Final

Proposed Plan
for Soil and Dry Sediment at the
Ramsdell Quarry Landfill (RVAAP-01)

Ravenna Army Ammunition Plant
Ravenna, Ohio

March 2007

Contract No. GS-10F-0076J
Delivery Order No. W912QR-05-F-0033

Prepared for:

US Army Corps of Engineers®

United States Army Corps of Engineers
Louisville District

Prepared by:

SAIC From Science to Solutions

Science Applications International Corporation
8866 Commons Boulevard, Suite 201
Twinsburg, Ohio 44087

1700.20070131.001

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

AOC	area of concern
ARAR	applicable or relevant and appropriate requirement
BGS	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
COC	constituent of concern
EPC	exposure point concentration
FS	feasibility study
GRA	general response action
IRP	Installation Restoration Program
HHRA	human health risk assessment
MEC	munitions and explosives of concern
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NGB	National Guard Bureau
O&M	operations and maintenance
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
PCB	polychlorinated biphenyl
RAO	remedial action objective
RI	remedial investigation
ROD	Record of Decision
RQL	Ramsdell Quarry Landfill
RTLS	Ravenna Training and Logistics Site
RVAAP	Ravenna Army Ammunition Plant
SVOC	semivolatile organic compound
USACE	U. S. Army Corps of Engineers
VOC	volatile organic compound

1.0 INTRODUCTION

This Proposed Plan presents remedial alternatives and identifies the preferred alternative for cleanup of contaminated soil and dry sediment within the Ramsdell Quarry Landfill (RQL) at the Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio (Figure 1) and provides the rationale for this preference. The US Army, in consultation with the Ohio Environmental Protection Agency (Ohio EPA), issues this Proposed Plan. The Proposed Plan provides the public with information necessary to comment upon the selection of an appropriate response action. The US Army, in consultation with Ohio EPA, will select the remedy for this area of concern (AOC) after reviewing and considering 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 Proposed Plan.

The US Army is issuing this Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 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 satisfy the requirements of the Ohio EPA Director's Final Findings and Orders, June 10, 2004 (Ohio EPA 2004a).

The Proposed Plan summarizes information that can be found in greater detail in the combined Phase I/II Remedial Investigation (RI) Report and other environmental studies [U. S. Army Corps of Engineers (USACE) 1999, 2000, and 2005a], the Feasibility Study (FS) (USACE 2006), and other documents contained in the Administrative Record file for RQL. The US 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.

Public Comment Period:
April 4, 2007 to May 3, 2007

Public Meeting:
The US Army will hold an open house and public meeting to explain the Proposed Plan and the alternatives presented in the Feasibility Study. Oral and written comments will also be accepted at the meeting. The open house and public meeting is scheduled for 6:00PM, April 10, 2007, at the Newton Falls Community Center, 52 East Quarry Street, Newton Falls, Ohio 44444.

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:
10AM – 8:45PM Monday – Friday
10AM – 5:45PM Saturday

Newton Falls Public Library
204 South Canal Street
Newton Falls, Ohio 44444
(330) 872-1282
Hours of operation:
9AM – 8PM Monday – Thursday
9AM – 5PM Friday and Saturday
12PM – 5PM Sunday

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

RVAAP, Building 1037
8451 State Route 5
Ravenna, Ohio 44266-9297
(330) 358-7311
Fax: (330) 358-7314

Note: Access is restricted to the Ravenna Army Ammunition Plant (RVAAP), but the file can be obtained or viewed with prior notice to RVAAP.

2.0 RVAAP AND AREA OF CONCERN BACKGROUND

RVAAP is approximately 4.8 km (3 miles) east-northeast of the city of Ravenna and approximately 1.6 km (1 mile) northwest of the city of Newton Falls (Figure 1). When the RVAAP Installation Restoration Program (IRP) began in 1989, RVAAP was identified as a 21,419-acre installation. The property boundary was resurveyed by the Ohio Army National Guard (OHARNG) over a 2-year period (2002 and 2003) and the actual total acreage of the property was found to be 21,683 acres. As of February 2006, a total of 20,403 acres of the former RVAAP have been transferred to the National Guard Bureau (NGB) and subsequently licensed to OHARNG for use as a military training site named the Ravenna Training and Logistics Site (RTLS). The current RVAAP consists of 1,280 acres scattered throughout the RTLS. The current RVAAP portions of the property are solely located within Portage County.

The RVAAP IRP includes investigation and cleanup related to past activities over the entire 21,683 acres of the former RVAAP. References to RVAAP in this document include the historical extent of RVAAP, which is the combined acreages of the current RTLS and RVAAP, unless otherwise specifically stated.

RVAAP is approximately 17.7 km (11 miles) long and 5.6 km (3.5 miles) wide bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad on the south; Garret, McCormick, and Berry roads on the west; the NSCORP Railroad on the north; and State Route 534 on the east (see Figure 1). RVAAP is surrounded by several communities: Windham on the north; Garrettsville 9.6 km (6 miles) to the northwest; Newton Falls 1.6 km (1 mile) to the southeast; Charlestown to the southwest; and Wayland 4.8 km (3 miles) to the south.

