Final

Proposed Plan
for Soil, Sediment, and Surface Water at
RVAAP-48 Anchor Test Area

Ravenna Army Ammunition Plant
Ravenna, Ohio

Contract No. W912QR-04-D-0028
Delivery Order No. 0001

Prepared for:

US Army Corps of Engineers®

United States Army Corps of Engineers
Louisville District

Prepared by:

SAIC Engineering of Ohio
8866 Commons Boulevard
Twinsburg, Ohio 44087

May 28, 2013

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None.

14. ABSTRACT

This Proposed Plan for the Anchor Test Area presents remedial alternatives and the preferred alternative for remedy of soil within Anchor Test Area. Permanent surface water and sediment are not present on the area of concern; therefore, remedial alternatives only address soil. The preferred remedial alternative (Alternative 2: Attain Unrestricted Land Use) involves the removal of shallow surface soil with chemical contamination above the cleanup goal for unrestricted land use and disposal off-site at a licensed disposal facility. Removal will be conducted at location ATAss-005M under this alternative. There are no chemicals of concern in deep surface soil and subsurface soil; therefore, no further action is recommended for these media.

15. SUBJECT TERMS
Proposed Plan, remedial alternatives, preferred alternative, no further action

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a. REPORT	b. ABSTRACT	c. THIS PAGE			Mark Nichter
U	U	U	U	43	19b. TELEPHONE NUMBER *(Include area code)* 502.315.6375

CONTRACTOR STATEMENT OF INDEPENDENT TECHNICAL REVIEW

Science Applications International Corporation (SAIC) has completed the Proposed Plan for Soil, Sediment, and Surface Water at RVAAP-48 Anchor Test Area at the Ravenna Army Ammunition Plant, Ravenna, Ohio. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project. During the independent technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of data quality objectives; technical assumptions; methods, procedures, and materials to be used; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing United States Army Corps of Engineers (USACE) policy.

5/22/2013

Sharon Stoller, P.E.
Study/Design Team Leader

Date

5/22/2013

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

Date

Significant concerns and the explanation of the resolution are as follows:

Internal SAIC Independent Technical Review comments are recorded on a Document Review Record per SAIC quality assurance procedure QAAP 3.1. This Document Review Record is maintained in the project file. Changes to the report addressing the comments have been verified by the Study/Design Team Leader. As noted above, all concerns resulting from independent technical review of the project have been considered.

5/22/2013

Lisa Jones-Bateman
Principal w/ A-E firm

Date

Ohio EPA
40 years and moving forward

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

June 6, 2013

CERTIFIED MAIL 70101060000000898541

Mr. Mark Patterson
Environmental Program Manager
Ravenna Army Ammunition Plant
Building 1037
8451 State Route 5
Ravenna OH 44266-9297

RE: APPROVAL OF THE "FINAL PROPOSED PLAN FOR SOIL, SEDIMENT, AND SURFACE WATER AT THE RVAAP-48 ANCHOR TEST AREA AT THE RAVENNA ARMY AMMUNITION PLANT, RAVENNA, OHIO," DATED MAY 28, 2013 (WORK ACTIVITY NO. 267-000859-109)

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) has received and reviewed the document entitled, *"Final Proposed Plan for Soil, Sediment, and Surface Water at the RVAAP-48 Anchor Test Area at the Ravenna Army Ammunition Plant, Ravenna, Ohio,"* dated May 28, 2013. This document, received by Ohio EPA's NEDO on May 29, 2013, was prepared for the U.S. Army Corps of Engineers (USACE) Louisville District, by SAIC Engineering of Ohio, Inc.

Ohio EPA has reviewed this documentation and the *Response to Comments* and has found no significant deficiencies. As a result, the "Final Proposed Plan for Soil, Sediment, and Surface Water at the RVAAP-48 Anchor Test Area" has been approved. Please let know when the Public Meeting will begin at least two weeks prior to commencement.

E-MAILED 06-10-2013 AMH

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RECEIVED 06-10-2013

If you have any questions or concerns, please do not hesitate to contact Eileen Mohr at (330) 963-1221.

Sincerely,

Nancy Zikmanis
Environmental Supervisor
Division of Environmental Response and Revitalization

ACK:NZ:dms

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May 28, 2013

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ARNG = Army National Guard
OHARNG = Ohio Army National Guard
Ohio EPA-NEDO = Ohio Environmental Protection Agency-Northeast District Office
REIMS = Ravenna Environmental Information Management System
RVAAP = Ravenna Army Ammunition Plant
SAIC = Science Applications International Corporation
USACE = United States Army Corps of Engineers

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amsl	Above Mean Sea Level
AOC	Area of Concern
ARAR	Applicable or Relevant and Appropriate Requirements
bgs	Below Ground Surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Chemical of Concern
COPC	Chemical of Potential Concern
CUG	Cleanup Goal
ERA	Ecological Risk Assessment
EU	Exposure Unit
FS	Feasibility Study
FWCUG	Facility-Wide Cleanup Goal
GRA	General Response Action
HHRA	Human Health Risk Assessment
LUC	Land Use Control
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NFA	No Further Action
O&M	Operation and Maintenance
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
PCB	Polychlorinated Biphenyl
PMP	Property Management Plan
PP	Proposed Plan
RAFLU	Reasonable and Anticipated Future Land Use
RAO	Remedial Action Objective
RI	Remedial Investigation
ROD	Record of Decision
RVAAP	Ravenna Army Ammunition Plant
SRC	Site-related Contaminant
SVOC	Semi-Volatile Organic Compound
TNT	2,4,6-Trinitrotoluene
USACE	United States Army Corps of Engineers
VOC	Volatile Organic Compound
USEPA	United States Environmental Protection Agency

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1.0 INTRODUCTION

This Proposed Plan (PP) presents the preferred alternative to achieve a remedy for soil within Anchor Test Area at the Ravenna Army Ammunition Plant (RVAAP) in Ravenna, Ohio (Figure 1). Anchor Test Area is designated as RVAAP-48. This PP presents remedial alternatives developed in the *Remedial Investigation/Feasibility Study Report for Soil, Sediment, and Surface Water at RVAAP-48 Anchor Test Area* (USACE 2012) and provides rationale for selecting the preferred alternative. Permanent surface water and sediment are not present on the area of concern (AOC); therefore, no further action (NFA) is necessary for these media and remedial alternatives only address soil. Groundwater will be addressed in a separate decision under the RVAAP Facility-Wide Groundwater AOC (RVAAP-66).

The U.S. Army, in coordination with the Ohio Environmental Protection Agency (Ohio EPA), issues this PP. This PP provides the public with information to comment upon the selection of an appropriate response action. The remedy will be selected for Anchor Test Area after review and consideration of all comments submitted during the 30-day public comment period. Therefore, the public is encouraged to review and comment on all alternatives presented in this PP.

The U.S. Army is issuing this PP as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 and Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 *Code of Federal Regulations* 300). Selection and implementation of a remedy will also be consistent with the requirements of the Ohio EPA *Director's Final Findings and Orders*, dated June 10, 2004.

Public Comment Period:
July 25, 2013 to August 23, 2013

Public Meeting:
The U.S. Army will hold an open house and public meeting to present the preferred alternative and additional details presented in the *Remedial Investigation/Feasibility Study Report for Soil, Sediment, and Surface Water at RVAAP-48 Anchor Test Area* (USACE 2012). Oral and written comments will also be accepted at the meeting. The open house and public meeting are scheduled for 6:00PM, August 7, 2013 at the Paris Township Hall, 9355 Newton Falls Road, Ravenna, Ohio 44266.

Information Repositories:
Information used in selecting the preferred alternative is available for public review at the following locations:

Reed Memorial Library
167 East Main Street
Ravenna, Ohio 44266
(330) 296-2827
Hours of operation:
9AM – 9PM Monday – Thursday
9AM – 6PM Friday
9AM – 5PM Saturday
1PM – 5PM Sunday

Newton Falls Public Library
204 South Canal Street
Newton Falls, Ohio 44444
(330) 872-1282
Hours of operation:
10AM – 8PM Tuesday - Friday
9AM – 5PM Friday and Saturday

The **Administrative Record File**, containing information used in selecting the preferred alternative, is available for public review at the following location:

Camp Ravenna Joint Military Training Center (former Ravenna Army Ammunition Plant)
Building 1037
8451 State Route 5
Ravenna, Ohio 44266-9297
(330) 358-7311
Fax: (330) 358-7314
Note: Access is restricted to Camp Ravenna, but the file can be obtained or viewed with prior notice to Camp Ravenna.

This PP summarizes information that can be found in greater detail in the Remedial Investigation/Feasibility Study (RI/FS) report (USACE 2012) and other documents contained in the Administrative Record file for Anchor Test Area.

The U.S. Army encourages the public to review these documents to gain a more comprehensive understanding of the AOC and activities that have been conducted to date.

