phase 1 RI was completed. Lead and hexavalent chromium were identified in two debris piles at levels that required removal. An IRA removal and disposition of the two piles will be completed in FY09. A preliminary draft, RI Addendum 1, remains under Army review.

CLEANUP/EXIT STRATEGY

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-50
Site Name: ATLAS SCRAP YARD

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: MEDIUM

Contaminants of Concern: Explosives, Metals, Semi-volatiles

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA	199802	199806
SI	199807	199807
RI/FS	200408	201301
RD	201302	201308
RA(C)	201308	201408

RIP Date: N/A

RC Date: 201408

SITE DESCRIPTION

This site's original design in the 1940s contained a complex of buildings that supported the installation's principal construction and engineering company's office staff, government, civilian and military administrative staff, and barracks-type housing for permanent duty residents integral to the construction of RVAAP. After WWII, a majority of the Atlas building complex was demolished leaving the remaining portion of the structures to support the installation's Roads and Grounds Maintenance staff and equipment (e.g., cranes, bulldozers, tractor-trailers, backhoes) that also included a large contingent of railroad maintenance personnel. The post WWII structures stood until after the Vietnam War at which point all remaining buildings were demolished and the site became a storage and stockpile yard for various types of bulk materials (e.g., gravel, railroad ballast, sand, culvert pipe, railroad ties, telephone poles) used in the day-to-day installation operations. In the mid to late 1980s, the southeast portion of the old Atlas area became a staging area for salvaged ammunition boxes from the demilitarization of defunct Vietnam War era munitions.

An earlier SI/Phase 1 RI analysis found explosives, SVOCs, and metals present in soils, sediment, surface water and groundwater above screening levels.

In May 1999 this site was transferred from the US Army to the NGB.

This is one of 14 sites investigated in FY04-FY05 to provide data for the 2008 PBC. An MMRP SI completed in FY08 contains a preliminary draft determination that further MEC investigation is necessary. MC will be addressed by an IRP during an RI/FS or an RA.

CLEANUP/EXIT STRATEGY

CTC assumptions include the following items in RAC:
1)Clear and grub two acres
2)2,000 linear feet of access road
3)Excavation of 6,500 cubic yards of soil
4)Nonhazardous offsite disposal of 7,313 cubic yards
5)43 confirmation samples and 17 disposal samples
6)Hazardous offsite disposal of 813 cubic yards
7)Construction and operation of a decontamination pad for 13 weeks.
8)Site closeout

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-51
Site Name: DUMP ALONG PARIS-WINDHAM ROAD

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: LOW

Contaminants of Concern: Asbestos, Polycyclic Aromatic Hydrocarbons

Media of Concern: Sediment, Soil

Phases	Start	End
PA	199802	199806
SI	199807	199807
RI/FS	200109	201109
IRA	200209	200409

RIP Date: N/A

RC Date: 201109

SITE DESCRIPTION

This AOC, adjacent to the Sand Creek flood plain, was used as an open dump for miscellaneous materials, including transite siding. The dates of operation for the landfill are unknown.

Collection and analyses of surface water, sediment and biological samples occurred in Sand Creek adjacent to the site. There were no detections above background identified in the surface water and sediment. Biological samples reflected excellent stream quality.

In January 2004 debris removal was complete. Confirmation sampling detected polycyclic aromatic hydrocarbons (PAHs) and asbestos close to the road within the embankment. No attempt was made to remove remaining debris within the roadbed embankment because it would have compromised the Paris-Windham Road stability.

An Army evaluation response is currently under draft, with formal submittal to the Ohio EPA scheduled for FY08. The evaluation will technically assess the level for further remediation activities.

CLEANUP/EXIT STRATEGY

Non-groundwater LTM requirements are carried in RVAAP-034. Groundwater monitoring requirements are carried in RVAAP-066.

Site ID: RVAAP-66
Site Name: Facility-wide Groundwater

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: MEDIUM

Contaminants of Concern: Asbestos, Explosives, Metals, Polycyclic Aromatic Hydrocarbons, Semi-volatiles, Volatiles

Media of Concern: Groundwater

Phases	Start	End
PA	198802	198804
SI	198805	198906
RI/FS	199910	201309
RA(C)	201310	201409
RA(O)	201310	204409

RIP Date: 201409

RC Date: 204409

SITE DESCRIPTION

Groundwater issues at RVAAP are administered through a facility-wide approach under this site. Central to this approach is the Facility-wide Ground Water Monitoring Program (FWGWMP). The FWGWMP was approved in 2004 and in 2005 monitoring was initiated on 36 wells. In 2007 a review of the FWGWMP was completed and the program has been expanded to include all 237 monitoring wells at RVAAP.

The FWGW site is currently in an RI phase, and quarterly monitoring is being conducted on all 237 wells (four events per well) to characterize the groundwater quality conditions at those wells. Further delineation of the groundwater impact at the facility will be initiated in FY08 in two areas: groundwater at 17 AOCs will be investigated during Phase II RIs (under PBC 2008), and six deep monitoring wells will be installed (using existing funds) and sampled to evaluate groundwater impact in the basal portion of the Sharon Conglomerate aquifer.

Upon completion of the RI phase, an FS most likely will be conducted to determine the appropriate remedial measures where action (if any) is required. The FS for RVAAP-12 will be prepared in FY09. Following approval of a ROD, this site will begin RA/RAO, which may consist of active remediation or MNA. When groundwater closure criteria are achieved, this site will begin LTM.

CLEANUP/EXIT STRATEGY

CTC assumptions include the following items in RI/FS:

1)Semi-annual monitoring of 40 shallow wells for one year (FY09).
2)Semi-annual monitoring of 54 shallow wells for five years.
3)Semi-annual monitoring of six deep wells for five years.
4)Abandonment of 120 shallow wells in FY13.
5)FS (high complexity, moderate study detail and documentation for RVAAP-12)
6)FS (high complexity, moderate study detail, broad documentation for other sites)

CTC assumptions include the following items in RAO:

1)Annual monitoring of 54 shallow wells for 30 years.
2)Annual monitoring of six deep wells for 30 years
3)Abandonment of 120 shallow wells in FY17.

Site ID: RVAAP-67
Site Name: Facility-wide Sewers

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
RRSE: LOW

Contaminants of Concern: Explosives

Media of Concern: Soil

Phases	Start	End
PA	198802	198804
SI	198805	198906
RI/FS	199910	201209
RD	201210	201309
RA(C)	201310	201409

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

The Ravenna plant started loading or demilitarizing ammunition in 1941 and continued operations intermittently until the late 1970s. The operations required processing large quantities of secondary explosives. Periodic cleaning of the process areas resulted in explosive residues in the sanitary and storm sewers and settling ponds. None of the materials have been discovered outside the boundaries of the plant.

Sewers thought to have transported explosive residues during plant operations are believed to be limited to the 12 process areas, Buildings 1037 (laundry) and 1039 (laboratory) in the administrative area of the plant. The sanitary sewers (approximately 28,500 feet) are assembled from either vitreous clay tile that has been lined with resin or cast iron. Storm sewers (estimated at 30,000 feet) are fabricated from either vitreous clay or corrugated galvanized steel.