RVAAP was constructed in 1940 and 1941 for depot storage and ammunition assembly/loading and placed on standby status in 1950. Production activities were resumed during 1954 to 1957 and 1968 to 1972. Demilitarization activities, including disassembly of munitions and explosives melt-out and recovery, continued until 1992. When RVAAP was operational, the entire 21,683-acre parcel was a government-owned, contractor-operated industrial facility. The only activities still being carried out at RVAAP are environmental restoration, ordnance clearance and infrequent demolition of any unexploded ordnance discovered during investigation and remediation activities, and building decontamination and demolition.

RQL, designated as AOC RVAAP-01, encompasses approximately 14 acres in the northeastern portion of RVAAP (Figures 2 and 3). The AOC was initially a stone quarry that operated until 1941. During operations, the quarry was excavated to 9 to 12 m (30 to 40 ft) 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, 18,000 225-kg (500-lb) incendiary or napalm bombs were burned and liquid residues from annealing operations were disposed of in the quarry.

Between 1941 and 1989, the western and southern sections of the abandoned quarry were used for landfill operations. No information is available regarding landfill disposal activities from 1941 to 1976, and no information is available on other activities at the quarry from the 1950s to 1976. Only non-hazardous soil waste was deposited in RQL from 1976 until it was closed in 1989. In 1978, a portion of the abandoned quarry was permitted as a sanitary landfill by the state of Ohio. The sanitary landfill was closed in 1990 under state of Ohio solid waste regulations. A clay cap was placed on the former permitted landfill area covering approximately 4 acres of the AOC. The installation and semi-annual monitoring of five groundwater monitoring wells were required for closure of the landfill.
The following environmental reports have been completed for RQL:

- Preliminary Assessment (USACE 1996);
- Groundwater Investigation – Initial and Final Phases (USACE 1999 and 2000);
- Combined Phase I/II RI (USACE 2005a); and
- FS (USACE 2006).

3.0 AREA OF CONCERN CHARACTERISTICS

The AOC characteristics, nature and extent of contamination, and conceptual site model are based on groundwater investigations and the RI conducted from 1998 through 2005 (USACE 1999, 2000, and 2005a).

Access is restricted to security patrols and maintenance of the landfill cap (e.g., mowing).

Ground surface elevations across RQL range from approximately 955 to 990 ft above mean sea level. Prominent features include the former quarry, the landfill, several drainage ditches, access roads, and a former rail line. The land surface in a large portion of the AOC slopes into the former quarry, which occupies most of the AOC. The quarry bottom is about 40 ft below the surrounding area. Surface water runoff collects in a wetland area in the bottom of the quarry. The extent of the wetland varies widely depending on the season and rainfall and it is sometimes completely dry. When water is present in the wetland, the depth is usually less than 4 ft. The drainage ways and ditch lines, located along access roads and the rail line, only contain water during rain events. There is no surface water drainage from the quarry pond. Former quarry operations resulted in the removal of much of the original soil. Surface soil within the quarry is thin and bedrock is exposed in some areas within the quarry. Nature and extent of contamination of surface soils [0 to 1 ft below ground surface (BGS)] and groundwater were determined in the Phase I/II RI at RQL (USACE 2005a). No subsurface soil (> 1 ft BGS) is present within the quarry.

Contaminants identified in surface soil include metals, explosive compounds, and semivolatile organic compounds (SVOCs). The highest concentrations of metals and SVOCs occur in the northwest portion of the former quarry bottom. Explosive compounds were detected in four discrete surface soil samples. SVOCs were detected in all samples, with the maximum concentrations observed in the northwest corner of the AOC. No volatile organic compounds (VOCs), pesticides, or polychlorinated biphenyls (PCBs) were detected.

Concentrations of metals were detected above background in RI groundwater samples at RQL; however, only three metals (arsenic, lead and manganese) were found to exceed the U. S. Environmental Protection Agency Region 9 residential preliminary remediation goals. The maximum detected concentrations of arsenic and lead were well below Ohio maximum contaminant levels and federal treatment standards. Low, estimated concentrations of a few VOCs and SVOCs were sporadically detected during the RI. Explosives have been detected in some previously installed wells near the quarry; however, wells installed further from the quarry during the Phase I/II RI did not contain explosives. Pesticides and PCBs were not detected in any RQL groundwater monitoring well samples during the RI. The groundwater monitoring data collected at RQL indicate a limited extent of contaminant migration downgradient of the site.

Groundwater contaminant migration was modeled as part of the FS. Modeling included evaluation of potential leaching of contaminants from soil to groundwater. Also, the potential for contaminants to migrate from sources to the AOC boundary was evaluated. Modeling results indicate that some metals, explosives, and one SVOC may leach from soil to groundwater. None of these contaminants were predicted by the modeling results to migrate beyond the AOC boundary at concentrations above risk-based concentrations or drinking water maximum contaminant levels.

