RAVENNA ARMY AMMUNITION PLANT

Army Cleanup Program

Installation Action Plan - FY2024

October 2024

STATEMENT OF PURPOSE

The IAP provides an outline of the total multi-year environmental cleanup program for each site with ongoing or future planned restoration activity and includes the (1) environmental restoration requirements, (2) the rationale for the selected technical approach, and (3) foundation to develop corresponding financial needs for each cleanup site.

INSTALLATION OVERVIEW

Installation Name: RAVENNA ARMY AMMUNITION PLANT

Installation City: Ravenna

Installation County: Portage and Trumbull

Installation State: Ohio

Regulatory Participation - Federal - NA

Regulatory Participation - State - Ohio EPA

ACRONYMS

Acronym	Definition
µg/kg	microgram per kilogram
µg/L	microgram per liter
AAP	Army Ammunition Plant
ABG	Agent Breakdown Products
ACM	Asbestos Containing Material
AD	Army Depot
AEDBR	Army Environmental Database -Restoration
AFFF	Aqueous Film-Forming Foam
AMC	Army Materiel Command
AOC	Area of Concern
AOPC	Area of Potential Concern
ARNG	Army National Guard
AR	Army Regulation
ARARs	Applicable or Relevant and Appropriate Requirements
AS	Air Sparge
ASL	Above Sea Level
AST	Aboveground Storage Tanks
ATSDR	Agency for Toxic Substance and Disease Registry
BGS	Below Ground Surface
BRAC	Base Realignment and Closure
BLM	Bureau of Land Management
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
CACM	Chemical Agent Contaminated Material
CAMU	Corrective Action Management Unit
CAP	Corrective Action Plan
CC	Compliance-related Cleanup
CDC	Center for Disease Control
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	Code of Federal Regulation
CHC	Chlorinated Hydrocarbon
CHPPM	Center for Health Promotion and Preventive Medicine
CIP	Community Involvement Plan
CLIN	Contract Line-Item Number
CMI	Corrective Measures Implementation

Acronym	Definition
CMI(C)	Corrective Measures Implementation (Construction)
CMI(O)	Corrective Measures Implementation (Operation)
CMO	Corrective Measures Objectives
CMR	Corrective Measures Report
CMS	Corrective Measures Study
COC	Contaminant of Concern
CONUS	Continental United States
COPC	Contaminants of Potential Concern
CS	Confirmatory Sampling
CSM	Conceptual Site Model
CUL	Cleanup Level
CTC	Cost-to-Complete
CWM	Chemical Warfare Material
cy	cubic yard
DCA	Dichloroethane
DCE	Dichloroethylene
DCS	Deputy Chief of Staff
DD	Decision Document
DDD	Dichlorobiphenyl Dichloroethane Dieldrin
DDE	Dichloro Diphenyltrichloro Ethane
DDT	Dichloro-Diphenyl-Trichloroethane
DDESB	DoD Explosive Safety Board
DERA	Defense Environmental Restoration Army
DERP	Defense Environmental Restoration Program
DES	Design
DLA	Defense Logistics Agency
DMM	Discarded Military Munitions
DNAPL	Dense Non-aqueous Phase Liquid
DNT	Dinitrotoluene
DoD	Department of Defense
DoDI	Department of Defense Instruction
DoDM	Department of Defense Manual
DOI	Department of Interior
DPE	Dual Phase Extraction
DPW-ED	Department of Public Works- Environmental Division

Acronym	Definition
DRMO	Defense Reutilization and Marketing Office
DRO	Diesel Range Organics
DSMOA	Defense and State Memorandum of Agreement
EC	Emerging Contaminant
EE/CA	Engineering Evaluation/Cost Analysis
E&DL	Environmental and Disposal Liabilities
EBS	Environmental Baseline Survey
EC	Engineering Controls
ECAS	Environmental Compliance Assessment Survey
EE/CA	Engineering Evaluation/Cost Analysis
ENV	Environmental
EJ	Environmental Justice
ELD	Environmental Law Division
ENV	Environmental
ENVR	Environmental Restoration Program
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
ER,A	Environmental Restoration, Army
ESD	Explanation of Significant Differences
ESM	Environmental Support Managers
ESP	Explosive Site Plan
ESS	Explosive Safety Submission
EVO	Emulsified Vegetable Oil
FFA	Federal Facility Agreement
FMR	Financial Management Regulation
FOSET	Finding of Suitability for Early Transfer
FOSL	Finding of Suitability to Lease
FOST	Finding of Suitability to Transfer
FRA	Final Remedial Actions
FFS	Focused Feasibility Study
FS	Feasibility Study
FUDS	Formerly Used Defense Sites
F&WS	Fish and Wildlife Services
ft	feet
FTA	Fire Training Area

Acronym	Definition
FY	Fiscal Year
FYR/5YR	Five-year Review
GMP	Groundwater Monitoring Plan
GRO	Gasoline Range Organics
GW	Groundwater
HQAES	Headquarters Army Environmental System
HE	High Explosive
HQ	Headquarters
HN	Host Nation
HRS	Hazard Ranking System
HW	Hazardous Waste
IAP	Installation Action Plan
IAW	In Accordance With
IC	Institutional Control
ICM	Interim Corrective Measures
ID	Identification
IM	Interim Measure
IMCOM	Installation Management Command
IMP(C)	Implementation (Construction)
IMP(O)	Implementation (Operation)
INV	Investigation
IR	Information Repository
IR	Installation Restoration
IRA	Interim Remedial Action
IROD	Interim Record of Decision
IRP	Installation Restoration Program
ISC	Initial Site Characterization
ISEB	In Situ Enhanced Bioremediation
JEP	Joint Execution Plan
JP	Jet Propellant
K	Thousand
kg	kilogram
km	kilometer
LEC	Lead Environmental Component
LOQ	Limit of Quantitation

Acronym	Definition
LTM	Long-term Management
LUC	Land Use Control
LUCIP	Land Use Control Implementation Plan
LUST	Leaking Underground Storage Tank
m	meter
m^2	square meter
m3	cubic meter
mg/kg	milligram per kilogram
MC	Munitions Constituents
MCL	Maximum Contaminant Level
MD	Munitions Debris
MEC	Munitions and Explosives of Concern
MILCON	Military Construction
MFR	Memorandum for Record
mg/kg	Milligrams per kilogram
MILCON	Military Construction
MMRP	Military Munitions Response Program
MNA	Monitored Natural Attenuation
MOGAS	Motor Gasoline
MP	Motor Pool
MOA	Memorandum of Agreement
MPPEH	Material Potentially Presenting an Explosive Hazard
MR	Munitions Response
MRA	Munitions Response Area
MRESP	Munitions Response Explosive Site Plan
MRESS	Munitions Response Explosive Safety Submission
MRS	Munitions Response Site
MRSPP	Munitions Response Site Prioritization Protocol
N/A	Not Applicable
NCP	National Contingency Plan
NDNODS	Non Department of Defense Owned, Non Operational Defense Sites
NFA	No Further Action
ng/g	nanograms per gram
ng/L	nanograms per liter
NPDES	National Pollutant Discharge Elimination System

Acronym	Definition
NPL	National Priority List
NTCRA	Non-Time Critical Removal Action
ODASA [ESOH]	Office of the Deputy Assistant Secretary of the Army for Environment, Safety and Occupational Health
OB/OD	Open Burn/Open Detonation
ODUSD(I&E)	Office of the Deputy Under Secretary of Defense for Installations and Environment
OCAR	Office of the Chief Army Reserve
OCONUS	Outside Continental United States
OMA	Operations and Maintenance, Army
ORA	Operational Range Assessment
ORO	Oil Range Organics
OU	Operable Unit
P&T	Pump and Treat
PA	Preliminary Assessment
PAH	Polycyclic Aromatic Hydrocarbon
PAL	Preliminary Action Level
PAO	Public Affairs Office
PFAS	Per- and polyfluoroalkyl substances
PBA	Performance Based Acquisition
PCBs	Polychlorinated biphenyls
PCE	Tetrachloroethylene
PFBS	Perfluorobutanesulfonic Acid
PFHpA	Perfluoroheptanoic Acid
PFHxS	Perfluorohexanesulfonic Acid
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulfonate
PFOSA	Perfluorooctane Sulfonamide
PID	Photoionization Detector
PM	Program Management
POC	Point of Contact
POL	Petroleum, Oil and Lubricants
PP	Proposed Plan
PRG	Preliminary Remediation Goal
ppm	parts per million
ppt	parts per trillion

Acronym	Definition
PRG	Preliminary Remediation Goals
PSV	Preliminary Screening Value
QA	Quality Assurance
QC	Quality Control
RA	Remedial Action
RAB	Restoration Advisory Boards
RA(C)	Remedial Action (Construction)
RACER	Remedial Action Cost Engineering and Requirements
RACR	Remedial Action Completion Report
RAWP	Remedial Action Work Plan
RA(O)	Remedial Action (Operation)
RBC	Risk- Based Concentrations
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RIP	Remedy in Place
RDX	Cyclotrimethylenetrinitramine
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RIP	Remedy in Place
ROD	Record of Decision
RSL	Regional Screening Level
RRSE	Relative Risk Site Evaluation
S&A/S&R	Supervision and Administration/Supervision and Review
SARA	Superfund Amendments and Reauthorization Act
SC	Site Closeout
SI	Site Inspection
SOFA	Status of Forces Agreement
SVOC	Semi- volatile Organic Compound
SWMU	Solid Waste Management Unit
TA	Training Area

Acronym	Definition
TAL	Target Analyte List
TAPP	Technical Assistance for Public Participation
TCE	Trichloroethylene
TMDL	Total Maximum Daily Load
TCRA	Time Critical Removal Action
TPH	Total Petroleum Hydrocarbons
TRC	Technical Review Committee
TSCA	Toxic Substance Control Act
TSD	Treatment, Storage & Disposal
US	United States
USACE	US Army Corps of Engineers
USAEC	US Army Environmental Command
USAEHA	US Army Environmental Hygiene Agency
USAF	US Air Force
USAG	US Army Garrison
USAR	US Army Reserve
USATCES	US Army Technical Center for Explosive Safety
USATHAMA	US Army Toxic and Hazardous Materials Agency
USEPA	US Environmental Protection Agency
USGS	US Geological Survey
UST	Underground Storage Tank
UU/UE	Unlimited Use/Unrestricted Exposure
UXO	Unexploded Ordnance
VOC	Volatile Organic Compound
VSI	Visual Site Inspection
WBS	Work Breakdown Structure
WMM	Waste Military Munitions
WWII	World War II