The sewers were installed in trenches lined with washed gravel then covered by about six inches of gravel and backfilled with the removed soil, generally heavy clay. If the sewers leaked contaminants they should be in the gravel fill, trapped by the clay backfill. The main sources of explosives in the sanitary sewers are change houses within the various plants where coveralls were removed and people showered prior to leaving the facility, the laundry where the clothes were washed and the laboratory where small quantities of explosives were tested.

Storm sewers within the plants were subject to contamination by virtue of wash-down procedures where explosive residue and dusts were scrubbed from the floors and washed through doorways onto the surrounding grounds and could migrate to the storm water drain system. Explosives could also enter the storm system from explosive filter effluent traveling to settling ponds.

Lakeshore Engineering was contracted to determine the explosive residues in sewers and make recommendations as recorded in its report "Explosive Evaluation of Sewers" dated November 2007. The Corps of Engineers Research Laboratory performed a similar investigation of explosive contamination in the sewer system in a letter report dated June 15, 2007 which has been included in Lakeshore's report as an appendix.

CLEANUP/EXIT STRATEGY

CTC assumptions in the RI/FS include the following:

1)A soil investigation including 65 direct push soil borings with two samples per boring
2) An FS (low complexity, narrow study detail, documentation)
3)Groundwater will be addressed under RVAAP-66.

Site ID: RVAAP-67
Site Name: Facility-wide Sewers

CTC assumptions in the RA(C) phase include the following:
1)Clear and grub one acre
2)2,000 linear feet of access road
3)Excavation of 2,500 cubic yards of soil
4)Nonhazardous offsite disposal of 1,563 cubic yards
5)17 confirmation samples and seven disposal samples
6)Hazardous offsite disposal of 1,563 cubic yards
7)Construction and operation of a decontamination pad for five weeks.
8)Site closeout

IRP No Further Action Sites Summary

Site ID	Site Name	NFA Date	Documentation
RVAAP-02	ERIE BURNING GROUNDS	200809	
RVAAP-04	OPEN DEMOLITION AREA #2	200801	NFA signed by Ohio EPA on January 2008
RVAAP-07	BLD 1601 HAZ WST STG	198906	Closure plan approval letter from Director of Ohio EPA, dated 02/12/1998 (with modifications). Letter from RVAAP responded with modified pages 06/26/2000. Closed under RCRA.
RVAAP-08	LOAD LINE 1	200809	
RVAAP-09	LOAD LINE 2	200809	
RVAAP-10	LOAD LINE 3	200809	
RVAAP-11	LOAD LINE 4	200809	
RVAAP-14	LOAD LINE 6 EVAPORATION UNIT	198906	Operational from 1987-1993. Not eligible for ER,A funding. Closure letter from Ohio EPA dated 20 Jan 2003
RVAAP-15	LOAD LINE 6 TREATMENT PLANT	200001	Operational from 1987-1993. Not eligible for ER,A funding.
RVAAP-17	DEACTIVATION FURNACE	198906	The DFA was not closed under RCRA. Soils and groundwater were moved over to the CERCLA side of the house under the Directors Findings and Orders (see section VI (9) (c). Journalized date June 10, 2004. RCRA closure plan submitted 23 Feb 2001. Soils and GW are covered under Winklepeck (RVAAP-05)
RVAAP-18	LOAD LINE 12 WWT PLANT	199703	Operational until 1983. Revocation of NPDES permit effective May 1, 2000.
RVAAP-20	SAND CREEK STP	198906	Operational until 1993. Letter from Director of Ohio EPA. NPDES permit revoked May 1, 2000.
RVAAP-21	DEPOT STP	198906	Operational until 1983. NPDES permit revoked May 1, 2000.
RVAAP-22	GEORGE RD STP	198906	Operational until 1983. NPDES permit revoked May 1, 2000.
RVAAP-23	UNIT TRAINING EQUIPMENT SITE UST	198911	Closeout Letter from OSFM BUSTR dated 02/05/2003. Further investigation under Ohio ARNG CC Program.
RVAAP-24	WASTE OIL TANK	198906	Not eligible for ER,A funding.
RVAAP-25	BLD 1034 MOTOR POOL AST	198906	Not eligible for ER,A funding.
RVAAP-26	FUZE BOOSTER AREA SETTLING TANKS	200001	15 tanks scattered among LL 5 (1 tank), 7 (1 removed in 1988), 9 (2 tanks), 10 (9 tanks-1 AST, 8 USTs), 11 (3 tanks); all tanks emptied, cleaned and covered in 1971. Soils are being investigated in conjunction with site-specific media investigation/cleanup. (RVAAP-39,

IRP No Further Action Sites Summary

Site ID	Site Name	NFA Date	Documentation
			-40, -42, -43, & -44)
RVAAP-27	BUILDING 854, PCB STORAGE	198906	Letter from Ohio EPA dated September 1, 1999 stating NFA.
RVAAP-30	LL 7 TREATMENT PLANT	200001	Operational until 1983. Revocation of NPDES permit effective May 1, 2000.
RVAAP-31	ORE PILE RETENTION POND	200001	Revocation of NPDES permit effective May 1, 2000.
RVAAP-35	1037 BUILDING-LAUNDRY WASTEWATER SUMP	200001	Not eligible for ER,A funding.
RVAAP-36	PISTOL RANGE	200509	Letter from Ohio EPA regarding the delay of clean-up until range no longer used, dated February 14, 2006. Range being used by OHARNG.
RVAAP-37	PESTICIDE BUILDING S-4452	199602	Closure letter from Ohio EPA dated September 19, 2000.
RVAAP-47	BUILDING T-5301	200109	Statement of Basis - signed by RVAAP and Ohio EPA on December 07, 2000. Clean up to background/bedrock. IRA in FY00 left no contaminants in place.