A facility-wide investigation of surface water at RVAAP also included an evaluation of the wetland area in the bottom of RQL (USACE 2005b). Because the wetland area is sometimes dry and of small extent, it does not offer good aquatic habitat. Chemical and biological measurements were not taken during the facility-wide investigation of surface water. However, the Ohio Rapid Assessment Method for wetlands was applied to RQL and it was determined that the wetland was of low quality (USACE 2005b). Surface monitoring may be conducted in the future if conditions warrant.

4.0 SCOPE AND ROLE OF RESPONSE ACTION

The US Army intends to transfer RQL to NBG following the remediation of contaminated soil and dry sediment. OHARNG plans to keep access to RQL restricted. Post-closure care of the RQL cap and monitoring must be continued in accordance with Ohio solid waste management regulations. Excavation into or disturbance of the landfill contents is prohibited without prior approval of Ohio EPA.

Remediation of groundwater, surface water, and underwater (wet) sediment is not included in the scope of this action. These media will be addressed under future actions. However, the selected remedy for soil and dry sediment at RQL must be protective of these other media.

Groundwater at RQL is routinely monitored under the post-closure provisions of Ohio solid waste management regulations and the RVAAP Facility-Wide Groundwater Monitoring program conducted in accordance with the Ohio EPA Director's Final Findings and Orders (Ohio EPA 2004a).

5.0 SUMMARY OF HUMAN AND ECOLOGICAL RISKS

A human health risk assessment (HHRA) was conducted to evaluate potential risks from current and predicted future exposures to soil and dry sediment contaminants at RQL (USACE 2005a). RQL is currently restricted access and groundskeeping activities include periodic mowing/maintenance of the landfill cap. Maintenance workers visit infrequently. The RI/FS evaluated a Security Guard/Maintenance Worker, National Guard Dust/Fire Control Worker, National Guard Trainee, Hunter/Trapper, Juvenile and Adult Trespasser, and Resident Subsistence Farmer (adult and child) to cover a range of possible land uses.

OHARNG plans to continue a restricted access land use at RQL. The National Guard Security Guard/Maintenance Worker was identified as the reasonably anticipated future land use. The HHRA also evaluated a residential land use scenario to provide a full comparative range of risks and remedial alternatives. A Resident Subsistence Farmer (adult and child) was identified as the most sensitive human receptor under residential land use. The facility will be retained by the US government (i.e. a federal facility) for use by the OHARNG for military training. Therefore, the HHRA summary focused on health effects for National Guard use. Risk information for other human receptors is located in the HHRA (USACE 2005a) and FS (USACE 2006). The other additional human receptors are not anticipated at RQL due to the intended future land use by OHARNG, the presence of the closed landfill, and potential munitions and explosives of concern (MEC).

Two metals (arsenic and lead) and eight SVOCs [benz(*a*)anthracene, benzo(*a*)pyrene, benzo(*b*)fluoranthene, benzo(*k*)fluoranthene, chrysene, dibenz(*a,h*)anthracene, indeno(*1,2,3-cd*)pyrene, and carbazole] were identified as constituents of concern (COCs) in shallow surface soil (0 to 1 ft BGS) for the most likely receptor (e.g., Security Guard/Maintenance Worker) at RQL. The highest concentrations for all eight SVOCs were detected at soil sampling station RQL-026 (Figure 3).

Total carcinogenic risk to a National Guard Security Guard/Maintenance Worker was calculated as 2.1E-03, which exceeds Ohio EPA target risk levels. Exposure point concentrations (EPCs) for five COCs did not exceed their respective preliminary cleanup

goals [arsenic, lead, benzo(*k*)fluoranthene, carbazole, and chrysene] and they were not considered further for evaluation of remedial alternatives. The EPCs for the remaining five COCs (Table 1) did exceed preliminary cleanup goals and were considered for remediation. Concentrations of benzo(*a*)pyrene at two sample points (RQL-025 and RQL-026, Figure 3) result in carcinogenic risk above Ohio EPA target risk level and the federal CERCLA risk range. The highest concentrations of COCs are at sampling station RQL-026, while concentrations at other sampling points are 0 to 2 orders of magnitude lower. The chemical hazard index was 0.23, indicating no unacceptable hazard.

Table 1. COCs and Preliminary Cleanup Goals for a Security Guard/Maintenance Worker for Soil/Dry Sediment at RQL

COC	Cleanup Goal (mg/kg)
Benz(*a*)anthracene	13
Benzo(*a*)pyrene	1.3
Benzo(*b*)fluoranthene	13
Dibenz(*a,h*)anthracene	1.3
Indeno(1,2,3-*cd*)pyrene	13

COC = Constituent of concern.
RQL = Ramsdell Quarry Landfill.