PHASE TRANSLATION TABLE

CERCLA Phase	RCRA Phase	RCRA UST Phase
Preliminary Assessment (PA)	RCRA Facility Assessment (RFA)	Initial Site Characterization (ISC)
Site Inspection (SI)	Confirmation Sampling (CS)	Investigation (INV)
Remedial Investigation/ Feasibility Study (RI/FS)	RCRA Facility Investigation/Corrective Measures Study (RFI/CMS)	Corrective Action Plan (CAP)
Remedial Design (RD)	Design (DES)	Design (DES)
Interim Remedial Action (IRA)	Interim Measure (IM)	Interim Remedial Action (IRA)
Remedial Action (Construction) (RA(C))	Corrective Measures Implementation (Construction) (CMI(C))	Implementation (Construction) (IMP(C))
Remedial Action (Operations) (RA(O))	Corrective Measures Implementation (Operations) (CMI(O))	Implementation (Operations) (IMP(O))
Long-Term Management (LTM)	Long-Term Management (LTM)	Long-Term Management (LTM)

BUILDING 1048 - FIRE STATION

CRL ID: 39747.1077
Env Site Id: CC RVAAP-69
Alias: RVAAP-69
Regulatory Driver: CERCLA
RIP Date: 11/15/2027
RC Date: 11/15/2027
RC Reason:
Site Closeout Date: 11/15/2027
Program: ER,A
Subprogram: IR
NPL Status: NO
HRS Score:
RRSE:
RCWM: NO
Emerging Contaminants: NO
Emerging Contaminants Type:
Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	09/30/2008	04/30/2009
SI	05/31/2009	02/28/2010
RI/FS	03/31/2010	11/15/2027
RD	-	-
IRA	-	-
RA(C)	-	-
RA(O)	-	-
LTM	-	-

Site Narrative: The Building 1048 Fire Station (CC RVAAP-69) Area of Concern (AOC) was located in the former plant administration area in the northwest quadrant of the intersection of George Road and South Service Road. In 1968, the fire station was referred to as the Fire and Guard Building, and consisted of 12,130 square feet. The fire station building was demolished in late 2008, and the site currently remains undeveloped. The AOC consists of the ground area located west/northwest of the former building as well as a portion of the former building footprint. The area is currently marked with Siebert stakes. Carbon tetrachloride was used at this site. A Historical Records Review (HRR) was completed in December 2011. This site is currently undergoing a Remedial Investigation (RI). Groundwater monitoring wells were installed as part of the RI.

In Fiscal Year 2023, a contract was awarded for Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions at nine AOCs at Ravenna, including the subject site. The contract included actions to complete RI/Feasibility Study (FS) at five sites (including the subject site), and to complete additional delineation and Remedial Design (RD) addendum needed at four sites that were in RD/Remedial Action (Construction) (RA(C)) phase.

Restoration/Cleanup Strategy: Groundwater was included as part of the RI. Future sampling will be included as part of RVAAP-66 Facility-Wide Groundwater (CRL ID 39747.1072). Future activities for groundwater past the RI/FS phase will be addressed in future phases for this subject site. The anticipated exit strategy for the site includes completion of the RI/FS. Once the RI/FS is completed, future actions will be evaluated. Current and

future land use is military training.

EAST CLASSIFICATION YARD

CRL ID: 39747.1078
Env Site Id: CC RVAAP-70
Alias: RVAAP-70
Regulatory Driver: CERCLA
RIP Date: 10/15/2027
RC Date: 10/15/2027
RC Reason:
Site Closeout Date: 10/15/2027
Program: ER,A
Subprogram: IR
NPL Status: NO
HRS Score:
RRSE:
RCWM: NO
Emerging Contaminants: NO
Emerging Contaminants Type:
Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	09/30/2008	04/30/2009
SI	05/31/2009	10/31/2018
RI/FS	10/15/2017	10/15/2027
RD	-	-
IRA	03/15/2020	08/04/2025
RA(C)	-	-
RA(O)	-	-
LTM	-	-

Site Narrative: The Ravenna Army Ammunition Plant (RVAAP) was originally equipped with east and west classification yards during its early operational years. The classification yards were used for the switching and maintenance of railroad cars.
The East Classification Yard (CC RVAAP-70) is located east of Load Line 1 in close proximity to the intersection of Ramsdell Road and Irons Road. The railyard reportedly consisted of 18 tracks with a 750 car capacity, and 3 Hi-X tracks with a 120 car capacity, which also included a washrack south of the main track area.

This yard was equipped with a locomotive repair building (Round House), an herbicide storage shed, several outbuildings, a washrack area, and a storage tank area. The herbicide shed contained a mobile herbicide tank. The area of concern (AOC) consists of the following areas within the East Classification Yard: storage tank area, herbicide shed, Round House building, and former washrack area.

A Historical Records Review (HRR) was completed in December 2011.

A Site Inspection (SI), which identified polycyclic aromatic hydrocarbon (PAH) contamination in the surface soil around the round house, was completed in November 2018. An Engineering Evaluation/Cost Analysis was completed in February 2021. The Action Memorandum was completed in July 2021.

In early Fiscal Year 2023, a contract was awarded for Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) actions at nine AOCs at Ravenna, including the subject site. The contract included actions to complete Remedial Investigation (RI)/Feasibility Study (FS) at five sites (including the subject site), and to complete additional delineation and Remedial Design (RD) addendum needed at four sites that were in

RD/Remedial Action (Construction) (RA(C)) phase. A Removal Action contract was also awarded in FY23 for three AOCs at Ravenna and included an interim removal action at the subject site.

Restoration/Cleanup Strategy: The anticipated exit strategy for the site includes completion of a soil removal. It is assumed a Remedial Investigation (RI) will be completed followed by a No Further Action (NFA) Proposed Plan (PP) and Record of Decision (ROD). Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. Current and future land use is military training.

DEPOT AREA

CRL ID: 39747.1083
Env Site Id: CC RVAAP-76
Alias: RVAAP-76
Regulatory Driver: CERCLA
RIP Date: 10/15/2027
RC Date: 10/15/2027
RC Reason:
Site Closeout Date: 10/15/2027
Program: ER,A
Subprogram: IR
NPL Status: NO
HRS Score:
RRSE:
RCWM: NO
Emerging Contaminants: NO
Emerging Contaminants Type:
Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	09/30/2008	04/30/2009
SI	05/31/2009	02/28/2010
RI/FS	03/31/2010	04/24/2019
RD	09/15/2017	03/26/2021
IRA	-	-
RA(C)	09/15/2017	10/15/2027
RA(O)	-	-
LTM	-	-

Site Narrative: The Depot Area (CC RVAAP-76) area of concern (AOC) consists of multiple historical support buildings used for former operations including: fueling stations, locomotive repair shop, motor repair shop, petroleum storage building, solid waste incinerator, demilitarization activities at Building U-10, service station and an aboveground storage tank (AST) associated with Building U-5.

A Historical Records Review (HRR) was completed in December 2011. The following sites within the Depot Area were recommended for further investigation: Building U-4 POL Area, Building U-5 Locomotive Repair Shop, Building U-20 Incinerator, Building U-10 (demilitarization activities), Building A-3 Service Garage, Building U-3 Service Station (Kerosene UST), Building A-2 Motor Repair Facility, Bolton Barn (Tank Maintenance) Paint Can Burial Area, and ditch lines within the operational areas.

The Remedial Investigation (RI)/Feasibility Study (FS) was finalized in January 2017. The Proposed Plan (PP) was completed in March 2018. The Record of Decision (ROD) was finalized in April 2019. The Remedial Design (RD) was completed in 2021. The Remedial Action (RA), to remove identified polycyclic aromatic hydrocarbon (PAH) contamination in soil surrounding Buildings U4 and U5, started in 2021 and continued into 2022. Additional contaminated soil beyond the scope of the current RA contract was identified.

In early FY23, a contract was awarded for CERCLA actions at nine AOCs at Ravenna, including the subject site. The contract included actions to complete RI/FS at five sites, and to complete additional delineation and RD addendum needed at four sites (including the subject site) that were in RD/Remedial Action (Construction) (RA(C)) phase.

Restoration/Cleanup Strategy: The anticipated exit strategy for this site includes additional delineation and a RD Addendum and Explanation of Significant Difference (ESD), being captured under the Remedial Action (Construction) (RA(C)) phase. Once complete, costs for the additional soil removal under the RA(C) phase to achieve unrestricted use (UU) will be determined. Groundwater monitoring requirements are carried in RVAAP-66 (39747.1072), Facility-wide Groundwater. Current and future land use is military training.

QUARRY POND SURFACE DUMP

CRL ID: 39747.1086
Env Site Id: CC RVAAP-78
Alias: RVAAP 78
Regulatory Driver: CERCLA
RIP Date: 10/15/2027
RC Date: 10/15/2027
RC Reason:
Site Closeout Date: 10/15/2027
Program: ER,A
Subprogram: IR
NPL Status: NO
HRS Score:
RRSE:
RCWM: NO
Emerging Contaminants: NO
Emerging Contaminants Type:
Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	04/30/2009	06/30/2009
SI	07/31/2009	11/14/2018
RI/FS	04/30/2010	10/15/2027
RD	-	-
IRA	12/27/2018	05/17/2021
RA(C)	-	-
RA(O)	-	-
LTM	-	-

Site Narrative: The Quarry Pond Surface Dump (CC RVAAP-78) consists of an area of former dumping along a small topographic ridge located north of the northern quarry pond within the Fuze and Booster Quarry. Several debris piles were identified at the Area of Concern (AOC). Contents of the debris piles consisted of construction debris, scrap metal, and potential asbestos. The Quarry Pond Surface Dump appears to be a possible northern extension of the existing Fuze and Booster Quarry AOC (RVAAP-16), which operated from 1941 through 1993.

The SI was completed in August 2016. The RI is currently underway. An Engineering Evaluation/Cost Analysis (EE/CA) was completed in September 2019. The Action Memorandum was completed in June 2020. A Non-Time Critical Removal Action (NTCRA) to remove several debris piles was completed in August 2020. Demolition debris with potential asbestos was identified in Debris Pile C beyond the original extent of the NTCRA excavation.

In early FY23, a contract was awarded for CERCLA actions at nine AOCs at Ravenna, including the subject site. The contract included actions to complete RI/FS at five sites (including the subject site), and to complete additional delineation and Remedial Design (RD) addendum needed at four sites that were in RD/Remedial Action (Construction) (RA(C)) phase.

Cleanup Strategy: The anticipated exit strategy for the site includes completion of a RI/FS phase. Once the RI/FS is completed, future actions will be evaluated. Groundwater monitoring requirements are carried in RVAAP-66 (39747.1072), Facility-wide Groundwater. Current and future land use is military training.

DLA ORE STORAGE SITES

CRL ID: 39747.1087

Env Site Id: CC RVAAP-79

Alias: RVAAP 79

Regulatory Driver: CERCLA

RIP Date: 10/15/2027

RC Date: 10/15/2027

RC Reason:

Site Closeout Date: 10/15/2027

Program: ER,A

Subprogram: IR

NPL Status: NO

HRS Score:

RRSE:

RCWM: NO

Emerging Contaminants: NO

Emerging Contaminants Type:

Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	04/30/2009	06/30/2009
SI	07/31/2009	09/30/2009
RI/FS	10/31/2010	10/15/2027
RD	-	-
IRA	-	-
RA(C)	-	-
RA(O)	-	-
LTM	-	-

Site Narrative: Various ores were historically stored (stockpiled) at this facility for the General Services Administration (GSA). The Defense Logistics Agency (DLA), Defense National Stockpile Center leased space at the Ravenna facility for the storage of the ore materials on the ground and in aboveground storage tanks (ASTs), which are addressed by CC RVAAP-79. The ASTs were referred to as strategic material tanks. Many of the ASTs were constructed without floors; therefore, the ores were allowed to make direct contact with the underlying soils.