2.0 RVAAP DESCRIPTION AND BACKGROUND

The current RVAAP consists of 1,260 acres scattered throughout the Ohio Army National Guard (OHARNG) Camp Ravenna Joint Military Training Center, hereafter referred to as Camp Ravenna. Camp Ravenna is federally owned and licensed to the OHARNG for use as a military training site. Camp Ravenna is in northeastern Ohio within Portage and Trumbull Counties, approximately 3 miles (4.8 km) east-northeast of the city of Ravenna and approximately 1 mile (1.6 km) northwest of the city of Newton Falls (Figure 1). The RVAAP portions of the property are located solely within Portage County. RVAAP and Camp Ravenna occupy a parcel of property approximately 11 miles (17.7 km) long and 3.5 miles (5.6 km) wide bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad on the south; Garrett, McCormick, and Berry roads on the west; the Norfolk Southern Railroad on the north; and State Route 534 on the east (Figures 1 and 2). Camp Ravenna is surrounded by several communities: Windham on the north, Garrettsville 6 miles (9.6 km) to the northwest, Newton Falls 1 mile (1.6 km) to the southeast, Charlestown to the southwest, and Wayland 3 miles (4.8 km) to the south.

When RVAAP was operational, Camp Ravenna did not exist and the entire 21,683-acre parcel was a federal government-owned, contractor-operated, industrial facility. The RVAAP Installation Restoration Program encompasses investigation and cleanup of past activities over the entire 21,683 acres of the former RVAAP. References to RVAAP in this document indicate the historical extent of RVAAP, which is inclusive of the combined acreages of the current Camp Ravenna and RVAAP, unless otherwise specifically stated.

Former industrial operations at RVAAP consisted of 12 munitions-assembly facilities referred to as "load lines." Load Lines 1 through 4 were used to melt and load 2,4,6-trinitrotoluene (TNT) and Composition B into large-caliber shells and bombs. The operations on the load lines produced explosive dust, spills, and vapors that collected on the floors and walls of each building. Periodically, the floors and walls were cleaned with water and steam. Following cleaning, the wastewater, containing TNT and Composition B, was known as "pink water" for its characteristic color. Pink water was collected in concrete holding tanks, filtered, and pumped into unlined ditches for transport to earthen settling ponds. Load Lines 5 through 11 were used to manufacture fuzes, primers, and boosters. Potential contaminants in these load lines include lead compounds, mercury compounds, and explosives. From 1946 to 1949, Load Line 12 was used to produce ammonium nitrate for explosives and fertilizers prior to use as a weapons demilitarization facility.

In 1950, the facility was placed on standby status and operations were limited to renovation, demilitarization, and normal maintenance of equipment, along with storage of munitions. Production activities were resumed from July 1954 to October 1957 and again from May 1968 to August 1972. In addition to production missions, various demilitarization activities were conducted at facilities constructed at Load Lines 1, 2, 3, and 12. Demilitarization activities included disassembly of munitions and explosives melt-out and recovery operations using hot water and steam processes. Periodic demilitarization of various munitions continued through 1992.

3.0 ANCHOR TEST AREA DESCRIPTION AND BACKGROUND

Anchor Test Area is located in the south-central portion of RVAAP (Figure 2). Although operational information about Anchor Test Area is relatively limited, the AOC was used for research, development, and testing of explosively driven soil anchoring devices. The dates of use for Anchor Test Area are unknown; although, it is believed that testing activities did not occur until after 1961.

The former testing operations area of Anchor Test Area is about 0.5 acres, based on historical information and investigations conducted to date. The RVAAP *Installation Action Plan* lists the AOC as 2 acres; however, this acreage includes the access road and surrounding areas that were not within the former area of testing operations.

The following environmental reports have been completed for Anchor Test Area:

- *Relative Risk Site Evaluation for Newly Added Sites* (USACHPPM 1998);
- *Characterization of 14 AOCs at the Ravenna Army Ammunition Plant* (MKM 2007); and
- *Remedial Investigation/Feasibility Study for Soil, Sediment, and Surface Water at the RVAAP 48 Anchor Test Area* (USACE 2012).

4.0 AREA OF CONCERN CHARACTERISTICS

The AOC characteristics, nature and extent of contamination, and conceptual site model are based on various investigations conducted from 1998 through 2010.

Ground elevations across Anchor Test Area range from approximately 930 ft above mean sea level (amsl) to 1,004 ft amsl. No permanent surface water features are present at the AOC. Surface water occurs only intermittently as overland storm water runoff associated with heavy rainfall events and generally flows towards a wetland located 500 ft to the south.

The wetland drains to the south through an unnamed stream, which enters the west branch of the Mahoning River. The key surface features at the AOC are remnants of the former sandpit (approximately 12 ft by 36 ft) and several dirt mounds that functioned as blast walls. A portion of a cement culvert is visible in one of the dirt mounds.
Silty clay glacial sediment overlies sandstone bedrock at Anchor Test Area, except where disturbed by RVAAP activities. Bedrock was not encountered in the shallow borings at the AOC.

No groundwater monitoring wells are present in the AOC. The generalized regional groundwater flow direction in the vicinity of the AOC is towards the east.

Surface soil from 0-1 ft below ground surface (bgs) at Anchor Test Area contains the majority of the site-related contaminants (SRCs). The prevalent SRCs detected in surface soil were 10 inorganic chemicals and four semi-volatile organic compounds (SVOCs). The highest concentrations of inorganic chemicals were generally observed near a cement culvert, the former sand pit area, and in the vicinity of the former blast wall mounds surrounding the sand pit. Explosives, propellants, volatile organic compounds (VOCs), pesticides, and polychlorinated biphenyls (PCBs) were not identified as SRCs in surface soil.

Subsurface soil (soil deeper than 1 ft bgs) contained substantially fewer detected SRCs than surface soil. Two VOCs, one SVOC, and two metals (cadmium and silver) were identified as SRCs. The VOCs and SVOC were detected in soil samples collected at a soil boring located within the former sand pit area. Cadmium and silver were present in the subsurface soil samples throughout the AOC. No trends were evident, and both metals occurred within a narrow range of concentrations.

Explosives, propellants, pesticides, and PCBs were not detected in subsurface soil.

Sediment and surface water samples were not collected because these media are not present in the AOC.

The potential for soil contaminants to migrate to groundwater was modeled and presented in the RI/FS report (USACE 2012). Modeling evaluated the potential for leaching of contaminants from soil to groundwater and if contaminants could potentially migrate from Anchor Test Area to the closest surface water feature (e.g., the wetland area southeast of the AOC). Modeling results indicated arsenic could potentially leach from soil to groundwater at concentrations above United States Environmental Protection Agency (USEPA) regional screening levels and RVAAP groundwater facility-wide cleanup goals (FWCUGs). Arsenic was the only constituent with the potential to leach. However, arsenic was not predicted to migrate from Anchor Test Area and reach the nearby wetland at concentrations above screening levels.

5.0 SCOPE AND ROLE OF RESPONSE ACTION

The Reasonable and Anticipated Future Land Use (RAFLU) of the Anchor Test Area is Military Training (which is equivalent to the National Guard Training Land Use presented in the RI/FS Report). The representative receptor for this RAFLU is the National Guard Trainee. The response action evaluated alternatives to attain this RAFLU for soil. Sediment and surface water are not present at this AOC. Although Residential Land Use is not anticipated at RVAAP or this AOC, the response action also evaluated Unrestricted Land Use. The Resident Farmer was evaluated as the representative receptor for Unrestricted Land Use, with the exception of a few chemicals where the National Guard Trainee has lower FWCUGs than the Resident Farmer.

The preferred alternative for a groundwater remedy will be addressed under the RVAAP Facility-Wide Groundwater AOC as a separate decision.

However, the selected remedy for soil at Anchor Test Area must also be protective of groundwater.

6.0 SUMMARY OF HUMAN AND ECOLOGICAL RISKS

A human health risk assessment (HHRA) was performed to identify COCs and provide a risk management evaluation to determine COCs requiring remediation based on potential risks to human receptors.

The exposure unit (EU) depths evaluated in the HHRA for the Resident Farmer were surface soil (0-1 ft bgs) and subsurface soil (1-13 ft bgs). The EUs evaluated for the National Guard Trainee were deep surface soil (0-4 ft bgs) and subsurface soil (4-7 ft bgs). The 0-4 ft bgs exposure depth for the National Guard Trainee has been characterized using two different sample types during investigations to date. Soil samples from 0-1 ft bgs samples were collected using incremental sampling method (ISM) samples and 1-4 ft bgs samples were collected using discrete sampling methods. These two sample intervals collected within the deep surface soil exposure depth were evaluated separately. COCs were determined for each exposure depth based on guidance established in *Facility-Wide Human Health Cleanup Goals* (USACE 2010), herein referred to as the FWCUG Report.

Ten inorganic chemicals and four SVOCs were identified as SRCs in surface soil. Risk-based screening identified four inorganic chemicals (arsenic, chromium, cobalt, and manganese) as chemicals of potential concern (COPCs) in surface soil. The COPCs were compared to the FWCUGs to determine COCs. The arsenic concentration (54 mg/kg) in the 0-1 ft bgs sample at location ATAss-005M was identified as a risk and was recommended for evaluation of remedial alternatives in the FS since it exceeded surface soil background

concentrations of 15.4 mg/kg. This sample location is near a cement culvert (Figure 3). Arsenic concentrations below 1 ft bgs were below background concentrations; therefore, soil below 1 ft bgs did not require evaluation in the FS.