The 14 acres of habitat at RQL include old-field communities with patches of forests and grasslands. The small aquatic habitat in the bottom of the quarry consists of an intermittent wetland. The wetland was assessed with the Ohio Rapid Assessment Method and determined to be of low quality (USACE 2005b). These habitats support a variety of wildlife, including small mammals, birds, and insects. There are currently no federally-listed species or critical habitats on RVAAP property. State-endangered, State-threatened, State species-of-concern, and State special-interest species have been identified at RVAAP. RQL has not been previously surveyed for State-listed species; therefore, none have been documented at RQL.

The ecological risk assessment for RQL evaluated risk to ecological receptors from contaminants in soil, surface water, and sediment. Chemicals of potential ecological concern identified for these media include metals, explosives, one pesticide, SVOCs, and one VOC. The FS (USACE 2006) presents a weight-of-evidence evaluation and recommends that no quantitative ecological preliminary cleanup goals be developed at RQL.

6.0 REMEDIAL ACTION OBJECTIVES

The remedial action objective (RAO) references preliminary cleanup goals and target risk levels that are considered protective of human health under current and reasonably anticipated future use scenarios. The RAO for this remedy is to prevent National Guard Security Guard/Maintenance Worker exposure to contaminants in soil and dry sediment that exceed preliminary cleanup goals to a depth of 1 ft BGS.

Soil/dry sediment to be cleaned up under this Proposed Plan extend to a maximum depth of 1 ft BGS because future land use will not require disturbance of soil below that depth. Additionally, bedrock is very near to the ground surface in much of the quarry bottom. Table 1 presents the risk-based cleanup goals.

7.0 SUMMARY OF FEASIBILITY STUDY ALTERNATIVES

The following general response actions (GRAs) were considered in the FS for remediation of contaminated soils/dry sediment at RQL:

- No action,
- Land Use Controls and Monitoring,
- Containment,
- Removal,
- Treatment, and
- Disposal and Handling.

The technologies screened under each GRA were selected for their ability to reduce exposure to contaminants in soil/dry sediment. Because the soil/dry sediment contain chemical contamination above the preliminary cleanup goals, the technologies were evaluated for their applicability to remove or reduce contaminants in the shortest timeframe.

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

7.1 Feasibility Study Alternative 1 – No Action

Cost: $0

This remedial alternative provides no further remedial action and is required under NCP as a baseline for comparison with other remedial alternatives. Under this alternative, there is no reduction in toxicity, mobility, or volume of contaminated soil and dry sediment. Access restrictions and environmental monitoring would be discontinued. The site would have no legal, physical, or administrative land use controls. Environmental monitoring would not be performed. Five-year reviews would not be conducted in accordance with CERCLA 121(c).

7.2 Feasibility Study Alternative 2 – Limited Action

Estimated Implementation Cost: $19,527
30-year Operations and Maintenance (O&M) Cost: $164,419
Estimated Total Cost: $183,946

This remedial alternative involves the implementation of land use controls and periodic monitoring by the US Army and OHARNG to detect any changes in the nature or extent of contamination at the site and to deter unauthorized access and protect human receptors. Five-year reviews would be conducted in accordance with CERCLA 121(c). The remedial action includes an O&M period for the post-implementation activities, including monitoring and land use controls. The US Army would also continue land use controls and monitoring currently needed for maintenance of the closed landfill, as required under Ohio solid waste management regulations.

7.3 Feasibility Study Alternative 3 – Excavation of Soil/Dry Sediment with Off-site Disposal - Security Guard/Maintenance Worker Land Use

Estimated Implementation Cost: $137,559
30-year O&M Cost: $164,419
Estimated Total Cost: $301,978

This remedial alternative involves the removal of contaminated soil/dry sediment to meet the preliminary cleanup goals for the Security Guard/Maintenance Worker and off-site disposal at a facility licensed and permitted to accept these wastes. An estimated 423 yd^3 (ex situ) of impacted soils/dry sediment would be excavated and transported to an off-site disposal facility licensed or permitted to accept these wastes. Confirmation sampling would be conducted to ensure 1) the Security Guard/Maintenance Worker preliminary cleanup goals have been achieved and 2) the remaining soil/dry sediment in other areas of the bottom of the quarry do not exceed preliminary cleanup goals. Areas successfully remediated would be backfilled with clean soils and re-vegetated.

The US Army and OHARNG would develop and implement land use controls to deter unauthorized access and to protect human receptors. Environmental monitoring would be conducted to evaluate future conditions at the AOC. Five-year reviews would be conducted in accordance with CERCLA 121(c) to ensure protectiveness of the remedy. The remedial action includes a 30-year O&M period to account for the post-implementation activities, including land use controls. The US Army would also continue land use controls and monitoring currently needed for maintenance of the closed landfill, as required under Ohio solid waste management regulations.