The following GSA materials were stockpiled on the ground surface: brass ingots, chemical chrome ore, copper ingots, ferrochrome ore, ferro manganese ore, and metallurgical manganese ore.

The following GSA materials were stored in Strategic Material Tanks: magnesium, kyanite, antimony sulfide, asbestos (raw), cobalt rutile sand, cobalt zircon sand, monazite sand, nickel cathodes, rutile sand, silicon carbide, talc, and zircon sand ore. The monazite sand contained radioactive element Thorium 232.

Ore storage occurred at the following primary locations on the facility: DLA Load Line 3 Tank Storage and Building 803, DLA Route 80 Tank Farm, DLA Main Ore Pile Storage Area, DLA Area 8 Inert Storage, Building 841, and DLA Area 2 Ammunition Storage Area. The total area of potentially impacted media associated with the ore storage consists of approximately 333,582 square yards (about 68.92 acres).

This site also includes the former Ore Pile Retention Pond (RVAAP-31) constructed in the mid-1950s. The pond was constructed to control potentially contaminated surface water runoff from the adjacent manganese and

chrome stockpiles from entering a receiving stream.

The Remedial Investigation (RI) was completed in December 2020. An RI addendum is currently underway.

In early Fiscal Year 2023, a contract was awarded for Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions at nine Areas of Concern (AOCs) at Ravenna, including the subject site. The contract included actions to complete RI/Feasibility Study (FS) at five sites (including the subject site), and to complete additional delineation and Remedial Design (RD) addendum needed at four sites that were in RD/Remedial Action (Construction) (RA(C)) phase.

Restoration/Cleanup Strategy: The anticipated exit strategy for the site includes completion of a RI/FS phase. Once the RI/FS is completed, future actions will be evaluated. Groundwater monitoring requirements are carried in RVAAP-66 (39747.1072), Facility-wide Groundwater. Current and future land use is military training.

OPEN DEMOLITION AREA #2

CRL ID: 39747.1061
Env Site Id: RVAAP-004-R-01
Alias:
Regulatory Driver: CERCLA
RIP Date: 05/31/2035
RC Date: 05/31/2035
RC Reason:
Site Closeout Date: 05/31/2035
Program: ER,A
Subprogram: MR
NPL Status: NO
HRS Score:
MRSPP:
RCWM: NO
Emerging Contaminants: NO
Emerging Contaminants Type:
Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	09/18/2002	12/21/2003
SI	09/30/2005	05/31/2008
RI/FS	10/31/2008	05/31/2035
RD	-	-
IRA	03/15/2015	05/31/2035
RA(C)	-	-
RA(O)	-	-
LTM	-	-

Site Narrative: The Open Demolition Area #2 (ODA #2) (RVAAP-004-R-01) Munitons Response Site (MRS) is a former open burn / open detonation area that was used between 1948 and 1991 for munitions and explosives demolition and disposal. The MRS is co-located with an Installation Restoration Program Area of Concern (AOC) RVAAP-04.

A Site Inspection (SI) was completed in 2008. The Final SI Report identified the MRS as being 35.4 acres and recommended the site for further evaluation for Munitions and Explosives of Concern (MEC) and Munitions Constituents (MC).

In 2008, a TCRA was conducted to address the potential for migration of munitions offsite in Sand Creek. In 2009-2011, a second TCRA was conducted at Rocket Ridge to address MEC and Material Potentially Presenting an Explosive Hazard (MPPEH) contamination along the leading slope of the creek.

In July 2009, a RI contract was awarded to characterize the nature and extent of MEC and MC contamination at the ODA #2 MRS. A partial RI was completed in 2015. The RI Report concluded that the MRS was much larger due to the presence of a significant kickout area. Some MC was detected, but not at levels that presented an unacceptable risk to potential receptors. MEC and MPPEH were confirmed at the site. The MRS was increased to 317.4 acres.

A Final Memorandum of Record and an Action Memorandum recommending a TCRA was completed in 2015. A Probability Assessment investigating the munitions risk at the site was completed in May 2015. A TCRA was conducted from May 2015 through January 2020 to reduce explosive safety hazards and better assess MEC and

potential MC contamination at the site.

A contract for a supplemental RI was awarded in September 2020; period of performance is through 30 September 2025. An RI addendum/data gap investigation will be required in the future. US Army Corps of Engineers (USACE)-Baltimore District is currently conducting semi-annual creek walks as part of an ongoing TCRA to prevent/monitor migration of MEC and MPPEH within the creek in the MRS.

Cleanup Strategy: The exit strategy for this site includes completion of a supplemental RI (already funded) to determine nature and extent of contamination of the soil. Groundwater will be investigated separately in the future. A Feasibility Study (FS) to evaluate remedial alternatives will be required, followed by a Proposed Plan (PP) and Record of Decision (ROD). Semi-annual creek walks will continue until the ROD is finalized. At this time there is insufficient information to plan future actions. Currently, the site is restricted. Future use is military training.

RAMSDELL QUARRY LANDFILL

CRL ID: 39747.1001
Env Site Id: RVAAP-01
Alias: RVAAP-01
Regulatory Driver: CERCLA
RIP Date: 03/15/2015
RC Date: 03/15/2015
RC Reason: All Required Cleanup Completed
Site Closeout Date: 02/15/2054
Program: ER,A
Subprogram: IR
NPL Status: NO
HRS Score:
RRSE:
RCWM: NO
Emerging Contaminants: NO
Emerging Contaminants Type:
Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	02/29/1988	04/30/1988
SI	06/30/1989	06/30/1989
RI/FS	06/30/2003	10/31/2009
RD	06/30/2007	09/30/2012
IRA	-	-
RA(C)	06/30/2010	03/15/2015
RA(O)	-	-
LTM	03/15/2015	02/15/2054

Site Narrative: Ramsdell Quarry Landfill (RQL) is situated in the northeastern portion of the facility and is 14 acres. The former quarry occupies approximately 10 acres of the AOC. A seasonally flooded wetland exists in the bottom of the quarry that is sometimes dry for extended periods. Quarrying activities were conducted at RQL until 1941. During that time, the quarry was excavated 30-40 feet below existing grade. The excavated sandstone and quartzite pebble conglomerate was used for road and construction ballast. From 1946 to the 1950s, the bottom of the quarry was used to burn waste explosives from Load Line 1. Reportedly, 18,000 500-pound (lb) incendiary or napalm bombs were burned, and liquid residues from annealing operations were disposed in the quarry. The landfill was used from 1941 to 1989. No historical information related to landfill operations was identified from 1941 to 1976. From 1976 to 1989, the landfill was used as a permitted nonhazardous solid waste landfill. Solid waste was disposed in RQL from 1976 until it was closed in 1989. The sanitary landfill was closed in 1990 under State of Ohio solid waste regulations and capped with a clay cover. Thirty years of post-closure care was required and was completed. The landfill achieved end of post-closure care in August 2021. The cap on the former permitted landfill covers approximately four acres along the western and southern portions of the quarry.

A Remedial Investigation (RI) was completed in September 2005. A Feasibility Study (FS) was completed in October 2006. A Proposed Plan (PP) was completed in March 2007. A Record of Decision (ROD) was signed and completed in October 2009. A Remedial Design (RD) was completed in June 2010. Soil removal per Alternative 3 in the ROD was initiated in July 2010. The excavation activities began with removing soil at the eastern edge of area RQL-043M. During soil removal activities, a large amount of construction and miscellaneous debris was encountered. Some of the debris (e.g., transite and roofing materials) was suspected to contain asbestos; therefore, the materials were sampled and analyzed for asbestos. Results revealed that transite and roofing materials within the excavation were asbestos-containing materials (ACM). Approximately 1,100 tons of soil and

construction debris (all considered friable asbestos) were removed from RQL and properly disposed. The soil removal area was extended into areas not contaminated by the contaminant of concern but to specifically remove ACM identified on the excavation sidewall. Due to identified asbestos, soil removal per Alternative 3 was discontinued and an Engineering Evaluation was completed in September 2011. The Engineering Evaluation re-evaluated the originally selected remedial alternative and additional alternatives to determine if the remedy at RQL required a change, given the noted site conditions.

A ROD Amendment was signed and completed in August 2013. A RD was completed in April 2014. A Remedial Action consisting of surficial removal of asbestos, access restrictions, a perimeter fence, asbestos signage, and Land Use Controls (LUCs) was completed in January 2015.

Restoration/Cleanup strategy: LUCs consisting of personnel briefing, inspections, asbestos signage, and access and digging restrictions will continue. Installation-wide five year review requirements are carried at this site. Costs for LUCs at RVAAP-01 (39747.1001), RVAAP-05 (39747.1005), RVAAP-06 (39747.1006), RVAAP-08 (39747.1008), RVAAP-09 (39747.1009), RVAAP-10 (39747.1010), RVAAP-11 (39747.1011), RVAAP-12 (39747.1012), RVAAP-50 (39747.1050) and RVAAP-51 (39747.1051) are tracked at RVAAP-01 (39747.1001). [RVAAP-06 and RVAAP-50 haven't reached LTM yet, but are anticipated to do so in FY25]. Groundwater monitoring requirements are carried in RVAAP-66 (39747.1072). Installation-wide support costs are tracked at this site. Current and future land use is restricted access.

WINKLEPECK BURNING GROUNDS

CRL ID: 39747.1005
Env Site Id: RVAAP-05
Alias: RVAAP-05
Regulatory Driver: CERCLA
RIP Date: 03/27/2018
RC Date: 03/27/2018
RC Reason: All Required Cleanup Completed
Site Closeout Date: 04/15/2054
Program: ER,A
Subprogram: IR
NPL Status: NO
HRS Score:
RRSE:
RCWM: NO
Emerging Contaminants: NO
Emerging Contaminants Type:
Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	02/29/1988	04/30/1988
SI	06/30/1989	06/30/1989
RI/FS	10/31/1994	09/15/2015
RD	09/15/2014	09/15/2015
IRA	08/31/2006	12/15/2009
RA(C)	02/15/2015	03/27/2018
RA(O)	-	-
LTM	04/15/2018	04/15/2054

Site Narrative: The Winklepeck Burning Grounds (RVAAP-05), consisted of approximately 216 acres and, operated from 1948 to 1998. Prior to 1980, there were open-burning activities performed in unlined pits, pads, and sometimes on the roads within the 216-acre area. Materials that were burned included: RDX, antimony sulfide, Composition B, lead azide, TNT, propellants, black powder, waste oils, sludge from the load lines, domestic wastes, explosively contaminated wastes (e.g. rags, papers, cardboard) and small amounts of laboratory chemicals. The pre-1980 burning was conducted on bare ground and resulting ash was abandoned in-place. Munitions, munitions debris (MD) (primarily scrap metal) and explosives were identified at the site. From 1980-1998, burning of scrap explosives, propellants, and explosively contaminated materials was conducted within raised refractory-lined trays located within a 1.5-acre area. In 1994, the Army notified Ohio EPA of their intent to withdraw the Part B permit application. The burn trays along with the 90-day storage unit, Building 1601, were closed in accordance with Ohio EPA guidance in 1998. The deactivation furnace soils were transferred from the RCRA to the CERCLA program under the DFFOs in June 2004. The management of groundwater monitoring is under the Facility-Wide Groundwater Monitoring Program (FWGWMP). A limited MEC clean-up took place within various portions of the site during 2004, 2005, 2008, and 2009. A PP was finalized in 2006. A September 2008 contract was awarded to conduct a Data Quality Objectives (DQO) study for MEC and chemical contaminants remaining within the AOC. The DQO report was completed in 2010. A Work Plan for additional sampling was finalized in 2012. Additional sampling was conducted in Fall 2012 in support of the upcoming multi-purpose machine gun range. Additional sampling results and analysis of the previously selected remedy with additional soil excavation was documented in the RI/FS Supplement. An Explanation of Significant Differences and remedial design (RD) work was completed in 2015. The removal action was completed in 2018.