The ecological habitat in Anchor Test Area is approximately 0.5 acres and consists of forest and shrubs. The vegetation provides a habitat for birds, mammals, insects, and other organisms. There are no ditches, streams, ponds, or wetlands on the AOC.

Currently, there are no federally-listed species or critical habitats on Camp Ravenna. Anchor Test Area has not been previously surveyed for state-listed or federally-listed species; however, there has been no documentation of threatened or endangered species at the AOC. State -threatened, state species-of-concern, and state special-interest species have been identified at RVAAP. Anchor Test Area has not been previously surveyed for rare species.

A Level I ecological risk assessment (ERA) was conducted to evaluate if the AOC had past releases or the potential for current contamination, and if important ecological resources exist on or near the AOC. The ERA identified four soil chemicals of potential ecological concern (arsenic, chromium, manganese, and mercury).

There are no important/significant ecological resources within the 0.5 acre habitat at the Anchor Test Area. Important places and resources identified by the U.S. Army and Ohio EPA include wetlands, terrestrial areas used for breeding by large or dense populations of animals, habitats used by threatened and endangered species, state land designated for wildlife or game management, locally important ecological places, and state parks. The environmental facts and characteristics of the AOC were compared to a list of 39 important/significant places and resources recognized by the U.S. Army and/or Ohio EPA.

The ERA concluded that although there is contamination at Anchor Test Area, it poses minimal risk, and the AOC has no important/significant ecological places or resources. Per guidance from the Ohio EPA, there was sufficient justification to recommend NFA for Anchor Test Area from the ecological perspective.

7.0 REMEDIAL ACTION OBJECTIVE

The remedial action objective (RAO) references remedial cleanup goals (CUGs) that are considered protective of human health and the environment under current land use and RAFLU. The RAO for this remedy is to prevent National Guard Trainee exposure to identified COCs above CUGs in soil, prevent adverse ecological effects from previous AOC activities, and prevent negative groundwater impacts from contaminant migration from source media (e.g., soil). Ohio EPA policy for remedial actions is to attain a target risk of 1E-05 and a hazard index of 1. Arsenic concentrations in the 0-1 ft bgs sample interval at ATAss-005M were identified as a risk; therefore, evaluation of remedial alternatives was recommended. The arsenic CUG was established as 15.4 mg/kg for Unrestricted Land Use. This concentration is the arsenic facility-wide background concentration and was selected as the remedial CUG because the Resident Farmer FWCUG is less than the background concentration. The CUG for arsenic achieves the target risk and hazard index levels for the National Guard Trainee and is also protective for the Resident Farmer.

The response action addresses arsenic above the CUG at location ATAss-005M to allow for Unrestricted Land Use. Arsenic was present above the CUG only in soil from 0-1 ft bgs in ATAss-005M. There are no chemicals requiring remediation in soil greater than 1 ft bgs.

Surface water and sediment are not present at the AOC. Remediation of soil to protect ecological and groundwater resources is not necessary.

However, remediation to protect human receptors at risk from arsenic will benefit ecological resources and will reduce the potential for contaminant migration to groundwater. Table 1 presents the COCs and CUGs for the soil under this remedy.

8.0 SUMMARY OF FEASIBILITY STUDY ALTERNATIVES

The following alternatives were developed using general response actions (GRAs) considered in the FS:

- Alternative 1: No Action
  - No action;
- Alternative 2: Attain Unrestricted Land Use
  - Removal; and
  - Disposal and handling.

The GRAs considered were no action, land use controls (LUCS) and five-year reviews, removal, treatment, and disposal and handling. Technologies under each GRA were screened and selected for their ability to reduce exposure to contaminants in soil. Because soil contains chemical contamination above CUGs, the technologies were evaluated for their ability to remove or reduce contaminants in the shortest timeframe.

Technologies selected under these GRAs were combined into alternatives for detailed analysis. Costs were estimated for each alternative.

8.1 Alternative 1 – No Action

Cost: $0
This remedial alternative provides no further remedial action and is required under the NCP as a baseline for comparison with other remedial alternatives. This alternative is not protective of human health for the RAFLU (Military Training) or Unrestricted Land Use. Under this alternative, there is no reduction in toxicity, mobility, or volume of contaminated soil. Access restrictions and environmental monitoring would be discontinued. Anchor Test Area would have no legal, physical, or administrative LUCs. Environmental monitoring would not be performed. Because this is the No Action alternative, five-year reviews are not required under CERCLA 121(c).

8.2 Alternative 2 – Attain Unrestricted Land Use

Actions within Anchor Test Area for this alternative include excavation of surface soil (0-1 ft bgs) within ATAss-005M with offsite disposal.

Estimated Implementation Cost: $93,967
30-yr Operation and Maintenance (O&M) Cost: $0
Estimated Total Cost: $93,967

This remedial alternative involves removal and off-site disposal of approximately 12.5 cubic yards (exs situ) of surface soil with arsenic concentrations above the CUG to attain Unrestricted Land Use. There are no COCs in soil below 1 ft bgs; therefore, NFA is recommended for soil below 1 ft bgs.

Table 1. Chemicals of Concern and Cleanup Goals to Attain Unrestricted Land Use at Anchor Test Area

Media	Chemicals of Concern (Maximum concentration)	Cleanup Goals	Location and Depth Requiring Remediation
Surface Soil[a]	Arsenic (54 mg/kg)	15.4 mg/kg	ATAss-005M at 0-1 ft bgs
Subsurface Soil[b]	None	Not applicable	Not applicable

[a]Inclusive of surface soil (0-1 ft bgs) for the Resident Farmer and deep surface soil (0-4 ft bgs) for the National Guard Trainee. Because 0-1 ft bgs samples were collected using ISM and the 1-4 ft bgs samples were collected using discrete sampling, these intervals were evaluated separately. All concentrations of arsenic below1 ft bgs were below the facility-wide background concentration.
[b]Inclusive of subsurface soil (1-13 ft bgs) for the Resident Farmer and subsurface soil (4-7 ft bgs) for the National Guard Trainee.

Table 2. CERCLA Evaluation Criteria

Overall Protection of Human Health and the Environment – considers whether or not an alternative provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) – considers how a remedy will meet all the applicable or relevant and appropriate requirements of other federal and state environmental statutes and/or provide grounds for invoking a waiver.

Long-term Effectiveness and Permanence – considers the magnitude of residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time once facility wide-cleanup goals (FWCUGs) have been met.

Reduction of Toxicity, Mobility, or Volume Through Treatment – considers the anticipated performance of the treatment technologies that may be employed in a remedy.

Short-term Effectiveness – considers the speed with which the remedy achieves protection, as well as the potential to create adverse impacts on human health and the environment that may result during the construction and implementation period.

Implementability – considers the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the chosen solution.

Cost – considers capital costs and operation and maintenance costs associated with the implementation of the alternative.

State Acceptance – indicates whether the state concurs with, opposes, or has no comment on the preferred alternative.

Community Acceptance – will be addressed in the Record of Decision (ROD) following a review of the public comments received on the remedial investigation (RI) report, feasibility study (FS) report, and Proposed Plan (PP).

Prior to excavation, waste characterization samples will be collected to determine if the soil will be disposed as nonhazardous or characteristically hazardous waste. Using current data and site knowledge, it is assumed that the soil will be considered nonhazardous waste.

Soil that exceeds the arsenic CUG at location ATAss-005M will be removed (Figure 3) by mechanical equipment and disposed off-site. Confirmation samples will be collected along excavation sidewalls. Confirmation samples will not be collected from the excavation floor because there was no identified risk in the soil below 1 ft bgs. The excavated areas will be backfilled with clean soil and re-vegetated.

Successful implementation of this alternative will attain Unrestricted Land Use. There is no operation and maintenance (O&M) period following the remedial action because Unrestricted Land Use is achieved. The U.S. Army and OHARNG will not be required to develop and implement LUCs. Five-year reviews in accordance with CERCLA 121(c) are not required following the remedy. At this time, discretionary five-year reviews (as described in USEPA 2001) will not be conducted since the AOC attains NFA.

9.0 EVALUATION OF FEASIBILITY STUDY ALTERNATIVES

The alternatives were evaluated with respect to the nine comparative analysis criteria outlined by CERCLA (Table 2). The nine criteria are categorized into three groups: threshold criteria, primary balancing criteria, and modifying criteria. These criteria are as follows.

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

1. Overall protection of human health and the environment.

2. Compliance with applicable or relevant and appropriate requirements (ARARs).

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

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

Modifying Criteria – may be considered to the extent that information is available during development of the FS but can be fully considered only after public comment on this PP.