7.4 Feasibility Study Alternative 4 – Excavation of Soils/Dry Sediment, and Off-site Disposal - Resident Subsistence Farmer Land Use

Estimated Implementation Cost: $215,465
30-Year O&M Cost: $0
Estimated Total Cost: $215,465

This remedial alternative involves the removal of contaminated soil/dry sediment to meet the preliminary cleanup goals for the Resident Subsistence Farmer and disposal off-site at a licensed disposal facility. An estimated 815 yd^3 of contaminated soil/dry sediment would be excavated and transported to an off-site disposal facility licensed or permitted to accept these wastes. Confirmation sampling would be conducted to ensure 1) Resident Subsistence Farmer land use preliminary cleanup goals have been achieved and 2) the remaining soil/dry sediment in other areas of the bottom of the quarry do not exceed preliminary cleanup goals. Areas successfully remediated would be backfilled with clean soil/dry sediment, as appropriate. Alternative 4 does not include additional land use controls or CERCLA 5-year reviews because residential land use preliminary cleanup goals are attained under this alternative. However, land use controls to address any issues with respect to MEC may be required and will be implemented by the US Army and OHARNG. The US Army would also continue land use controls and monitoring currently needed for maintenance of the closed landfill, as required under Ohio solid waste management regulations.

8.0 EVALUATION OF FEASBILITY STUDY ALTERNATIVES

The alternatives were evaluated with respect to the nine comparative analysis criteria, as 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).

Primary 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 Proposed Plan.

8. State acceptance.
9. Community acceptance.

The comparative analysis evaluates the relative performance of Alternatives 1 through 4 with respect to each of the nine criteria. Identifying the advantages and disadvantages of each alternative, relative to one another, helps identify the relative strengths of the preferred alternative. These strengths, combined with risk management decisions made by the US Army and Ohio EPA, as well as input from the community, will serve as the basis for selecting the remedy.

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 cleanup goals have been met.

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

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

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

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

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 report, focused feasibility study report, and the Proposed Plan.

Table 3 presents a summary for the comparative analysis of remedial alternatives for RQL from the FS. Criterion 1, Overall Protectiveness, is rated as either "protective" or "not protective." Criterion 2, Compliance with ARARs, is rated as either "compliant" or "not compliant." The remaining five primary balancing criteria are rated as high, medium, or low, with a rating of high indicating alternative(s) that performs the best and a rating of low indicating alternative(s) that performs the worst (e.g., an alternative with a high cost will be scored "low" for 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/dry sediment. Concentrations of contaminants could pose future risk to both the Security Guard/Maintenance Worker and Resident Subsistence Farmer.

For the remaining alternatives, the evaluation shows Alternative 2 does not offer substantial long-term effectiveness and permanence for a Security Guard/Maintenance Worker because of its reliance entirely on land use controls. In addition, it has a higher relative cost due to O&M requirements.

Alternative 3 provides a high degree of overall protectiveness and long-term effectiveness and permanence for a Security Guard/Maintenance Worker land use by removing contaminated soil. Alternative 3 can be readily and quickly implemented at a comparatively low cost.

Alternative 4 provides additional protection and allows residential future land use. Remediation of RQL to achieve residential cleanup goals is not warranted at this time. The AOC's reasonably anticipated land use will be restricted to Security Guard/Maintenance Worker due to the presence of MEC and the landfill.

Table 3. Summary of Comparative Analysis of Remedial Alternatives for RQL[a]

NCP Evaluation Criteria	Alternative 1 No Action	Alternative 2 Limited Action	Alternative 3 Excavation of Soils/Dry Sediment and Off-Site Disposal ~ Security Guard/Maintenance Worker Land Use	Alternative 4 Excavation of Soil and Dry Sediment, Treatment, and Off-Site Disposal ~ Resident Subsistence Farmer Land Use
1. Overall Protectiveness	Not protective	Not protective	Protective	Protective
2. Compliance with ARARs	Not compliant	Compliant	Compliant	Compliant
3. Long-Term Effectiveness and Permanence	Low	Medium	High	High
4. Reduction of Toxicity, Mobility, or Volume through Treatment	Low	Low	Low	Low
5. Short-Term Effectiveness	High	High	Medium	Medium
6. Implementability	High	High	Medium	Medium
7. Cost	High $0	Medium $183,946	Medium $301,978	Medium $215,465

[a]Criterion 1, Overall Protectiveness, 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(s) that performs the best], medium (moderate alternative performance), or low [alternative(s) that performs the worst].
ARAR = Applicable or relevant and appropriate requirement.
NCP = National oil and Hazardous Substances Pollution Contingency Plan.
RQL = Ramsdell Quarry Landfill.

9.0 PREFERRED FEASIBILITY STUDY ALTERNATIVE

The US Army, in consultation with Ohio EPA, is recommending Alternative 3 (Excavation of Soil/Dry Sediment and Off-site Disposal – Security Guard/Maintenance Worker Land Use) be implemented as the remedial action at RQL. This recommendation is not a final decision. The US Army, in consultation with Ohio EPA, will select the remedy for this AOC after reviewing and considering all comments submitted during the 30-day public comment period.