IRP Schedule

Date of IRP Inception: 198802

Past Phase Completion Milestones

1988	
ISC	(RVAAP-23 - UNIT TRAINING EQUIPMENT SITE UST)
PA	(RVAAP-01 - RAMSDELL QUARRY LANDFILL, RVAAP-02 - ERIE BURNING GROUNDS, RVAAP-03 - OPEN DEMOLITION AREA #1, RVAAP-04 - OPEN DEMOLITION AREA #2, RVAAP-05 - WINKLEPECK BURNING GROUNDS, RVAAP-06 - C BLOCK QUARRY , RVAAP-08 - LOAD LINE 1 , RVAAP-09 - LOAD LINE 2, RVAAP-10 - LOAD LINE 3, RVAAP-11 - LOAD LINE 4, RVAAP-12 - LOAD LINE 12, RVAAP-13 - BLDG 1200-DILUTION\SETTLING POND, RVAAP-15 - LOAD LINE 6 TREATMENT PLANT, RVAAP-16 - FUZE &BOOSTER QUARRY LANDFILL/PONDS, RVAAP-18 - LOAD LINE 12 WWT PLANT, RVAAP-19 - LANDFILL NORTH OF WINKLEPECK BURN GRND, RVAAP-20 - SAND CREEK STP, RVAAP-21 - DEPOT STP, RVAAP-22 - GEORGE RD STP, RVAAP-24 - WASTE OIL TANK, RVAAP-25 - BLD 1034 MOTOR POOL AST, RVAAP-26 - FUZE BOOSTER AREA SETTLING TANKS, RVAAP-28 - MUSTARD AGENT BURIAL SITE, RVAAP-29 - UPPER AND LOWER COBB PONDS, RVAAP-30 - LL 7 TREATMENT PLANT, RVAAP-31 - ORE PILE RETENTION POND, RVAAP-66 - Facility-wide Groundwater, RVAAP-67 - Facility-wide Sewers)
RFA	(RVAAP-07 - BLD 1601 HAZ WST STG, RVAAP-14 - LOAD LINE 6 EVAPORATION UNIT, RVAAP-17 - DEACTIVATION FURNACE, RVAAP-27 - BUILDING 854, PCB STORAGE)
1989	
CS	(RVAAP-07 - BLD 1601 HAZ WST STG, RVAAP-14 - LOAD LINE 6 EVAPORATION UNIT, RVAAP-17 - DEACTIVATION FURNACE, RVAAP-27 - BUILDING 854, PCB STORAGE)
SI	(RVAAP-01 - RAMSDELL QUARRY LANDFILL, RVAAP-02 - ERIE BURNING GROUNDS, RVAAP-03 - OPEN DEMOLITION AREA #1, RVAAP-04 - OPEN DEMOLITION AREA #2, RVAAP-05 - WINKLEPECK BURNING GROUNDS, RVAAP-06 - C BLOCK QUARRY , RVAAP-08 - LOAD LINE 1 , RVAAP-09 - LOAD LINE 2, RVAAP-10 - LOAD LINE 3, RVAAP-11 - LOAD LINE 4, RVAAP-12 - LOAD LINE 12, RVAAP-13 - BLDG 1200-DILUTION\SETTLING POND, RVAAP-15 - LOAD LINE 6 TREATMENT PLANT, RVAAP-16 - FUZE &BOOSTER QUARRY LANDFILL/PONDS, RVAAP-18 - LOAD LINE 12 WWT PLANT, RVAAP-19 - LANDFILL NORTH OF WINKLEPECK BURN GRND, RVAAP-20 - SAND CREEK STP, RVAAP-21 - DEPOT STP, RVAAP-22 - GEORGE RD STP, RVAAP-24 - WASTE OIL TANK, RVAAP-25 - BLD 1034 MOTOR POOL AST, RVAAP-26 - FUZE BOOSTER AREA SETTLING TANKS, RVAAP-28 - MUSTARD AGENT BURIAL SITE, RVAAP-29 - UPPER AND LOWER COBB PONDS, RVAAP-30 - LL 7 TREATMENT PLANT, RVAAP-31 - ORE PILE RETENTION POND, RVAAP-66 - Facility-wide Groundwater, RVAAP-67 - Facility-wide Sewers)
INV	(RVAAP-23 - UNIT TRAINING EQUIPMENT SITE UST)
1990	
IMP(C)	(RVAAP-23 - UNIT TRAINING EQUIPMENT SITE UST)
1996	
PA	(RVAAP-32 - 40 MM FIRING RANGE, RVAAP-33 - LOAD LINE 6 , RVAAP-34 - SAND CREEK DISPOSAL ROAD LANDFILL, RVAAP-35 - 1037 BUILDING-LAUNDRY WASTEWATER SUMP, RVAAP-36 - PISTOL RANGE, RVAAP-37 - PESTICIDE BUILDING S-4452, RVAAP-38 - NACA TEST AREA)
SI	(RVAAP-37 - PESTICIDE BUILDING S-4452)
1997	
SI	(RVAAP-32 - 40 MM FIRING RANGE)
RI/FS	(RVAAP-18 - LOAD LINE 12 WWT PLANT)
1998	
PA	(RVAAP-39 - LOAD LINE 5 , RVAAP-40 - LOAD LINE 7 , RVAAP-41 - LOAD LINE 8 , RVAAP-42 - LOAD LINE 9, RVAAP-43 - LOAD LINE 10, RVAAP-44 - LOAD LINE 11, RVAAP-45 - WET STORAGE AREA, RVAAP-46 - BUILDING F-15 AND F-16, RVAAP-47 - BUILDING T-5301, RVAAP-48 - ANCHOR TEST AREA, RVAAP-49 - CENTRAL BURN PITS, RVAAP-50 - ATLAS SCRAP YARD, RVAAP-51 - DUMP ALONG PARIS-WINDHAM ROAD)

IRP Schedule

1998	
SI	(RVAAP-35 - 1037 BUILDING-LAUNDRY WASTEWATER SUMP, RVAAP-39 - LOAD LINE 5 , RVAAP-40 - LOAD LINE 7 , RVAAP-41 - LOAD LINE 8 , RVAAP-42 - LOAD LINE 9, RVAAP-43 - LOAD LINE 10, RVAAP-44 - LOAD LINE 11, RVAAP-45 - WET STORAGE AREA, RVAAP-46 - BUILDING F-15 AND F-16, RVAAP-47 - BUILDING T-5301, RVAAP-48 - ANCHOR TEST AREA, RVAAP-49 - CENTRAL BURN PITS, RVAAP-50 - ATLAS SCRAP YARD, RVAAP-51 - DUMP ALONG PARIS-WINDHAM ROAD)
1999	
SI	(RVAAP-33 - LOAD LINE 6 , RVAAP-34 - SAND CREEK DISPOSAL ROAD LANDFILL, RVAAP-36 - PISTOL RANGE, RVAAP-38 - NACA TEST AREA)
2000	
RD	(RVAAP-47 - BUILDING T-5301)
2001	
RA(C)	(RVAAP-47 - BUILDING T-5301)
2002	
RI/FS	(RVAAP-34 - SAND CREEK DISPOSAL ROAD LANDFILL)
2003	
RI/FS	(RVAAP-08 - LOAD LINE 1 , RVAAP-09 - LOAD LINE 2, RVAAP-10 - LOAD LINE 3, RVAAP-11 - LOAD LINE 4)
IRA	(RVAAP-03 - OPEN DEMOLITION AREA #1)
PA	(PBC at Ravenna - PBC (2005))
2004	
IRA	(RVAAP-51 - DUMP ALONG PARIS-WINDHAM ROAD)
RA(C)	(RVAAP-34 - SAND CREEK DISPOSAL ROAD LANDFILL)
2005	
RI/FS	(RVAAP-36 - PISTOL RANGE)

Projected Phase Completion Milestones

See attached schedule

Projected Record of Decision (ROD)/Decision Document (DD) Approval Dates

Site ID	Site Name	ROD/DD Title	ROD/DD Date
RVAAP-03	OPEN DEMOLITION AREA #1	Proposed Plan for IRA NFA	20090407

Final RA(C) Completion Date: 201409

NPL Deletion Date: N/A

Schedule for Next Five-Year Review: N/A

Estimated Completion Date of IRP at Installation (including LTM phase): 204409

RAVENNA ARMY AMMUNITION PLANT IRP Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY09	FY10	FY11	FY12	FY13	FY14+
PBC at Ravenna	PBC (2005)	PA						
		RA(C)						
		LTM						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-01	RAMSDELL QUARRY LANDFILL	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-03	OPEN DEMOLITION AREA #1	PA						
		SI						
		RI/FS						
		IRA						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-05	WINKLEPECK BURNING GROUNDS	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-06	C BLOCK QUARRY	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-12	LOAD LINE 12	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-13	BLDG 1200-DILUTION\SETTLING POND	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						