Cleanup Strategy: LUCs include no residential use and a potable groundwater use restriction. Costs for LUCs at

RVAAP-01 (39747.1001), RVAAP-05 (39747. 1005), RVAAP-06 (39747.1006), RVAAP-08 (39747.1008), RVAAP-09 (39747.1009), RVAAP-10 (39747.1010), RVAAP-11 (39747.1011), RVAAP-12 (39747.1012), RVAAP-50 (39747.1050) and RVAAP-51 (39747.1051) are tracked at RVAAP-01 (39747.1001). Installation-wide five year review costs are carried at RVAAP-01. Current and future land use is military training.

C BLOCK QUARRY

CRL ID: 39747.1006
Env Site Id: RVAAP-06
Alias: RVAAP-06
Regulatory Driver: CERCLA
RIP Date: 08/04/2025
RC Date: 08/04/2025
RC Reason:
Site Closeout Date: 10/14/2055
Program: ER,A
Subprogram: IR
NPL Status: NO
HRS Score:
RRSE:
RCWM: NO
Emerging Contaminants: NO
Emerging Contaminants Type:
Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	02/29/1988	04/30/1988
SI	06/30/1989	06/30/1989
RI/FS	08/31/2004	06/27/2022
RD	10/15/2022	05/31/2024
IRA	-	-
RA(C)	11/04/2022	08/04/2025
RA(O)	-	-
LTM	08/04/2025	08/15/2055

Site Narrative: RVAAP-06 (C Block Quarry) is an abandoned quarry, approximately 0.96 acres. It was used as a disposal area for annealing process wastes (chromic acid) for a short time during the 1950s. Liquid wastes were reported to have been dumped in the pit bottom. The site is now heavily forested. The contaminants of concern are chromium and asbestos. The Remedial Investigation/Feasibility Study (RI/FS) was completed in April 2019 and the Proposed Plan (PP) was finalized in May 2020.

Cleanup Strategy: The anticipated exit strategy for this site includes removal of surficial asbestos and implementation of LUCs. Anticipated LUCs will include no residential use, access and digging restrictions, maintenance of signage and siebert stakes, annual inspections and training. LTM will include five-year reviews.

Groundwater monitoring requirements are carried in RVAAP-66 (39747.1072), Facility-wide Groundwater. Five-year review requirements are tracked at RVAAP-01. Costs for LUCs at RVAAP-01 (39747.1001), RVAAP-05 (39747.1005), RVAAP-06 (39747.1006), RVAAP-08 (39747.1008), RVAAP-09 (39747.1009), RVAAP-10 (39747.1010), RVAAP-11 (39747.1011), RVAAP-12 (39747.1012), RVAAP-50 (39747.1050) and RVAAP-51 (39747.1051) are tracked at RVAAP-01 (39747.1001). Current and future land use is restricted access.

BLOCK D IGLOO

CRL ID: 39747.1062
Env Site Id: RVAAP-060-R-01
Alias:
Regulatory Driver: CERCLA
RIP Date: 09/30/2026
RC Date: 09/30/2026
RC Reason:
Site Closeout Date: 09/30/2026
Program: ER,A
Subprogram: MR
NPL Status: NO
HRS Score:
MRSPP:
RCWM: NO
Emerging Contaminants: NO
Emerging Contaminants Type:
Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	09/18/2002	12/21/2003
SI	09/30/2005	05/31/2008
RI/FS	10/15/2008	11/12/2019
RD	09/30/2021	04/30/2023
IRA	-	-
RA(C)	09/30/2021	09/30/2026
RA(O)	-	-
LTM	-	-

Site Narrative: The Block D Igloo MRS (RVAAP-060-R-01) was the result of an explosion that occurred at Igloo 7-D-15 ("D" Block) on March 24, 1943. A munitions response was conducted by Explosives Ordnance Disposal team and a follow-on site assessment was later conducted by Huntsville District to assess the type of munitions stored in the bunker, as well as the size of the debris field created by the explosion. The site assessment identified a 3,000-foot blast radius around the former storage bunker. A SI was completed for the Block D Igloo site in 2008. The SI recommended 340.20 acres be evaluated for MEC and MC. In July 2009, a contract was awarded to characterize the nature and extent of MEC and MC contamination at the Block D Igloo MRS (RVAAP-060-R-01). The RI was completed in 2015. The RI Report concluded that a release of MEC had occurred, but the extent of the release was much less than suspected in the SI. Some MC was detected, but not at levels that presented an unacceptable risk to potential receptors. The MRS acreage was reduced to 101.6 acres. The RI Report recommended evaluation of remedial alternatives for MEC in a FS. MPPEH was confirmed at the site. The FS was completed in June 2018. The PP was completed in January 2019. The ROD was completed in November 2019. A surface clearance was completed in January 2021 and the Final After Action Report was completed in June 2021. The surface clearance was completed to support installation timber harvest of this area to prepare it for the remedial action. A performance-based contract was awarded in September 2021 to perform RD/RA(C). Period of performanc ends 29 September 2026.

Cleanup Strategy:
The exit strategy for this site includes a MEC removal action to achieve UU/UE. Following the completion of the removal action, a NFA Explosives Safety Submittal will be completed. Costs for this site are tracked at RVAAP-063-R-01 (39747.1057). Current and future land use is military training.

GROUP 8 MRS

CRL ID: 39747.1057
Env Site Id: RVAAP-063-R-01
Alias:
Regulatory Driver: CERCLA
RIP Date: 09/30/2026
RC Date: 09/30/2026
RC Reason:
Site Closeout Date: 09/30/2026
Program: ER,A
Subprogram: MR
NPL Status: NO
HRS Score:
MRSPP:
RCWM: NO
Emerging Contaminants: NO
Emerging Contaminants Type:
Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	09/18/2002	12/21/2003
SI	09/30/2005	05/31/2008
RI/FS	04/30/2010	01/14/2021
RD	09/30/2021	04/30/2023
IRA	-	-
RA(C)	09/30/2021	09/30/2026
RA(O)	-	-
LTM	-	-

Site Narrative: The Group 8 (RVAAP-063-R-01) Munitions Response Site (MRS) consists of most of the area between Buildings 846 and 849 and may have been used for debris and trash burning. Adjacent buildings were previously used for salvage operations.

A SI was completed for the site in 2008. The SI recommended 2.65 acres be evaluated for MEC and munitions constituents (MC).

The Remedial Investigation (RI) was completed in 2015. The RI Report concluded that a release of MEC had not occurred at the site. However, MC was detected at the site at concentrations that posed an unacceptable risk to potential receptors. In addition, significant amounts of munitions debris was identified. The Feasibility Study (FS) was completed in August 2019. The Proposed Plan was completed in 2020. The ROD was completed in January 2021 and the selected remedy was a soil removal action. A performance-based contract was awarded in September 2021 to perform RD/RA-C.

Cleanup Strategy: A soil removal action for MC is underway (funded) to achieve UU/unlimited exposure (UE) at this site. Costs for RVAAP-060-R-01 (39747.1062) are tracked at this site. Current and future land use is military training.

LOAD LINE 1

CRL ID: 39747.1008
Env Site Id: RVAAP-08
Alias: RVAAP-08
Regulatory Driver: CERCLA
RIP Date: 12/09/2021
RC Date: 12/09/2021
RC Reason: All Required Cleanup Completed
Site Closeout Date: 12/15/2053
Program: ER,A
Subprogram: IR
NPL Status: NO
HRS Score:
RRSE:
RCWM: NO
Emerging Contaminants: NO
Emerging Contaminants Type:
Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	02/29/1988	04/30/1988
SI	06/30/1989	06/30/1989
RI/FS	10/31/1994	03/04/2020
RD	09/30/2019	10/02/2020
IRA	09/30/2003	07/31/2008
RA(C)	09/30/2019	12/09/2021
RA(O)	-	-
LTM	12/15/2021	12/15/2053

Site Narrative: From 1941 through 1945, Load Line 1 was used to melt and load 2,4 ,6-trinitrotoluene (TNT) and Composition B into large-caliber shells and bombs. From 1947 to 1949, demilitarization projects occurred at Load Line 1. In 1949, the TNT washout plant and debanding equipment were moved from Load Line 1 to Load Line 12. From 1950 to 1952, Load Line 1 reclaimed cartridge cases for reuse. Sulfuric acid, sodium orthosilicate, chromic acid, and alkali were used in the annealing process. From 1961 to 1967, Load Line 1 was used for munitions rehabilitation activities and the demilitarization of 90mm projectiles; activities included dismantling, replacing components, and repainting mines. In 1965 and 1966, Load Line 1 was used for demilitarizing propellant charges and cartridges. In 1973 and 1974, demilitarization operations on 90mm cartridges occurred at the load line. Load Line 1 was rehabilitated in 1951 to remove and replace soil contaminated with accumulated explosives and to remove and replace wastewater lines. All buildings and structures at Load Line 1 have been demolished. In 2007, in accordance with the Load Lines 1-4 Interim ROD (to attain mounted training, no digging use), a total of 539 tons of PCB- contaminated soil and 3,126 tons of non-hazardous soil were removed from 51 areas within Load Line 1. In May 2009, building slabs at Load Line 1 were removed. Excavation of 359 cy of contaminated soils that were located beneath b uilding slabs was conducted in September 2010. In order to attain Commercial/Industrial use, which would allow more flexibility for military training, additional sampling was conducted and the AOC was re-evaluated in a Feasibility Study Addendum in June 2017. A Proposed Plan was completed in October 2018. A ROD amendment was completed in March 2020. The RD was completed in September 2020. The removal action was completed in February 2021 and the RA completion report was finalized in December 2021.