8. State acceptance.
9. Community acceptance.

The comparative analysis evaluates the relative performance of Alternatives 1 and 2 with respect to each of the nine criteria. Identifying the advantages and disadvantages of each alternative with respect to each other helps to identify the relative strengths of the preferred alternative. These strengths, combined with risk management decisions made by the U.S. Army and Ohio EPA, as well as input from the community, will serve as the basis for selecting the remedy.

Table 3 summarizes the comparative analysis of remedial alternatives for Anchor Test Area from the FS. Criterion 1 (Overall Protectiveness of Human Health and the Environment) is rated either "protective" or "not protective." Criterion 2 (Compliance with ARARs) is rated either "compliant" or "not compliant." The remaining seven criteria are rated as "high," "medium," or "low." A rating of "high" indicates the alternative performs the best, and a rating of "low" indicates the alternative performs the worst. For example, an alternative with a high cost is scored "low" (worst) under Criterion 7, Cost.

Alternative 1 (No Action) will provide no protection of human health or the environment from the AOC contaminants beyond current conditions. No effort will be taken to prevent or minimize human or ecological exposure to contaminated soil. Concentrations of contaminants could pose future risk to both the National Guard Trainee and Resident Farmer.

Alternative 2 is considered protective regarding overall protectiveness of human health and the environment and is compliant with ARARs. The long-term effectiveness and permanence is "high", as the alternative attains the RAFLU and Unrestricted Land Use by removing contaminated soil. The reduction of toxicity, mobility, or volume through treatment is considered "medium". No treatment is implemented, but the mobility of COCs is reduced given the excavated soil is disposed of at an off-site facility equipped with engineering controls. The short-term effectiveness is considered "medium", as the soil removal presents short-term risk to workers, the community, and the environment during excavation and transportation of soil. Implementability is considered "medium", as Alternative 2 can be readily and quickly implemented. The estimated cost of $95,967 is ranked "medium".

10.0 PREFERRED FEASIBILITY STUDY ALTERNATIVE

The U.S. Army, in coordination with Ohio EPA, is recommending Alternative 2 (Attain Unrestricted Land Use) be implemented as the remedial action for soil at Anchor Test Area. Permanent surface water and sediment are not present on the AOC; therefore, NFA is necessary for these media and remedial alternatives only address soil.

Alternative 1 (No Action) was also evaluated. However, Alternative 1 was eliminated from consideration since it is not protective for human health and not compliant with ARARs.

Alternative 2 is protective for the RAFLU, which is consistent with the approved Property Management Plan (PMP) at RVAAP, and is also protective for Unrestricted Land Use.
This alternative is cost effective and can be performed in a timely manner. Based on the available risk assessment information, the preferred alternative will achieve the RAO.

Mitigation measures (e.g., dust control, storm water controls, site housekeeping activities, and covering and cleaning haul trucks) during excavation activities will minimize and/or eliminate potential risks to workers and the community. Because Alternative 2 will attain a requisite level of protectiveness for soil for Unrestricted Land Use, LUCs and five-year reviews are not required following the remedy.

This recommendation is not a final decision. The U.S. Army, in coordination with Ohio EPA, will select the remedy for Anchor Test Area after reviewing and considering all comments submitted during the 30-day public comment period.

11.0 COMMUNITY PARTICIPATION

11.1 Community Participation

Public participation is an important component of the remedy selection.

The U.S. Army, in coordination with Ohio EPA, is soliciting input from the community on the preferred alternative.

The comment period extends from July 25, 2013 to August 23, 2013. This period includes a public meeting at which the U.S. Army will present this PP. The U.S. Army will accept oral and written comments at this meeting.

POINT OF CONTACT FOR WRITTEN COMMENTS

Camp Ravenna Environmental Office
1438 State Route 534 SW
Newton Falls, OH 44444

11.2 Public Comment Period

The 30-day comment period is from July 25, 2013 to August 23, 2013, and provides an opportunity for public involvement in the decision-making process for the proposed action. The public is encouraged to review and comment on this PP.

All public comments will be considered by the U.S. Army and Ohio EPA before selecting a remedy.

Table 3. Comparative Analysis of Remedial Alternatives

NCP Evaluation Criteria[a]	Alternative 1 – No Action		Alternative 2 – Attain Unrestricted Land Use	
Threshold Criteria	***Result***		***Result***	
1. Overall Protectiveness of Human Health and the Environment	Not protective		Protective	
2. Compliance with ARARs	Not compliant		Compliant	
Balancing Criteria	***Result***		***Result***	
3. Long-term Effectiveness and Permanence	Low	1	High	3
4. Reduction of Toxicity, Mobility, or Volume through Treatment	Low	1	Medium	2
5. Short-term Effectiveness	High	3	Medium	2
6. Implementability	High	3	Medium	2
7. Cost	High	3	Medium	2
Balancing Criteria Score		11		11

Criterion 1, Overall Protectiveness of Human Health and the Environment, is rated as either protective or not protective. Criterion 2, Compliance with ARARs, is rated as either compliant or not compliant. The remaining five criteria are rated as high (alternative that performs the best), medium (moderate alternative performance), or low (alternative that performs the worst)

Scoring for the Balancing Criteria is as follows: High = 3, Medium = 2, Low = 1ARAR = Applicable or Relevant and Appropriate Requirement

NCP = National Oil and Hazardous Substances Pollution Contingency Plan

During the comment period, the public is encouraged to review documents pertinent to Anchor Test Area.

This information is available at the Information Repository and online at www.rvaap.org. To obtain further information, contact the Camp Ravenna Environmental Office.

11.3 Written Comments

If the public would like to comment in writing on this PP or other relevant issues, please deliver comments to the U.S. Army at the public meeting or mail written comments (postmarked no later than August 23, 2013).

INFORMATION REPOSITORIES

Reed Memorial Library
167 East Main Street
Ravenna, Ohio 44266
(330) 296-2827
Hours of operation:
9AM – 9PM Monday – Thursday
9AM – 6PM Friday
9AM – 5PM Saturday
1PM – 5PM Sunday

Newton Falls Public Library
204 South Canal Street
Newton Falls, Ohio 44444
(330) 872-1282
Hours of operation:
10AM – 8PM Tuesday - Friday
9AM – 5PM Friday and Saturday

11.4 Public Meeting

The U.S. Army will hold an open house and public meeting on this PP on August 7, 2013, at 6:00PM, in the Paris Township Hall, 9355 Newton Falls Road, Ravenna, Ohio 44266to accept comments.

This meeting will provide an opportunity for the public to comment on the proposed action. Comments made at the meeting will be transcribed.

11.5 U.S. Army Review of Public Comments

The U.S. Army will review the public's comments as part of the process in reaching a final decision for the most appropriate action to be taken.

The Responsiveness Summary, a document that summarizes the U.S. Army's responses to comments received during the public comment period, will be included in the Record of Decision (ROD). The U.S. Army's final choice of action will be documented in the ROD. The ROD will be added to the RVAAP Administrative Record and Information Repositories.

ADMINISTRATIVE RECORD FILE

Camp Ravenna Joint Military Training Center (former Ravenna Army Ammunition Plant)
Building 1037
8451 State Route 5
Ravenna, Ohio 44266-9297
(330) 358-7311
Fax: (330) 358-7314
Note: Access is restricted to Camp Ravenna, but the file can be obtained or viewed with prior notice to Camp Ravenna.

GLOSSARY OF TERMS

Administrative Record: a collection of documents, typically reports and correspondence, generated during site investigation and remedial activities. Information in the Administrative Record represents the information used to select the preferred alternative. It is available for public review at the Ravenna Army Ammunition Plant, Building 1037; call (330) 358-7311 for an appointment.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): a federal law passed in 1980, commonly referred to as the Superfund Program.
It provides liability, compensation, cleanup, and emergency response in connection with the cleanup of inactive hazardous substance release sites that endanger public health or the environment.

Chemical of Concern (COC): chemical substances specific to an area of concern that potentially pose significant human health or ecological risks. COCs are typically further evaluated for remedial action.

Ecological Receptor: a plant, animal, or habitat exposed to an adverse condition.

Exposure Unit (EU): a location or area where a receptor may move at random and come into contact with an environmental medium (e.g., soil, surface water, and/or sediment).

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

Five-Year Review: a review conducted to determine whether each AOC remedy remains protective of human health and the environment and functions as intended based on the decision documents.

Human Receptor: a hypothetical person, based on current or potential future land use, who may be exposed to an adverse condition. For example, a National Guard Trainee is considered to be the most sensitive human receptor under future restricted land use in this Proposed Plan (PP).

National Oil and Hazardous Substances Pollution Contingency Plan (NCP): the set of regulations that implement CERCLA and address responses to hazardous substances and pollutants or contaminants.

Property Management Plan (PMP): a presiding management document to help manage land use controls established to protect human health and the environment at areas of concern and management response sites. A Property Management Plan presents final defined land uses and land use restrictions to ensure the property assumptions are appropriate or will remain appropriate through restrictions in the future.

Reasonable and Anticipated Future Land Use (RAFLU): the U.S. Army projected land use for an AOC that steers identification of potential future receptors, human health risk assessments for those future receptors, and remedial decisions to be protective of those future receptors.