RAVENNA ARMY AMMUNITION PLANT IRP Schedule

SITE ID	SITE NAME	PHASE	FY09	FY10	FY11	FY12	FY13	FY14+
RVAAP-16	FUZE &BOOSTER QUARRY LANDFILL/PONDS	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-19	LANDFILL NORTH OF WINKLEPECK BURN GRND	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-28	MUSTARD AGENT BURIAL SITE	PA						
		SI						
		RI/FS						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-29	UPPER AND LOWER COBB PONDS	PA						
		SI						
		RI/FS						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-32	40 MM FIRING RANGE	PA						
		SI						
		RI/FS						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-33	LOAD LINE 6	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-34	SAND CREEK DISPOSAL ROAD LANDFILL	PA						
		SI						
		RI/FS						
		RA(C)						
		LTM						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-38	NACA TEST AREA	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						

RAVENNA ARMY AMMUNITION PLANT IRP Schedule

SITE ID	SITE NAME	PHASE	FY09	FY10	FY11	FY12	FY13	FY14+
RVAAP-39	LOAD LINE 5	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-40	LOAD LINE 7	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-41	LOAD LINE 8	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-42	LOAD LINE 9	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-43	LOAD LINE 10	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-44	LOAD LINE 11	PA						
		SI						
		RI/FS						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-45	WET STORAGE AREA	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						

RAVENNA ARMY AMMUNITION PLANT IRP Schedule

SITE ID	SITE NAME	PHASE	FY09	FY10	FY11	FY12	FY13	FY14+
RVAAP-46	BUILDING F-15 AND F-16	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-48	ANCHOR TEST AREA	PA						
		SI						
		RI/FS						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-49	CENTRAL BURN PITS	PA						
		SI						
		RI/FS						
		IRA						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-50	ATLAS SCRAP YARD	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-51	DUMP ALONG PARIS-WINDHAM ROAD	PA						
		SI						
		RI/FS						
		IRA						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-66	Facility-wide Groundwater	PA						
		SI						
		RI/FS						
		RA(C)						
		RA(O)						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-67	Facility-wide Sewers	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						

RAVENNA ARMY AMMUNITION PLANT

Non-BRAC Excess
Military Munitions Response Program

MMRP Summary

Installation Total Army Environmental Database-Restoration (AEDB-R) Sites/Response Complete (RC) Sites: 19/1

Installation Site Types with Future and/or Underway Phases

2 Disposal Pit/Dry Well
(RVAAP-019-R-01, RVAAP-032-R-01)

1 Explosive Ordnance Disposal Area
(RVAAP-034-R-01)

4 Open Burn
(RVAAP-001-R-01, RVAAP-002-R-01, RVAAP-004-R-01, RVAAP-016-R-01)

7 Unexploded Munitions/Ordnance
(RVAAP-008-R-01, RVAAP-033-R-01, RVAAP-050-R-01, RVAAP-060-R-01, RVAAP-061-R-01, RVAAP-062-R-01, RVAAP-063-R-01)

Most Widespread Contaminants of Concern

Munitions and explosives of concern, Munitions constituents

Media of Concern

Groundwater, Sediment, Soil, Surface Water

Completed Remedial Actions (Interim Remedial Actions / Final Remedial Actions (IRA/FRA))

Site ID	Site Name	Action	Remedy	FY	Cost
RVAAP-004-R-01	OPEN DEMOLITION AREA #2	IRA	FENCE OR OTHER SITE ACCESS CONTROL MEASURES	2008	TBD

Duration of MMRP

Year of MMRP Inception: 200209

Estimated Date for Remedy-In-Place (RIP)/Response Complete (RC): 201809/201809

Date of MMRP completion including Long Term Management (LTM): Indefinite

MMRP Contamination Assessment

Contamination Assessment Overview

Twelve load lines at RVAAP were used to load assemble, and pack (LAP) high explosive munitions and components during World War II, and the Korean and Vietnam Wars. Periodically, until 1988, munitions were also demilitarized and renovated during non-production periods. More than 36 million large-caliber projectiles, 600 thousand general-purpose bombs, and 420 million munitions components such as fuses, boosters, and percussion elements were produced during World War II. During the Korean War, more than 11 million projectiles, 4 million propelling charges and cartridges, 220 million munitions components, and one million antitank mines were produced. Although production declined during the Vietnam War, as compared to the previous two production periods, RVAAP produced in excess of two and one half million large caliber projectiles, 16 million 40-millimeter grenades, seven million fuses and 80 million primers. Most of the demilitarization of munitions took place after World War II and the Korean War. Off-spec or excess RVAAP munitions as well as munitions from other sources were either disassembled with the explosives being recovered or they were burned or detonated at various locations on the facility. Some high explosive munitions made at other US facilities and even from Europe were sent to RVAAP to be demilitarized.

From 1941 to 1943 Load Line 12 was used to make high-grade ammonium nitrate which was mixed with TNT to make amatol. In the late 1940s fertilizer grade ammonium nitrate was produced for export to Europe. In addition to amatol and pure TNT, Composition B, a mixture of RDX and TNT, was the only other secondary explosive used in large quantities at RVAAP. The primary explosives, lead azide and lead styphnate, were used extensively in the fuse and booster lines. Tetryl and black powder were also used in the components made at these lines. The principle propellants used at RVAAP were nitrocellulose, nitroglycerine, and nitroguanidine in various mixtures. Projectiles from 37 to 240 millimeter were produced at RVAAP with 90, 120, and 155 millimeter being the most common caliber. The general-purpose bombs produced at the facility ranged from 100 to 2,000 pounds gross weight. More information on the chemicals and types of munitions used or produced at RVAAP can be found in the June 2004 Archive Search Report (ASR) for RVAAP.

In November 2003 an inventory of the closed, transferring, and transferred (CTT) ranges or sites at RVAAP was completed under the Army's Military Munitions Response Program (MMRP) in order to meet the requirement of the OSD DERP Management Guidance and the follow-on requirements of the FY02 Defense Authorization Act. The inventory identified 19 MMRP sites at RVAAP totaling 1,460.39 acres that are known or suspected to contain Munitions and Explosives of Concern (MEC). These sites include former open burning and demolition grounds, disposal sites, test ranges, and load lines. These sites have not been maintained for more than 30 years, so many are now overgrown with brush, saplings, and even large trees, and some, such as the Erie Burning Grounds, are permanently flooded. A portion of the D Block safety fan originating from the accidental explosion of Igloo 7-D-15 is the only privately owned area. (It was always privately owned). The explosive safety risk of each of the sites was evaluated using the Risk Assessment Code (RAC) which is now referred to as the Munitions Response Site Prioritization Protocol (MRSPP). Site specific information and more on the RAC scores can be found in the CTT Inventory.
Most of the known MEC at RVAAP are at Open Demolition Area (ODA) 2 and Winklepeck Burning Ground (WBG). MEC and MEC scrap are on the surface and buried throughout WBG and ODA 2, and to a lesser degree, on the surface beyond the site as a result of kick-outs. Munitions detonated at ODA 2 and burned at WBG were usually un-fused with the exception of 40-millimeter grenades, which have an integral fuse.
White phosphorus is present at ODA 2. Other sites, such as the Fuse and Booster Quarry Ponds, the Ramsdell Quarry Landfill, and the Erie Burning Grounds were used to dispose of MEC while others, such as Load Line 12 and Buildings F-15 and F-16 contain MEC incidental to production or testing. Only small amounts of MC have been found at a couple sites.

The WBG site was determined to be ineligible for MMRP because it is an operational range.

Between 1999 and 2000 the 1.5 acre RCRA unit in ODA #2 was cleared of MEC to a depth of four feet and was determined to be ineligible for MMRP.