Cleanup Strategy: LTM will include no residential use, inspections and annual reporting. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. Installation-wide five year review requirements are carried at RVAAP-01. Costs for LUCs at RVAAP-01 (3 9747.1001), RVAAP-05 (39747.1005),

RVAAP-06 (39747.1006), RVAAP-08 (39747.1008), RVAAP-09 (39747.1009), RVAAP-10 (39747.1010), RVAAP-11 (39747.1011), RVAAP-12 (39747.1012), RVAAP-50 (39747.1050) and RVAAP-51 (39747.1051) are tracked at RVAAP-01 (39747.1001). Current and future land use is military training.

LOAD LINE 2

CRL ID: 39747.1009
Env Site Id: RVAAP-09
Alias: RVAAP-09
Regulatory Driver: CERCLA
RIP Date: 12/09/2021
RC Date: 12/09/2021
RC Reason: All Required Cleanup Completed
Site Closeout Date: 12/15/2053
Program: ER,A
Subprogram: IR
NPL Status: NO
HRS Score:
RRSE:
RCWM: NO
Emerging Contaminants: NO
Emerging Contaminants Type:
Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	02/29/1988	04/30/1988
SI	06/30/1989	06/30/1989
RI/FS	10/31/1994	05/06/2020
RD	09/30/2019	10/02/2020
IRA	09/30/2003	07/31/2008
RA(C)	09/30/2019	12/09/2021
RA(O)	-	-
LTM	12/15/2021	12/15/2053

Site Narrative: From 1941 through 1945, Load Line 2 was used to melt and load TNT and Composition B into large-caliber shells and bombs. Demilitarization projects also occurred at Load Line 2 from 1947 through 1949 when a washout plant was installed. From 1950 to 1952, Load Line 2 reclaimed cartridge cases using an annealing process for reuse. During the entirety of its operational history, Load Line 2 produced about 10 million munitions, and approximately 4 million pounds of TNT were salvaged during demilitarization activities. In 1951, Load Line 2 was rehabilitated, including the removal of explosive accumulations. All buildings and structures at Load Line 2 have been demolished. In 2007, in accordance with the Load Lines 1-4 Interim ROD (to attain mounted training, no digging use), a total of 320 tons of PCB-contaminated soil and 2,617 tons of non-hazardous soil were removed from a total of 24 locations within Load Line 2. In 2008, building slabs at Load Line 2 were removed. Excavation of 885 cy of contaminated soils located beneath building slabs was conducted in June 2010. In order to attain Commercial/Industrial use, which would allow more flexibility for military training, additional sampling was conducted and the AOC was re-evaluated in a FS Addendum in June 2017. A PP was completed in October 2018. A ROD amendment was completed in March 2020. The RD was completed in September 2020. The removal action was completed in February 2021. The Remedial Action Completion Report was finalized in December 2021.

Cleanup Strategy: The anticipated exit strategy for this site includes LTM. LTM will include no residential use, inspections and annual reporting. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. Installation-wide five year review requirements are carried at RVAAP-01. Costs for LUCs at RVAAP-01 (39747.1001), RVAAP-05 (39747.1005), RVAAP-06 (39747.1006), RVAAP-08 (39747.1008), RVAAP-09 (39747.1009), RVAAP-10 (39747.1010), RVAAP-11 (39747.1011), RVAAP-12 (39747.1012), RVAAP-50 (39747.1050) and RVAAP-51 (39747.1051) are tracked at RVAAP-01 (39747.1001). Current and future land use is military training.

LOAD LINE 3

CRL ID: 39747.1010
Env Site Id: RVAAP-10
Alias: RVAAP-10
Regulatory Driver: CERCLA
RIP Date: 12/09/2021
RC Date: 12/09/2021
RC Reason: All Required Cleanup Completed
Site Closeout Date: 12/15/2053
Program: ER,A
Subprogram: IR
NPL Status: NO
HRS Score:
RRSE:
RCWM: NO
Emerging Contaminants: NO
Emerging Contaminants Type:
Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	02/29/1988	04/30/1988
SI	06/30/1989	06/30/1989
RI/FS	10/31/1994	03/04/2020
RD	09/30/2019	10/02/2020
IRA	09/30/2003	07/31/2008
RA(C)	09/30/2019	12/09/2021
RA(O)	-	-
LTM	12/15/2021	12/15/2053

Site Narrative: Load Line 3 was primarily used to melt bulk explosives and load Composition B into large-caliber shells and bombs. During its operat ional history from 1941 to 1945, Load Line 3 produced approximately 6.5 million munitions. Demilitarization activities were conducted between 1951 and 1957, during which time approximately 228,000 munitions were processed at the load line. During the operation of Load Line 3, bulk TNT and HMX were offloaded at Buildings EA-6 and EA-6A for screening and preparation before being transported to melt pour Buildings EA-4 and EA-4A for processing and loading into shells. Bulk explosive carrier washout activities were conducted at Building EB-25. All buildings and structures at Load Line 3 have been demolished. In 2007, in accordance with the Load Lines 1-4 Interim ROD (to attain mounted training, no digging), a total of 893 tons of PCB-contaminated soil and 2,538 tons of non-hazardous soil were removed from 35 locations within Load Line 3. In 2008, building slabs at Load Line 3 were removed. Excavation of 1,602 cy of contaminated soils located beneath building slabs was conducted in June 2010. In order to attain Commercial/Industrial use which would allow more flexibility for military training, additional sampling was conducted and the AOC was re-evaluated in a Feasibility Study Addendum in June 2017. A Proposed Plan was completed in October 2018 A ROD amendment was completed in March 2020. The RD was completed in September 2020. The removal action was completed in February 2021. The Remedial Action Completion Report was finalized in December 2021.

Cleanup Strategy: The anticipated exit strategy for this site is LTM, and will include no residential use, inspections and annual reporting. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. Installation-wide five year review requirements are carried at RVAAP-01. Costs for LUCs at RVAAP-01 (39747.1001), RVAAP-05 (39747.1005), RVAAP-06 (39747.1006), RVAAP-08 (39747.1008), RVAAP-09 (39747.1009), RVAAP-10 (39747.1010), RVAAP-11 (39747.1011), RVAAP-12 (39747.1012), RVAAP-50 (39747.1050)

and RVAAP-51 (39747.1051) are tracked at RVAAP-01 (39747.1001). Current and future land use is military training.

LOAD LINE 4

CRL ID: 39747.1011
Env Site Id: RVAAP-11
Alias: RVAAP-11
Regulatory Driver: CERCLA
RIP Date: 12/09/2021
RC Date: 12/09/2021
RC Reason: All Required Cleanup Completed
Site Closeout Date: 12/15/2053
Program: ER,A
Subprogram: IR
NPL Status: NO
HRS Score:
RRSE:
RCWM: NO
Emerging Contaminants: NO
Emerging Contaminants Type:
Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	02/29/1988	04/30/1988
SI	06/30/1989	06/30/1989
RI/FS	10/31/1994	03/04/2020
RD	09/30/2019	10/02/2020
IRA	09/30/2003	07/31/2008
RA(C)	09/30/2019	12/09/2021
RA(O)	-	-
LTM	12/15/2021	12/15/2053

Site Narrative: Load Line 4 operated from 1941 to 1945 to produce 91,970 projectiles and bombs and again from 1951 to 1957 to produce 1,269,262 mines. Load Line 4 was used to melt and load TNT into large-caliber shells, bombs, and antitank mines. During its operational history, Load Line 4 produced about 1.2 million munitions. All buildings and structures at Load Line 4 have been demolished. In 2007, in accordance with the Load Lines 1-4 Interim ROD, a total of 1 ,208 tons of non-hazardous soil were removed from nine locations within Load Line 4. In 2008, building slabs at Load Line 4 were removed. No additional soil beneath slabs required removal. In order to attain Commercial/Industrial use which would allow more flexibility for military training, additional sampling was conducted and the AOC was re-evaluated in a Feasibility Study Addendum in June 2017. A Proposed Plan was completed in October 2018. A ROD amendment was completed in March 2020. The RD was completed in September 2020. The removal action was completed in February 2021. The Remedial Action Completion Report was finalized in December 2021.

Cleanup Strategy: The anticipated exit strategy for this site is LTM, and will include no residential use, inspections and annual reporting. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater. Installation-wide five year review requirements are carried at RVAAP-01. Costs for LUCs at RVAAP-01 (39747.1001), RVAAP-05 (39747.1005), RVAAP-06 (39747.1006), RVAAP-08 (39747.1008), RVAAP-09 (39747.1009), RVAAP-10 (39747.1010), RVAAP-11 (39747.1011), RVAAP-12 (39747.1012), RVAAP-50 (39747.1050) and RVAAP-51 (39747.1051) are tracked at RVAAP-01 (39747.1001). Current and future land use is military training.

LOAD LINE 12

CRL ID: 39747.1012

Env Site Id: RVAAP-12

Alias: RVAAP-12

Regulatory Driver: CERCLA

RIP Date: 12/09/2021

RC Date: 12/09/2021

RC Reason: All Required Cleanup Completed

Site Closeout Date: 12/15/2053

Program: ER,A

Subprogram: IR

NPL Status: NO

HRS Score:

RRSE:

RCWM: NO

Emerging Contaminants: NO

Emerging Contaminants Type:

Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	02/29/1988	04/30/1988
SI	06/30/1989	06/30/1989
RI/FS	10/31/1999	03/04/2020
RD	09/30/2019	10/02/2020
IRA	09/15/2003	07/15/2008
RA(C)	09/30/2019	12/09/2021
RA(O)	-	-
LTM	12/15/2021	12/15/2053

Site Narrative: Load Line 12 is a former ammonium nitrate manufacturing facility that was operational from 1941 to 1946. From 1941 to 1943, explosive-grade ammonium nitrate was manufactured. Munitions renovation and demilitarization operations were performed after 1943. Load Line 12 was leased by the Silas Mason Company from 1946 to 1950 to manufacture fertilizer-grade ammonium nitrate. To improve the quality of TNT recovered from demilitarization operations, washout operations were converted to a steam melt-out process in the late 1950s. A pinkwater treatment plant located near Building 904 was operational from 1981 to 2000. From 1965 to 1967, Hercules Alcor, Inc. leased Building FF-19 to produce aluminum chloride. From 1969 to 1971, Load Line 12 produced M54 primers in support of the Southeast Asian conflict. Demolition of buildings occurred between 1973 and 2000. In 1999, approximately 1,500 cubic feet of soil were removed as part of an explosives composting pilot study. In 2010, in accordance with the Record of Decision for Soil and Dry Sediment for the RVAAP-12 Load Line 12, 1,181 tons of contaminated sediment were removed from the Main Ditch. To address surface water and wet sediment, a Phase III RI was completed in February 2017. A No Further Action Proposed Plan for Surface Water and Wet Sediment was completed in November 2017. A No Further Action Record of Decision for Surface Water and Wet Sediment was finalized in June 2019. In order to attain Commercial/Industrial use which would allow more flexibility for military training, additional sampling was conducted and the AOC was re-evaluated in a Feasibility Study Addendum in June 2017. A Proposed Plan was completed in October 2018. A ROD amendment was completed in March 2020. The RD was completed in September 2020. The removal action was completed in February 2021. The Remedial Action Completion Report was finalized in December 2021.