Record of Decision (ROD): a legal record signed by the U.S. Army following coordination and concurrence with the Ohio EPA as per a June 10, 2004 agreement between the two parties. It describes the cleanup action or remedy selected for a site, the basis for selecting that remedy, public comments, responses to comments, and the estimated cost of the remedy.

Remedial Action Objective (RAO): these specific goals, developed from the evaluation of applicable or relevant and appropriate requirements, are to be protective of human health and the environment.

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

Responsiveness Summary: a section of the ROD where the U.S. Army documents and responds to written and oral comments received from the public about the PP.

Risk Assessment: an evaluation that determines potential harmful effects, or lack thereof, posed to human health and the environment due to exposure to chemicals found at a CERCLA site.

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

REFERENCES

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

Ohio EPA (Ohio Environmental Protection Agency) 2004. *Director's Final Findings and Orders in the Matter of US Army, Ravenna Army Ammunition Plant.* June 2004.

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

USACE (United States Army Corps of Engineers) 2005. *RVAAP Facility-Wide Human Health Risk Assessors Manual, Amendment 1*, December 2005.

USACE 2010. *Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant, RVAAP, Ravenna, Ohio*. March 2010.

USACE 2012. *Remedial Investigation/ Feasibility Study Report for Soil, Sediment, Surface Water at RVAAP-48 Anchor Test Area, Ravenna Army Ammunition Plant, Ravenna, Ohio*. January 2012.

USACHPPM (United States Army Center for Health Promotion and Preventive Medicine) 1998. *Relative Risk Site Evaluation for Newly Added Sites at the Ravenna Army Ammunition Plant, Ravenna, Ohio*. Hazardous and Medical Waste Study No. 37-EF-5360-99. October 1998.

USEPA (United States Environmental Protection Agency) 2001. *Comprehensive Five-Year Review Guidance*. OSWER No. 9355.7-03B-P, June 2001.

FIGURES

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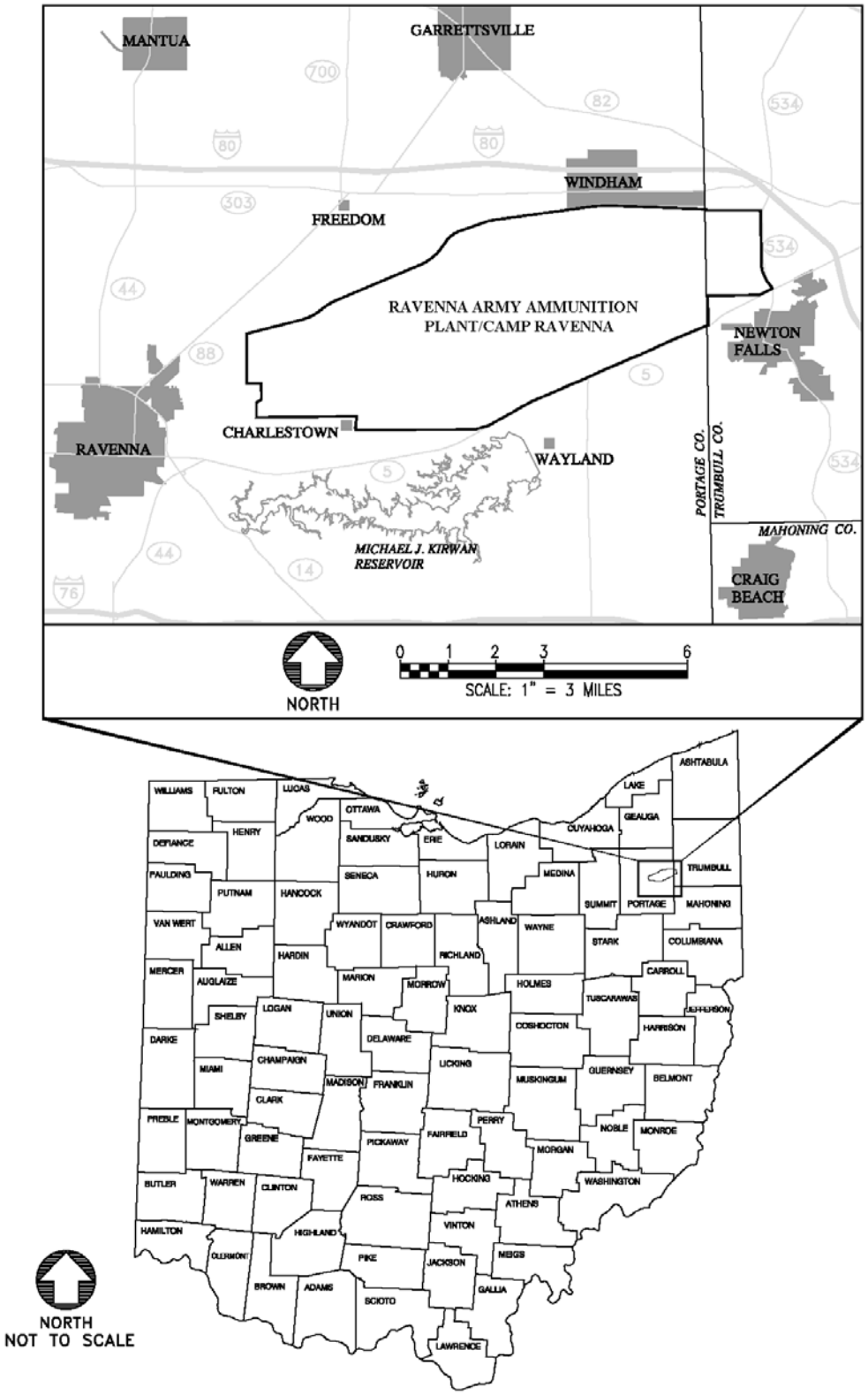