The MMRP at RVAAP is based upon the phased approach similar to the restoration (CERCLA) program. Starting in 2005, a Site Inspection (SI) was initiated for all sites except for WBG. The SI further identified the boundaries and types of munitions at the sites using limited geophysical and intrusive studies. The SI was used to determine whether additional study and/or remedial action will be necessary. Long-term management of the sites will be required to ensure the selected remedy continues to be effective and any land use controls are being followed. In January 2008 the draft SI was completed and the final SI is expected to be completed by September 2008. Remediation of MEC will not be completed until 2012. The Ohio EPA will be the lead regulatory agency and all stakeholders, including the RAB members and the public, will be encouraged to provide their input for the MMRP.

Cleanup Exit Strategy

After the final SI is complete in 2008, the installation will determine and execute follow-on phases/actions as required in the

individual site cleanup strategies.

MMRP Previous Studies

	Title	Author	Date
2003			
	Final US Army Closed, Transferring and Transferred Range/Site Inventory for Ravenna Army Ammunition Plant, Ohio	engineering-environmental Management, Inc.	NOV-2003
2004			
	Archives Search Report for the Ravenna Army Ammunition Plant	US Army Corps of Engineers	JUN-2004
2007			
	Military Munitions Response Program Historical Records Review, Ravenna Army Ammunition Plant, Ohio	e2M	JAN-2007
	Final Work Plan for the Military Munitions Response Program, Munitions Response Sites Site Inspection	Engineering-Environmental Management, Inc.	SEP-2007
	Final Work Plan for Sand Creek Survey Rocket Ridge Area of Open Demolition Area #2 Military Munitions Response Program Time Critical Response Action	Engineering-Environmental Management, Inc.	OCT-2007
2008			
	Draft Site Inspection for the Military Munitions Response Program	Engineering-Environmental Management, Inc.	JAN-2008

RAVENNA ARMY AMMUNITION PLANT

Non-BRAC Excess

Military Munitions Response Program

Site Descriptions

Site ID: RVAAP-001-R-01
Site Name: RAMSDELL QUARRY

STATUS

Parcel: Ramsdell Landfill (15 acres)

Regulatory Driver: CERCLA

MRSPP Score: Evaluation pending

Contaminants of Concern: Munitions and explosives of concern, Munitions constituents

Media of Concern: Soil

Phases	Start	End
PA	200209	200312
SI	200509	200805
RI/FS	200810	201109
RD	201110	201209
RA(C)	201210	201409
LTM	201909	204909

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

From 1946 to 1950 this site was used to thermally treat waste explosives and napalm bombs. Historic information for the period from 1950 to 1976 has not been located. From 1976 to 1978 the site was permitted by the State of Ohio and used as a non-hazardous solid waste landfill until its closure in 1990.

The Munitions Response Site (MRS) is comprised of two separate areas: a northern area where Open Burn/Open Detonation (OB/OD) operations were conducted in a former quarry and a southern area that contains a small inactive quarry and wooded area where installation personnel found munitions debris. The northern quarry area is collocated with an Installation Restoration Program (IRP) Area of Concern (AOC). For the SI field work, a magnetometer and metal detector assisted unexploded ordnance (UXO) survey was conducted in the northern quarry area and at the southern quarry area, where there is little historical data. Subsurface anomalies were detected at the northern quarry, specifically around the pond; however, no evidence of MEC was observed at the MRS. Large caliber munitions debris was found at two locations in the southern quarry during the SI field work. The potential presence of MEC in the pond in the northern quarry area will require additional investigation under future Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions.

CLEANUP/EXIT STRATEGY

The MMRP SI will be completed in FY08. The preliminary recommendation for Ramsdell Quarry MRS is further characterization based on the presence of MC in the southern area and the potential for MEC in and around the pond at the northern quarry area. In the northern quarry area, MC will continue to be addressed under the IRP.

Site ID: RVAAP-002-R-01
Site Name: ERIE BURNING GROUNDS

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

MRSPP Score: Evaluation pending

Contaminants of Concern: Munitions and explosives of concern, Munitions constituents

Media of Concern: Soil

Phases	Start	End
PA	200209	200312
SI	200509	200805
RI/FS	200810	201109
RD	201110	201209
RA(C)	201210	201409
LTM	201910	204909

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

From 1941 to 1951 the Erie Burning Grounds was used to thermally treat bulk, obsolete, off-specification propellants, conventional explosives, rags, and large explosive contaminated items (e.g., railcars) through open burning on the ground surface. The MRS is collocated with an IRP AOC. During the SI, several subsurface anomalies were detected in the northwest and central portions of the MRS; however, no MEC was observed. Furthermore, several subsurface anomalies were detected in the southwest portion of the MRS and one possible MEC item was found partially buried northwest of the wooded area. MEC is also expected in the flooded sections of the MRS and will require further investigation under future CERCLA actions.

CLEANUP/EXIT STRATEGY

The MMRP SI will be completed in FY08. The preliminary recommendation for the Erie Burning Grounds MRS is further characterization to investigate potential MEC. MC in wet sediments will require additional investigation. No further action is approved for chemical contamination in soil and dry sediment. Chemical contamination in surface water and groundwater is being addressed under the IRP. Interim and final land use controls will be implemented.

Site ID: RVAAP-004-R-01
Site Name: OPEN DEMOLITION AREA #2

STATUS

Parcel: Open Demolition Area #2 (25 acres)

Regulatory Driver: CERCLA

MRSPP Score: Evaluation pending

Contaminants of Concern: Munitions and explosives of concern, Munitions constituents

Media of Concern: Groundwater, Sediment, Soil, Surface Water

Phases	Start	End
PA	200209	200312
SI	200509	200805
RI/FS	200810	201109
RD	201110	201209
IRA	200710	200809
RA(C)	201210	201409
RA(O)	201310	201409
LTM	201910	204909

RIP Date: 201409

RC Date: 201409

SITE DESCRIPTION

The Open Demolition Area #2 MRS was used from 1948 until 1991 to detonate large caliber munitions and off-specification bulk explosives and for burial of white phosphorus and bombs of unknown type. The MRS is collocated with an IRP AOC. The MRS consists of the former demolition area; Burial Sites 1 and 2; Rocket Ridge; the Bomb Disposal Area located adjacent to the northwestern section of the MRS; and all areas in between. MEC was found at Rocket Ridge, the Bomb Disposal Area, Burial Site 2, and on the hill across Sand Creek from Rocket Ridge. At Rocket Ridge, the observed MEC included T-bar fuses (model unknown), white phosphorus grenades, and possibly 500-lb bombs. One partially buried fuse (model unknown), considered MEC, was found at the Bomb Disposal Area. A partially buried fuse (model unknown), considered MEC, was also found at Burial Site 2. On the hill directly across (i.e., north) from Rocket Ridge, two 40millimeter (mm) cartridges (considered MEC) with intact primers were found. Munitions debris consisting of demilitarized 155mm projectiles, remnants of 40mm rounds, casing fragments from large caliber projectiles, and remnants of donor charge bags was found throughout the MRS.

Rocket Ridge, where potential MEC items have been discarded on the ground surface and into Sand Creek, is located along a 70 foot embankment northeast of Building 1503 overlooking Sand Creek. In June 2007 a white phosphorous grenade detonated at Rocket Ridge. Because of this incident, the Ohio EPA has required a time critical response action be completed for Rocket Ridge in FY08.