Cleanup Strategy: The anticipated exit strategy for this site is LTM, and will include no residential use, inspections and annual reporting. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide

Groundwater. Installation-wide five year review requirements are carried at RVAAP-01. Costs for LUCs at RVAAP-01 (39747.1001), RVAAP-05 (39747.1005), RVAAP-06 (39747.1006), RVAAP-08 (39747.1008), RVAAP-09 (39747.1009), RVAAP-10 (39747.1010), RVAAP-11 (39747.1011), RVAAP-12 (39747.1012), RVAAP-50 (39747.1050) and RVAAP-51 (39747.1051) are tracked at RVAAP-01 (39747.1001). Current and future land use is military training.

SAND CREEK DISPOSAL ROAD LANDFILL

CRL ID: 39747.1034
Env Site Id: RVAAP-34
Alias: RVAAP-34
Regulatory Driver: CERCLA
RIP Date: 10/15/2027
RC Date: 10/15/2027
RC Reason:
Site Closeout Date: 10/15/2027
Program: ER,A
Subprogram: IR
NPL Status: NO
HRS Score:
RRSE:
RCWM: NO
Emerging Contaminants: NO
Emerging Contaminants Type:
Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	07/31/1994	02/29/1996
SI	07/31/1994	06/30/1999
RI/FS	09/30/2004	10/15/2027
RD	-	-
IRA	09/15/2002	09/30/2022
RA(C)	-	-
RA(O)	-	-
LTM	-	-

Site Narrative: RVAAP-34 was reported by former workers at Ravenna Army Ammunition Plant (RVAAP) to have been an open dump for materials including, but not limited to, concrete, wood, asbestos debris, lab bottles, 55-gallon drums and fluorescent light tubes. Debris was disposed at the surface but became covered by vegetation. The site is approximately one (1) acre and located adjacent to Sand Creek. The dates of operation of this site are unknown but believed to be between 1950 and 1960. A surface soil and debris removal [Interim Remedial Action (IRA)] was completed in 2003. A Data Quality Objectives study, geophysical magnetometer study and soil sampling were completed in 2009. A Remedial Investigation (RI) was completed in 2017. An Engineering Evaluation/Cost Analysis (EE/CA) was completed in 2019. An Action Memorandum was completed in July 2020. A non-time critical removal action (NTCRA) was started in 2021 and went into 2022 but additional contamination beyond the scope of the contract was identified and the NTCRA was not completed.

In early FY23, a contract was awarded for CERCLA actions at nine AOCs at Ravenna, including the subject site. The contract included actions to complete RI/FS at five sites (including the subject site), and to complete additional delineation and Remedial Design (RD) addendum needed at four sites that were in RD/Remedial Action (Construction) (RA(C)) phase.

Cleanup Strategy: Once the RI/Feasibility Study (FS) is complete (additional delineation underway), need for a remedial action will be determined. Groundwater monitoring requirements are carried in RVAAP-66, Facility-wide Groundwater (CRL ID: 39747.1072).

NACA TEST AREA

CRL ID: 39747.1038

Env Site Id: RVAAP-38

Alias: RVAAP-38

Regulatory Driver: CERCLA

RIP Date: 10/15/2027

RC Date: 10/15/2027

RC Reason:

Site Closeout Date: 10/15/2027

Program: ER,A

Subprogram: IR

NPL Status: NO

HRS Score:

RRSE:

RCWM: NO

Emerging Contaminants: NO

Emerging Contaminants Type:

Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	08/31/1995	02/29/1996
SI	08/31/1995	12/31/1998
RI/FS	09/30/1999	03/04/2020
RD	09/15/2017	03/29/2021
IRA	-	-
RA(C)	09/15/2017	10/15/2027
RA(O)	-	-
LTM	-	-

Site Narrative: National Advisory Committee on Aeronautics (NACA) Test Area is located west of Greenleaf Road at the southern end of Demolition Road in the southwestern portion of the facility. The area of concern (AOC) is approximately 47 acres. This AOC was designed and used by NACA from 1947 to 1953. The site was used to conduct experimental crash tests of excess military aircraft in order to develop explosion-proof fuel tanks and fuel for aircraft. Excess airplanes were flown to the former Ravenna Army Ammunition Plant (RVAAP) under their own power, taxied along installation roads, and staged at NACA Test Area. Seventeen excess aircraft were used during NACA Test Area operations. The planes were fueled and then propelled under their own power on a guide monorail. The planes were crashed into a concrete barrier at speeds from 80–105 miles per hour. During the tests, high-speed films were made to study fuel spillage, generation of ignition sources, flame front progression, and toxic gas generation, among other parameters. Combustible liquids involved in testing activities included 100/130 octane aviation fuels, low-volatility fuel, flame retardants, lubricating oil, coolant compounds, hydraulic fluids, alcohol, and brake fluid. Estimates of aviation fuel consumed are approximately 17,850 gallons. However, the amounts of other liquids potentially released are not known. Fluids from the burning airplanes were generally found in a fan-shaped area beginning at the crash barrier and extending out in front of the airplane up to 400 feet (ft). Some aircraft were completely consumed by fire. Aircraft that were significantly damaged during testing were stripped of instrumentation and salvageable parts, and all of the aircraft were removed from the site.

Site features associated with NACA Test Area include an east-west trending runway or crash strip approximately 1,625 ft long. The crash area was located at the east end of the strip. The total crash area is approximately 12 acres. The former plane storage area was located east and south of the crash area. Many of the features, including the crash barrier, utilities, and buildings (i.e., observation towers, fuel shack, storage sheds) have been

removed. Remaining AOC features include the concrete crash strip and pad, and a small man-made reservoir southeast of the former crash barrier. Currently, the AOC is forested around the perimeter. The interior of the AOC, which includes the crash strip, is relatively open and occasionally mowed. Hinkley Creek is located south/southwest of the AOC.

The Remedial Investigation (RI)/Feasibility Study (FS) was completed in 2018. The Proposed Plan (PP) was completed in April 2019. The Record of Decision (ROD) was completed in March 2020. A Remedial Design (RD) was completed in March 2021. Remedial Action (RA) field activities started in 2021 and continued into 2022. Additional contaminated soils beyond the scope of the RD/RA contract were identified during the RA and additional delineation and removal activities are required.

In early Fiscal Year 2023, a contract was awarded for Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions at nine AOCs at Ravenna, including the subject site. The contract included actions to complete RI/FS at five sites, and to complete additional delineation and RD addendum needed at four sites (including the subject site) that were in RD/Remedial Action (Construction) (RA(C)) phase.

Cleanup Strategy: The anticipated exit strategy for this site includes additional delineation and a RD Addendum and Explanation of Significant Difference (ESD), being captured under the Remedial Action (Construction) [RA(C)] phase. Once complete, costs for the additional soil removal under the RA(C) phase to achieve unrestricted use (UU) will be determined. Groundwater monitoring requirements are carried in RVAAP-66 (39747.1072), Facility-wide Groundwater. Current and future land use is military training.

LOAD LINE 9

CRL ID: 39747.1042
Env Site Id: RVAAP-42
Alias: RVAAP-42
Regulatory Driver: CERCLA
RIP Date: 10/15/2027
RC Date: 10/15/2027
RC Reason:
Site Closeout Date: 10/15/2027
Program: ER,A
Subprogram: IR
NPL Status: NO
HRS Score:
RRSE:
RCWM: NO
Emerging Contaminants: NO
Emerging Contaminants Type:
Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	02/28/1998	06/30/1998
SI	07/31/1998	07/31/1998
RI/FS	08/31/2002	06/07/2019
RD	09/15/2017	05/04/2021
IRA	-	-
RA(C)	09/15/2017	10/15/2027
RA(O)	-	-
LTM	-	-

Site Narrative: Load Line 9 (RVAAP-42) was used to produce fuze components for artillery projectiles from 1941 to 1945. The buildings and foundations were demolished in 2003. Basements for several buildings were demolished in place to three feet below grade. Contaminants of concern (COCs) include polycyclic aromatic hydrocarbons (PAHs) and mercury. The Remedial Investigation (RI)/Feasibility Study (FS) was completed in 2017. The Proposed Plan (PP) was completed in 2018. The Record of Decision (ROD) was completed in 2019. The Remedial Design (RD) was completed in 2021. The Remedial Action (RA) started in 2021 and continued into 2022. During the RA it was determined that additional delineation and excavation beyond the scope of the current contract would be required to finish the RA.

In early Fiscal Year 2023, a contract was awarded for Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions at nine AOCs at Ravenna, including the subject site. The contract included actions to complete RI/FS at five sites, and to complete additional delineation and RD addendum needed at four sites (including the subject site) that were in RD/Remedial Action (Construction) (RA(C)) phase.

Cleanup Strategy: The anticipated exit strategy for this site includes additional delineation and a RD Addendum and Explanation of Significant Difference (ESD), being captured under the Remedial Action (Construction) [RA(C)] phase. Once complete, costs for the additional soil removal under the RA(C) phase to achieve unrestricted use (UU) will be determined. Groundwater monitoring requirements are carried in RVAAP-66 (39747.1072), Facility-wide Groundwater. Current and future land use is military training.

WET STORAGE AREA

CRL ID: 39747.1045

Env Site Id: RVAAP-45

Alias: RVAAP-45

Regulatory Driver: CERCLA

RIP Date: 10/15/2027

RC Date: 10/15/2027

RC Reason:

Site Closeout Date: 10/15/2027

Program: ER,A

Subprogram: IR

NPL Status: NO

HRS Score:

RRSE:

RCWM: NO

Emerging Contaminants: NO

Emerging Contaminants Type:

Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	02/28/1998	06/30/1998
SI	07/31/1998	07/31/1998
RI/FS	09/30/2004	06/05/2019
RD	09/15/2017	04/16/2021
IRA	-	-
RA(C)	09/15/2017	10/15/2027
RA(O)	-	-
LTM	-	-

Site Narrative: Wet Storage Area is a 36-acre fenced area of concern (AOC) located directly northwest of the intersection of George Road and Newton Falls Road. From 1941 through 1945, Wet Storage Area was used to store highly explosive primary explosives, including lead azide, mercury fulminate, and tetryl. During storage activities, explosive material was containerized, covered with water within drums, and stored separately in six igloos at the AOC. WS-1 and WS-1A were used to store lead azide, WS-2 and WS-2A were used to store mercury fulminate, and WS-3 and WS-3A were used to store tetryl. Four igloos (WS-1, WS-1A, WS-2, and WS-2A) were demolished in July 2004. All above-grade concrete structures and floor slabs were removed from the four igloos, and any foundations were removed to 1 foot below ground surface (bgs). All concrete from the demolition of the four igloos was transported to the clean hard-fill area in Load Line 1. The two remaining igloos (WS-3 and WS-3A) within the eastern portion of the AOC were refurbished. The earthen mounds that backed the four demolished igloos are still visible. Other areas of Wet Storage Area are forested.