Figure 1. General Location and Orientation of RVAAP/Camp Ravenna

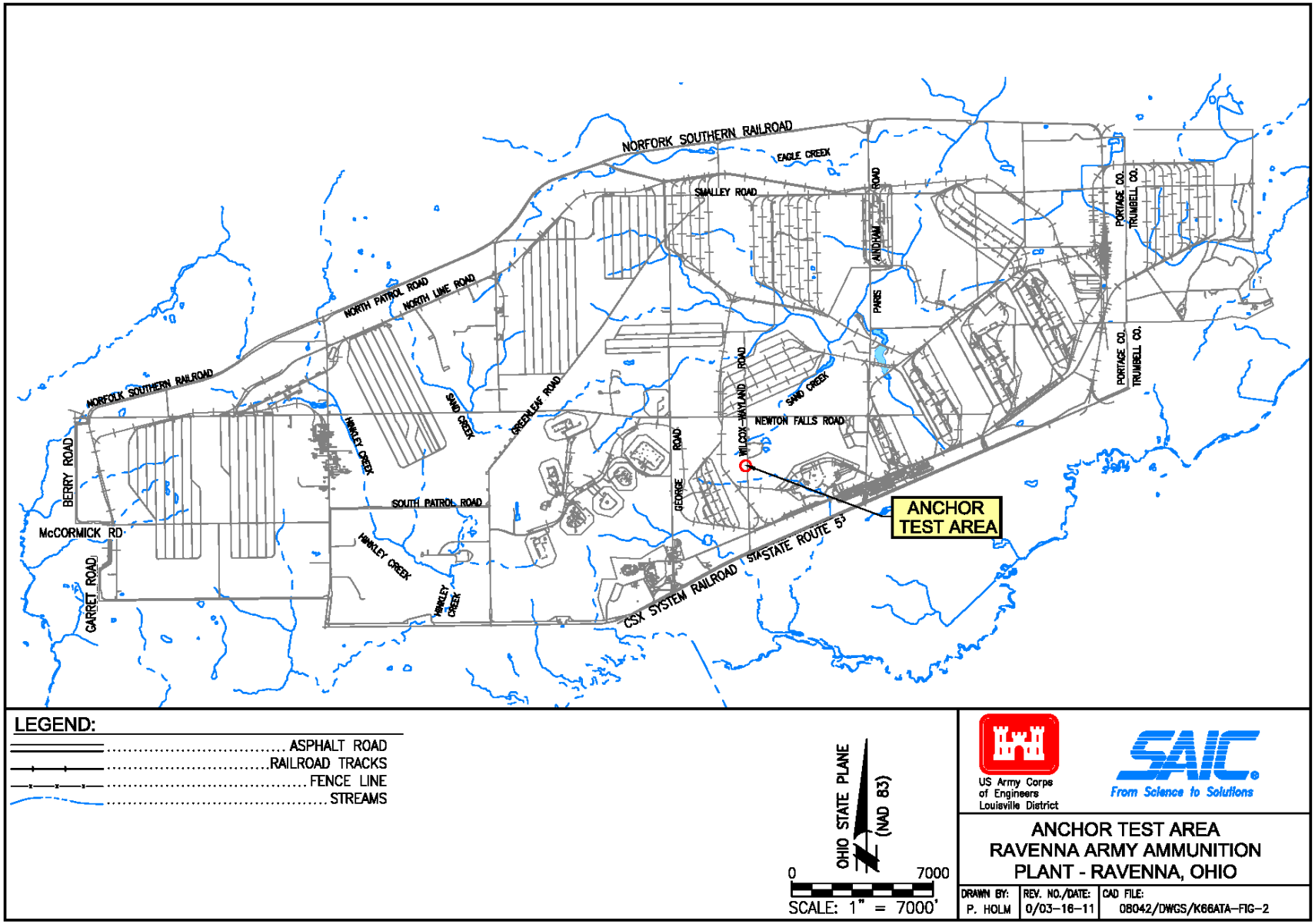

Figure 2. RVAAP/Camp Ravenna Installation Map

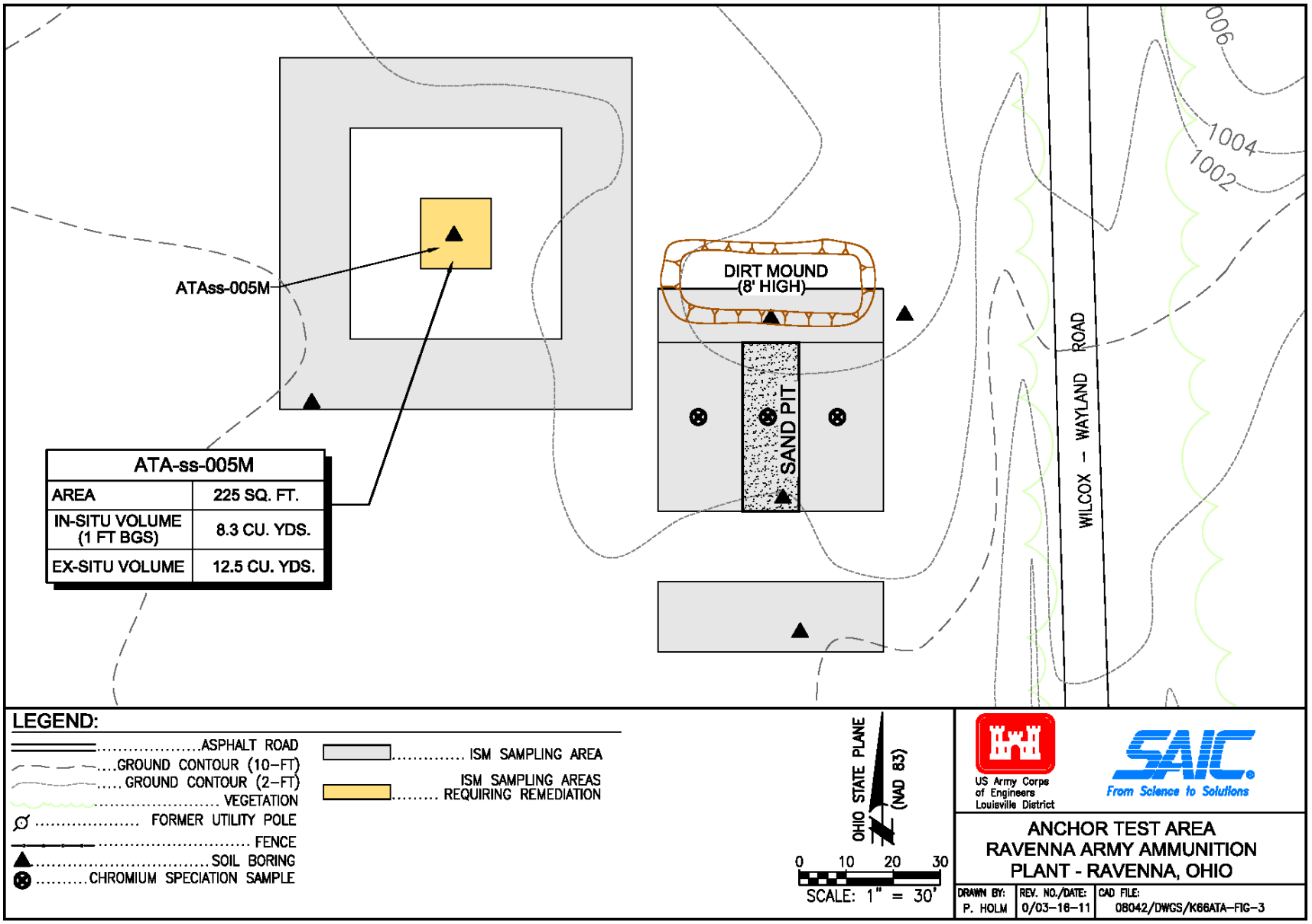

Figure 3. Anchor Test Area Site Features

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COMMENT RESPONSE TABLE

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DRAFT PROPOSED PLAN FOR SOIL, SEDIMENT, AND SURFACE WATER AT THE RVAAP-48 ANCHOR TEST AREA
RAVENNA ARMY AMMUNITION PLANT, RAVENNA OHIO
COMMENT RESPONSE TABLE ~ REVISION 3 (5/22/2013)

<table>
<tr><th>Comment Number</th><th>Page or Sheet</th><th>Comment</th><th>Recommendation</th><th>Response</th></tr>
<tr><td colspan="5">Ohio EPA Comments in Notice of Deficiency Letter dated 26 April 2013, Certified Mail # 7012 1010 000 9467 632</td></tr>
<tr><td></td><td>NOD Letter dated 26 April 2013</td><td colspan="3">The USACE received two additional comments from the Ohio EPA in a Notice of Deficiency letter dated 26 April 2013, Certified Mail # 7012 1010 000 9467 632. The Ohio EPA and the Army held a Comment Clarification Meeting on 13 May 2013 to get clarification on the two additional comments.

Comment 1 in the letter: "Response to Ohio EPA Comment # 2 - Ohio EPA recognizes that manganese is a Chemical of Potential Concern (COPC); however, the Weight of Evidence (WOE) provided could be modified to include the fact that the current RSL for residential exposure is 1,800 mg/kg (non-diet). The highest value detected in surface soil was 1,500 mg/kg. So, this would pass a current screen more or less (multiple chemical adjustments aside). This does, however, illustrate that the CUGs need updating, as the residential farmer CUG used in the assessment is cited at 2,930 mg/kg, almost twice the current residential RSL. I would like to see the Residential RSL used in the report as a line of evidence. Ohio EPA understands that the precedent CUGs were not to be used as values in the majority of the cases, if at all, so any text that mentions precedent CUGs needs to be removed." Per the discussion during the Clarification Meeting, the Ohio EPA clarified that they wanted the revisions made in the Army's response to Ohio EPA's original Comment O-2 (listed below in this CRT). During the Clarification Meeting, Ohio EPA clarified that the Ohio EPA did not intend for the Army to add additional text to the Proposed Plan but would accept a modification to the Army's original response in the Comment Response Table as presented below for NOD Comment 1.

Comment 2 in the letter requested that the text in the Proposed Plan be modified on page 7, Section 8.0 Summary of Feasibility Study Alternatives – Lines 22 through 27. The Comment requested clarification to be added that Alternative 2 incorporates four of the bulleted actions.

This CRT was modified and only addresses the two additional comments presented in the NOD Letter dated April 26, 2013. As such, Comments O-1, O-3, O-4, O-5, O-6, O-7, O-8, and O-9 were removed to easily identify the Army's response to the two additional comments. Based on Ohio EPA's NOD letter, the Army's responses to these comments that were removed were deemed acceptable by the Ohio EPA.</td></tr>
<tr><td>Comment # 1 in the NOD Letter Original Comment O-2</td><td>Page 3, Lines 96 - 8</td><td>The text states that the AOC will be used for dismounted training, which may include some digging. This statement seems inconsistent in reference to the Cleanup Goal (CUG) for manganese (Mn). The precedent CUG for Mn is 1,800 mg/kg as documented in the Final Record of Decision (ROD) for LLs 1-4; however, that CUG was based on a “mounted training, no digging.” The highest Mn surface soil analytical result at ATA was 1,500 mg/kg, which is above the background level of 1,450 mg/kg and well above the calculated CUG (351 mg/kg).</td><td>Please explain how a precedent CUG for “mounted, no digging” scenario can be used when the land use for this proposed plan is “dismounted training, some digging.”</td><td>REVISED RESPONSE PER COMMENT CLARIFICATION MEETING, 13 May 2013. The Land Use being evaluated for the AOC is Unrestricted. The references to a precedent CUG for "mounted, no digging" scenario being used for a land use in the Proposed Plan as "dismounted training, some digging" is not applicable. The AOC was assessed in the RI/FS to determine if there were chemicals of concern for various receptors. The FS assesses the Unrestricted Land Use to determine if it may be achievable applying the General Remedial Actions. Both the RI and the FS consider the Resident Adult Farmer as the representative receptor for the Unrestricted Land Use. The representative receptor for the Military Land Use was the (Ohio Army) National Guard Trainee (NGT). The precedent CUG used in the RI as a line of evidence for the weight-of-evidence discussion (Section 7.2.4.3 of the approved, final RI/FS Report) was included to provide rationale of why manganese is not identified as a Chemical of Concern (COC) at Anchor Test Area for the Resident Adult Farmer (RAF).