CLEANUP/EXIT STRATEGY

The MMRP SI will be completed in FY08. The preliminary recommendation is further characterization to address MEC under the IRP. MC in soil and dry sediment was characterized in part of the site under the IRP. Additional characterization work may be required under the MMRP at Rocket Ridge, Bomb Disposal Area, and Burial Site #2; that is, at areas that have not been characterized under the IRP.

Interim and final land use controls will be conducted at this site.

Site ID: RVAAP-008-R-01
Site Name: LOAD LINE #1

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
MRSPP Score: Evaluation pending

Contaminants of Concern: Munitions and explosives of concern

Media of Concern: Soil

Phases	Start	End
PA	200209	200312
SI	200509	200805
RI/FS	200810	201109
RD	201110	201209
RA(C)	201210	201409
LTM	201910	204909

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

From about 1941 to 1992 Load Line #1 was operated for loading various types of projectiles. From 1973 to 1974 ordnance was demilitarized at this site. During World War II (WWII) and the Korean War, Load Line #1 was used to melt and load trinitrotoluene (TNT) and Composition B explosives into large-caliber shells. The MRS consists of approximately five acres of the load line site and is composed of several areas associated with Buildings CB-13/CB-13B, and CB-14, and areas where there are still triple base propellants. The MRS is collocated with an IRP AOC.

CLEANUP/EXIT STRATEGY

The preliminary recommendation, based on the UXO survey and MC results from the SI field work, is further characterization to address MEC and MC.

Site ID: RVAAP-016-R-01
Site Name: FUZE AND BOOSTER QUARRY

STATUS

Parcel: 40 mm Test Range/Waterworks Ponds (58 acres)

Regulatory Driver: CERCLA

MRSPP Score: Evaluation pending

Contaminants of Concern: Munitions and explosives of concern, Munitions constituents

Media of Concern: Soil

Phases	Start	End
PA	200209	200312
SI	200509	200805
RI/FS	200810	201109
RD	201110	201209
RA(C)	201210	201409
LTM	201910	204909

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

The Fuse and Booster Quarry MRS consists of three elongated ponds separated by berms, constructed within an abandoned rock quarry, which was used from 1945 to 1975 for open burning of various types of munitions. The MRS is collocated with an IRP AOC. No MEC was observed during the SI; however, munitions debris was found on the southeastern side of the southern pond. Subsurface anomalies identified during the SI are suspected to represent buried munitions debris and possible MEC. Additionally, RVAAP personnel have indicated the presence of potential MEC in the northern and southern ponds when water levels are low. The bottoms of the ponds have not been investigated.

CLEANUP/EXIT STRATEGY

The MMRP SI will be completed in FY08. The preliminary recommendation is further characterization to assess the buried anomalies (i.e., MEC) located on the banks of the three ponds and of the submerged portions of the three ponds. MC will continue to be addressed under the IRP. Interim and final land use controls will be evaluated after future characterization.

Site ID: RVAAP-019-R-01
Site Name: LANDFILL NORTH OF WINKLEPECK

STATUS

Parcel: Landfill North of Winklepeck (5 acres)

Regulatory Driver: CERCLA

MRSPP Score: Evaluation pending

Contaminants of Concern: Munitions and explosives of concern, Munitions constituents

Media of Concern: Sediment, Soil, Surface Water

Phases	Start	End
PA	200209	200312
SI	200509	200805
RI/FS	200810	201109
RD	201110	201209
RA(C)	201210	201409
LTM	201910	204909

RIP Date: N/A

RC Date: 201409

SITE DESCRIPTION

The Landfill North of Winklepeck accepted general plant refuse, explosive wastes residue, and open burn waste including flares and booster cups from Winklepeck Burning Grounds. The landfill was used from 1969 to 1976. The MRS, which is located adjacent to an IRP AOC, consists of the slope area and adjacent small stream where MEC was reportedly found. No MEC was discovered during the SI, although munitions debris was found.

CLEANUP/EXIT STRATEGY

The MMRP SI will be completed in FY08. The preliminary recommendation is further characterization to address MC and MEC concerns.

Site ID: RVAAP-032-R-01
Site Name: 40 MM FIRING RANGE

STATUS

Parcel: 40 mm Test Range/Waterworks Ponds (58 acres)

Regulatory Driver: CERCLA

MRSPP Score: Evaluation pending

Contaminants of Concern: Munitions and explosives of concern

Media of Concern: Soil

Phases	Start	End
PA	200209	200312
SI	200509	200805
RI/FS	201210	201509
RD	201510	201609
RA(C)	201610	201809
LTM	202310	205309

RIP Date: N/A

RC Date: 201809

SITE DESCRIPTION

The 40mm Firing Range MRS, a former test range for the 40mm cartridge, is surrounded by forest. The MRS was used from 1969 to 1971. It is collocated with an IRP site. The impact area was sited in the western portion of the MRS while the firing point was sited at the opposite end. UXO was reportedly present beyond the impact area, on the slope that leads down to the Fuse and Booster Quarry MRS. MEC was not discovered during the SI; however, munitions debris was found scattered from the target point to a point approximately 100 feet (ft) beyond the former impact area. Samples were not taken at the MRS because chemical contamination is being covered under the IRP.

CLEANUP/EXIT STRATEGY

MC is included under the IRP; any MC issues will be addressed after clearance under the MMRP.

The MMRP SI will be completed in FY08. The preliminary recommendation is further characterization to address MEC concerns.

Site ID: RVAAP-033-R-01
Site Name: FIRESTONE TEST FACILITY

STATUS

Parcel: Load Line 6 (43 acres)

Regulatory Driver: CERCLA

MRSPP Score: Evaluation pending

Contaminants of Concern: Munitions and explosives of concern

Media of Concern: Soil

Phases	Start	End
PA	200209	200312
SI	200509	200805
RI/FS	201210	201509
RD	201510	201609
RA(C)	201610	201809
LTM	202310	205309

RIP Date: N/A

RC Date: 201809

SITE DESCRIPTION

The Firestone Test Facility MRS consisted of two buildings used as test chambers for tube-launched, optically-tracked, wire-guided (TOW) missiles and Dragon missiles, and a pond and two test chambers where shaped charges were tested under water. The site was used from the late 1960s to 1992. The former test chambers have been demolished and all of the debris removed. Another suspect area that consists of a small clearing and piles of dirt and large timbers was included in the SI field work. The MRS is collocated with an IRP AOC Load Line 6 (RVAAP-33). Neither MEC nor munitions debris were discovered during the SI of the two former missile test chambers locations and the small clearing, and only a few subsurface anomalies were recorded. Neither MEC nor munitions debris were observed lying on the ground surface at the pond and associated location of the former shaped charge test chamber; however, multiple closely spaced subsurface anomalies were detected around the pond and the location of the test chamber. The submerged portion of the pond was not investigated under the SI.

CLEANUP/EXIT STRATEGY

The MMRP SI will be completed in FY08. Preliminary recommendation is further characterization around the perimeter and bottom of the pond, and adjacent former shaped charge test chambers to address MEC concerns.