The Remedial Investigation (RI)/Feasibility Study (FS) was completed in March 2017. The Proposed Plan (PP) was completed in February 2018. The Record of Decision (ROD) was completed in June 2019. The Remedial Design (RD) was completed in 2021. The Remedial Action (RA) started in 2021 and continued into 2022. Additional contaminated soil beyond the scope of the current contract was identified.

In early Fiscal Year 2023, a contract was awarded for Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions at nine AOCs at Ravenna, including the subject site. The contract included actions to complete RI/FS at five sites, and to complete additional delineation and RD addendum needed at four sites (including the subject site) that were in RD/Remedial Action (Construction) (RA(C)) phase.

Cleanup Strategy: The anticipated exit strategy for this site includes additional delineation and a RD Addendum and Explanation of Significant Difference (ESD), being captured under the Remedial Action (Construction) [RA(C)] phase. Once complete, costs for the additional soil removal under the RA(C) phase to achieve unrestricted use (UU) will be determined. Groundwater monitoring requirements are carried in RVAAP-66 (39747.1072), Facility-wide Groundwater. Current and future land use is military training.

ATLAS SCRAP YARD

CRL ID: 39747.1050
Env Site Id: RVAAP-50
Alias: RVAAP-50
Regulatory Driver: CERCLA
RIP Date: 09/30/2025
RC Date: 09/30/2025
RC Reason:
Site Closeout Date: 10/01/2055
Program: ER,A
Subprogram: IR
NPL Status: NO
HRS Score:
RRSE:
RCWM: NO
Emerging Contaminants: NO
Emerging Contaminants Type:
Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	02/28/1998	06/30/1998
SI	07/31/1998	07/31/1998
RI/FS	08/31/2004	08/23/2022
RD	06/01/2022	05/31/2024
IRA	-	-
RA(C)	11/04/2022	09/30/2025
RA(O)	-	-
LTM	10/01/2025	10/01/2055

Site Narrative: In the 1940s, RVAAP-50 (Atlas Scrap Yard) contained a complex of buildings, including barracks type housing that supported the principal construction and engineering company staff and included barracks type housing. After World War II (WWII), a majority of the Atlas building complex was demolished leaving the remaining portion of structures to support the installation roads and grounds maintenance staff and equipment, as well as, 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. The site became a storage/stockpile yard for various types of bulk materials used in the day-to-day installation operations such as gravel, railroad ballast, sand, culvert pipe, railroad ties, and telephone poles. In the mid to late-1980s, the southeastern portion of the old Atlas area became a staging area for salvaged ammunition boxes from the demilitarization of defunct Vietnam War era munitions.

The Remedial Investigation (RI) was completed in August 2017. The Feasibility Study (FS) was completed in October 2019. The Proposed Plan (PP) was completed in August 2020. The ROD was completed on 23 August 2022.

Cleanup Strategy: The anticipated exit strategy for this site includes a removal action involving soil treatment/excavation with LUCs. A portion of the AOC will achieve unrestricted use and will not require LUCs. Another portion will achieve commercial/industrial use and will require LUCs. Annual inspections and reporting, no residential use and five year reviews will be completed. Groundwater monitoring requirements are carried in RVAAP-66 (39747.1072), Facility-wide Groundwater. Installation-wide five year review requirements are carried at RVAAP-01. Costs for LUCs at RVAAP-01 (39747.1001), RVAAP-05 (39747.1005), RVAAP-06 (39747.1006), RVAAP-08 (39747.1008), RVAAP-09 (39747.1009), RVAAP-10 (39747.1010), RVAAP-11 (39747.1011), RVAAP-12

(39747.1012), RVAAP-50 (39747.1050) and RVAAP-51 (39747.1051) are tracked at RVAAP-01 (39747.1001). Current and future land use is military training.

DUMP ALONG PARIS-WINDHAM ROAD

CRL ID: 39747.1051
Env Site Id: RVAAP-51
Alias: RVAAP-51
Regulatory Driver: CERCLA
RIP Date: 11/26/2019
RC Date: 11/26/2019
RC Reason: All Required Cleanup Completed
Site Closeout Date: 12/15/2053
Program: ER,A
Subprogram: IR
NPL Status: NO
HRS Score:
RRSE:
RCWM: NO
Emerging Contaminants: NO
Emerging Contaminants Type:
Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	02/28/1998	06/30/1998
SI	07/31/1998	07/31/1998
RI/FS	09/30/2001	05/24/2018
RD	05/24/2018	04/15/2019
IRA	09/30/2002	09/30/2004
RA(C)	04/15/2019	11/26/2019
RA(O)	-	-
LTM	11/26/2019	11/25/2053

Site Narrative: RVAAP-51 (Dump Along Paris-Windham Road) is adjacent to the Sand Creek floodplain and was used as an open dump for miscellaneous materials, including transite siding. The dates of operation for the dump are unknown. Debris removal was completed in January 2004. Confirmation sampling detected PAHs and asbestos close to the road within the embankment. No attempt was made to remove remaining debris within the roadbed embankment as it would have compromised the stability of Paris-Windham Road. The Final Site Characterization Focused Feasibility Study was approved in December 2015. The PP was finalized in October 2016. The ROD was finalized in May 2018. The RD/RA, including sign installation, was completed in 2019.

Cleanup Strategy: Groundwater monitoring requirements are carried in RVAAP-66 (39747.1072), Facility-wide Groundwater. LUC inspections, sign and Siebert stake maintenance, restricted access, and reporting will continue. LUCs cost requirements at RVAAP-01 (39747.1001), RVAAP-05 (39747.1005), RVAAP-08 (39747.1008), RVAAP-09 (39747.1009), RVAAP-10 (39747.1010), RVAAP-11 (39747.1011), RVAAP-12 (39747.1012), RVAAP-50 (39747.1050) and RVAAP-51 (39747.1051) are tracked at RVAAP-01 (39747.1001). Installation-wide five year review requirements are also carried at RVAAP-01 (39747.1001). Current and future land use is restricted access.

FACILITY-WIDE GROUNDWATER

CRL ID: 39747.1072
Env Site Id: RVAAP-66
Alias:
Regulatory Driver: CERCLA
RIP Date: 10/01/2029
RC Date: 10/01/2059
RC Reason:
Site Closeout Date: 10/01/2059
Program: ER,A
Subprogram: IR
NPL Status: NO
HRS Score:
RRSE:
RCWM: NO
Emerging Contaminants: NO
Emerging Contaminants Type:
Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	02/29/1988	04/30/1988
SI	05/31/1988	06/30/1989
RI/FS	10/31/1999	09/30/2027
RD	10/01/2027	09/30/2028
IRA	10/31/2011	03/15/2016
RA(C)	10/01/2028	09/30/2029
RA(O)	10/01/2029	10/01/2059
LTM	-	-

Site Narrative: Groundwater is managed through a facility-wide approach called Facility-Wide Groundwater Monitoring Program (FWGWMP) under RVAAP-66. The FWGWMP is a component of the Director's Final Findings and Orders (DFFO) with the Ohio EPA dated June 2004. There are over 300 wells facility-wide. Both shallow aquifers and deeper regional aquifers are being monitored. Some of the source areas are known and contamination has been identified. A select number of wells are sampled on a semi-annual basis and well gauging is completed annually. The RI work plan was finalized in March 2017. The Final RI was completed in April 2022. The Feasibility Study (FS) is underway.

Site specific groundwater investigation is being tracked at RVAAP-004-R-01 (39747.1061) ODA#2 and CC RVAAP-69 (39747.1077) Building 1048-Fire Station and is not currently part of the FWGWMP. Additional wells were installed in March 2023 to finalize the Feasibility Study (FS).

Cleanup Strategy: The anticipated exit strategy for this site includes completion of the FS (already funded), Proposed Plan (PP) and Record of Decision (ROD) followed by a remedial action. Facility-wide groundwater monitoring will continue until the RI/FS is completed, and monitoring is required for a minimum of three years following the completion of all environmental investigations and remediation at the site, or until a minimum of three consecutive years of groundwater monitoring data indicate that the concentration limits for each contaminant of concern have not been exceeded, whichever is longer (per the Findings and Orders). Monitored Natural Attenuation (MNA), which will encompass the semi-annual groundwater monitoring, is the assumed remedial action. Current and future land use is military training.

FACILITY-WIDE SEWERS

CRL ID: 39747.1073
Env Site Id: RVAAP-67
Alias:
Regulatory Driver: CERCLA
RIP Date: 06/30/2028
RC Date: 06/30/2028
RC Reason:
Site Closeout Date: 06/30/2028
Program: ER,A
Subprogram: IR
NPL Status: NO
HRS Score:
RRSE:
RCWM: NO
Emerging Contaminants: NO
Emerging Contaminants Type:
Emerging Contaminants Information:

Phase	Begin Date	End Date
PA	02/29/1988	04/30/1988
SI	05/31/1988	06/30/1989
RI/FS	10/31/1999	06/30/2028
RD	-	-
IRA	05/15/2016	05/30/2021
RA(C)	-	-
RA(O)	-	-
LTM	-	-

Site Narrative: The Ravenna Army Ammunition Plant started producing munitions in 1941 and continued intermittently until the late-1970s either loading or demilitarizing ammunition. Plant operations required processing large quantities of secondary explosives and lesser quantities of primary explosives. Periodic cleaning of the process areas resulted in explosive residues in the sanitary and storm sewers and settling ponds. Facility-wide sewers are addressed by RVAAP-67.

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

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.

Storm sewers within the load lines 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 which could then migrate to the storm water drain system. Explosives could also enter the storm system from explosive filter effluent traveling to settling ponds.

Following an Ohio EPA approved work plan, Tier I (sediment and liquids) surveys/ investigation were completed in 2010 with Tier II video analyses completed in 2011. A Draft RI/FS report was submitted to Ohio EPA in 2012.

An Engineering Evaluation/Cost Analysis was completed in March 2017. An Action Memorandum was completed in February 2018. A soil removal was completed in November 2020.

Cleanup Strategy: The RI/FS is underway and will be completed. Future actions are unknown at this time and will be determined in the future. Groundwater monitoring requirements are carried in RVAAP-66 (39747.1072), Facility-wide Groundwater. Current and future land use is military training.