Manganese was not identified as a COPC for the NGT receptor based on a comparison to background concentrations of manganese for subsurface soil. The precedent cleanup goal for a NGT receptor for manganese was not based on a site-specific calculated CUG but was instead an USEPA Residential Preliminary Remediation Goal (now replaced with USEPA's Regional Screening Levels – RSLs). Because the precedent CUG for manganese was based on a PRG in effect at the time of the Load Line 1-4 ROD, it is no longer directly applicable to the Anchor Test Area AOC or the NGT receptor.

The following discussion is presented to clarify and present the reasoning behind the dismissal of manganese as a COC for the RAF and the NGT receptors with additional lines of evidence other than the non-applicable precedent CUG. The data presented in Table CRT-1 was taken from Tables G-1, G-2, G-3, and G-4 of the RI.

Table CRT-1. Summary information regarding maximum detected value, average result, and background concentrations. The FWGUGs for the NGT and RAF are provided as well as the current USEPA Regional Screening Level (RSL) for the 1.0 X 10^{-6} Risk Level for manganese are provided. Concentrations are reported in mg/kg.
<table>
<tr><th>Soil Depth</th><th>Maximum detected</th><th>Average Result</th><th>Background Concentration</th><th>NGT mg/kg</th><th>RAF mg/kg</th><th>RSL mg/kg</th></tr>
<tr><td>0 to 1 ft. bgs</td><td>1500 mg/kg</td><td>807 mg/kg</td><td>1450 mg/kg</td><td>-</td><td>1482</td><td>1800</td></tr>
<tr><td>1 to 4 ft. bgs</td><td>437 mg/kg</td><td>336 mg/kg</td><td>3030 mg/kg</td><td>-</td><td>1482</td><td>1800</td></tr>
<tr><td>0 to 4 ft bgs: actual exposure depth and interval was assessed by evaluating the 0 to 1 foot interval separately from the 1 to 4 foot interval.</td><td>-</td><td>-</td><td>1 foot at 1450 mg/kg and 3 feet at 3030 mg/kg</td><td>35.1</td><td>1482</td><td>1800</td></tr>
<tr><td>4 to 7 ft bgs</td><td>383 mg/kg</td><td>302 mg/kg</td><td>3030 mg/kg</td><td>35.1</td><td>1482</td><td>1800</td></tr>
<tr><td>1 to 13 ft bgs</td><td>437 mg/kg</td><td>316 mg/kg</td><td>3030 mg/kg</td><td>35.1</td><td>1482</td><td>1800</td></tr>
</table></td></tr>
</table>

Comment Number	Page or Sheet	Comment	Recommendation	Response
				Considering the data and values presented in Table CRT-1, manganese is not a COC for either the NGT or the RAF receptors at the Anchor Test Area AOC. Since the average concentration of manganese in any of the depths is less than background concentration, the value of the FWCUG or RSL for any of the receptors (NGT, RAF, and RSL-resident) is inconsequential to the determination of COCs. There was one sample that had a maximum detected value of manganese at 1500 mg/kg that was slightly above background values but this value was still less than the residential RSL. Because the concentration of manganese is less than the Residential RSL, manganese was not considered to be a COC and was not assessed further for this AOC.

Comment #2 in NOD Letter 26 April 2013		The second comment in the NOD letter was a request to modify text in the Proposed Plan on page 7, Section 8.0 Summary of Feasibility Study Alternatives – Lines 22 through 27. The Comment requested clarification to be added that Alternative 2 incorporates four of the bulleted actions.		Agree to Revise page 7, Section 8, Summary of Feasibility Study Alternative, Lines 22 through 27 of the Proposed Plan. Please note that Alternative 2 incorporates two of the GRAs evaluated. Land use controls (LUCs) and five year reviews and treatment are GRAs that were screened out in the FS evaluation.
				
				Currently in the Proposed Plan, the beginning of Section 8 reads as follows:
				
				8.0 SUMMARY OF FEASIBILITY STUDY ALTERNATIVES
				The following general response actions (GRAs) were considered in the FS for remediation of contaminated soil at Anchor Test Area:
				• No action;
				• Land use controls (LUCs) and five-year reviews;
				• Removal;
				• Treatment; and
				• Disposal and handling.
				
				Technologies under each GRA were screened and selected for their ability to reduce exposure to contaminants in soil. Because soil contains chemical contamination above CUGs, the technologies were evaluated for their ability to remove or reduce contaminants in the shortest timeframe. Technologies selected under these GRAs were combined into the following two alternatives for detailed analysis. Costs were estimated for each alternative.
				
				The following revision is suggested to address the comment from Ohio EPA:
				
				8.0 SUMMARY OF FEASIBILITY STUDY ALTERNATIVES
				
				The following alternatives were developed using general response actions (GRAs) considered in the FS:
				
				• Alternative 1 – No Action:
				  o No action;
				• Alternative 2 – Attain Unrestricted Land Use:
				  o Removal;
				  o Disposal and handling.
				
				The GRAs considered were no action, land use controls and five-year reviews, removal, treatment, and disposal and handling. Technologies under each GRA were screened and selected for their ability to reduce exposure to contaminants in soil. Because soil contains chemical contamination above CUGs, the technologies were evaluated for their ability to remove or reduce contaminants in the shortest timeframe.
				
				Technologies selected under these GRAs were combined into ~~the following two~~ alternatives for detailed analysis. Costs were estimated for each alternative.

Ohio EPA
40 years and moving forward

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

April 26, 2013

CERTIFIED MAIL
7012 1010 0000 9467 6325

Mr. Mark Patterson, Facility Manager
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, OH 44266

Re: Comments for the "Revised Proposed Plan for Soil, Sediment, and Surface Water at the RVAAP-48 Anchor Test Area at the Ravenna Army Ammunition Plant, Ravenna, Ohio," Dated March 11, 2013 (Work Activity No. 267-000859-109)

Dear Mr. Patterson:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) has received and reviewed the document entitled, "Revised Proposed Plan for Soil, Sediment, and Surface Water at the RVAAP-48 Anchor Test Area at the Ravenna Army Ammunition Plant, Ravenna, Ohio," dated March 11, 2013. This document, received by Ohio EPA's NEDO on March 12, 2013, was prepared for the U.S. Army Corps of Engineers (USACE) Louisville District, by SAIC Engineering of Ohio, Inc.

Comments:

1. Response to Ohio EPA Comment # 2 - Ohio EPA recognizes that manganese is a Chemical of Potential Concern (COPC); however, the Weight of Evidence (WOE) provided could be modified to include the fact that the current RSL for residential exposure is 1,800 mg/kg (non-diet). The highest value detected in surface soil was 1,500 mg/kg.

   So, this would pass a current screen more or less (multiple chemical adjustments aside). This does, however, illustrate that the CUGs need updating, as the residential farmer CUG used in the assessment is cited at 2,930 mg/kg, almost twice the current residential RSL. I would like to see the Residential RSL used in the report as a line of evidence.

   Ohio EPA understands that the precedent CUGs were not to be used as values in the majority of the cases, if at all, so any text that mentions precedent CUGs needs to be removed.

E-MAILED 04-29-2013 RMH

Scanned By: RMH Date: 04-29-2013

Northeast District Office • 2110 East Aurora Road • Twinsburg, OH 44087-1924
www.epa.ohio.gov • (330) 963-1200 • (330) 487-0769 (fax)

RECEIVED 04-29-2013

2. Page 7, Section 8.0, Summary of Feasibility Study Alternatives - Lines 22 through 27 list five bullets or response actions; however, only two Alternatives are listed. Please clarify that Alternative 2 incorporates four of the bulleted actions.

Pursuant to the June 14, 2004 Director's Final Findings and Orders (DFFOs), Ohio EPA has prepared this Notice of Deficiency for Revised Proposed Plan for Soil, Sediment, and Surface Water at the RVAAP-48 Anchor Test Area at the Ravenna Army Ammunition Plant, Ravenna, Ohio," dated March 11, 2013, under Paragraphs 39 and 41. Pursuant to DFFOs, Paragraph 41, and this notification, the "Respondent shall within thirty (30) days from the date of actual receipt of the disapproval, correct the deficiencies and submit revised page(s) to Ohio EPA for approval." "This time limitation may be extended by mutual written agreement of the Project Managers. The revised submission shall incorporate all of the uncontested changes, additions, and/or deletions specified by Ohio EPA in its notice of deficiency."

Paragraph 42 of the DFFOs provides for a meeting request by the Respondent to discuss and clarify issues. The DFFOs state, "... the meeting shall commence within fifteen (15) days of the close of the comment period" and again can be extended by mutual written agreement of the Project Managers. Please let Ohio EPA's contact Project Manager, Eileen Mohr, know if the Army wants to request a meeting. She can be reached at (330) 963-1221.