Site ID: RVAAP-034-R-01
Site Name: SAND CREEK DUMP

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
MRSPP Score: Evaluation pending

Contaminants of Concern: Munitions and explosives of concern

Media of Concern: Soil

Phases	Start	End
PA	200209	200312
SI	200509	200805
RI/FS	201210	201509
RD	201510	201609
RA(C)	201610	201809
LTM	202310	205309

RIP Date: N/A

RC Date: 201809

SITE DESCRIPTION

The Sand Creek Dump MRS, which is collocated with an IRP AOC RVAAP-34, is undeveloped land that stretches along the banks of Sand Creek for approximately 1,000 feet. From 1950 to 1960 the Sand Creek Dump was used as a disposal site for concrete, wood, asbestos debris, lab bottles, 55-gallon drums and fluorescent light tubes. Debris remains at the site. During an IRA performed in October 2003, two 75-mm inert projectiles were discovered at this site. MEC was not discovered during the SI; however, one empty 105mm projectile was discovered in Sand Creek downstream of the former dump.

CLEANUP/EXIT STRATEGY

The MMRP SI will be completed in FY08. The preliminary recommendation is additional characterization work to address MEC concerns. MC will continue to be addressed under the IRP.

Site ID: RVAAP-050-R-01
Site Name: ATLAS SCRAP YARD

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

MRSPP Score: Evaluation pending

Contaminants of Concern: Munitions and explosives of concern, Munitions constituents

Media of Concern: Soil

Phases	Start	End
PA	200209	200312
SI	200509	200805
RI/FS	201210	201509
RD	201510	201609
RA(C)	201610	201809
LTM	202310	205309

RIP Date: N/A

RC Date: 201809

SITE DESCRIPTION

The Atlas Scrap Yard MRS, which is collocated with IRP AOC RVAAP-50, consists of mostly open land that contains a network of roads. Originally used as a construction camp, the MRS was used for scrap storage and currently consists of scattered piles of debris. During the 2003 RI, MEC was uncovered in the southwest corner of the site. Most of the MEC and MEC scrap was removed. Accessible areas were surveyed during the SI. No MEC or munitions debris were found lying on the ground surface, and only a few scattered subsurface anomalies were detected. In the north-central section, neither MEC nor munitions debris were observed lying on the ground surface around or on top of the debris piles. And MEC or munitions debris were not observed lying on the ground surface in the east-central section of the MRS.

CLEANUP/EXIT STRATEGY

The MMRP SI will be completed in FY08. The preliminary recommendation is additional characterization work to address MEC. MC will continue to be addressed under the IRP.

Site ID: RVAAP-060-R-01
Site Name: BLOCK D IGLOO

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
MRSPP Score: Evaluation pending

Contaminants of Concern: Munitions and explosives of concern

Media of Concern: Soil

Phases	Start	End
PA	200209	200312
SI	200509	200805
RI/FS	201210	201509
RD	201510	201609
RA(C)	201610	201809
LTM	202310	205309

RIP Date: N/A

RC Date: 201809

SITE DESCRIPTION

The Block D Igloo MRS resulted when fused bombs in Igloo 7-D-15 (D Block) exploded on March 24, 1943. The initial 3,000-foot radial MRS boundary was established by the USACE, Huntsville District to capture the probable debris field resulting from the explosion and was based on the type of munitions stored in the bunker at the time of the explosion. As described below, the area of this MRS was adjusted based on the 2008 SI findings.

During the 2008 SI, a magnetometer/metal detector assisted UXO survey was conducted within and around the former igloo and at four documented locations where explosion-related debris was found. Neither MEC nor munitions debris were found within the interior of the former igloo and within a circumference of approximately 100 feet surrounding the area. At the four documented debris locations, visual evidence of MEC and/or munitions debris was not found, and very few subsurface anomalies were detected.

Based on the observations and findings of the UXO survey, MEC and/or munitions debris are not present at these locations. However, no such declaration can be made for the remaining areas that were not included in the SI field work.

CLEANUP/EXIT STRATEGY

The MMRP SI will be completed in FY08. The preliminary recommendations are:
- Further characterization of the former igloo area to address MC concerns;
- Additional characterization to address MEC in debris locations and adjacent areas that were not investigated during the SI;
- No further action for debris locations and adjacent areas that were surveyed; and
- No further action for the area contained within the Huntsville derived MRS boundary since there is no historical information documenting discovery of any MEC or munitions debris.

Site ID: RVAAP-061-R-01
Site Name: BLOCK D IGLOO -TD

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

MRSPP Score: Evaluation pending

Contaminants of Concern: Munitions and explosives of concern, Munitions constituents

Media of Concern: Soil

Phases	Start	End
PA	200209	200312
SI	200509	200805
RI/FS	201210	201509
RD	201510	201609
RA(C)	201610	201809
LTM	202310	205309

RIP Date: N/A

RC Date: 201809

SITE DESCRIPTION

The Block D Igloo MRS resulted when fused bombs in Igloo 7-D-15 ("D" Block) exploded on March 24, 1943. The initial 3,000-foot radial MRS boundary was established by the USACE, Huntsville District to capture the probable debris field resulting from the explosion and was based on the type of munitions stored in the bunker at the time of the explosion. The HRR identified 19.25 acres for the site. The 2008 SI found that no further action was required to address MEC or MC at the 19.25 acres; however, the SI identified a new area of 14.13 acres that captured debris locations situated northeast of the installation. This area was not investigated during the 2008 SI. The site will require additional characterization work to address MC and MEC concerns.

CLEANUP/EXIT STRATEGY

An SI will be completed for the newly identified area. Based on the results of the SI, an RI/FS, RD, and RA(C) may be conducted. The RA(C) may include soil removal to address MC and institutional controls and UXO removal to address MEC.

Site ID: RVAAP-062-R-01
Site Name: WATER WORKS #4 DUMP

STATUS

Parcel: NONE

Regulatory Driver: CERCLA

MRSPP Score: Evaluation pending

Contaminants of Concern: Munitions and explosives of concern

Media of Concern: Soil

Phases	Start	End
PA	200209	200312
SI	200509	200805
RI/FS	201210	201509
RD	201510	201609
RA(C)	201610	201809
LTM	202310	205309

RIP Date: N/A

RC Date: 201809

SITE DESCRIPTION

The Water Works #4 Dump MRS is an approximate 0.77 acre open area located immediately west of Water Works #4 and Load Line 7, in the southwestern portion of RVAAP. The MRS boundary identified in the US Army Closed, Transferring, and Transferred (CTT) Range/Site Inventory was not accurate. The actual MRS is located approximately 400 feet to the east. During the SI, no MEC or MC was identified, although further characterization is needed to confirm its presence or absence. Munitions debris was found during the SI. Several subsurface anomaly detections were also made in the open field.

CLEANUP/EXIT STRATEGY

The MMRP SI will be completed in FY08. The preliminary recommendation is further characterization for MEC.

Site ID: RVAAP-063-R-01
Site Name: Group 8 MRS

STATUS

Parcel: NONE

Regulatory Driver: CERCLA
MRSPP Score: Evaluation pending

Contaminants of Concern: Munitions and explosives of concern

Media of Concern: Soil

Phases	Start	End
PA	200209	200312
SI	200509	200805
RI/FS	201210	201509
RD	201510	201609
RA(C)	201610	201809
LTM	202310	205309

RIP Date: N/A

RC Date: 201809

SITE DESCRIPTION

The Group 8 MRS consists of most of the area between Buildings 846 and 849. This area is disturbed land that may have historically been used for debris and rubbish burning. In 1996, one anti-personnel fragmentation bomb (referred to as a "hammerhead" anti-personnel bomb) loaded with high explosives (HE) was found at the MRS. MEC and MC were identified during the SI.