SITE CLOSEOUT SUMMARY

HQAES ID	Site Name	Site Closeout Date	Program Code
39747.1002	RVAAP-02_ERIE BURNING GROUNDS	1/31/2008	ENV Restoration, Army
39747.1003	RVAAP-03_OPEN DEMOLITION AREA #1	10/6/2021	ENV Restoration, Army
39747.1004	RVAAP-04_OPEN DEMOLITION AREA #2	1/31/2008	ENV Restoration, Army
39747.1007	RVAAP-07_BLD 1601 HAZ WST STG	6/30/1989	ENV Restoration, Army
39747.1013	RVAAP-13_BLDG 1200-DILUTION\SETTLING PON	5/15/2015	ENV Restoration, Army
39747.1014	RVAAP-14_LOAD LINE 6 EVAPORATION UNIT	6/30/1989	ENV Restoration, Army
39747.1015	RVAAP-15_LOAD LINE 6 TREATMENT PLANT	1/31/2000	ENV Restoration, Army
39747.1016	RVAAP-16_FUZE&BOOSTER QUARRY LANDFILL/PO	9/30/2010	ENV Restoration, Army
39747.1017	RVAAP-17_DEACTIVATION FURNACE	6/30/1989	ENV Restoration, Army
39747.1018	RVAAP-18_LOAD LINE 12 WWT PLANT	3/31/1997	ENV Restoration, Army
39747.1019	RVAAP-19_LANDFILL NORTH OF WINKLEPECK BU	7/20/20	ENV Restoration, Army
39747.1020	RVAAP-20_SAND CREEK STP	6/30/1989	ENV Restoration, Army
39747.1021	RVAAP-21_DEPOT STP	6/30/1989	ENV Restoration, Army
39747.1022	RVAAP-22_GEORGE RD STP	6/30/1989	ENV Restoration, Army
39747.1023	RVAAP-23_UNIT TRAINING EQUIPMENT SITE US	11/30/1989	ENV Restoration, Army
39747.1024	RVAAP-24_DEPOT AREA	6/30/1989	ENV Restoration, Army
39747.1025	RVAAP-25_BLD 1034 MOTOR POOL AST	6/30/1989	ENV Restoration, Army
39747.1026	RVAAP-26_FUZE BOOSTER AREA SETTLING TANK	1/31/2000	ENV Restoration, Army

HQAES ID	Site Name	Site Closeout Date	Program Code
39747.1027	RVAAP-27_BUILDING 854 PCB STORAGE	6/30/1989	ENV Restoration, Army
39747.1028	RVAAP-28_MUSTARD AGENT BURIAL SITE	7/27/2017	ENV Restoration, Army
39747.1029	RVAAP-29_UPPER AND LOWER COBBS PONDS	6/7/2019	ENV Restoration, Army
39747.1030	RVAAP-30_LL 7 TREATMENT PLANT	1/31/2000	ENV Restoration, Army
39747.1031	RVAAP-31_ORE PILE RETENTION POND	1/31/2000	ENV Restoration, Army
39747.1032	RVAAP-32_40 MM FIRING RANGE	9/30/2007	ENV Restoration, Army
39747.1033	RVAAP-33_LOAD LINE 6	5/12/2018	ENV Restoration, Army
39747.1035	RVAAP-35_1037 BUILDING-LAUNDRY WASTEWATE	9/30/1998	ENV Restoration, Army
39747.1036	RVAAP-36_PISTOL RANGE	9/30/2005	ENV Restoration, Army
39747.1037	RVAAP-37_PESTICIDE BUILDING S-4452	2/29/1996	ENV Restoration, Army
39747.1039	RVAAP-39_LOAD LINE 5	3/16/2018	ENV Restoration, Army
39747.1040	RVAAP-40_LOAD LINE 7	6/30/2019	ENV Restoration, Army
39747.1041	RVAAP-41_LOAD LINE 8	6/16/2018	ENV Restoration, Army
39747.1043	RVAAP-43_LOAD LINE 10	5/11/2017	ENV Restoration, Army
39747.1044	RVAAP-44_LOAD LINE 11	5/12/2018	ENV Restoration, Army
39747.1046	RVAAP-46_BUILDING F-15 AND F-16	7/20/2020	ENV Restoration, Army
39747.1047	RVAAP-47_BUILDING T-5301	12/31/2000	ENV Restoration, Army
39747.1048	RVAAP-48_ANCHOR TEST AREA	4/15/2015	ENV Restoration, Army
39747.1049	RVAAP-49_CENTRAL BURN PITS	7/31/2009	ENV Restoration, Army
39747.1052	PBC at Ravenna_PBA 2008	7/15/2015	ENV Restoration, Army
39747.1053	RVAAP-034-R-01_SAND CREEK DUMP	3/15/2016	ENV Restoration, Army

HQAES ID	Site Name	Site Closeout Date	Program Code
39747.1054	RVAAP-012-R-01_LOAD LINE #12	5/31/2008	ENV Restoration, Army
39747.1055	RVAAP-064-R-01_Old Hay Field MRS	5/31/2008	ENV Restoration, Army
39747.1056	RVAAP-046-R-01_BUILDING #F-15 AND F-16	5/31/2008	ENV Restoration, Army
39747.1058	RVAAP-061-R-01_BLOCK D INGLOO-TD	6/18/2020	ENV Restoration, Army
39747.1059	RVAAP-016-R-01_FUZE AND BOOSTER QUARRY	6/18/2020	ENV Restoration, Army
39747.1060	RVAAP-002-R-01_ERIE BURNING GROUNDS	6/18/2020	ENV Restoration, Army
39747.1063	RVAAP-050-R-01_ATLAS SCRAP YARD	6/18/2020	ENV Restoration, Army
39747.1064	RVAAP-048-R-01_ANCHOR TEST AREA	5/31/2008	ENV Restoration, Army
39747.1065	RVAAP-032-R-01_40MM FIRING RANGE	6/18/2020	ENV Restoration, Army
39747.1066	RVAAP-008-R-01_LOAD LINE #1	3/15/2016	ENV Restoration, Army
39747.1067	RVAAP-019-R-01_LANDFILL NORTH OF WINKLEPECK	6/18/2020	ENV Restoration, Army
39747.1068	RVAAP-005-R-01_WINKLEPECK BURNING GROUND	3/31/2006	ENV Restoration, Army
39747.1069	RVAAP-062-R-01_WATER WORKS #4 DUMP	3/15/2016	ENV Restoration, Army
39747.1070	RVAAP-001-R-01_RAMSDELL QUARRY AREA 2	6/18/2020	ENV Restoration, Army
39747.1071	RVAAP-033-R-01_FIRESTONE TEST FACILITY	3/15/2016	ENV Restoration, Army
39747.1074	RVAAP-001-R-02_RAMSDELL QUARRY AREA 1	6/18/2020	ENV Restoration, Army
39747.1076	CC RVAAP-68_ELECTRIC SUBSTATIONS (E&W NO	5/31/2017	ENV Restoration, Army

HQAES ID	Site Name	Site Closeout Date	Program Code
39747.1079	CC RVAAP-72_FACILITY-WIDE USTs	7/15/2015	ENV Restoration, Army
39747.1080	CC RVAAP-73_FACILITY-WIDE COAL STORAGE	4/24/2019	ENV Restoration, Army
39747.1081	CC RVAAP-74_BLDG 1034 MOTOR POOL HYDRAUL	10/5/2021	ENV Restoration, Army
39747.1082	CC RVAAP-75_GEORGE ROAD STP MERCURY SPIL	3/15/2016	ENV Restoration, Army
39747.1084	CC RVAAP-77_BLDG 1037 LAUNDRY WASTEWATER	2/15/2015	ENV Restoration, Army
39747.1088	CC RVAAP-80_GROUP 2 PROPELLANT CAN TOPS	5/31/2017	ENV Restoration, Army
39747.1091	CC RVAAP-83_FORMER BUILDINGS 1031 AND 10	8/15/2015	ENV Restoration, Army
39747.1092	CC RVAAP-71_BARN NO. 5 PETROLEUM RELEASE	2/15/2015	ENV Restoration, Army

COMMUNITY INVOLVEMENT

Technical Review Committee (TRC) Establishment Date:	N/A
Community Involvement Plan (Date Published):	March 2022
Restoration Advisory Board (RAB) Establishment Date:	10/31/1996
RAB Adjournment Date:	N/A
RAB Adjournment Reason:	N/A
Additional Community Involvement:	The RVAAP RAB was established in 1996 and has 21 community members and two noncommunity members. The community members include an appointee from each of the surrounding six townships, one representative appointed by the Trumbull County Commissioners, a representative appointed by the Portage County Commissioners, and 13 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 Feb. 19, 1997. A copy can be found on the RVAAP web site www.RVAAP.org. The RVAAP RAB generally meets twice a year. 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. The minutes of all RAB meetings are recorded. Meetings are announced in the local media. All restoration program records are made available to the RAB members and any other interested parties through the two public repositories. Documents are also available at www.RVAAP.org. The Community Relations Plan is updated regularly. The plan outlines the many ways that RVAAP involves the community in the restoration activities, including through the RAB, site tours, and the website.
Administrative Record is located at:	CJAG Environmental Office, Building 1071, 8451 State Route 5, Ravenna Ohio 44266
Information Repository is located at:	RVAAP public website www.rvaap.org (instructions included in the Installation Action Plan kept at the local libraries (Reed Memorial Library and Newton Falls Public Library))

Current Technical Assistance for Public Participation (TAPP):	None
TAPP Title:	N/A
Potential TAPP:	N/A

FIVE-YEAR / PERIODIC REVIEW SUMMARY

Review Summary Table

Status	Start Date	End Date	End FY
COMPLETE	7/1/2011	8/1/2012	2012
COMPLETE	7/1/2016	8/1/2017	2017
COMPLETE	6/06/2021	9/04/2022	2022
FUTURE	5/15/2026	8/15/2027	2027

ROD/DDs associated with the last Five-Year/Periodic Review

Associated ROD/DD Name	HQAES ID
ROD FOR LOAD LINE 1 -4	39747.1008, 39747.1009, 39747.1010, 39747.1011
ROD LOAD LINE 12	39747.1012
RAMSDELL QUARRY LANDFILL ROD	39747.1001
WINKLEPECK BURNING GROUNDS ESD	39747.1005
ROD DUMP ALONG PARIS-WINDHAM ROAD	39747.1051

Results, Actions & Plans

Results	Actions	Plans
The remedies are protective of health and the environment. Risk from chemicals of concern in surface/subsurface soil and sediments at Load Lines 1-4 and 12 have been reduced to meet remedial goal options for Commercial/Industrial land use.	Continue General Land Use Control Awareness Training annually for facility personnel, staff and tenants of Camp James A. Garfield Joint Military Training Center.	Land use controls to continue to deter unauthorized access and limit exposure. Next five year review scheduled for FY27.

LAND USE CONTROLS (LUC) SUMMARY

ROD/DD	LUC Title	HQAES ID
RAMSDELL QUARRY LANDFILL	LUC RAMSDELL QUARRY LF	39747.1001
WINKLEPECK BURNING GROUNDS	FINAL REVISED PROPERTY MANAGEMENT PLAN 2018	39747.1005
ROD FOR LOAD LINE 1 -4	LOAD LINE 1	39747.1008
ROD FOR LOAD LINE 1 -4	LOAD LINE 2	39747.1009
ROD FOR LOAD LINE 1 -4	LOAD LINE 3	39747.1010
ROD FOR LOAD LINE 1 -4	LOAD LINE 4	39747.1011
ROD LOAD LINE 12	LOAD LINE 12	39747.1012
ROD DUMP ALONG PARIS WINDHAM ROAD	DUMP ALONG PARIS WINDHAM ROAD	39747.1051