Sincerely,

FOR

Nancy Zikmanis
Environmental Supervisor
Division of Environmental Response and Revitalization

ACK:NZ/kss

cc: Ann Wood, NGB
Katie Tate, OHARNG, Camp Ravenna
Cullen Grasty, Louisville District Corps of Engineers

ec: Eileen Mohr, Ohio EPA, NEDO, DERR
Todd Fisher, Ohio EPA, NEDO, DERR
Andrew Kocher, Ohio EPA, NEDO, DERR
Justin Burke, Ohio EPA, CO, DERR

DRAFT PROPOSED PLAN FOR SOIL, SEDIMENT, AND SURFACE WATER AT THE RVAAP-48 ANCHOR TEST AREA
RAVENNA ARMY AMMUNITION PLANT, RAVENNA OHIO
COMMENT RESPONSE TABLE ~ REVISION 1 (issued 03/06/13)

Comment Number	Page or Sheet	Comment	Recommendation	Response
		Ohio EPA (Andrew Kocher)		
O-1.	Page 1, Lines 53 – 54	The call-out box is not consistent with previous Proposed Plans that are final. See Proposed Plan for ODA#2.	Please include information of the Information Repositories in the call-out box.	Agree. The Information Repository information has been put in the call out box on Page 1.
O-2.	Page 3, Lines 96 - 8	The text states that the AOC will be used for dismounted training, which may include some digging. This statement seems inconsistent in reference to the Cleanup Goal (CUG) for manganese (Mn). The precedent CUG for Mn is 1,800 mg/kg as documented in the Final Record of Decision (ROD) for LLs 1-4; however, that CUG was based on a "mounted training, no digging." The highest Mn surface soil analytical result at ATA was 1,500 mg/kg, which is above the background level of 1,450 mg/kg and well above the calculated CUG (351 mg/kg).	Please explain how a precedent CUG for "mounted, no digging" scenario can be used when the land use for this proposed plan is "dismounted training, some digging."	Clarification. Using a weight-of-evidence discussion, Section 7.2.4.3 of the approved, final RI/FS Report provides the rationale of why manganese is not identified as a COC at Anchor Test Area, including comparison to background concentrations and precedent cleanup goals for a National Guard Trainee receptor, which were based on an EPA Residential PRG. Because the precedent CUG for manganese was based on a PRG in effect at the time of the Load Line 1-4 ROD, it is no longer directly applicable. However, please also note that in addition to the WOE approved in the final RI/FS Report, the following lines of evidence exist that conclude manganese is not a chemical of concern: 1) The manganese concentration is less than the FWCUG for the Resident Farmer (2,930 mg/kg). 2) Manganese across the National Guard Trainee exposure depth of 0-4 ft bgs has a maximum detected concentration of 1,500 mg/kg. This concentration is less than the maximum background screening value in the 0-4 ft bgs interval (3,030 mg/kg). Using these additional lines of evidence in addition to conclusions approved in the RI/FS

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				Report, manganese should not be a COC at Anchor Test Area.
O-3.	Page 4, Lines 38 - 41	Based on the previous comment, Mn may need to be added as a COC in shallow soil.	A revision may be needed.	Clarification. See response to comment O-2.
O-4.	Page 4, Lines 46 - 50	This sentence explains that arsenic was present above the CUGs, but no concentrations were present.	Please add the concentration/s of arsenic (and Mn, if applicable) and the appropriate CUG values.	Agree. The text has been revised to present the concentration of arsenic. Section 7.0 and Table 1 have been revised to clearly present the remedial cleanup goal for arsenic.
O-5.	Page 5, Lines 24 -25	This is Table 1.	Please add the concentration of arsenic to Table 1.	Agree. The maximum arsenic concentration of 54 mg/kg was added to Table 1.
O-6.	Page 5, Lines 58 -70	This paragraph describes Alternative 1 – No Action. There is no Reasonable and Anticipated Future Land Use (RAFLU).	Please include a RAFLU.	Agree. The following sentence has been added to the first paragraph of Section 8.1 as the second sentence. "This alternative is not protective of human health for the RAFLU (Dismounted Training-Digging OHARNG Military Use and Training Land Use) or Unrestricted Land Use."
O-7.	Page 5, Lines 67-70; Page 6, Lines 31-33; Page 8, Lines 31-32	The text states that 5-Year Reviews would not be conducted. Ohio EPA does not agree with this statement. At this time, 5-Year Reviews will be necessary to confirm that land use has not changed, CUGs have not changed, and the Project Management Plan (PMP) has not changed.	Please revise the text to say (or similar), "At this time, discretionary 5-Year Reviews (as described in U.S. EPA's 5-Year Review Guidance Document, OSWER No. 9355.7-03B-P, June 2001) will be conducted to insure that land use~~s~~, CUGs, and the PMP have not changed, which could affect the current unrestricted use.	At this time, discretionary five-year reviews (as described in USEPA 2001) are not needed. If the property is transferred from the ARNG or to another property owner, then an appropriate evaluation will be conducted at that time. The new proposed Land Use would have to be evaluated. In addition, the FWCUGs are based on specific receptors and exposure scenarios that would likely not be applicable to the proposed Land Use if the property changes ownership.
O-8.	Page 10,	This section is the "Glossary of Terms."	Please add RAFLU, 5-Yr Review, and the	Agree. The following has been added to the

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	Lines 13-89 (ALL RPTS)	This glossary needs a few more added terms.	Project Management Plan (PMP) to the glossary.	"Glossary of Terms" **Five-Year Review**: a review conducted to determine whether each AOC remedy remains protective of human health and the environment and functions as intended based on the decision documents. **Property Management Plan (PMP)**: a presiding management document to help manage land use controls established to protect human health and the environment at areas of concern and management response sites. A Property Management Plan presents final defined land uses and land use restrictions to ensure the property assumptions are appropriate or will remain appropriate through restrictions in the future. **Reasonable and Anticipated Future Land Use (RAFLU):** the U.S. Army projected land use for an area of concern that steers identification of potential future receptors, human health risk assessments for those future receptors, and remedial decisions to be protective of those future receptors.
O-9.	General (ALL RPTS)	Since the Army/NGB has not finalized the PMP, there is no final defined land use and restrictions to ensure the property assumptions are appropriate or will remain appropriate through restrictions in the future. Therefore, please be advised that if this document is not consistent with the final, approved PMP, the PP will need to be revised accordingly. This may require a change	Provide a discussion that the defined land use is consistent with the approved PMP and meets all requirements of the approved PMP.	Agree. Providing this response in anticipation of the approved PMP, the second paragraph in Section 10.0 has been revised as follows: "Alternative 2 is protective for the RAFLU, which is consistent with the approved Property Management Plan (PMP) at RVAAP, and is also protective for Unrestricted Land Use."

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		in the defined remedy and revising all documents as appropriate, including the PP/ROD for the project.		

ADDITIONAL REVISIONS TO DOCUMENT

Attached to this comment response table is a tracked changes version of the Proposed Plan showing insertions to the text. The original text is the Predraft and the revised version is recommended to be the Draft. Notable changes are as follows:

1) The Reasonable and Anticipated Future Land Use for Anchor Test Area is defined as Dismounted Training-Digging OHARNG Military Use and Training Land Use.
2) The previous Alternative 2 was named "Attain National Guard Training and Residential Land Use". As agreed in the 18 Universal Comments, that alternative will now be re-named "Attain Unrestricted Land Use". Text has been put in the Proposed Plan to explain that Unrestricted Land Use is based on the Resident Farmer receptor, with exception of a few chemicals where another receptor has lower FWCUGs than the Resident Farmer. In addition, text has been added to the revised Proposed Plan to explain the change of the alternative name from the final RI/FS Report.
3) A review was performed to identify and correct any inconsistencies in the deep surface soil exposure depth terminology. Deep surface soil refers to the 0–4 ft bgs exposure depth for the National Guard Trainee. Because the 0-4 ft bgs deep surface soil exposure depth was characterized using two different sample types (ISM and discrete samples), the HHRA refers to the 0–1 ft bgs ISM sample interval collected within the deep surface soil exposure depth and the 1–4 ft discrete sample interval collected within the deep surface soil exposure depth. Per the FWHHRAM, the following terms are consistently used: Surface soil = 0–1 ft bgs (for Resident Farmer), Deep surface soil = 0–4 ft bgs (for National Guard Trainee), Subsurface soil = 1–13 ft bgs (for Resident Farmer), Subsurface soil = 4–7 ft bgs (for National Guard Trainee).
4) In Nature and Extent discussion, references to "deep surface soil," "shallow soil," and "shallow surface soil," and other risk/exposure depth terms are removed because this addresses soil contaminants only on the basis of SRCs within surface soil (0–1 ft bgs) and subsurface soil (all depths > 1 ft bgs). This dependency is due to separate RVAAP background values for surface soil (0–1 ft bgs) and subsurface soil (all depths greater than 1 ft bgs).
5) Revisions to contact information (e.g., contacting the Camp Ravenna Environmental Office) within the Proposed Plan now align with what was presented in the Final RQL Proposed Plan.