CLEANUP/EXIT STRATEGY

The MMRP SI will be completed in FY08. The preliminary recommendation is further MEC and MC characterization.

MMRP No Further Action Sites Summary

Site ID	Site Name	NFA Date	Documentation
RVAAP-005-R-01	WINKLEPECK BURNING GROUNDS	200603	Operational Range. Ineligible for ER,A funding.
RVAAP-012-R-01	LOAD LINE #12	200805	
RVAAP-046-R-01	BUILDING #F-15 AND F-16	200805	
RVAAP-048-R-01	ANCHOR TEST AREA	200805	
RVAAP-064-R-01	Old Hay Field MRS	200805	

MMRP Schedule

Date of MMRP Inception: 200209

Past Phase Completion Milestones

2004

PA (RVAAP-001-R-01 - RAMSDELL QUARRY , RVAAP-002-R-01 - ERIE BURNING GROUNDS, RVAAP-004-R-01 - OPEN DEMOLITION AREA #2, RVAAP-005-R-01 - WINKLEPECK BURNING GROUNDS, RVAAP-008-R-01 - LOAD LINE #1, RVAAP-012-R-01 - LOAD LINE #12, RVAAP-016-R-01 - FUZE AND BOOSTER QUARRY, RVAAP-019-R-01 - LANDFILL NORTH OF WINKLEPECK, RVAAP-032-R-01 - 40 MM FIRING RANGE, RVAAP-033-R-01 - FIRESTONE TEST FACILITY, RVAAP-034-R-01 - SAND CREEK DUMP, RVAAP-046-R-01 - BUILDING #F-15 AND F-16, RVAAP-048-R-01 - ANCHOR TEST AREA, RVAAP-050-R-01 - ATLAS SCRAP YARD, RVAAP-060-R-01 - BLOCK D IGLOO, RVAAP-061-R-01 - BLOCK D IGLOO -TD, RVAAP-062-R-01 - WATER WORKS #4 DUMP, RVAAP-063-R-01 - Group 8 MRS, RVAAP-064-R-01 - Old Hay Field MRS)

Projected Phase Completion Milestones

See attached schedule

Projected Record of Decision (ROD)/Decision Document (DD) Approval Dates

To Be Determined

Final RA(C) Completion Date: 201809

NPL Deletion Date: N/A

Schedule for Next Five-Year Review: N/A

Estimated Completion Date of MMRP at Installation (including LTM phase): Indefinite

RAVENNA ARMY AMMUNITION PLANT MMRP Schedule

= phase underway

SITE ID	SITE NAME	PHASE	FY09	FY10	FY11	FY12	FY13	FY14+
RVAAP-001-R-01	RAMSDELL QUARRY	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
		LTM						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-002-R-01	ERIE BURNING GROUNDS	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
		LTM						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-004-R-01	OPEN DEMOLITION AREA #2	PA						
		SI						
		RI/FS						
		RD						
		IRA						
		RA(C)						
		RA(O)						
		LTM						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-008-R-01	LOAD LINE #1	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
		LTM						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-016-R-01	FUZE AND BOOSTER QUARRY	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
		LTM						

RAVENNA ARMY AMMUNITION PLANT MMRP Schedule

SITE ID	SITE NAME	PHASE	FY09	FY10	FY11	FY12	FY13	FY14+
RVAAP-019-R-01	LANDFILL NORTH OF WINKLEPECK	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
		LTM						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-032-R-01	40 MM FIRING RANGE	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
		LTM						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-033-R-01	FIRESTONE TEST FACILITY	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
		LTM						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-034-R-01	SAND CREEK DUMP	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
		LTM						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-050-R-01	ATLAS SCRAP YARD	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
		LTM						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-060-R-01	BLOCK D IGLOO	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
		LTM						

RAVENNA ARMY AMMUNITION PLANT MMRP Schedule

SITE ID	SITE NAME	PHASE	FY09	FY10	FY11	FY12	FY13	FY14+
RVAAP-061-R-01	BLOCK D IGLOO -TD	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
		LTM						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-062-R-01	WATER WORKS #4 DUMP	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
		LTM						
SITE ID	**SITE NAME**	**PHASE**	**FY09**	**FY10**	**FY11**	**FY12**	**FY13**	**FY14+**
RVAAP-063-R-01	Group 8 MRS	PA						
		SI						
		RI/FS						
		RD						
		RA(C)						
		LTM						

Community Involvement

Technical Review Committee (TRC): None

Restoration Advisory Board (RAB): RAB established 1996

RAB Adjournment Date:
RAB Adjournment Reason:

Community Involvement Plan (Date Published): 200309

Additional Community Involvement Information

The RVAAP Restoration Advisory Board (RAB) was established in 1996 and has 25 members consisting of 23 community members and 2 non-community members. The community members include an appointee from each of the surrounding 6 townships, one representative appointed by the Trumbull County Commissioners, a representative appointed by the Portage County Commissioners, and 15 members chosen from the general public. One of the community members is elected as a community co-chair by majority vote. The two non-community members include a representative of the Ohio EPA and an Army installation co-chair appointed by the installation. A RAB operating procedure was adopted by all members on February 19, 1997. A copy can be found on the RVAAP web site www.RVAAP.org, as well as in two public repositories (The Reed Memorial Library in Ravenna and the Newton Falls Public Library).

The RVAAP RAB generally meets every two to three months. All meetings are open to the public and are rotated among public places within the townships around the installation. Current topics are addressed at the meetings and a speaker is generally featured. There have been presentations by the Ohio Department of Health addressing health issues related to the cleanup; by the contractors that are performing remediation work; by WES on the explosive uptake by vegetation; Corps of Engineers describing newly identified contaminated sites; and the US Army Center for Health Promotion and Preventive Medicine to explain the rating of sites for funding and the process of performing ecological and human health risk assessments. The minutes of all RAB meetings are recorded. All meetings are announced in the local media. Regular RAB meetings were held during the past year covering such topics Performance-Based Contracts at LLs 1-4, progress of the remedial investigations at the high RRSE AOCs, and thermal decontamination at excess production buildings. Tours were held in August 2005 and September 2006 for RAB members, the media, and elected officials to view ongoing restoration activities.

All IRP records are made available to the RAB members and any other interested parties through the two public repositories. IRP and other RVAAP documents are available at www.RVAAP.org. The RAB receives technical assistance for public participation (TAPP).

In 2003, a Community Involvement Plan was developed to facilitate communication, identify issues of concern and serve as a guide for public involvement goals and objectives. The plan outlines the many ways that Ravenna AAP involves the community in the restoration activities, including through the RAB, site tours and issuance of fact sheets and newsletters.

Administrative Record is located at

RVAAP
Building 1037
8451 State Route 5
Ravenna, OH 44266

Information Repository is located at

Reed Memorial Library
167 East Main Street
Ravenna, OH 44266

Newton Falls Public Library
204 South Canal Street
Newton Falls, OH 44444

Community Involvement

Current Technical Assistance for Public Participation (TAPP): 199906
TAPP Title: Winklepeck OB Grounds Phase II
Current Technical Assistance for Public Participation (TAPP): 200102
TAPP Title: Winklepeck Burning Grounds site
Potential TAPP: N/A