This alternative includes the removal of contaminated soil/dry sediment from the bottom of RQL that exceeds preliminary cleanup goals for the National Guard Security Guard/Maintenance Worker. This alternative is protective for the reasonably anticipated future land use, is cost effective, and can be performed in a timely manner. Based on available risk assessment information, the preferred alternative will achieve the RAO, which is to prevent Security Guard/Maintenance Worker exposure to contaminants in soil and dry sediment that exceed preliminary cleanup goals to a depth of 1 ft BGS. In addition, low risks to ecological receptors will be further reduced.

Engineering controls, personal protective equipment, erosion and sediment controls, proper waste handling practices, and monitoring will be used to mitigate short-term effects during construction. Following remediation, land use controls will be implemented by the US Army and OHARNG to deter unauthorized access to RQL. CERCLA 5-year reviews will be conducted to ensure protectiveness of the remedy.

10.0 COMMUNITY PARTICIPATION

10.1 Community Participation

Public participation is an important component of remedy selection. The US Army and Ohio EPA are soliciting input from the

community on the preferred alternative. The comment period extends from April 4, 2007, to May 3, 2007. This period includes a public meeting at which the US Army will present the Proposed Plan as agreed to by Ohio EPA. The US Army will accept both oral and written comments at this meeting.

10.2 Public Comment Period

The 30-day comment period is from April 4, 2007 to May 3, 2007, and provides an opportunity for public involvement in the decision-making process for the proposed action. All public comments will be considered by the US Army and Ohio EPA before selecting the final remedy. The public is encouraged to review and comment on this Proposed Plan. During the comment period, the public is encouraged to review documents pertinent to RQL. This information is available at the Information Repository and online at www.rvaap.org. To obtain further information, contact the RVAAP Facility Manager.

POINT OF CONTACT FOR WRITTEN COMMENTS

Facility Manager
Ravenna Army Ammunition Plant
Building 1037
8451 State Route 5
Ravenna, Ohio 44266-9297
Office: (330) 358-7311
Fax: (330) 358-7314

10.3 Written Comments

If the public would like to comment in writing on the Proposed Plan or other relevant issues, please deliver comments to the US Army at the public meeting or mail written comments (postmarked no later than May 3, 2007).

10.4 Public Meeting

The US Army will hold an open house and public meeting on this Proposed Plan on April 10, 2007, at 6:00PM, in the Newton Falls Community Center, 52 East Quarry Street, Newton Falls, Ohio, 44444 to accept comments. This meeting will provide an opportunity for the public to comment on the proposed action. Comments made at the meeting will be transcribed.

INFORMATION REPOSITORIES

Reed Memorial Library
167 East Main Street
Ravenna, Ohio 44266
(330) 296-2827
Hours of operation:
10AM – 8:45PM Monday – Friday
10AM – 5:45PM Saturday

Newton Falls Public Library
204 South Canal Street
Newton Falls, Ohio 44444
(330) 872-1282
Hours of operation:
9AM – 8PM Monday – Thursday
9AM – 5PM Friday and Saturday
12PM – 5PM Sunday

10.5 US Army Review of Public Comments

The US Army will review the public's comments as part of the process in reaching a final decision on the most appropriate action to be taken. A Responsiveness Summary, a document that summarizes the US Army's responses to comments received during the public comment period, will be included in the Record of Decision (ROD). The US 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

RVAAP
Building 1037
8451 State Route 5
Ravenna, Ohio 44266-9297
(330) 358-7311
Fax: (330) 358-7314

Note: Access is restricted to the Ravenna Army Ammunition Plant (RVAAP), but the file can be obtained or viewed with prior notice to RVAAP

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 RVAAP, 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.

Constituent of concern (COC): site-specific chemical substance that potentially poses significant human health or ecological risks. COCs are typically further evaluated for remedial action.

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.

Human receptor: a hypothetical person, based on current or potential future land use, who may be exposed to an adverse condition. For example, a Security Guard/Maintenance Worker is considered the representative human receptor in this Proposed Plan.

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

Record of Decision (ROD): legal record signed by the US Army and Ohio EPA. 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 ARARs, 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 US Army documents and responds to written and oral comments received from the public about the Proposed Plan.

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

Target risk: the Ohio EPA (2004b) identifies 1E-05 as a target for cancer risk for carcinogens and an acceptable target hazard index of 1 for non-carcinogens.

Weight-of-Evidence: a procedure for identifying, organizing, and evaluating or weighing various types, quantities, and qualities of information about natural resources, ecological risk from chemicals, and likely consequences of any remediation on those plants, animals, and ecological systems.

REFERENCES

Ohio EPA 2004a. *Director's Final Findings and Orders in the matter of US Army, Ravenna Army Ammunition Plant*, June 2004.

Ohio EPA, Division of Emergency and Remedial Response (DERR), 2004b. *Technical Decision Compendium: Human Health Cumulative Carcinogenic Risk and Non-carcinogenic Hazard Goals for DERR Remedial Response and Office of Federal Facility Oversight.* April 28, 2004.

USACE (US Army Corps of Engineers) 1996. *Preliminary Assessment for the Ravenna Army Ammunition Plant, Ravenna, Ohio*, DACA62-94-D-0029, Delivery Order 0009.

USACE 1999. *Initial Phase Report, Groundwater Investigation, Ramsdell Quarry Landfill, Ravenna Army Ammunition Plant, Ravenna, Ohio*, DACA27-97-D0025, Delivery Order 003, Final, January.

USACE 2000. *Final Report on the Groundwater Investigation of the Ramsdell Quarry Landfill, Ravenna Army Ammunition Plant, Ravenna, Ohio*, DACA27-97-D-0025, Delivery Order 003, August.

USACE 2005a. *Phase I Remedial Investigation Report for Ramsdell Quarry Landfill (RVAAP-01)*, *Ravenna Army Ammunition Plant, Ravenna, Ohio*, GS-10F-0076J, Delivery Order W912QR-05-F-0033, Final, September.

USACE 2005b. *Facility-wide Biological and Water Quality Study 2003, Ravenna Army Ammunition Plant. Part 1 - Streams and Part 2 -- Ponds*. USACE, Louisville District, with the Ohio Environmental Protection Agency, Division of Surface Water.

USACE 2006. *Feasibility Study for Ramsdell Quarry Landfill (RVAAP-001), Ravenna Army Ammunition Plant, Ravenna, Ohio*, GS-10F-0076J, Delivery Order No. W912QR-05-F-003, Final. March 2006.

FIGURES

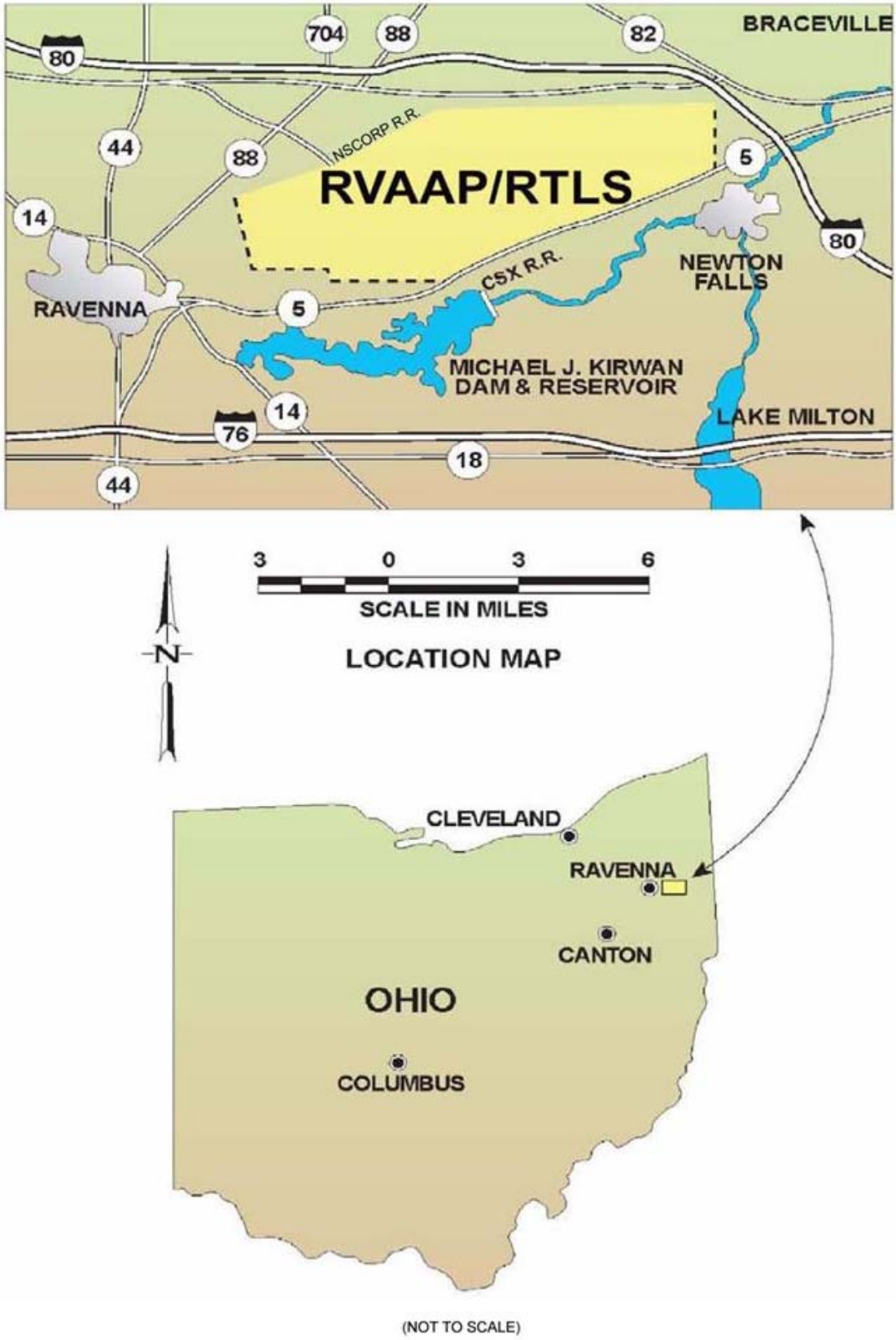

Figure 1. General Location and Orientation of RVAAP/RTLS

Figure 2. RVAAP/RTLS Installation Map

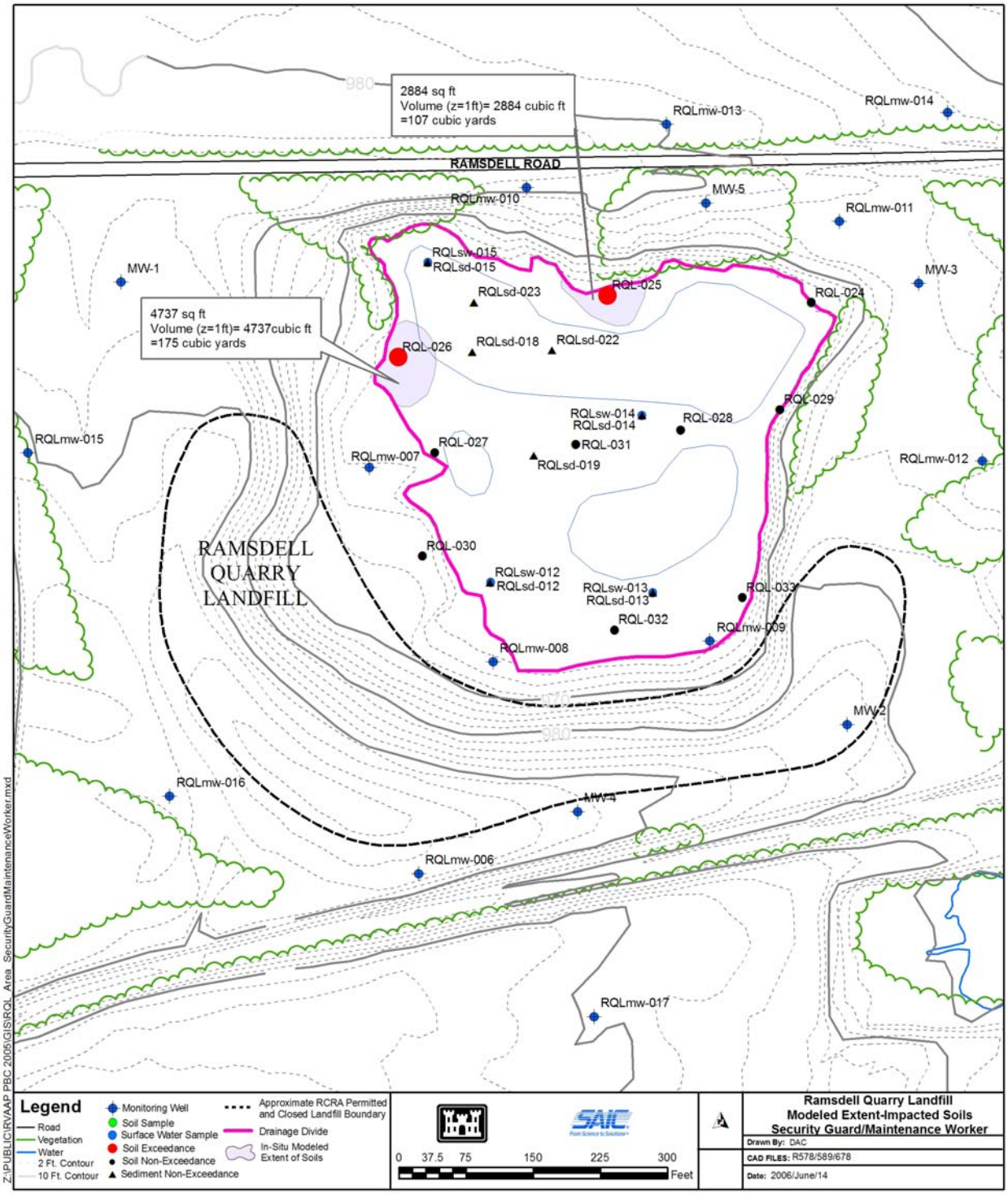

Figure 3. RQL and Areas to be Excavated under the Preferred Alternative